



ATLAS *of*
BREEDING
BIRDS
of INDIANA

— 2005-2011

ON THE COVER

A female Northern Cardinal perching on a bare branch with a male Northern Cardinal behind her. *Photo by Shari McCollough.*

ATLAS *of*
BREEDING
BIRDS
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2005-2011

John S. Castrale

INDIANA DIVISION OF FISH AND WILDLIFE

*Dedicated to the many ornithologists and birders
who have contributed to the
scientific knowledge of Indiana birds.*

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DISCLAIMER

Users of atlas data are advised that the accuracy and completeness of data are not guaranteed. Responsibility for interpretation of data lies with the user. In addition, the Indiana Department of Natural Resources and the author shall not be responsible for any costs, losses, or damages either from furnishing inaccurate or incomplete data, or from interpretation of data.

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ABSTRACT

THE FIRST BREEDING BIRD ATLAS project in Indiana was conducted from 1985 to 1990 to document the occurrence of breeding birds in the state. Volunteers, agency staff, and paid contractors visited 646 priority blocks representing about 17% of the area of the state to gather breeding evidence for all species found during their presumed nesting season. Twenty years later, this project was repeated to determine changes in distribution and relative occurrence of Indiana's breeding birds. A total of 146 bird species was confirmed breeding during both atlas periods. An additional 13 species nested only during the 1985–1990 atlas and 17 other species were confirmed breeding exclusively during the 2005–2011 period. Species found in the most blocks were American Robin, Northern Cardinal, Mourning Dove, Song Sparrow, and European Starling. Between atlas periods, 27% of species showed statistically significant increases in detections, while 15% showed a significant decline in the frequency of occurrence. Species showing the greatest significant increases in occurrence were Tree Swallow, Eastern Phoebe, Wild Turkey, Canada

Goose, and Northern Parula. Those with the largest statistical declines were Ruffed Grouse, Rock Pigeon, Black-billed Cuckoo, Grasshopper Sparrow, and Eastern Whip-poor-will. Relatively more forest species showed increases than wetland and urban birds, while grassland and shrubland birds fared poorest. Regional differences in distribution were found in 66% of species analyzed. More species showed differences among northern, central, and southern regions (60%) compared to differences from east to west (36%). In seven subregions, relative distributions of 44% of species showed statistical differences, with more species occurring most often in south-central Indiana followed by northeastern and southwestern regions. Thirty-one bird species exhibited a statistically significant range shift, with the mean longitude for 21 species occurring further north, four southward, eight westward, and four southward. Maps are presented showing the occurrence of 198 bird species along with 201 tables detailing regional atlas frequencies and relative abundances from federal Breeding Bird Surveys.

INTRODUCTION

FROM 1985 THROUGH 1990, field work for a breeding bird atlas project was conducted in Indiana and the results later published (Castrale *et al.* 1998). The purpose of the atlas was to map the distribution of breeding birds by visiting preselected sampling blocks distributed throughout Indiana. Specific objectives were to: 1) provide the data necessary to produce accurate and current distribution maps for every bird species thought to be breeding in the state, 2) provide more accurate information on breeding occurrences and habitats of rare birds for management purposes, 3) identify unusual habitats supporting rare species that could become the focus of targeted conservation efforts, 4) provide baseline data against which future changes in the status of breeding birds could be measured, 5) provide a database for use in the review of proposed construction projects regulated by the

Indiana Department of Natural Resources, and 6) involve birders of Indiana in a cooperative conservation effort. At the time of the first atlas, authors envisioned repeating the project 20 years later to assess changes in bird distributions and occurrence rates. This came to fruition in 2005 - 2011 when Indiana's second Breeding Bird Atlas was conducted.

Other states in the Midwest have conducted Breeding Bird Atlas projects. Several have completed a second, follow-up project. The initial atlases in adjacent states were conducted as follows: Ohio from 1982–1987 (Peterjohn and Rice 1991), Michigan from 1983–1988 (Brewer *et al.* 1991), Kentucky from 1985–1991 (Palmer-Ball 1996), and Illinois from 1986–1991 (Kleen *et al.* 2004). Michigan conducted a second atlas from 2002–2008 (Chartier *et al.* 2013) while Ohio conducted one from 2006–2011 (Rodewald *et al.* 2016).

METHODS

BOTH BREEDING BIRD ATLAS projects conducted in Indiana to date were initiated, coordinated, funded, and published by the Wildlife Diversity Program (formerly called the Nongame and Endangered Wildlife Program) of the Division of Fish and Wildlife, Indiana Department of Natural Resources. Volunteer birders were again recruited to carry out field work for the atlas, although most blocks were completed by paid contractors in addition to limited Wildlife Diversity Program staff.

To allow for comparisons between atlas projects, field methods were nearly identical in both projects, especially the use of safe dates and breeding evidence codes. Most differences in methods were in data entry, map preparation, and communication. During the 1985–1990 atlas, participants submitted annual summary reports on paper and atlas staff reviewed and entered them into a computer database. During the current atlas, data entry was online through a website titled the Breeding Bird Atlas Explorer, designed and maintained by the U.S. Geological Survey’s Patuxent Wildlife Research Center and the National Biological Information Infrastructure (www.pwrc.usgs.gov/bba). For each block visited, participants entered the amount of time spent atlasing and a date with the highest breeding evidence code for each bird species encountered. A county coordinator or the project coordinator then reviewed each record. The database was updated frequently and preliminary maps for each bird species could be viewed throughout the project.

The basic sampling unit in a Breeding Bird Atlas project is a block. A block is one-sixth of a standard 7.5’ U.S. Geological Survey topographic map. Each topographic map within Indiana was divided by one vertical line and two horizontal lines resulting in six equal parts (Fig 1). Each block was approximately 24.5 km² (9.5 mi²) in area and ranged from 24.1 km² (9.3 mi²) for the most northern blocks to 25.5 km² (9.9 mi²) for the southernmost blocks. Blocks targeted for atlasing are referred to as priority blocks while the remaining ones are non-priority blocks. The west-central block was designated the priority block and the project goal was to adequately sample each priority block. Ideally,

all blocks within Indiana would be sampled, but due to limited resources, a smaller but representative sample consisting of priority blocks (spread evenly throughout the state) was used instead. Only portions of blocks within the legal boundaries of Indiana were sampled for birds. Some blocks contained just a small area within the state boundary. Although 647 priority blocks were sampled during the 1985–1990 atlas, only 646 blocks were designated during the 2005–2011 project (Fig. 2). The rejected block was a small area in Posey County that had poor access especially after flooding events. Comparisons between atlas projects were based on the same 646 priority blocks sampled during both time periods.

Standard breeding evidence criteria and codes were used to evaluate breeding by each species and were the same used in both atlas projects (Table 1). Breeding evidence codes are behaviors or observations

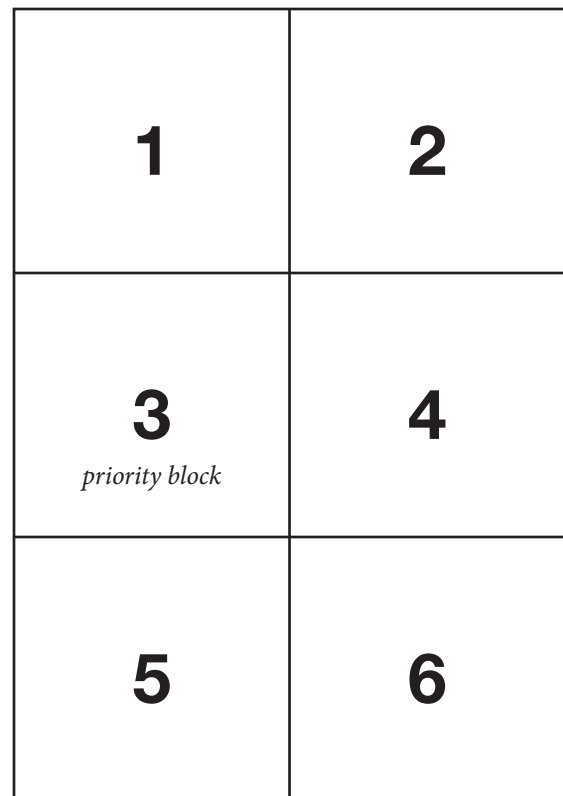


Figure 1. Block numbers for portions of topographic maps. Block three was designated the priority block.

were categorized into four major classes (observed, possible, probable, confirmed) that suggest increasing degrees of breeding evidence and all but Observed suggest breeding in a block. The goal of each atlaser was to obtain the highest breeding evidence possible for each species in a block with the majority in the confirmed and probable categories. Except for evidence in the confirmed categories, safe breeding dates for each species were used in conjunction with breeding evidence. Safe breeding dates are conservative estimates of the period when spring migration should have been completed by most individuals and when post-breeding dispersal and migration should have not begun. Keep in mind that, for many species, breeding occurs outside of the safe breeding dates, and some individual birds will linger past normal migration windows and will be counted by atlasers.

During the 1985–1990 atlas, participants reported the highest breeding evidence code for each species on

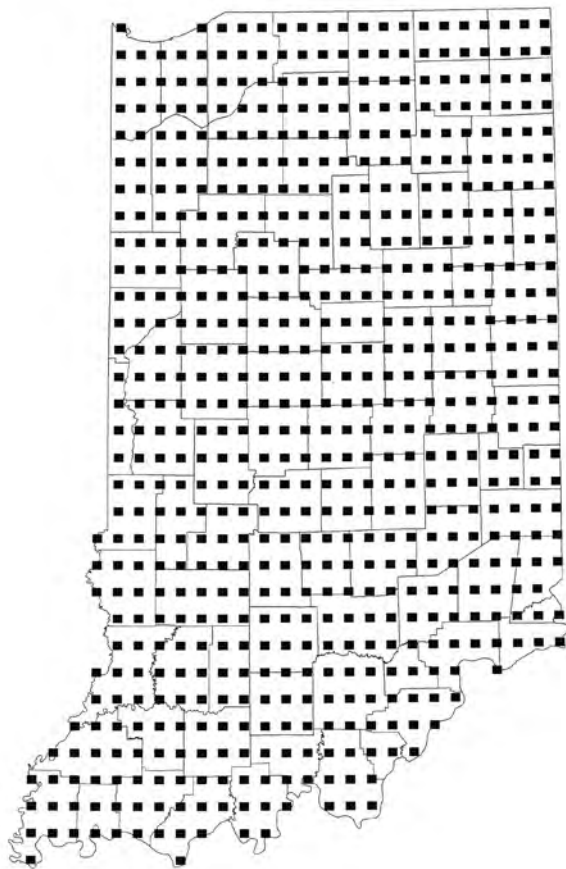


Figure 2. Locations of 646 priority blocks for the Indiana Breeding Bird Atlas.

Table 1. Breeding evidence criteria and codes for the Indiana Breeding Bird Atlas.

| Category | Code | Explanation |
|------------------|------|--|
| Observed* | | |
| | O | Species (male or female) observed during the breeding season, but not believed to be breeding in block. |
| Possible* | | |
| | X | Species (male or female) observed in suitable nesting habitat during its breeding season. |
| | S | Singing male present (or breeding calls heard) in suitable habitat during its breeding season. |
| Probable* | | |
| | M | Seven or more males of the same species heard singing in suitable habitat during one visit during their breeding season. |
| | P | Pair observed in suitable nesting habitat during its breeding season. |
| | T | A bird or pair apparently defending a breeding territory (e.g., chasing other birds) or a singing male at the same location on >1 time a week or more apart. |
| | C | Courtship behavior or copulation. |
| | N | Visiting probable nest site. |
| | A | Agitated behavior or anxiety calls from adult(s). |
| | B | Nest building by wrens or cavity excavation by woodpeckers. |
| Confirmed | | |
| | NB | Nest building by all species except wrens or woodpeckers. |
| | DD | Distraction display or injury feigning. |
| | PE | Physiological evidence of breeding based on a bird in the hand (i.e., edematous brood patch or egg in oviduct). |
| | UN | Used nest or eggshells found. |
| | FY | Adult(s) carrying food for young or feeding recently fledged young. |
| | FL | Recently fledged young (of altricial species) incapable of flight or downy young (of precocial species) restricted to the natal area by dependence on adults or limited mobility. |
| | ON | Adult(s) entering or leaving nest site in circumstances indicating an occupied nest (includes high nests or nest holes in which the contents cannot be seen), or adult incubating or brooding. |
| | FS | Adult carrying a fecal sac. |
| | NE | Nest with egg(s). |
| | NY | Nest with young seen or heard. |

*Used in conjunction with safe breeding dates.

Figure 3b. Field cards used by Indiana atlas workers.

| SPECIES | EVIDENCE CODE | | | | Safe dates; High code date |
|-------------------------|---------------|----|----|----|-------------------------------|
| | OB | PO | PR | CO | |
| Goose, Canada | | | | | 4/15-6/30; |
| Swan, Mute* | | | | | 5/1-7/31; |
| Duck, Wood | | | | | 5/1-6/30; |
| Mallard | | | | | 5/1-6/30; |
| Teal, Blue-winged* | | | | | 6/1-7/15; |
| Merganser, Hooded* | | | | | 5/1-7/15; |
| Pheasant, Ring-neck.* | | | | | 4/1-6/30; |
| Grouse, Ruffed* | | | | | 4/1-7/31; |
| Turkey, Wild | | | | | 4/1-7/31; |
| Bobwhite, Northern | | | | | 4/15-7/31; |
| Grebe, Pied-billed* | | | | | 5/15-7/15; |
| Heron, Great Blue* | | | | | 5/15-7/15; |
| Green | | | | | 5/15-6/30; |
| Night-Heron, Blk.-cmd.* | | | | | 5/1-6/30; |
| Yellow-crowned* | | | | | 5/1-6/30; |
| Vulture, Black* | | | | | 4/15-7/31; |
| Turkey* | | | | | 5/1-7/31; |
| Eagle, Bald* | | | | | 5/1-7/31; |
| Harrier, Northern* | | | | | 5/15-7/15; |
| Hawk, Sharp-shinned* | | | | | 5/1-7/15; |
| Cooper's* | | | | | 5/20-7/31; |
| Red-shouldered* | | | | | 5/1-7/31; |
| Broad-winged* | | | | | 5/20-7/31; |
| Red-tailed | | | | | 4/15-7/31; |
| Kestrel, American | | | | | 5/1-7/15; |
| Rail, Virginia* | | | | | 5/15-7/31; |
| Sora* | | | | | 6/1-7/31; |
| Coot, American* | | | | | 6/1-7/31; |
| Crane, Sandhill* | | | | | 5/15-6/30; |
| Killdeer | | | | | 4/15-6/30; |
| Sandpiper, Spotted* | | | | | 6/1-6/30; |
| Upland* | | | | | 5/15-6/30; |
| Woodcock, American* | | | | | 4/10-6/30; |
| Pigeon, Rock | | | | | 3/15-7/31; |
| Collared-Dove, Eur.* | | | | | 6/15-7/31; |
| Dove, Mourning | | | | | 5/1-7/15; |
| Cuckoo, Black-billed* | | | | | 6/10-8/15; |
| Yellow-billed | | | | | 6/10-7/31; |
| Owl, Barn* | | | | | 5/1-7/31; |
| Screech-Owl, Eastern | | | | | 4/1-7/31; |
| Owl, Great Horned | | | | | 2/1-8/15; |
| Barred | | | | | 2/1-7/31; |
| Short-eared* | | | | | 5/1-7/31; |
| Nighthawk, Common* | | | | | 6/5-7/15; |
| Chuck-Will's-Widow* | | | | | 5/1-7/25; |
| Whip-Poor-Will* | | | | | 5/15-7/15; |
| Swift, Chimney | | | | | 5/20-7/15; |
| Hummingbird, Ruby-thr. | | | | | 5/20-6/30; |

*Species should also be reported in non-priority blocks during safe dates.

| SPECIES | EVIDENCE CODE | | | | Safe dates; High code date |
|-----------------------------|---------------|----|----|----|-------------------------------|
| | OB | PO | PR | CO | |
| Kingfisher, Belted | | | | | 4/15-7/15; |
| Woodpecker, Red-headed | | | | | 5/25-7/31; |
| Red-bellied | | | | | 4/1-7/31; |
| Downy | | | | | 5/15-7/31; |
| Hairy | | | | | 5/15-7/31; |
| Flicker, No. (Yel.-shafted) | | | | | 5/15-7/31; |
| Woodpecker, Pileated | | | | | 5/1-7/31; |
| Wood-Pewee, Eastern | | | | | 6/1-7/31; |
| Flycatcher, Acadian | | | | | 5/25-7/15; |
| Alder* | | | | | 6/10-7/10; |
| Willow | | | | | 6/1-7/10; |
| Least* | | | | | 6/7-6/30; |
| Phoebe, Eastern | | | | | 5/1-6/30; |
| Flycatcher, Great Crested | | | | | 6/1-7/15; |
| Kingbird, Eastern | | | | | 5/25-7/15; |
| Shrike, Loggerhead* | | | | | 5/1-6/30; |
| Vireo, White-eyed | | | | | 5/15-6/30; |
| Bell's* | | | | | 5/15-6/30; |
| Yellow-throated | | | | | 5/25-6/30; |
| Warbling | | | | | 6/5-7/15; |
| Red-eyed | | | | | 5/25-6/30; |
| Jay, Blue | | | | | 6/1-7/15; |
| Crow, American | | | | | 5/1-7/15; |
| Lark, Horned | | | | | 4/1-6/30; |
| Martin, Purple | | | | | 5/15-6/25; |
| Swallow, Tree | | | | | 5/25-6/30; |
| No. Rough-winged | | | | | 6/1-6/30; |
| Bank* | | | | | 5/25-6/30; |
| Cliff* | | | | | 6/1-6/30; |
| Barn | | | | | 5/15-6/30; |
| Chickadee, Carolina | | | | | 4/1-6/30; |
| Black-capped* | | | | | 5/1-7/15; |
| Titmouse, Tufted | | | | | 4/1-7/31; |
| Nuthatch, White-breasted | | | | | 5/10-7/31; |
| Creeper, Brown* | | | | | 5/1-6/30; |
| Wren, Carolina | | | | | 5/1-7/31; |
| House | | | | | 5/20-6/30; |
| Sedge* | | | | | 6/1-7/15; |
| Marsh* | | | | | 5/25-7/15; |
| Gnatcatcher, Blue-gray | | | | | 5/15-6/30; |
| Bluebird, Eastern | | | | | 5/15-7/15; |
| Veery* | | | | | 6/5-7/31; |
| Thrush, Wood | | | | | 5/25-7/31; |
| Robin, American | | | | | 5/1-7/31; |
| Catbird, Gray | | | | | 5/20-7/31; |
| Mockingbird, Northern | | | | | 5/1-7/31; |
| Thrasher, Brown | | | | | 5/15-7/31; |
| Starling, European | | | | | 4/1-6/30; |

*Species should also be reported in non-priority blocks during safe dates.

| SPECIES | EVIDENCE CODE | | | | Safe dates; High code date |
|-------------------------|---------------|----|----|----|-------------------------------|
| | OB | PO | PR | CO | |
| Waxwing, Cedar | | | | | 6/10-7/10; |
| Warbler, Blue-winged* | | | | | 5/25-6/30; |
| Parula, Northern* | | | | | 5/15-6/30; |
| Warbler, Yellow | | | | | 5/25-6/30; |
| Chestnut-sided* | | | | | 6/1-6/30; |
| Black-throated Green* | | | | | 6/1-7/10; |
| Yellow-throated | | | | | 5/1-6/30; |
| Pine* | | | | | 5/15-6/30; |
| Prairie | | | | | 5/25-7/15; |
| Cerulean* | | | | | 5/25-6/30; |
| Black-and-White* | | | | | 5/20-6/30; |
| Redstart, American* | | | | | 6/5-7/5; |
| Warbler, Prothonotary* | | | | | 5/15-6/30; |
| Worm-eating* | | | | | 5/20-6/30; |
| Ovenbird* | | | | | 5/20-6/30; |
| Waterthrush, Louisiana* | | | | | 5/15-6/30; |
| Warbler, Kentucky | | | | | 5/25-6/30; |
| Yellowthroat, Common | | | | | 5/20-6/30; |
| Warbler, Hooded* | | | | | 5/25-6/30; |
| Chat, Yellow-breasted | | | | | 5/25-7/15; |
| Tanager, Summer | | | | | 6/1-7/15; |
| Scarlet | | | | | 5/25-6/30; |
| Towhee, Eastern | | | | | 5/15-7/31; |
| Sparrow, Chipping | | | | | 5/10-7/31; |
| Field | | | | | 5/15-7/15; |
| Vesper | | | | | 5/1-7/31; |
| Lark* | | | | | 6/1-7/15; |
| Savannah | | | | | 6/1-7/15; |
| Grasshopper | | | | | 5/15-7/15; |
| Henslow's* | | | | | 5/15-7/31; |
| Song | | | | | 5/1-7/15; |
| Swamp* | | | | | 6/1-7/15; |
| Cardinal, Northern | | | | | 3/15-8/31; |
| Grosbeak, Rose-breasted | | | | | 6/5-7/15; |
| Blue* | | | | | 6/1-7/15; |
| Bunting, Indigo | | | | | 6/1-7/31; |
| Dickcissel | | | | | 6/1-7/31; |
| Bobolink | | | | | 6/10-7/10; |
| Blackbird, Red-winged | | | | | 5/1-6/30; |
| Meadowlark, Eastern | | | | | 5/1-7/31; |
| Western* | | | | | 5/1-7/31; |
| Grackle, Common | | | | | 4/20-6/20; |
| Cowbird, Brown-headed | | | | | 5/1-7/5; |
| Oriole, Orchard | | | | | 5/25-7/5; |
| Baltimore | | | | | 5/25-7/5; |
| Finch, House | | | | | 5/1-6/30; |
| Goldfinch, American | | | | | 6/15-8/31; |
| Sparrow, House | | | | | 3/1-8/31; |

*Species should also be reported in non-priority blocks during safe dates.

their annual summary form. The Observed codes were not entered into the database and were not included in the species distribution maps. The Observed code was used for observations of species that range widely or individuals that were flyovers. Thus, it cannot be reasonably assumed that the species presence or breeding was confined to the block in which it was observed. This code was used primarily for large birds that travel widely between nesting and feeding areas, including Bald Eagles, Osprey, both vulture species, Great Blue Herons, Great Egrets, and Double-crested Cormorants. The smaller sizes of breeding territories for other species made it much more likely that they nested in the territory in which they were observed. For the 2005–2011 atlas project, Observed codes were included in the database and Observed codes for Black and Turkey Vultures were retrieved from the earlier atlas project and included in the maps. During the 2005–2011 atlas, safe dates were provided on the field cards (Fig. 3a-b) and space provided to list the date for the highest level of breeding evidence registered. Atlasers were also required to provide this date during online data entry. The website flagged any records that were outside the safe dates and most of these records were not accepted. Because dates were not included on the annual summary forms for the 1985–1990 atlas, it is probable that some records were accepted when they should have been rejected.

Although atlas participants were encouraged to spend their efforts in priority blocks to achieve adequate coverage, they could also submit incidental observations in priority and non-priority blocks. Observations of less common species were strongly encouraged no matter which block they occurred in. Results from targeted monitoring projects during the atlas years (e.g., Bald Eagles, Peregrine Falcons, Barn Owls) were included in both Breeding Bird Atlas projects. In a few cases, atlasers concentrated on special areas, which were usually public areas such as state or federal wildlife areas that consisted of multiple atlas blocks. The online website allows retrieval of records by designated special areas. During the most recent atlas project, postings on the Indiana birders list serve (former <http://iulist.indiana.edu>) were extensively used to add additional records for less common species or for species where confirmed breeding was rarely detected.

Fewer incidental records were gathered during the 1985–1990 atlas, because sources were primarily records published in the annual seasonal field notes feature and Summer Bird Counts found in the state's ornithological journal, the *Indiana Audubon Quarterly*.

Both atlas projects were initially planned to be completed in five years. However, the first atlas consisted of six field seasons and the second, seven years to obtain adequate coverage in all priority blocks. Because volunteers were more difficult to recruit during the latter atlas project, more paid atlasers were used. Atlas participants were asked to report the time spent atlasing in order to compare effort between atlas projects. However, few did and the differences in ability among atlasers made comparisons in efforts questionable.

Data were summarized using an Excel spreadsheet with species as columns and atlas blocks as rows. Additional columns indicated the region and latitude and longitude of each block. A code for the primary breeding evidence (confirmed, probable, possible, and observed) populated the cells of the spreadsheet. Maps were prepared using the ARC View GIS system. For each atlas period, a map was prepared for each bird species with four symbols representing each of the four main breeding evidence codes. Observations in both priority and non-priority blocks were presented. To better illustrate changes in bird distributions between atlas periods, another set of maps was produced that used only information from priority blocks and from confirmed, probable, and possible breeding evidence codes. The symbols do not reflect breeding evidence, but show priority blocks where the species was detected during the 1985–1990 atlas, the 2005–2011 atlas, and both atlas periods.

To incorporate information about relative abundance of birds in the state, Breeding Bird Survey data were obtained from the U.S. Geological Survey's Patuxent Wildlife Research Center (Sauer *et al.* 2015; www.mbr-pwrc.usgs.gov/bbs/). The Breeding Bird Survey is an annual roadside survey conducted from late May to early July and was initiated in 1966. The numbers of each bird species seen or heard during a three-minute period are counted at 50 stops along a route with surveys beginning 30 minutes before sunrise. In Indiana, 42 routes were originally established with

route starting points and directions selected in a stratified random manner. In 1999, 16 additional routes were added. Due to traffic and safety concerns, some routes have been replaced by new ones nearby. Other nonrandom routes have also been set up, but these were not used in this analysis. Numbers of birds present on surveys conducted during each atlas period were averaged by region. Forty-eight routes were surveyed at least once during the 2005–2011 period while 42 routes were surveyed during 1985–1990. Population trends (mean annual percent change) were also obtained for each species for the 1985–2011 period. Graphs of annual indices could also be examined online (www.mbr-pwrc.usgs.gov/bbs/trend/tf13.html). Classification of birds species into broad habitat categories (forest, grassland, shrubland, wetland, urban) used in some Breeding Bird Survey analyses (www.mbr-pwrc.usgs.gov/bbs/trend/guild13.html) were also used in the IBBA project to explore regional differences and changes in occurrences between atlas periods.

Chi-square tests for independence and the related G-tests were used to determine statistical significance in the number of blocks in which a species occurred between atlas periods. Both use the number of blocks where a species occurred compared to the number of blocks where a species was not detected. The G-test used the natural log of the frequencies and both tests provided nearly identical outcomes. Chi-square goodness of fit tests were also used to examine regional differences in species occurrences during the 2005–2011 atlas period. Chi-square tests may be unreliable when expected cell frequencies are low, giving erroneous differences when

in fact they are not (a type I error). As a result, these tests were not used in cases where any expected cell frequencies were <1 or if more than two cells were <5 . Species in this category were those that rarely occurred as well as those that occurred in virtually every block.

For the regional summary and analysis of the atlas data, the same regional boundaries were used as those in the 1985–1990 atlas (Castrale *et al.* 1998, Fig. 4). These are based on the original physiographic regions used in the federal Breeding Bird Survey. Even though Bird Conservation Regions have since been developed and are widely used in bird conservation initiatives, the former regions better correspond to the major portions of the state: northwest, northeast, west-central, east-central, southwest, south-central, and southeast. Statistical analyses using chi-square goodness of fit tests were employed to explore differences in the relative occurrences of each bird species in various regions of the state.

References are sometimes made in the species accounts to Indiana counties, public lands, and rivers. A state map of Indiana counties (Fig. 5) and the location of public lands (Fig. 6) and rivers (Fig. 7) are provided. Because bird distribution and abundance are most strongly associated with the amount, location, and configuration of specific habitat types, maps of major land use and cover types are shown in Fig. 8. This map is from the 2011 National Land Cover Database (NLCD), a 16-class land cover classification digitally interpreted from Landsat satellite imagery taken during 2011 (Homer *et al.* 2015).

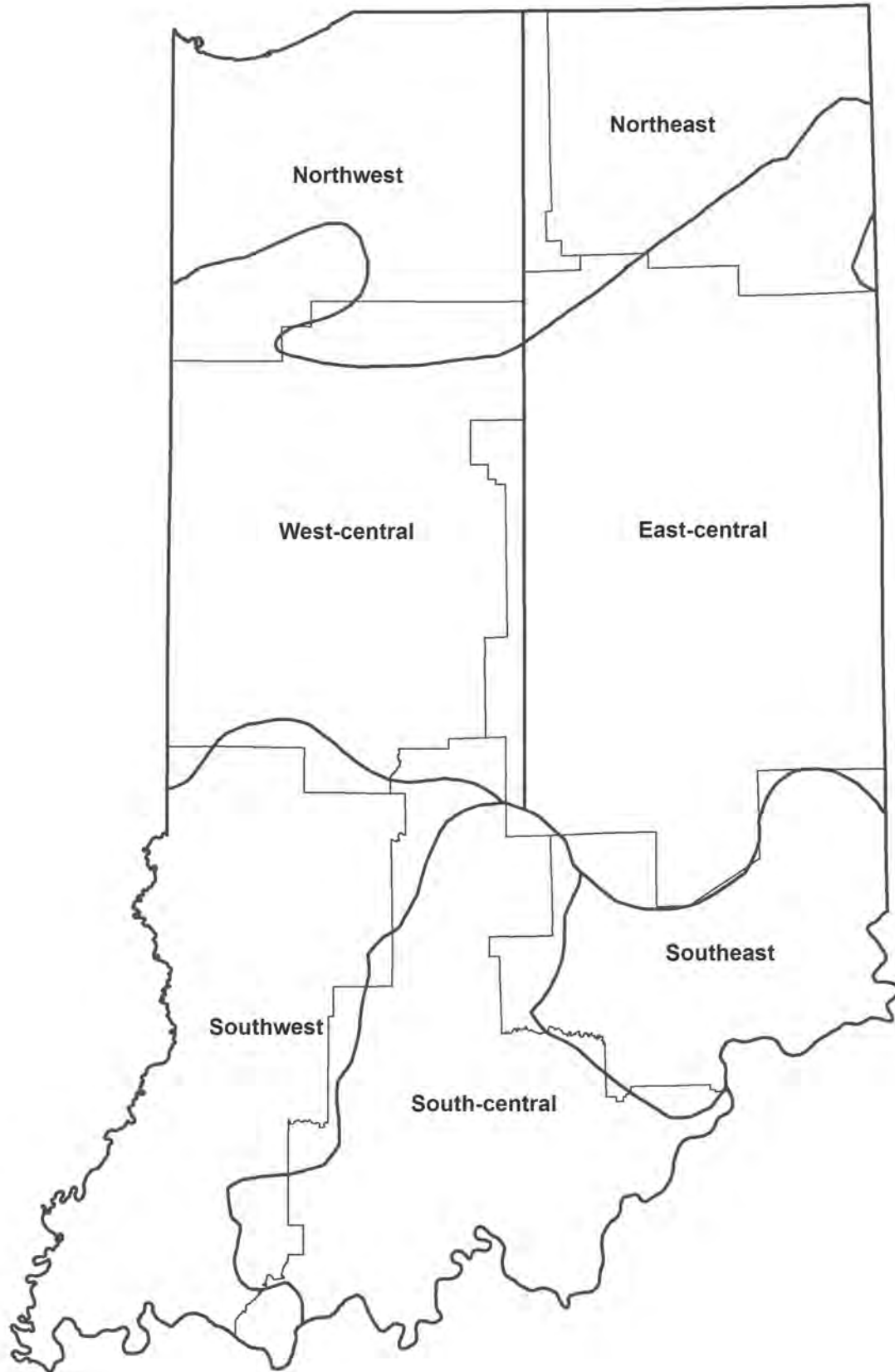


Figure 4. Map showing regions used for summarizing bird occurrences on the Indiana Breeding Bird Atlas and the Breeding Bird Survey.



Figure 5. Map of Indiana counties.

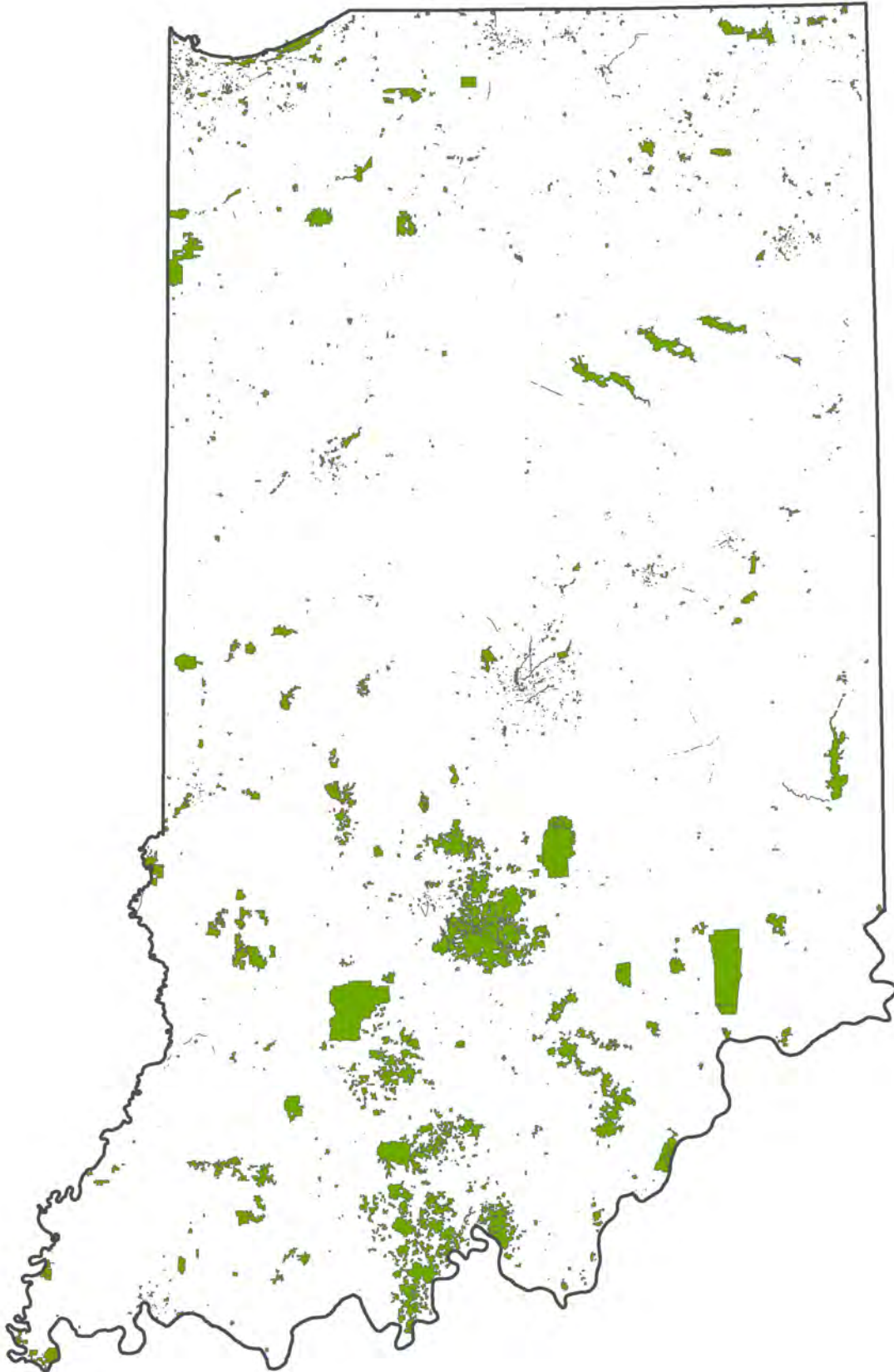


Figure 6. Map showing public lands of Indiana.

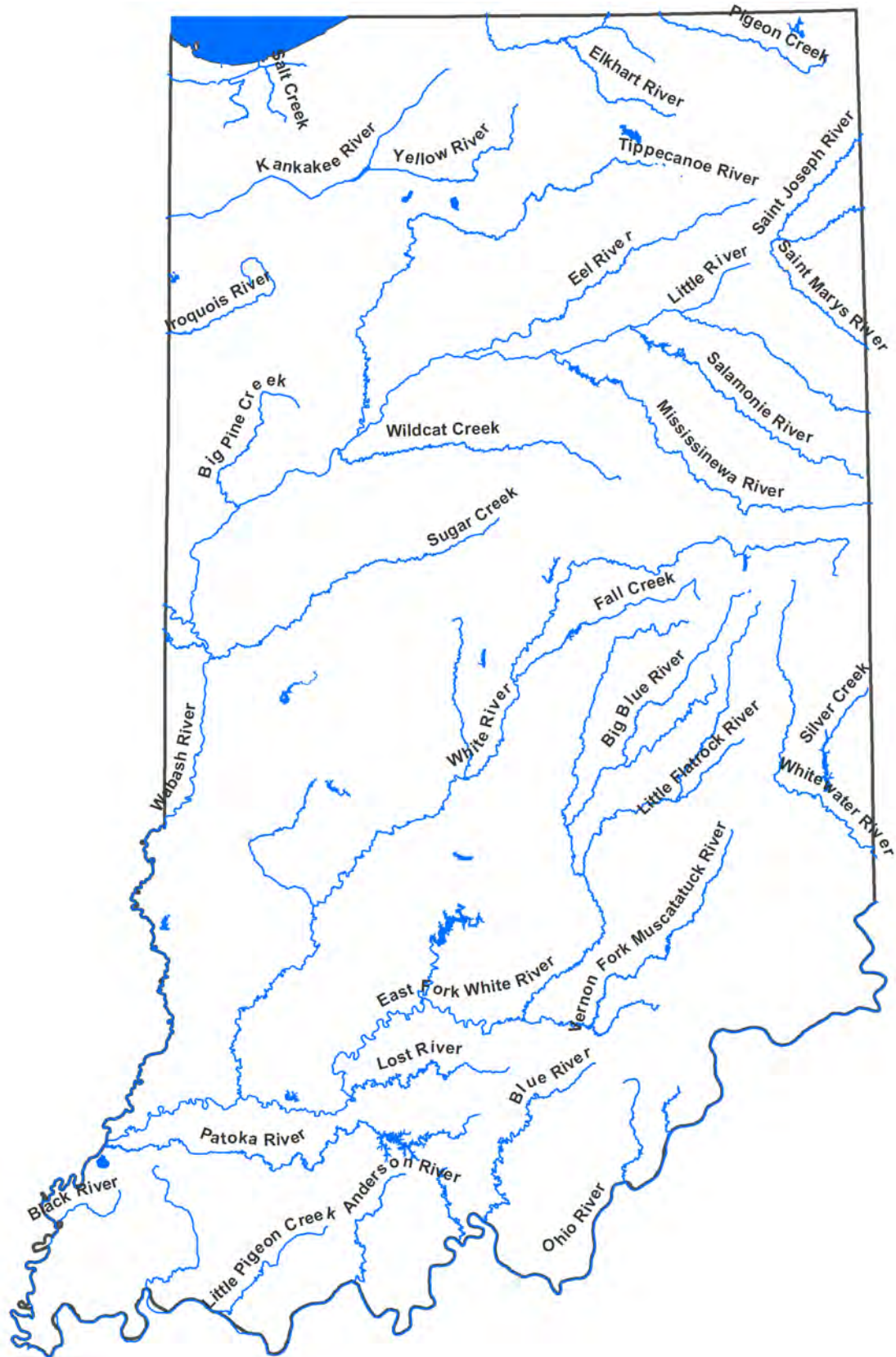


Figure 7. Map showing major rivers of Indiana.

Type of Land Use or Land Cover

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Herbaceous
- Hay/Pasture
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

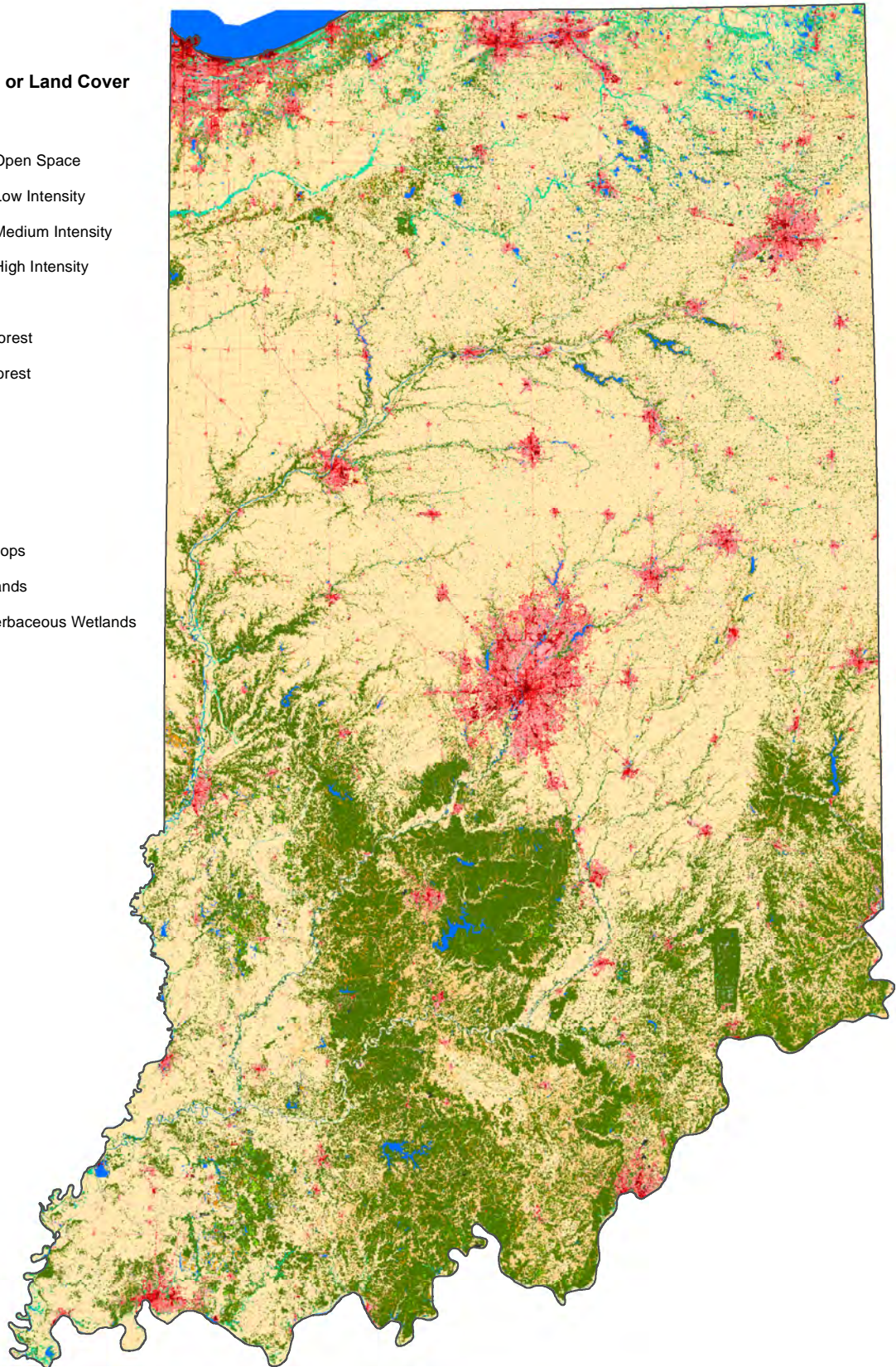


Figure 8. Map showing land use and land cover in Indiana using data from the 2011 NLCD and Landsat satellite imagery.

RESULTS AND DISCUSSION

LAND USE AND LAND cover in Indiana as quantified by the NLCD 2011 classification of satellite imagery show that the state is dominated by agricultural land (primarily corn and soybeans) statewide (Table 2). Agricultural land comprised over half of the landscape statewide and exceeded 70% in central regions. The only regions with <50% coverage were southern, south-central, and southeastern Indiana, where deciduous forests predominate. The south-central region was the only one where forest cover exceeded 50%. Developed land (primarily urban and roads) was the third highest land-cover category and values were greatest in northern and central regions. Grasslands, primarily hayfields and pastures, comprised slightly less than 10% of the state's area and were found in greatest amounts in south-central, southeastern, and northeastern Indiana, with the least coverage in central regions. Other land cover categories each made up <2% of the state's area. Wetlands, a critically important habitat for many birds, were found in greater amounts in northern portions of Indiana. Shrubland, another habitat vital to many bird species, is difficult to identify from satellite imagery and is included in many of the other land use categories, especially forests, grasslands, and wetlands. It is tempting to compare the NLCD from 2001/2006

to an earlier time period (1992), but this must be done with great caution due to changes in algorithms used to categorize land use and cover. This is especially evident in the “developed” category, which increased from 3% to 11% between time periods. Nevertheless, these data indicate that many categories (agricultural lands, emergent wetlands, forested wetlands, open water) were similar in abundance, while deciduous forest cover increased moderately (from 18% to 22%), and evergreen/mixed forests (1.1% to 0.6%) and grasslands (19% to 9%) declined.

The number of records in 646 priority blocks with breeding evidence in the confirmed, probable, and possible categories was 43,251 for the 1985–1990 atlas and 45,406 in the 2005–2011 atlas, a 5% increase. This increase (Fig. 9) is due to a combination of greater comprehensive coverage by atlas workers during the current atlas as well as changes in the abundance and distribution of bird species between atlas time periods. It is difficult to assess the relative contributions of these factors overall and for each bird species, although the increased effort is relatively minor. An additional 2,436 records were included from 676 non-priority blocks for the 1985–1990 atlas and 5,117 records in 852 non-priority blocks during the 2005–2011 atlas. Observed

Table 2. Regional land cover (% area) in Indiana from 2011 NLCD data.

| Region | Land Cover Category | | | | | | | | | |
|------------------|---------------------|-------------------|------------|------------------------|------------------|-----------------|-------------------|------------|-------------|------------|
| | Agricultural crops | Grassland/pasture | Shrub | Evergreen/mixed forest | Deciduous forest | Wooded wetlands | Emergent wetlands | Open water | Developed | Barren |
| North | 59.0 | 8.8 | 0.8 | 0.3 | 9.8 | 5.1 | 0.6 | 1.4 | 14.0 | 0.2 |
| Northwest | 60.3 | 6.4 | 1.1 | 0.4 | 11.1 | 3.6 | 0.5 | 1.0 | 15.3 | 0.2 |
| Northeast | 57.1 | 12.1 | 0.4 | 0.3 | 8.0 | 7.1 | 0.6 | 2.1 | 12.1 | 0.1 |
| Central | 70.9 | 5.1 | 0.2 | <0.1 | 10.1 | 0.3 | 0.1 | 0.7 | 12.5 | 0.0 |
| West-central | 70.9 | 5.7 | <0.1 | <0.1 | 11.7 | 0.4 | <0.1 | 0.7 | 10.4 | <0.1 |
| East-central | 71.0 | 4.7 | 0.3 | <0.1 | 8.9 | 0.3 | 0.2 | 0.7 | 14.0 | <0.1 |
| South | 33.4 | 13.3 | 0.3 | 1.4 | 42.1 | 0.4 | 0.2 | 1.5 | 7.3 | 0.2 |
| Southwest | 51.0 | 7.4 | <0.1 | 0.8 | 28.9 | 0.8 | 0.3 | 1.9 | 8.6 | 0.2 |
| South-central | 16.2 | 18.8 | 0.4 | 1.7 | 54.7 | 0.2 | <0.1 | 1.3 | 6.3 | 0.2 |
| Southeast | 30.2 | 14.7 | 0.4 | 2.0 | 45.0 | 0.1 | <0.1 | 1.0 | 6.5 | <0.1 |
| Statewide | 54.7 | 8.9 | 0.3 | 0.6 | 21.9 | 1.3 | 0.2 | 1.1 | 10.8 | 0.1 |

evidence records added 1,371 records in priority blocks and 213 records in non-priority blocks for the 2005–2011 atlas. No observed records were used from the 1985–1990 atlas except for Black Vultures (19 records) and Turkey Vultures (514).

During both atlas projects, 201 species of birds were recorded (Table 3) with 184 occurring in priority blocks. In the 2005–2011 atlas, 174 species occurred in priority blocks, while 161 species were tallied in priority blocks during the 1985–1990 atlas. Comparisons in the number of occurrences between species must be made with caution due to differences in the detectability of species as a result of differences in habitats used, vocal conspicuousness, and other behaviors. Of all species recorded, the American Robin occurred in the most priority blocks during each atlas project (Tables 3, 4), although the Northern Cardinal was as frequent in 2005–2011. The 15 most recorded species during each period were similar, with the Chipping Sparrow, Brown-headed Cowbird, and Common Grackle making this list during the second, while Common Yellowthroat, Blue Jay, and Northern Flicker fell out of the top 15. Species with the greatest positive change in rank were Bald Eagle, Eurasian Collared-Dove, Eastern Phoebe, Sandhill Crane, and Mute Swan. The largest declines in rank were seen for Short-eared Owl, Ruffed Grouse, Loggerhead Shrike, Long-eared Owl, and Golden-winged Warbler.

During both atlas projects, 176 bird species were confirmed breeding. Of these, 146 species were common to both projects, 17 unique to the 2005–2011 atlas and 13 exclusive to the 1985–1990 atlas (Table 5). Many birds on the latter lists could be considered sporadic nesters in Indiana, although Least Bittern and Alder Flycatcher nest regularly in small numbers each year. On the 2005–2011 list, Double-crested Cormorant, Great Egret, Black-crowned Night-Heron, Mississippi Kite, Black-necked Stilt, Caspian Tern, Eurasian Collared-Dove, and Monk Parakeet were

annual breeders in recent years, although mostly in small numbers or at few sites. The latter two birds are nonnative species. Of the 25 bird species without confirmed breeding evidence, American Bittern, Chuck-will’s-widow, and Black-throated Green Warbler could be considered regular nesters in Indiana due to their territorial behavior and consistent presence in moderate numbers during the breeding season. Thus, the breeding avifauna currently consists of 159 species that breed regularly. Since the last atlas ended in 2011, three species (Trumpeter Swan, Black-bellied Whistling-Duck, Merlin) have been discovered nesting in multiple locations and years (Brock 2020; 2021, Ehn 2021) and should now be considered regular breeders. Additionally, single records of Whooping Crane (Kearns et al. 2022), Scissor-tailed Flycatcher (Brock 2021), Black-throated Blue Warbler (Brock 2017), and Blackburnian Warbler (Brock 2016) with breeding evidence in the confirmed category have been reported.

The average number of species detected in priority blocks was greatest in southern Indiana, but similar in northern and central regions (Table 6). Southwestern blocks had the greatest average followed by south-central, northeastern, and southeastern subregions. Blocks in northwestern and central subregions had the lowest averages. In contrast, the overall number of species (species richness) was greatest in northern and northwestern Indiana and lowest in central and

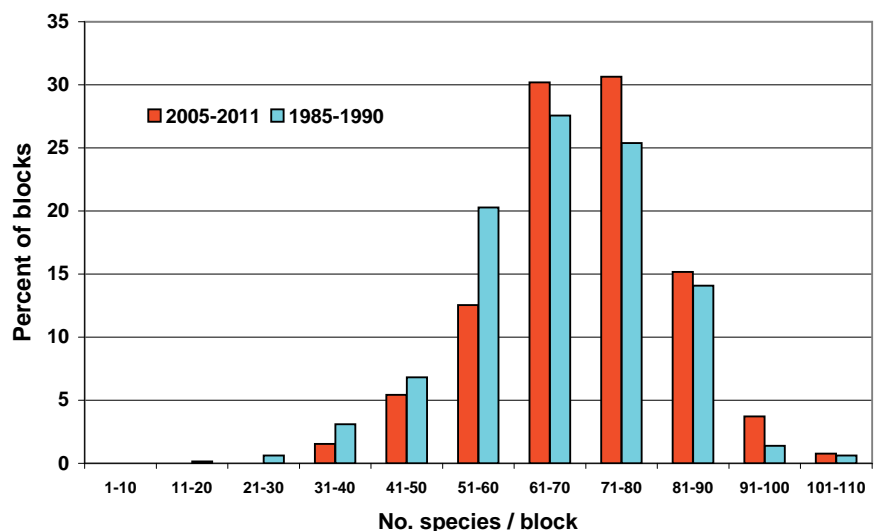


Figure 9. Frequency distribution of the number of bird species detected in priority blocks during both Indiana Breeding Bird Atlas projects.

southeastern areas of the state. Sixteen species were found only in northern Indiana, while eight others were unique to southern Indiana. No species were reported only in the central region. In the subregions, nine species (Double-crested Cormorant, Wilson's Phalarope, Herring Gull, Caspian Tern, Peregrine Falcon, Monk Parakeet, Winter Wren, Yellow-headed Blackbird, Pine Siskin) were reported only in priority blocks in northwestern Indiana, while five species each were observed in the northeastern region (Blue-headed Vireo, Mourning Warbler, Magnolia Warbler, Clay-colored Sparrow, Brewer's Blackbird) and southwestern region (King Rail, Black-necked Stilt, Least Tern, Western Kingbird, Fish Crow). Single records of single species were unique to the south-central region (Purple Finch) and southeastern region (Ring-necked Duck).

Most bird species (66%) showed regional differences in relative frequencies of occurrence (Table 7). Three different analyses were conducted. The first analysis explored occurrences among north, central, and southern regions. Of the 174 individual species tests, 60% were statistically significant, with greatest relative occurrences (36% of species) appearing in southern Indiana, followed by northern Indiana (20%). Few bird species (7%) had greatest values in the central part of the state. Species with greatest significant differences in northern Indiana were primarily wetland species (41% of the 34 species with greatest significant differences in this region), while those in southern Indiana were dominated by forest birds (61% of 62 species). Of the 12 species with greatest occurrences in central Indiana, 42% were classified as grassland species. In an analysis by habitat category, forest species with significant differences were most often greatest in southern Indiana (58% of 65 species). Shrubland species with differences were also more likely to be found in southern Indiana (43% of 35 species), while wetland birds with significant regional differences were most often in northern Indiana (35% of 40 species). Grassland birds (n=19) with differences were evenly divided (26%) between northern and central regions. The number of urban birds (n=18) with differences was similar (17%) in northern and southern Indiana. Wetland and urban birds were less likely to show regional differences, while forest species exhibited the largest number of differences.

In a separate analysis testing differences between western and eastern portions of the state, only 36% of species showed a statistical difference, with somewhat more species occurring in a greater proportion of eastern (20%) blocks compared to western (16%) priority blocks. The species with the largest differences between western and eastern Indiana were (in order of magnitude) Blue Grosbeak, Bell's Vireo, Dickcissel, Northern Parula, and Wild Turkey. All more frequently occurred in western Indiana. Regional differences among bird species categorized by habitat were not dramatically different for forest and grassland species. However, eastern Indiana had a greater percentage of urban (33% vs. 6%) and wetland (15% vs. 3%) species with significant differences. The relative number of shrubland species with statistical differences was greater in western Indiana (21% vs. 9%).

The final analysis focused on the seven subregions of the state. Of the 174 species tested, 44% showed a statistical difference in at least one area. The south-central region had the greatest number of species (17%) with the highest occurrence rates, followed by northeastern (10%) and southwestern (9%) Indiana. The remaining regions hosted few species with high frequencies (<5% each). Of the various regions, the percentage of wetland species topped the list of differences in northwestern (100%; n=1) and northeastern (32%; n=19) Indiana, grassland species in the west-central region (75%; n=4), while forest birds predominated in each of the remaining subregions: east-central (75%; n=4), southwestern (47%; n=17), south-central (71%; n=31), southeastern (86%; n=7). Focusing on the habitat groups, the highest percentage of forest and shrubland birds with statistical differences were found in south-central Indiana (32% and 18%, respectively), while most wetland birds were most numerous in northeastern Indiana (15%). The relative number of grassland birds with significant differences was similar in northeastern and west-central regions (17% each), while most urban birds with differences were in southwestern and south-central areas (11% each). Wetland and urban birds were least likely to show significant regional differences (20% and 26%, respectively), while forest birds (65%) were most likely to have regional differences in occurrence.

Of the 184 bird species that occurred in a priority

(continued on pg 26)

Table 3. Relative frequencies of occurrence (%) and ranks of birds detected in priority blocks (n=646) on the Indiana Breeding Bird Atlas projects. Species are arranged taxonomically. Numbers in bold indicate species confirmed breeding.

| Bird Species | Atlas project years | | | | | Bird Species | Atlas project years | | | | |
|----------------------------|---------------------|------|---------------------|------|-------|------------------------|---------------------|------|---------------------|------|-------|
| | 2005–2011 | | 1985–1990 | | | | 2005–2011 | | 1985–1990 | | |
| | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank | Hab.* | | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank | Hab.* |
| Canada Goose | 71.2 | 53 | 39.9 | 76 | W | Sharp-shinned Hawk | 6.0 | 116 | 10.7 | 105 | F |
| Mute Swan | 5.6 | 119 | 0.8 | 142 | W | Cooper's Hawk | 41.8 | 82 | 20.7 | 92 | F |
| Wood Duck | 61.6 | 64 | 64.2 | 53 | W | Red-shouldered Hawk | 29.4 | 87 | 15.8 | 99 | F |
| Gadwall | 0.0 | 175 | 0.0 | 162 | W | Broad-winged Hawk | 7.7 | 112 | 12.1 | 104 | F |
| American Wigeon | 0.0 | 175 | 0.0 | 162 | W | Red-tailed Hawk | 93.8 | 26 | 83.3 | 38 | F |
| American Black Duck | 0.3 | 153 | 1.1 | 139 | W | Black Rail | 0.0 | 175 | 0.0 | 162 | W |
| Mallard | 67.2 | 59 | 59.8 | 61 | W | King Rail | 0.3 | 153 | 0.2 | 151 | W |
| Blue-winged Teal | 2.9 | 130 | 9.1 | 107 | S | Virginia Rail | 1.9 | 139 | 1.5 | 133 | W |
| Northern Shoveler | 0.0 | 175 | 0.3 | 148 | W | Sora | 5.3 | 120 | 4.3 | 120 | W |
| Northern Pintail | 0.0 | 175 | 0.0 | 162 | W | Common Gallinule | 1.1 | 141 | 1.2 | 136 | W |
| Green-winged Teal | 0.0 | 175 | 0.0 | 162 | W | American Coot | 3.3 | 128 | 4.8 | 117 | W |
| Redhead | 0.0 | 175 | 0.0 | 162 | W | Sandhill Crane | 4.5 | 122 | 0.5 | 146 | W |
| Ring-necked Duck | 0.2 | 163 | 0.2 | 151 | W | Black-necked Stilt | 0.3 | 153 | 0.0 | 162 | W |
| Lesser Scaup | 0.0 | 175 | 0.0 | 162 | W | Killdeer | 97.7 | 12 | 97.5 | 14 | G |
| Hooded Merganser | 6.3 | 115 | 1.4 | 134 | W | Spotted Sandpiper | 13.3 | 102 | 15.5 | 100 | W |
| Red-breasted Merganser | 0.0 | 175 | 0.0 | 162 | W | Upland Sandpiper | 0.9 | 144 | 1.7 | 132 | G |
| Ruddy Duck | 0.0 | 175 | 0.0 | 162 | W | Wilson's Snipe | 0.5 | 148 | 0.0 | 162 | W |
| Northern Bobwhite | 68.9 | 56 | 78.5 | 44 | S | American Woodcock | 11.6 | 106 | 22.4 | 87 | S |
| Ring-necked Pheasant | 15.9 | 97 | 15.9 | 98 | G | Wilson's Phalarope | 0.2 | 163 | 0.0 | 162 | W |
| Ruffed Grouse | 1.1 | 141 | 9.8 | 106 | F | Ring-billed Gull | 0.3 | 153 | 0.0 | 162 | W |
| Wild Turkey | 46.6 | 77 | 15.5 | 100 | F | Herring Gull | 0.2 | 163 | 0.2 | 151 | W |
| Common Loon | 0.0 | 175 | 0.0 | 162 | W | Least Tern | 0.3 | 153 | 0.0 | 162 | W |
| Pied-billed Grebe | 4.2 | 124 | 3.3 | 125 | W | Caspian Tern | 0.2 | 163 | 0.0 | 162 | W |
| Double-crested Cormorant | 0.3 | 153 | 0.0 | 162 | W | Black Tern | 0.0 | 175 | 0.0 | 162 | W |
| American Bittern | 0.8 | 147 | 0.6 | 144 | W | Rock Pigeon | 76.8 | 49 | 89.3 | 28 | U |
| Least Bittern | 2.0 | 134 | 0.9 | 141 | W | Eurasian Collared-Dove | 4.2 | 124 | 0.0 | 162 | U |
| Great Blue Heron | 8.0 | 111 | 2.5 | 128 | W | Mourning Dove | 99.5 | 3 | 99.4 | 4 | U |
| Great Egret | 0.5 | 148 | 0.0 | 162 | W | Yellow-billed Cuckoo | 73.8 | 51 | 79.1 | 43 | F |
| Snowy Egret | 0.0 | 175 | 0.0 | 162 | W | Black-billed Cuckoo | 10.4 | 107 | 21.8 | 88 | F |
| Little Blue Heron | 0.0 | 175 | 0.0 | 162 | W | Barn Owl | 2.0 | 134 | 2.5 | 128 | G |
| Cattle Egret | 0.0 | 175 | 0.0 | 162 | W | Eastern Screech-Owl | 57.4 | 68 | 61.3 | 60 | F |
| Green Heron | 36.4 | 85 | 50.8 | 71 | W | Great Horned Owl | 43.2 | 79 | 47.2 | 74 | F |
| Black-crowned Night-Heron | 1.1 | 141 | 0.0 | 162 | W | Barred Owl | 43.2 | 79 | 37.9 | 77 | F |
| Yellow-crowned Night-Heron | 0.9 | 144 | 1.4 | 134 | W | Long-eared Owl | 0.0 | 175 | 0.6 | 144 | F |
| Black Vulture | 12.1 | 105 | 2.9 | 127 | F | Short-eared Owl | 0.0 | 175 | 1.1 | 139 | G |
| Turkey Vulture | 85.9 | 40 | 81.9 | 41 | F | Northern Saw-whet Owl | 0.0 | 175 | 0.2 | 151 | F |
| Osprey | 2.0 | 134 | 0.2 | 151 | W | Common Nighthawk | 15.3 | 98 | 18.3 | 95 | U |
| Mississippi Kite | 0.9 | 144 | 0.0 | 162 | F | Chuck-will's-widow | 2.8 | 131 | 4.6 | 118 | F |
| Northern Harrier | 2.5 | 132 | 3.4 | 123 | G | Eastern Whip-poor-will | 20.1 | 93 | 33.1 | 82 | F |
| Bald Eagle | 4.3 | 123 | 0.0 | 162 | W | Chimney Swift | 86.1 | 39 | 87.2 | 32 | U |

Table 3. (continued)

| Bird Species | Atlas project years | | | | | Hab.* | Bird Species | Atlas project years | | | | | Hab.* |
|---------------------------|---------------------|------|---------------------|------|------|-------------------------|--------------|---------------------|-------|---------------------|------|------|-------|
| | 2005–2011 | | 1985–1990 | | Rank | | | 2005–2011 | | 1985–1990 | | Rank | |
| | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank | | | | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank | | |
| Ruby-throated Hummingbird | 85.0 | 41 | 63.2 | 55 | F | Tufted Titmouse | 93.5 | 28 | 93.5 | 25 | F | | |
| Belted Kingfisher | 58.0 | 67 | 65.5 | 52 | W | Red-breasted Nuthatch | 0.5 | 148 | 0.0 | 162 | F | | |
| Red-headed Woodpecker | 77.4 | 46 | 84.7 | 36 | F | White-breasted Nuthatch | 92.4 | 31 | 89.0 | 29 | F | | |
| Red-bellied Woodpecker | 93.8 | 26 | 87.2 | 32 | F | Brown Creeper | 2.0 | 134 | 1.2 | 136 | F | | |
| Yellow-bellied Sapsucker | 0.0 | 175 | 0.0 | 162 | F | House Wren | 89.2 | 33 | 88.9 | 30 | S | | |
| Downy Woodpecker | 95.8 | 19 | 96.6 | 21 | F | Winter Wren | 0.2 | 163 | 0.0 | 162 | F | | |
| Hairy Woodpecker | 67.6 | 57 | 67.0 | 49 | F | Sedge Wren | 10.2 | 108 | 5.7 | 114 | G | | |
| Northern Flicker | 93.3 | 29 | 98.0 | 12 | F | Marsh Wren | 3.1 | 129 | 2.2 | 130 | W | | |
| Pileated Woodpecker | 57.1 | 69 | 43.8 | 75 | F | Carolina Wren | 80.0 | 44 | 63.2 | 55 | S | | |
| American Kestrel | 77.2 | 47 | 79.3 | 42 | F | Bewick's Wren | 0.0 | 175 | 0.0 | 162 | S | | |
| Peregrine Falcon | 0.2 | 163 | 0.0 | 162 | U | Blue-gray Gnatcatcher | 78.3 | 45 | 58.4 | 64 | F | | |
| Monk Parakeet | 0.2 | 163 | 0.0 | 162 | U | Golden-crowned Kinglet | 0.0 | 175 | 0.0 | 162 | F | | |
| Western Wood-Pewee | 0.0 | 175 | 0.2 | 151 | F | Eastern Bluebird | 93.3 | 29 | 82.2 | 40 | S | | |
| Eastern Wood-Pewee | 95.5 | 21 | 93.2 | 26 | F | Veery | 5.0 | 121 | 6.7 | 111 | F | | |
| Acadian Flycatcher | 65.0 | 61 | 55.4 | 68 | F | Wood Thrush | 87.3 | 37 | 83.0 | 39 | F | | |
| Alder Flycatcher | 1.9 | 139 | 1.2 | 135 | S | American Robin | 99.8 | 1 | 100.0 | 1 | U | | |
| Willow Flycatcher | 60.1 | 66 | 59.4 | 62 | S | Gray Catbird | 97.2 | 15 | 97.5 | 14 | S | | |
| Least Flycatcher | 3.7 | 126 | 5.7 | 114 | F | Brown Thrasher | 94.7 | 23 | 96.9 | 18 | S | | |
| Eastern Phoebe | 88.1 | 35 | 57.4 | 66 | F | Northern Mockingbird | 67.6 | 57 | 58.0 | 66 | U | | |
| Great Crested Flycatcher | 88.5 | 34 | 88.4 | 31 | F | European Starling | 99.2 | 5 | 98.1 | 10 | U | | |
| Western Kingbird | 0.2 | 163 | 0.0 | 162 | S | Cedar Waxwing | 83.3 | 43 | 70.9 | 48 | S | | |
| Eastern Kingbird | 96.4 | 18 | 96.6 | 21 | S | Ovenbird | 22.3 | 90 | 21.1 | 91 | F | | |
| Loggerhead Shrike | 0.5 | 148 | 5.4 | 116 | S | Worm-eating Warbler | 10.1 | 109 | 8.7 | 108 | F | | |
| White-eyed Vireo | 50.3 | 73 | 48.9 | 72 | S | Louisiana Waterthrush | 21.7 | 92 | 21.7 | 89 | F | | |
| Bell's Vireo | 9.6 | 110 | 4.3 | 120 | S | Northern Waterthrush | 0.0 | 175 | 0.2 | 151 | F | | |
| Yellow-throated Vireo | 54.5 | 71 | 48.1 | 73 | F | Golden-winged Warbler | 0.0 | 175 | 0.5 | 146 | S | | |
| Blue-headed Vireo | 0.3 | 153 | 0.0 | 162 | S | Blue-winged Warbler | 14.9 | 99 | 19.0 | 93 | S | | |
| Warbling Vireo | 87.9 | 36 | 83.7 | 37 | F | Black-and-white Warbler | 7.1 | 113 | 4.3 | 120 | F | | |
| Red-eyed Vireo | 89.8 | 32 | 86.5 | 34 | F | Prothonotary Warbler | 16.9 | 95 | 14.4 | 102 | F | | |
| Blue Jay | 97.1 | 16 | 98.9 | 9 | U | Mourning Warbler | 0.3 | 153 | 0.3 | 148 | S | | |
| American Crow | 96.9 | 17 | 96.7 | 19 | F | Kentucky Warbler | 36.5 | 84 | 35.0 | 80 | F | | |
| Fish Crow | 0.5 | 148 | 0.0 | 162 | F | Common Yellowthroat | 95.8 | 19 | 99.1 | 6 | S | | |
| Horned Lark | 72.1 | 52 | 72.6 | 47 | G | Hooded Warbler | 13.8 | 101 | 8.0 | 110 | F | | |
| Purple Martin | 62.2 | 63 | 65.9 | 51 | U | American Redstart | 23.8 | 89 | 18.9 | 94 | F | | |
| Tree Swallow | 66.6 | 60 | 31.9 | 83 | G | Cerulean Warbler | 13.3 | 102 | 21.4 | 90 | F | | |
| N. Rough-winged Swallow | 70.3 | 55 | 66.4 | 50 | U | Northern Parula | 47.8 | 75 | 22.6 | 86 | F | | |
| Bank Swallow | 14.4 | 100 | 17.0 | 97 | W | Magnolia Warbler | 0.2 | 163 | 0.0 | 162 | F | | |
| Cliff Swallow | 19.0 | 94 | 8.4 | 109 | W | Blackburnian Warbler | 0.0 | 175 | 0.2 | 151 | F | | |
| Barn Swallow | 98.6 | 9 | 97.5 | 14 | U | Yellow Warbler | 77.1 | 48 | 72.8 | 46 | S | | |
| Carolina Chickadee | 74.1 | 50 | 73.5 | 45 | F | Chestnut-sided Warbler | 2.3 | 133 | 4.5 | 119 | S | | |
| Black-capped Chickadee | 16.1 | 96 | 17.2 | 96 | F | Pine Warbler | 7.1 | 113 | 3.4 | 123 | F | | |

Table 3. (continued)

| Bird Species | Atlas project years 2005–2011 | | Atlas project years 1985–1990 | | | Hab.* | Bird Species | Atlas project years 2005–2011 | | Atlas project years 1985–1990 | | | Hab.* |
|------------------------------|----------------------------------|------|----------------------------------|------|---------------------|-------------------------|--------------|----------------------------------|---------------------|----------------------------------|---------------------|------|-------|
| | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank | Freq. of occur. (%) | | | Rank | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank | |
| Yellow-throated Warbler | 46.0 | 78 | 35.4 | 79 | F | Rose-breasted Grosbeak | 42.4 | 81 | 36.7 | 78 | F | | |
| Prairie Warbler | 24.9 | 88 | 23.7 | 85 | S | Blue Grosbeak | 31.6 | 86 | 13.3 | 103 | S | | |
| Black-throated Green Warbler | 2.0 | 134 | 0.8 | 142 | F | Indigo Bunting | 98.9 | 7 | 99.1 | 6 | S | | |
| Canada Warbler | 0.0 | 175 | 0.3 | 148 | W | Dickcissel | 61.5 | 65 | 51.1 | 69 | G | | |
| Yellow-breasted Chat | 56.8 | 70 | 58.4 | 64 | S | Bobolink | 22.3 | 90 | 31.3 | 84 | G | | |
| Eastern Towhee | 86.7 | 38 | 85.1 | 35 | S | Red-winged Blackbird | 99.1 | 6 | 99.7 | 3 | W | | |
| Bachman's Sparrow | 0.0 | 175 | 0.2 | 151 | F | Eastern Meadowlark | 94.3 | 24 | 97.4 | 17 | G | | |
| Chipping Sparrow | 98.8 | 8 | 95.7 | 24 | U | Western Meadowlark | 3.6 | 127 | 3.1 | 126 | G | | |
| Clay-colored Sparrow | 0.3 | 153 | 0.0 | 162 | S | Yellow-headed Blackbird | 0.2 | 163 | 0.2 | 151 | W | | |
| Field Sparrow | 95.0 | 22 | 97.7 | 13 | S | Brewer's Blackbird | 0.3 | 153 | 0.0 | 162 | S | | |
| Vesper Sparrow | 51.2 | 72 | 58.8 | 63 | G | Common Grackle | 97.7 | 12 | 96.4 | 23 | U | | |
| Lark Sparrow | 5.9 | 117 | 2.2 | 130 | S | Brown-headed Cowbird | 98.5 | 11 | 96.7 | 19 | G | | |
| Savannah Sparrow | 49.2 | 74 | 50.9 | 70 | G | Orchard Oriole | 71.2 | 53 | 63.8 | 54 | S | | |
| Grasshopper Sparrow | 47.8 | 75 | 63.0 | 57 | G | Baltimore Oriole | 94.3 | 24 | 92.1 | 27 | F | | |
| Henslow's Sparrow | 12.8 | 104 | 5.9 | 113 | G | House Finch | 84.5 | 42 | 62.4 | 59 | U | | |
| Song Sparrow | 99.5 | 3 | 99.8 | 2 | S | Purple Finch | 0.2 | 163 | 0.0 | 162 | F | | |
| Swamp Sparrow | 5.9 | 117 | 6.7 | 111 | W | Pine Siskin | 0.2 | 163 | 0.2 | 151 | F | | |
| Summer Tanager | 39.2 | 83 | 33.6 | 81 | F | American Goldfinch | 98.6 | 9 | 98.1 | 10 | S | | |
| Scarlet Tanager | 64.6 | 62 | 62.7 | 58 | F | House Sparrow | 97.4 | 14 | 99.1 | 6 | U | | |
| Northern Cardinal | 99.8 | 1 | 99.4 | 4 | S | | | | | | | | |

*Habitat category: Forest (F), Grassland (G), Shrubland (S), Urban (U), Wetland (W).

Table 4. Relative frequencies of occurrence (%) and ranks of birds detected in priority blocks (n=646) on the Indiana Breeding Bird Atlas projects. Species are arranged in order of greatest frequency during 2005-2011.

| Bird Species | Atlas project years 2005–2011 | | Atlas project years 1985–1990 | | Bird Species | Atlas project years 2005–2011 | | Atlas project years 1985–1990 | |
|----------------------|----------------------------------|------|----------------------------------|------|----------------------|----------------------------------|------|----------------------------------|------|
| | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank | | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank |
| American Robin | 99.8 | 1 | 100.0 | 1 | American Goldfinch | 98.6 | 9 | 98.1 | 10 |
| Northern Cardinal | 99.8 | 1 | 99.4 | 4 | Brown-headed Cowbird | 98.5 | 11 | 96.7 | 19 |
| Mourning Dove | 99.5 | 3 | 99.4 | 4 | Killdeer | 97.7 | 12 | 97.5 | 14 |
| Song Sparrow | 99.5 | 3 | 99.8 | 2 | Common Grackle | 97.7 | 12 | 96.4 | 23 |
| European Starling | 99.2 | 5 | 98.1 | 10 | House Sparrow | 97.4 | 14 | 99.1 | 6 |
| Red-winged Blackbird | 99.1 | 6 | 99.7 | 3 | Gray Catbird | 97.2 | 15 | 97.5 | 14 |
| Indigo Bunting | 98.9 | 7 | 99.1 | 6 | Blue Jay | 97.1 | 16 | 98.9 | 9 |
| Chipping Sparrow | 98.8 | 8 | 95.7 | 24 | American Crow | 96.9 | 17 | 96.7 | 19 |
| Barn Swallow | 98.6 | 9 | 97.5 | 14 | Eastern Kingbird | 96.4 | 18 | 96.6 | 21 |

Table 4. (continued)

| Bird Species | Atlas project years | | | | Bird Species | Atlas project years | | | |
|---------------------------|---------------------|------|---------------------|------|-------------------------|---------------------|------|---------------------|------|
| | 2005–2011 | | 1985–1990 | | | 2005–2011 | | 1985–1990 | |
| | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank | | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank |
| Downy Woodpecker | 95.8 | 19 | 96.6 | 21 | Tree Swallow | 66.6 | 60 | 31.9 | 83 |
| Common Yellowthroat | 95.8 | 19 | 99.1 | 6 | Acadian Flycatcher | 65.0 | 61 | 55.4 | 68 |
| Eastern Wood-Pewee | 95.5 | 21 | 93.2 | 26 | Scarlet Tanager | 64.6 | 62 | 62.7 | 58 |
| Field Sparrow | 95.0 | 22 | 97.7 | 13 | Purple Martin | 62.2 | 63 | 65.9 | 51 |
| Brown Thrasher | 94.7 | 23 | 96.9 | 18 | Wood Duck | 61.6 | 64 | 64.2 | 53 |
| Eastern Meadowlark | 94.3 | 24 | 97.4 | 17 | Dickcissel | 61.5 | 65 | 51.1 | 69 |
| Baltimore Oriole | 94.3 | 24 | 92.1 | 27 | Willow Flycatcher | 60.1 | 66 | 59.4 | 62 |
| Red-tailed Hawk | 93.8 | 26 | 83.3 | 38 | Belted Kingfisher | 58.0 | 67 | 65.5 | 52 |
| Red-bellied Woodpecker | 93.8 | 26 | 87.2 | 32 | Eastern Screech-Owl | 57.4 | 68 | 61.3 | 60 |
| Tufted Titmouse | 93.5 | 28 | 93.5 | 25 | Pileated Woodpecker | 57.1 | 69 | 43.8 | 75 |
| Northern Flicker | 93.3 | 29 | 98.0 | 12 | Yellow-breasted Chat | 56.8 | 70 | 58.4 | 64 |
| Eastern Bluebird | 93.3 | 29 | 82.2 | 40 | Yellow-throated Vireo | 54.5 | 71 | 48.1 | 73 |
| White-breasted Nuthatch | 92.4 | 31 | 89.0 | 29 | Vesper Sparrow | 51.2 | 72 | 58.8 | 63 |
| Red-eyed Vireo | 89.8 | 32 | 86.5 | 34 | White-eyed Vireo | 50.3 | 73 | 48.9 | 72 |
| House Wren | 89.2 | 33 | 88.9 | 30 | Savannah Sparrow | 49.2 | 74 | 50.9 | 70 |
| Great Crested Flycatcher | 88.5 | 34 | 88.4 | 31 | Northern Parula | 47.8 | 75 | 22.6 | 86 |
| Eastern Phoebe | 88.1 | 35 | 57.4 | 66 | Grasshopper Sparrow | 47.8 | 75 | 63.0 | 57 |
| Warbling Vireo | 87.9 | 36 | 83.7 | 37 | Wild Turkey | 46.6 | 77 | 15.5 | 100 |
| Wood Thrush | 87.3 | 37 | 83.0 | 39 | Yellow-throated Warbler | 46.0 | 78 | 35.4 | 79 |
| Eastern Towhee | 86.7 | 38 | 85.1 | 35 | Great Horned Owl | 43.2 | 79 | 47.2 | 74 |
| Chimney Swift | 86.1 | 39 | 87.2 | 32 | Barred Owl | 43.2 | 79 | 37.9 | 77 |
| Turkey Vulture | 85.9 | 40 | 81.9 | 41 | Rose-breasted Grosbeak | 42.4 | 81 | 36.7 | 78 |
| Ruby-throated Hummingbird | 85.0 | 41 | 63.2 | 55 | Cooper's Hawk | 41.8 | 82 | 20.7 | 92 |
| House Finch | 84.5 | 42 | 62.4 | 59 | Summer Tanager | 39.2 | 83 | 33.6 | 81 |
| Cedar Waxwing | 83.3 | 43 | 70.9 | 48 | Kentucky Warbler | 36.5 | 84 | 35.0 | 80 |
| Carolina Wren | 80.0 | 44 | 63.2 | 55 | Green Heron | 36.4 | 85 | 50.8 | 71 |
| Blue-gray Gnatcatcher | 78.3 | 45 | 58.4 | 64 | Blue Grosbeak | 31.6 | 86 | 13.3 | 103 |
| Red-headed Woodpecker | 77.4 | 46 | 84.7 | 36 | Red-shouldered Hawk | 29.4 | 87 | 15.8 | 99 |
| American Kestrel | 77.2 | 47 | 79.3 | 42 | Prairie Warbler | 24.9 | 88 | 23.7 | 85 |
| Yellow Warbler | 77.1 | 48 | 72.8 | 46 | American Redstart | 23.8 | 89 | 18.9 | 94 |
| Rock Pigeon | 76.8 | 49 | 89.3 | 28 | Ovenbird | 22.3 | 90 | 21.1 | 91 |
| Carolina Chickadee | 74.1 | 50 | 73.5 | 45 | Bobolink | 22.3 | 90 | 31.3 | 84 |
| Yellow-billed Cuckoo | 73.8 | 51 | 79.1 | 43 | Louisiana Waterthrush | 21.7 | 92 | 21.7 | 89 |
| Horned Lark | 72.1 | 52 | 72.6 | 47 | Eastern Whip-poor-will | 20.1 | 93 | 33.1 | 82 |
| Canada Goose | 71.2 | 53 | 39.9 | 76 | Cliff Swallow | 19.0 | 94 | 8.4 | 109 |
| Orchard Oriole | 71.2 | 53 | 63.8 | 54 | Prothonotary Warbler | 16.9 | 95 | 14.4 | 102 |
| N. Rough-winged Swallow | 70.3 | 55 | 66.4 | 50 | Black-capped Chickadee | 16.1 | 96 | 17.2 | 96 |
| Northern Bobwhite | 68.9 | 56 | 78.5 | 44 | Ring-necked Pheasant | 15.9 | 97 | 15.9 | 98 |
| Hairy Woodpecker | 67.6 | 57 | 67.0 | 49 | Common Nighthawk | 15.3 | 98 | 18.3 | 95 |
| Northern Mockingbird | 67.6 | 57 | 58.0 | 66 | Blue-winged Warbler | 14.9 | 99 | 19.0 | 93 |
| Mallard | 67.2 | 59 | 59.8 | 61 | Bank Swallow | 14.4 | 100 | 17.0 | 97 |

Table 4. (continued)

| Bird Species | Atlas project years | | | |
|------------------------------|---------------------|------|---------------------|------|
| | 2005–2011 | | 1985–1990 | |
| | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank |
| Hooded Warbler | 13.8 | 101 | 8.0 | 110 |
| Spotted Sandpiper | 13.3 | 102 | 15.5 | 100 |
| Cerulean Warbler | 13.3 | 102 | 21.4 | 90 |
| Henslow's Sparrow | 12.8 | 104 | 5.9 | 113 |
| Black Vulture | 12.1 | 105 | 2.9 | 127 |
| American Woodcock | 11.6 | 106 | 22.4 | 87 |
| Black-billed Cuckoo | 10.4 | 107 | 21.8 | 88 |
| Sedge Wren | 10.2 | 108 | 5.7 | 114 |
| Worm-eating Warbler | 10.1 | 109 | 8.7 | 108 |
| Bell's Vireo | 9.6 | 110 | 4.3 | 120 |
| Great Blue Heron | 8.0 | 111 | 2.5 | 128 |
| Broad-winged Hawk | 7.7 | 112 | 12.1 | 104 |
| Black-and-white Warbler | 7.1 | 113 | 4.3 | 120 |
| Pine Warbler | 7.1 | 113 | 3.4 | 123 |
| Hooded Merganser | 6.3 | 115 | 1.4 | 134 |
| Sharp-shinned Hawk | 6.0 | 116 | 10.7 | 105 |
| Lark Sparrow | 5.9 | 117 | 2.2 | 130 |
| Swamp Sparrow | 5.9 | 117 | 6.7 | 111 |
| Mute Swan | 5.6 | 119 | 0.8 | 142 |
| Sora | 5.3 | 120 | 4.3 | 120 |
| Veery | 5.0 | 121 | 6.7 | 111 |
| Sandhill Crane | 4.5 | 122 | 0.5 | 146 |
| Bald Eagle | 4.3 | 123 | 0.0 | 162 |
| Pied-billed Grebe | 4.2 | 124 | 3.3 | 125 |
| Eurasian Collared-Dove | 4.2 | 124 | 0.0 | 162 |
| Least Flycatcher | 3.7 | 126 | 5.7 | 114 |
| Western Meadowlark | 3.6 | 127 | 3.1 | 126 |
| American Coot | 3.3 | 128 | 4.8 | 117 |
| Marsh Wren | 3.1 | 129 | 2.2 | 130 |
| Blue-winged Teal | 2.9 | 130 | 9.1 | 107 |
| Chuck-will's-widow | 2.8 | 131 | 4.6 | 118 |
| Northern Harrier | 2.5 | 132 | 3.4 | 123 |
| Chestnut-sided Warbler | 2.3 | 133 | 4.5 | 119 |
| Least Bittern | 2.0 | 134 | 0.9 | 141 |
| Osprey | 2.0 | 134 | 0.2 | 151 |
| Barn Owl | 2.0 | 134 | 2.5 | 128 |
| Brown Creeper | 2.0 | 134 | 1.2 | 136 |
| Black-throated Green Warbler | 2.0 | 134 | 0.8 | 142 |
| Virginia Rail | 1.9 | 139 | 1.5 | 133 |
| Alder Flycatcher | 1.9 | 139 | 1.2 | 135 |
| Ruffed Grouse | 1.1 | 141 | 9.8 | 106 |

| Bird Species | Atlas project years | | | |
|----------------------------|---------------------|------|---------------------|------|
| | 2005–2011 | | 1985–1990 | |
| | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank |
| Black-crowned Night-Heron | 1.1 | 141 | 0.0 | 162 |
| Common Gallinule | 1.1 | 141 | 1.2 | 136 |
| Yellow-crowned Night-Heron | 0.9 | 144 | 1.4 | 134 |
| Mississippi Kite | 0.9 | 144 | 0.0 | 162 |
| Upland Sandpiper | 0.9 | 144 | 1.7 | 132 |
| American Bittern | 0.8 | 147 | 0.6 | 144 |
| Great Egret | 0.5 | 148 | 0.0 | 162 |
| Wilson's Snipe | 0.5 | 148 | 0.0 | 162 |
| Loggerhead Shrike | 0.5 | 148 | 5.4 | 116 |
| Fish Crow | 0.5 | 148 | 0.0 | 162 |
| Red-breasted Nuthatch | 0.5 | 148 | 0.0 | 162 |
| American Black Duck | 0.3 | 153 | 1.1 | 139 |
| Double-crested Cormorant | 0.3 | 153 | 0.0 | 162 |
| King Rail | 0.3 | 153 | 0.2 | 151 |
| Black-necked Stilt | 0.3 | 153 | 0.0 | 162 |
| Ring-billed Gull | 0.3 | 153 | 0.0 | 162 |
| Least Tern | 0.3 | 153 | 0.0 | 162 |
| Blue-headed Vireo | 0.3 | 153 | 0.0 | 162 |
| Mourning Warbler | 0.3 | 153 | 0.3 | 148 |
| Clay-colored Sparrow | 0.3 | 153 | 0.0 | 162 |
| Brewer's Blackbird | 0.3 | 153 | 0.0 | 162 |
| Ring-necked Duck | 0.2 | 163 | 0.2 | 151 |
| Wilson's Phalarope | 0.2 | 163 | 0.0 | 162 |
| Herring Gull | 0.2 | 163 | 0.2 | 151 |
| Caspian Tern | 0.2 | 163 | 0.0 | 162 |
| Peregrine Falcon | 0.2 | 163 | 0.0 | 162 |
| Monk Parakeet | 0.2 | 163 | 0.0 | 162 |
| Western Kingbird | 0.2 | 163 | 0.0 | 162 |
| Winter Wren | 0.2 | 163 | 0.0 | 162 |
| Magnolia Warbler | 0.2 | 163 | 0.0 | 162 |
| Yellow-headed Blackbird | 0.2 | 163 | 0.2 | 151 |
| Purple Finch | 0.2 | 163 | 0.0 | 162 |
| Pine Siskin | 0.2 | 163 | 0.2 | 151 |
| Gadwall | 0.0 | 175 | 0.0 | 162 |
| American Wigeon | 0.0 | 175 | 0.0 | 162 |
| Northern Shoveler | 0.0 | 175 | 0.3 | 148 |
| Northern Pintail | 0.0 | 175 | 0.0 | 162 |
| Green-winged Teal | 0.0 | 175 | 0.0 | 162 |
| Redhead | 0.0 | 175 | 0.0 | 162 |
| Lesser Scaup | 0.0 | 175 | 0.0 | 162 |
| Red-breasted Merganser | 0.0 | 175 | 0.0 | 162 |

Table 4. (continued)

| Bird Species | Atlas project years | | | | Bird Species | Atlas project years | | | |
|-----------------------|---------------------|------|---------------------|------|--------------------------|---------------------|------|---------------------|------|
| | 2005–2011 | | 1985–1990 | | | 2005–2011 | | 1985–1990 | |
| | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank | | Freq. of occur. (%) | Rank | Freq. of occur. (%) | Rank |
| Ruddy Duck | 0.0 | 175 | 0.0 | 162 | Yellow-bellied Sapsucker | 0.0 | 175 | 0.0 | 162 |
| Common Loon | 0.0 | 175 | 0.0 | 162 | Western Wood-Pewee | 0.0 | 175 | 0.2 | 151 |
| Snowy Egret | 0.0 | 175 | 0.0 | 162 | Bewick's Wren | 0.0 | 175 | 0.0 | 162 |
| Little Blue Heron | 0.0 | 175 | 0.0 | 162 | Golden-crowned Kinglet | 0.0 | 175 | 0.0 | 162 |
| Cattle Egret | 0.0 | 175 | 0.0 | 162 | Northern Waterthrush | 0.0 | 175 | 0.2 | 151 |
| Black Rail | 0.0 | 175 | 0.0 | 162 | Golden-winged Warbler | 0.0 | 175 | 0.5 | 146 |
| Black Tern | 0.0 | 175 | 0.0 | 162 | Blackburnian Warbler | 0.0 | 175 | 0.2 | 151 |
| Long-eared Owl | 0.0 | 175 | 0.6 | 144 | Canada Warbler | 0.0 | 175 | 0.3 | 148 |
| Short-eared Owl | 0.0 | 175 | 1.1 | 139 | Bachman's Sparrow | 0.0 | 175 | 0.2 | 151 |
| Northern Saw-whet Owl | 0.0 | 175 | 0.2 | 151 | | | | | |

Table 5. Breeding status of birds recorded on the Indiana Breeding Bird Atlas.

| Species confirmed breeding during both atlas periods (regular nesters) | | | |
|--|----------------------|---------------------------|-------------------------------|
| Canada Goose | Red-shouldered Hawk | Eastern Screech-Owl | Great Crested Flycatcher |
| Mute Swan | Broad-winged Hawk | Great Horned Owl | Eastern Kingbird |
| Wood Duck | Red-tailed Hawk | Barred Owl | Loggerhead Shrike |
| Mallard | King Rail | Common Nighthawk | White-eyed Vireo |
| Blue-winged Teal | Virginia Rail | Eastern Whip-poor-will | Bell's Vireo |
| Hooded Merganser | Sora | Chimney Swift | Yellow-throated Vireo |
| Northern Bobwhite | Common Gallinule | Ruby-throated Hummingbird | Warbling Vireo |
| Ring-necked Pheasant | American Coot | Belted Kingfisher | Red-eyed Vireo |
| Ruffed Grouse | Sandhill Crane | Red-headed Woodpecker | Blue Jay |
| Wild Turkey | Killdeer | Red-bellied Woodpecker | American Crow |
| Pied-billed Grebe | Spotted Sandpiper | Downy Woodpecker | Horned Lark |
| Great Blue Heron | Upland Sandpiper | Hairy Woodpecker | Purple Martin |
| Green Heron | American Woodcock | Northern Flicker | Tree Swallow |
| Yellow-crowned Night-Heron | Ring-billed Gull | Pileated Woodpecker | Northern Rough-winged Swallow |
| Black Vulture | Herring Gull | American Kestrel | Bank Swallow |
| Turkey Vulture | Least Tern | Peregrine Falcon | Cliff Swallow |
| Osprey | Rock Pigeon | Eastern Wood-Pewee | Barn Swallow |
| Bald Eagle | Mourning Dove | Acadian Flycatcher | Carolina Chickadee |
| Northern Harrier | Yellow-billed Cuckoo | Willow Flycatcher | Black-capped Chickadee |
| Sharp-shinned Hawk | Black-billed Cuckoo | Least Flycatcher | Tufted Titmouse |
| Cooper's Hawk | Barn Owl | Eastern Phoebe | White-breasted Nuthatch |

Table 5. (continued)

| Species confirmed breeding during both atlas periods (regular nesters) | | | |
|--|----------------------------|-------------------------|-------------------------------|
| Brown Creeper | Worm-eating Warbler | Yellow-breasted Chat | Indigo Bunting |
| House Wren | Louisiana Waterthrush | Eastern Towhee | Dickcissel |
| Sedge Wren | Blue-winged Warbler | Chipping Sparrow | Bobolink |
| Marsh Wren | Black-and-white Warbler | Field Sparrow | Red-winged Blackbird |
| Carolina Wren | Prothonotary Warbler | Vesper Sparrow | Eastern Meadowlark |
| Blue-gray Gnatcatcher | Kentucky Warbler | Lark Sparrow | Western Meadowlark |
| Eastern Bluebird | Common Yellowthroat | Savannah Sparrow | Yellow-headed Blackbird |
| Veery | Hooded Warbler | Grasshopper Sparrow | Common Grackle |
| Wood Thrush | American Redstart | Henslow's Sparrow | Brown-headed Cowbird |
| American Robin | Cerulean Warbler | Song Sparrow | Orchard Oriole |
| Gray Catbird | Northern Parula | Swamp Sparrow | Baltimore Oriole |
| Brown Thrasher | Yellow Warbler | Summer Tanager | House Finch |
| Northern Mockingbird | Chestnut-sided Warbler | Scarlet Tanager | American Goldfinch |
| European Starling | Pine Warbler | Northern Cardinal | House Sparrow |
| Cedar Waxwing | Yellow-throated Warbler | Rose-breasted Grosbeak | |
| Ovenbird | Prairie Warbler | Blue Grosbeak | |
| Species confirmed breeding only during the 2005-2011 atlas period | | | |
| Gadwall | Cattle Egret | Wilson's Phalarope | Red-breasted Nuthatch |
| Ruddy Duck | Black-crowned Night-Heron* | Caspian Tern* | Brewer's Blackbird |
| Double-crested Cormorant* | Mississippi Kite* | Eurasian Collared-Dove* | |
| Great Egret* | Black-necked Stilt* | Monk Parakeet* | |
| Snowy Egret | Wilson's Snipe | Western Kingbird | |
| Species confirmed breeding only during the 1985-1990 atlas period | | | |
| American Black Duck | Red-breasted Merganser | Long-eared Owl | Pine Siskin |
| Northern Shoveler | Least Bittern* | Short-eared Owl | |
| Green-winged Teal | Little Blue Heron | Alder Flycatcher* | |
| Redhead | Black Tern | Canada Warbler | |
| Species recorded but not confirmed breeding during either atlas period | | | |
| American Wigeon | Northern Saw-whet Owl | Bewick's Wren | Black-throated Green Warbler* |
| Northern Pintail | Chuck-will's-widow* | Golden-crowned Kinglet | Bachman's Sparrow |
| Ring-necked Duck | Yellow-bellied Sapsucker | Northern Waterthrush | Clay-colored Sparrow |
| Lesser Scaup | Western Wood-Pewee | Golden-winged Warbler | Purple Finch |
| Common Loon | Blue-headed Vireo | Mourning Warbler | |
| American Bittern* | Fish Crow | Magnolia Warbler | |
| Black Rail | Winter Wren | Blackburnian Warbler | |

*Considered regular nester in Indiana in recent times.

Table 6. Regional number of species occurring in Indiana atlas priority blocks, 2005-2011.

| Region | Mean | Median | Min. | Max. | Overall |
|------------------|-------------|-----------|-----------|------------|------------|
| North | 67.0 | 67 | 35 | 104 | 161 |
| Northwest | 61.7 | 64 | 35 | 90 | 151 |
| Northeast | 74.2 | 74 | 53 | 104 | 145 |
| Central | 66.7 | 68 | 33 | 95 | 144 |
| West-central | 65.1 | 68 | 33 | 92 | 135 |
| East-central | 67.8 | 68 | 37 | 95 | 134 |
| South | 76.0 | 76 | 42 | 108 | 151 |
| Southwest | 77.4 | 79 | 42 | 102 | 142 |
| South-central | 76.3 | 76 | 52 | 108 | 134 |
| Southeast | 72.9 | 72 | 54 | 97 | 128 |
| Statewide | 70.3 | 71 | 33 | 108 | 174 |

Table 7. Regional differences in frequency of occurrence in Indiana atlas priority blocks, 2005-2011.

| Bird species | Region ^a | | | | Region | | | Region | | | | | | | |
|----------------------------|---------------------|----------------|---|---|--------|---|---|--------|----|----|----|----|----|----|----|
| | ns ^b | N | C | S | ns | W | E | ns | NW | NE | WC | EC | SW | SC | SE |
| Canada Goose | | X ^c | | | | | X | | | X | | | | | |
| Mute Swan | | X | | | X | | | - | | | | | | | |
| Wood Duck | | X | | | X | | | | | X | | | | | |
| American Black Duck | - ^d | | | | - | | | - | | | | | | | |
| Mallard | | X | | | | | X | | | X | | | | | |
| Blue-winged Teal | | X | | | X | | | - | | | | | | | |
| Ring-necked Duck | - | | | | - | | | - | | | | | | | |
| Hooded Merganser | | X | | | X | | | - | | | | | | | |
| Northern Bobwhite | | | | X | | X | | | | | | | X | | |
| Ring-necked Pheasant | | X | | | X | | | | | X | | | | | |
| Ruffed Grouse | - | | | | - | | | - | | | | | | | |
| Wild Turkey | | | | X | | X | | | | | | | | X | |
| Pied-billed Grebe | | X | | | X | | | - | | | | | | | |
| Double-crested Cormorant | - | | | | - | | | - | | | | | | | |
| American Bittern | - | | | | - | | | - | | | | | | | |
| Least Bittern | X | | | | X | | | - | | | | | | | |
| Great Blue Heron | X | | | | X | | | X | | | | | | | |
| Great Egret | - | | | | - | | | - | | | | | | | |
| Green Heron | | x | | X | X | | | | | X | | | x | | |
| Black-crowned Night-Heron | - | | | | - | | | - | | | | | | | |
| Yellow-crowned Night-Heron | - | | | | - | | | - | | | | | | | |
| Black Vulture | | | | X | | | X | | | | | | | x | X |
| Turkey Vulture | | | | X | | X | | | | | | | | X | |
| Osprey | - | | | | X | | | - | | | | | | | |

Table 7. (continued)

| Bird species | Region ^a | | | | Region | | | Region | | | | | | | |
|---------------------------|---------------------|---|---|---|--------|---|---|--------|----|----|----|----|----|----|----|
| | ns | N | C | S | ns | W | E | ns | NW | NE | WC | EC | SW | SC | SE |
| Mississippi Kite | - | | | | - | | | - | | | | | | | |
| Northern Harrier | X | | | | X | | | - | | | | | | | |
| Bald Eagle | | | | X | X | | | - | | | | | | | |
| Sharp-shinned Hawk | | | | X | X | | | - | | | | | | | |
| Cooper's Hawk | X | | | | X | | | | | X | | | | | |
| Red-shouldered Hawk | | | | X | | X | | | | | | | x | X | x |
| Broad-winged Hawk | | | | X | X | | | | | | | | | X | |
| Red-tailed Hawk | | | X | | X | | | - | | | | | | | |
| King Rail | X | | | | X | | | - | | | | | | | |
| Virginia Rail | - | | | | X | | | - | | | | | | | |
| Sora | | X | | | | | X | - | | | | | | | |
| Common Gallinule | - | | | | X | | | - | | | | | | | |
| American Coot | | X | | | X | | | - | | | | | | | |
| Sandhill Crane | | X | | | | | X | - | | | | | | | |
| Black-necked Stilt | - | | | | - | | | - | | | | | | | |
| Killdeer | | X | X | | | | X | - | | | | | | | |
| Spotted Sandpiper | | X | | | X | | | | X | X | | | | | |
| Upland Sandpiper | - | | | | - | | | - | | | | | | | |
| Wilson's Snipe | - | | | | - | | | - | | | | | | | |
| American Woodcock | X | | | | X | | | | | | | | X | | |
| Wilson's Phalarope | - | | | | - | | | - | | | | | | | |
| Ring-billed Gull | - | | | | - | | | - | | | | | | | |
| Herring Gull | - | | | | - | | | - | | | | | | | |
| Least Tern | - | | | | - | | | - | | | | | | | |
| Caspian Tern | - | | | | - | | | - | | | | | | | |
| Rock Pigeon | | | X | | | | X | | | X | | x | | | |
| Eurasian Collared-Dove | X | | | | | X | | - | | | | | | | |
| Mourning Dove | - | | | | - | | | - | | | | | | | |
| Yellow-billed Cuckoo | | | | X | X | | | | | | | | X | X | |
| Black-billed Cuckoo | X | | | | X | | | | | | X | | | | |
| Barn Owl | | | | X | | X | | - | | | | | | | |
| Eastern Screech-Owl | | | X | x | | | X | | | | | X | | | |
| Great Horned Owl | | | X | | | | X | | | | | X | | | |
| Barred Owl | | | | X | X | | | | | | | | X | | |
| Common Nighthawk | | X | | | | | X | - | | | | | | | |
| Chuck-will's-widow | | | | X | | X | | | | | | | X | X | |
| Eastern Whip-poor-will | | | | X | X | | | | | | | | | X | |
| Chimney Swift | | | | X | X | | | | | | | | X | X | |
| Ruby-throated Hummingbird | | | | X | | | X | | | x | | | X | | |
| Belted Kingfisher | X | | | | X | | | X | | | | | | | |
| Red-headed Woodpecker | | X | | | X | | | | | X | | | | | |
| Red-bellied Woodpecker | | | | X | | | X | - | | | | | | | |

Table 7. (continued)

| Bird species | Region ^a | | | | Region | | | Region | | | | | | | |
|--------------------------|---------------------|---|---|---|--------|---|---|--------|----|----|----|----|----|----|----|
| | ns | N | C | S | ns | W | E | ns | NW | NE | WC | EC | SW | SC | SE |
| Downy Woodpecker | X | | | | X | | | - | | | | | | | |
| Hairy Woodpecker | | | | X | X | | | | | | | | | | X |
| Northern Flicker | | X | | | X | | | - | | | | | | | |
| Pileated Woodpecker | | | | X | | X | | | | | | | X | X | |
| American Kestrel | | | X | | | | X | | | x | | X | | | |
| Peregrine Falcon | - | | | | - | | | - | | | | | | | |
| Monk Parakeet | - | | | | - | | | - | | | | | | | |
| Eastern Wood-Pewee | | | | X | X | | | - | | | | | | | |
| Acadian Flycatcher | | | | X | X | | | | | | | | | X | |
| Alder Flycatcher | - | | | | X | | | - | | | | | | | |
| Willow Flycatcher | | X | x | | | | X | | | X | | | | | |
| Least Flycatcher | | X | | | X | | | - | | | | | | | |
| Eastern Phoebe | | | | X | | | X | | | | | | x | x | X |
| Great Crested Flycatcher | | | | X | X | | | | | | | | X | x | |
| Western Kingbird | - | | | | - | | | - | | | | | | | |
| Eastern Kingbird | X | | | | X | | | - | | | | | | | |
| Loggerhead Shrike | - | | | | - | | | - | | | | | | | |
| White-eyed Vireo | | | | X | | X | | | | | | | | X | |
| Bell's Vireo | | | | X | | X | | | | | | | X | | |
| Yellow-throated Vireo | | | | X | X | | | | | | | | | X | X |
| Blue-headed Vireo | - | | | | - | | | - | | | | | | | |
| Warbling Vireo | X | | | | X | | | X | | | | | | | |
| Red-eyed Vireo | | | | X | | | X | | | | | | | X | |
| Blue Jay | X | | | | | | X | - | | | | | | | |
| American Crow | | X | | | X | | | - | | | | | | | |
| Fish Crow | - | | | | - | | | - | | | | | | | |
| Horned Lark | | | X | | | | X | | | x | X | x | | | |
| Purple Martin | | | | X | | | X | | | | | | | X | |
| Tree Swallow | | X | | | | | X | | | X | | | | | |
| N. Rough-winged Swallow | X | | | | | | X | X | | | | | | | |
| Bank Swallow | | X | | | X | | | | | X | | | | | |
| Cliff Swallow | | | | X | | X | | | | | | | X | | |
| Barn Swallow | - | | | | - | | | - | | | | | | | |
| Carolina Chickadee | | | | X | X | | | | | | | | | X | |
| Black-capped Chickadee | | X | | | | | X | | | X | | | | | |
| Tufted Titmouse | | | | X | | | X | - | | | | | | | |
| Red-breasted Nuthatch | | X | | | - | | | - | | | | | | | |
| White-breasted Nuthatch | | | | X | | | X | - | | | | | | | |
| Brown Creeper | - | | | | - | | | - | | | | | | | |
| House Wren | | X | X | | X | | | | | X | x | | | | |
| Winter Wren | - | | | | - | | | - | | | | | | | |
| Sedge Wren | X | | | | X | | | X | | | | | | | |

Table 7. (continued)

| Bird species | Region ^a | | | | Region | | | Region | | | | | | | |
|------------------------------|---------------------|---|---|---|--------|---|---|--------|----|----|----|----|----|----|----|
| | ns | N | C | S | ns | W | E | ns | NW | NE | WC | EC | SW | SC | SE |
| Marsh Wren | | X | | | | | X | - | | | | | | | |
| Carolina Wren | | | | X | | | X | | | | | | x | X | x |
| Blue-gray Gnatcatcher | | | | X | X | | | | | | | | X | | |
| Eastern Bluebird | | | | X | | | X | - | | | | | | | |
| Veery | | X | | | | | X | - | | | | | | | |
| Wood Thrush | | | | X | | | X | | | | | | | | X |
| American Robin | - | | | | - | | | - | | | | | | | |
| Gray Catbird | | X | x | | X | | | - | | | | | | | |
| Brown Thrasher | | | | X | X | | | - | | | | | | | |
| Northern Mockingbird | | | | X | | | X | | | | | | X | x | x |
| European Starling | - | | | | - | | | - | | | | | | | |
| Cedar Waxwing | X | | | | | X | | | | X | x | | | | |
| Ovenbird | | | | X | X | | | | | | | | | X | |
| Worm-eating Warbler | | | | X | | X | | | | | | | | X | |
| Louisiana Waterthrush | | | | X | | X | | | | | | | | X | |
| Blue-winged Warbler | | | | X | X | | | | | | | | | | X |
| Black-and-white Warbler | | | | X | | X | | - | | | | | | | |
| Prothonotary Warbler | | | | X | | X | | | | | | | X | | |
| Mourning Warbler | - | | | | - | | | - | | | | | | | |
| Kentucky Warbler | | | | X | | X | | | | | | | | X | |
| Common Yellowthroat | | | x | X | X | | | - | | | | | | | |
| Hooded Warbler | | | | X | | X | | | | | | | | X | |
| American Redstart | X | | | | | | X | | | X | | | | | |
| Cerulean Warbler | | | | X | X | | | | | | | | | X | |
| Northern Parula | | | | X | | X | | | | | | | X | x | |
| Magnolia Warbler | - | | | | - | | | - | | | | | | | |
| Yellow Warbler | | X | | | X | | | | x | X | x | | | | |
| Chestnut-sided Warbler | X | | | | X | | | - | | | | | | | |
| Pine Warbler | | | | X | X | | | | | | | | | X | |
| Yellow-throated Warbler | | | | X | | X | | | | | | | | X | |
| Prairie Warbler | | | | X | | X | | | | | | | | X | |
| Black-throated Green Warbler | - | | | | X | | | - | | | | | | | |
| Yellow-breasted Chat | | | | X | X | | | | | | | | x | X | |
| Eastern Towhee | | | | X | X | | | | | | | | | X | |
| Chipping Sparrow | - | | | | - | | | - | | | | | | | |
| Clay-colored Sparrow | - | | | | - | | | - | | | | | | | |
| Field Sparrow | | | | X | X | | | - | | | | | | | |
| Vesper Sparrow | | | X | | | | X | | | | X | | | | |
| Lark Sparrow | | | | X | | X | | - | | | | | | | |
| Savannah Sparrow | | | X | | X | | | | | | X | X | | | |
| Grasshopper Sparrow | X | | | | X | | | | | x | | | X | | |
| Henslow's Sparrow | | | | X | | X | | | | | | | | X | |

Table 7. (continued)

| Bird species | Region ^a | | | | Region | | | Region | | | | | | | |
|-------------------------|---------------------|---|---|---|--------|---|---|--------|----|----|----|----|----|----|----|
| | ns | N | C | S | ns | W | E | ns | NW | NE | WC | EC | SW | SC | SE |
| Song Sparrow | - | | | | - | | | - | | | | | | | |
| Swamp Sparrow | | X | | | | | X | - | | | | | | | |
| Summer Tanager | | | | X | | X | | | | | | | | X | |
| Scarlet Tanager | | | | X | X | | | | | | | | | X | |
| Northern Cardinal | - | | | | - | | | - | | | | | | | |
| Rose-breasted Grosbeak | | X | | | X | | | | x | X | | | | | |
| Blue Grosbeak | | | | X | | X | | | | | | | X | | |
| Indigo Bunting | - | | | | - | | | - | | | | | | | |
| Dickcissel | X | | | | | X | | | | | | | X | | |
| Bobolink | | X | | | | | X | | | X | | | | | |
| Red-winged Blackbird | - | | | | - | | | - | | | | | | | |
| Eastern Meadowlark | | | X | X | X | | | - | | | | | | | |
| Western Meadowlark | | X | x | | | X | | - | | | | | | | |
| Yellow-headed Blackbird | - | | | | - | | | - | | | | | | | |
| Brewer's Blackbird | - | | | | - | | | - | | | | | | | |
| Common Grackle | | X | | x | X | | | - | | | | | | | |
| Brown-headed Cowbird | - | | | | - | | | - | | | | | | | |
| Orchard Oriole | | | | X | X | | | | | | | | x | X | x |
| Baltimore Oriole | X | | | | | | X | - | | | | | | | |
| House Finch | | | X | | X | | | X | | | | | | | |
| Purple Finch | - | | | | - | | | - | | | | | | | |
| Pine Siskin | - | | | | - | | | - | | | | | | | |
| American Goldfinch | - | | | | - | | | - | | | | | | | |
| House Sparrow | | X | | | X | | | - | | | | | | | |

^a N (north), C (central), S (south), W (west), E (east), NW (northwest), NE (northeast), WC (west-central), EC (east-central), SW (southwest), SC (south-central), SE (southeast).

^b statistically non-significant; P>5%.

^c X indicates a statistically non-significant difference or the region which contributed most to a significant difference in the chi-square value; x indicates a region of secondary importance.

^d Not able to test.

block during at least one of the atlas projects, 42% showed a statistically significant change in frequency of occurrence between atlas periods (Tables 8, 9). Significant increases occurred for 27% of species, while 15% showed a significant decline in the frequency of occurrence. Species showing the greatest significant increases in occurrences were Tree Swallow, Eastern Phoebe, Wild Turkey, Canada Goose, and Northern Parula. Those with the largest statistical declines were Ruffed Grouse, Rock Pigeon, Black-billed Cuckoo, Grasshopper Sparrow, and Eastern Whip-poor-will (Table 9). When categorized by habitat, more forest species showed overall (Fig. 10) and statistically significant (Fig. 11) increases between atlas periods, while the grassland group was the only one that had more species that declined than increased. Although many wetland birds showed no significant differences in numbers due to their infrequent occurrence, the number of species with statistical increases greatly

outnumbered those that declined (Fig. 11). Grassland and shrubland birds had a similar number of species with significant increases and declines, while urban birds were intermediate among the groups.

Population trends from Indiana Breeding Bird Surveys for the more abundant species are presented in Table 10. Because of differences in methodology, fewer species are detected on these surveys than on atlas projects and even fewer occur in enough abundance to determine statistically relevant changes in population trends with great confidence. Of the 129 bird species analyzed, more species (56%) showed positive than negative (44%) population trends. Only half of the trends were statistically significant, with 28% of species indicating increasing populations and 22% suggesting declines in abundance. Overall, more forest species showed positive population trends, with wetland and urban birds also having greater numbers of species with positive trends (Fig. 12). Grassland and shrubland

(continued on pg 34)

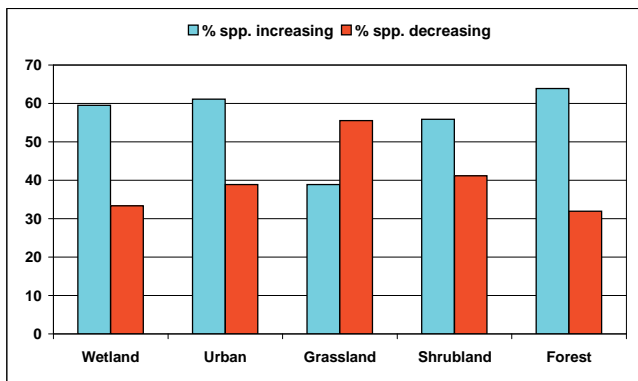


Figure 10. Overall trend values among species groups between Indiana Breeding Bird Atlas projects.

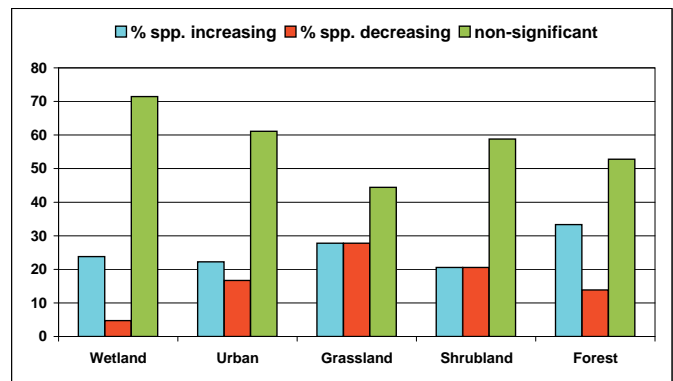


Figure 11. Statistically significant trend values among species groups between Indiana atlas projects.

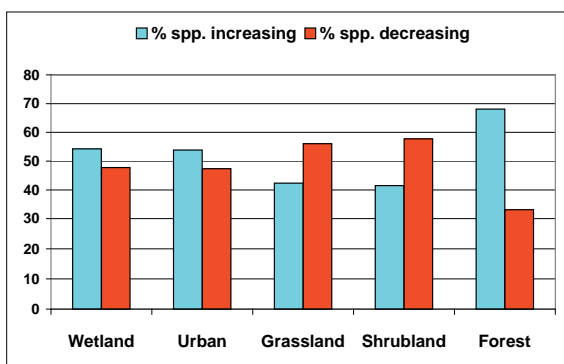


Figure 12. Overall trend values among species groups on Indiana Breeding Bird Survey routes, 1985–2011.

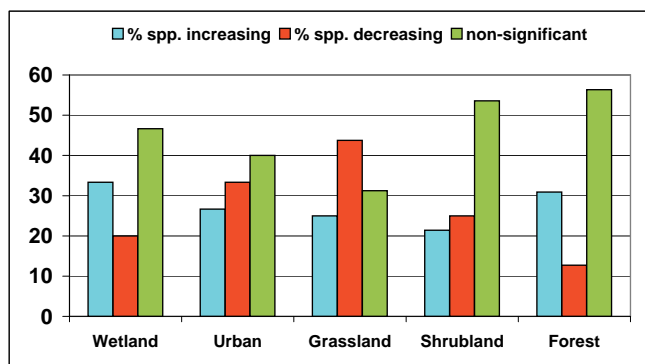


Figure 13. Statistically significant trend values among species groups on Indiana Breeding Bird Survey.

Table 8. Frequencies of occurrence for bird species between Indiana atlas periods ordered taxomically.

| Bird species | Freq. of occur. (%) | | Statistical test | | | Bird species | Freq. of occur. (%) | | Statistical test | | |
|----------------------------|---------------------|-----------|------------------|--------|-------------------|---------------------------|---------------------|-----------|------------------|--------|-------------------|
| | 2005-2011 | 1985-1990 | Chi-square | G-test | test ^a | | 2005-2011 | 1985-1990 | Chi-square | G-test | test ^a |
| Canada Goose | 71.2 | 39.9 | 127.92 | 130.08 | *** | Spotted Sandpiper | 13.3 | 15.5 | 1.23 | 1.23 | ns |
| Mute Swan | 5.6 | 0.8 | 24.21 | 26.87 | *** | Upland Sandpiper | 0.9 | 1.7 | 1.49 | 1.47 | ns |
| Wood Duck | 61.6 | 64.2 | 0.96 | 0.96 | ns | Wilson's Snipe | 0.5 | 0.0 | 3.01 | n/a | ns |
| American Black Duck | 0.3 | 1.1 | 2.80 | 2.81 | ns | American Woodcock | 11.6 | 22.4 | 26.84 | 27.17 | *** |
| Mallard | 67.2 | 59.8 | 7.69 | 7.69 | ** | Wilson's Phalarope | 0.2 | 0.0 | 1.00 | n/a | ns |
| Blue-winged Teal | 2.9 | 9.1 | 21.83 | 22.69 | *** | Ring-billed Gull | 0.3 | 0.0 | 2.00 | n/a | ns |
| Northern Shoveler | 0.0 | 0.3 | 2.00 | n/a | ns | Herring Gull | 0.2 | 0.2 | 0.00 | 0.00 | ns |
| Ring-necked Duck | 0.2 | 0.2 | 0.00 | 0.00 | ns | Least Tern | 0.3 | 0.0 | 2.00 | n/a | ns |
| Hooded Merganser | 6.3 | 1.4 | 21.30 | 22.77 | *** | Caspian Tern | 0.2 | 0.0 | 1.00 | n/a | ns |
| Northern Bobwhite | 68.9 | 78.5 | 15.34 | 15.39 | *** | Rock Pigeon | 76.8 | 89.3 | 36.07 | 36.72 | *** |
| Ring-necked Pheasant | 15.9 | 15.9 | 0.00 | 0.00 | ns | Eurasian Collared-Dove | 4.2 | 0.0 | 27.58 | n/a | *** |
| Ruffed Grouse | 1.1 | 9.8 | 47.37 | 53.71 | *** | Mourning Dove | 99.5 | 99.4 | 0.14 | 0.13 | ns |
| Wild Turkey | 46.6 | 15.5 | 146.09 | 150.98 | *** | Yellow-billed Cuckoo | 73.8 | 79.1 | 4.97 | 4.97 | * |
| Pied-billed Grebe | 4.2 | 3.3 | 0.78 | 0.77 | ns | Black-billed Cuckoo | 10.4 | 21.8 | 31.38 | 31.89 | *** |
| Double-crested Cormorant | 0.3 | 0.0 | 2.00 | n/a | ns | Barn Owl | 2.0 | 2.5 | 0.32 | 0.31 | ns |
| American Bittern | 0.8 | 0.6 | 0.11 | 0.11 | ns | Eastern Screech-Owl | 57.4 | 61.3 | 2.01 | 2.00 | ns |
| Least Bittern | 2.0 | 0.9 | 2.62 | 2.61 | ns | Great Horned Owl | 43.2 | 47.2 | 2.11 | 2.11 | ns |
| Great Blue Heron | 8.0 | 2.5 | 20.12 | 20.97 | *** | Barred Owl | 43.2 | 37.9 | 3.71 | 3.71 | ns |
| Great Egret | 0.5 | 0.0 | 3.01 | n/a | ns | Long-eared Owl | 0.0 | 0.6 | 4.01 | n/a | * |
| Green Heron | 36.4 | 50.8 | 27.23 | 27.30 | *** | Short-eared Owl | 0.0 | 1.1 | 7.04 | n/a | ** |
| Black-crowned Night-Heron | 1.1 | 0.0 | 7.04 | n/a | ** | Northern Saw-whet Owl | 0.0 | 0.2 | 1.00 | n/a | ns |
| Yellow-crowned Night-Heron | 0.9 | 1.4 | 0.61 | 0.59 | ns | Common Nighthawk | 15.3 | 18.3 | 2.00 | 2.00 | ns |
| Black Vulture | 12.1 | 2.9 | 38.80 | 41.21 | *** | Chuck-will's-widow | 2.8 | 4.6 | 3.12 | 3.12 | ns |
| Turkey Vulture | 85.9 | 81.9 | 3.87 | 3.87 | * | Eastern Whip-poor-will | 20.1 | 33.1 | 27.95 | 28.13 | *** |
| Osprey | 2.0 | 0.2 | 10.40 | 11.89 | **/** | Chimney Swift | 86.1 | 87.2 | 0.33 | 0.33 | ns |
| Mississippi Kite | 0.9 | 0.0 | 6.03 | n/a | * | Ruby-throated Hummingbird | 85.0 | 63.2 | 80.12 | 81.95 | *** |
| Northern Harrier | 2.5 | 3.4 | 0.98 | 0.97 | ns | Belted Kingfisher | 58.0 | 65.5 | 7.55 | 7.55 | ** |
| Bald Eagle | 4.3 | 0.0 | 28.62 | n/a | *** | Red-headed Woodpecker | 77.4 | 84.7 | 11.13 | 11.16 | *** |
| Sharp-shinned Hawk | 6.0 | 10.7 | 9.09 | 9.16 | ** | Red-bellied Woodpecker | 93.8 | 87.2 | 16.61 | 16.87 | *** |
| Cooper's Hawk | 41.8 | 20.7 | 66.61 | 67.50 | *** | Downy Woodpecker | 95.8 | 96.6 | 0.53 | 0.53 | ns |
| Red-shouldered Hawk | 29.4 | 15.8 | 34.26 | 34.63 | *** | Hairy Woodpecker | 67.6 | 67.0 | 0.06 | 0.06 | ns |
| Broad-winged Hawk | 7.7 | 12.1 | 6.80 | 6.82 | ** | Northern Flicker | 93.3 | 98.0 | 16.80 | 17.52 | *** |
| Red-tailed Hawk | 93.8 | 83.3 | 35.29 | 36.37 | *** | Pileated Woodpecker | 57.1 | 43.8 | 22.90 | 22.94 | *** |
| King Rail | 0.3 | 0.2 | 0.33 | 0.29 | ns | American Kestrel | 77.2 | 79.3 | 0.77 | 0.77 | ns |
| Virginia Rail | 1.9 | 1.5 | 0.18 | 0.18 | ns | Peregrine Falcon | 0.2 | 0.0 | 1.00 | n/a | ns |
| Sora | 5.3 | 4.3 | 0.61 | 0.61 | ns | Monk Parakeet | 0.2 | 0.0 | 1.00 | n/a | ns |
| Common Gallinule | 1.1 | 1.2 | 0.07 | 0.07 | ns | Western Wood-Pewee | 0.0 | 0.2 | 1.00 | n/a | ns |
| American Coot | 3.3 | 4.8 | 2.00 | 2.00 | ns | Eastern Wood-Pewee | 95.5 | 93.2 | 3.27 | 3.27 | ns |
| Sandhill Crane | 4.5 | 0.5 | 21.66 | 24.60 | *** | Acadian Flycatcher | 65.0 | 55.4 | 12.42 | 12.43 | *** |
| Black-necked Stilt | 0.3 | 0.0 | 2.00 | n/a | ns | Alder Flycatcher | 1.9 | 1.2 | 0.81 | 0.80 | ns |
| Killdeer | 97.7 | 97.5 | 0.03 | 0.03 | ns | Willow Flycatcher | 60.1 | 59.4 | 0.05 | 0.05 | ns |

Table 8. (continued)

| Bird species | Freq. of occur. (%) | | Statistical test | | | Bird species | Freq. of occur. (%) | | Statistical test | | |
|--------------------------|---------------------|-----------|------------------|--------|-------------------|------------------------------|---------------------|-----------|------------------|--------|-------------------|
| | 2005-2011 | 1985-1990 | Chi-square | G-test | test ^a | | 2005-2011 | 1985-1990 | Chi-square | G-test | test ^a |
| Least Flycatcher | 3.7 | 5.7 | 2.91 | 2.91 | ns | European Starling | 99.2 | 98.1 | 2.92 | 2.92 | ns |
| Eastern Phoebe | 88.1 | 57.4 | 153.08 | 159.92 | *** | Cedar Waxwing | 83.3 | 70.9 | 28.05 | 28.27 | *** |
| Great Crested Flycatcher | 88.5 | 88.4 | 0.01 | 0.01 | ns | Ovenbird | 22.3 | 21.1 | 0.29 | 0.29 | ns |
| Western Kingbird | 0.2 | 0.0 | 1.00 | n/a | ns | Worm-eating Warbler | 10.1 | 8.7 | 0.74 | 0.74 | ns |
| Eastern Kingbird | 96.4 | 96.6 | 0.02 | 0.02 | ns | Louisiana Waterthrush | 21.7 | 21.7 | 0.00 | 0.00 | ns |
| Loggerhead Shrike | 0.5 | 5.4 | 27.76 | 32.08 | *** | Northern Waterthrush | 0.0 | 0.2 | 1.00 | n/a | ns |
| White-eyed Vireo | 50.3 | 48.9 | 0.25 | 0.25 | ns | Golden-winged Warbler | 0.0 | 0.5 | 3.01 | n/a | ns |
| Bell's Vireo | 9.6 | 4.3 | 13.81 | 14.05 | *** | Blue-winged Warbler | 14.9 | 19.0 | 4.01 | 4.01 | * |
| Yellow-throated Vireo | 54.5 | 48.1 | 5.21 | 5.21 | * | Black-and-white Warbler | 7.1 | 4.3 | 4.64 | 4.66 | * |
| Blue-headed Vireo | 0.3 | 0.0 | 2.00 | n/a | ns | Prothonotary Warbler | 16.9 | 14.4 | 1.50 | 1.50 | ns |
| Warbling Vireo | 87.9 | 83.7 | 4.64 | 4.64 | * | Mourning Warbler | 0.3 | 0.3 | 0.00 | 0.00 | ns |
| Red-eyed Vireo | 89.8 | 86.5 | 3.27 | 3.27 | ns | Kentucky Warbler | 36.5 | 35.0 | 0.34 | 0.34 | ns |
| Blue Jay | 97.1 | 98.9 | 5.65 | 5.76 | * | Common Yellowthroat | 95.8 | 99.1 | 13.71 | 14.58 | *** |
| American Crow | 96.9 | 96.7 | 0.03 | 0.02 | ns | Hooded Warbler | 13.8 | 8.0 | 10.90 | 10.97 | *** |
| Fish Crow | 0.5 | 0.0 | 3.01 | n/a | ns | American Redstart | 23.8 | 18.9 | 4.72 | 4.72 | * |
| Horned Lark | 72.1 | 72.6 | 0.03 | 0.03 | ns | Cerulean Warbler | 13.3 | 21.4 | 14.60 | 14.68 | *** |
| Purple Martin | 62.2 | 65.9 | 1.94 | 1.94 | ns | Northern Parula | 47.8 | 22.6 | 90.14 | 91.54 | *** |
| Tree Swallow | 66.6 | 31.9 | 155.38 | 158.48 | *** | Magnolia Warbler | 0.2 | 0.0 | 1.00 | n/a | ns |
| N. Rough-winged Swallow | 70.3 | 66.4 | 2.24 | 2.23 | ns | Blackburnian Warbler | 0.0 | 0.2 | 1.00 | n/a | ns |
| Bank Swallow | 14.4 | 17.0 | 1.69 | 1.69 | ns | Yellow Warbler | 77.1 | 72.8 | 3.23 | 3.23 | ns |
| Cliff Swallow | 19.0 | 8.4 | 31.17 | 31.81 | *** | Chestnut-sided Warbler | 2.3 | 4.5 | 4.61 | 4.64 | * |
| Barn Swallow | 98.6 | 97.5 | 2.00 | 1.99 | ns | Pine Warbler | 7.1 | 3.4 | 8.94 | 9.06 | ** |
| Carolina Chickadee | 74.1 | 73.5 | 0.06 | 0.06 | ns | Yellow-throated Warbler | 46.0 | 35.4 | 14.83 | 14.84 | *** |
| Black-capped Chickadee | 16.1 | 17.2 | 0.27 | 0.27 | ns | Prairie Warbler | 24.9 | 23.7 | 0.27 | 0.27 | ns |
| Tufted Titmouse | 93.5 | 93.5 | 0.00 | 0.00 | ns | Black-throated Green Warbler | 2.0 | 0.8 | 3.61 | 3.63 | ns |
| Red-breasted Nuthatch | 0.5 | 0.0 | 3.01 | n/a | ns | Canada Warbler | 0.0 | 0.3 | 2.00 | n/a | ns |
| White-breasted Nuthatch | 92.4 | 89.0 | 4.45 | 4.45 | * | Yellow-breasted Chat | 56.8 | 58.4 | 0.32 | 0.32 | ns |
| Brown Creeper | 2.0 | 1.2 | 1.21 | 1.19 | ns | Eastern Towhee | 86.7 | 85.1 | 0.64 | 0.64 | ns |
| House Wren | 89.2 | 88.9 | 0.03 | 0.03 | ns | Bachman's Sparrow | 0.0 | 0.2 | 1.00 | n/a | ns |
| Winter Wren | 0.2 | 0.0 | 1.00 | n/a | ns | Chipping Sparrow | 98.8 | 95.7 | 11.43 | 11.92 | *** |
| Sedge Wren | 10.2 | 5.7 | 8.35 | 8.40 | ** | Clay-colored Sparrow | 0.3 | 0.0 | 2.00 | n/a | ns |
| Marsh Wren | 3.1 | 2.2 | 1.09 | 1.08 | ns | Field Sparrow | 95.0 | 97.7 | 6.38 | 6.45 | * |
| Carolina Wren | 80.0 | 63.2 | 45.22 | 45.67 | *** | Vesper Sparrow | 51.2 | 58.8 | 7.51 | 7.51 | ** |
| Blue-gray Gnatcatcher | 78.3 | 58.4 | 59.53 | 60.22 | *** | Lark Sparrow | 5.9 | 2.2 | 11.54 | 11.86 | *** |
| Eastern Bluebird | 93.3 | 82.2 | 37.38 | 38.50 | *** | Savannah Sparrow | 49.2 | 50.9 | 0.37 | 0.37 | ns |
| Veery | 5.0 | 6.7 | 1.71 | 1.71 | ns | Grasshopper Sparrow | 47.8 | 63.0 | 30.09 | 30.18 | *** |
| Wood Thrush | 87.3 | 83.0 | 4.80 | 4.80 | * | Henslow's Sparrow | 12.8 | 5.9 | 18.46 | 18.80 | *** |
| American Robin | 99.8 | 100.0 | 1.00 | n/a | ns | Song Sparrow | 99.5 | 99.8 | 1.00 | 0.93 | ns |
| Gray Catbird | 97.2 | 97.5 | 0.12 | 0.12 | ns | Swamp Sparrow | 5.9 | 6.7 | 0.33 | 0.33 | ns |
| Brown Thrasher | 94.7 | 96.9 | 3.79 | 3.79 | ns | Summer Tanager | 39.2 | 33.6 | 4.33 | 4.33 | * |
| Northern Mockingbird | 67.6 | 58.0 | 12.74 | 12.75 | *** | Scarlet Tanager | 64.6 | 62.7 | 0.48 | 0.48 | ns |

Table 8. (continued)

| Bird species | Freq. of occur. (%) | | Statistical test | | | Bird species | Freq. of occur. (%) | | Statistical test | | |
|-------------------------|---------------------|-----------|------------------|--------|-------------------|----------------------|---------------------|-----------|------------------|--------|-------------------|
| | 2005-2011 | 1985-1990 | Chi-square | G-test | test ^a | | 2005-2011 | 1985-1990 | Chi-square | G-test | test ^a |
| Northern Cardinal | 99.8 | 99.4 | 1.81 | 1.76 | ns | Brewer's Blackbird | 0.3 | 0.0 | 2.00 | n/a | ns |
| Rose-breasted Grosbeak | 42.4 | 36.7 | 4.43 | 4.43 | * | Common Grackle | 97.7 | 96.4 | 1.74 | 1.73 | ns |
| Blue Grosbeak | 31.6 | 13.3 | 61.91 | 63.25 | *** | Brown-headed Cowbird | 98.5 | 96.7 | 4.00 | 4.02 | * |
| Indigo Bunting | 98.9 | 99.1 | 0.08 | 0.07 | ns | Orchard Oriole | 71.2 | 63.8 | 8.13 | 8.13 | ** |
| Dickcissel | 61.5 | 51.1 | 14.12 | 14.13 | *** | Baltimore Oriole | 94.3 | 92.1 | 2.39 | 2.39 | ns |
| Bobolink | 22.3 | 31.3 | 13.28 | 13.31 | *** | House Finch | 84.5 | 62.4 | 81.17 | 82.98 | *** |
| Red-winged Blackbird | 99.1 | 99.7 | 2.01 | 1.98 | ns | Purple Finch | 0.2 | 0.0 | 1.00 | n/a | ns |
| Eastern Meadowlark | 94.3 | 97.4 | 7.73 | 7.84 | ** | Pine Siskin | 0.2 | 0.2 | 0.00 | 0.00 | ns |
| Western Meadowlark | 3.6 | 3.1 | 0.22 | 0.21 | ns | American Goldfinch | 98.6 | 98.1 | 0.44 | 0.43 | ns |
| Yellow-headed Blackbird | 0.2 | 0.2 | 0.00 | 0.00 | ns | House Sparrow | 97.4 | 99.1 | 5.36 | 5.46 | * |

^a Statistical significance at probability levels of <0.1% (***), <1% (**), ≤5% (*) or >5% (ns).

Table 9. Bird species ordered by statistical differences in frequencies of occurrence between atlas periods.

| Bird species | Freq. of occur. (%) | | Statistical test | | | Bird species | Freq. of occur. (%) | | Statistical test | | |
|----------------------------|---------------------|-----------|------------------|--------|-------------------|-------------------------|---------------------|-----------|------------------|--------|-------------------|
| | 2005-2011 | 1985-1990 | Chi-square | G-test | test ^a | | 2005-2011 | 1985-1990 | Chi-square | G-test | test ^a |
| Increased frequency | | | | | | | | | | | |
| Tree Swallow | 66.6 | 31.9 | 155.38 | 158.48 | *** | Mute Swan | 5.6 | 0.8 | 24.21 | 26.87 | *** |
| Eastern Phoebe | 88.1 | 57.4 | 153.08 | 159.92 | *** | Pileated Woodpecker | 57.1 | 43.8 | 22.90 | 22.94 | *** |
| Wild Turkey | 46.6 | 15.5 | 146.09 | 150.98 | *** | Sandhill Crane | 4.5 | 0.5 | 21.66 | 24.60 | *** |
| Canada Goose | 71.2 | 39.9 | 127.92 | 130.08 | *** | Hooded Merganser | 6.3 | 1.4 | 21.30 | 22.77 | *** |
| Northern Parula | 47.8 | 22.6 | 90.14 | 91.54 | *** | Great Blue Heron | 8.0 | 2.5 | 20.12 | 20.97 | *** |
| House Finch | 84.5 | 62.4 | 81.17 | 82.98 | *** | Henslow's Sparrow | 12.8 | 5.9 | 18.46 | 18.80 | *** |
| Ruby-throated Hummingbird | 85.0 | 63.2 | 80.12 | 81.95 | *** | Red-bellied Woodpecker | 93.8 | 87.2 | 16.61 | 16.87 | *** |
| Cooper's Hawk | 41.8 | 20.7 | 66.61 | 67.50 | *** | Yellow-throated Warbler | 46.0 | 35.4 | 14.83 | 14.84 | *** |
| Blue Grosbeak | 31.6 | 13.3 | 61.91 | 63.25 | *** | Dickcissel | 61.5 | 51.1 | 14.12 | 14.13 | *** |
| Blue-gray Gnatcatcher | 78.3 | 58.4 | 59.53 | 60.22 | *** | Bell's Vireo | 9.6 | 4.3 | 13.81 | 14.05 | *** |
| Carolina Wren | 80.0 | 63.2 | 45.22 | 45.67 | *** | Northern Mockingbird | 67.6 | 58.0 | 12.74 | 12.75 | *** |
| Black Vulture | 12.1 | 2.9 | 38.80 | 41.21 | *** | Acadian Flycatcher | 65.0 | 55.4 | 12.42 | 12.43 | *** |
| Eastern Bluebird | 93.3 | 82.2 | 37.38 | 38.50 | *** | Lark Sparrow | 5.9 | 2.2 | 11.54 | 11.86 | *** |
| Red-tailed Hawk | 93.8 | 83.3 | 35.29 | 36.37 | *** | Chipping Sparrow | 98.8 | 95.7 | 11.43 | 11.92 | *** |
| Red-shouldered Hawk | 29.4 | 15.8 | 34.26 | 34.63 | *** | Hooded Warbler | 13.8 | 8.0 | 10.90 | 10.97 | *** |
| Cliff Swallow | 19.0 | 8.4 | 31.17 | 31.81 | *** | Osprey | 2.0 | 0.2 | 10.40 | 11.89 | **/** |
| Bald Eagle | 4.3 | 0.0 | 28.62 | n/a | *** | Pine Warbler | 7.1 | 3.4 | 8.94 | 9.06 | ** |
| Cedar Waxwing | 83.3 | 70.9 | 28.05 | 28.27 | *** | Sedge Wren | 10.2 | 5.7 | 8.35 | 8.40 | ** |
| Eurasian Collared-Dove | 4.2 | 0.0 | 27.58 | n/a | *** | Orchard Oriole | 71.2 | 63.8 | 8.13 | 8.13 | ** |

Table 9. (continued)

| Bird species | Freq. of occur. (%) | | Statistical test | | |
|------------------------------|---------------------|-----------|------------------|--------|-------------------|
| | 2005-2011 | 1985-1990 | Chi-square | G-test | test ^a |
| Increased frequency | | | | | |
| Mallard | 67.2 | 59.8 | 7.69 | 7.69 | ** |
| Black-crowned Night-Heron | 1.1 | 0.0 | 7.04 | n/a | ** |
| Mississippi Kite | 0.9 | 0.0 | 6.03 | n/a | * |
| Yellow-throated Vireo | 54.5 | 48.1 | 5.21 | 5.21 | * |
| Wood Thrush | 87.3 | 83.0 | 4.80 | 4.80 | * |
| American Redstart | 23.8 | 18.9 | 4.72 | 4.72 | * |
| Black-and-white Warbler | 7.1 | 4.3 | 4.64 | 4.66 | * |
| Warbling Vireo | 87.9 | 83.7 | 4.64 | 4.64 | * |
| White-breasted Nuthatch | 92.4 | 89.0 | 4.45 | 4.45 | * |
| Rose-breasted Grosbeak | 42.4 | 36.7 | 4.43 | 4.43 | * |
| Summer Tanager | 39.2 | 33.6 | 4.33 | 4.33 | * |
| Brown-headed Cowbird | 98.5 | 96.7 | 4.00 | 4.02 | * |
| Turkey Vulture | 85.9 | 81.9 | 3.87 | 3.87 | * |
| Barred Owl | 43.2 | 37.9 | 3.71 | 3.71 | ns |
| Black-throated Green Warbler | 2.0 | 0.8 | 3.61 | 3.63 | ns |
| Red-eyed Vireo | 89.8 | 86.5 | 3.27 | 3.27 | ns |
| Eastern Wood-Pewee | 95.5 | 93.2 | 3.27 | 3.27 | ns |
| Yellow Warbler | 77.1 | 72.8 | 3.23 | 3.23 | ns |
| Great Egret | 0.5 | 0.0 | 3.01 | n/a | ns |
| Wilson's Snipe | 0.5 | 0.0 | 3.01 | n/a | ns |
| Fish Crow | 0.5 | 0.0 | 3.01 | n/a | ns |
| Red-breasted Nuthatch | 0.5 | 0.0 | 3.01 | n/a | ns |
| European Starling | 99.2 | 98.1 | 2.92 | 2.92 | ns |
| Least Bittern | 2.0 | 0.9 | 2.62 | 2.61 | ns |
| Baltimore Oriole | 94.3 | 92.1 | 2.39 | 2.39 | ns |
| N. Rough-winged Swallow | 70.3 | 66.4 | 2.24 | 2.23 | ns |
| Double-crested Cormorant | 0.3 | 0.0 | 2.00 | n/a | ns |
| Black-necked Stilt | 0.3 | 0.0 | 2.00 | n/a | ns |
| Ring-billed Gull | 0.3 | 0.0 | 2.00 | n/a | ns |
| Least Tern | 0.3 | 0.0 | 2.00 | n/a | ns |
| Blue-headed Vireo | 0.3 | 0.0 | 2.00 | n/a | ns |
| Clay-colored Sparrow | 0.3 | 0.0 | 2.00 | n/a | ns |
| Brewer's Blackbird | 0.3 | 0.0 | 2.00 | n/a | ns |
| Barn Swallow | 98.6 | 97.5 | 2.00 | 1.99 | ns |
| Northern Cardinal | 99.8 | 99.4 | 1.81 | 1.76 | ns |
| Common Grackle | 97.7 | 96.4 | 1.74 | 1.73 | ns |
| Prothonotary Warbler | 16.9 | 14.4 | 1.50 | 1.50 | ns |
| Brown Creeper | 2.0 | 1.2 | 1.21 | 1.19 | ns |
| Marsh Wren | 3.1 | 2.2 | 1.09 | 1.08 | ns |
| Purple Finch | 0.2 | 0.0 | 1.00 | n/a | ns |

| Bird species | Freq. of occur. (%) | | Statistical test | | |
|----------------------------|---------------------|-----------|------------------|--------|-------------------|
| | 2005-2011 | 1985-1990 | Chi-square | G-test | test ^a |
| Increased frequency | | | | | |
| Peregrine Falcon | 0.2 | 0.0 | 1.00 | n/a | ns |
| Wilson's Phalarope | 0.2 | 0.0 | 1.00 | n/a | ns |
| Caspian Tern | 0.2 | 0.0 | 1.00 | n/a | ns |
| Monk Parakeet | 0.2 | 0.0 | 1.00 | n/a | ns |
| Western Kingbird | 0.2 | 0.0 | 1.00 | n/a | ns |
| Winter Wren | 0.2 | 0.0 | 1.00 | n/a | ns |
| Magnolia Warbler | 0.2 | 0.0 | 1.00 | n/a | ns |
| Alder Flycatcher | 1.9 | 1.2 | 0.81 | 0.80 | ns |
| Pied-billed Grebe | 4.2 | 3.3 | 0.78 | 0.77 | ns |
| Worm-eating Warbler | 10.1 | 8.7 | 0.74 | 0.74 | ns |
| Eastern Towhee | 86.7 | 85.1 | 0.64 | 0.64 | ns |
| Sora | 5.3 | 4.3 | 0.61 | 0.61 | ns |
| Scarlet Tanager | 64.6 | 62.7 | 0.48 | 0.48 | ns |
| American Goldfinch | 98.6 | 98.1 | 0.44 | 0.43 | ns |
| Kentucky Warbler | 36.5 | 35.0 | 0.34 | 0.34 | ns |
| King Rail | 0.3 | 0.2 | 0.33 | 0.29 | ns |
| Ovenbird | 22.3 | 21.1 | 0.29 | 0.29 | ns |
| Prairie Warbler | 24.9 | 23.7 | 0.27 | 0.27 | ns |
| Virginia Rail | 1.9 | 1.5 | 0.18 | 0.18 | ns |
| Mourning Dove | 99.5 | 99.4 | 0.14 | 0.13 | ns |
| American Bittern | 0.8 | 0.6 | 0.11 | 0.11 | ns |
| Carolina Chickadee | 74.1 | 73.5 | 0.06 | 0.06 | ns |
| Hairy Woodpecker | 67.6 | 67.0 | 0.06 | 0.06 | ns |
| Willow Flycatcher | 60.1 | 59.4 | 0.05 | 0.05 | ns |
| Killdeer | 97.7 | 97.5 | 0.03 | 0.03 | ns |
| House Wren | 89.2 | 88.9 | 0.03 | 0.03 | ns |
| American Crow | 96.9 | 96.7 | 0.03 | 0.02 | ns |
| Great Crested Flycatcher | 88.5 | 88.4 | 0.01 | 0.01 | ns |
| Decreased frequency | | | | | |
| Ruffed Grouse | 1.1 | 9.8 | 47.37 | 53.71 | *** |
| Rock Pigeon | 76.8 | 89.3 | 36.07 | 36.72 | *** |
| Black-billed Cuckoo | 10.4 | 21.8 | 31.38 | 31.89 | *** |
| Grasshopper Sparrow | 47.8 | 63.0 | 30.09 | 30.18 | *** |
| Eastern Whip-poor-will | 20.1 | 33.1 | 27.95 | 28.13 | *** |
| Loggerhead Shrike | 0.5 | 5.4 | 27.76 | 32.08 | *** |
| Green Heron | 36.4 | 50.8 | 27.23 | 27.30 | *** |
| American Woodcock | 11.6 | 22.4 | 26.84 | 27.17 | *** |
| Blue-winged Teal | 2.9 | 9.1 | 21.83 | 22.69 | *** |
| Northern Flicker | 93.3 | 98.0 | 16.80 | 17.52 | *** |

Table 9. (continued)

| Bird species | Freq. of occur. (%) | | Statistical test | | |
|----------------------------|---------------------|-----------|------------------|--------|-------------------|
| | 2005-2011 | 1985-1990 | Chi-square | G-test | test ^a |
| Decreased frequency | | | | | |
| Northern Bobwhite | 68.9 | 78.5 | 15.34 | 15.39 | *** |
| Cerulean Warbler | 13.3 | 21.4 | 14.60 | 14.68 | *** |
| Common Yellowthroat | 95.8 | 99.1 | 13.71 | 14.58 | *** |
| Bobolink | 22.3 | 31.3 | 13.28 | 13.31 | *** |
| Red-headed Woodpecker | 77.4 | 84.7 | 11.13 | 11.16 | *** |
| Sharp-shinned Hawk | 6.0 | 10.7 | 9.09 | 9.16 | ** |
| Eastern Meadowlark | 94.3 | 97.4 | 7.73 | 7.84 | ** |
| Belted Kingfisher | 58.0 | 65.5 | 7.55 | 7.55 | ** |
| Vesper Sparrow | 51.2 | 58.8 | 7.51 | 7.51 | ** |
| Short-eared Owl | 0.0 | 1.1 | 7.04 | n/a | ** |
| Broad-winged Hawk | 7.7 | 12.1 | 6.80 | 6.82 | ** |
| Field Sparrow | 95.0 | 97.7 | 6.38 | 6.45 | * |
| Blue Jay | 97.1 | 98.9 | 5.65 | 5.76 | * |
| House Sparrow | 97.4 | 99.1 | 5.36 | 5.46 | * |
| Yellow-billed Cuckoo | 73.8 | 79.1 | 4.97 | 4.97 | * |
| Chestnut-sided Warbler | 2.3 | 4.5 | 4.61 | 4.64 | * |
| Long-eared Owl | 0.0 | 0.6 | 4.01 | n/a | * |
| Blue-winged Warbler | 14.9 | 19.0 | 4.01 | 4.01 | * |
| Brown Thrasher | 94.7 | 96.9 | 3.79 | 3.79 | ns |
| Chuck-will's-widow | 2.8 | 4.6 | 3.12 | 3.12 | ns |
| Golden-winged Warbler | 0.0 | 0.5 | 3.01 | n/a | ns |
| Least Flycatcher | 3.7 | 5.7 | 2.91 | 2.91 | ns |
| American Black Duck | 0.3 | 1.1 | 2.80 | 2.81 | ns |
| Great Horned Owl | 43.2 | 47.2 | 2.11 | 2.11 | ns |
| Red-winged Blackbird | 99.1 | 99.7 | 2.01 | 1.98 | ns |
| Eastern Screech-Owl | 57.4 | 61.3 | 2.01 | 2.00 | ns |
| American Coot | 3.3 | 4.8 | 2.00 | 2.00 | ns |
| Northern Shoveler | 0.0 | 0.3 | 2.00 | n/a | ns |
| Canada Warbler | 0.0 | 0.3 | 2.00 | n/a | ns |
| Common Nighthawk | 15.3 | 18.3 | 2.00 | 2.00 | ns |
| Purple Martin | 62.2 | 65.9 | 1.94 | 1.94 | ns |
| Veery | 5.0 | 6.7 | 1.71 | 1.71 | ns |
| Bank Swallow | 14.4 | 17.0 | 1.69 | 1.69 | ns |
| Upland Sandpiper | 0.9 | 1.7 | 1.49 | 1.47 | ns |
| Spotted Sandpiper | 13.3 | 15.5 | 1.23 | 1.23 | ns |
| Song Sparrow | 99.5 | 99.8 | 1.00 | 0.93 | ns |
| American Robin | 99.8 | 100.0 | 1.00 | n/a | ns |

| Bird species | Freq. of occur. (%) | | Statistical test | | |
|------------------------------|---------------------|-----------|------------------|--------|-------------------|
| | 2005-2011 | 1985-1990 | Chi-square | G-test | test ^a |
| Decreased frequency | | | | | |
| Northern Saw-whet Owl | 0.0 | 0.2 | 1.00 | n/a | ns |
| Western Wood-Pewee | 0.0 | 0.2 | 1.00 | n/a | ns |
| Northern Waterthrush | 0.0 | 0.2 | 1.00 | n/a | ns |
| Blackburnian Warbler | 0.0 | 0.2 | 1.00 | n/a | ns |
| Bachman's Sparrow | 0.0 | 0.2 | 1.00 | n/a | ns |
| Northern Harrier | 2.5 | 3.4 | 0.98 | 0.97 | ns |
| Wood Duck | 61.6 | 64.2 | 0.96 | 0.96 | ns |
| American Kestrel | 77.2 | 79.3 | 0.77 | 0.77 | ns |
| Yellow-crowned Night-Heron | 0.9 | 1.4 | 0.61 | 0.59 | ns |
| Downy Woodpecker | 95.8 | 96.6 | 0.53 | 0.53 | ns |
| White-eyed Vireo | 50.3 | 48.9 | 0.25 | 0.25 | ns |
| Western Meadowlark | 3.6 | 3.1 | 0.22 | 0.21 | ns |
| Savannah Sparrow | 49.2 | 50.9 | 0.37 | 0.37 | ns |
| Swamp Sparrow | 5.9 | 6.7 | 0.33 | 0.33 | ns |
| Chimney Swift | 86.1 | 87.2 | 0.33 | 0.33 | ns |
| Barn Owl | 2.0 | 2.5 | 0.32 | 0.31 | ns |
| Yellow-breasted Chat | 56.8 | 58.4 | 0.32 | 0.32 | ns |
| Black-capped Chickadee | 16.1 | 17.2 | 0.27 | 0.27 | ns |
| Gray Catbird | 97.2 | 97.5 | 0.12 | 0.12 | ns |
| Indigo Bunting | 98.9 | 99.1 | 0.08 | 0.07 | ns |
| Common Gallinule | 1.1 | 1.2 | 0.07 | 0.07 | ns |
| Horned Lark | 72.1 | 72.6 | 0.03 | 0.03 | ns |
| Eastern Kingbird | 96.4 | 96.6 | 0.02 | 0.02 | ns |
| | | | | | |
| | | | | | |
| | | | | | |
| Identical frequencies | | | | | |
| Ring-necked Duck | 0.2 | 0.2 | 0.00 | 0.00 | ns |
| Ring-necked Pheasant | 15.9 | 15.9 | 0.00 | 0.00 | ns |
| Herring Gull | 0.2 | 0.2 | 0.00 | 0.00 | ns |
| Tufted Titmouse | 93.5 | 93.5 | 0.00 | 0.00 | ns |
| Louisiana Waterthrush | 21.7 | 21.7 | 0.00 | 0.00 | ns |
| Mourning Warbler | 0.3 | 0.3 | 0.00 | 0.00 | ns |
| Yellow-headed Blackbird | 0.2 | 0.2 | 0.00 | 0.00 | ns |
| Pine Siskin | 0.2 | 0.2 | 0.00 | 0.00 | ns |
| | | | | | |
| | | | | | |

^a Statistical significance at probability levels of <0.1% (***), <1% (**), ≤5% (*) or >5% (ns).

Table 10. Statewide population trends for Indiana birds from federal Breeding Bird Surveys, 1985–2011.

| Bird species | Annual change, % | Increase | | Decrease | | Credibility ^c |
|---------------------------|------------------|--------------------|-----------------|--------------------|-----------------|--------------------------|
| | | Sign. ^a | NS ^b | Sign. ^a | NS ^b | |
| Canada Goose | 16.75 | X | | | | 2 |
| Wood Duck | 2.15 | | X | | | 2 |
| Mallard | 4.25 | X | | | | 1 |
| Blue-winged Teal | -0.93 | | | | X | 3 |
| Northern Bobwhite | -4.08 | | | X | | 1 |
| Ring-necked Pheasant | -1.23 | | | | X | 1 |
| Wild Turkey | 15.52 | X | | | | 3 |
| Pied-billed Grebe | -1.64 | | | | X | 3 |
| Great Blue Heron | 4.69 | X | | | | 1 |
| Green Heron | -1.30 | | | X | | 2 |
| Black-crowned Night-Heron | -0.30 | | | | X | 3 |
| Black Vulture | 12.07 | X | | | | 3 |
| Turkey Vulture | 4.48 | X | | | | 1 |
| Northern Harrier | 2.14 | | X | | | 3 |
| Sharp-shinned Hawk | 0.51 | | X | | | 3 |
| Cooper's Hawk | 6.78 | X | | | | 3 |
| Red-shouldered Hawk | 6.79 | X | | | | 2 |
| Broad-winged Hawk | -0.13 | | | | X | 3 |
| Red-tailed Hawk | 2.80 | X | | | | 2 |
| Killdeer | 2.26 | X | | | | 1 |
| Spotted Sandpiper | 3.01 | | X | | | 3 |
| Upland Sandpiper | -1.09 | | | | X | 3 |
| Ring-billed Gull | 22.27 | X | | | | 3 |
| Rock Pigeon | -3.99 | | | X | | 1 |
| Mourning Dove | 0.45 | | X | | | 1 |
| Yellow-billed Cuckoo | -1.71 | | | X | | 1 |
| Black-billed Cuckoo | -5.12 | | | X | | 2 |
| Eastern Screech-Owl | -3.30 | | | | X | 3 |
| Great Horned Owl | -1.79 | | | | X | 2 |
| Barred Owl | 2.02 | | X | | | 3 |
| Common Nighthawk | 0.47 | | X | | | 3 |
| Chuck-will's-widow | -2.76 | | | | X | 3 |
| Eastern Whip-poor-will | -5.05 | | | X | | 2 |
| Chimney Swift | -2.60 | | | X | | 1 |
| Ruby-throated Hummingbird | 2.52 | X | | | | 2 |
| Belted Kingfisher | -1.94 | | | X | | 2 |
| Red-headed Woodpecker | -3.06 | | | X | | 1 |
| Red-bellied Woodpecker | 1.53 | X | | | | 1 |
| Downy Woodpecker | -0.58 | | | | X | 1 |
| Hairy Woodpecker | 1.04 | | X | | | 2 |
| Northern Flicker | -2.53 | | | X | | 1 |
| Pileated Woodpecker | 3.86 | X | | | | 2 |
| American Kestrel | -0.66 | | | | X | 1 |
| Eastern Wood-Pewee | -0.56 | | | | X | 1 |
| Acadian Flycatcher | -0.97 | | | X | | 1 |
| Alder Flycatcher | 5.04 | | X | | | 3 |
| Willow Flycatcher | -0.31 | | | | X | 1 |
| Least Flycatcher | 2.07 | | X | | | 3 |
| Eastern Phoebe | 3.06 | X | | | | 1 |
| Great Crested Flycatcher | -0.75 | | | | X | 1 |
| Eastern Kingbird | -2.21 | | | X | | 1 |
| Loggerhead Shrike | -5.14 | | | X | | 3 |
| White-eyed Vireo | 0.06 | | X | | | 1 |
| Bell's Vireo | 8.35 | X | | | | 3 |
| Yellow-throated Vireo | 1.19 | | X | | | 1 |
| Warbling Vireo | 0.64 | | X | | | 1 |
| Red-eyed Vireo | 0.21 | | X | | | 1 |
| Blue Jay | -1.22 | | | X | | 1 |
| American Crow | 0.13 | | X | | | 1 |
| Horned Lark | -2.00 | | | X | | 1 |
| N. Rough-winged Swallow | 0.24 | | X | | | 1 |
| Purple Martin | -1.67 | | | X | | 1 |
| Tree Swallow | 11.06 | X | | | | 2 |
| Bank Swallow | 0.62 | | X | | | 2 |
| Barn Swallow | -0.52 | | | | X | 1 |
| Cliff Swallow | 21.42 | X | | | | 3 |
| Carolina Chickadee | 0.33 | | X | | | 1 |
| Black-capped Chickadee | 4.44 | | X | | | 2 |
| Tufted Titmouse | 0.70 | | X | | | 1 |
| White-breasted Nuthatch | 2.09 | X | | | | 1 |
| House Wren | 1.26 | X | | | | 1 |
| Sedge Wren | 0.04 | | X | | | 3 |
| Carolina Wren | 4.80 | X | | | | 1 |
| Blue-gray Gnatcatcher | 0.52 | | X | | | 1 |
| Eastern Bluebird | 1.85 | X | | | | 1 |
| Veery | -8.51 | | | | X | 3 |
| Wood Thrush | -0.53 | | | | X | 1 |
| American Robin | 2.01 | X | | | | 1 |
| Gray Catbird | -0.35 | | | | X | 1 |
| Northern Mockingbird | 1.39 | X | | | | 1 |
| Brown Thrasher | -0.94 | | | X | | 1 |
| European Starling | 0.46 | | X | | | 1 |

Table 10. (continued)

| Bird species | Annual change, % | Increase | | Decrease | | Credibility ^c |
|-------------------------|------------------|--------------------|-----------------|--------------------|-----------------|--------------------------|
| | | Sign. ^a | NS ^b | Sign. ^a | NS ^b | |
| Cedar Waxwing | 4.97 | X | | | | 1 |
| Ovenbird | 1.36 | | X | | | 2 |
| Worm-eating Warbler | 2.67 | | X | | | 2 |
| Louisiana Waterthrush | 4.23 | X | | | | 2 |
| Blue-winged Warbler | -1.35 | | | | X | 2 |
| Black-and-white Warbler | -0.87 | | | | X | 3 |
| Prothonotary Warbler | 3.17 | X | | | | 3 |
| Kentucky Warbler | 0.30 | | X | | | 1 |
| Common Yellowthroat | -1.03 | | | X | | 1 |
| Hooded Warbler | 4.42 | X | | | | 2 |
| American Redstart | 2.13 | | X | | | 2 |
| Cerulean Warbler | -3.68 | | | X | | 2 |
| Northern Parula | 8.37 | X | | | | 2 |
| Yellow Warbler | 0.86 | | X | | | 1 |
| Chestnut-sided Warbler | -1.02 | | | | X | 3 |
| Pine Warbler | 3.22 | | X | | | 3 |
| Yellow-throated Warbler | 2.22 | X | | | | 2 |
| Prairie Warbler | -1.19 | | | | X | 2 |
| Yellow-breasted Chat | 0.54 | | X | | | 1 |
| Eastern Towhee | -0.11 | | | | X | 1 |
| Chipping Sparrow | 2.94 | X | | | | 1 |
| Field Sparrow | -2.33 | | | X | | 1 |
| Vesper Sparrow | -2.75 | | | X | | 1 |
| Lark Sparrow | 6.42 | | X | | | 3 |

| Bird species | Annual change, % | Increase | | Decrease | | Credibility ^c |
|------------------------|------------------|--------------------|-----------------|--------------------|-----------------|--------------------------|
| | | Sign. ^a | NS ^b | Sign. ^a | NS ^b | |
| Savannah Sparrow | -4.23 | | | X | | 1 |
| Grasshopper Sparrow | -5.36 | | | X | | 1 |
| Henslow's Sparrow | 2.53 | | X | | | 2 |
| Song Sparrow | -0.43 | | | | X | 1 |
| Swamp Sparrow | -3.36 | | | | X | 2 |
| Summer Tanager | 1.64 | X | | | | 2 |
| Scarlet Tanager | 0.87 | | X | | | 1 |
| Northern Cardinal | 0.01 | | X | | | 1 |
| Rose-breasted Grosbeak | 1.64 | | X | | | 2 |
| Blue Grosbeak | 9.20 | X | | | | 2 |
| Indigo Bunting | -1.56 | | | X | | 1 |
| Dickcissel | 3.12 | X | | | | 1 |
| Bobolink | -5.29 | | | X | | 1 |
| Red-winged Blackbird | -1.15 | | | X | | 1 |
| Eastern Meadowlark | -1.95 | | | X | | 1 |
| Western Meadowlark | -3.40 | | | X | | 2 |
| Common Grackle | -0.58 | | | | X | 1 |
| Brown-headed Cowbird | 0.94 | X | | | | 1 |
| Orchard Oriole | -0.10 | | | | X | 1 |
| Baltimore Oriole | 0.49 | | X | | | 1 |
| House Finch | 17.14 | X | | | | 3 |
| American Goldfinch | -0.08 | | | | X | 1 |
| House Sparrow | -3.84 | | | X | | 1 |

^aStatistically significant trend at 5% probability level.

^bStatistically non-significant trend at 5% probability level.

^cDegree of precision and accuracy based on regional abundance and occurrence: moderate (1), low (2), very low (3).

groups included more species with negative trends than positive ones. Considering only statistically significant differences, wetland and forest birds had the greatest relative number of species with positive population trends, while the forest had the fewest number of species with declines (Fig. 13). Relatively more grassland birds showed significant negative population trends with urban and shrubland birds also exhibiting more statistically significant positive than negative trends.

In an effort to determine if bird species ranges shifted between atlas periods, the mean latitude and longitude of priority atlas blocks in which a species occurred were calculated and tested with a two-tailed t-test. Overall, of the 151 species recorded during both atlas periods, more species showed a shift northward (61%) than southward (38%). Longitudinal differences were less pronounced with 52% of species ranging more eastward, while 48% shifted their range westward. Only a few of these differences were statistically significant

(Table 11). The vast majority in this category showed a range shift northward (21 species), but a small number of species shifted westward, southward, and eastward to a significant degree. Six species (Canada Goose, Black Vulture, Cooper’s Hawk, Eastern Whip-poor-will, Common Nighthawk, Northern Parula) exhibited significant changes in two directions: Canada Goose south and west; Black Vulture and Cooper’s Hawk north and west; and Eastern Whip-poor-will, Common Nighthawk, and Northern Parula north and east. Of the 31 species with significant range shifts, the vast majority (20 species, 68%) had statistically significant increases in frequencies between atlas periods. Additionally, five increased but not significantly; four showed nonsignificant declines; and the remaining two decreased significantly. The causes of these range shifts are complex and beyond the scope of this project, but would most likely be due to changes in regional climate as well as land cover and habitats.

Table 11. Species with statistically significant shifts in distributions between Indiana atlas periods.

| Direction | t-test | P ^a | degrees of freedom | distance (miles) |
|---------------------------|--------|----------------|--------------------|------------------|
| Northward | | | | |
| Eastern Phoebe | 4.365 | *** | 938 | 21 |
| Pileated Woodpecker | 4.234 | *** | 650 | 20 |
| Black Vulture | 7.326 | *** | 95 | 76 |
| Carolina Wren | 4.061 | *** | 923 | 18 |
| Blue-gray Gnatcatcher | 3.768 | *** | 881 | 18 |
| Wild Turkey | 3.855 | *** | 399 | 31 |
| American Bittern | 5.187 | ** | 7 | 176 |
| Eastern Whip-poor-will | 3.117 | ** | 342 | 26 |
| Blue Grosbeak | 3.295 | ** | 288 | 19 |
| Northern Parula | 3.071 | ** | 453 | 17 |
| Spotted Sandpiper | 3.005 | ** | 184 | 34 |
| Common Nighthawk | 2.907 | ** | 215 | 34 |
| Barred Owl | 2.839 | ** | 522 | 18 |
| Northern Mockingbird | 2.806 | ** | 810 | 13 |
| Yellow-throated Warbler | 2.492 | * | 524 | 13 |
| Ruby-throated Hummingbird | 2.417 | * | 955 | 12 |
| Great Horned Owl | 2.239 | * | 582 | 14 |
| Pied-billed Grebe | 2.159 | * | 46 | 49 |
| Sora | 2.109 | * | 60 | 36 |
| Red-shouldered Hawk | 2.086 | * | 290 | 14 |
| Cooper’s Hawk | 1.946 | * | 402 | 16 |
| Southward | | | | |
| Canada Goose | 2.739 | ** | 716 | 16 |
| Grasshopper Sparrow | 2.166 | * | 714 | 12 |
| Tree Swallow | 2.104 | * | 634 | 15 |
| House Finch | 2.050 | * | 947 | 10 |
| Westward | | | | |
| Black Vulture | 3.975 | *** | 95 | 33 |
| Chuck-will’s-widow | 2.821 | ** | 46 | 27 |
| Black-and-white Warbler | 2.816 | ** | 72 | 26 |
| Cooper’s Hawk | 2.638 | ** | 402 | 11 |
| Henslow’s Sparrow | 2.480 | * | 119 | 15 |
| Worm-eating Warbler | 2.270 | * | 119 | 12 |
| Canada Goose | 2.117 | * | 716 | 7 |
| Summer Tanager | 2.004 | * | 468 | 8 |
| Eastward | | | | |
| Bell’s Vireo | 3.441 | *** | 88 | 33 |
| Northern Parula | 2.917 | ** | 453 | 11 |
| Eastern Whip-poor-will | 2.710 | ** | 342 | 13 |
| Common Nighthawk | 2.616 | ** | 215 | 17 |

^aStatistically different at probability levels of 5%*, 1%** and 0.1%***.

SPECIES ACCOUNTS

SPECIES ACCOUNTS ARE grouped by avian order or family in the case of the songbirds (Passeriformes). These are much abbreviated from the species accounts in the previous atlas (Castrale *et al.* 1998). To avoid redundancy, readers are directed to that publication for historical range and occurrences in Indiana, detailed descriptions of breeding and wintering ranges, and occurrences on atlas projects in adjacent states.

Life history topics included in the current accounts are general habitat descriptions, diets, foraging substrates and behavior, nesting sites, migratory tendencies, and general wintering areas.

Distribution information includes statewide and regional occurrence on the current atlas and relative abundance on the Breeding Bird Survey (BBS), com-

parisons of atlas occurrences and relative abundance on BBS routes between atlas periods, and statewide population trends using BBS for the 1985–2011 period.

Comparisons (Table 12) were also made to atlas projects in Michigan (Brewer *et al.* 1991, Chartier *et al.* 2013) and Ohio (Peterjohn and Rice 1991, Rodewald *et al.* 2016). Michigan values from Appendix 4 (Chartier *et al.* 2013) were recalculated to include only those blocks in which at least one species was detected. Rates for Ohio should be more comparable to Indiana due to similar latitudes, habitats, and more similar atlas methodology, while Michigan frequencies underestimate actual occurrences due to inclusion of non-priority blocks where atlas efforts were lower.

Table 12. Relative occurrence of bird species in atlas blocks on the Michigan and Ohio Breeding Bird Atlases. Numbers in bold are species confirmed breeding and Michigan values include non-priority blocks.

| Bird species | Michigan Atlas | | Ohio Atlas | | Bird species | Michigan Atlas | | Ohio Atlas | |
|--------------------------|---------------------|---------------------|---------------------|---------------------|----------------------------|---------------------|---------------------|---------------------|---------------------|
| | 2002–2007 | 1983–1988 | 2006–2011 | 1982–1987 | | 2002–2007 | 1983–1988 | 2006–2011 | 1982–1987 |
| | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) | | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) |
| | n=5801 | n=6116 | n=764 | n=764 | | n=5801 | n=6116 | n=764 | n=764 |
| Canada Goose | 35.1 | 22.8 | 82.1 | 45.9 | Snowy Egret | 0.0 | 0.0 | 0.1 | 0.0 |
| Mute Swan | 9.6 | 5.3 | 5.0 | 0.0 | Little Blue Heron | <0.1 | 0.0 | 0.1 | 0.0 |
| Trumpeter Swan | 3.4 | 0.0 | 2.1 | 0.0 | Cattle Egret | 0.0 | <0.1 | 0.0 | 0.0 |
| Wood Duck | 23.2 | 24.3 | 63.9 | 68.2 | Green Heron | 18.6 | 24.0 | 47.3 | 71.9 |
| Gadwall | 0.6 | 0.4 | 0.1 | 0.8 | Black-crowned Night-Heron | 1.6 | 1.2 | 1.8 | 0.0 |
| American Wigeon | 0.5 | 0.6 | 0.3 | 0.0 | Yellow-crowned Night-Heron | 0.0 | 0.0 | 0.1 | 0.9 |
| American Black Duck | 2.6 | 6.0 | 0.7 | 1.8 | Black Vulture | 0.0 | 0.0 | 14.7 | 3.0 |
| Mallard | 36.6 | 40.8 | 70.8 | 67.9 | Turkey Vulture | 39.6 | 30.2 | 97.9 | 90.7 |
| Blue-winged Teal | 3.9 | 8.8 | 2.9 | 4.3 | Osprey | 6.7 | 6.0 | 5.1 | 0.0 |
| Northern Shoveler | 0.6 | 0.3 | 0.3 | 0.4 | Mississippi Kite | 0.0 | 0.0 | 0.3 | 0.0 |
| Northern Pintail | 0.2 | 0.7 | 0.3 | 0.3 | Bald Eagle | 12.0 | 6.4 | 15.7 | 0.7 |
| Green-winged Teal | 1.0 | 1.6 | 0.3 | 0.8 | Northern Harrier | 7.7 | 11.0 | 4.1 | 4.6 |
| Canvasback | 0.1 | 0.1 | 0.0 | 0.0 | Sharp-shinned Hawk | 5.6 | 5.3 | 6.9 | 8.5 |
| Redhead | 0.3 | 0.6 | 0.5 | 0.7 | Cooper's Hawk | 11.9 | 8.7 | 58.9 | 32.6 |
| Ring-necked Duck | 2.0 | 2.0 | 0.0 | 0.0 | Northern Goshawk | 3.2 | 3.0 | 0.0 | 0.0 |
| Greater Scaup | <0.1 | 0.0 | 0.0 | 0.0 | Red-shouldered Hawk | 8.7 | 6.9 | 38.4 | 17.3 |
| Lesser Scaup | 0.1 | 0.2 | 0.0 | 0.1 | Broad-winged Hawk | 14.6 | 14.3 | 18.6 | 22.9 |
| Bufflehead | <0.1 | <0.1 | 0.0 | 0.0 | Red-tailed Hawk | 35.0 | 35.4 | 98.4 | 94.5 |
| Common Goldeneye | 1.4 | 1.5 | 0.0 | 0.0 | Yellow Rail | 0.3 | 0.1 | 0.0 | 0.0 |
| Hooded Merganser | 7.6 | 2.8 | 6.3 | 3.3 | Black Rail | <0.1 | <0.1 | 0.0 | 0.0 |
| Common Merganser | 5.1 | 3.7 | 0.7 | 0.0 | King Rail | 0.2 | 0.2 | 0.5 | 0.5 |
| Red-breasted Merganser | 2.1 | 3.0 | 0.0 | 0.0 | Virginia Rail | 4.9 | 4.2 | 5.9 | 4.8 |
| Ruddy Duck | 0.5 | 0.2 | 0.9 | 0.8 | Sora | 6.3 | 5.6 | 4.3 | 3.9 |
| Northern Bobwhite | 5.7 | 15.0 | 18.6 | 52.6 | Purple Gallinule | 0.0 | 0.0 | 0.1 | 0.0 |
| Ring-necked Pheasant | 22.4 | 33.2 | 23.2 | 48.6 | Common Gallinule | 1.0 | 2.4 | 2.0 | 3.5 |
| Ruffed Grouse | 25.0 | 27.7 | 7.5 | 32.1 | American Coot | 1.7 | 2.8 | 2.0 | 2.2 |
| Spruce Grouse | 1.4 | 1.0 | 0.0 | 0.0 | Sandhill Crane | 27.0 | 9.5 | 2.5 | 0.0 |
| Sharp-tailed Grouse | 1.2 | 1.3 | 0.0 | 0.0 | Black-necked Stilt | <0.1 | 0.0 | 0.0 | 0.0 |
| Wild Turkey | 33.8 | 15.8 | 60.6 | 15.8 | Piping Plover | 0.8 | 0.3 | 0.0 | 0.0 |
| Common Loon | 11.7 | 9.0 | 0.0 | 0.0 | Killdeer | 44.8 | 60.5 | 94.9 | 99.2 |
| Pied-billed Grebe | 6.6 | 7.3 | 3.5 | 3.3 | Spotted Sandpiper | 13.5 | 16.1 | 19.2 | 30.2 |
| Red-necked Grebe | <0.1 | 0.0 | 0.0 | 0.0 | Lesser Yellowlegs | 0.0 | <0.1 | 0.0 | 0.0 |
| Eared Grebe | <0.1 | <0.1 | 0.0 | 0.0 | Upland Sandpiper | 5.1 | 9.7 | 1.0 | 3.0 |
| Double-crested Cormorant | 2.7 | 1.3 | 4.7 | 0.0 | Wilson's Snipe | 6.3 | 9.2 | 0.8 | 0.8 |
| American White Pelican | <0.1 | 0.0 | 0.0 | 0.0 | American Woodcock | 17.9 | 25.1 | 26.7 | 34.7 |
| American Bittern | 4.7 | 6.1 | 1.3 | 1.0 | Wilson's Phalarope | 0.2 | 0.2 | 0.0 | 0.0 |
| Least Bittern | 1.7 | 1.9 | 2.0 | 2.0 | Laughing Gull | 0.0 | 0.0 | 0.0 | 0.1 |
| Great Blue Heron | 30.9 | 34.4 | 78.0 | 4.3 | Ring-billed Gull | 4.5 | 2.9 | 4.6 | 0.1 |
| Great Egret | 2.8 | 1.1 | 4.7 | 0.0 | Herring Gull | 4.4 | 3.4 | 3.4 | 1.2 |

Table 12. (continued)

| Bird species | Michigan Atlas | | Ohio Atlas | | Bird species | Michigan Atlas | | Ohio Atlas | |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------------|---------------------|---------------------|---------------------|---------------------|
| | 2002–2007 | 1983–1988 | 2006–2011 | 1982–1987 | | 2002–2007 | 1983–1988 | 2006–2011 | 1982–1987 |
| | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) | | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) |
| | n=5801 | n=6116 | n=764 | n=764 | | n=5801 | n=6116 | n=764 | n=764 |
| Least Tern | 0.0 | 0.0 | 0.0 | 0.0 | Western Wood-Pewee | 0.0 | 0.0 | 0.0 | 0.0 |
| Caspian Tern | 2.2 | 0.9 | 0.0 | 0.0 | Eastern Wood-Pewee | 55.5 | 57.4 | 99.5 | 100.0 |
| Black Tern | 1.6 | 3.7 | 0.1 | 0.5 | Yellow-bellied Flycatcher | 4.6 | 2.2 | 0.0 | 0.0 |
| Common Tern | 1.2 | 1.4 | 0.4 | 0.1 | Acadian Flycatcher | 8.4 | 6.8 | 76.7 | 83.6 |
| Forster's Tern | 0.8 | 0.8 | 0.0 | 0.0 | Alder Flycatcher | 23.6 | 16.8 | 6.2 | 4.7 |
| Rock Pigeon | 24.3 | 33.4 | 85.7 | 94.0 | Willow Flycatcher | 22.8 | 25.6 | 80.1 | 82.5 |
| Eurasian Collared-Dove | <0.1 | 0.0 | 0.8 | 0.0 | Least Flycatcher | 31.0 | 35.3 | 5.0 | 10.1 |
| Mourning Dove | 64.5 | 63.2 | 99.7 | 100.0 | Eastern Phoebe | 43.6 | 33.9 | 92.3 | 79.5 |
| Yellow-billed Cuckoo | 19.7 | 14.2 | 80.4 | 87.4 | Great Crested Flycatcher | 45.0 | 55.1 | 90.1 | 97.8 |
| Black-billed Cuckoo | 18.0 | 19.9 | 22.9 | 35.7 | Western Kingbird | 0.0 | <0.1 | 0.0 | 0.0 |
| Barn Owl | <0.1 | <0.1 | 2.9 | 1.6 | Eastern Kingbird | 51.6 | 66.6 | 91.2 | 94.0 |
| Eastern Screech-Owl | 9.0 | 10.8 | 61.0 | 97.5 | Loggerhead Shrike | <0.1 | 0.4 | 0.3 | 1.4 |
| Great Horned Owl | 9.7 | 17.2 | 44.0 | 73.8 | White-eyed Vireo | 0.9 | 0.8 | 57.9 | 66.4 |
| Barred Owl | 12.0 | 9.1 | 39.1 | 52.2 | Bell's Vireo | <0.1 | <0.1 | 1.2 | 0.4 |
| Great Gray Owl | 0.2 | 0.1 | 0.0 | 0.0 | Yellow-throated Vireo | 22.6 | 19.4 | 73.3 | 75.0 |
| Long-eared Owl | 0.4 | 0.3 | 0.1 | 0.5 | Blue-headed Vireo | 18.5 | 7.7 | 4.1 | 1.7 |
| Short-eared Owl | 0.1 | 0.2 | 0.1 | 0.1 | Warbling Vireo | 38.0 | 39.9 | 87.0 | 88.5 |
| Northern Saw-whet Owl | 1.6 | 0.9 | 0.1 | 0.0 | Philadelphia Vireo | 0.7 | 0.8 | 0.0 | 0.0 |
| Common Nighthawk | 6.1 | 14.4 | 9.8 | 29.8 | Red-eyed Vireo | 66.5 | 60.3 | 99.1 | 99.7 |
| Chuck-will's-widow | <0.1 | <0.1 | 1.0 | 0.8 | Canada Jay | 2.6 | 2.4 | 0.0 | 0.0 |
| Eastern Whip-poor-will | 4.8 | 10.3 | 10.2 | 24.5 | Blue Jay | 67.7 | 68.2 | 99.7 | 100.0 |
| Chimney Swift | 22.4 | 28.0 | 93.5 | 99.5 | American Crow | 65.6 | 68.6 | 97.0 | 98.7 |
| Ruby-throated Humming-bird | 39.4 | 32.0 | 85.6 | 89.7 | Fish Crow | 0.0 | 0.0 | 0.0 | 0.0 |
| Belted Kingfisher | 27.9 | 34.7 | 61.9 | 80.8 | Common Raven | 24.1 | 16.7 | 0.3 | 0.0 |
| Red-headed Woodpecker | 10.5 | 25.7 | 49.6 | 67.3 | Horned Lark | 23.3 | 31.3 | 59.3 | 67.4 |
| Red-bellied Woodpecker | 36.4 | 22.9 | 99.5 | 92.9 | Purple Martin | 9.7 | 24.0 | 55.1 | 70.0 |
| Yellow-bellied Sapsucker | 24.7 | 15.1 | 2.5 | 0.3 | Tree Swallow | 47.9 | 61.5 | 80.0 | 44.1 |
| Downy Woodpecker | 50.8 | 54.9 | 99.9 | 100.0 | N. Rough-winged Swallow | 20.2 | 20.9 | 75.5 | 81.2 |
| Hairy Woodpecker | 38.6 | 37.8 | 80.2 | 89.0 | Bank Swallow | 16.7 | 22.3 | 13.7 | 20.8 |
| American Three-toed Woodpecker | <0.1 | <0.1 | 0.0 | 0.0 | Barn Swallow | 48.3 | 62.7 | 98.7 | 99.6 |
| Black-backed Woodpecker | 1.5 | 1.2 | 0.0 | 0.0 | Cliff Swallow | 12.8 | 15.7 | 15.8 | 5.4 |
| Northern Flicker | 62.1 | 66.0 | 99.3 | 99.7 | Carolina Chickadee | 0.0 | 0.0 | 70.8 | 69.8 |
| Pileated Woodpecker | 27.2 | 15.4 | 63.9 | 54.6 | Black-capped Chickadee | 66.5 | 67.4 | 31.0 | 31.2 |
| American Kestrel | 22.2 | 35.3 | 72.9 | 91.9 | Boreal Chickadee | 0.8 | 1.0 | 0.0 | 0.0 |
| Merlin | 4.0 | 1.2 | 0.0 | 0.0 | Tufted Titmouse | 35.9 | 29.1 | 98.6 | 98.7 |
| Peregrine Falcon | 0.7 | <0.1 | 1.7 | 0.1 | Red-breasted Nuthatch | 27.4 | 17.6 | 1.7 | 1.6 |
| Monk Parakeet | 0.0 | <0.1 | 0.0 | 0.0 | White-breasted Nuthatch | 48.0 | 51.2 | 99.5 | 97.9 |
| Olive-sided Flycatcher | 3.3 | 4.2 | 0.0 | 0.0 | Brown Creeper | 15.2 | 10.6 | 3.4 | 2.5 |

Table 12. (continued)

| Bird species | Michigan Atlas | | Ohio Atlas | | Bird species | Michigan Atlas | | Ohio Atlas | |
|-------------------------|---------------------|---------------------|---------------------|---------------------|------------------------------|---------------------|---------------------|---------------------|---------------------|
| | 2002–2007 | 1983–1988 | 2006–2011 | 1982–1987 | | 2002–2007 | 1983–1988 | 2006–2011 | 1982–1987 |
| | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) | | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) |
| | n=5801 | n=6116 | n=764 | n=764 | | n=5801 | n=6116 | n=764 | n=764 |
| House Wren | 46.3 | 48.1 | 94.9 | 95.7 | Northern Parula | 11.8 | 5.6 | 25.1 | 5.2 |
| Winter Wren | 19.3 | 13.6 | 1.7 | 0.3 | Magnolia Warbler | 14.9 | 7.5 | 1.8 | 0.8 |
| Sedge Wren | 12.9 | 8.3 | 5.0 | 1.8 | Bay-breasted Warbler | 0.7 | 0.7 | 0.0 | 0.0 |
| Marsh Wren | 5.5 | 5.5 | 3.4 | 4.5 | Blackburnian Warbler | 15.8 | 10.4 | 0.7 | 0.3 |
| Carolina Wren | 8.5 | 0.6 | 88.7 | 54.2 | Yellow Warbler | 47.6 | 49.7 | 92.5 | 94.4 |
| Bewick's Wren | 0.0 | 0.0 | 0.0 | 0.3 | Chestnut-sided Warbler | 28.8 | 24.9 | 8.1 | 7.9 |
| Blue-gray Gnatcatcher | 16.2 | 10.8 | 84.8 | 85.6 | Black-throated Blue Warbler | 10.4 | 5.3 | 0.4 | 0.4 |
| Golden-crowned Kinglet | 12.6 | 7.6 | 0.8 | 0.0 | Palm Warbler | 1.9 | 0.3 | 0.0 | 0.0 |
| Ruby-crowned Kinglet | 4.1 | 4.1 | 0.0 | 0.0 | Pine Warbler | 19.6 | 7.8 | 10.9 | 8.8 |
| Eastern Bluebird | 46.9 | 41.6 | 95.3 | 85.2 | Yellow-rumped Warbler | 23.1 | 17.6 | 0.0 | 0.0 |
| Veery | 31.5 | 33.3 | 10.3 | 18.3 | Yellow-throated Warbler | 0.3 | 0.1 | 40.4 | 35.2 |
| Swainson's Thrush | 6.8 | 5.2 | 0.0 | 0.0 | Prairie Warbler | 0.5 | 0.6 | 25.9 | 33.1 |
| Hermit Thrush | 29.0 | 20.6 | 1.8 | 0.7 | Black-throated Green Warbler | 27.6 | 17.3 | 6.4 | 3.9 |
| Wood Thrush | 32.7 | 33.3 | 94.6 | 98.6 | Canada Warbler | 7.7 | 7.8 | 0.7 | 0.9 |
| American Robin | 73.9 | 78.5 | 100.0 | 100.0 | Wilson's Warbler | 0.7 | 0.2 | 0.0 | 0.0 |
| Gray Catbird | 49.5 | 54.2 | 99.7 | 100.0 | Yellow-breasted Chat | 1.2 | 2.3 | 53.0 | 72.6 |
| Brown Thrasher | 31.8 | 41.0 | 91.8 | 97.9 | Eastern Towhee | 28.4 | 34.5 | 86.9 | 94.4 |
| Northern Mockingbird | 2.7 | 2.1 | 76.0 | 54.1 | Bachman's Sparrow | 0.0 | 0.0 | 0.0 | 0.0 |
| European Starling | 51.9 | 62.7 | 99.7 | 100.0 | Chipping Sparrow | 68.3 | 70.8 | 100.0 | 99.3 |
| Cedar Waxwing | 62.6 | 66.8 | 93.6 | 94.2 | Clay-colored Sparrow | 9.7 | 4.5 | 0.4 | 0.0 |
| Ovenbird | 48.0 | 44.7 | 42.7 | 53.8 | Field Sparrow | 34.5 | 43.4 | 96.2 | 99.5 |
| Worm-eating Warbler | 0.2 | <0.1 | 10.3 | 11.9 | Vesper Sparrow | 30.4 | 42.1 | 45.9 | 64.9 |
| Louisiana Waterthrush | 0.9 | 1.4 | 31.3 | 34.8 | Lark Sparrow | <0.1 | 0.0 | 0.7 | 0.7 |
| Northern Waterthrush | 9.7 | 8.1 | 0.1 | 0.5 | Savannah Sparrow | 39.6 | 45.1 | 67.0 | 71.7 |
| Golden-winged Warbler | 5.4 | 8.3 | 0.1 | 0.9 | Grasshopper Sparrow | 9.9 | 13.3 | 52.9 | 69.8 |
| Blue-winged Warbler | 12.9 | 11.8 | 40.2 | 60.2 | Henslow's Sparrow | 3.1 | 4.5 | 11.9 | 18.8 |
| Black-and-white Warbler | 25.4 | 19.8 | 19.8 | 17.3 | Le Conte's Sparrow | 1.3 | 0.6 | 0.0 | 0.0 |
| Prothonotary Warbler | 1.5 | 1.6 | 8.4 | 8.1 | Song Sparrow | 70.3 | 74.4 | 99.9 | 100.0 |
| Tennessee Warbler | 1.2 | 1.0 | 0.0 | 0.0 | Lincoln's Sparrow | 5.1 | 4.1 | 0.0 | 0.0 |
| Nashville Warbler | 27.9 | 20.5 | 0.0 | 0.0 | Swamp Sparrow | 32.3 | 29.7 | 21.7 | 22.6 |
| Connecticut Warbler | 0.6 | 1.1 | 0.0 | 0.0 | White-throated Sparrow | 26.8 | 23.9 | 0.0 | 0.0 |
| Mourning Warbler | 20.7 | 18.2 | 0.1 | 0.8 | Dark-eyed Junco | 6.3 | 6.3 | 1.8 | 0.7 |
| Kentucky Warbler | 0.1 | 0.2 | 34.9 | 50.7 | Summer Tanager | <0.1 | 0.1 | 22.3 | 30.9 |
| Common Yellowthroat | 63.1 | 63.2 | 98.6 | 99.9 | Scarlet Tanager | 37.9 | 35.4 | 82.2 | 89.4 |
| Hooded Warbler | 2.7 | 1.4 | 45.4 | 37.2 | Northern Cardinal | 46.3 | 45.7 | 100.0 | 100.0 |
| American Redstart | 42.9 | 33.9 | 43.6 | 45.7 | Rose-breasted Grosbeak | 55.2 | 56.2 | 60.7 | 55.2 |
| Kirtland's Warbler | 2.3 | 0.9 | 0.0 | 0.0 | Blue Grosbeak | <0.1 | 0.0 | 11.9 | 3.5 |
| Cape May Warbler | 3.3 | 2.5 | 0.0 | 0.0 | Indigo Bunting | 62.2 | 62.8 | 99.7 | 99.9 |
| Cerulean Warbler | 3.1 | 3.5 | 27.7 | 50.7 | Dickcissel | 4.3 | 4.5 | 25.0 | 16.4 |

Table 12. (continued)

| | Michigan Atlas | | Ohio Atlas | | | Michigan Atlas | | Ohio Atlas | |
|-------------------------|---------------------|---------------------|---------------------|---------------------|------------------------|---------------------|---------------------|---------------------|---------------------|
| | 2002–2007 | 1983–1988 | 2006–2011 | 1982–1987 | | 2002–2007 | 1983–1988 | 2006–2011 | 1982–1987 |
| Bird species | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) | Bird species | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) | Freq. of occur. (%) |
| | n=5801 | n=6116 | n=764 | n=764 | | n=5801 | n=6116 | n=764 | n=764 |
| Bobolink | 25.5 | 37.8 | 34.2 | 57.9 | Pine Grosbeak | <0.1 | <0.1 | 0.0 | 0.0 |
| Red-winged Blackbird | 62.4 | 70.4 | 99.5 | 99.7 | House Finch | 37.4 | 11.0 | 90.2 | 78.0 |
| Eastern Meadowlark | 32.7 | 46.0 | 90.6 | 96.6 | Purple Finch | 20.7 | 20.5 | 6.7 | 10.6 |
| Western Meadowlark | 1.1 | 2.3 | 0.8 | 2.1 | Red Crossbill | 2.5 | 1.4 | 0.0 | 0.0 |
| Yellow-headed Blackbird | 0.2 | 0.7 | 0.3 | 0.3 | White-winged Crossbill | 3.3 | 0.7 | 0.0 | 0.0 |
| Rusty Blackbird | <0.1 | <0.1 | 0.0 | 0.0 | Pine Siskin | 6.0 | 6.3 | 1.2 | 0.9 |
| Brewer's Blackbird | 3.9 | 5.5 | 0.0 | 0.0 | American Goldfinch | 67.9 | 69.1 | 99.5 | 100.0 |
| Common Grackle | 57.7 | 65.4 | 98.0 | 99.9 | Evening Grosbeak | 5.9 | 9.8 | 0.0 | 0.0 |
| Brown-headed Cowbird | 51.0 | 60.3 | 99.0 | 99.7 | House Sparrow | 41.5 | 53.1 | 99.3 | 99.7 |
| Orchard Oriole | 7.5 | 3.5 | 77.9 | 68.8 | Eurasian Tree Sparrow | <0.1 | 0.0 | 0.0 | 0.0 |
| Baltimore Oriole | 45.9 | 54.3 | 96.9 | 99.0 | | | | | |

Waterfowl (Anseriformes)

Tables 13–29, Fig. 14–38

WATERFOWL THAT BREED regularly in Indiana consist of one goose (Canada Goose), one nonnative swan (Mute Swan), and four species of ducks (Wood Duck, Mallard, Blue-winged Teal, and Hooded Merganser). Other duck species nest occasionally. Two (Gadwall, Ruddy Duck) had confirmed records in the recent atlas and five others (American Black Duck, Northern Shoveler, Green-winged Teal, Redhead, and Red-breasted Merganser) had confirmed records during the 1985–1990 atlas. Other waterfowl with nesting documented at one time or another in Indiana include the Trumpeter Swan, Northern Pintail, Ring-necked Duck, and Lesser Scaup. As a result of reintroduction efforts for Trumpeter Swans in Ohio, Michigan, Wisconsin, and other states, this species was first recorded nesting in Indiana during 2017 in LaGrange County (Brock 2017) with subsequent successful pairs found in the northern counties of Lake and LaPorte (Brock 2020). Other duck species have been recorded during the summer in Indiana and it would not be surprising if additional waterfowl species are occasionally documented nesting in the future. The American Wigeon would be the most likely possibility. Summer waterfowl records of these rarer species consist of late or early migrants, nonbreeding birds, injured birds, or captive birds that have escaped from hobbyists. The Black-bellied Whistling-Duck was first discovered nesting in Indiana in Posey County during 2018 and 2019 (Brock 2018, Ehn 2020) as well as Gibson County in 2021 (Ehn 2022). Fulvous Whistling-Duck, a species that nests along the Gulf Coast, was found at Goose Pond Fish and Wildlife Area during 2009. Two to five birds were repeatedly observed from mid-June to early September, although they did not exhibit any behavior that suggested nesting. Their presence during this period would technically qualify them for possible breeding in the atlas.

All Indiana waterfowl nest most often in areas near water, including marshes, islands, ditches, reclaimed mine lands, and golf courses, as well as at the edges of lakes, reservoirs, farm ponds, retention ponds, rivers, and streams (Dugger *et al.* 1994, Austin and Miller

1995, Hepp and Bellrose 1995, Johnson 1995, Dubowy 1996, Ciaranca *et al.* 1997, LeSchack *et al.* 1997, Austin *et al.* 1998, Hohman and Eberhardt 1998, Mowbray 1999a, Titman 1999, Longcore *et al.* 2000, Brua 2002, Drilling *et al.* 2002, Mowbray *et al.* 2002, Rohwer *et al.* 2002, Woodin and Michot 2002). Most nest on the ground in grassy or brushy areas with the exception of Wood Ducks and Hooded Mergansers, which nest in tree cavities or man-made nest boxes. Canada Geese and Mallards will also use nesting platforms off the ground and Canada Geese are sometimes found using old nests of Bald Eagles along rivers.

Waterfowl typically feed in aquatic habitats: dabbling ducks and geese in marshes, ditches, and other shallow waters and diving ducks in more open areas with deeper water. Ducks, geese, and swans feed on a variety of aquatic plants and animals. These may include seeds, algae, green vegetation, and plant tubers, as well as insects, crustaceans, mollusks, and small fish. Canada Geese, Mute Swans, and Mallards also feed on grain, crop seedlings, and weed seeds in agricultural fields and readily take bread and other human foods in parks and urban settings.

Among waterfowl, Canada Goose and Mallard occurred in the most atlas blocks during the 2005–2011 period and had the greatest abundance values on Breeding Bird Surveys. Wood Duck had somewhat lower values, but this species is a common breeder throughout the state. Mute Swan, Blue-winged Teal, and Hooded Merganser are regular breeders in low numbers. All other waterfowl can be considered sporadic breeders in Indiana. For the six most common waterfowl species, atlas records and BBS values were highest in northern Indiana, especially in the northeast.

The Canada Goose population has continued to grow in number and occupy more area of the state as shown by the IBBA and the BBS. Both changes were statistically significant. Restoration efforts in the 1960s have resulted in a statewide distribution and nuisance complaints in urban areas despite recent liberalized hunting seasons and permits to control nesting in local

areas. Canada Geese are most common in northern Indiana where wetlands and lakes are more concentrated and least likely encountered in more heavily forested areas of south-central and southeastern Indiana. Rates of occurrence on the Indiana atlases were intermediate between the higher values reported for Ohio and lower values for Michigan. Large increases in frequencies were consistent for all three state atlases.

Mute Swans, originally established as escapees from domestic stock, have become more heavily entrenched in Indiana, especially in northeastern areas, despite sporadic efforts to control their numbers. During the 1985–1990 atlas period only a handful of blocks recorded this species. On the current atlas, swans occurred in priority blocks in all regions of the state and with great regularity in northern Indiana. The higher rate of occurrence in the current atlas was statistically significant. Rates of occurrence were similar between Indiana and Ohio atlases, while higher in Michigan. All states showed substantial increases between atlas periods. Trumpeter Swans were confirmed breeders on the most recent atlas projects in Michigan and Ohio, but not on the first atlases. These are due to reintroductions in those states from 1986–1993 and 1996–2003, respectively. Spillover from those restorations may result in this species eventually becoming a regular nester in Indiana.

The Wood Duck is the second most common breeding duck species in Indiana and was found in slightly fewer blocks compared to the previous atlas, although the change was not statistically significant. It appears to be declining somewhat according to BBS tallies, although the BBS trend for 1985–2011 was positive but not statistically significant. As a cavity nesting bird, it is less frequently found in central Indiana. However, as with most other waterfowl, numbers are greatest in the northern part of the state. Atlas occurrence rates of Wood Duck were similar on Indiana and Ohio atlases, but much lower in Michigan. All states have slightly fewer records on their second atlas projects.

Mallard is the most abundant duck species breeding in Indiana, although its breeding status is somewhat clouded by the presence of domesticated Mallards and hybrids with other duck species. Occurrences were greater in all regions of the state during the recent IBBA. The overall difference in the rate of occurrence

was statistically significant. Mallard populations exhibited a statistically significant increase on BBS routes in Indiana for the 1985–2011 period. The relative frequency of Mallard occurrences was similar between Indiana and Ohio atlas projects, but much lower for Michigan. Changes were small between atlas periods: slight increases for Indiana and Ohio, and a minor decline in Michigan.

Blue-winged Teal showed a statistically significant decline in occurrence between atlas periods and the population trend on BBS routes for the 1985–2011 period in Indiana was negative but not statistically significant. Rates of occurrences were most pronounced in southwestern Indiana. Hooded Merganser, a cavity-nesting species, has shown the opposite trend; this duck now surpasses Blue-winged Teal in relative abundance. Relative frequencies were comparable among Indiana, Ohio, and Michigan atlases for both species. Changes between atlas periods were consistent among all three states with Hooded Merganser increasing substantially and Blue-winged Teal becoming less frequent, especially in Indiana and Michigan.

Other duck species had just a handful of records, and little can be said about changes in numbers from the previous atlas. American Black Duck, Northern Shoveler, Green-winged Teal, Redhead, and Red-breasted Merganser had confirmed records in the previous atlas, but not in the current one. American Wigeon, Northern Pintail, Ring-necked Duck, and Lesser Scaup did not have evidence of confirmed breeding in either atlas, but have nested in Indiana. The Ruddy Duck and Gadwall were not confirmed breeding in the 1985–1990 atlas, but were confirmed breeders in the recent atlas. Three families of Ruddy Ducks were reported in Allen County during 2021 (Ehn 2022). The observations of nesting Gadwall represent an Indiana first for breeding. Both records came from the Goose Pond Fish and Wildlife Area in Greene County. One consisted of a nest with eggs photographed by Lee Sterrenberg on July 8, 2008. In 2013, a hen Gadwall with four ducklings was observed. Although of advanced age, they did not fly, but instead skittered across the water when approached.

On the Michigan and Ohio atlases, these and other duck species nested sporadically or in consistently low numbers. Gadwall, American Black Duck, Northern Shoveler, Green-winged Teal, Redhead, and Ruddy

Duck were confirmed breeders during both atlas periods in Michigan and Ohio. American Wigeon, Canvasback, Ring-necked Duck, Common Goldeneye, Common Merganser, and Red-breasted Merganser also were confirmed nesters on both Michigan atlases, while Northern Pintail was confirmed breeding during both Ohio atlases. In addition, Canvasback, Greater Scaup, Lesser Scaup, and Common Merganser were documented breeding on the 2006–2011 Ohio atlas, while American Wigeon attained the same status on the initial atlas. The Northern Pintail was confirmed

breeding on the first Michigan atlas. Bufflehead was recorded on both Michigan atlases, but did not attain confirmed breeding status.

Although local populations of Canada Goose and Mute Swan stay year-round in Indiana, these and other species are highly migratory with large numbers passing through the state during spring and fall seasons. Winter numbers are generally much lower for most waterfowl, with Canada Goose and Mallard being most likely to be encountered in the state.

Canada Goose



A pair of Canada Geese swimming with their seven goslings. *Photo by Michael Brown.*

Table 13. Regional occurrence and abundance information for the Canada Goose.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 91 | 62 | 55 | 13.8 | 31 | 9.9 | | | | |
| Northwest | 73 | 88 | 55 | 34 | 9.5 | 19 | 3.3 | | | | |
| Northeast | 54 | 94 | 72 | 21 | 20.7 | 12 | 20.3 | | | | |
| Central | 273 | 66 | 37 | 110 | 10.4 | 102 | 2.5 | | | | |
| West-central | 114 | 46 | 22 | 56 | 14.9 | 38 | 3.4 | | | | |
| East-central | 159 | 81 | 48 | 54 | 5.8 | 64 | 1.9 | | | | |
| South | 246 | 67 | 32 | 97 | 4.5 | 88 | 1.6 | | | | |
| Southwest | 106 | 70 | 29 | 47 | 6.0 | 39 | 3.4 | | | | |
| South-central | 87 | 57 | 23 | 35 | 3.8 | 35 | 0.4 | | | | |
| Southeast | 53 | 75 | 51 | 15 | 1.1 | 14 | 0.0 | | | | |
| Statewide | 646 | 71 | 40 | 262 | 8.9 | 221 | 3.2 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 340 | 74 | 160 | 62 |
| Probable | 62 | 13 | 48 | 19 |
| Possible | 58 | 13 | 50 | 19 |
| Sum | 460 | | 258 | |
| Observed | 16 | | - | |
| Other blocks | | | | |
| Confirmed | 28 | | 10 | |
| Probable | 6 | | 1 | |
| Possible | 6 | | 1 | |
| Sum | 40 | | 12 | |
| Observed | 1 | | - | |

Canada Goose

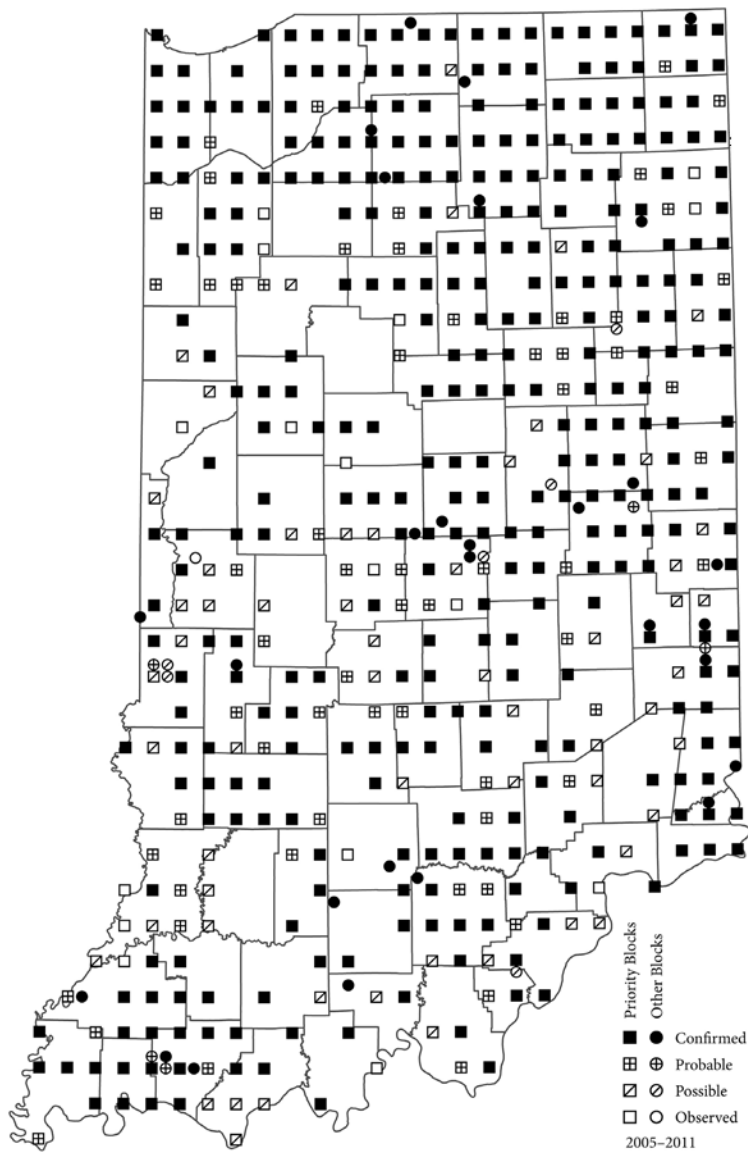


Figure 14. Occurrences of the Canada Goose in IBBA blocks during 2005–2011.

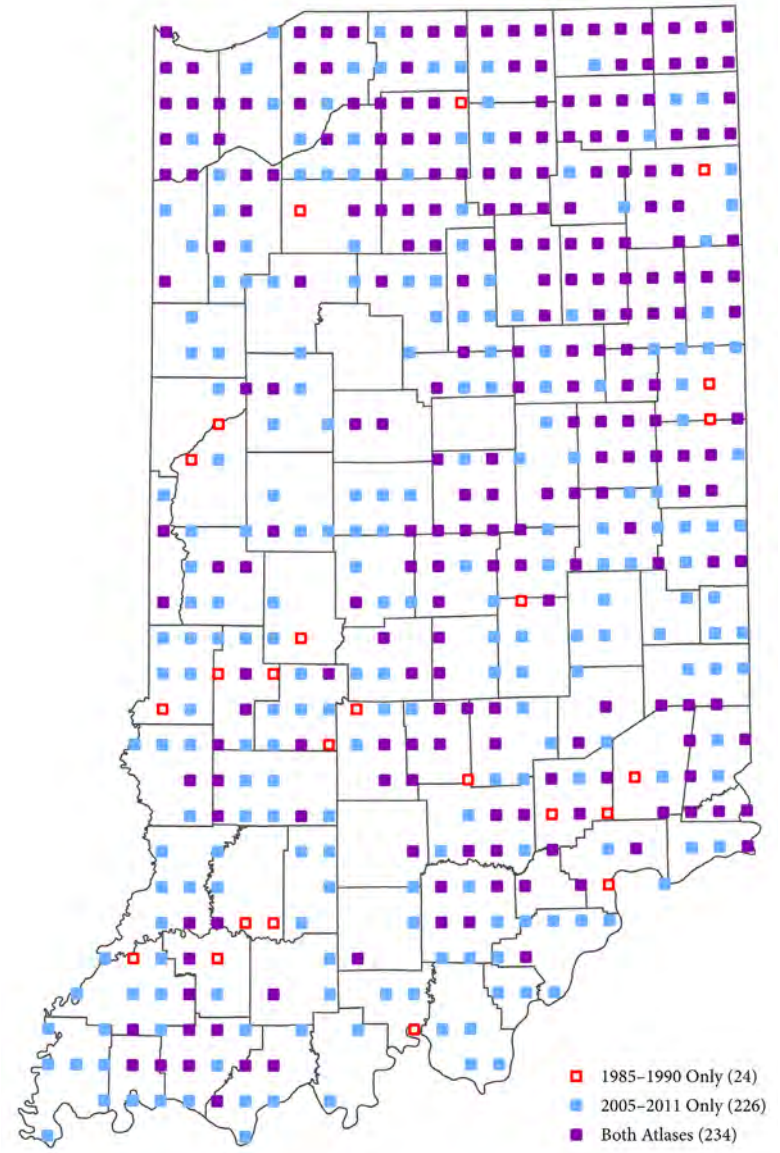


Figure 15. Occurrences of the Canada Goose in IBBA priority blocks during both atlas periods.

Mute Swan



A Mute Swan bathing. Photo by Shari McCollough.

Table 14. Regional occurrence and abundance information for the Mute Swan.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|--------------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 19 | 2 | 55 | 0.58 | 31 | 0.00 | | | | |
| Northwest | 73 | 11 | 1 | 34 | 0.18 | 19 | 0.00 | | | | |
| Northeast | 54 | 30 | 4 | 21 | 1.24 | 12 | 0.00 | | | | |
| Central | 273 | 2 | 0 | 110 | <0.01 | 102 | 0.00 | | | | |
| West-central | 114 | 2 | 0 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 3 | 0 | 54 | 0.02 | 64 | 0.00 | | | | |
| South | 246 | 2 | <1 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | 2 | 0 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 3 | 2 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 2 | 0 | 15 | 0.00 | 14 | 0.0 | | | | |
| Statewide | 646 | 6 | <1 | 262 | 0.13 | 221 | 0.00 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|----------|----|
| Priority Blocks | | | | |
| Confirmed | 21 | 58 | 3 | 60 |
| Probable | 9 | 25 | 1 | 20 |
| Possible | 6 | 17 | 1 | 20 |
| Sum | 36 | | 5 | |
| Observed | 4 | | - | |
| Other blocks | | | | |
| Confirmed | 18 | | 3 | |
| Probable | 2 | | 1 | |
| Possible | 5 | | 2 | |
| Sum | 25 | | 6 | |
| Observed | 1 | | - | |

Mute Swan

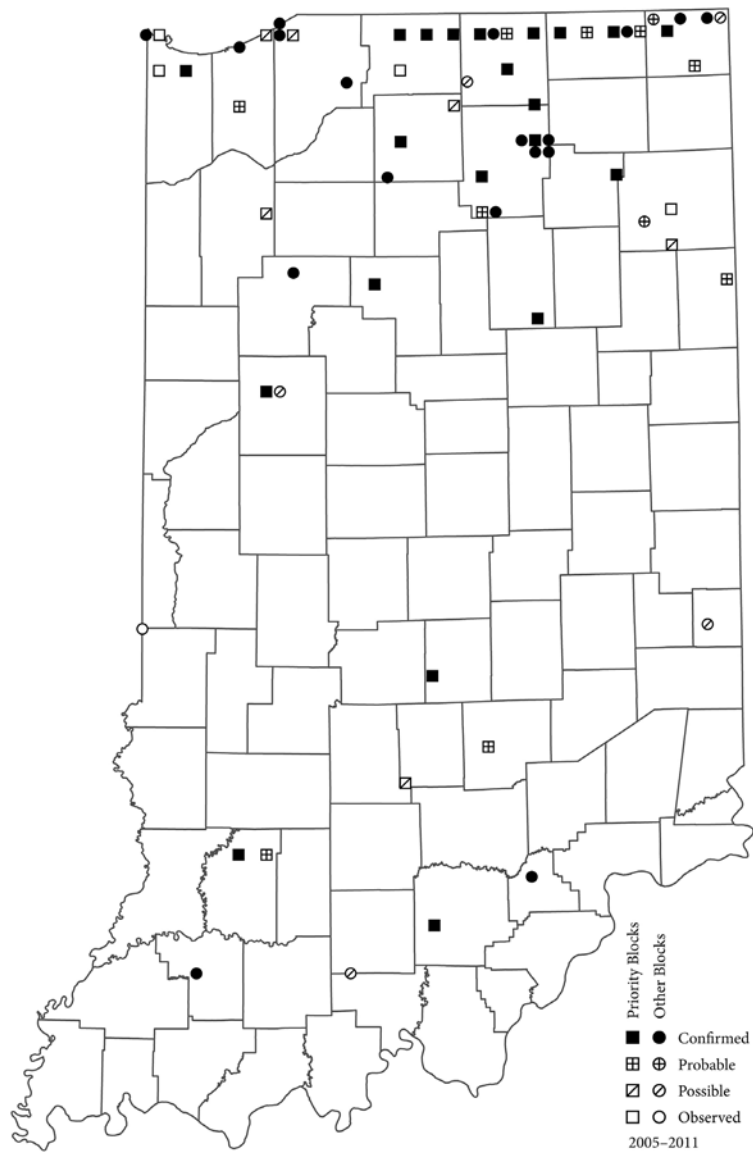


Figure 16. Occurrences of the Mute Swan in IBBA blocks during 2005-2011.

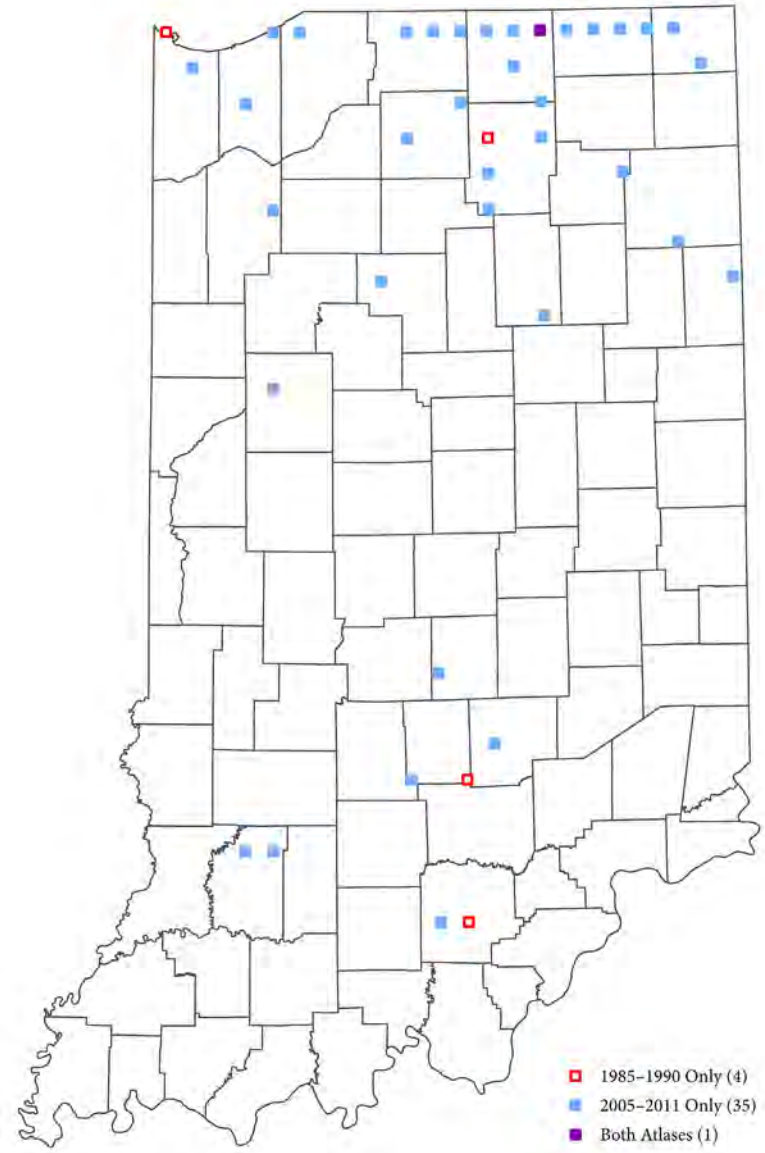


Figure 17. Occurrences of the Mute Swan in IBBA priority blocks during both atlas periods.

Wood Duck



Portrait of a male Wood Duck. *Photo by Shari McCollough.*

Table 15. Regional occurrence and abundance information for the Wood Duck.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 76 | 75 | 55 | 0.75 | 31 | 1.12 | | | | |
| Northwest | 73 | 73 | 75 | 34 | 0.85 | 19 | 0.74 | | | | |
| Northeast | 54 | 81 | 74 | 21 | 0.57 | 12 | 1.75 | | | | |
| Central | 273 | 56 | 52 | 110 | 0.46 | 102 | 0.58 | | | | |
| West-central | 114 | 47 | 44 | 56 | 0.52 | 38 | 0.34 | | | | |
| East-central | 159 | 62 | 58 | 54 | 0.41 | 64 | 0.72 | | | | |
| South | 246 | 60 | 72 | 97 | 0.68 | 88 | 0.69 | | | | |
| Southwest | 106 | 63 | 75 | 47 | 0.36 | 39 | 0.56 | | | | |
| South-central | 87 | 56 | 72 | 35 | 1.20 | 35 | 0.71 | | | | |
| Southeast | 53 | 60 | 64 | 15 | 0.47 | 14 | 1.00 | | | | |
| Statewide | 646 | 62 | 64 | 262 | 0.60 | 221 | 0.70 | | | | |

| | 2005–2011 | | 1985–1990 | |
|------------------------|------------|----|------------|----|
| | No. | % | No. | % |
| Priority Blocks | | | | |
| Confirmed | 249 | 63 | 271 | 65 |
| Probable | 93 | 23 | 83 | 20 |
| Possible | 56 | 14 | 61 | 15 |
| Sum | 398 | | 415 | |
| Observed | 5 | | - | |
| Other blocks | | | | |
| Confirmed | 45 | | 17 | |
| Probable | 4 | | 6 | |
| Possible | 4 | | 1 | |
| Sum | 53 | | 24 | |
| Observed | 0 | | - | |

Wood Duck

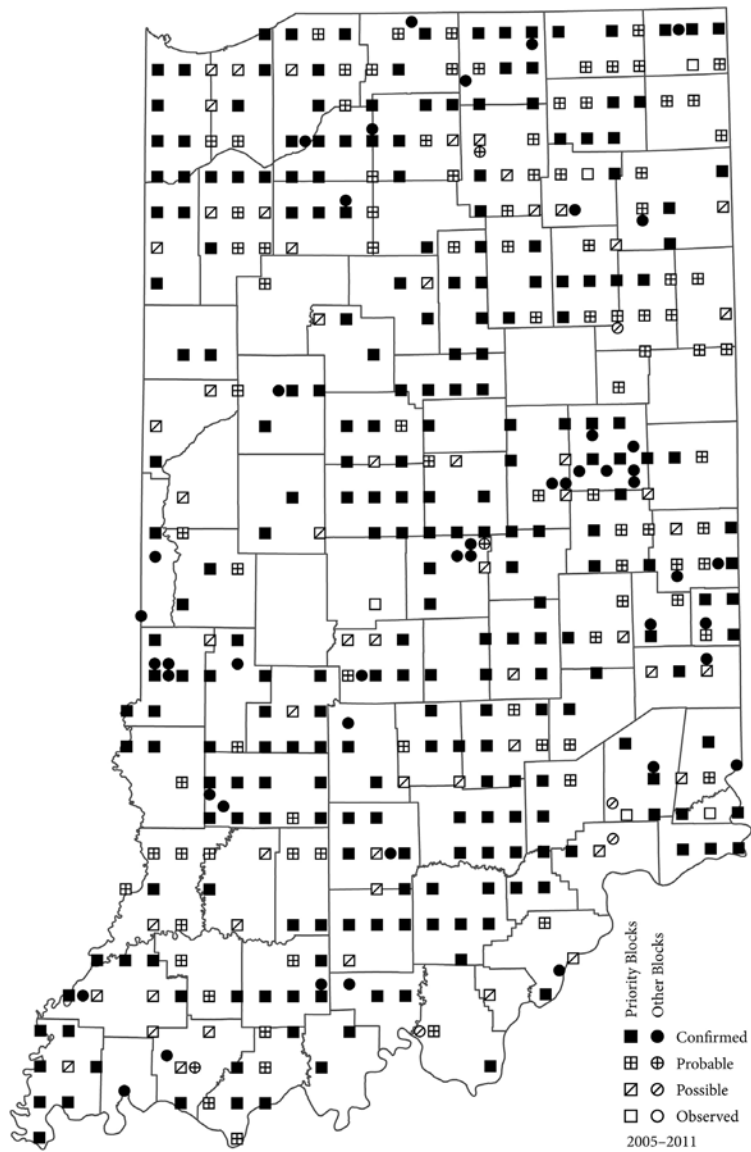


Figure 18. Occurrences of the Wood Duck in IBBA blocks during 2005–2011.

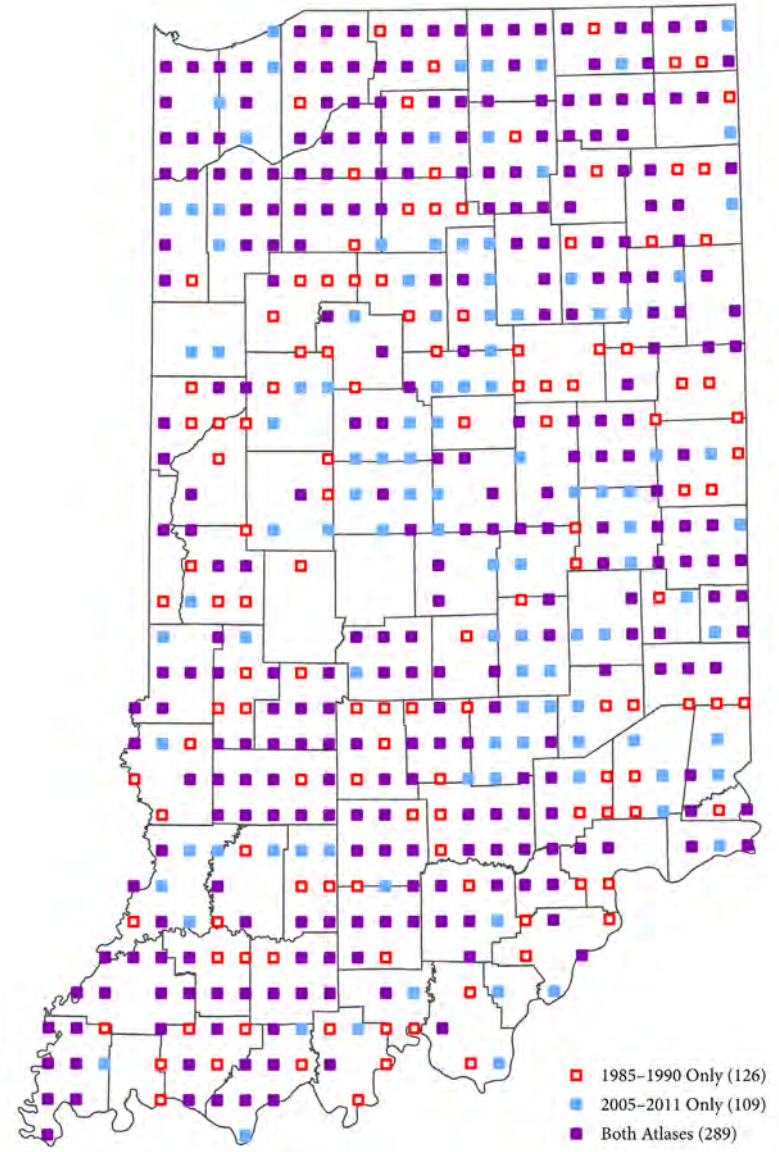


Figure 19. Occurrences of the Wood Duck in IBBA priority blocks during both atlas periods.

Gadwall



A pair of Gadwalls in flight. *Photo by Michael Brown.*

Table 16. Regional occurrence and abundance information for the Gadwall.

| Region | Breeding Bird Atlas | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 1 | | 0 | |
| Probable | 1 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 2 | | 0 | |
| Observed | 0 | | - | |

Gadwall



Figure 20. Occurrences of the Gadwall in IBBA blocks during 2005–2011.

American Wigeon



A female American Wigeon on water. Photo by Ryan Sanderson.

Table 17. Regional occurrence and abundance information for the American Wigeon.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 2 | | 0 | |
| Sum | 2 | | 0 | |
| Observed | 0 | | - | |

American Wigeon



Figure 21. Occurrences of the American Wigeon in IBBA blocks during 2005–2011.

American Black Duck



A pair of American Black Ducks on water. *Photo by Michael Topp.*

Table 18. Regional occurrence and abundance information for the American Black Duck.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|-----------|------------|----------|---------------------|-----------|--|--|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | |
| North | 127 | <1 | 3 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 3 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 2 | 4 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 1 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 2 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | <1 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 1 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|----|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 2 | 29 |
| Probable | 2 | 100 | 2 | 29 |
| Possible | 0 | 0 | 3 | 43 |
| Sum | 2 | | 7 | |
| Observed | 2 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 1 | |
| Probable | 0 | | 1 | |
| Possible | 0 | | 4 | |
| Sum | 0 | | 6 | |
| Observed | 0 | | - | |

American Black Duck



Figure 22. Occurrences of the American Black Duck in IBBA blocks during 2005–2011.

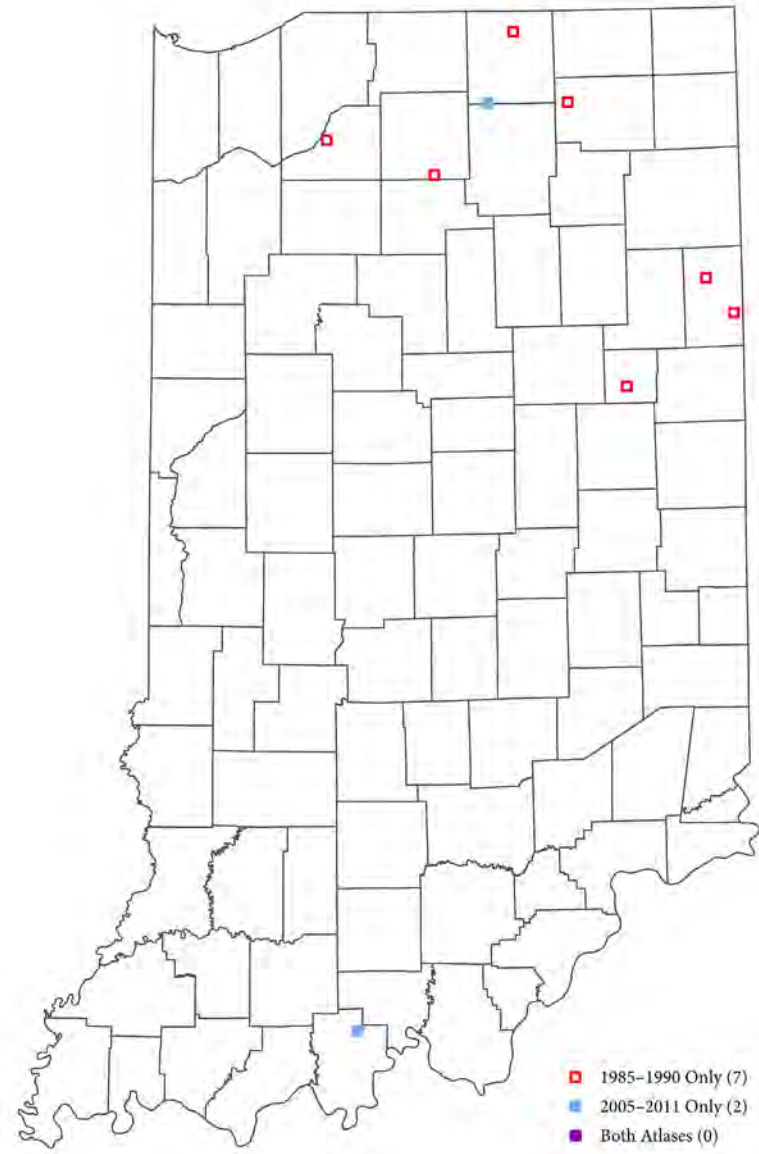
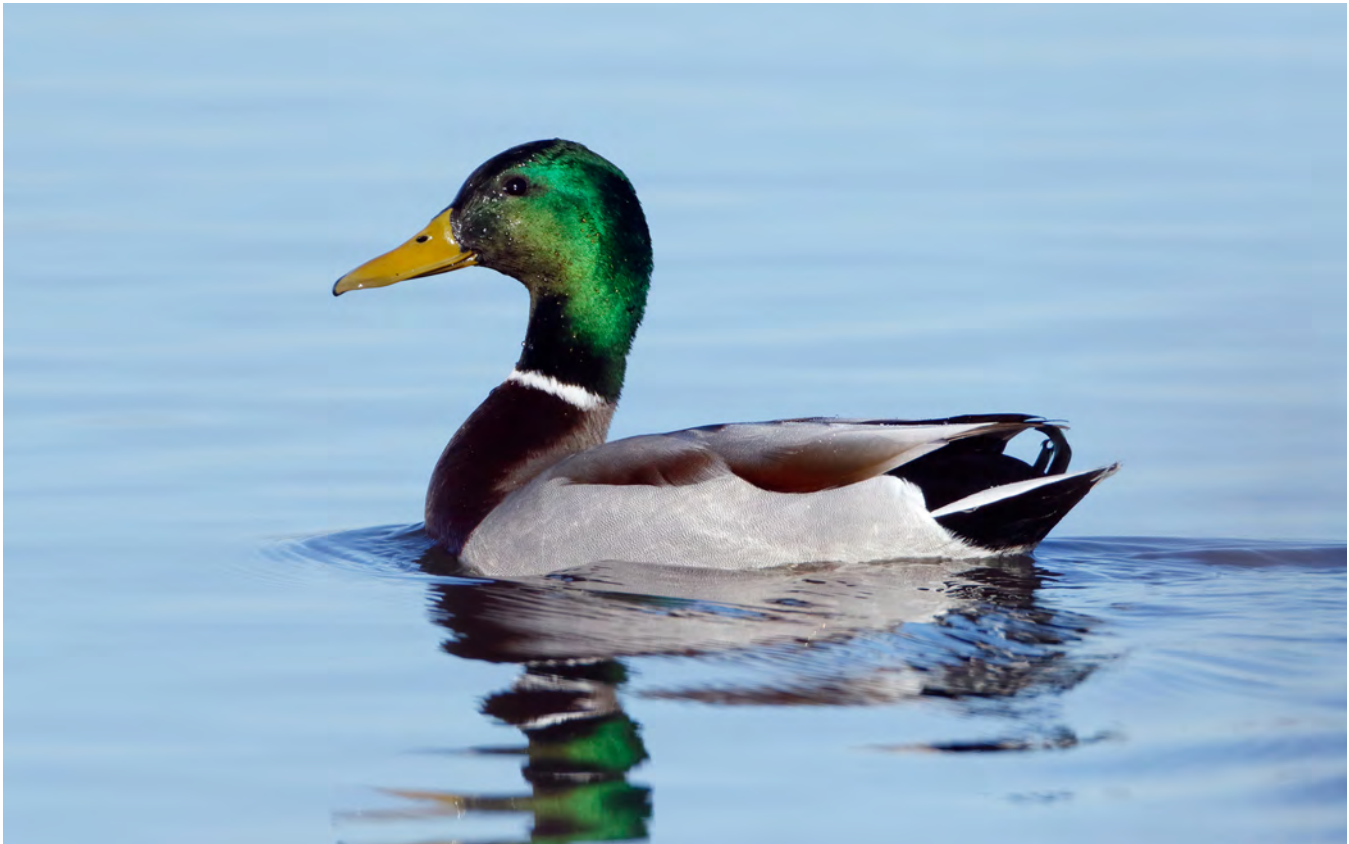


Figure 23. Occurrences of the American Black Duck in IBBA priority blocks during both atlas periods.

Mallard



A male Mallard on water. Photo by Michael Brown.

Table 19. Regional occurrence and abundance information for the Mallard.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 89 | 83 | 55 | 4.3 | 31 | 6.4 | | | | |
| Northwest | 73 | 85 | 85 | 34 | 3.1 | 19 | 4.1 | | | | |
| Northeast | 54 | 94 | 81 | 21 | 6.2 | 12 | 10.0 | | | | |
| Central | 273 | 71 | 62 | 110 | 2.3 | 102 | 1.4 | | | | |
| West-central | 114 | 59 | 47 | 56 | 2.4 | 38 | 1.2 | | | | |
| East-central | 159 | 81 | 72 | 54 | 2.2 | 64 | 1.4 | | | | |
| South | 246 | 51 | 46 | 97 | 0.7 | 88 | 0.5 | | | | |
| Southwest | 106 | 55 | 58 | 47 | 1.2 | 39 | 0.7 | | | | |
| South-central | 87 | 45 | 34 | 35 | 0.2 | 35 | 0.1 | | | | |
| Southeast | 53 | 55 | 40 | 15 | 0.3 | 14 | 0.6 | | | | |
| Statewide | 646 | 67 | 60 | 262 | 2.1 | 221 | 1.7 | | | | |

| | Breeding Bird Atlas | | Breeding Bird Atlas | |
|------------------------|---------------------|----|---------------------|----|
| | No. | % | No. | % |
| Priority Blocks | | | | |
| Confirmed | 218 | 50 | 174 | 45 |
| Probable | 141 | 32 | 132 | 34 |
| Possible | 75 | 17 | 80 | 21 |
| Sum | 434 | | 386 | |
| Observed | 13 | | - | |
| Other blocks | | | | |
| Confirmed | 31 | | 9 | |
| Probable | 7 | | 3 | |
| Possible | 10 | | 1 | |
| Sum | 48 | | 13 | |
| Observed | 3 | | - | |

Mallard

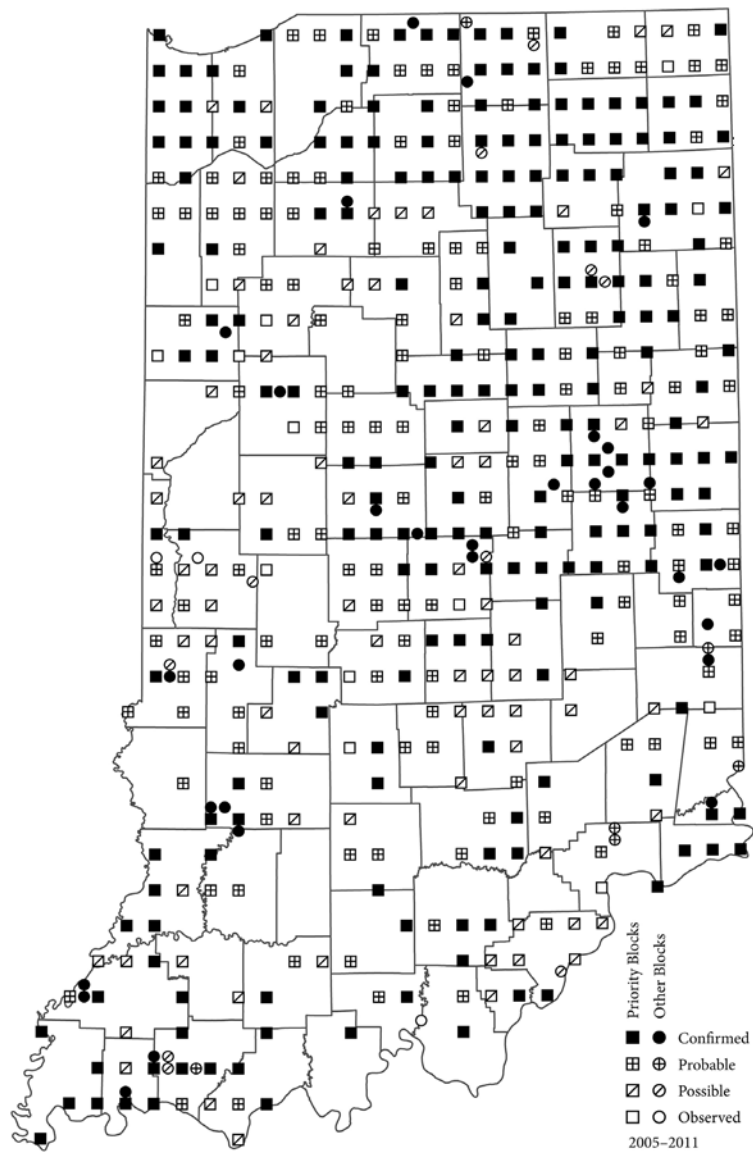


Figure 24. Occurrences of the Mallard in IBBA blocks during 2005–2011.

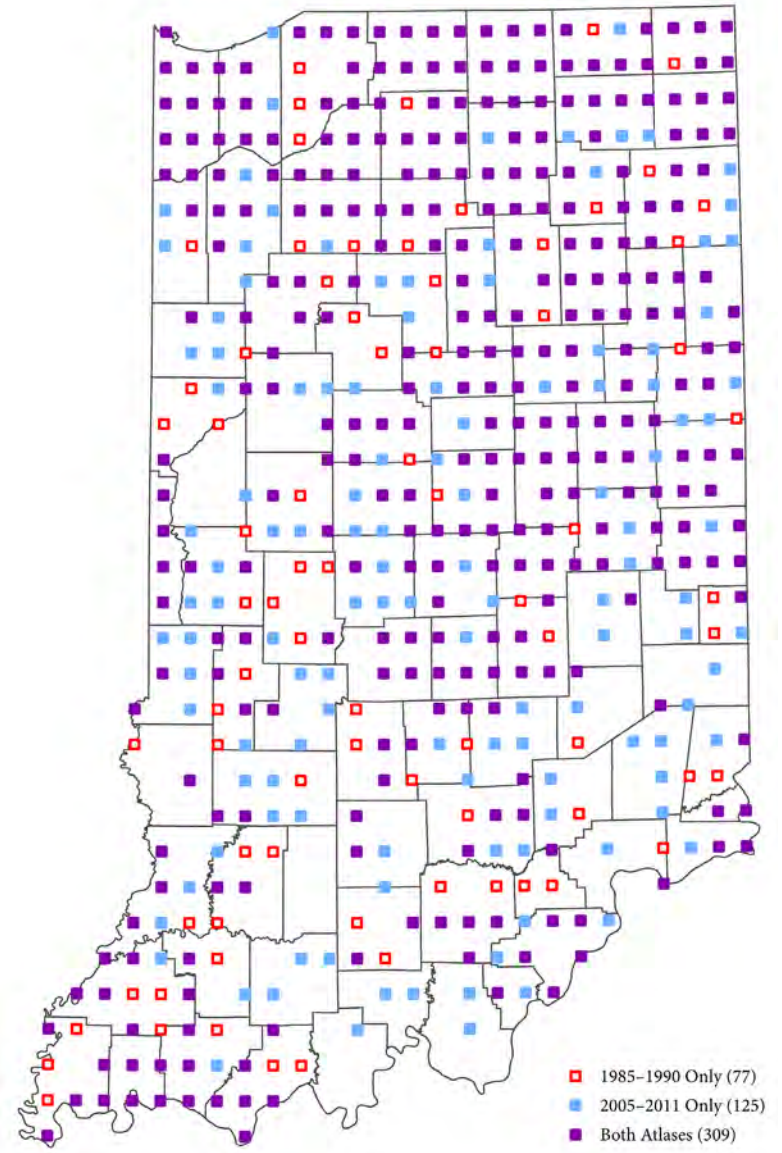


Figure 25. Occurrences of the Mallard in IBBA priority blocks during both atlas periods

Blue-winged Teal



A male Blue-winged Teal lifting off from water. *Photo by Michael Brown.*

Table 20. Regional occurrence and abundance information for the Blue-winged Teal.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 6 | 19 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 4 | 16 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 9 | 22 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 3 | 5 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 2 | 4 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 4 | 6 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 1 | 9 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | <1 | 13 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 1 | 7 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 2 | 4 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 3 | 9 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 1 | 5 | 22 | 37 |
| Probable | 8 | 42 | 20 | 34 |
| Possible | 10 | 53 | 17 | 29 |
| Sum | 19 | | 59 | |
| Observed | 1 | | - | |
| Other blocks | | | | |
| Confirmed | 9 | | 8 | |
| Probable | 3 | | 4 | |
| Possible | 4 | | 6 | |
| Sum | 16 | | 18 | |
| Observed | 1 | | - | |

Blue-winged Teal

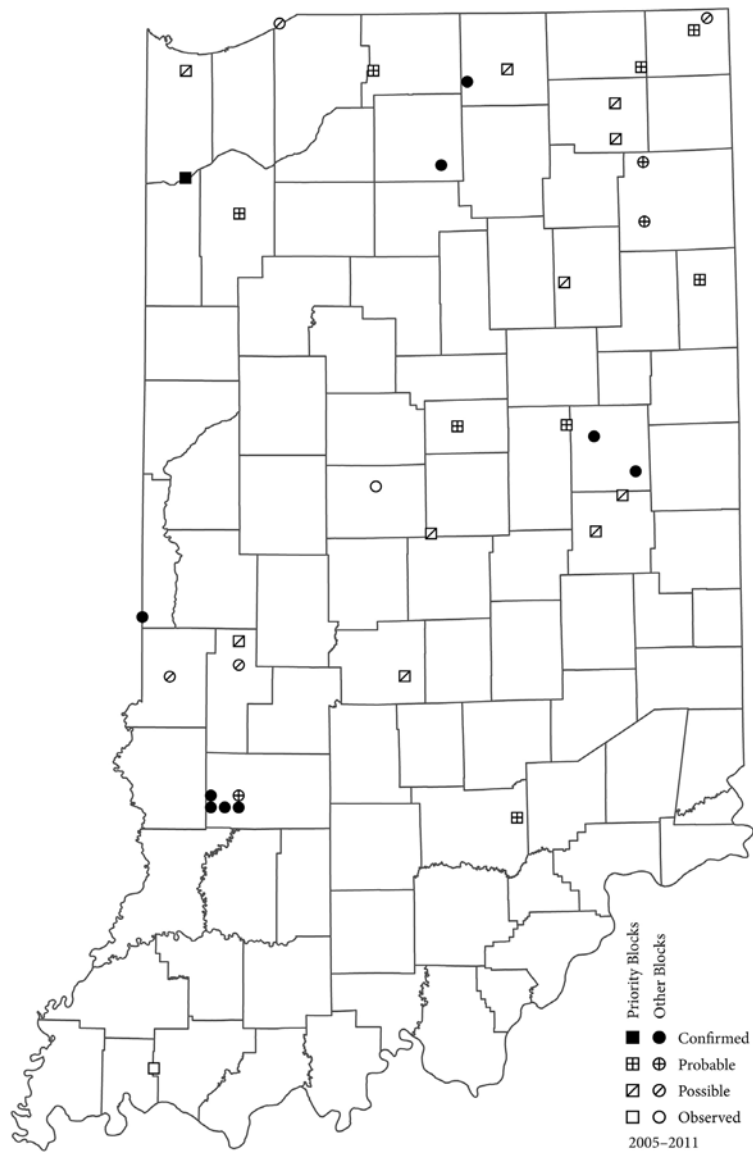


Figure 26. Occurrences of the Blue-winged Teal in IBBA blocks during 2005–2011.

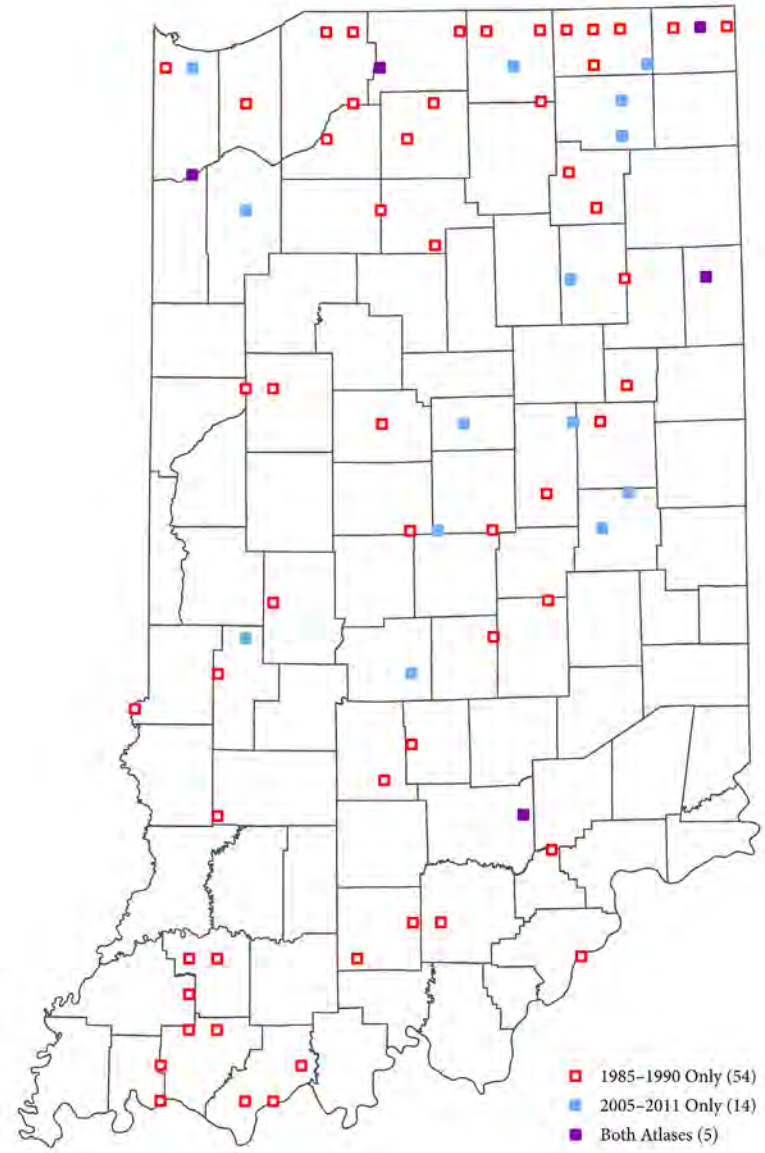


Figure 27. Occurrences of the Blue-winged Teal in IBBA priority blocks during both atlas periods.

Northern Shoveler



Two male Northern Shovelers in flight. *Photo by Marty Jones.*

Table 21. Regional occurrence and abundance information for the Northern Shoveler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|--------------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | <1 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | <1 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | <1 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | <1 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | <1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 1 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 1 | |
| Sum | 0 | | 2 | |
| Observed | 1 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 1 | |
| Probable | 3 | | 0 | |
| Possible | 2 | | 2 | |
| Sum | 5 | | 3 | |
| Observed | 0 | | - | |

Northern Shoveler



Figure 28. Occurrences of the Northern Shoveler in IBBA blocks during 2005–2011.

Northern Pintail



A male Northern Pintail on water. *Photo by Jeff Packer.*

Table 22. Regional occurrence and abundance information for the Northern Pintail.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 2 | | 0 | |
| Possible | 1 | | 0 | |
| Sum | 3 | | 0 | |
| Observed | 0 | | - | |

Northern Pintail



Figure 29. Occurrences of the Northern Pintail in IBBA blocks during 2005–2011.

Green-winged Teal



A breeding male Green-winged Teal on water. *Photo by Michael Brown.*

Table 23. Regional occurrence and abundance information for the Green-winged Teal.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 1 | |
| Probable | 2 | | 1 | |
| Possible | 4 | | 1 | |
| Sum | 6 | | 3 | |
| Observed | 0 | | - | |

Green-winged Teal



Figure 30. Occurrences of the Green-winged Teal in IBBA blocks during 2005–2011.

Redhead



A pair of Redheads on water with snow flurries falling around them. *Photo by Joe Bailey.*

Table 24. Regional occurrence and abundance information for the Redhead.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | | | - | |
| Other blocks | 0 | | | |
| Confirmed | 0 | | 1 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 2 | | 1 | |
| Observed | | | - | |

Redhead



Figure 31. Occurrences of the Redhead in IBBA blocks during 2005–2011.

Ring-necked Duck



A male Ring-necked Duck on water. *Photo by Ryan Sanderson.*

Table 25. Regional occurrence and abundance information for the Ring-necked Duck.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|--------------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 0 | <1 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 1 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | <1 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 2 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | <1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 1 | | 1 | |
| Sum | 1 | | 1 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 1 | | 0 | |
| Possible | 1 | | 0 | |
| Sum | 2 | | 0 | |
| Observed | 1 | | - | |

Ring-necked Duck



Figure 32. Occurrences of the Ring-necked Duck in IBBA blocks during 2005–2011.



Figure 33. Occurrences of the Ring-necked Duck in IBBA priority blocks during both atlas periods.

Lesser Scaup



A male Lesser Scaup on water. *Photo by Joe Bailey.*

Table 26. Regional occurrence and abundance information for the Lesser Scaup.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|--------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/survey | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 1 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 0 | | - | |

Lesser Scaup



Figure 34. Occurrences of the Lesser Scaup in IBBA blocks during 2005–2011.

Hooded Merganser



A male Hooded Merganser on water. *Photo by Michael Brown.*

Table 27. Regional occurrence and abundance information for the Hooded Merganser.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 12 | 2 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 11 | 4 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 13 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 4 | 1 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 2 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 5 | 2 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 7 | 1 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 12 | 2 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 1 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 4 | 2 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 6 | 1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|----------|----|
| Priority Blocks | | | | |
| Confirmed | 20 | 49 | 5 | 56 |
| Probable | 4 | 10 | 0 | 0 |
| Possible | 17 | 41 | 4 | 44 |
| Sum | 41 | | 9 | |
| Observed | 4 | | - | |
| Other blocks | | | | |
| Confirmed | 20 | | 1 | |
| Probable | 2 | | 2 | |
| Possible | 7 | | 6 | |
| Sum | 29 | | 9 | |
| Observed | 1 | | - | |

Hooded Merganser

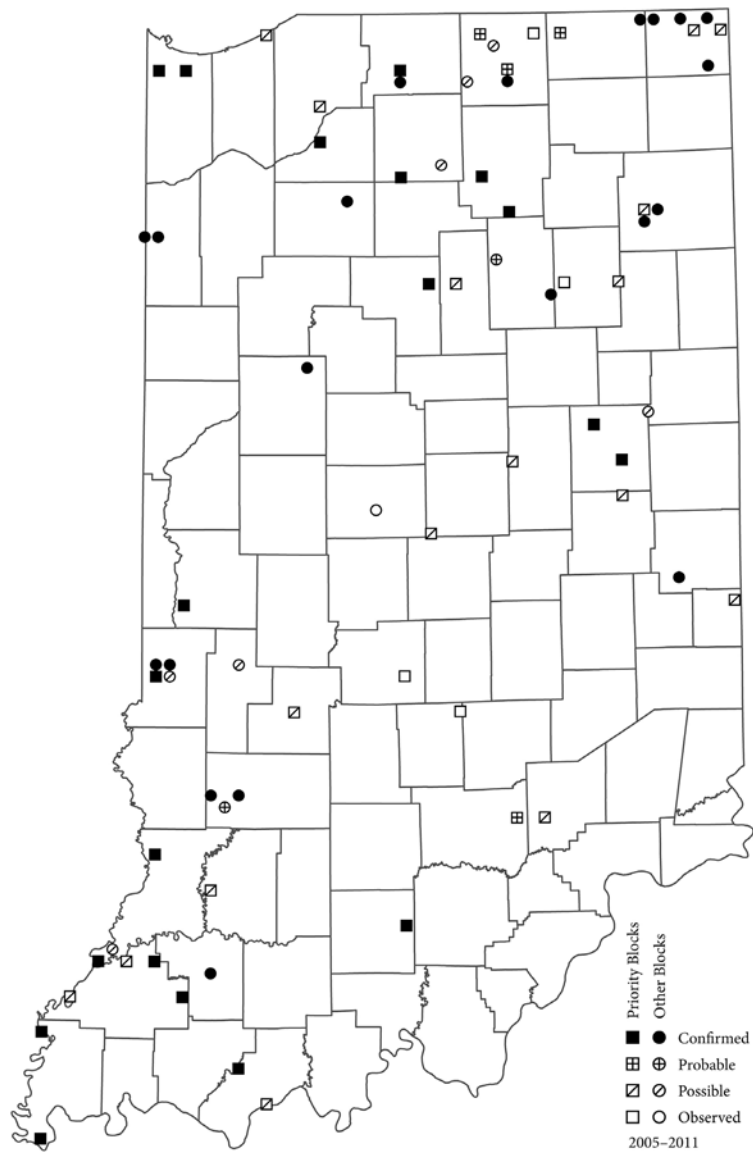


Figure 35. Occurrences of the Hooded Merganser in IBBA blocks during 2005-2011.

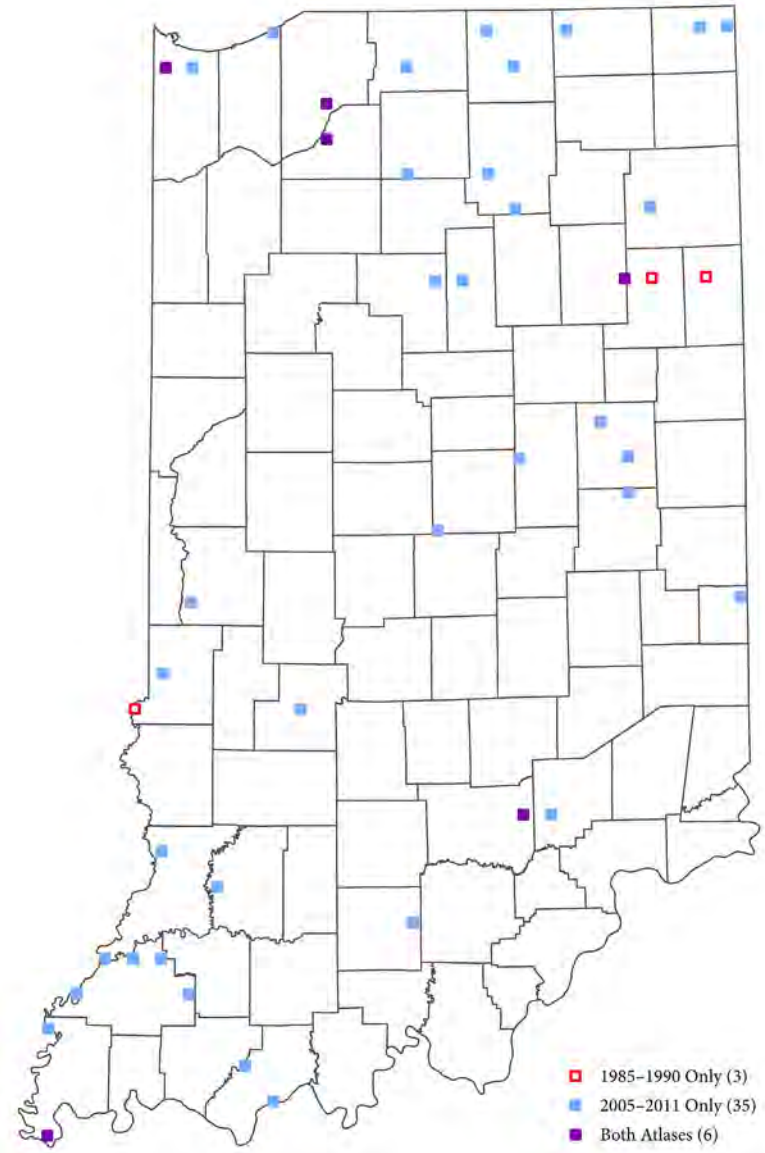
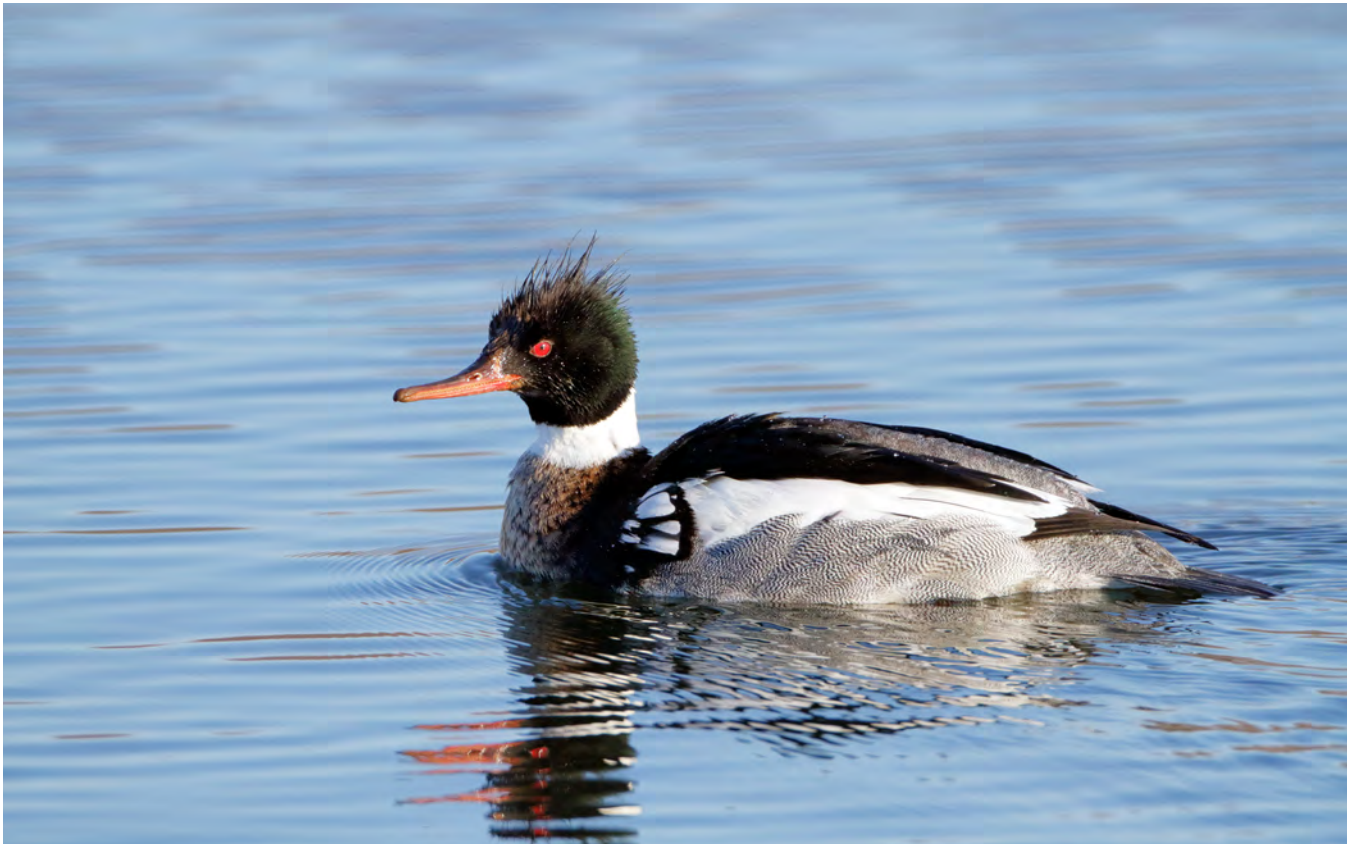


Figure 36. Occurrences of the Hooded Merganser in IBBA priority blocks during both atlas periods.

Red-breasted Merganser



A male Red-breasted Merganser on water. *Photo by Michael Brown.*

Table 28. Regional occurrence and abundance information for the Red-breasted Merganser.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 1 | |
| Probable | 0 | | 1 | |
| Possible | 1 | | 1 | |
| Sum | 1 | | 3 | |
| Observed | 0 | | - | |

Red-breasted Merganser



Figure 37. Occurrences of the Red-breasted Merganser in IBBA blocks during 2005–2011.

Ruddy Duck



A female/immature male Ruddy Duck on water. *Photo by Ryan Sanderson.*

Table 29. Regional occurrence and abundance information for the Ruddy Duck.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|-----------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0.02 | 31 | 0.0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0.00 | 19 | 0.0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0.05 | 12 | 0.0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0.00 | 102 | 0.0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0.00 | 38 | 0.0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0.00 | 64 | 0.0 | | | | |
| South | 246 | 0 | 0 | 97 | 0.00 | 88 | 0.0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0.00 | 39 | 0.0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | <0.01 | 221 | 0.0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 1 | | - | |
| Other blocks | | | | |
| Confirmed | 1 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 2 | | 2 | |
| Sum | 3 | | 2 | |
| Observed | 0 | | - | |

Ruddy Duck



Figure 38. Occurrences of the Ruddy Duck in IBBA blocks during 2005–2011.

Gallinaceous Birds (Galliformes)

Tables 30–33, Fig. 39–46

THESE NONMIGRATORY GAME birds in Indiana consist of three native species (Northern Bobwhite, Ruffed Grouse, Wild Turkey) and one introduced species, the Ring-necked Pheasant. Native Greater Prairie-Chicken has been extirpated since the 1960s and past efforts to establish exotic species, such as the Gray Partridge, have not been successful. Other exotics, most usually Chukar, are sometimes encountered as escapees from private hunting preserves.

Northern Bobwhite and Wild Turkey are the most common of these four species and have a statewide distribution, although occurrences and numbers are higher in southern Indiana. Ruffed Grouse are restricted to southern Indiana, while Ring-necked Pheasant is found in the northern half of the state. Preferred habitats differ among these species, with Wild Turkey and Ruffed Grouse associated primarily with forested areas and Northern Bobwhite and Ring-necked Pheasant considered grassland birds (Eaton 1992, Brennan 1999, Rusch *et al.* 2000, Giudice and Ratti 2001). However, Wild Turkey and Northern Bobwhite are edge species and do well where a mosaic of forests, grasslands, and crop fields occur. Ruffed Grouse have the most restrictive habitat needs using early successional woodland habitat, primarily recently timbered areas or abandoned fields. All four species nest on the ground and have large broods of precocial young. Gallinaceous birds feed primarily on the ground, although Ruffed Grouse seek out buds and small leaves of trees and shrubs. Although insects are important foods during the summer, the diets of these birds consist mostly of vegetation, including weed seeds, plant leaves, buds, flowers, hard mast, fruit, and waste grain.

Northern Bobwhites were found in significantly fewer blocks during the most recent atlas and BBS numbers are less than half of what was tallied 20 years earlier. Populations exhibited a statistically significant decline of 4% annually on BBS routes in Indiana for the 1985–2011 period. Although quail are more common in

the southern part of the state, their declines have been most pronounced there also. Advancing forest succession and changes in agricultural policies may be most responsible for these trends. Indiana atlas frequencies were much greater on the Indiana atlas compared to Ohio and especially Michigan, and declines between atlas periods were more substantial in those states.

Ring-necked Pheasants were found in the same number of atlas blocks during both periods, although some regional differences were noted. BBS results suggest a decline in pheasant numbers, however, and the trend for the 1985–2011 period was negative, but not statistically significant. Ring-necked Pheasants were reported more frequently on the Ohio and Michigan atlas projects with substantial declines shown between atlas periods for those states.

Ruffed Grouse showed one of the largest declines of any of Indiana's birds with the lack of forest disturbance blamed for the loss of early successional woodland habitat that this species requires. Relative occurrence of Ruffed Grouse was greater on the Michigan and Ohio atlases compared to Indiana. Frequencies declined substantially between atlas periods in Ohio, but only slightly in Michigan. Spruce Grouse and Sharp-tailed Grouse breed in small numbers in the Upper Peninsula of Michigan with little change in rates of occurrence noted between atlas periods.

Following a widespread restoration effort in the 1980s, Wild Turkeys have become a common bird in Indiana and have adapted to a variety of forested and open habitats. The number of blocks with Wild Turkeys tripled between atlas periods with IBBA and BBS data showing significant population increases in most regions of the state. Most frequently found in southern Indiana, numbers are least likely to be encountered in central areas of the state. Ohio and Michigan also exhibited large increases in occurrence on their second atlases, with records greatest in Ohio and least in Michigan, Indiana being intermediate in relative abundance.

Northern Bobwhite



A male Northern Bobwhite standing on the edge of a gravel road. *Photo by Shari McCollough.*

Table 30. Regional occurrence and abundance information for the Northern Bobwhite.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----------|------------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 51 | 54 | 55 | 6 | 31 | 9 | | | | | |
| Northwest | 73 | 52 | 62 | 34 | 7 | 19 | 11 | | | | | |
| Northeast | 54 | 50 | 43 | 21 | 3 | 12 | 7 | | | | | |
| Central | 273 | 64 | 72 | 110 | 6 | 102 | 11 | | | | | |
| West-central | 114 | 68 | 82 | 56 | 7 | 38 | 9 | | | | | |
| East-central | 159 | 62 | 65 | 54 | 5 | 64 | 12 | | | | | |
| South | 246 | 83 | 98 | 97 | 14 | 88 | 35 | | | | | |
| Southwest | 106 | 90 | 98 | 47 | 19 | 39 | 44 | | | | | |
| South-central | 87 | 76 | 100 | 35 | 10 | 35 | 27 | | | | | |
| Southeast | 53 | 81 | 96 | 15 | 8 | 14 | 29 | | | | | |
| Statewide | 646 | 69 | 78 | 262 | 9 | 221 | 20 | | | | | |
| | | | | | | | | Priority Blocks | | | | |
| | | | | | | | | Confirmed | 49 | 11 | 102 | 20 |
| | | | | | | | | Probable | 290 | 65 | 321 | 63 |
| | | | | | | | | Possible | 106 | 24 | 84 | 17 |
| | | | | | | | | Sum | 445 | | 507 | |
| | | | | | | | | Observed | 0 | | - | |
| | | | | | | | | Other blocks | | | | |
| | | | | | | | | Confirmed | 4 | | 3 | |
| | | | | | | | | Probable | 9 | | 8 | |
| | | | | | | | | Possible | 15 | | 3 | |
| | | | | | | | | Sum | 28 | | 14 | |
| | | | | | | | | Observed | 0 | | - | |

Northern Bobwhite

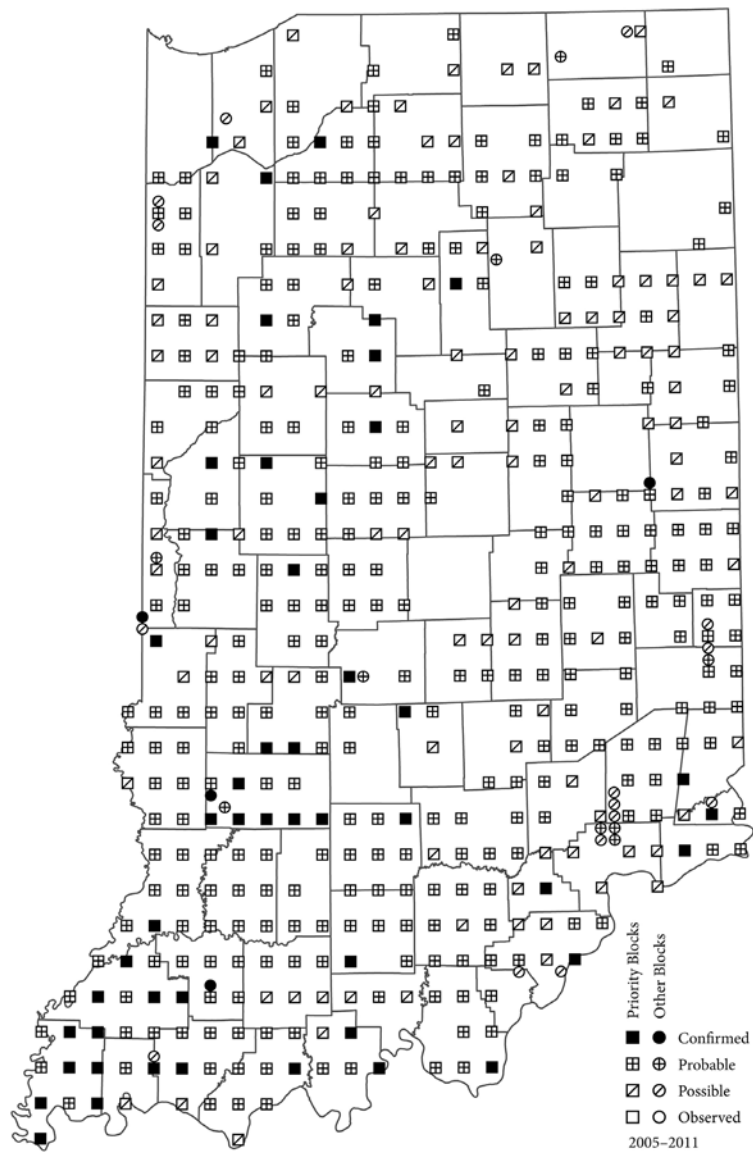


Figure 39. Occurrences of the Northern Bobwhite in IBBA blocks during 2005-2011.

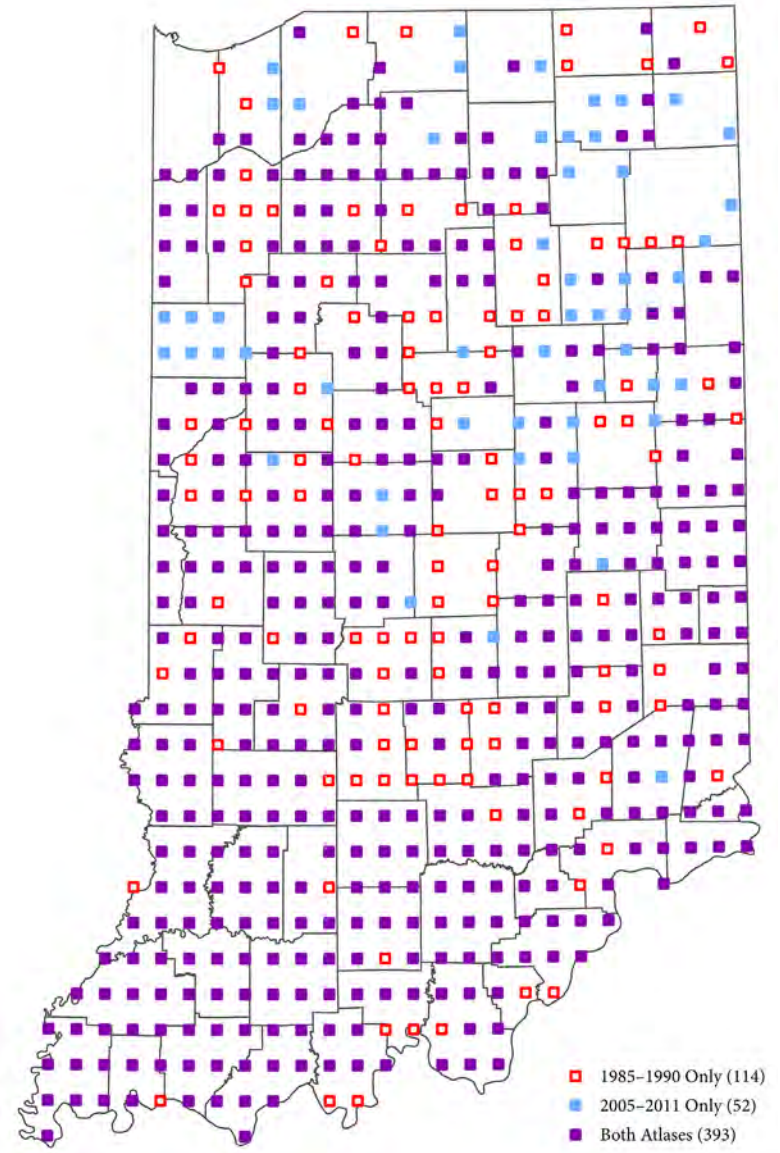


Figure 40. Occurrences of the Northern Bobwhite in IBBA priority blocks during both atlas periods.

Ring-necked Pheasant



A male Ring-necked Pheasant flapping his wings. *Photo by Michael Brown.*

Table 31. Regional occurrence and abundance information for the Ring-necked Pheasant.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 49 | 45 | 55 | 4.2 | 31 | 5.3 | | | | |
| Northwest | 73 | 44 | 47 | 34 | 4.5 | 19 | 5.6 | | | | |
| Northeast | 54 | 56 | 43 | 21 | 3.9 | 12 | 4.8 | | | | |
| Central | 273 | 15 | 16 | 110 | 4.4 | 102 | 7.0 | | | | |
| West-central | 114 | 25 | 37 | 56 | 8.6 | 38 | 18.7 | | | | |
| East-central | 159 | 8 | 2 | 54 | 0.1 | 64 | <0.1 | | | | |
| South | 246 | 0 | <1 | 97 | 0.0 | 88 | <0.1 | | | | |
| Southwest | 106 | 0 | <1 | 47 | 0.0 | 39 | <0.1 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0.0 | 35 | 0.0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.0 | 14 | <0.1 | | | | |
| Statewide | 646 | 16 | 16 | 262 | 2.7 | 221 | 4.0 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 15 | 15 | 16 | 16 |
| Probable | 41 | 40 | 48 | 47 |
| Possible | 47 | 46 | 39 | 38 |
| Sum | 103 | | 103 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 1 | | 1 | |
| Probable | 5 | | 2 | |
| Possible | 8 | | 1 | |
| Sum | 14 | | 4 | |
| Observed | 0 | | - | |

Ring-necked Pheasant

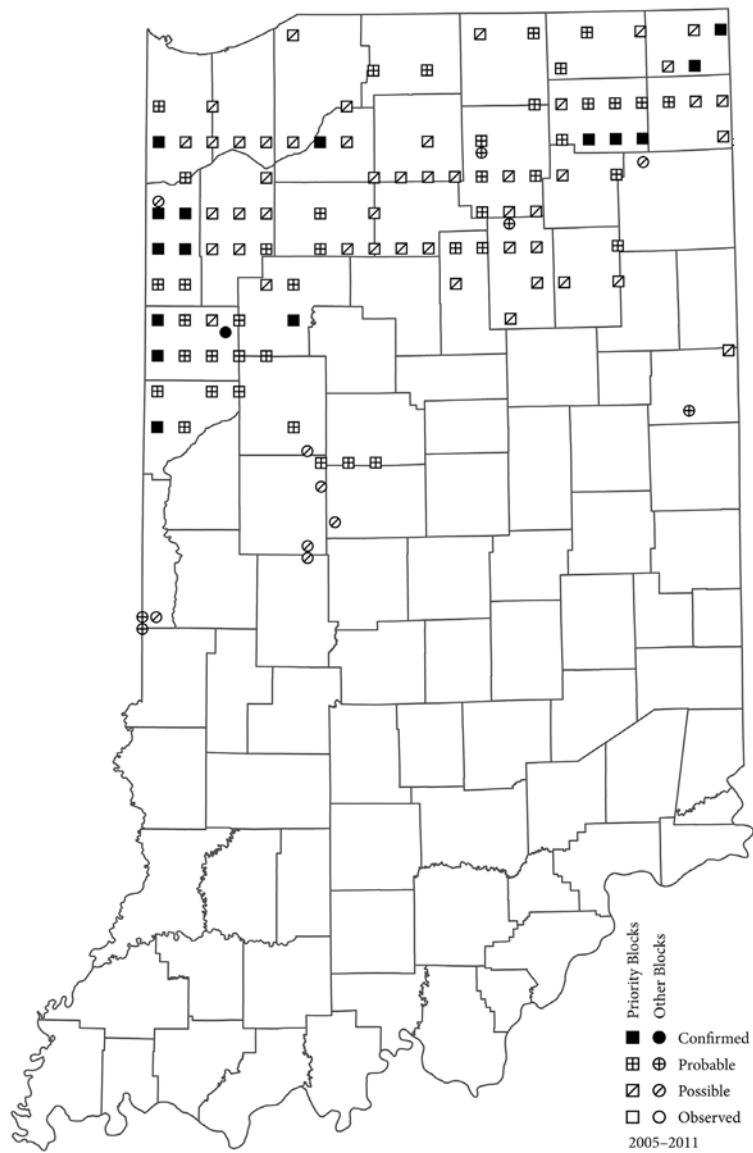


Figure 41. Occurrences of the Ring-necked Pheasant in IBBA blocks during 2005-2011.

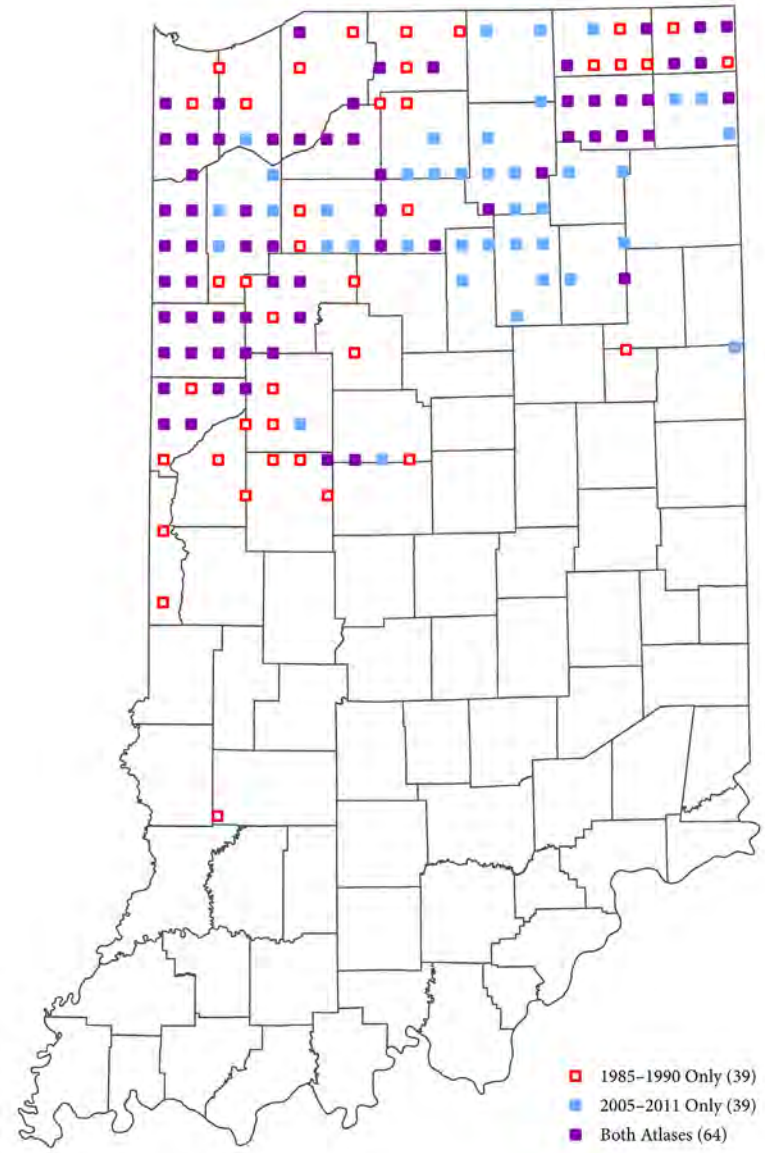


Figure 42. Occurrences of the Ring-necked Pheasant in IBBA priority blocks during both atlas periods.

Ruffed Grouse



Portrait of a Ruffed Grouse. *Photo by Ryan Sanderson.*

Table 32. Regional occurrence and abundance information for the Ruffed Grouse.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 0 | 3 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 4 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 2 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | <1 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | <1 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 3 | 24 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 12 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 7 | 45 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 2 | 11 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 1 | 10 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|-----|----|-----|----|
| Priority Blocks | | | | |
| Confirmed | 2 | 29 | 21 | 33 |
| Probable | 2 | 29 | 13 | 21 |
| Possible | 3 | 43 | 29 | 46 |
| Sum | 7 | | 63 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 2 | | 2 | |
| Probable | 8 | | 0 | |
| Possible | 4 | | 4 | |
| Sum | 14 | | 6 | |
| Observed | 0 | | - | |

Ruffed Grouse

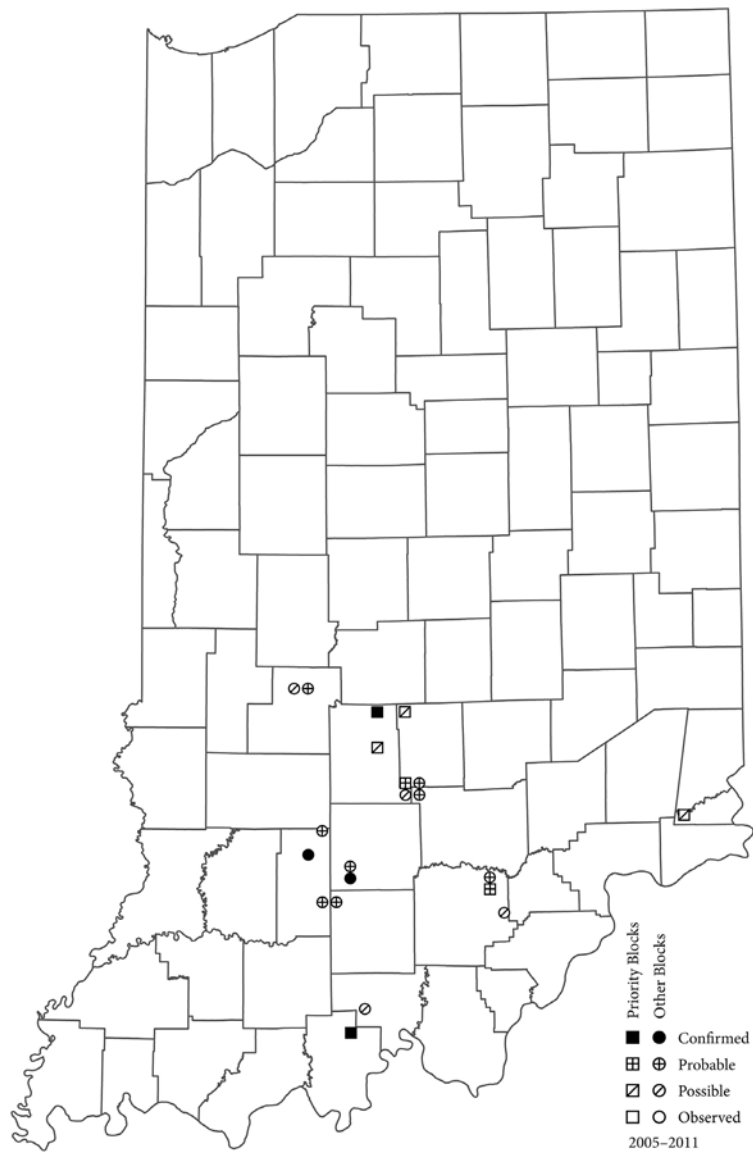


Figure 43. Occurrences of the Ruffed Grouse in IBBA blocks during 2005–2011.

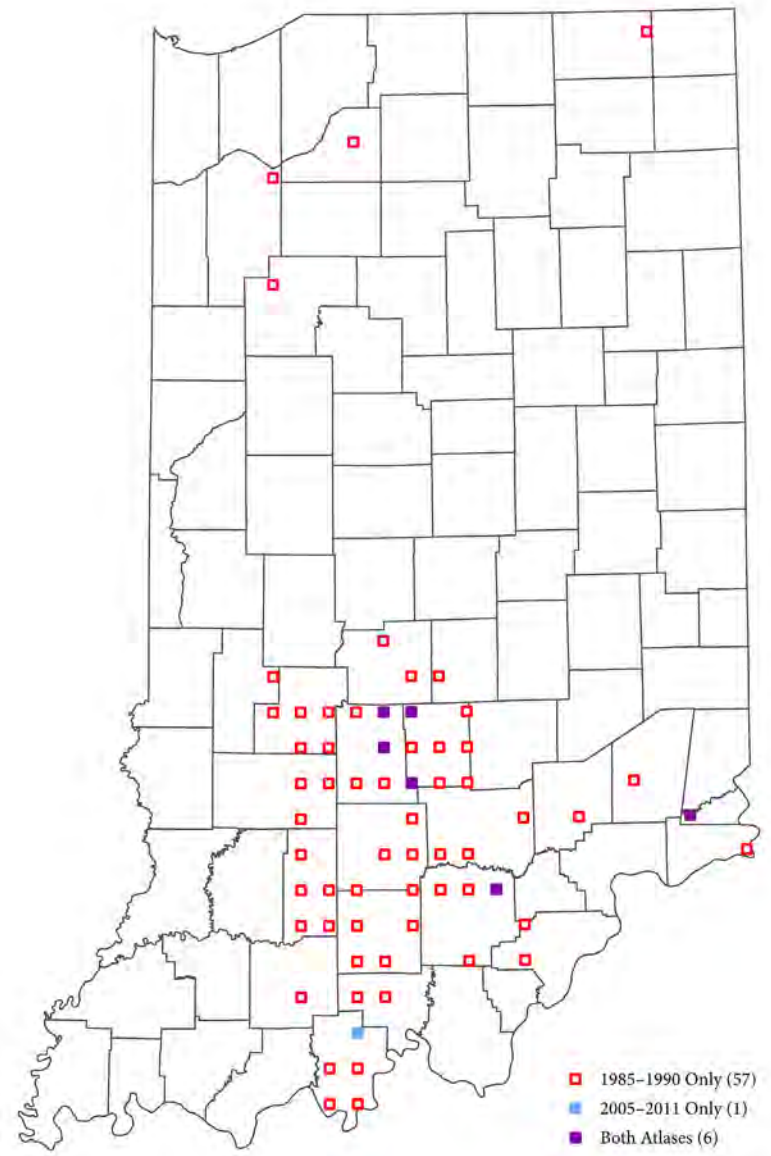


Figure 44. Occurrences of the Ruffed Grouse in IBBA priority blocks during both atlas periods.

Wild Turkey



Two displaying adult male Wild Turkeys in short grass. Their tail feathers are fanned out. *Photo by Stephen Bell.*

Table 33. Regional occurrence and abundance information for the Wild Turkey.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 50 | 8 | 55 | 1.02 | 31 | 0.00 | | | | |
| Northwest | 73 | 44 | 8 | 34 | 0.71 | 19 | 0.00 | | | | |
| Northeast | 54 | 57 | 7 | 21 | 1.52 | 12 | 0.00 | | | | |
| Central | 273 | 20 | 4 | 110 | 0.06 | 102 | 0.02 | | | | |
| West-central | 114 | 31 | 7 | 56 | 0.09 | 38 | 0.00 | | | | |
| East-central | 159 | 13 | 1 | 54 | 0.04 | 64 | 0.03 | | | | |
| South | 246 | 74 | 33 | 97 | 1.23 | 88 | 0.08 | | | | |
| Southwest | 106 | 71 | 12 | 47 | 0.85 | 39 | 0.05 | | | | |
| South-central | 87 | 79 | 55 | 35 | 1.97 | 35 | 0.03 | | | | |
| Southeast | 53 | 74 | 36 | 15 | 0.67 | 14 | 0.29 | | | | |
| Statewide | 646 | 47 | 15 | 262 | 0.69 | 221 | 0.04 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 113 | 38 | 52 | 52 |
| Probable | 84 | 28 | 23 | 23 |
| Possible | 104 | 35 | 25 | 25 |
| Sum | 301 | | 100 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 13 | | 80 | |
| Probable | 12 | | 13 | |
| Possible | 13 | | 35 | |
| Sum | 38 | | 128 | |
| Observed | 0 | | - | |

Wild Turkey

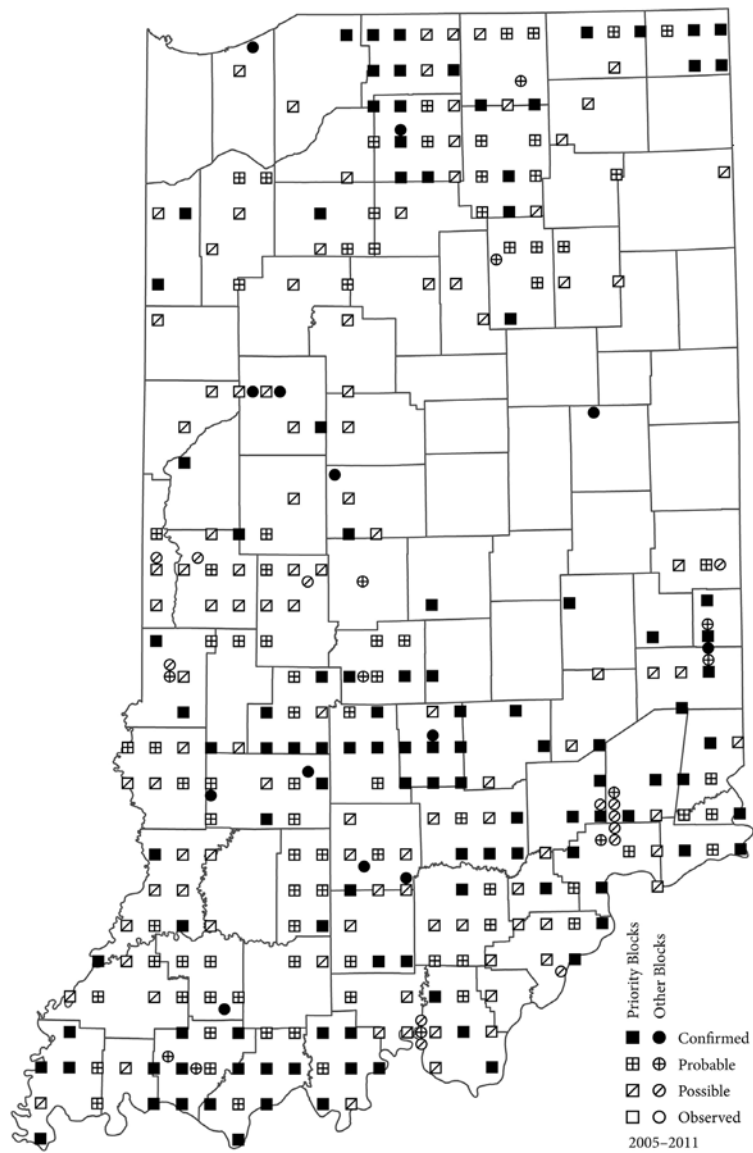


Figure 45. Occurrences of the Wild Turkey in IBBA blocks during 2005-2011.

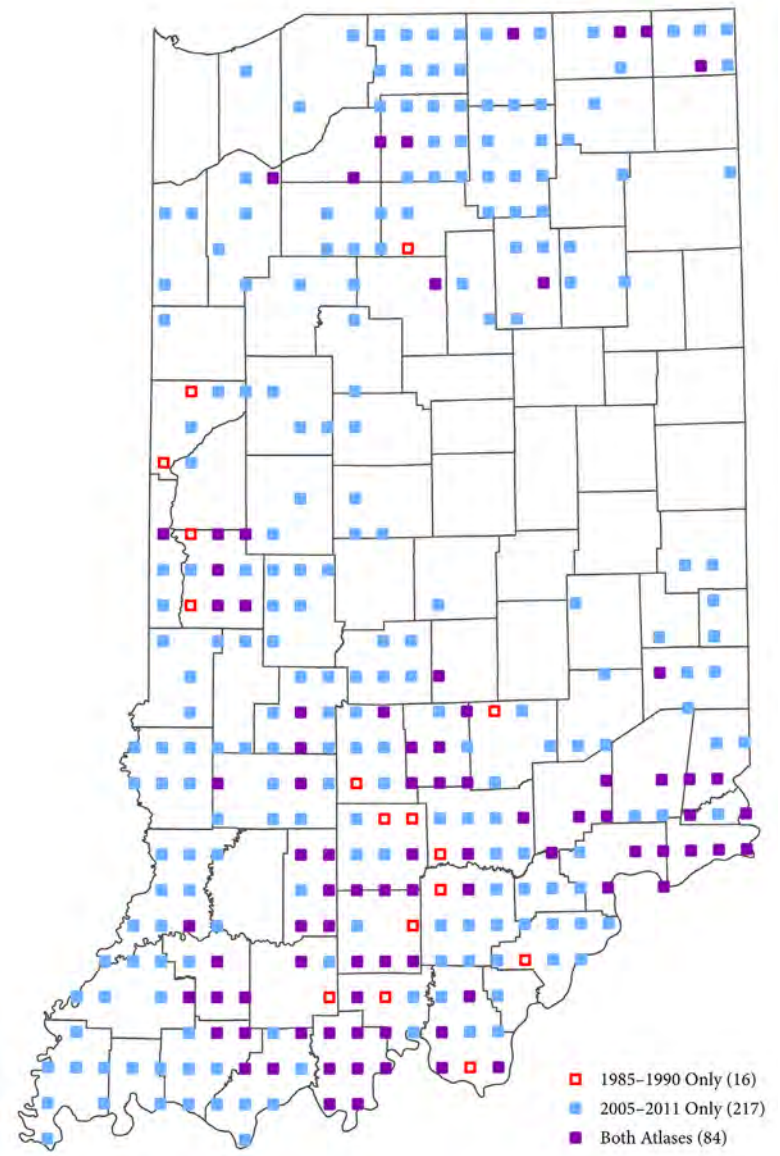


Figure 46. Occurrences of the Wild Turkey in IBBA priority blocks during both atlas periods.

Loons (Gaviiformes)

Table 34, Fig. 47

THE BREEDING RANGE of Common Loons includes the upper Great Lakes and northeastern United States north through much of Canada and Alaska. A few historical nesting records of Common Loons exist in extreme northern Indiana and small numbers regularly linger in the state during the summer. The only breeding records since 1900 include unsubstantiated reports from 1955 and 1998 (Bruner 2001). This species was not suspected of nesting during either atlas period. Only single records in the observed category were reported in single priority and non-priority blocks. Common Loons inhabit northern lakes and nest singly on islands

or shorelines where nests consist of mounds of aquatic vegetation (McIntyre and Barr 1997). As superb divers, Common Loons feed primarily on fish and aquatic invertebrates. They are most commonly encountered in Indiana during migration (Brock 2006) between northern breeding areas and wintering areas primarily along the Atlantic and Gulf coasts. Common Loons were not reported on the Ohio atlas, but do breed in the Upper Peninsula and Northern Lower Peninsula of Michigan with slightly greater frequencies reported during the second atlas.

Common Loon



A Common Loon in water. *Photo by Stephen Bell.*

Table 34. Regional occurrence and abundance information for the Common Loon.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 1 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 1 | | - | |

Common Loon



Figure 47. Occurrences of the Common Loon in IBBA blocks during 2005–2011.

Grebes (Podicipediformes)

Table 35, Fig. 48–49

OF THE FIVE grebes that occur in Indiana, the Pied-billed Grebe is the only species that nests. Associated with lakes, ponds, rivers, and marshes, they are found throughout the year in Indiana, but most frequently encountered during spring and fall migration (Muller and Storer 1999, Brock 2006). Breeding occurs in areas with emergent aquatic vegetation and nests are built on mounds of floating vegetation. Pied-billed Grebes dive after small fish and aquatic invertebrates.

On the atlas, Pied-billed Grebes occurred sporadically throughout the state. However, as with many other wetland birds, these grebes are most frequently encountered in northern Indiana, with few detected in central and southern blocks. Atlas records were more numerous in both northern regions compared to the 1985–1990 atlas. Although not a common species,

numbers seem to be stable or increasing. The slight increase on the 2005–2011 atlas was not statistically significant and the population trend on BBS routes in Indiana was negative but not statistically significant for the 1985–2011 period.

Pied-billed Grebes are migratory and are most numerous in Indiana during spring and fall periods, and can be frequently encountered on larger lakes and reservoirs with open water during the winter. Pied-billed Grebes also nest in Michigan and Ohio with frequencies slightly higher on the Michigan atlas and little change noted between periods. Red-necked Grebes were confirmed breeding in a single location on the 2002–2008 Michigan atlas with two confirmed records noted for the Eared Grebe during the same period. Neither was reported on the Ohio atlas.

Pied-billed Grebe



A breeding adult Pied-billed Grebe on water. *Photo by Shari McCollough.*

Table 35. Regional occurrence and abundance information for the Pied-billed Grebe.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|-----------------|-------------|-----------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 16 | 7 | 55 | 0.02 | 31 | 0.03 | | | | |
| Northwest | 73 | 16 | 11 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 15 | 2 | 21 | 0.05 | 12 | 0.08 | | | | |
| Central | 273 | 1 | 1 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | 2 | <1 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 1 | 2 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 1 | 3 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | 2 | 2 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 0 | 5 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 2 | 4 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 4 | 3 | 262 | <0.01 | 221 | <0.01 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 9 | 33 | 9 | 43 |
| Probable | 4 | 15 | 4 | 19 |
| Possible | 14 | 52 | 8 | 38 |
| Sum | 27 | | 21 | |
| Observed | 1 | | - | |
| Other blocks | | | | |
| Confirmed | 20 | | 7 | |
| Probable | 3 | | 4 | |
| Possible | 2 | | 2 | |
| Sum | 25 | | 13 | |
| Observed | 0 | | - | |

Pied-billed Grebe

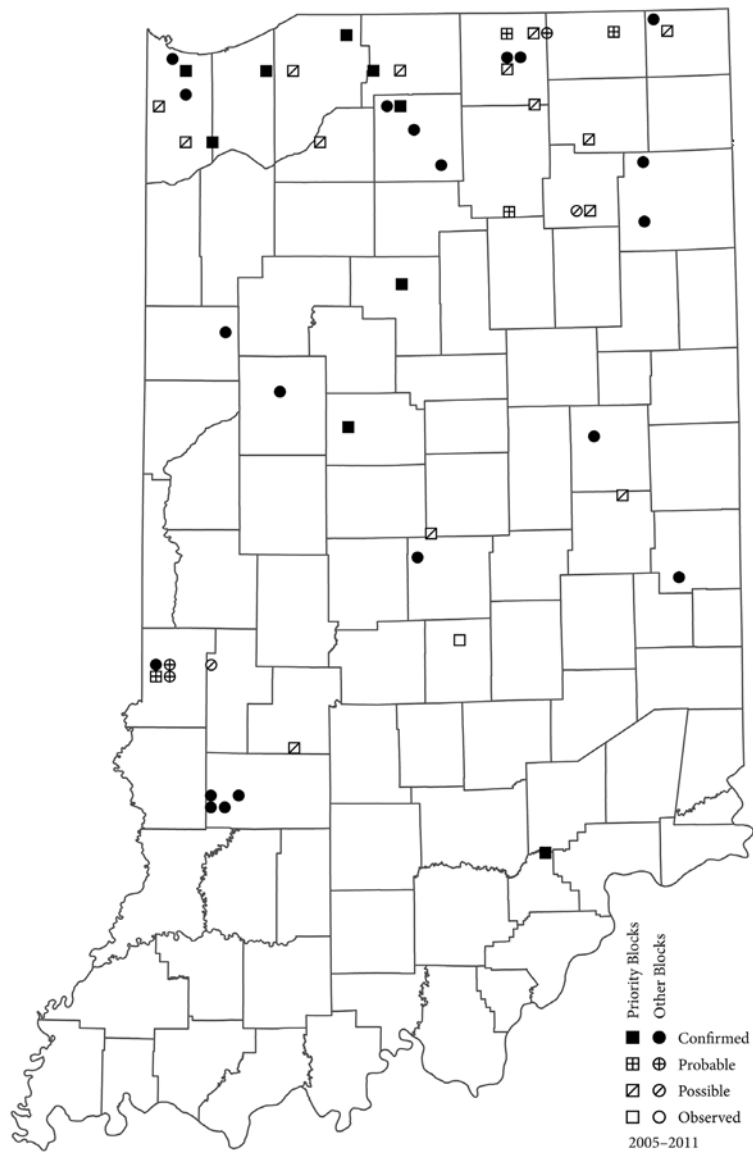


Figure 48. Occurrences of the Pied-billed Grebe in IBBA blocks during 2005–2011.

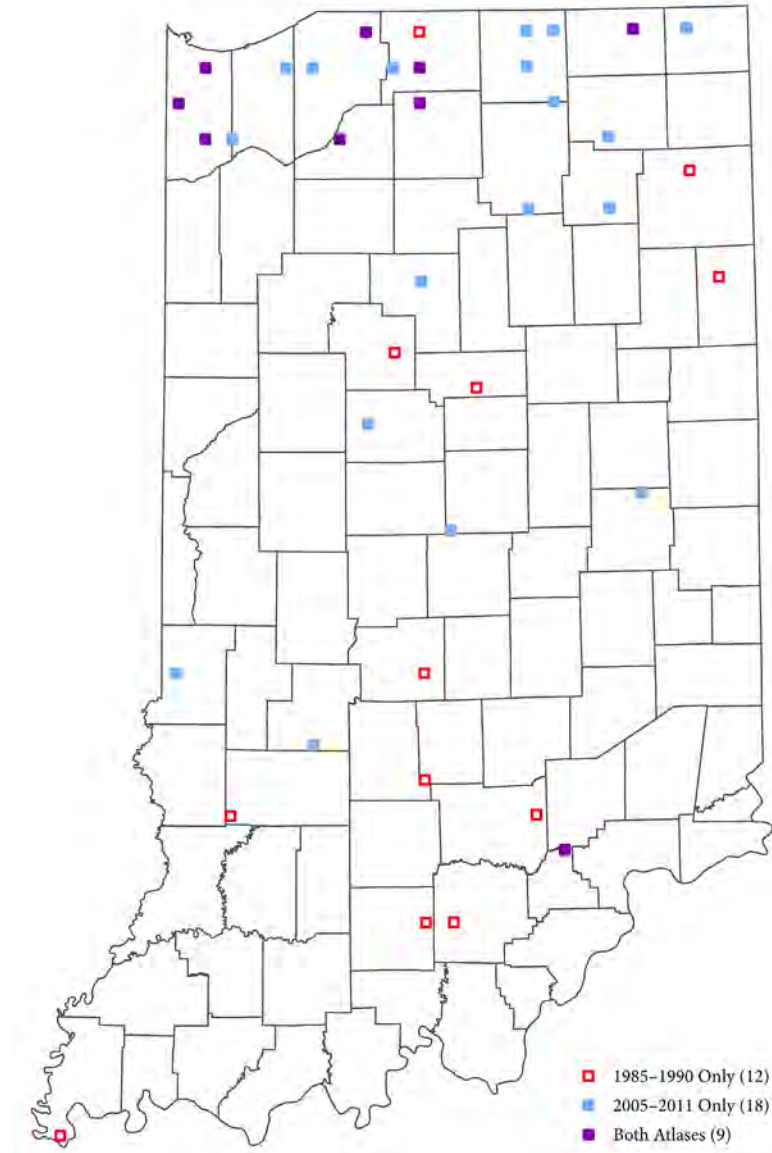


Figure 49. Occurrences of the Pied-billed Grebe in IBBA priority blocks during both atlas periods.

Cormorants (Suliformes)

Table 36, Fig. 50

DOUBLE-CRESTED CORMORANTS are associated with lakes and larger rivers, are colonial breeders, and build stick nests in trees or on the ground (Hatch and Weseloh 1999). The Double-crested Cormorant experienced a period of time in Indiana after 1953 when no nesting occurred. Although cormorants were observed during the 1985–1990 atlas, none were suspected of breeding. In 1999, a single nesting attempt was noted in Gibson County and beginning in 2004, a small colony was discovered at a steel mill along Lake Michigan in Lake County. This has now become the largest colony in Indiana with over 2,600 nests counted in 2012. Other much smaller nesting areas were reported during the atlas, but nesting appears to be sporadic. After recovering from the impacts of DDT and other pesticide use in the mid-1900s, this species is now considered a pest in many areas as it consumes sport fish in lakes and at fish hatcheries. In most areas, species other than sport fish predominate in the diet, including invasive species such as the round goby and gizzard shad. Double-crest-

ed Cormorants are efficient divers and actively pursue small fish to depths as great as 12 m. High concentrations of nesting birds may also impact nesting sites for herons and egrets by killing nesting trees and competing for available nest sites.

During the 2005–2011 atlas, nesting by Double-crested Cormorants was reported in two priority and five non-priority blocks, an increase from the earlier atlas, but not statistically significant. Blocks with cormorants were concentrated in extreme northwestern Indiana, but also occurred at Eagle Creek Reservoir in central Indiana as well as in southwestern Indiana at Goose Pond Fish and Wildlife Area and Gibson Lake.

Double-crested Cormorants are migratory and can be found throughout the state during the spring and fall. A few may linger during the winter in southern Indiana if open water is available. Nesting occurred during both the Michigan and Ohio atlas projects with increases noted between periods. Frequencies of occurrence were greater than those recorded in Indiana.

Double-crested Cormorant



A breeding adult Double-crested Cormorant perches on a branch of a pine tree. *Photo by Ryan Sanderson.*

Table 36. Regional occurrence and abundance information for the Double-crested Cormorant.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|-----------|------------|-----------|---------------------|-----------|--|--|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | | |
| North | 127 | 2 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 3 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 2 | 100 | 0 | |
| Probable | 0 | 0 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 2 | | 0 | |
| Observed | 16 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 5 | | 0 | |
| Observed | 10 | | - | |

Double-crested Cormorant

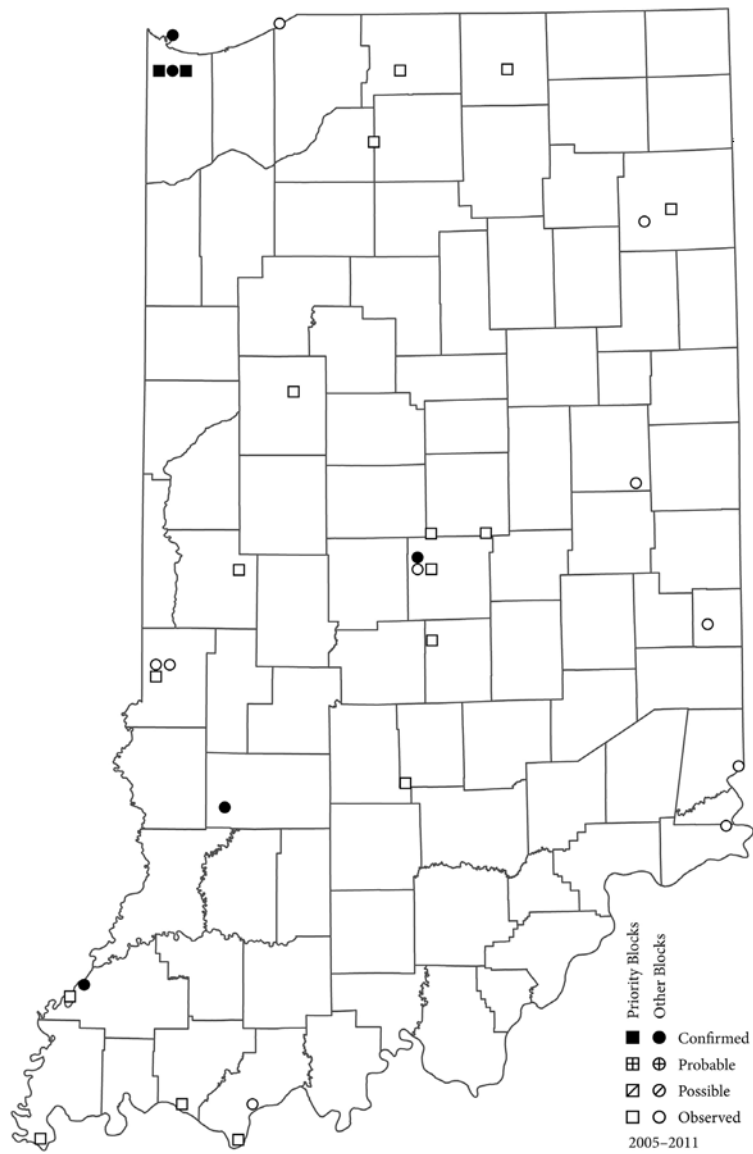


Figure 50. Occurrences of the Double-crested Cormorant in IBBA blocks during 2005–2011.

Bitterns, Herons, Egrets, and Pelicans (Pelecaniformes)

Tables 37–46, Fig. 51–65

REGULAR BREEDING OCCURS in Indiana by two species of bitterns and four species of herons and egrets. Only Great Blue Heron and Green Heron could be considered common nesters throughout the state. American Bittern and Least Bittern were not confirmed nesting during the current IBBA, but they almost certainly did due to the regularity of records in suitable habitat and reports of flighted young. Great Egret, Black-crowned Night-Heron, and Yellow-crowned Night-Heron nest regularly in a handful of sites in the state. Snowy Egret and Cattle Egret were confirmed nesting at one site during the current IBBA. The Little Blue Heron was a confirmed nester on the previous atlas, the only breeding record for Indiana. In 1996, a Tricolored Heron was observed carrying nesting materials to a mixed heron colony in Gibson County, the only suggestion of breeding in Indiana for this species.

This group of birds is associated with water and wetlands as they feed primarily on fish, frogs, salamanders, crayfish, and other aquatic invertebrates (Butler 1992, Gibbs *et al.* 1992a, Gibbs *et al.* 1992b, Davis 1993, Davis and Kushlan 1994, Telfair 1994, Rodgers and Smith 1995, Watts 1995, Parsons and Master 2000, McCrimmon *et al.* 2001). Cattle Egrets are more terrestrial and also feed in grasslands, pastures, and agricultural fields, often associated with livestock. The bitterns nest on small mounds of vegetation in denser areas of shallow marshes. The herons and egrets, with the exception of the more solitary Green Heron, are colonial nesters that build stick nests in trees and shrubs.

Although American White Pelican has never nested in Indiana, recent expansion in the Midwest from their western breeding range suggests that this species may one day breed in the state. Pelicans were not included on the Ohio atlas, but Michigan reported a single breeding colony on the second atlas with the first nesting record in 1999.

American Bittern and Least Bittern were both confirmed breeding in Michigan and Ohio during each of their atlas projects. Occurrences were infrequent but similar in all three states with American Bittern

in Michigan showing the greatest rates of occurrence. Both species showed little differences in occurrence between atlas periods, being slightly more common during the second Indiana atlas and less frequent in Michigan. In Ohio, American Bittern reports were slightly greater between periods, but Least Bittern had identical occurrence rates.

The Great Blue Heron is the most commonly encountered heron in Indiana. During both Indiana atlases, only observed and confirmed breeding evidence codes were accepted because this species travels long distances away from nesting colonies to forage. Both atlases benefited from Department of Natural Resource surveys that sent staff members and volunteers to previously known colonies maintained in a database. Atlas records and the BBS trend reflect an increase in numbers of the Great Blue Heron that was statistically significant. The Great Blue Heron was also the most frequently encountered heron on the Michigan and Ohio atlases. Rates of occurrence of confirmed records for the second atlas were similar in Indiana (8.0%) and Ohio (7.9%), but lower (2.2%) in Michigan. The number of confirmed records tripled in Indiana and nearly doubled in Ohio for the most recent atlas, while rates declined in Michigan.

Green Heron is a common nesting bird, but is much less noticeable than the Great Blue Heron due to its small size and more solitary nesting habits in dense, shrubby vegetation near water. Atlas occurrences were greatest in northeastern and southwestern Indiana. Atlas records and BBS numbers suggest a decline in Green Heron populations in most regions of the state. Frequency of occurrence on the atlas and the overall BBS trend were statistically significant for the 1985–2011 period in Indiana. Ohio and Michigan also exhibited substantial to moderate decreases in Green Heron occurrences between atlas periods. Green Heron frequencies were greatest in Ohio and lowest in Michigan, with Indiana rates intermediate.

Although not many breeding colonies of Great Egret are known in Indiana, this species sometimes

nests in small numbers with Great Blue Herons. The largest and most persistent colony consisted of over 100 nests along Lake Michigan and was associated with Black-crowned Night-Heron, Double-crested Cormorant, and Ring-billed Gull and Herring Gull. Great Egret was also a confirmed nester in small numbers in Michigan and Ohio during both atlases. The number of records increased between atlas periods.

Although Black-crowned Night-Heron nesting colonies were known historically in Indiana, there were no confirmed breeding records for the 1985–1990 atlas. Since 1993, they have nested annually in two blocks in Lake County with an additional nesting record during the current atlas period at Goose Pond Fish and Wildlife Area in Greene County. Although occurrences were uncommon, a statistically significant increase was indicated between atlas periods, but the BBS population trend showed a decline that was not significant. Black-crowned Night-Heron was a confirmed breeder during both atlas periods in Michigan and Ohio with rates similar to Indiana. Both states reported more records during their second atlas.

Yellow-crowned Night-Heron was infrequently reported as a confirmed breeder in Indiana, primarily in southern portions of the state. Rates of occurrence were greater than in Ohio, where it was confirmed as a nester during both atlas projects. Both states report-

ed somewhat fewer observations of this species during the second atlas. Although Yellow-crowned Night-Heron has nested sporadically in Michigan, there were no confirmed breeding records during either atlas project.

Snowy Egret, Little Blue Heron, and Cattle Egret are rare and sporadic breeders in the Upper Midwest with nesting usually restricted to one or two sites during atlas projects. The Snowy Egret was confirmed nesting on the current IBBA due to an observation of a pair courting and building a nest at the Goose Pond Fish and Wildlife Area during 2010. This species nested at single sites during both Ohio atlases. Little Blue Herons also nested at single sites during both atlas projects in Ohio and during the first Indiana atlas. Cattle Egrets nested at the Goose Pond area in Indiana during the 2005–2011 atlas, at one site during the first Michigan atlas, and at two locations during both Ohio atlases. Tri-colored Herons occur occasionally in all three states, but have never been confirmed nesting.

Most species in this group are encountered during the summer period. The Great Blue Heron, the only species to regularly winter, is found primarily in southern Indiana where open water is available. Many of the herons and egrets breed more regularly in the southern United States and exhibit post-breeding dispersal in late summer north of their nesting areas.

American Bittern



An American Bittern wades through a marsh. *Photo by Ryan Sanderson.*

Table 37. Regional occurrence and abundance information for the American Bittern.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|--------------|----------------------|--------------|-------------|-----------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 3 | 0 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 3 | 0 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 4 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 0 | 0 | 110 | 0.00 | 102 | 0.01 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0.00 | 64 | 0.02 | | | | |
| South | 246 | <1 | 2 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | <1 | 3 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 0 | 2 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | <1 | <1 | 262 | 0.00 | 221 | <0.01 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|----------|----|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 0 | 0 |
| Probable | 1 | 20 | 3 | 75 |
| Possible | 4 | 80 | 1 | 25 |
| Sum | 5 | | 4 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 6 | | 0 | |
| Possible | 5 | | 6 | |
| Sum | 11 | | 6 | |
| Observed | 0 | | - | |

American Bittern

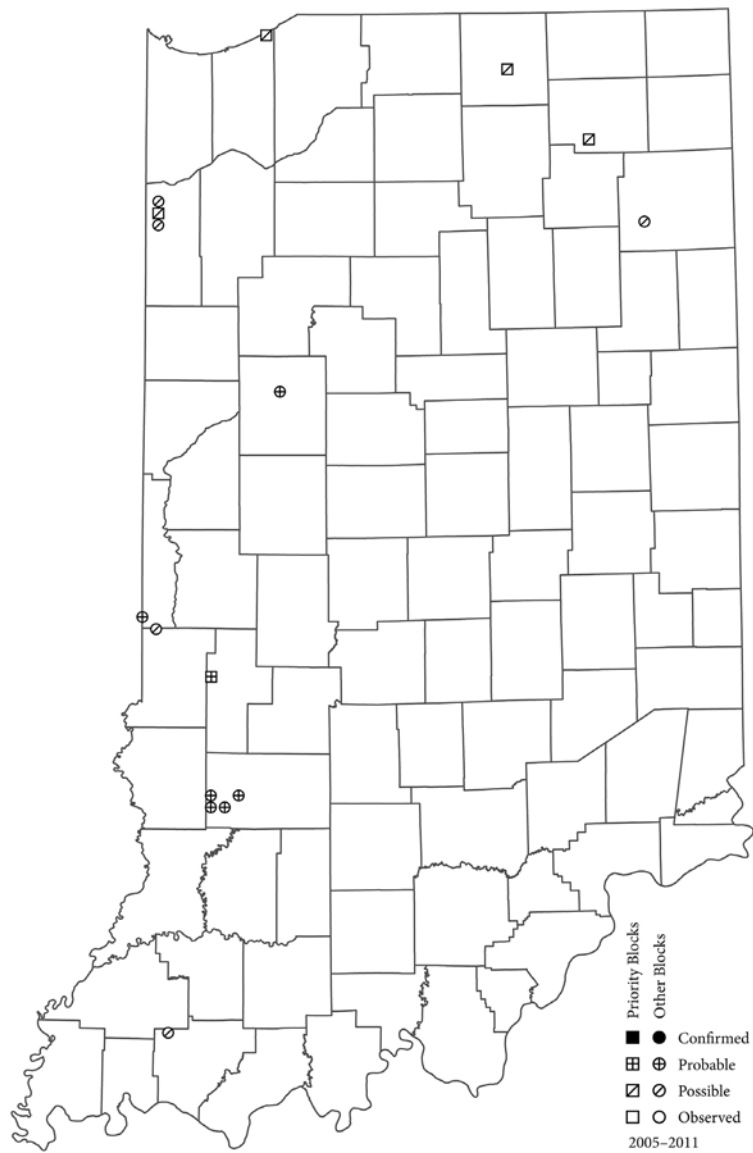


Figure 51. Occurrences of the American Bittern in IBBA blocks during 2005–2011.

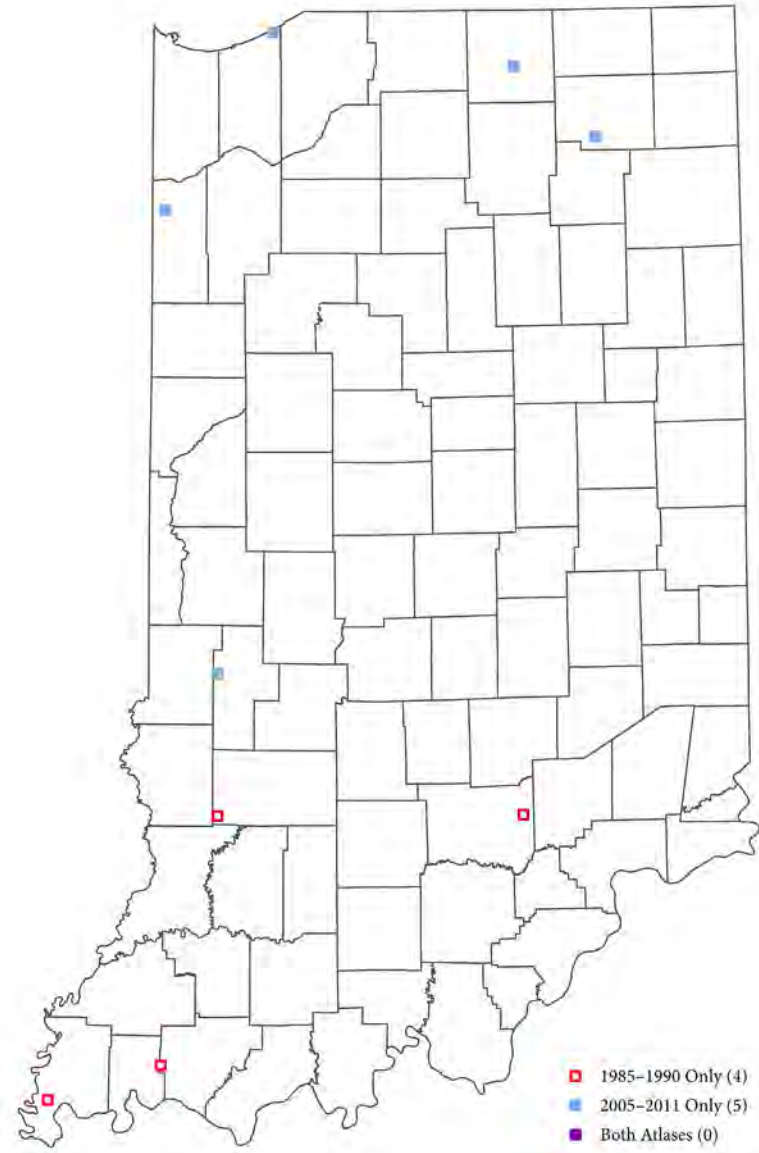


Figure 52. Occurrences of the American Bittern in IBBA priority blocks during both atlas periods.

Least Bittern



A male Least Bittern holds a small crayfish in its bill while grasping onto separate clumps of tall grasses with each foot.
Photo by Michael Brown.

Table 38. Regional occurrence and abundance information for the Least Bittern.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|--------------|----------------------|--------------|-------------|---------------|------------------------|-----------|-----------|-----------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 4 | <1 | 55 | 0 | 31 | 0 | Priority Blocks | | | | |
| Northwest | 73 | 4 | 0 | 34 | 0 | 19 | 0 | Confirmed | 0 | 0 | 3 | 50 |
| Northeast | 54 | 4 | 2 | 21 | 0 | 12 | 0 | Probable | 6 | 46 | 2 | 33 |
| Central | 273 | 1 | <1 | 110 | 0 | 102 | 0 | Possible | 7 | 54 | 1 | 17 |
| West-central | 114 | 2 | <1 | 56 | 0 | 38 | 0 | Sum | 13 | | 6 | |
| East-central | 159 | <1 | 0 | 54 | 0 | 64 | 0 | Observed | 0 | | - | |
| South | 246 | 2 | 2 | 97 | 0 | 88 | 0 | Other blocks | | | | |
| Southwest | 106 | 5 | 2 | 47 | 0 | 39 | 0 | Confirmed | 0 | | 4 | |
| South-central | 87 | 0 | 1 | 35 | 0 | 35 | 0 | Probable | 8 | | 5 | |
| Southeast | 53 | 0 | 2 | 15 | 0 | 14 | 0 | Possible | 7 | | 8 | |
| Statewide | 646 | 2 | <1 | 262 | 0 | 221 | 0 | Sum | 15 | | 17 | |
| | | | | | | | | Observed | 1 | | - | |

Least Bittern

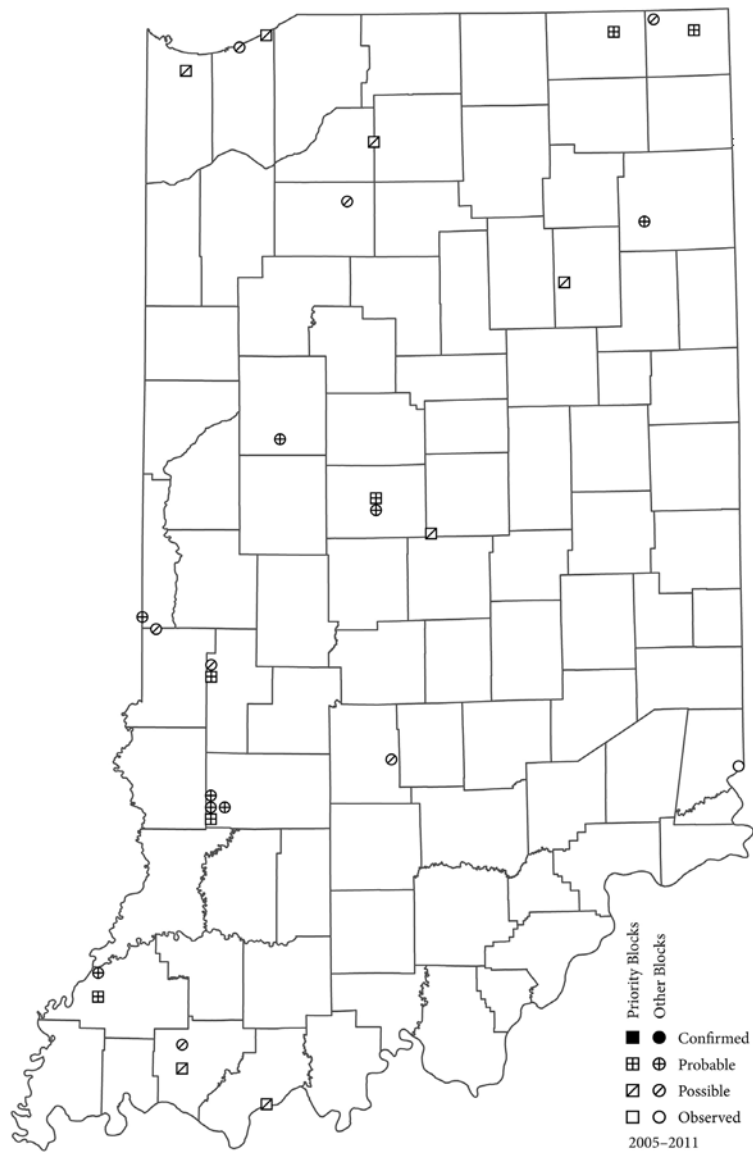


Figure 53. Occurrences of the Least Bittern in IBBA blocks during 2005–2011.

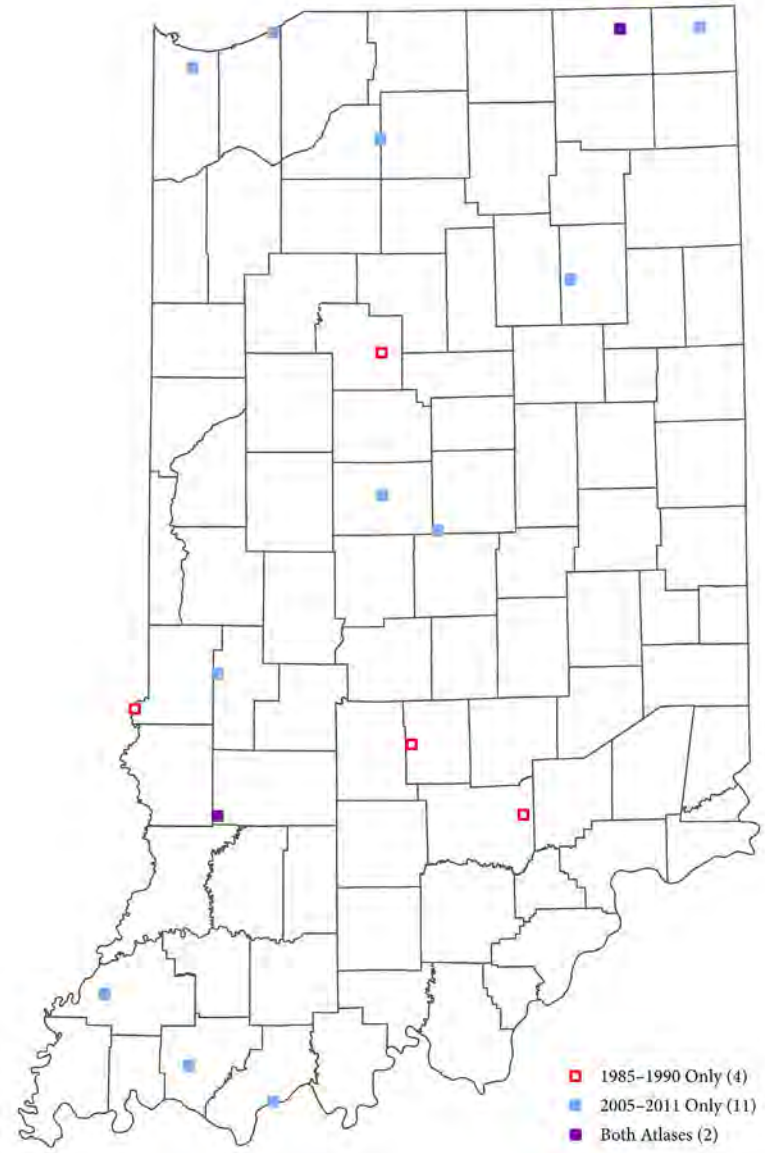


Figure 54. Occurrences of the Least Bittern in IBBA priority blocks during both atlas periods.

Great Blue Heron



A Great Blue Heron in flight over water. *Photo by Peter Finley.*

Table 39. Regional occurrence and abundance information for the Great Blue Heron.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 9 | 4 | 55 | 2.9 | 31 | 2.9 | | | | |
| Northwest | 73 | 8 | 4 | 34 | 2.1 | 19 | 2.6 | | | | |
| Northeast | 54 | 9 | 4 | 21 | 4.1 | 12 | 3.4 | | | | |
| Central | 273 | 8 | 3 | 110 | 1.9 | 102 | 1.0 | | | | |
| West-central | 114 | 8 | 3 | 56 | 1.9 | 38 | 0.9 | | | | |
| East-central | 159 | 9 | 3 | 54 | 1.9 | 64 | 1.0 | | | | |
| South | 246 | 7 | 2 | 97 | 1.7 | 88 | 0.3 | | | | |
| Southwest | 106 | 7 | 0 | 47 | 2.1 | 39 | 0.4 | | | | |
| South-central | 87 | 2 | 2 | 35 | 1.4 | 35 | 0.3 | | | | |
| Southeast | 53 | 17 | 4 | 15 | 1.1 | 14 | 0.4 | | | | |
| Statewide | 646 | 8 | 2 | 262 | 2.0 | 221 | 1.0 | | | | |

| | No. | % | No. | % |
|------------------------|------------|-----|-----------|-----|
| Priority Blocks | | | | |
| Confirmed | 52 | 100 | 16 | 100 |
| Probable | 0 | 0 | 0 | 0 |
| Possible | 0 | 0 | 0 | 0 |
| Sum | 52 | | 16 | |
| Observed | 464 | | - | |
| Other blocks | | | | |
| Confirmed | 159 | | 58 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 159 | | 58 | |
| Observed | 33 | | - | |

Great Blue Heron

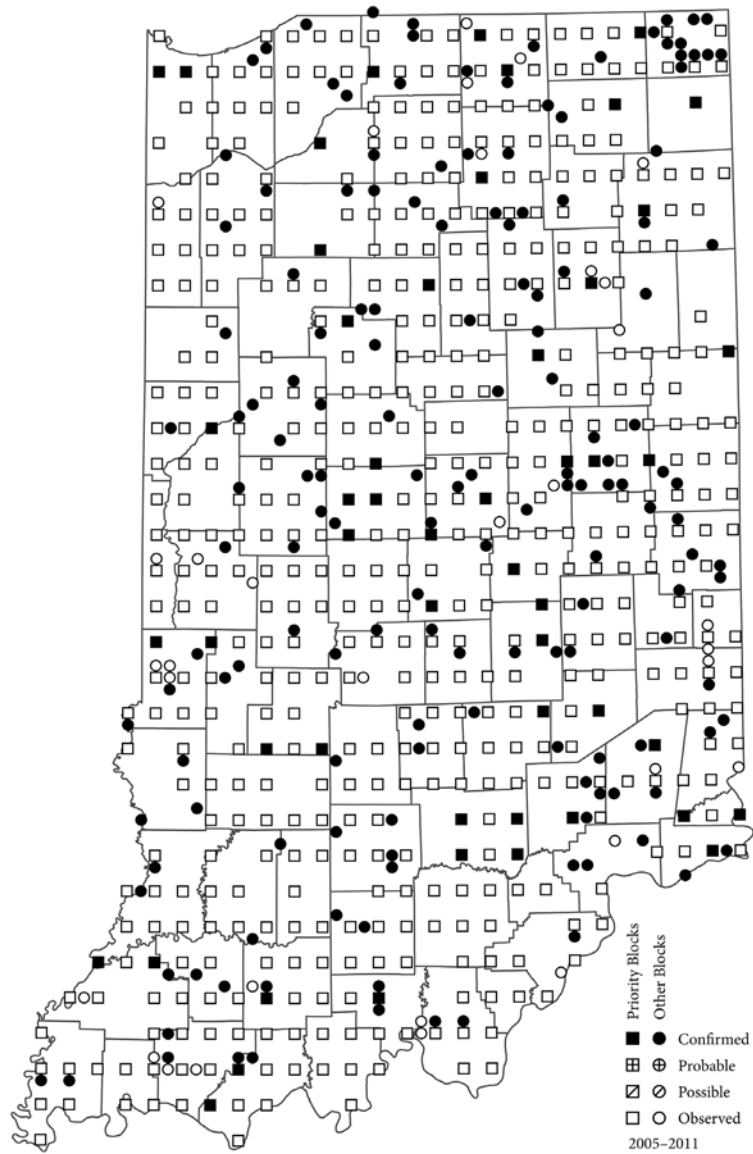


Figure 55. Occurrences of the Great Blue Heron in IBBA blocks during 2005–2011.

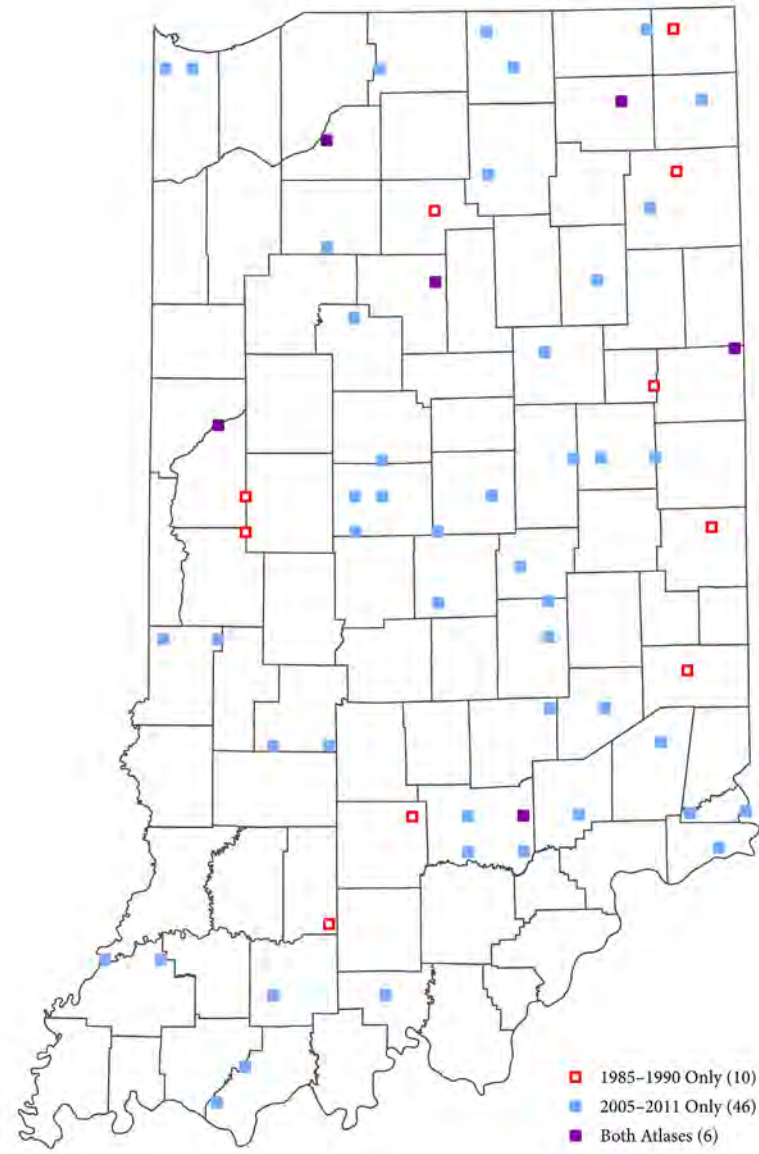


Figure 56. Occurrences of the Great Blue Heron in IBBA priority blocks during both atlas periods.

Great Egret



A Great Egret stands in water and tosses a freshly caught fish into the air. *Photo by Ryan Sanderson.*

Table 40. Regional occurrence and abundance information for the Great Egret.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|-----------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 2 | 0 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 3 | 0 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | <1 | 0 | 110 | <0.01 | 102 | 0.00 | | | | |
| West-central | 114 | <1 | 0 | 56 | 0.02 | 38 | 0.00 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 0 | 0 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | <1 | 0 | 262 | <0.01 | 221 | 0.00 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 3 | 100 | 0 | |
| Probable | 0 | 0 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 3 | | 0 | |
| Observed | 35 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 5 | | 0 | |
| Observed | 12 | | - | |

Great Egret

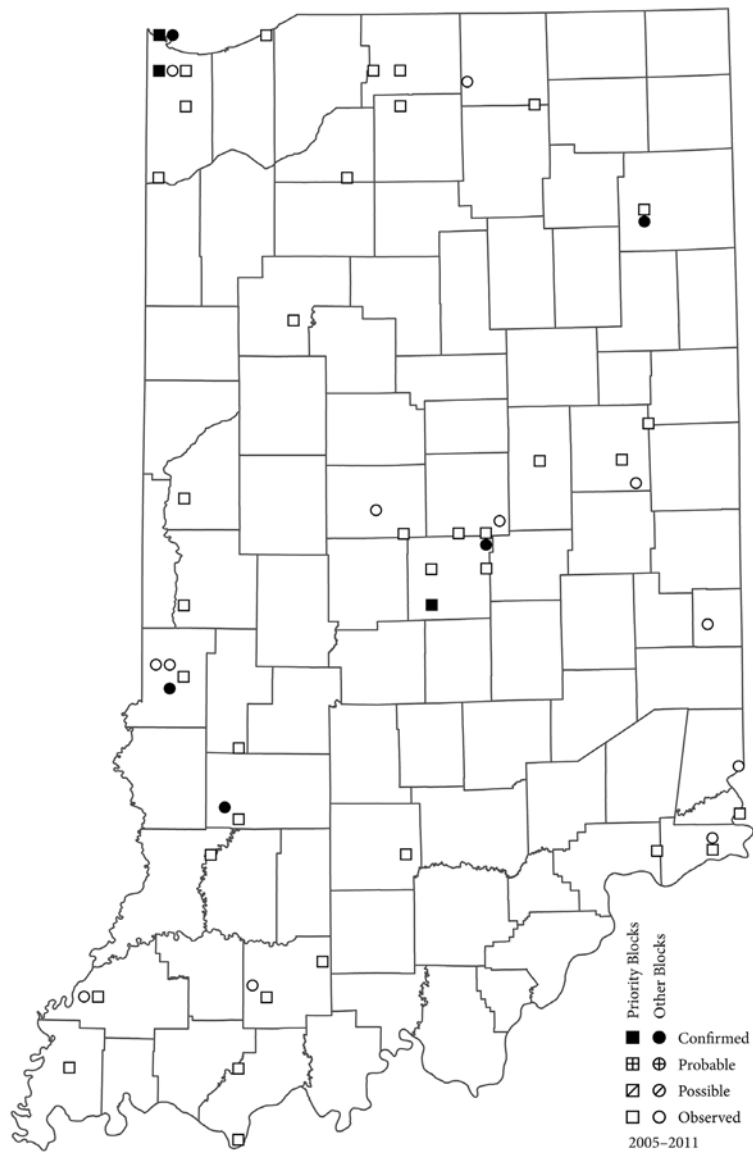


Figure 57. Occurrences of the Great Egret in IBBA blocks during 2005–2011.

Snowy Egret



A Snowy Egret lifting off from water. *Photo by Ryan Sanderson.*

Table 41. Regional occurrence and abundance information for the Snowy Egret.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 1 | | - | |
| Other blocks | | | | |
| Confirmed | 1 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 1 | | 0 | |
| Observed | 3 | | - | |

Snowy Egret



Figure 58. Occurrences of the Snowy Egret in IBBA blocks during 2005–2011.

Little Blue Heron



A juvenile Little Blue Heron stands on a fallen log in water. *Photo by Peter Finley.*

Table 42. Regional occurrence and abundance information for the Little Blue Heron.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 7 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 1 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 1 | |
| Observed | 2 | | - | |

Little Blue Heron



Figure 59. Occurrences of the Little Blue Heron in IBBA blocks during 2005–2011.

Cattle Egret



A Cattle Egret in flight approaches a second adult Cattle Egret in breeding plumage standing on a wooden post.
Photo by Stephen Bell.

Table 43. Regional occurrence and abundance information for the Cattle Egret.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 6 | | - | |
| Other blocks | | | | |
| Confirmed | 1 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 1 | | 0 | |
| Observed | 3 | | - | |

Cattle Egret

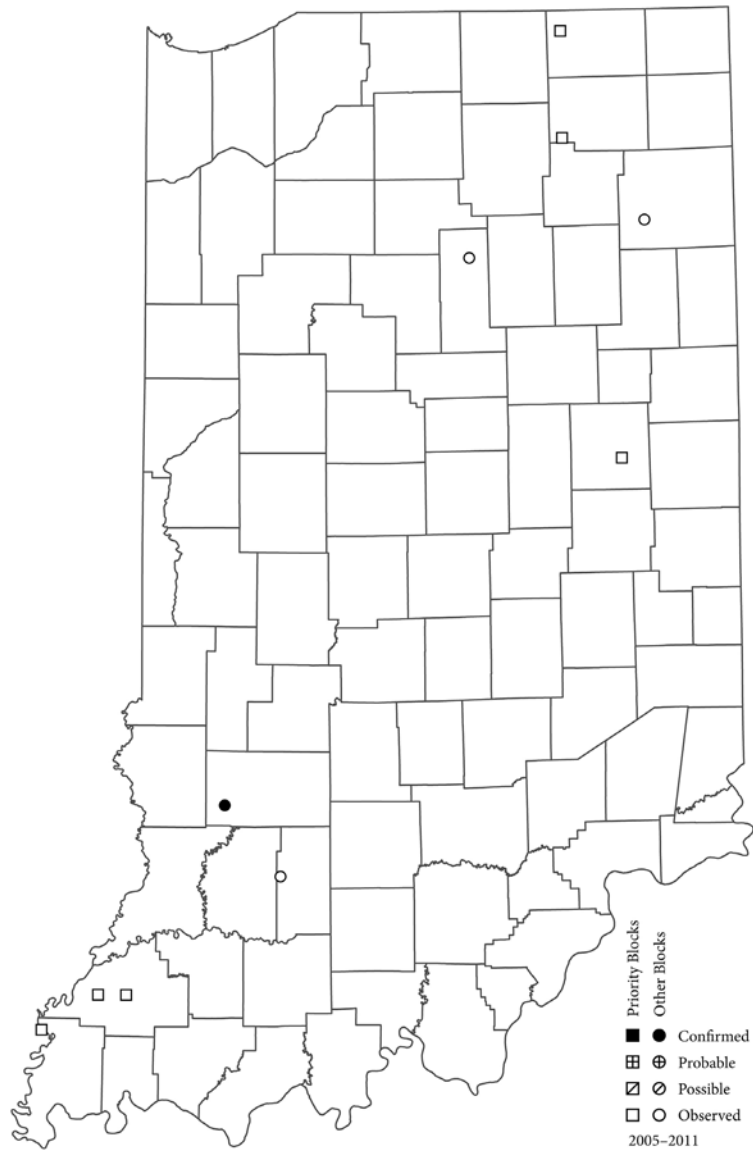


Figure 60. Occurrences of the Cattle Egret in IBBA blocks during 2005–2011.

Green Heron



A juvenile Green Heron is alert and hunched over while walking through water. *Photo by Ryan Sanderson.*

Table 44. Regional occurrence and abundance information for the Green Heron.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % | No. | % |
| North | 127 | 44 | 54 | 55 | 0.58 | 31 | 1.19 | | | | | | |
| Northwest | 73 | 32 | 51 | 34 | 0.35 | 19 | 1.00 | | | | | | |
| Northeast | 54 | 61 | 57 | 21 | 0.95 | 12 | 1.50 | | | | | | |
| Central | 273 | 24 | 37 | 110 | 0.25 | 102 | 0.26 | | | | | | |
| West-central | 114 | 25 | 39 | 56 | 0.36 | 38 | 0.53 | | | | | | |
| East-central | 159 | 23 | 35 | 54 | 0.13 | 64 | 0.09 | | | | | | |
| South | 246 | 46 | 65 | 97 | 0.66 | 88 | 0.78 | | | | | | |
| Southwest | 106 | 54 | 73 | 47 | 0.81 | 39 | 0.77 | | | | | | |
| South-central | 87 | 40 | 70 | 35 | 0.54 | 35 | 0.86 | | | | | | |
| Southeast | 53 | 40 | 42 | 15 | 0.47 | 14 | 0.64 | | | | | | |
| Statewide | 646 | 36 | 51 | 262 | 0.47 | 221 | 0.60 | | | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 19 | 8 | 22 | 7 |
| Probable | 94 | 40 | 117 | 36 |
| Possible | 122 | 52 | 189 | 58 |
| Sum | 235 | | 328 | |
| Observed | 20 | | - | |
| Other blocks | | | | |
| Confirmed | 12 | | 3 | |
| Probable | 8 | | 3 | |
| Possible | 11 | | 10 | |
| Sum | 31 | | 16 | |
| Observed | 0 | | - | |

Green Heron

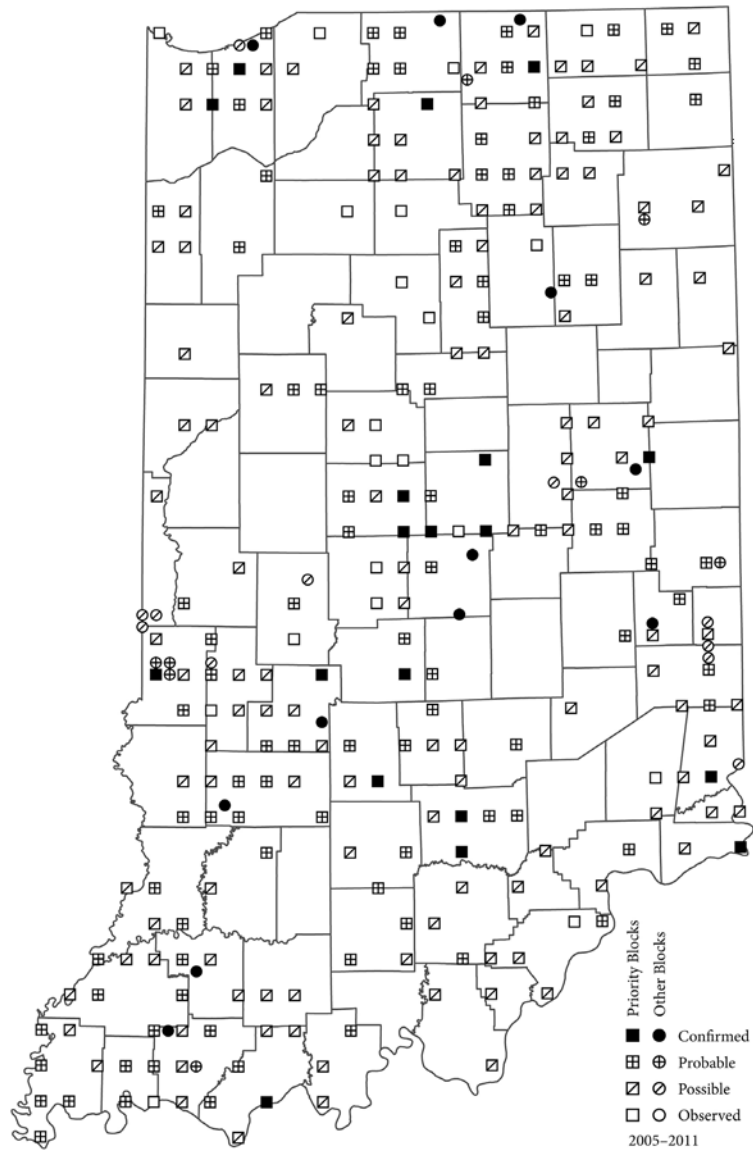


Figure 61. Occurrences of the Green Heron in IBBA blocks during 2005–2011.

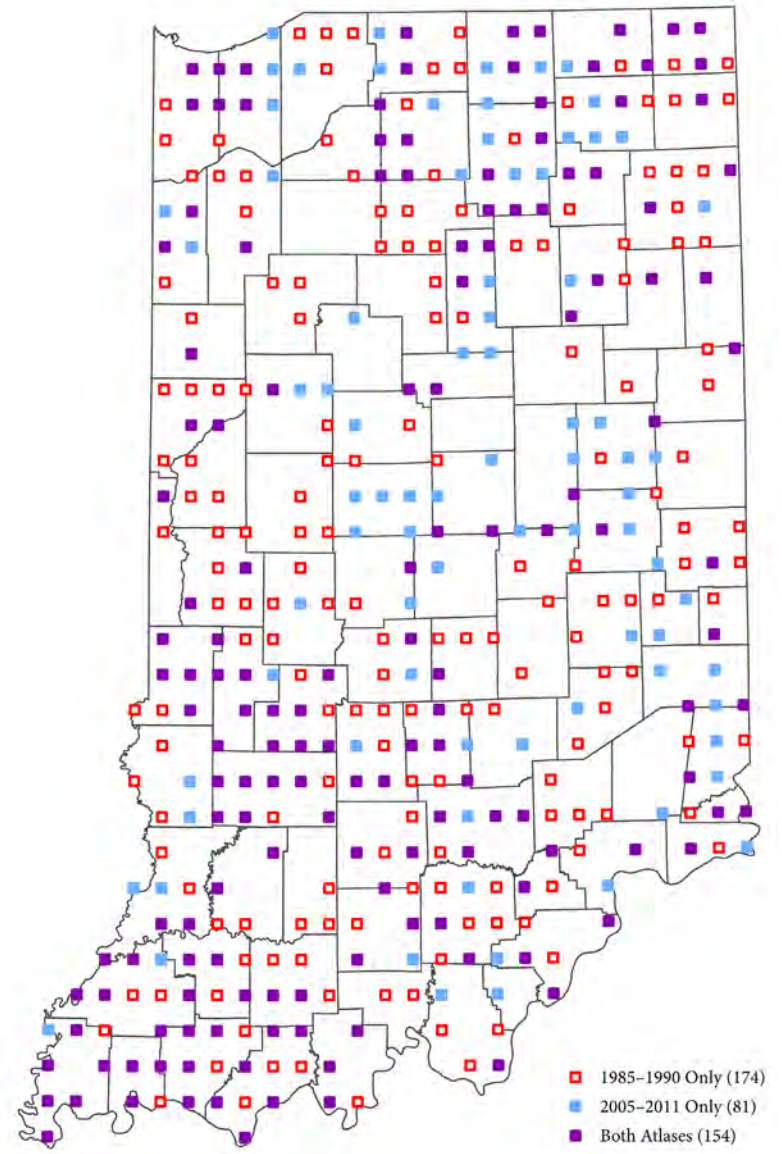


Figure 62. Occurrences of the Green Heron in IBBA priority blocks during both atlas periods.

Black-crowned Night-Heron



A Black-crowned Night-Heron stands on a rock sticking out of the water along a rocky shore. *Photo by Scott Evans.*

Table 45. Regional occurrence and abundance information for the Black-crowned Night-Heron.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 2 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 1 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 2 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 2 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 5 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 1 | 14 | 0 | |
| Probable | 2 | 29 | 0 | |
| Possible | 4 | 57 | 0 | |
| Sum | 7 | | 0 | |
| Observed | 5 | | - | |
| Other blocks | | | | |
| Confirmed | 2 | | 0 | |
| Probable | 1 | | 0 | |
| Possible | 1 | | 0 | |
| Sum | 4 | | 0 | |
| Observed | 8 | | - | |

Black-crowned Night-Heron

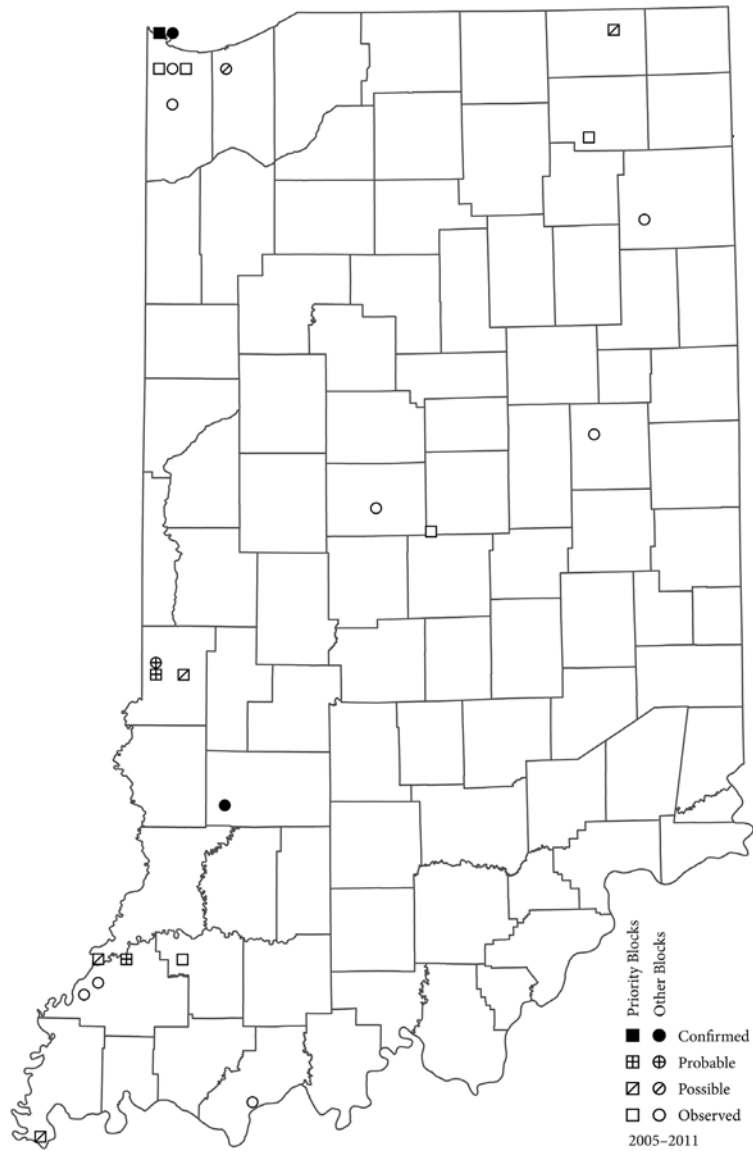


Figure 63. Map of the occurrences of the Black-crowned Night-Heron in IBBA blocks during 2005–2011.

Yellow-crowned Night-Heron



A Yellow-crowned Night-Heron stands in short vegetation. *Photo by Ryan Sanderson.*

Table 46. Regional occurrence and abundance information for the Yellow-crowned Night-Heron.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|--------------|--------------|----------------------|--------------|-------------|---------------|------------------------|----------|-----------|----------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | Priority Blocks | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | Confirmed | 2 | 33 | 3 | 33 |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | Probable | 1 | 17 | 3 | 33 |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | Possible | 3 | 50 | 3 | 33 |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | Sum | 6 | | 9 | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | Observed | 1 | | - | |
| South | 246 | 2 | 2 | 97 | 2 | 88 | 2 | Other blocks | | | | |
| Southwest | 106 | 3 | 3 | 47 | 3 | 39 | 3 | Confirmed | 0 | | 2 | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | Probable | 1 | | 1 | |
| Southeast | 53 | 6 | 6 | 15 | 6 | 14 | 6 | Possible | 1 | | 2 | |
| Statewide | 646 | <1 | <1 | 262 | <1 | 221 | <1 | Sum | 2 | | 5 | |
| | | | | | | | | Observed | 3 | | - | |

Yellow-crowned Night-Heron

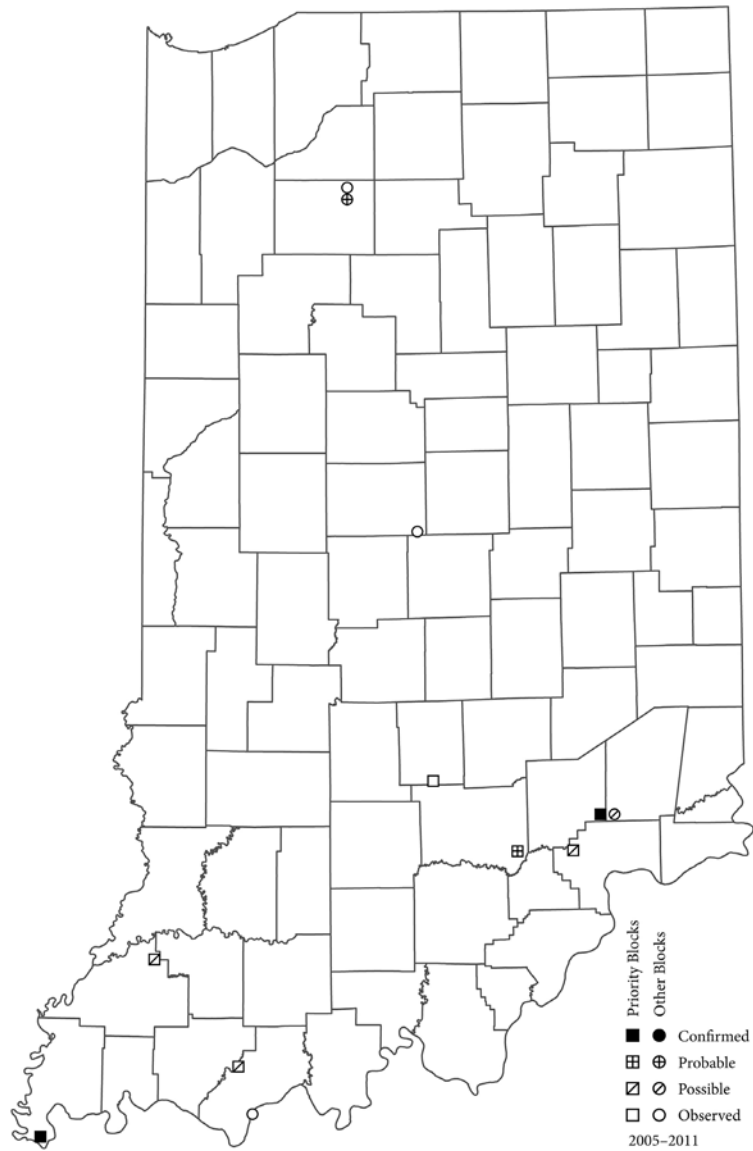


Figure 64. Map of the occurrences of the Yellow-crowned Night-Heron in IBBA blocks during 2005–2011.

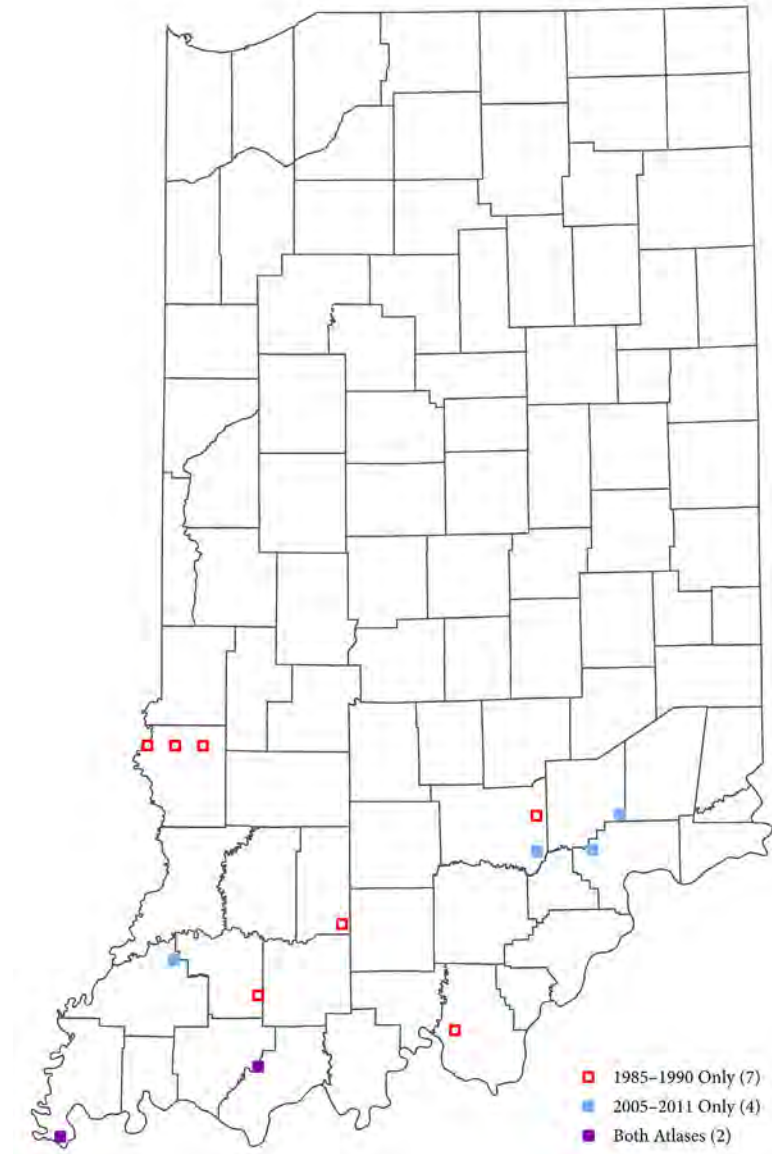


Figure 65. Map of the occurrences of the Yellow-crowned Night-Heron in IBBA priority blocks during both atlas periods.

Vultures, Osprey, Hawks, and Eagles (Accipitriformes)

Tables 47–57, Fig. 66–85

THIS GROUP INCLUDES eleven species that breed in Indiana, including two vultures, Osprey, Mississippi Kite, Bald Eagle, and six species of hawks. These birds are referred to as diurnal raptors or birds of prey with diets consisting primarily of vertebrate animals as well as some invertebrates. Turkey Vulture and Black Vulture feed primarily on carrion, although the Black Vulture also is known to kill young livestock (Kirk and Mossman 1998, Buckley 1999). Osprey and Bald Eagle feed extensively on fish. Bald Eagles also regularly pursue waterbirds, occasionally take a mammal, and regularly scavenge on white-tailed deer and other animals (Buehler 2000, Poole *et al.* 2002). Cooper's Hawk and Sharp-shinned Hawk are bird specialists, although small mammals are sometimes taken. Red-tailed Hawk, Red-shouldered Hawk, and Broad-winged Hawk hunt a variety of small mammals as well as birds, snakes, and amphibians (Preston and Beane 1993, Rosenfield and Bielefeldt 1993, Crocoll 1994, Goodrich *et al.* 1996). Northern Harriers feed almost exclusively on voles and other small mammals (Macwhirter and Bildstein 1996). Mississippi Kites are the most insectivorous of this group, although they also eat small vertebrates (Parker 1999). Hunting behavior is quite varied among this group and includes aerial pursuit, hunting from a perch, hovering, diving into water, and coursing low over fields.

Raptors are found in all Hoosier habitats from urban areas to forested wilderness. Most prefer a mix of open and wooded habitats, although Northern Harriers are found almost exclusively in extensive areas of grasslands and marshes. Bald Eagles and Ospreys are found in wooded locations near larger bodies of water, while Red-shouldered Hawks are at highest densities in bottomland forests. Broad-winged Hawks and Red-shouldered Hawks prefer larger blocks of forest while Sharp-shinned Hawks are most often associated with coniferous woodlands (Bildstein and Meyer 2000). Except for the vultures and the Northern Harrier, members of this group build nests of sticks lined with finer vegetation. Nests are almost always found

in live trees, although Ospreys prefer dead trees and especially man-made structures including utility towers and poles, communication and water towers, and specially designed nesting platforms. Red-tailed Hawks will sometimes build on utility towers. Northern Harriers construct nests of grass and other soft materials on the ground. Black Vultures and Turkey Vultures do not build nests but lay their eggs on or off the ground in large tree cavities or hollows, in barns, in abandoned buildings, in small caves or crevices along streams, or under piles of discarded limestone blocks.

Most raptors breeding in Indiana show distinct migratory movements, even though many species are found in the state year-round. Ospreys, Mississippi Kites, and Broad-winged Hawks migrate the longest distances and are rarely reported in Indiana during the winter. Turkey Vultures generally migrate out of the state during the winter, although many remain in the southern part of the state during milder winters. Bald Eagles and Northern Harriers are more noticeable outside of the breeding season as birds from further north arrive to winter. Red-tailed Hawks, Red-shouldered Hawks, Cooper's Hawks, and Black Vultures appear to have rather stable numbers throughout the year, although migratory movements do occur except for Black Vultures. Sharp-shinned Hawks are most noticeable in Indiana during migration periods, although a few remain during winter and summer seasons.

The most commonly encountered raptors in this group are the Red-tailed Hawk and Turkey Vulture; both are found in a large majority of priority blocks. Cooper's Hawk and Red-shouldered Hawk were found in a moderate number of atlas blocks. Black Vulture, Broad-winged Hawk, Sharp-shinned Hawk, Bald Eagle, Northern Harrier, Osprey, and Mississippi Kite were much less frequently encountered. All but two raptor species are distributed statewide. Black Vulture is mostly restricted to south-central and southeastern Indiana, while the Mississippi Kite shows a preference for southwestern counties. Red-tailed Hawk and Cooper's Hawk numbers are rather evenly distributed

throughout the state, although atlas and Breeding Bird Survey values are somewhat higher in northeastern Indiana. Occurrences of Sharp-shinned Hawk are lower in the central regions of the state. Turkey Vulture, Bald Eagle, Red-shouldered Hawk, and Broad-winged Hawk are found in greater numbers in the more heavily forested areas of southern Indiana. Osprey occurs more frequently in northern Indiana, while Northern Harrier is scattered but more frequently found in northwestern and southwestern regions.

Eight of these raptor species showed increases in numbers between the two atlas periods, although the difference was not statistically different for the Turkey Vulture. The Mississippi Kite was not detected during the previous atlas and breeding evidence was first observed in 1992. It is now annually reported in Indiana and its range is expanding north from the Mississippi River. During the summer of 2021, reports were received from 13 counties (Brock 2021). The Black Vulture is also undergoing a range expansion up the Atlantic Coast from its primary range in the southeastern United States. A combination of warmer winters and increased densities of road-killed mammals, especially raccoons and white-tailed deer, may explain this phenomenon. Turkey Vulture numbers are also increasing and this species may also be benefitting from increased food availability and milder winters. Osprey and Bald Eagle have shown a dramatic resurgence in the state as a result of a continent-wide recovery supplemented by restoration programs in Indiana and elsewhere. Occurrences in atlas blocks doubled for Cooper's Hawk and nearly doubled for Red-shouldered Hawk. This is rather surprising for the latter species, because this was a species of special concern for Indiana and other eastern states a few decades ago. Both species are adapting to human habitations and are showing up nesting in suburban and rural areas. Cooper's Hawk can also be found in downtown urban areas feeding on other urban birds. Three raptor species were found in fewer atlas blocks during the 2005–2011 period, although the difference was not statistically significant for the Northern Harrier. This species has never been a common nesting bird in Indiana and the large expanses of grassland and wetlands are in increasingly short sup-

ply. Sharp-shinned Hawk and Broad-winged Hawk are both woodland birds that showed a substantial drop in the number of atlas blocks where they were reported. Population trends on BBS routes in Indiana for the 1985–2011 period showed significant increases for Black Vulture, Turkey Vulture, Cooper's Hawk, Red-shouldered Hawk, and Red-tailed Hawk. Trends were also positive, but not statistically significant for Northern Harrier and Sharp-shinned Hawk. The trend was slightly negative for Broad-winged Hawk.

Comparisons of relative occurrence of raptor species among atlases in Indiana, Ohio, and Michigan showed a few differences and many similarities. Black Vulture and Mississippi Kite, both southern species, did not occur on the Michigan atlas. The Northern Goshawk breeds in the Upper Peninsula and the Northern Lower Peninsula, but is absent in Ohio and Indiana. Red-tailed Hawk and Turkey Vulture were the most frequently encountered species in all states with Turkey Vultures becoming more widespread and more common on recent atlases. Red-tailed Hawks were also more often reported during the second atlas in Indiana and Ohio, while slightly fewer blocks with this species were tallied in Michigan. Cooper's Hawk and Red-shouldered Hawk were ranked next in occurrence in Ohio and Indiana. Meanwhile, Broad-winged Hawk was third in relative frequency in Michigan, but was fifth and sixth in rank in Ohio and Indiana, respectively. Records of Red-shouldered Hawk and Cooper's Hawk were more numerous during the second atlas, especially in Indiana and Ohio. Broad-winged Hawk declined in frequency in these two states, but were little changed in Michigan. Sharp-shinned Hawk and Northern Harrier were found in fewer blocks and declined in frequency between atlas periods in all states. Bald Eagle showed a dramatic increase in occurrence in all three states, while Osprey numbers were sharply up in Indiana and Ohio as a result of recent restoration efforts. Both were more often reported in Michigan and Ohio than in Indiana. Records of Black Vulture increased dramatically in southern portions of Indiana and Ohio with similar rates of occurrence in both states. Mississippi Kite was not confirmed breeding on the first atlases in Indiana and Ohio, but now breeds regularly in small numbers.

Black Vulture



Two Black Vultures perch on a bare branch. *Photo by Jeff Packer.*

Table 47. Regional occurrence and abundance information for the Black Vulture.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | | 1985–1990 | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 4 | 0 | 110 | 0.03 | 102 | 0.04 | | | | |
| West-central | 114 | <1 | 0 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 6 | 0 | 54 | 0.06 | 64 | 0.06 | | | | |
| South | 246 | 28 | 8 | 97 | 0.54 | 88 | 0.01 | | | | |
| Southwest | 106 | 7 | 0 | 47 | 0.02 | 39 | 0.00 | | | | |
| South-central | 87 | 38 | 11 | 35 | 1.40 | 35 | 0.03 | | | | |
| Southeast | 53 | 53 | 17 | 15 | 0.13 | 14 | 0.00 | | | | |
| Statewide | 646 | 12 | 3 | 262 | 0.21 | 221 | 0.02 | | | | |

| | No. | % | No. | % |
|------------------------|----------|----|----------|-----|
| Priority Blocks | | | | |
| Confirmed | 7 | 78 | 1 | 100 |
| Probable | 2 | 22 | 0 | 0 |
| Possible | 0 | 0 | 0 | 0 |
| Sum | 9 | | 1 | |
| Observed | 69 | | 18 | |
| Other blocks | | | | |
| Confirmed | 7 | | 2 | |
| Probable | 1 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 8 | | 2 | |
| Observed | 20 | | 1 | |

*includes blocks with observed breeding evidence code.

Black Vulture

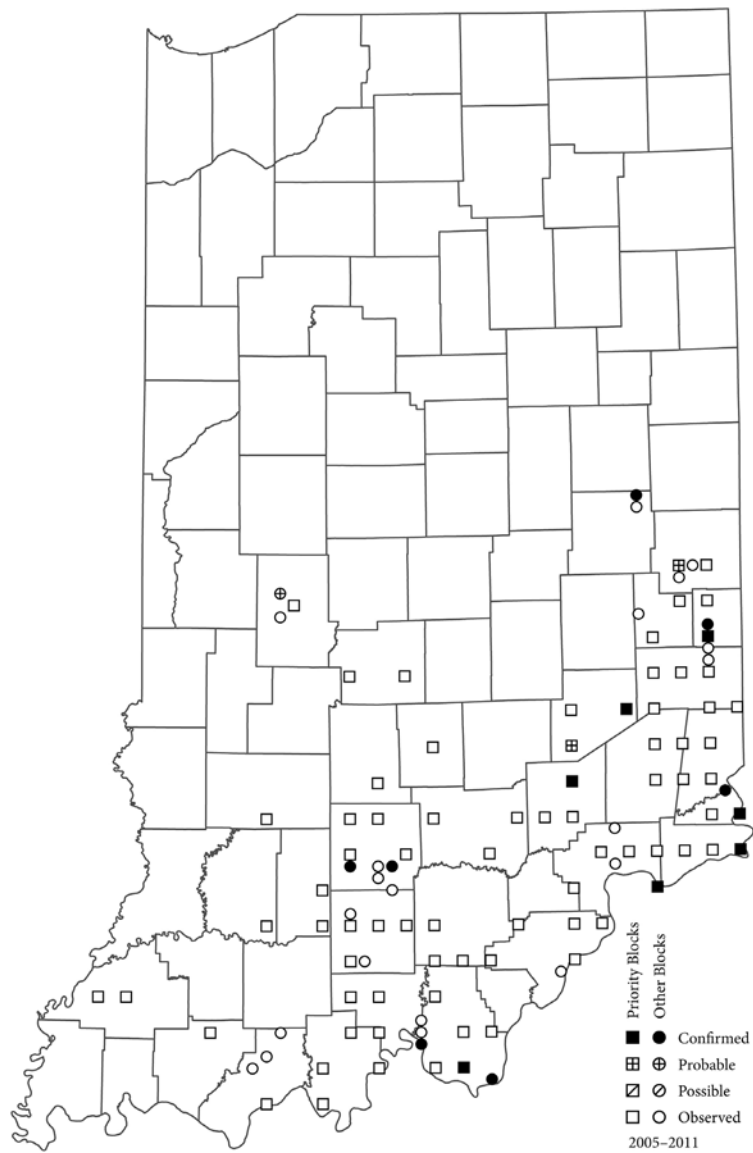


Figure 66. Map of the occurrences of the Black Vulture in IBBA blocks during 2005–2011.

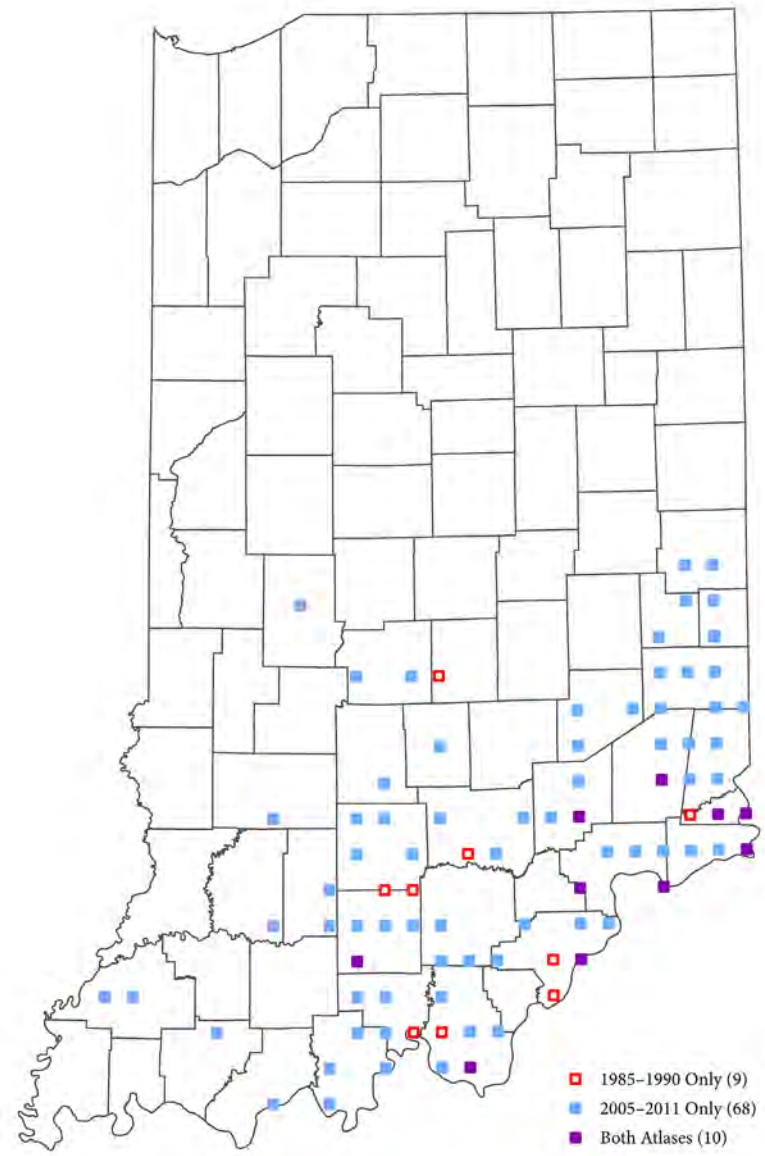


Figure 67. Map of the occurrences of the Black Vulture in IBBA priority blocks during both atlas periods.

Turkey Vulture



A Turkey Vulture stands over a deceased striped skunk. *Photo by Ryan Sanderson.*

Table 48. Regional occurrence and abundance information for the Turkey Vulture.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|------------------------|-----------|-----|-----------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 87 | 81 | 55 | 3.5 | 31 | 1.6 | Priority Blocks | | | | |
| Northwest | 73 | 85 | 79 | 34 | 2.5 | 19 | 0.8 | Confirmed | 19 | 83 | 14 | 93 |
| Northeast | 54 | 89 | 83 | 21 | 5.0 | 12 | 2.8 | Probable | 4 | 17 | 1 | 7 |
| Central | 273 | 79 | 74 | 110 | 2.8 | 102 | 0.8 | Possible | 0 | 0 | 0 | 0 |
| West-central | 114 | 87 | 69 | 56 | 2.0 | 38 | 0.8 | Sum | 23 | | 15 | |
| East-central | 159 | 73 | 77 | 54 | 3.5 | 64 | 0.8 | Observed | 532 | | 514 | |
| South | 246 | 93 | 91 | 97 | 6.7 | 88 | 4.3 | Other blocks | | | | |
| Southwest | 106 | 89 | 88 | 47 | 4.3 | 39 | 5.6 | Confirmed | 19 | | 9 | |
| South-central | 87 | 98 | 94 | 35 | 10.5 | 35 | 3.7 | Probable | 1 | | 0 | |
| Southeast | 53 | 96 | 92 | 15 | 5.3 | 14 | 2.4 | Possible | 0 | | 0 | |
| Statewide | 646 | 86 | 82 | 262 | 4.4 | 221 | 2.3 | Sum | 20 | | 9 | |
| | | | | | | | | Observed | 34 | | - | |

*includes blocks with observed breeding evidence code.

Turkey Vulture

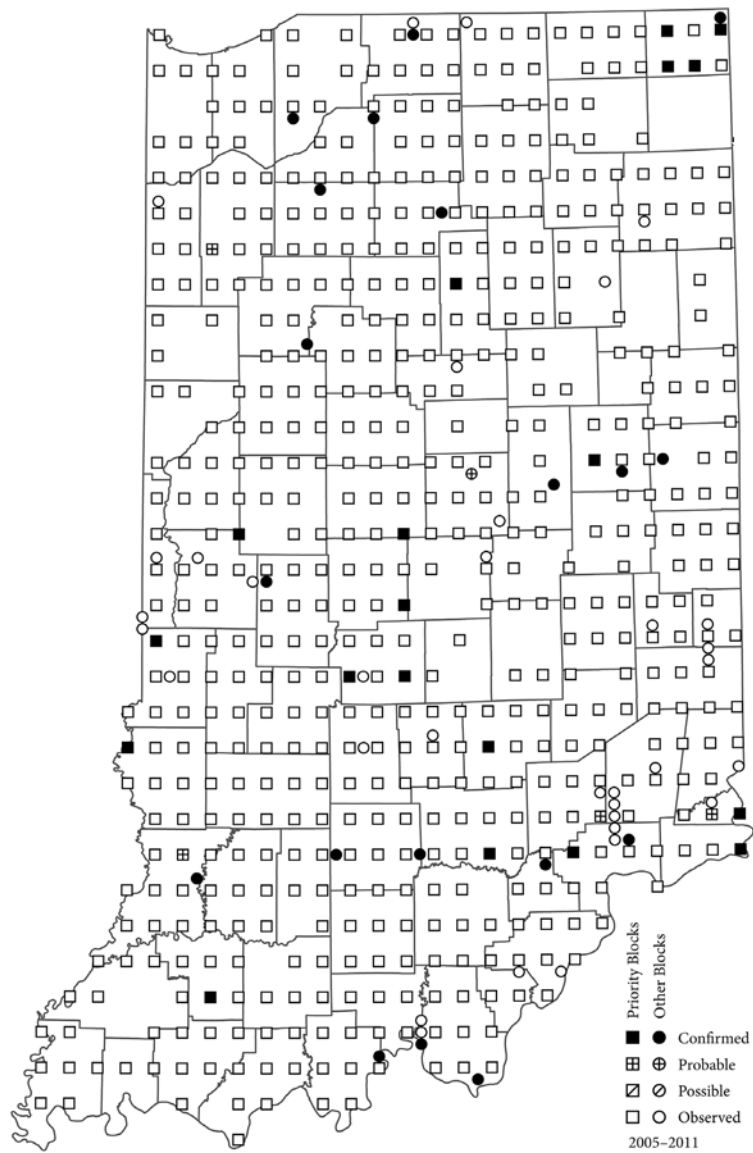


Figure 68. Map of the occurrences of the Turkey Vulture in IBBA blocks during 2005–2011.

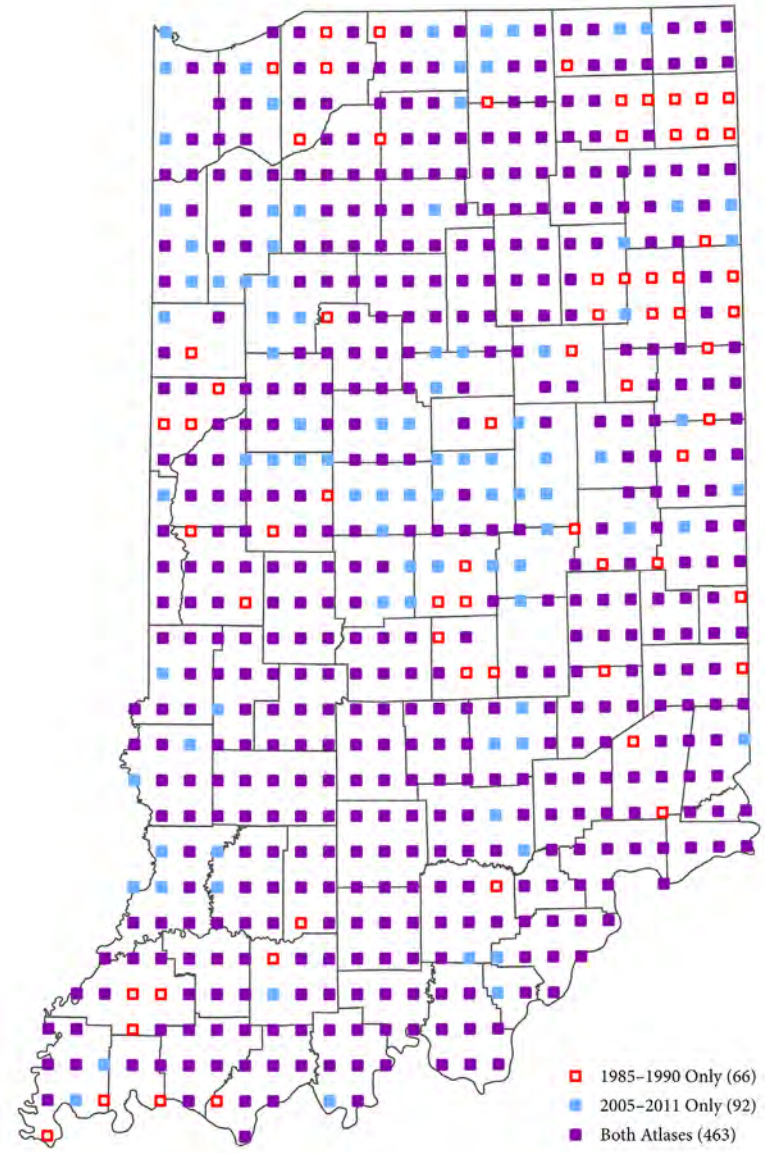


Figure 69. Map of the occurrences of the Turkey Vulture in IBBA priority blocks during both atlas periods.

Osprey



A juvenile and adult Osprey sit in their nest on a manmade platform. *Photo by Jeff Danielson.*

Table 49. Regional occurrence and abundance information for the Osprey.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|--------------|----------------------|-----------------|------------|-------------|---------------------|-----------|--|--|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | | |
| North | 127 | 6 | 0 | 55 | 0.02 | 31 | 0.00 | | | | |
| Northwest | 73 | 5 | 0 | 34 | 0.03 | 19 | 0.00 | | | | |
| Northeast | 54 | 7 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | <1 | 0 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | <1 | 0 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 2 | <1 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | 2 | 0 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 2 | 1 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 2 | <1 | 262 | <0.01 | 221 | 0.00 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|-----|----------|-----|
| Priority Blocks | | | | |
| Confirmed | 13 | 100 | 0 | 0 |
| Probable | 0 | 0 | 1 | 100 |
| Possible | 0 | 0 | 0 | 0 |
| Sum | 13 | | 1 | |
| Observed | 10 | | - | |
| Other blocks | | | | |
| Confirmed | 34 | | 2 | |
| Probable | 0 | | 1 | |
| Possible | 0 | | 0 | |
| Sum | 34 | | 3 | |
| Observed | 14 | | - | |

Osprey

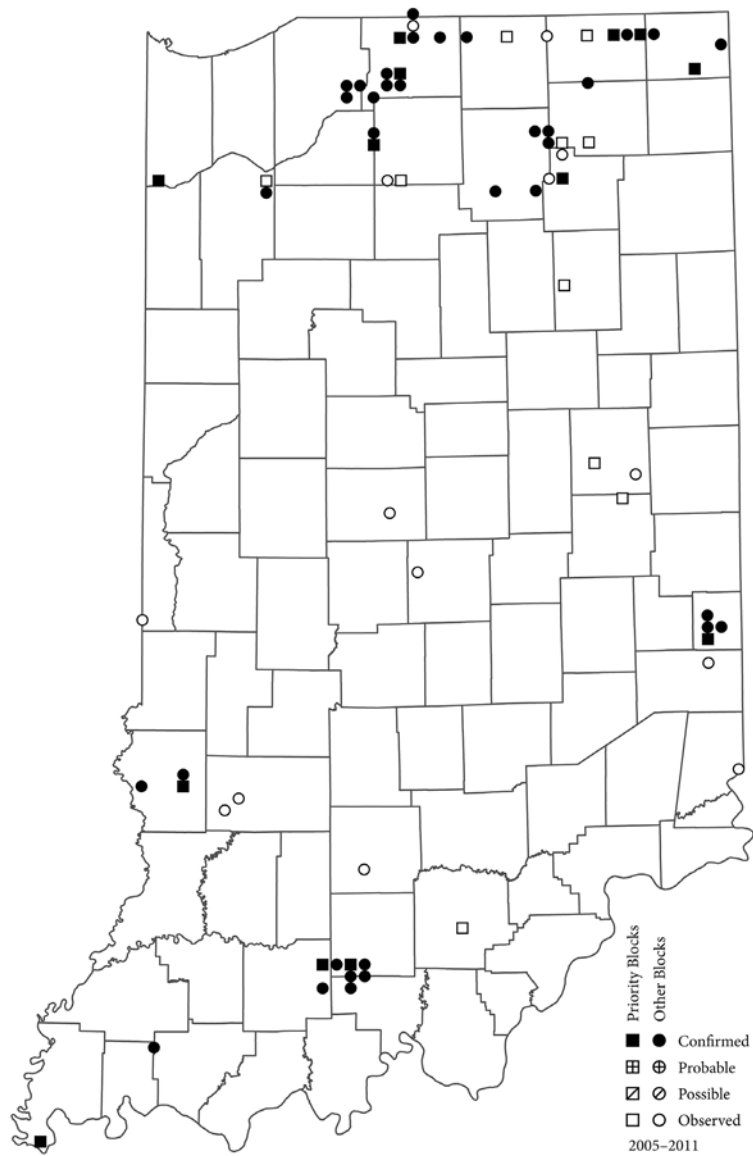


Figure 70. Map of the occurrences of the Osprey in IBBA blocks during 2005–2011.

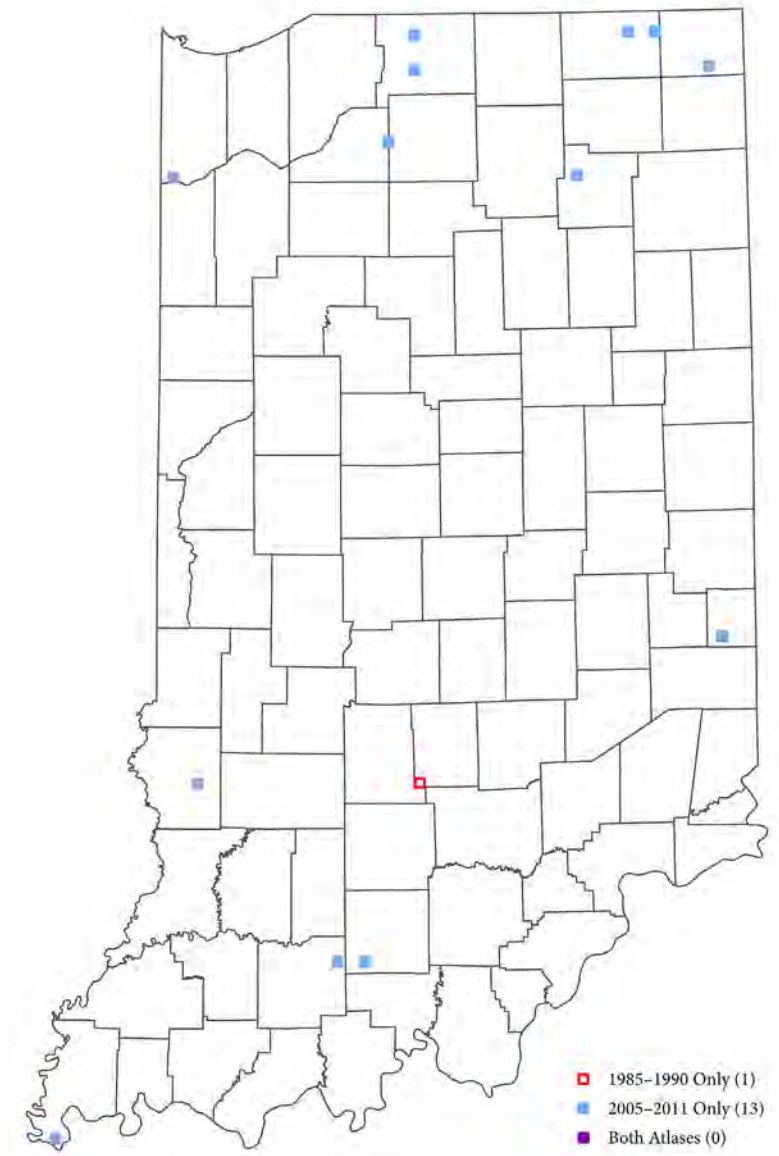


Figure 71. Map of the occurrences of the Osprey in IBBA blocks during both atlas periods.

Mississippi Kite



A Mississippi Kite perches on a branch of a dead tree with its mouth open. *Photo by Scott Evans.*

Table 50. Regional occurrence and abundance information for the Mississippi Kite.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | <1 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | <1 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 2 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 4 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 1 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 2 | 33 | 0 | |
| Probable | 0 | 0 | 0 | |
| Possible | 4 | 67 | 0 | |
| Sum | 6 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 0 | |
| Probable | 1 | | 0 | |
| Possible | 2 | | 0 | |
| Sum | 8 | | 0 | |
| Observed | 1 | | - | |

Mississippi Kite

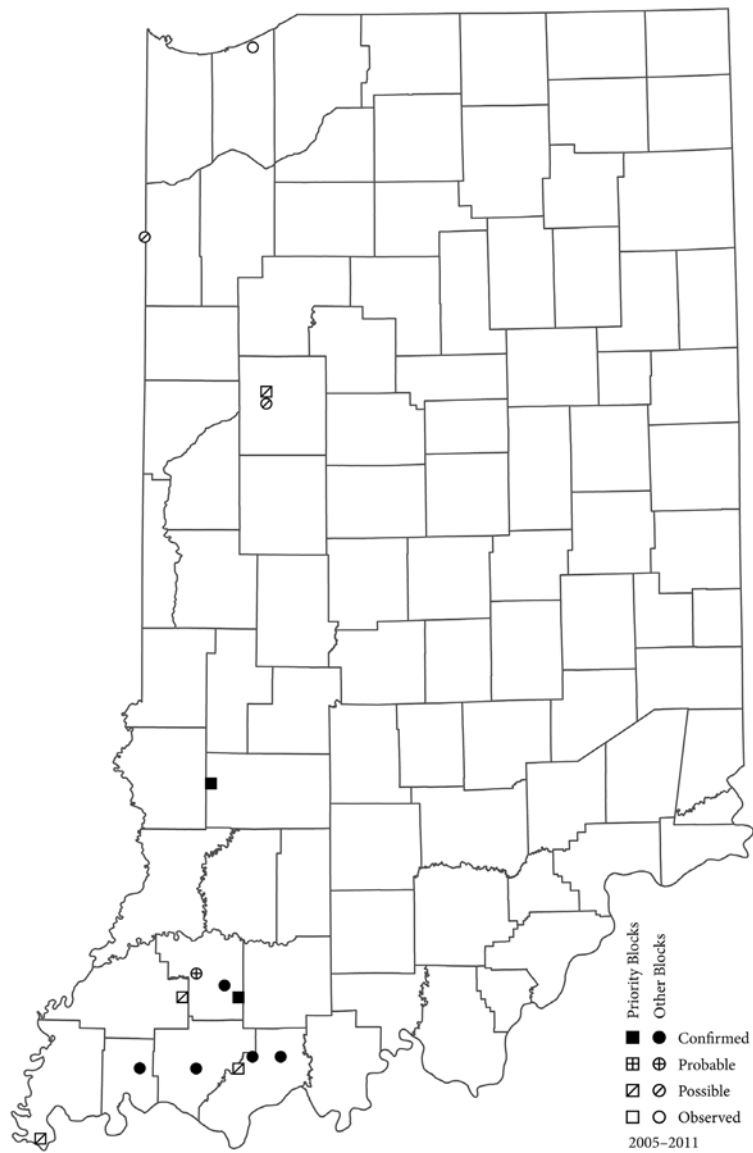


Figure 72. Map of the occurrences of the Mississippi Kite in IBBA blocks during 2005–2011.

Northern Harrier



A female Northern Harrier in flight. *Photo by Stephen Bell.*

Table 51. Regional occurrence and abundance information for the Northern Harrier.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 4 | 2 | 55 | 0.02 | 31 | 0.00 | | | | |
| Northwest | 73 | 7 | 1 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 0 | 4 | 21 | 0.05 | 12 | 0.00 | | | | |
| Central | 273 | 1 | 3 | 110 | 0.02 | 102 | 0.08 | | | | |
| West-central | 114 | 0 | 4 | 56 | 0.02 | 38 | 0.16 | | | | |
| East-central | 159 | 3 | 2 | 54 | 0.02 | 64 | 0.03 | | | | |
| South | 246 | 3 | 5 | 97 | 0.03 | 88 | 0.01 | | | | |
| Southwest | 106 | 6 | 8 | 47 | 0.06 | 39 | 0.03 | | | | |
| South-central | 87 | 1 | 2 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 0 | 4 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 2 | 3 | 262 | 0.02 | 221 | 0.04 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 1 | 6 | 0 | 0 |
| Probable | 1 | 6 | 6 | 27 |
| Possible | 14 | 88 | 16 | 73 |
| Sum | 16 | | 22 | |
| Observed | 17 | | - | |
| Other blocks | | | | |
| Confirmed | 3 | | 5 | |
| Probable | 5 | | 1 | |
| Possible | 6 | | 8 | |
| Sum | 14 | | 14 | |
| Observed | 1 | | - | |

Northern Harrier

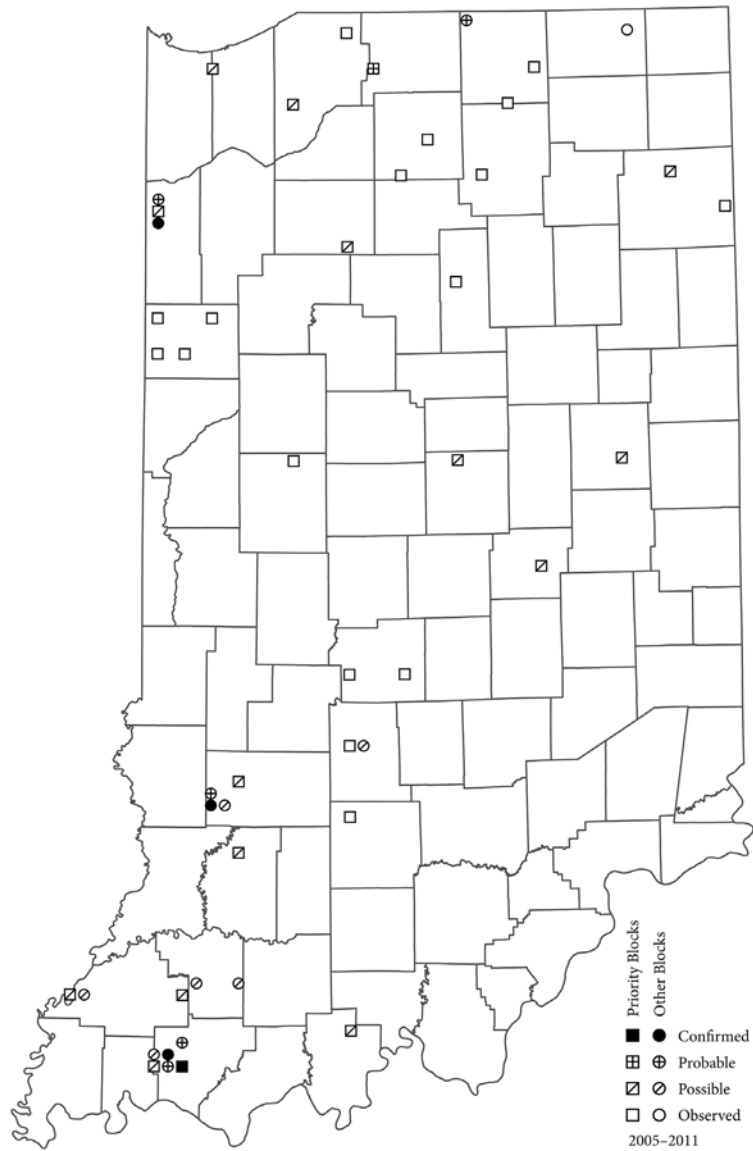


Figure 73. Map of the occurrences of the Northern Harrier in IBBA blocks during 2005–2011.

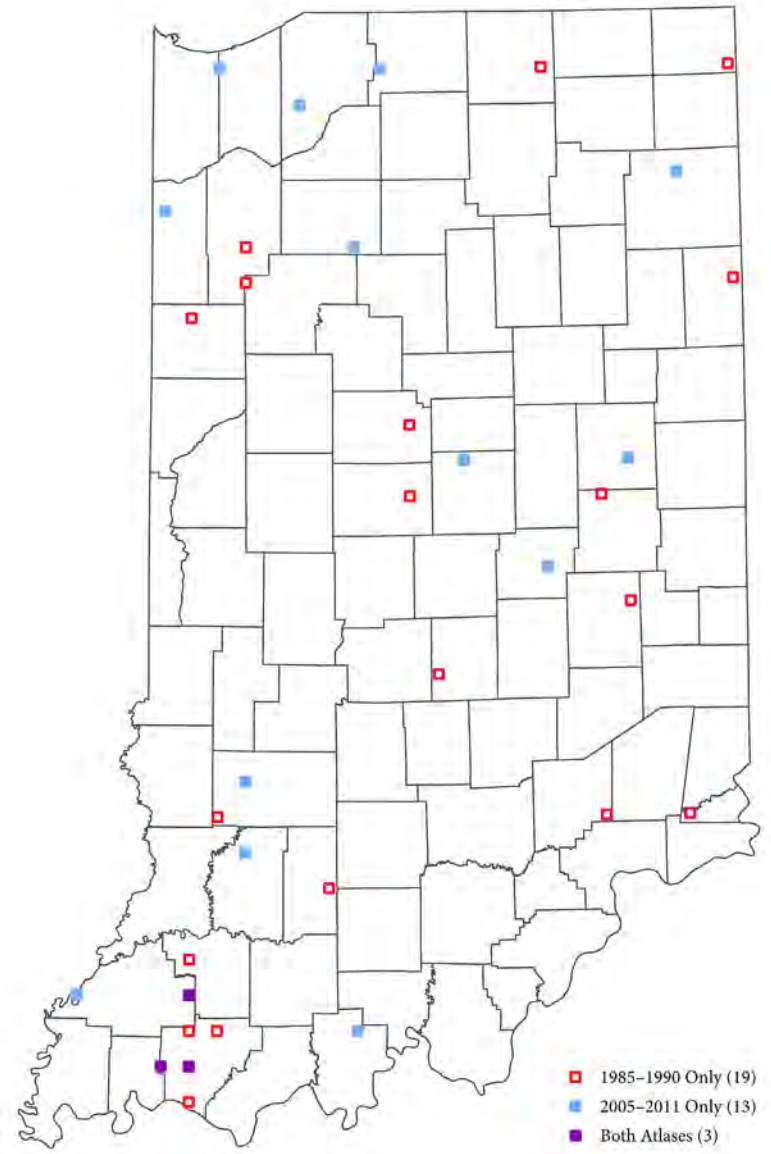


Figure 74. Map of the occurrences of the Northern Harrier in IBBA priority blocks during both atlas periods.

Bald Eagle



An immature Bald Eagle stands atop of a broken tree snag. *Photo by Ryan Sanderson.*

Table 52. Regional occurrence and abundance information for the Bald Eagle.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|-----------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | <1 | 0 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 1 | 0 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 2 | 0 | 110 | 0.02 | 102 | 0.00 | | | | |
| West-central | 114 | 4 | 0 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 1 | 0 | 54 | 0.04 | 64 | 0.00 | | | | |
| South | 246 | 9 | 0 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | 9 | 0 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 9 | 0 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 6 | 0 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 4 | 0 | 262 | <0.01 | 221 | 0.00 | | | | |

| | No. | % | No. | % |
|------------------------|------------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 28 | 100 | 0 | |
| Probable | 0 | 0 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 28 | | 0 | |
| Observed | 29 | | - | |
| Other blocks | | | | |
| Confirmed | 133 | | 3 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 133 | | 3 | |
| Observed | 12 | | - | |

Bald Eagle

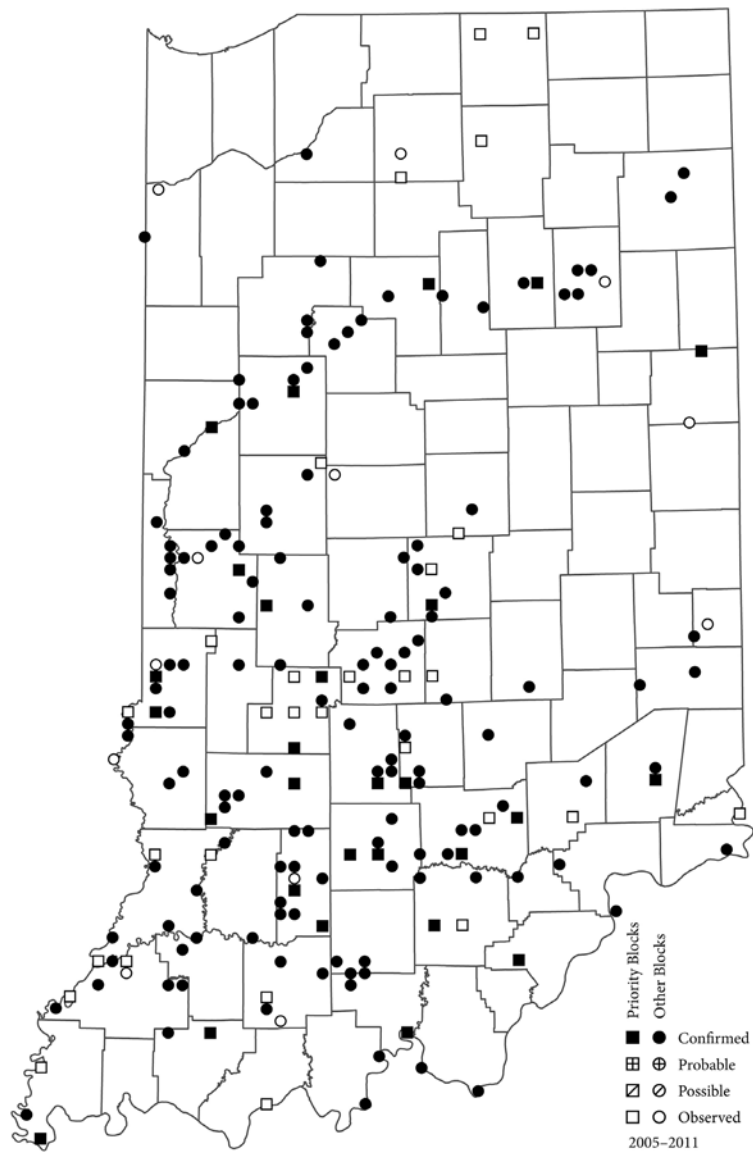


Figure 75. Map of the occurrences of the Bald Eagle in IBBA blocks during 2005–2011.

Sharp-shinned Hawk



An adult Sharp-shinned Hawk perches on a tree with bare branches. *Photo by Jining Han.*

Table 53. Regional occurrence and abundance information for the Sharp-shinned Hawk.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|-----------------|-------------|---------------|------------------------|-----------|-----|-----------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 8 | 8 | 55 | 0.00 | 31 | 0.03 | Priority Blocks | | | | |
| Northwest | 73 | 8 | 10 | 34 | 0.00 | 19 | 0.00 | Confirmed | 2 | 5 | 8 | 12 |
| Northeast | 54 | 7 | 6 | 21 | 0.00 | 12 | 0.08 | Probable | 4 | 10 | 15 | 22 |
| Central | 273 | 2 | 3 | 110 | <0.01 | 102 | 0.00 | Possible | 33 | 85 | 46 | 67 |
| West-central | 114 | <1 | 2 | 56 | 0.00 | 38 | 0.00 | Sum | 39 | | 69 | |
| East-central | 159 | 3 | 4 | 54 | 0.02 | 64 | 0.00 | Observed | 3 | | - | |
| South | 246 | 10 | 20 | 97 | 0.00 | 88 | 0.03 | Other blocks | | | | |
| Southwest | 106 | 8 | 8 | 47 | 0.00 | 39 | 0.05 | Confirmed | 4 | | 3 | |
| South-central | 87 | 9 | 32 | 35 | 0.00 | 35 | 0.03 | Probable | 0 | | 5 | |
| Southeast | 53 | 15 | 25 | 15 | 0.00 | 14 | 0.00 | Possible | 2 | | 7 | |
| Statewide | 646 | 6 | 11 | 262 | <0.01 | 221 | 0.02 | Sum | 6 | | 15 | |
| | | | | | | | | Observed | 0 | | - | |

Sharp-shinned Hawk

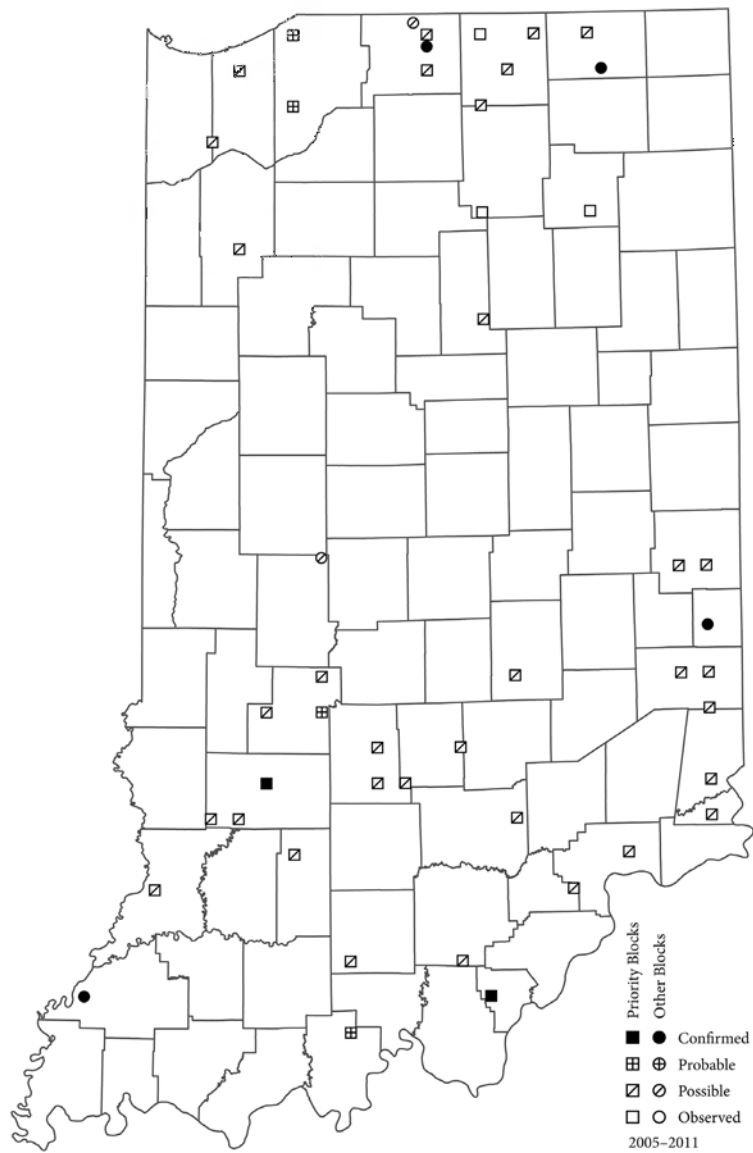


Figure 76. Map of the occurrences of the Sharp-shinned Hawk in IBBA blocks during 2005–2011.

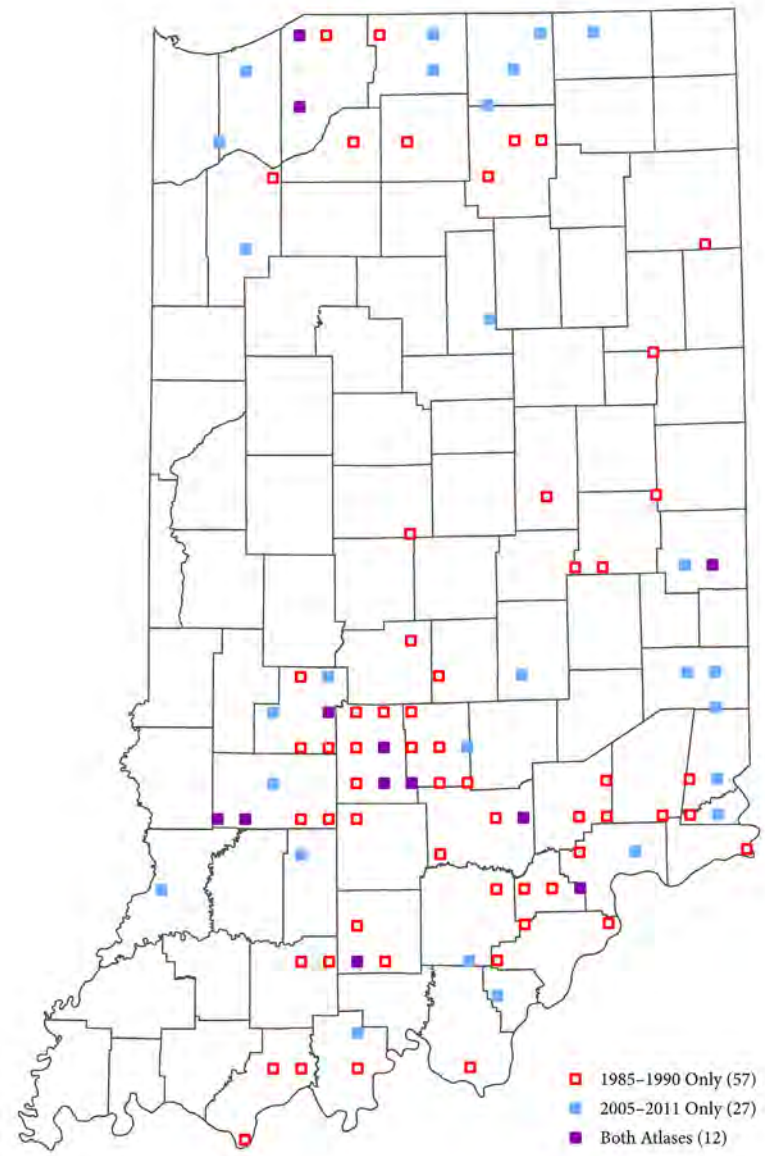


Figure 77. Map of the occurrences of the Sharp-shinned Hawk in IBBA blocks both atlas periods.

Cooper's Hawk



An immature Cooper's Hawk in flight. *Photo by Ryan Sanderson.*

Table 54. Regional occurrence and abundance information for the Cooper's Hawk.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | | 1985–1990 | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 45 | 19 | 55 | 0.33 | 31 | 0.10 | | | | |
| Northwest | 73 | 34 | 8 | 34 | 0.18 | 19 | 0.05 | | | | |
| Northeast | 54 | 59 | 33 | 21 | 0.57 | 12 | 0.17 | | | | |
| Central | 273 | 42 | 12 | 110 | 0.15 | 102 | 0.00 | | | | |
| West-central | 114 | 46 | 11 | 56 | 0.11 | 38 | 0.00 | | | | |
| East-central | 159 | 39 | 14 | 54 | 0.20 | 64 | 0.00 | | | | |
| South | 246 | 40 | 31 | 97 | 0.23 | 88 | 0.06 | | | | |
| Southwest | 106 | 48 | 18 | 47 | 0.17 | 39 | 0.03 | | | | |
| South-central | 87 | 37 | 49 | 35 | 0.29 | 35 | 0.11 | | | | |
| Southeast | 53 | 30 | 26 | 15 | 0.27 | 14 | 0.00 | | | | |
| Statewide | 646 | 42 | 21 | 262 | 0.22 | 221 | 0.04 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 46 | 17 | 24 | 18 |
| Probable | 61 | 23 | 40 | 30 |
| Possible | 163 | 60 | 70 | 52 |
| Sum | 270 | | 134 | |
| Observed | 12 | | - | |
| Other blocks | | | | |
| Confirmed | 23 | | 8 | |
| Probable | 4 | | 4 | |
| Possible | 28 | | 8 | |
| Sum | 55 | | 20 | |
| Observed | 2 | | - | |

Cooper's Hawk

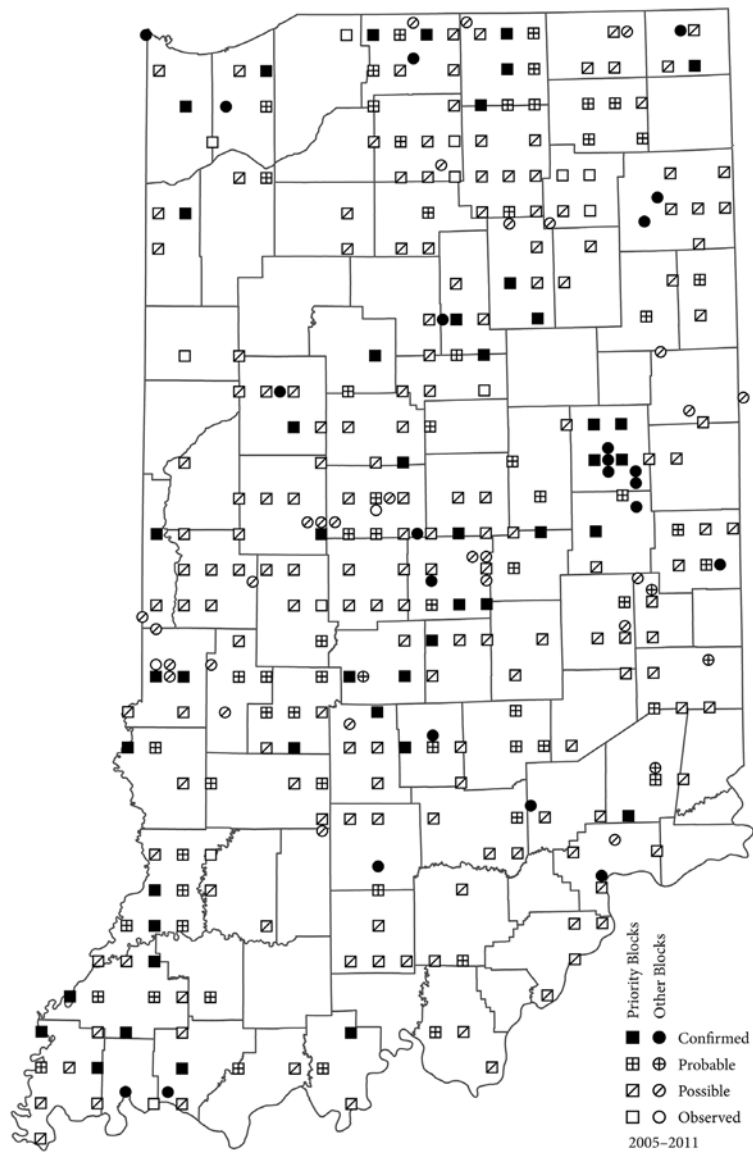


Figure 78. Map of the occurrences of the Cooper's Hawk in IBBA blocks during 2005–2011.

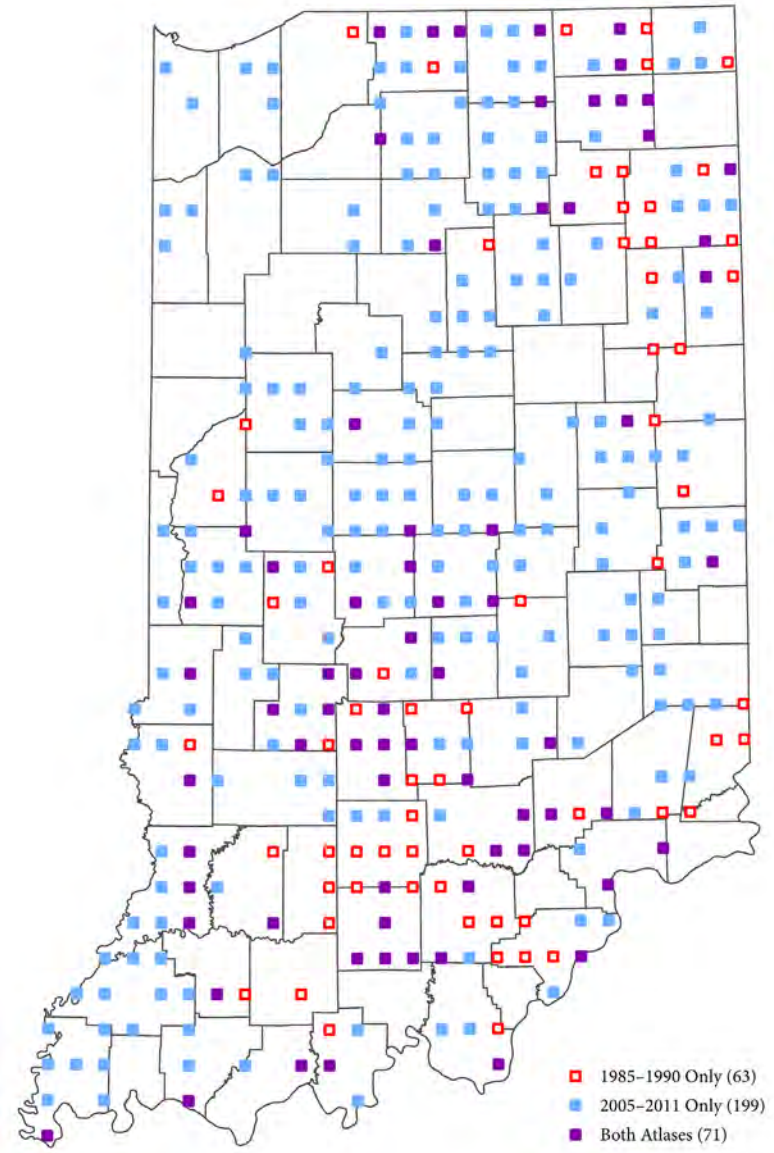


Figure 79. Map of the occurrences of the Cooper's Hawk in IBBA priority blocks during both atlas periods.

Red-shouldered Hawk



A Red-shouldered Hawk looks over its shoulder while perched at the top of a broken tree trunk. *Photo by Shari McCollough.*

Table 55. Regional occurrence and abundance information for the Red-shouldered Hawk.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 7 | 3 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 8 | 5 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 6 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 12 | 3 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | 20 | 3 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 6 | 3 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 60 | 37 | 97 | 0.52 | 88 | 0.13 | | | | |
| Southwest | 106 | 58 | 25 | 47 | 0.32 | 39 | 0.03 | | | | |
| South-central | 87 | 64 | 49 | 35 | 0.66 | 35 | 0.11 | | | | |
| Southeast | 53 | 57 | 40 | 15 | 0.80 | 14 | 0.43 | | | | |
| Statewide | 646 | 29 | 16 | 262 | 0.19 | 221 | 0.05 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 62 | 33 | 23 | 23 |
| Probable | 70 | 37 | 40 | 39 |
| Possible | 58 | 31 | 39 | 38 |
| Sum | 190 | | 102 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 20 | | 7 | |
| Probable | 12 | | 2 | |
| Possible | 16 | | 1 | |
| Sum | 48 | | 10 | |
| Observed | 0 | | - | |

Red-shouldered Hawk

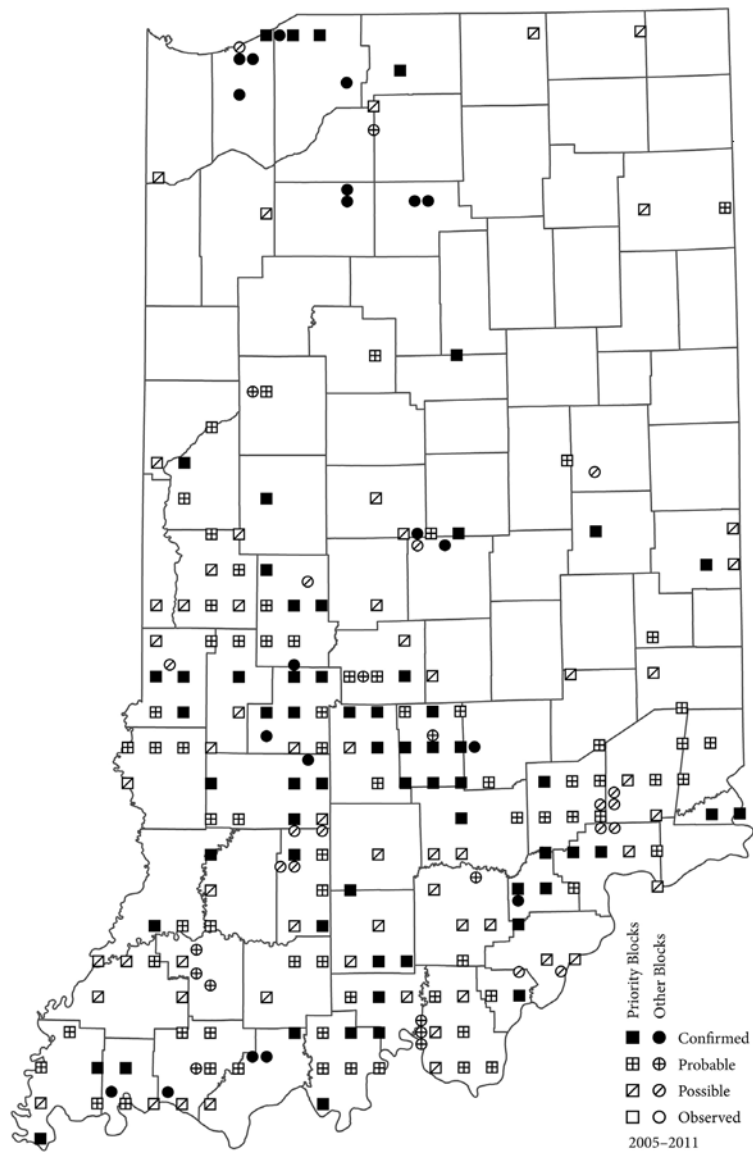


Figure 80. Map of the occurrences of the Red-shouldered Hawk in IBBA blocks during 2005–2011.

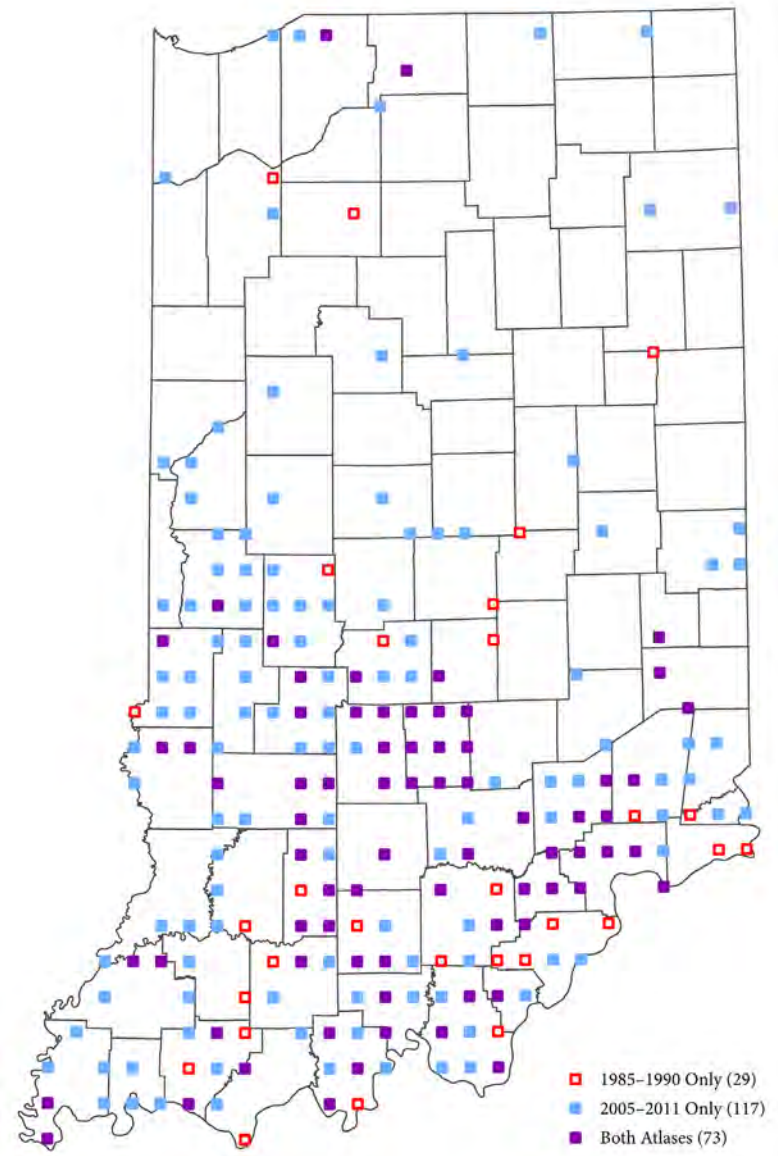


Figure 81. Map of the occurrences of the Red-shouldered Hawk in IBBA priority blocks during both atlas periods.

Broad-winged Hawk



A light morph Broad-winged Hawk perches on a bare branch. *Photo by Jeff Timmons.*

Table 56. Regional occurrence and abundance information for the Broad-winged Hawk.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 3 | 6 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 3 | 11 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 4 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 1 | 1 | 110 | <0.01 | 102 | 0.00 | | | | |
| West-central | 114 | <1 | 2 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 1 | 1 | 54 | 0.02 | 64 | 0.00 | | | | |
| South | 246 | 17 | 27 | 97 | 0.06 | 88 | 0.09 | | | | |
| Southwest | 106 | 4 | 11 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 38 | 52 | 35 | 0.17 | 35 | 0.23 | | | | |
| Southeast | 53 | 11 | 17 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 8 | 12 | 262 | 0.03 | 221 | 0.04 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 8 | 16 | 11 | 14 |
| Probable | 18 | 36 | 27 | 35 |
| Possible | 24 | 48 | 40 | 51 |
| Sum | 50 | | 78 | |
| Observed | 3 | | - | |
| Other blocks | | | | |
| Confirmed | 6 | | 7 | |
| Probable | 3 | | 35 | |
| Possible | 4 | | 15 | |
| Sum | 13 | | 57 | |
| Observed | 0 | | - | |

Broad-winged Hawk

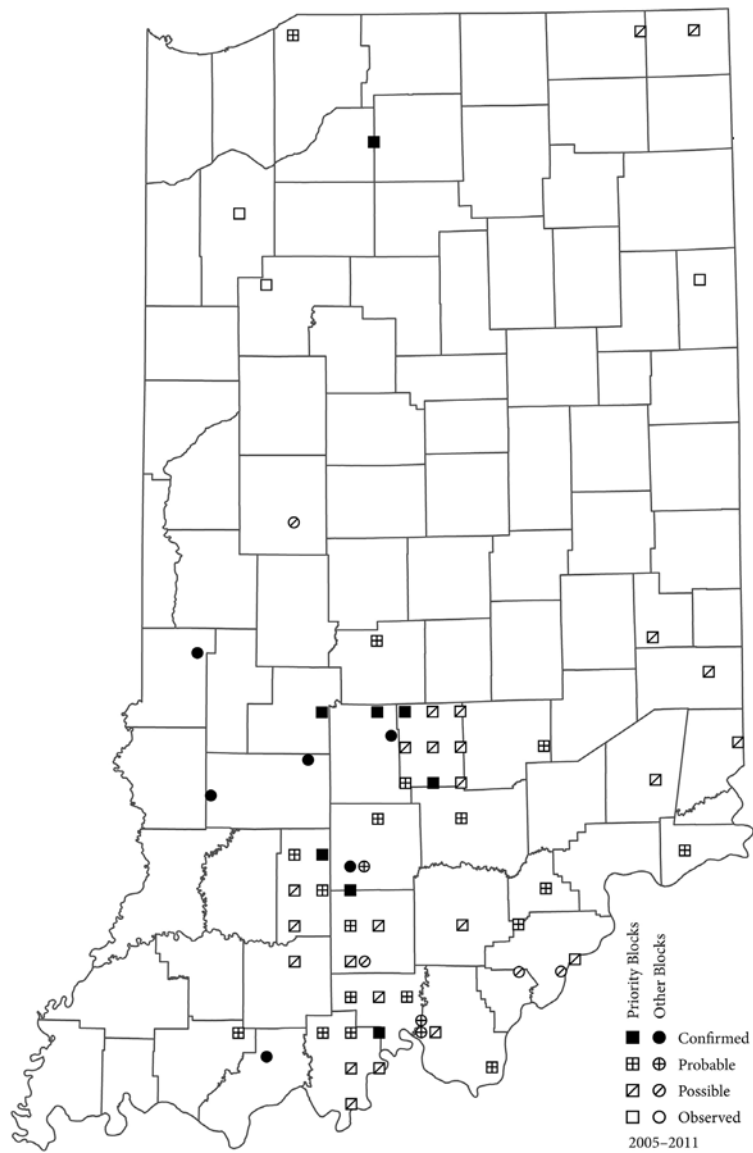


Figure 82. Map of the occurrences of the Broad-winged Hawk in IBBA blocks during 2005–2011.

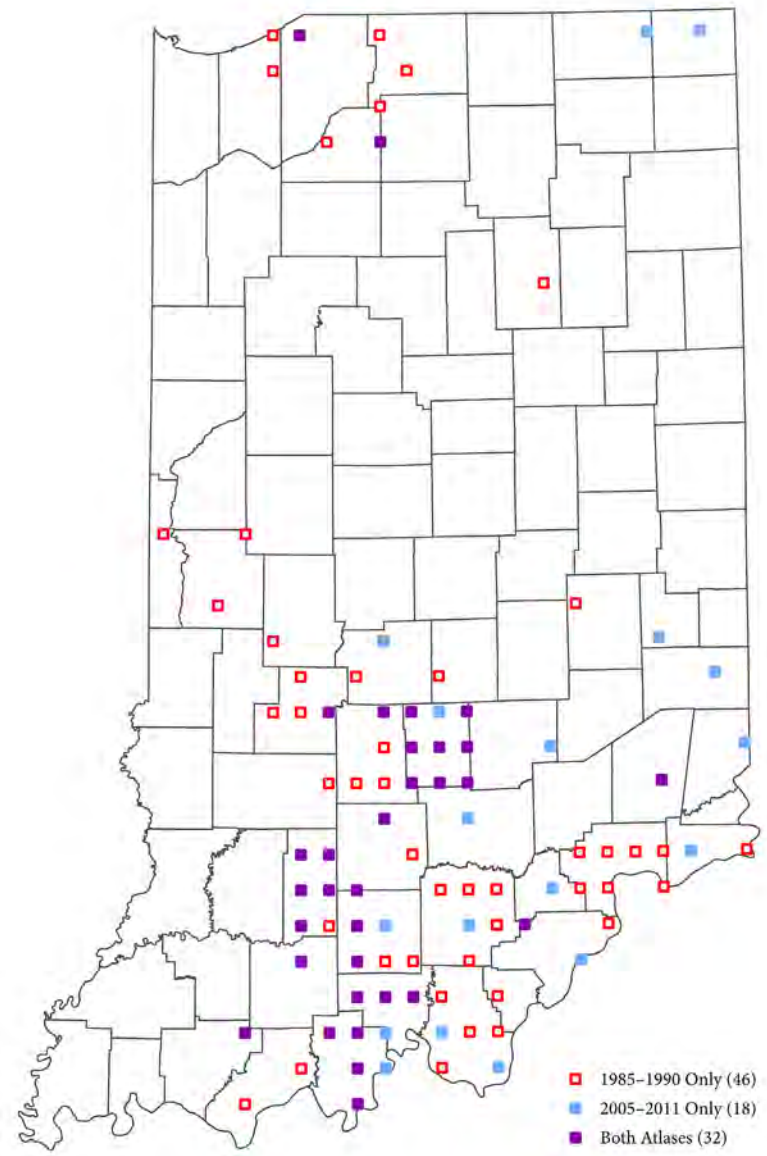


Figure 83. Map of the occurrences of the Broad-winged Hawk in IBBA priority blocks during both atlas periods.

Red-tailed Hawk



A light morph Red-tailed Hawk perches on a decaying log. *Photo by Steve Gifford.*

Table 57. Regional occurrence and abundance information for the Red-tailed Hawk.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|------------|------------|------------|---------------------|-----------|--|--|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | |
| North | 127 | 92 | 86 | 55 | 1.8 | 31 | 1.1 | | | | |
| Northwest | 73 | 89 | 79 | 34 | 1.6 | 19 | 0.8 | | | | |
| Northeast | 54 | 96 | 94 | 21 | 2.1 | 12 | 1.5 | | | | |
| Central | 273 | 97 | 73 | 110 | 1.4 | 102 | 0.7 | | | | |
| West-central | 114 | 95 | 72 | 56 | 1.5 | 38 | 0.7 | | | | |
| East-central | 159 | 98 | 74 | 54 | 1.3 | 64 | 0.7 | | | | |
| South | 246 | 91 | 93 | 97 | 1.4 | 88 | 1.2 | | | | |
| Southwest | 106 | 94 | 93 | 47 | 1.4 | 39 | 1.3 | | | | |
| South-central | 87 | 89 | 95 | 35 | 1.3 | 35 | 1.3 | | | | |
| Southeast | 53 | 91 | 89 | 15 | 1.6 | 14 | 0.7 | | | | |
| Statewide | 646 | 94 | 83 | 262 | 1.5 | 221 | 0.9 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 159 | 26 | 168 | 31 |
| Probable | 276 | 46 | 169 | 31 |
| Possible | 171 | 28 | 201 | 37 |
| Sum | 606 | | 538 | |
| Observed | 2 | | - | |
| Other blocks | | | | |
| Confirmed | 48 | | 8 | |
| Probable | 10 | | 7 | |
| Possible | 19 | | 8 | |
| Sum | 77 | | 23 | |
| Observed | 0 | | - | |

Red-tailed Hawk

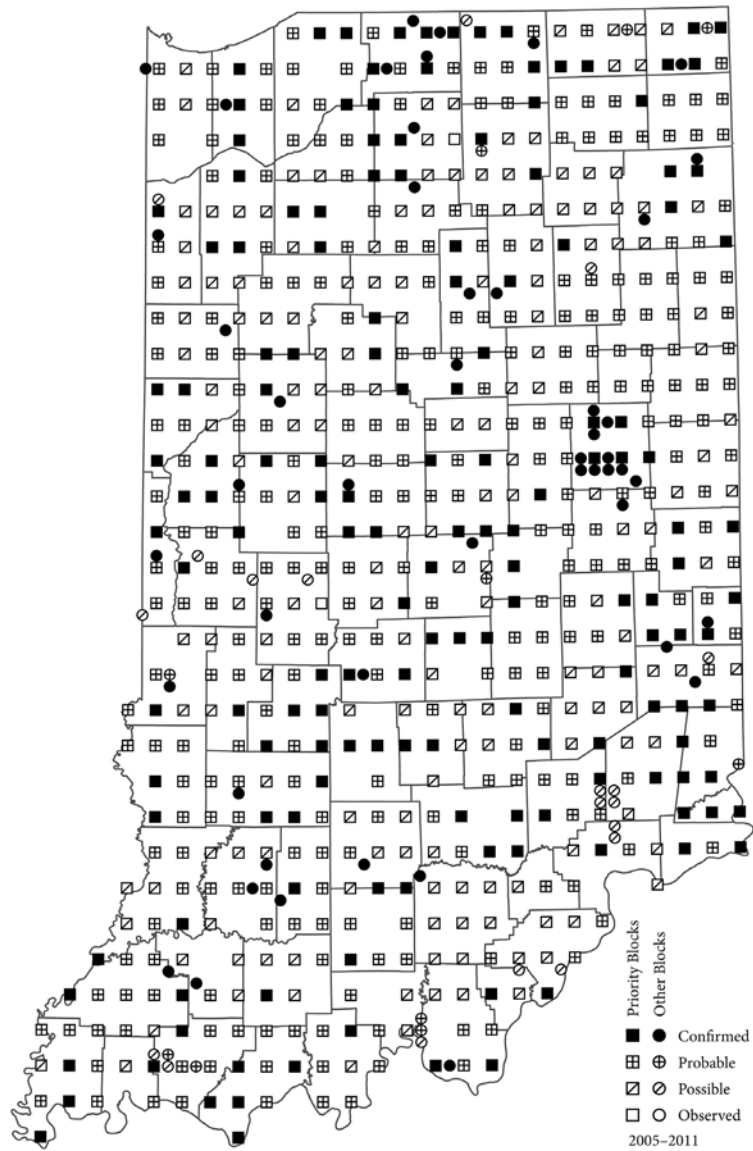


Figure 84 Map of the occurrences of the Red-tailed Hawk in IBBA blocks during 2005–2011.

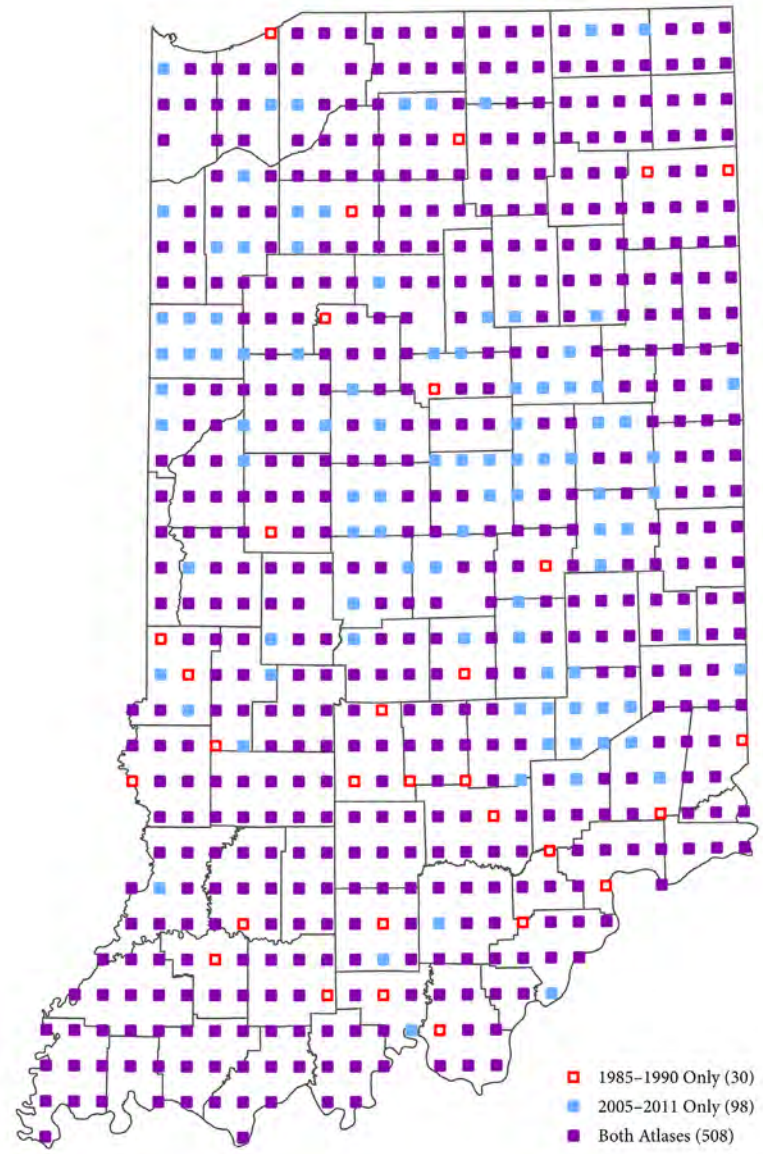


Figure 85. Map of the occurrences of the Red-tailed Hawk in IBBA priority blocks during both atlas periods.

Rails, Gallinules, and Cranes (Gruiformes)

Tables 58–64, Fig. 86-98

THIS MARSHBIRD GROUP consists of three breeding species of rail, plus the Common Gallinule, American Coot, and Sandhill Crane. Rails are exceedingly difficult to observe due to their propensity for thick, emergent vegetation in shallow marshes and ditches interspersed with open water and mudflats (Meanley 1992, Eddleman *et al.* 1994, Conway 1995, Melvin and Gibbs 1996). Diets consist of a variety of insects, crayfish, frogs, and small fish, as well as seeds and other parts of aquatic plants. Nests are well-concealed mounds of marsh vegetation suspended over water. All species are migratory with wintering areas in marshes and coastal areas of the southern United States and Central and South America.

Rails are most readily detected during evening or early morning bouts of calling and they respond to recorded playbacks. The degree to which atlas workers actively sought out rails is unknown, but their presence was certainly underrepresented on the atlas due to their secretive habits. During both atlas projects, three rail species were confirmed breeding, with the Sora most commonly reported, followed by the Virginia Rail and King Rail. The Black Rail, a species never confirmed nesting in Indiana, was rarely detected in non-priority blocks. Sora and Virginia Rail breed throughout the state, although most encounters are reported from northern Indiana where natural and artificial wetlands are more abundant. All four rail species were detected at Goose Pond Fish and Wildlife Area in Greene County, where this extensive area of recently restored marshes and grasslands has drawn the attention of many bird-watchers. The number of rails reported in priority blocks did not change appreciably between atlas periods.

Virginia Rail and Sora were the most common rail species detected on atlas projects in Indiana, Michigan, and Ohio, with small and inconsistent differences between periods. King Rail, a confirmed nester in small numbers in all three states, had similar rates of occurrence between the first and second atlases. Yellow Rail breeds in small numbers in the Upper Peninsula of Michigan, but were not confirmed nesters during

the first atlas. One was reported during safe dates in LaPorte County during 2016 (Carper 2016). Black Rail is rarely encountered during the supposed breeding season in Indiana, Michigan, or Ohio, and has never been confirmed nesting. Calling or territorial birds were reported during safe dates in Floyd, Jackson, LaGrange, and Owen counties from 2016-2021 (Brock 2016, 2018, 2021, Carper 2016).

Common Gallinule and American Coot are duck-like birds inhabiting wetlands that have a mix of open water and dense emergent vegetation (Bannor and Kiviat 2002, Brisban and Mowbray 2002). As with the rails, nests consist of mounds of marsh vegetation built just above the water surface. Both species are quite vocal and more readily observed than the rails. Gallinules and American Coots feed primarily on seeds, leaves, and other parts of marsh vegetation, but also consume invertebrates. Both are migratory. Flocks of American Coots are sometimes encountered in large numbers during the winter on larger lakes and reservoirs. American Coots were more frequently encountered than Common Gallinules during both atlases and can be found statewide, although most occurrences were in northern blocks. The number of occurrences for the Common Gallinule was low, but similar, between atlas periods. American Coot detections in priority blocks declined by about a third, but were not statistically different. American Coots and Common Gallinules nest consistently at low frequencies in Indiana, Michigan, and Ohio. Fewer numbers of both species were detected in all three states on the second atlas. The Purple Gallinule was confirmed breeding in a single block on the second Ohio atlas.

The Sandhill Crane is strikingly different in appearance from the other members of this group, although it also nests in marshes on mats of vegetation (Tacha *et al.* 1992). Besides feeding on invertebrates and marsh vegetation in wetlands, it also forages on waste grain in agricultural fields (as does the Canada Goose). Sandhill Cranes are most noticeable in Indiana during fall and spring migration due to their flocking behavior. Flocks

consisting of two dozen to thousands of cranes may be encountered feeding in fields, roosting in shallow water, or flying overhead, oftentimes vocalizing. Much of the eastern population breeds in states and Canadian provinces north of Indiana and winters in the southeastern states. As increasing numbers have been found during the winter in the state, the breeding population has increased dramatically in the past several decades. During the 1985–1990 IBBA, nesting was almost totally restricted to northeastern Indiana. In ensuing years, nesting cranes expanded their range across the northern three tiers of Indiana counties with sporadic records in more southern regions. Successful nesting has now been confirmed as far south as Greene and Sul-

livan counties (Brock 2017, 2018). The large increase in frequency of occurrence was statistically significant between atlas periods. Sandhill Cranes were most commonly encountered on the Michigan atlas and least likely detected in Ohio. As in Indiana, numbers have increased dramatically.

During 2015, a totally unexpected nesting attempt by a pair of Whooping Cranes was documented (Kearns et al. 2022). A pair of banded Whooping Cranes from the reintroduced population remained on their wintering grounds in Gibson County. Three nesting platforms were discovered in April, but there was no evidence of eggs being laid. The female was later found dead.

Black Rail



A Black Rail forages around muddy soil and vegetation. *Photo by Pablo Gutiérrez Maier.*

Table 58. Regional occurrence and abundance information for the Black Rail.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | 2005–2011 | 1985–1990 |
|------------------------|-----------|-----------|
| Priority Blocks | | |
| Confirmed | 0 | 0 |
| Probable | 0 | 0 |
| Possible | 0 | 0 |
| Sum | 0 | 0 |
| Observed | 0 | - |
| Other blocks | | |
| Confirmed | 0 | 0 |
| Probable | 4 | 0 |
| Possible | 2 | 0 |
| Sum | 6 | 0 |
| Observed | 0 | - |

Black Rail



Figure 86. Map of the occurrences of the Black Rail in IBBA blocks during 2005–2011.

King Rail



A King Rail walks on rocky soil in front of a flowering soapwort plant. *Photo by Michael Brown.*

Table 59. Regional occurrence and abundance information for the King Rail.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|--------------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 0 | <1 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 1 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | <1 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 2 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | <1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|----|----------|-----|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 0 | 0 |
| Probable | 1 | 50 | 0 | 0 |
| Possible | 1 | 50 | 1 | 100 |
| Sum | 2 | | 1 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 4 | | 2 | |
| Probable | 4 | | 1 | |
| Possible | 0 | | 1 | |
| Sum | 8 | | 4 | |
| Observed | 0 | | - | |

King Rail

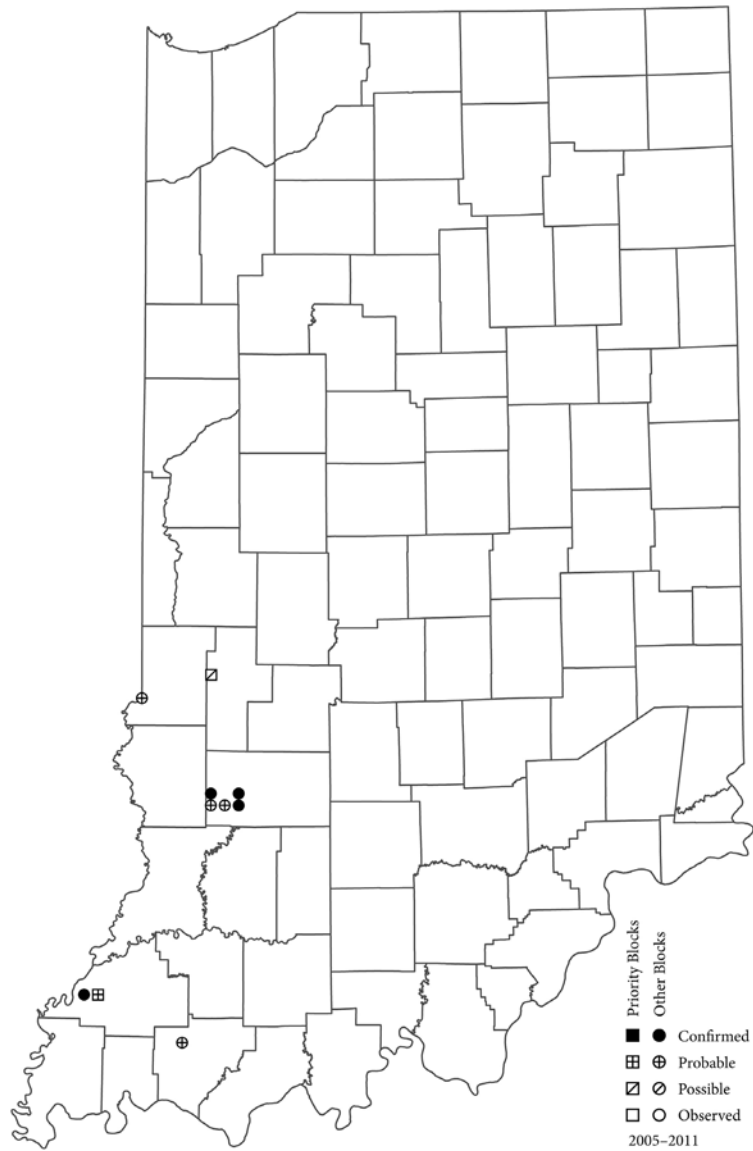


Figure 87. Map of the occurrences of the King Rail in IBBA blocks during 2005–2011.



Figure 88. Map of the occurrences of the King Rail in IBBA priority blocks during both atlas periods.

Virginia Rail



A Virginia Rail foraging in algae-rich water. *Photo by Shari McCollough.*

Table 60. Regional occurrence and abundance information for the Virginia Rail.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 6 | 6 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 5 | 4 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 7 | 7 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 1 | <1 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 2 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | <1 | <1 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | <1 | <1 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | <1 | 2 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 2 | 2 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 2 | 20 |
| Probable | 8 | 67 | 1 | 10 |
| Possible | 4 | 33 | 7 | 70 |
| Sum | 12 | | 10 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 2 | | 1 | |
| Probable | 6 | | 4 | |
| Possible | 10 | | 0 | |
| Sum | 18 | | 5 | |
| Observed | 0 | | - | |

Virginia Rail

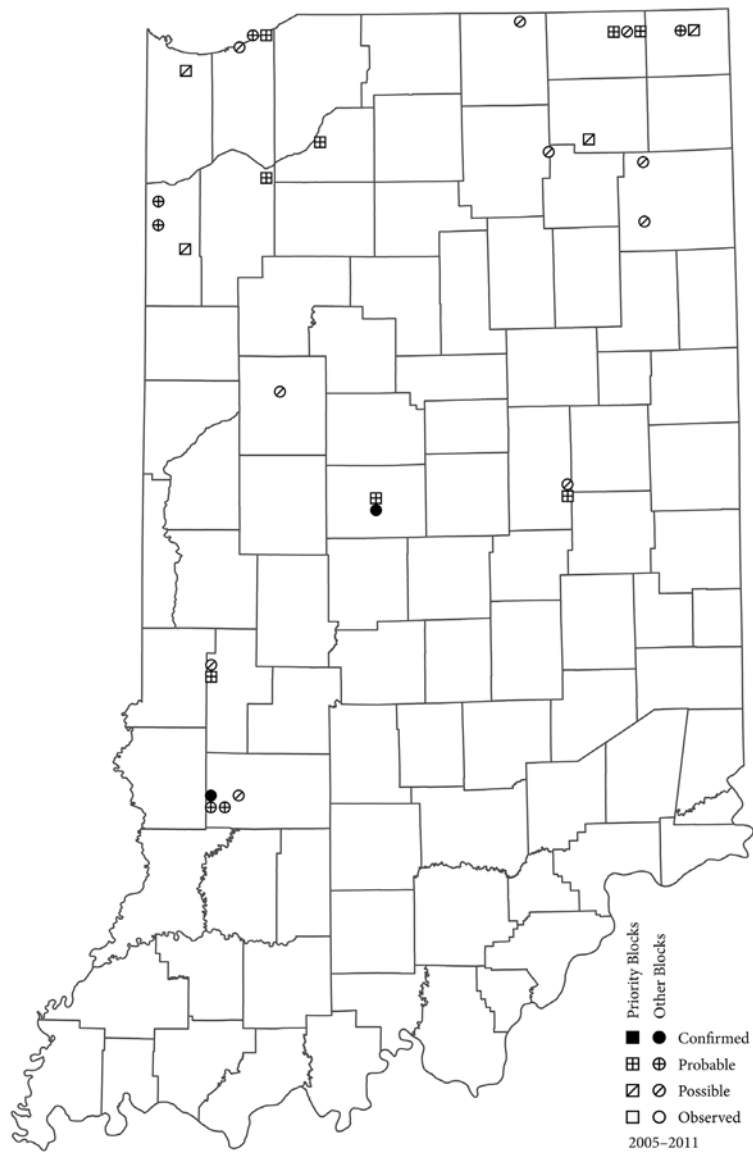


Figure 89. Map of the occurrences of the Virginia Rail in IBBA blocks during 2005–2011.

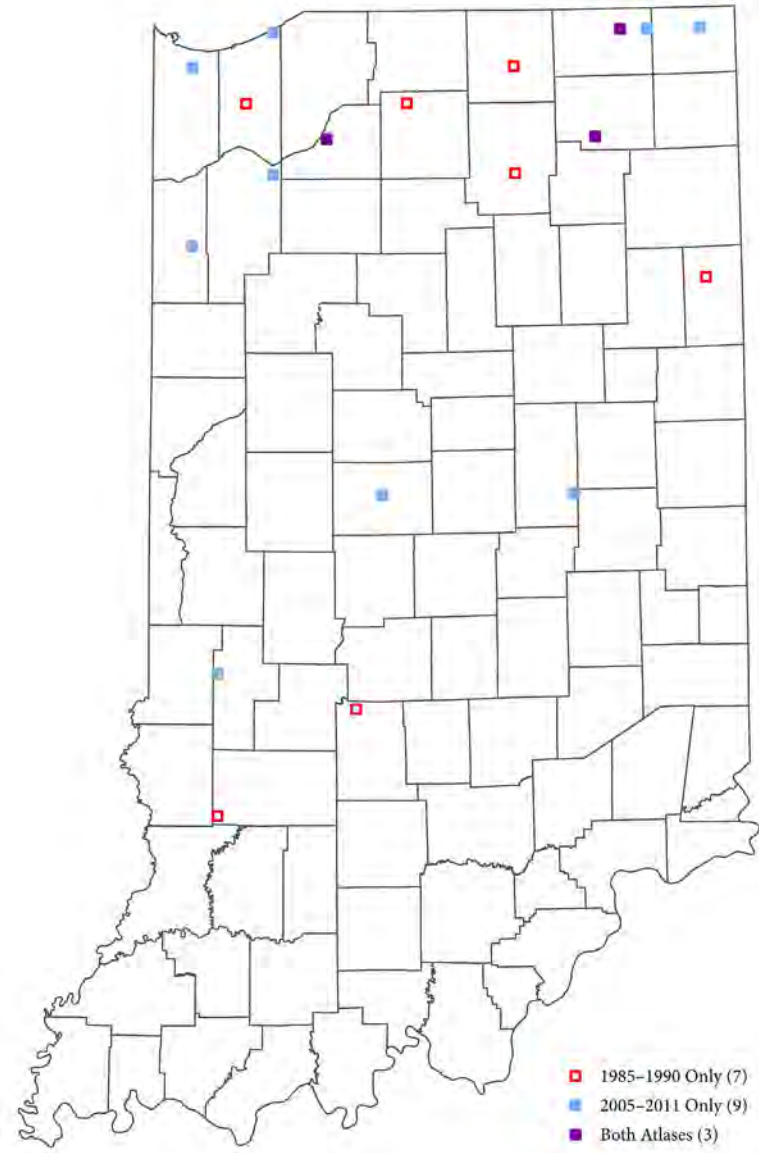


Figure 90. Map of the occurrences of the Virginia Rail in IBBA priority blocks during both atlas periods.

Sora



A Sora wades through algae and vegetation-rich water. *Photo by Shari McCollough.*

Table 61. Regional occurrence and abundance information for the Sora.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 17 | 9 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 11 | 5 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 24 | 15 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 4 | 3 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 3 | <1 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 5 | 4 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | <1 | 4 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 4 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 1 | 2 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 2 | 6 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 5 | 4 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 2 | 6 | 2 | 7 |
| Probable | 10 | 29 | 10 | 36 |
| Possible | 22 | 65 | 16 | 57 |
| Sum | 34 | | 28 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 3 | | 0 | |
| Probable | 4 | | 4 | |
| Possible | 7 | | 3 | |
| Sum | 14 | | 7 | |
| Observed | 0 | | - | |

Sora

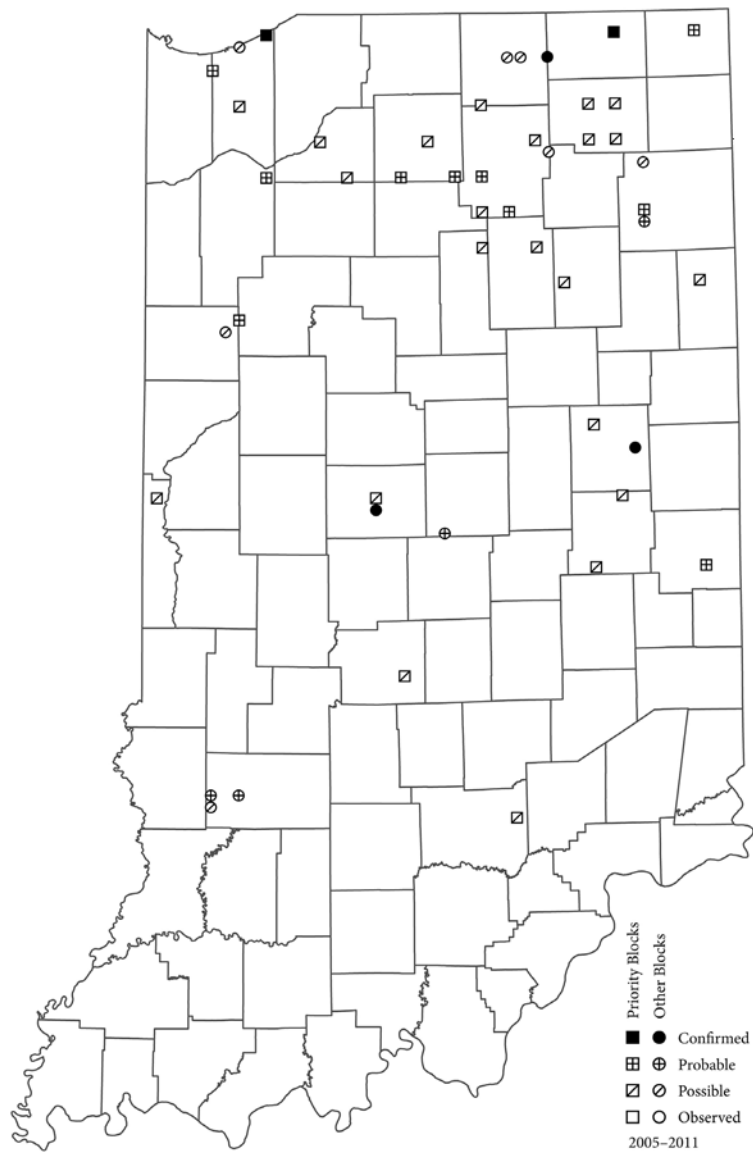


Figure 91. Map of the occurrences of the Sora in IBBA blocks during 2005–2011.

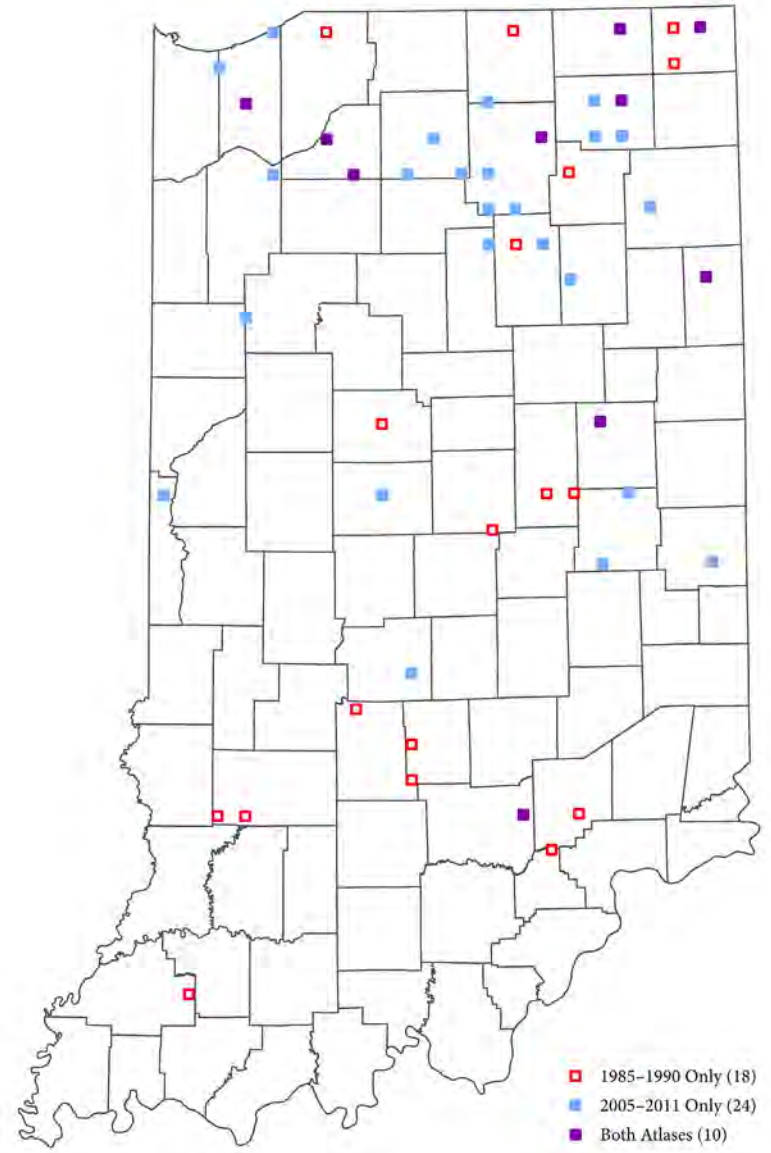


Figure 92. Map of the occurrences of the Sora in IBBA priority blocks during both atlas periods.

Common Gallinule



A Common Gallinule swims in open water in front of a wall of cattails. *Photo by Jeremy Ross.*

Table 62. Regional occurrence and abundance information for the Common Gallinule.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|------------------------|----|-----------|----|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 5 | 3 | 55 | 0 | 31 | 0 | Priority Blocks | | | | |
| Northwest | 73 | 5 | 4 | 34 | 0 | 19 | 0 | Confirmed | 2 | 29 | 6 | 75 |
| Northeast | 54 | 4 | 2 | 21 | 0 | 12 | 0 | Probable | 2 | 29 | 2 | 25 |
| Central | 273 | 0 | <1 | 110 | 0 | 102 | 0 | Possible | 3 | 43 | 0 | 0 |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | Sum | 7 | | 8 | |
| East-central | 159 | 0 | <1 | 54 | 0 | 64 | 0 | Observed | 3 | | - | |
| South | 246 | <1 | 1 | 97 | 0 | 88 | 0 | Other blocks | | | | |
| Southwest | 106 | 0 | <1 | 47 | 0 | 39 | 0 | Confirmed | 12 | | 9 | |
| South-central | 87 | 0 | 1 | 35 | 0 | 35 | 0 | Probable | 4 | | 2 | |
| Southeast | 53 | 2 | 2 | 15 | 0 | 14 | 0 | Possible | 4 | | 4 | |
| Statewide | 646 | 1 | 1 | 262 | 0 | 221 | 0 | Sum | 20 | | 15 | |
| | | | | | | | | Observed | 1 | | - | |

Common Gallinule

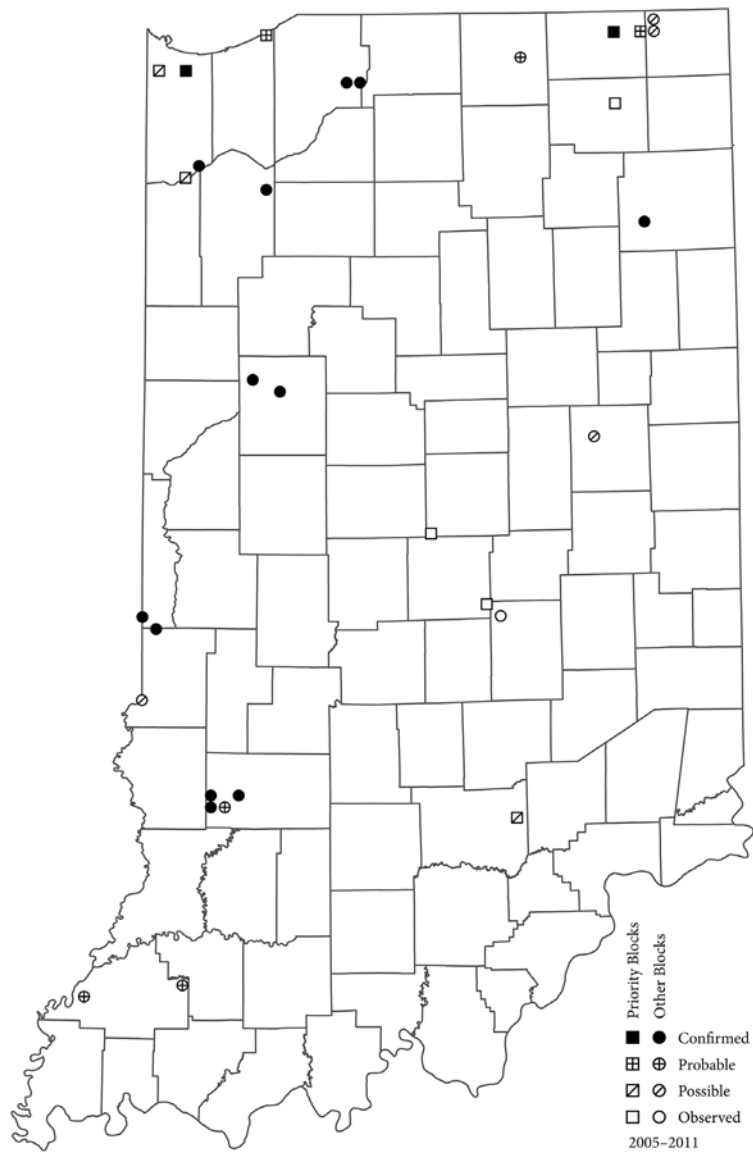


Figure 93. Map of the occurrences of the Common Gallinule in IBBA blocks during 2005–2011.

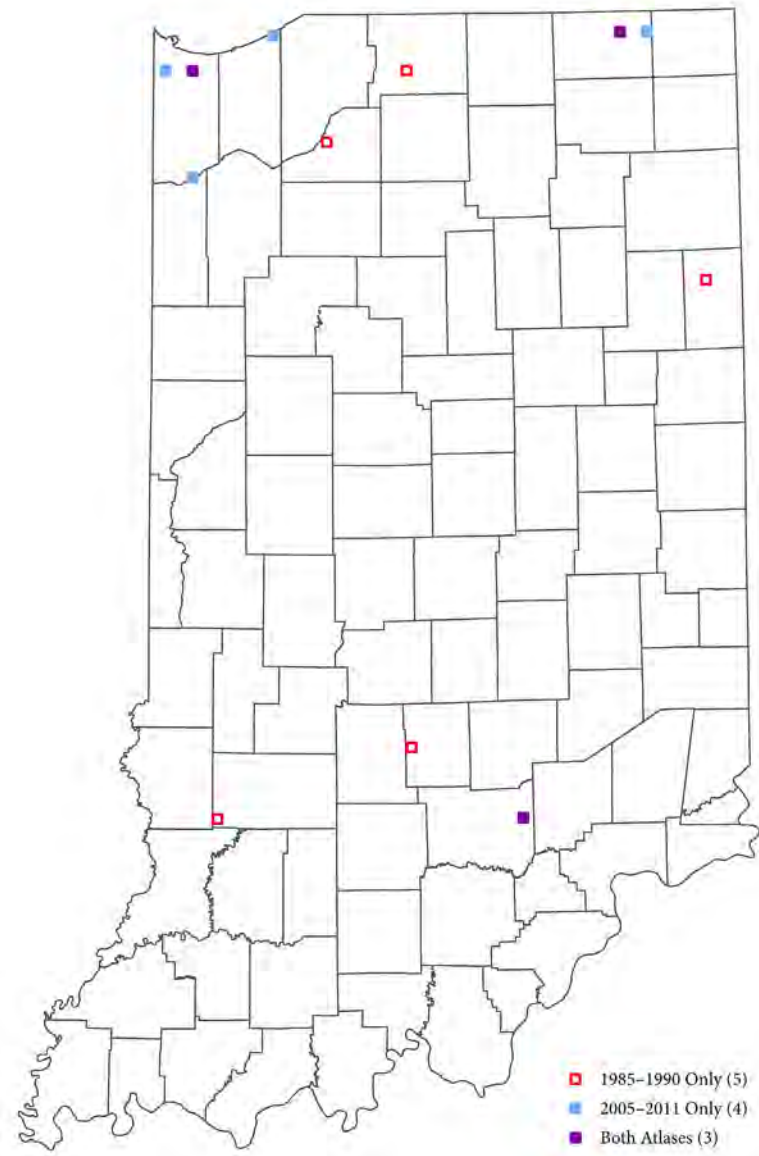


Figure 94. Map of the occurrences of the Common Gallinule in IBBA priority blocks during both atlas periods.

American Coot



An American Coot swims through water with dense cattail vegetation. *Photo by Shari McCollough.*

Table 63. Regional occurrence and abundance information for the American Coot.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|-----------------|------------------------|-----------|-----|-----------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 8 | 8 | 55 | 0.00 | 31 | 0.00 | Priority Blocks | | | | |
| Northwest | 73 | 5 | 8 | 34 | 0.00 | 19 | 0.00 | Confirmed | 5 | 24 | 8 | 26 |
| Northeast | 54 | 11 | 7 | 21 | 0.00 | 12 | 0.00 | Probable | 7 | 33 | 9 | 29 |
| Central | 273 | 2 | 3 | 110 | <0.01 | 102 | 0.01 | Possible | 9 | 43 | 14 | 45 |
| West-central | 114 | 2 | 3 | 56 | 0.02 | 38 | 0.03 | Sum | 21 | | 31 | |
| East-central | 159 | 3 | 4 | 54 | 0.00 | 64 | 0.00 | Observed | 3 | | - | |
| South | 246 | 2 | 5 | 97 | 0.02 | 88 | 0.00 | Other blocks | | | | |
| Southwest | 106 | 2 | 2 | 47 | 0.04 | 39 | 0.00 | Confirmed | 4 | | 5 | |
| South-central | 87 | 2 | 7 | 35 | 0.00 | 35 | 0.00 | Probable | 2 | | 2 | |
| Southeast | 53 | 2 | 8 | 15 | 0.00 | 14 | 0.00 | Possible | 7 | | 3 | |
| Statewide | 646 | 3 | 5 | 262 | 0.01 | 221 | <0.01 | Sum | 13 | | 10 | |
| | | | | | | | | Observed | 4 | | - | |

American Coot

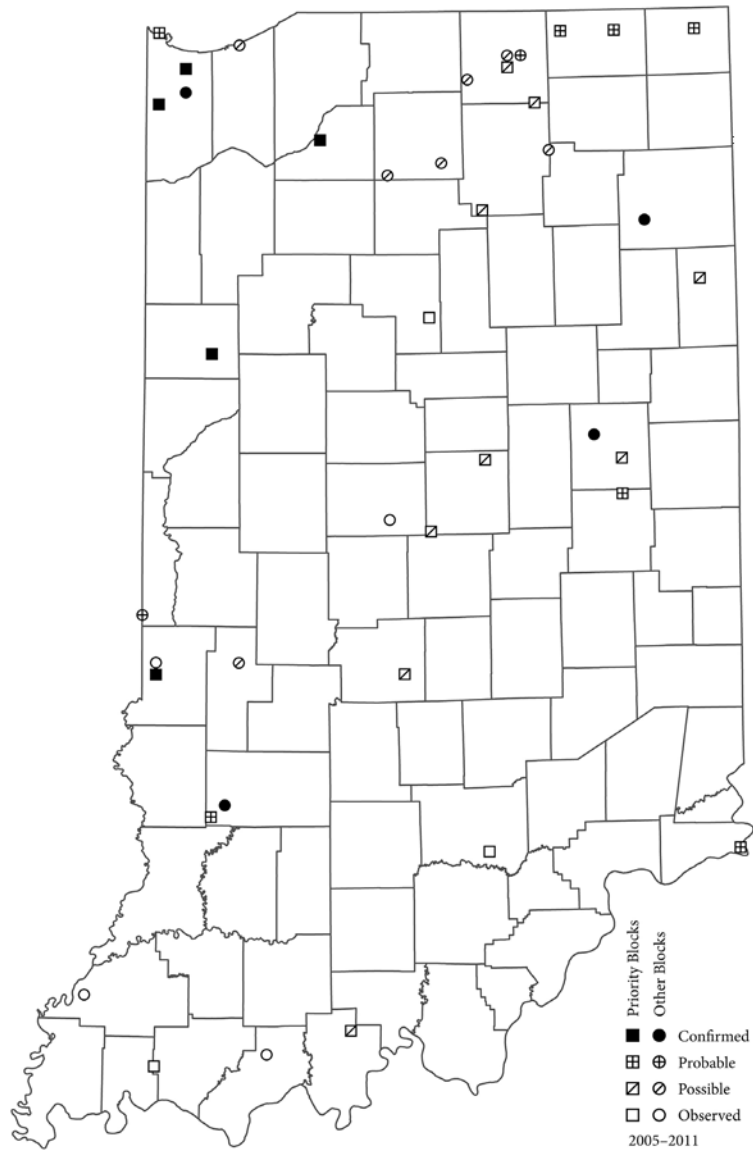


Figure 95. Map of the occurrences of the American Coot in IBBA blocks during 2005–2011.

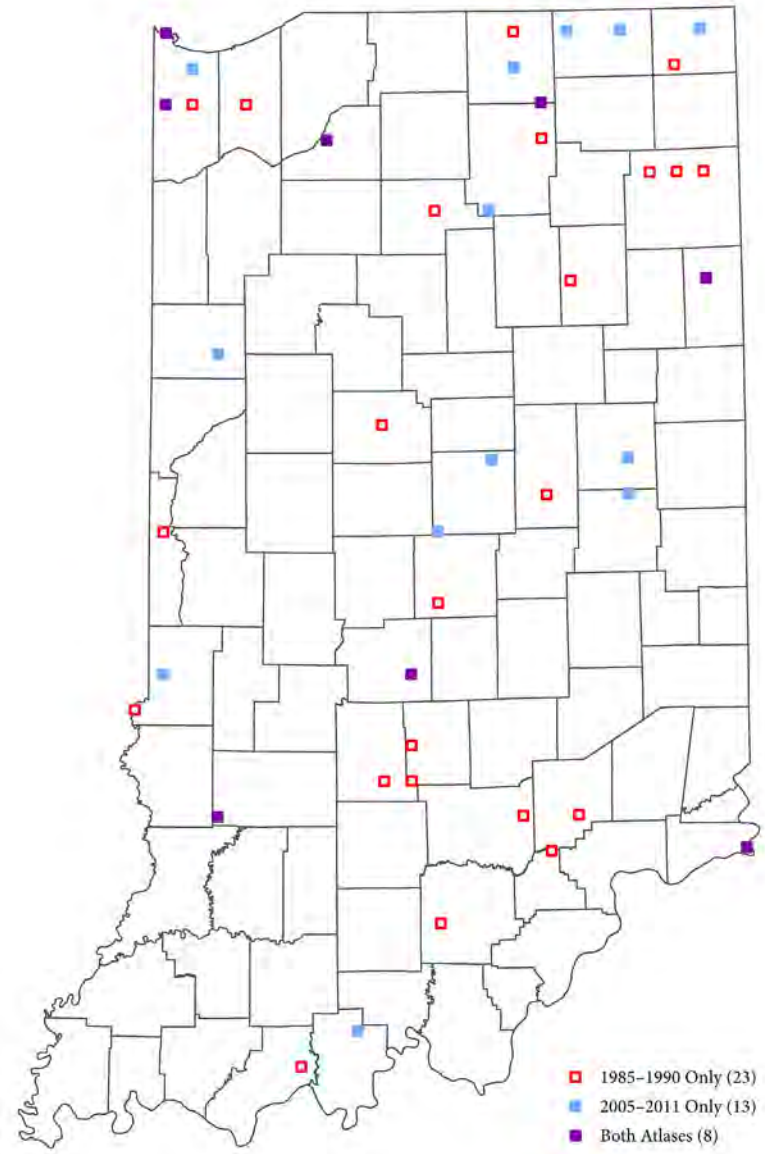


Figure 96. Map of the occurrences of the American Coot in IBBA priority blocks during both atlas periods.

Sandhill Crane



An immature Sandhill Crane stands to the right of an adult, both facing opposite directions in a field of cut corn stalks. Photo by Shari McCollough.

Table 64. Regional occurrence and abundance information for the Sandhill Crane.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|--------------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 22 | 2 | 55 | 0.67 | 31 | 0.00 | | | | |
| Northwest | 73 | 12 | 1 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 35 | 4 | 21 | 1.76 | 12 | 0.00 | | | | |
| Central | 273 | <1 | 0 | 110 | 0.02 | 102 | 0.00 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0.04 | 38 | 0.00 | | | | |
| East-central | 159 | <1 | 0 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 0 | 0 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 4 | <1 | 262 | 0.15 | 221 | 0.00 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|----------|----|
| Priority Blocks | | | | |
| Confirmed | 13 | 45 | 2 | 67 |
| Probable | 8 | 28 | 0 | 0 |
| Possible | 8 | 28 | 1 | 33 |
| Sum | 29 | | 3 | |
| Observed | 6 | | - | |
| Other blocks | | | | |
| Confirmed | 22 | | 5 | |
| Probable | 8 | | 0 | |
| Possible | 4 | | 1 | |
| Sum | 34 | | 6 | |
| Observed | 1 | | - | |

Sandhill Crane

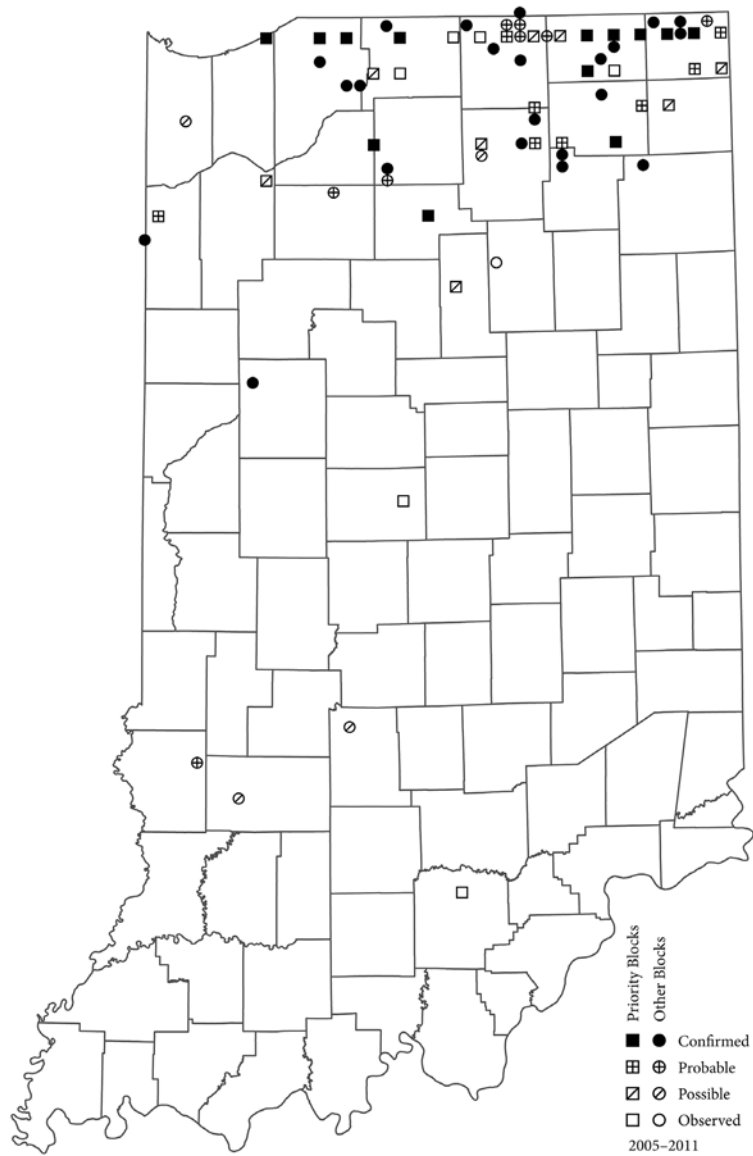


Figure 97. Map of the occurrences of the Sandhill Crane in IBBA blocks during 2005-2011.

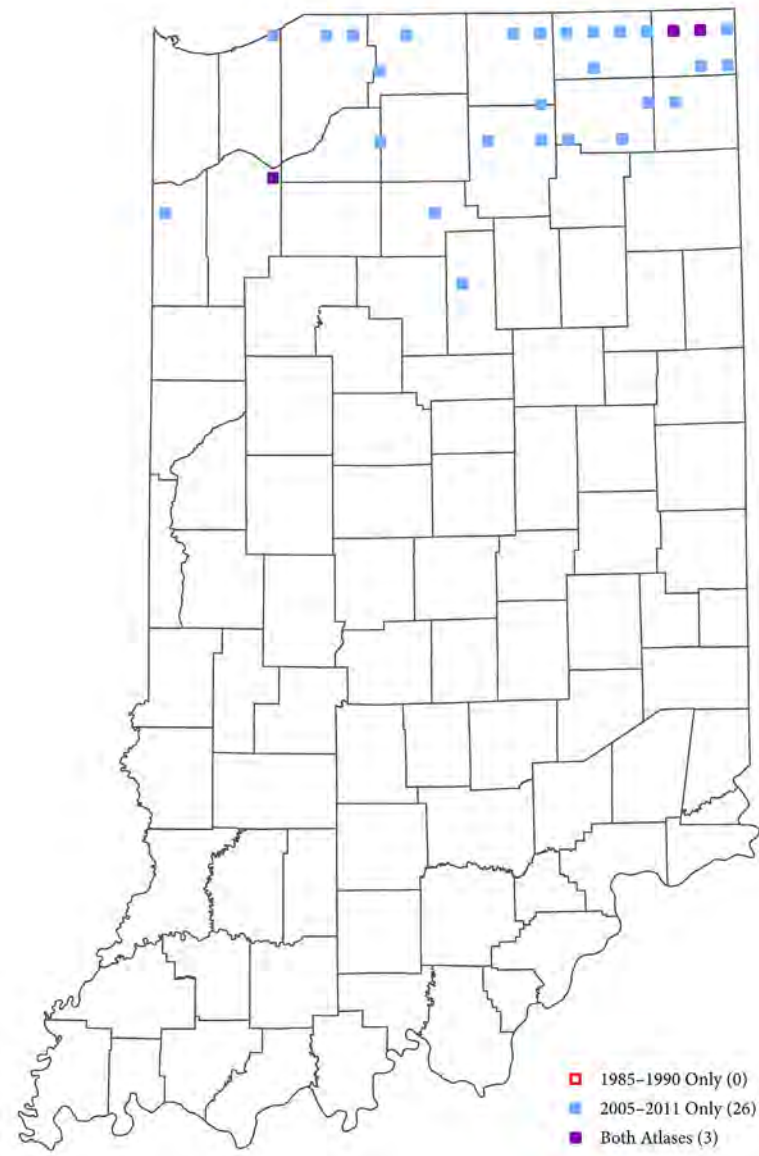


Figure 98. Map of the occurrences of the Sandhill Crane in IBBA priority blocks during both atlas periods.

Shorebirds, Gulls, and Terns (Charadriiformes)

Tables 65–76, Fig. 99–115

INCLUDED IN THIS group are seven breeding shorebirds, two gulls, and two terns. All nest on the ground spending little effort to construct a nest except to form a small depression, sometimes lined with stones or vegetation in the case of the gulls. Gulls and terns breed in colonies while the other species nest singly (Dunn and Argo 1995, Cuthbert and Wires 1999). The gulls and terns feed on small fish and aquatic invertebrates. The gulls also feed in agricultural fields and on garbage and human handouts (Ryder 1993, Pierotti and Good 1994, Thompson *et al.* 1997). The shorebirds feed on aquatic invertebrates and probe into moist substrate in shallow water or mud or pick prey items from the ground, water, or vegetation (Colwell and Jehl 1994, Oring *et al.* 1997, Mueller 1999, Robinson *et al.* 1999). Most shorebirds are found near water, although the Upland Sandpiper is a bird of upland grasslands (Houston and Bowen 2001) and the American Woodcock is associated with early successional forests (Keppie and Whiting 1994). Spotted Sandpiper is often found along river sandbars or shorelines. Killdeer, one of the most common birds in heavily agricultural areas, nests along gravel roads and parking lots and in crop fields and other areas with sparse vegetation (Jackson and Jackson 2000). All species are migratory, although Killdeer, Wilson's Snipe, American Woodcock, Ring-billed Gull, and Herring Gull may winter in small numbers.

The Killdeer is the only species in this group that can be considered abundant; it was found in nearly every atlas block during both periods. Relative densities on Breeding Bird Survey routes were somewhat greater in east-central and northeastern regions, and all areas showed increased numbers between atlas periods. BBS numbers indicate that populations have undergone a significant increase over the past two decades in Indiana with relative densities greatest in regions with more farmland and least common in forested areas. Killdeer, also the most common shorebird detected on the Ohio and Michigan atlases, was found in nearly all blocks in Ohio and at much lower frequencies in Michigan. Rates of observations declined greatly in

Michigan, but only slightly in Ohio.

The federally endangered Piping Plover does not nest in Indiana or Ohio, but breeding colonies of this species have been slowly increasing in Michigan. A pair was discovered nesting along the Lake Michigan shoreline of Chicago in 2019 and subsequent years, so there is a good possibility this species could nest in northwestern Indiana in the future.

The Black-necked Stilt is a recent addition to the breeding birds of Indiana as a result of a range expansion from the western United States. Nesting was first recorded in 2002. Breeding now occurs annually and is restricted primarily to southwestern Indiana, especially Gibson Lake and the Goose Pond Fish and Wildlife Area. Since the second atlas was completed, further range expansion has been noted with nesting records for Lake and Tippecanoe counties (Brock 2015, 2017). This species was also confirmed breeding on the recent atlases (but not the first ones) in Ohio and Michigan at rates lower than in Indiana.

The Spotted Sandpiper was found in moderate numbers of atlas blocks throughout the state, with increasing occurrences northward. Between atlas periods, frequencies declined somewhat, especially in southern regions of Indiana, while most northern areas were similar or showed increases. Occurrences in some blocks were certainly overlooked due to the difficulty of surveying riverbanks and islands. Relative densities on Breeding Bird Surveys were also greatest in northern Indiana, while birds were rarely observed in southern Indiana. The statewide average remained virtually unchanged between atlas periods, with small increases in three of four central and northern regions and a decline in northeastern Indiana. Over the 1985–2011 period, the BBS population trend was positive but not statistically significant. Spotted Sandpipers were recorded at similar rates on the Indiana and Michigan atlases and in a greater proportion of Ohio atlas blocks. Small declines between atlas periods were consistent in all three states, although the decreases were much more pronounced in Ohio.

Indiana's small population of the Upland Sandpiper appears to have declined with occurrences widely dispersed in northern and western Indiana. The BBS trend was negative, but not statistically significant. Occurrence rates of Upland Sandpiper were greatest on the Michigan atlas, but all three states exhibited similar patterns of substantial declines between atlas periods. Wilson's Snipe and Wilson's Phalarope are rare and sporadic breeders in emergent wetlands. Neither was detected during the 1985–1990 atlas in Indiana, while the current effort confirmed breeding in one block for Wilson's Phalarope and two non-priority blocks with Wilson's Snipe. Wilson's Phalarope was also absent as confirmed breeders on the first atlases in Michigan and Ohio, but the most recent ones included three confirmed records for Michigan and one for Ohio. Compared to Indiana, Wilson's Snipe was more commonly detected on atlases in Ohio and especially Michigan, but the number of records declined there between atlas periods.

The American Woodcock is found in moderate numbers throughout the state, although the number of occurrences declined significantly between atlas periods. South-central Indiana, the most heavily forested area of the state, exhibited the most dramatic change in frequencies. The reduction in timber cutting on public and private lands and fewer early successional forests are blamed for the decline in American Woodcock throughout their range. This species was also found in a moderate number of blocks on Michigan and Ohio atlases, with relative occurrence greatest in Ohio. Substantially fewer blocks recorded American Woodcock during the most recent atlases in all three states, with Indiana showing the greatest rate of decline.

Breeding colonies of Ring-billed Gull and Herring Gull have increased during the past two decades with nesting restricted to northern Indiana. The largest colonies exist in Lake County where tens of thousands of Ring-billed Gulls and hundreds of Herring Gulls nest on discarded fill and waste material at steel mills adja-

cent to the shoreline of Lake Michigan. Breeding colonies elsewhere are much smaller and nesting more sporadic. The large increase in Ring-billed Gulls observed on Breeding Bird Surveys was statistically significant. The Michigan and Ohio atlas had more records of Ring-billed Gull and Herring Gull and all states have reported increasing numbers and sites with breeding colonies in recent years.

During the 1985–1990 atlas, the federally endangered Least Tern nested in a small colony at one Indiana location at Gibson Lake. Conservation efforts have paid off with numbers of pairs increasing and additional colonies becoming established in southwestern Indiana. In 2015, colonies were known at power plants in Gibson and Spencer counties, nearby areas along the Wabash and Ohio Rivers, Cane Ridge Wildlife Management Area, a mine site in Gibson County and an island created for Least Terns at the Goose Pond Fish and Wildlife Area in Greene County. Least Terns have not nested or been recorded on atlases in Michigan and Ohio.

The Caspian Tern was first discovered nesting in Indiana during 1997 (Brock and Castrale 1997) and a small colony has nested multiple years on slag piles and building rooftops at a steel mill in Lake County. This species has not been reported breeding in Ohio, while Michigan has several coastal colonies in northern portions of the state.

Black Terns nested in a few marshlands in extreme northern Indiana during the previous atlas period but nesting has not been reported since 1997. This species is likely extirpated as a breeder in Indiana and many other eastern states. Michigan and Ohio had a few records of Black Terns confirmed nesting during both atlases, but rates of occurrence declined substantially between atlas periods. Common Terns were also confirmed breeding at a few colonies during both atlases in Michigan and Ohio, while Forsters's Terns nest at even fewer sites in Michigan.

Black-necked Stilt



A Black-necked Stilt wades through water. *Photo by Ryan Sanderson.*

Table 65. Regional occurrence and abundance information for the Black-necked Stilt.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | <1 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 2 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 2 | 100 | 0 | |
| Probable | 0 | 0 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 2 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 8 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 8 | | 0 | |
| Observed | 2 | | - | |

Black-necked Stilt

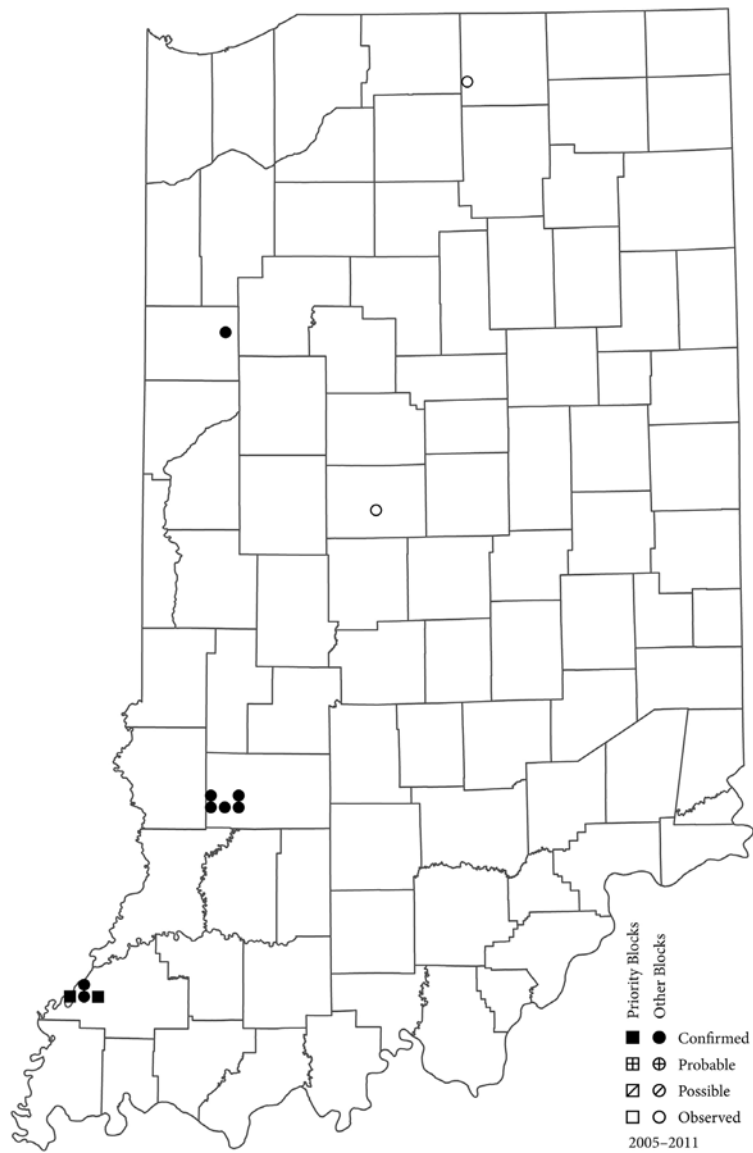


Figure 99. Map of the occurrences of the Black-necked Stilt in IBBA blocks during 2005–2011.

Killdeer



A Killdeer with wet feathers stands in short vegetation. *Photo by Michael Brown.*

Table 66. Regional occurrence and abundance information for the Killdeer.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 99 | 97 | 55 | 20 | 31 | 14 | | | | |
| Northwest | 73 | 99 | 96 | 34 | 17 | 19 | 14 | | | | |
| Northeast | 54 | 100 | 98 | 21 | 25 | 12 | 16 | | | | |
| Central | 273 | 99 | 98 | 110 | 24 | 102 | 13 | | | | |
| West-central | 114 | 98 | 96 | 56 | 22 | 38 | 14 | | | | |
| East-central | 159 | 100 | 99 | 54 | 27 | 64 | 13 | | | | |
| South | 246 | 95 | 97 | 97 | 14 | 88 | 9 | | | | |
| Southwest | 106 | 96 | 100 | 47 | 20 | 39 | 12 | | | | |
| South-central | 87 | 93 | 93 | 35 | 5 | 35 | 4 | | | | |
| Southeast | 53 | 96 | 98 | 15 | 17 | 14 | 9 | | | | |
| Statewide | 646 | 98 | 98 | 262 | 20 | 221 | 12 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 440 | 70 | 307 | 49 |
| Probable | 172 | 27 | 259 | 41 |
| Possible | 19 | 3 | 64 | 10 |
| Sum | 631 | | 630 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 19 | | 12 | |
| Probable | 8 | | 4 | |
| Possible | 11 | | 3 | |
| Sum | 38 | | 19 | |
| Observed | 0 | | - | |

Killdeer

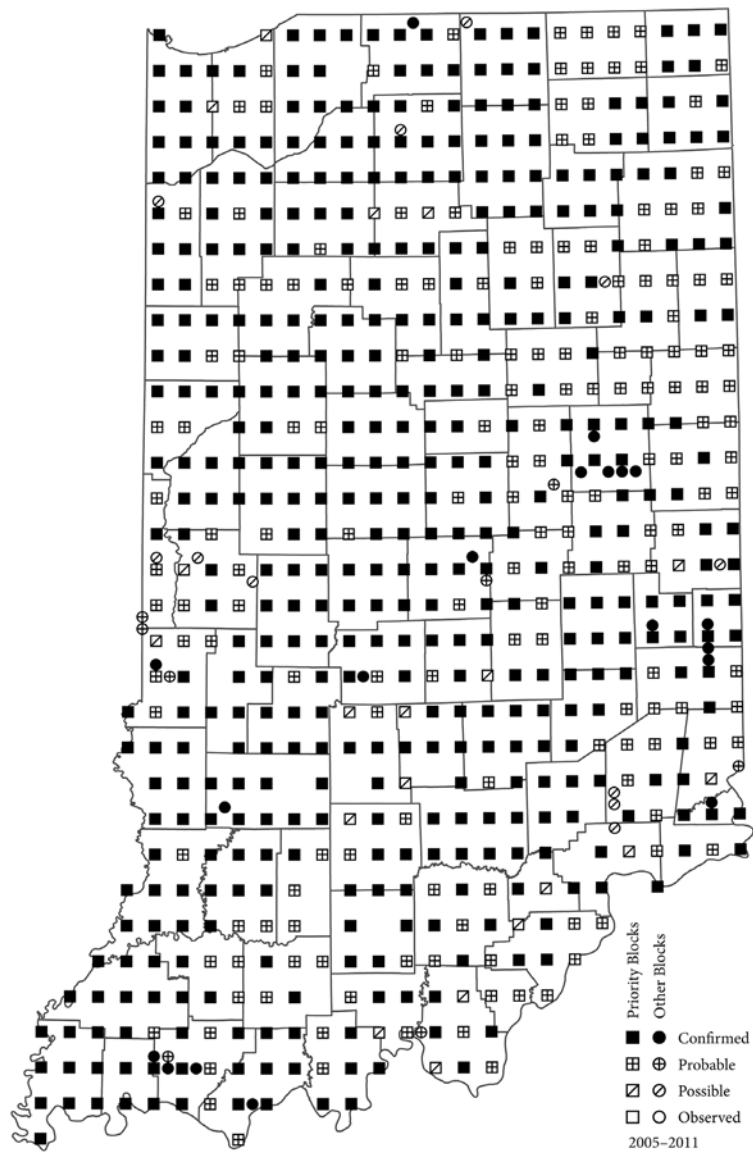


Figure 100. Map of the occurrences of the Killdeer in IBBA blocks during 2005–2011.

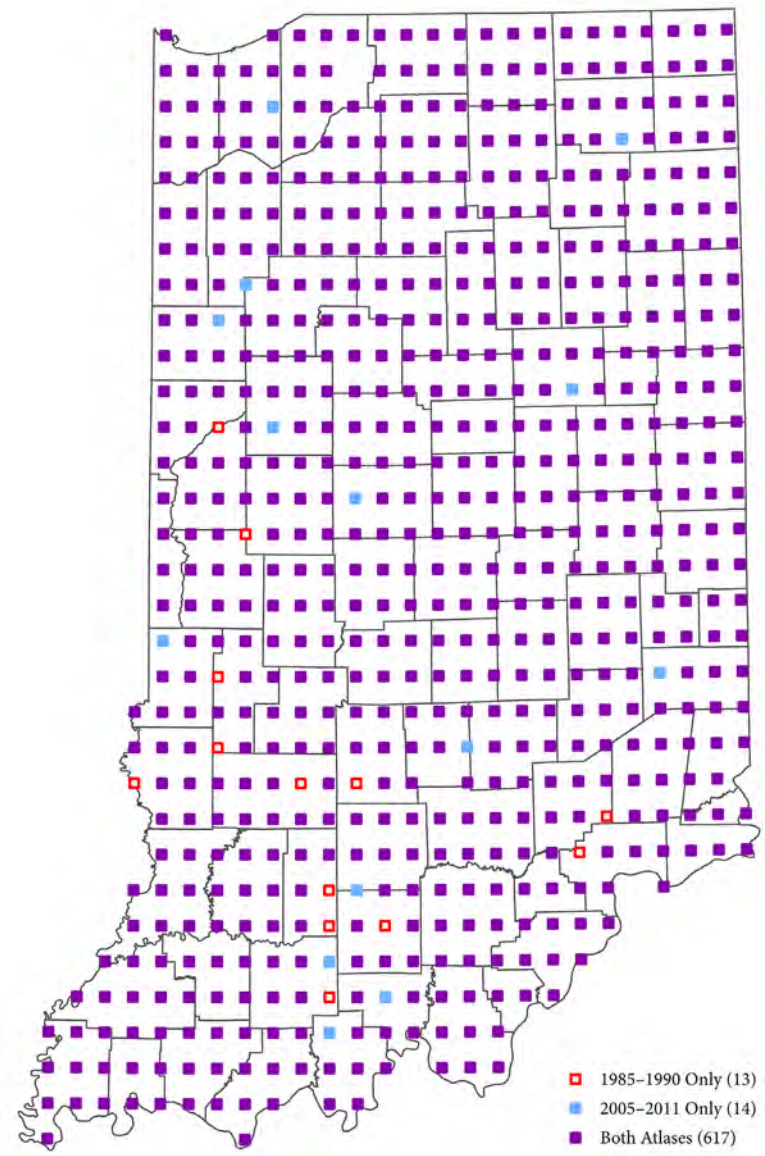


Figure 101. Map of the occurrences of the Killdeer in IBBA priority blocks during both atlas periods.

Spotted Sandpiper



A breeding adult Spotted Sandpiper walks through algae covered ground vegetation. *Photo by Michael Brown.*

Table 67. Regional occurrence and abundance information for the Spotted Sandpiper.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 20 | 16 | 55 | 0.11 | 31 | 0.23 | | | | |
| Northwest | 73 | 21 | 15 | 34 | 0.09 | 19 | 0.05 | | | | |
| Northeast | 54 | 20 | 17 | 21 | 0.14 | 12 | 0.50 | | | | |
| Central | 273 | 16 | 13 | 110 | 0.09 | 102 | 0.02 | | | | |
| West-central | 114 | 18 | 9 | 56 | 0.09 | 38 | 0.03 | | | | |
| East-central | 159 | 14 | 16 | 54 | 0.09 | 64 | 0.02 | | | | |
| South | 246 | 7 | 18 | 97 | 0.00 | 88 | 0.01 | | | | |
| Southwest | 106 | 11 | 30 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 6 | 9 | 35 | 0.00 | 35 | 0.03 | | | | |
| Southeast | 53 | 0 | 8 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 13 | 15 | 262 | 0.06 | 221 | 0.05 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 12 | 14 | 12 | 12 |
| Probable | 37 | 43 | 38 | 38 |
| Possible | 37 | 43 | 50 | 50 |
| Sum | 86 | | 100 | |
| Observed | 3 | | - | |
| Other blocks | | | | |
| Confirmed | 12 | | 1 | |
| Probable | 7 | | 3 | |
| Possible | 11 | | 3 | |
| Sum | 30 | | 7 | |
| Observed | 1 | | - | |

Spotted Sandpiper

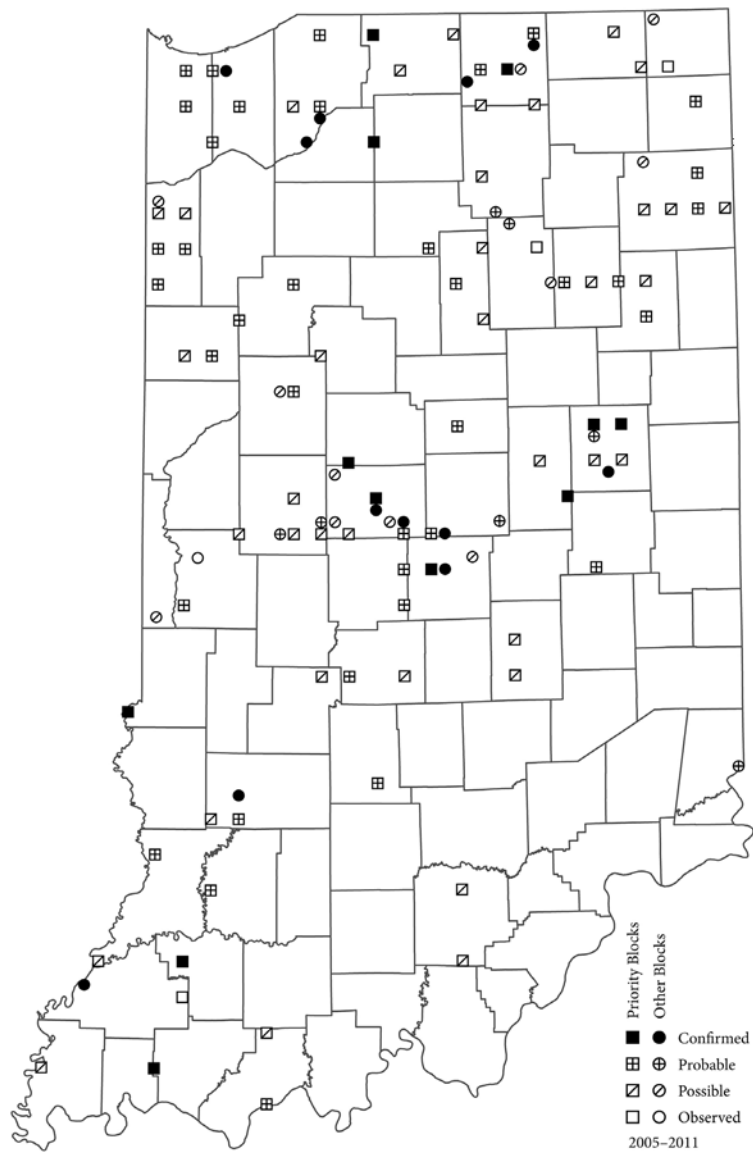


Figure 102. Map of the occurrences of the Spotted Sandpiper in IBBA blocks during 2005–2011.

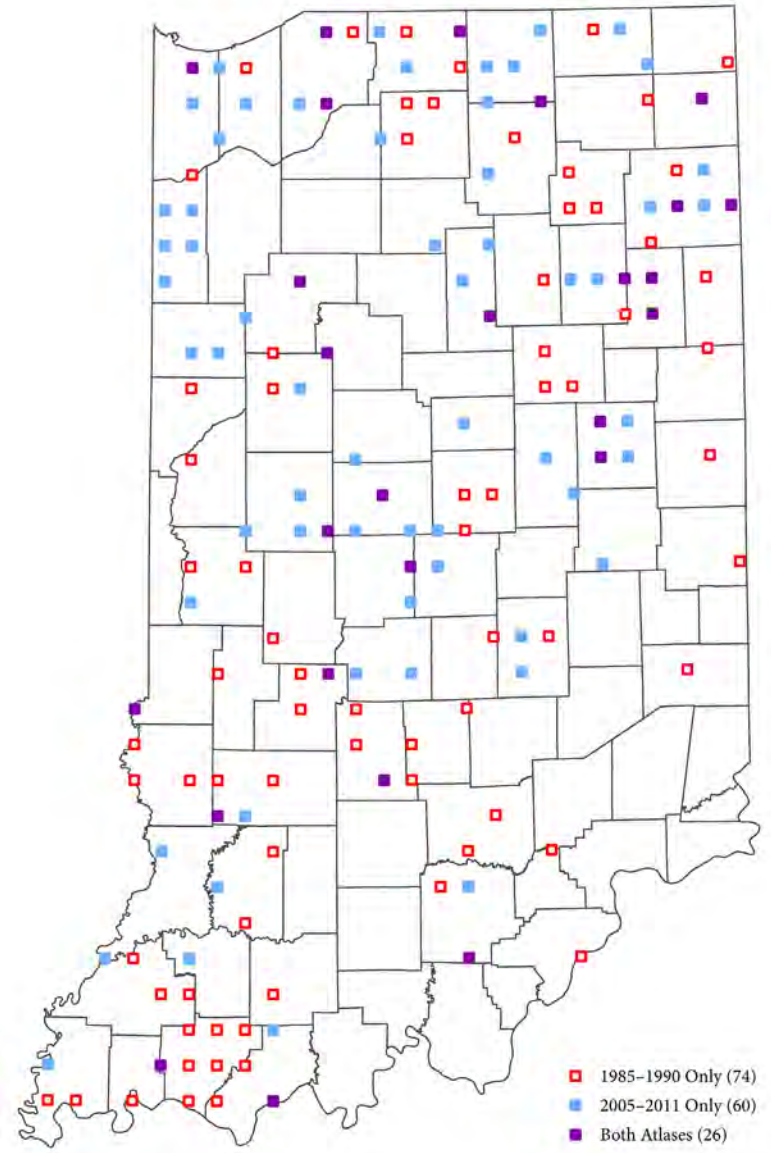


Figure 103. Map of the occurrences of the Spotted Sandpiper in IBBA priority blocks during both atlas periods.

Upland Sandpiper



An Upland Sandpiper stands in grass with blooming dandelions. *Photo by Michael Brown.*

Table 68. Regional occurrence and abundance information for the Upland Sandpiper.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|------------------------|-----------|-----|-----------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 3 | 5 | 55 | 0.04 | 31 | 0.03 | Priority Blocks | | | | |
| Northwest | 73 | 4 | 7 | 34 | 0.03 | 19 | 0.05 | Confirmed | 1 | 17 | 1 | 9 |
| Northeast | 54 | 2 | 2 | 21 | 0.05 | 12 | 0.00 | Probable | 4 | 67 | 4 | 36 |
| Central | 273 | <1 | 2 | 110 | 0.07 | 102 | 0.09 | Possible | 1 | 17 | 6 | 55 |
| West-central | 114 | 2 | 4 | 56 | 0.14 | 38 | 0.24 | Sum | 6 | | 11 | |
| East-central | 159 | 0 | 0 | 54 | 0.00 | 64 | 0.00 | Observed | 0 | | - | |
| South | 246 | 0 | 0 | 97 | 0.00 | 88 | 0.00 | Other blocks | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0.00 | 39 | 0.00 | Confirmed | 2 | | 10 | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.00 | Probable | 3 | | 14 | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | Possible | 1 | | 5 | |
| Statewide | 646 | <1 | 2 | 262 | 0.04 | 221 | 0.05 | Sum | 6 | | 29 | |
| | | | | | | | | Observed | 0 | | - | |

Upland Sandpiper

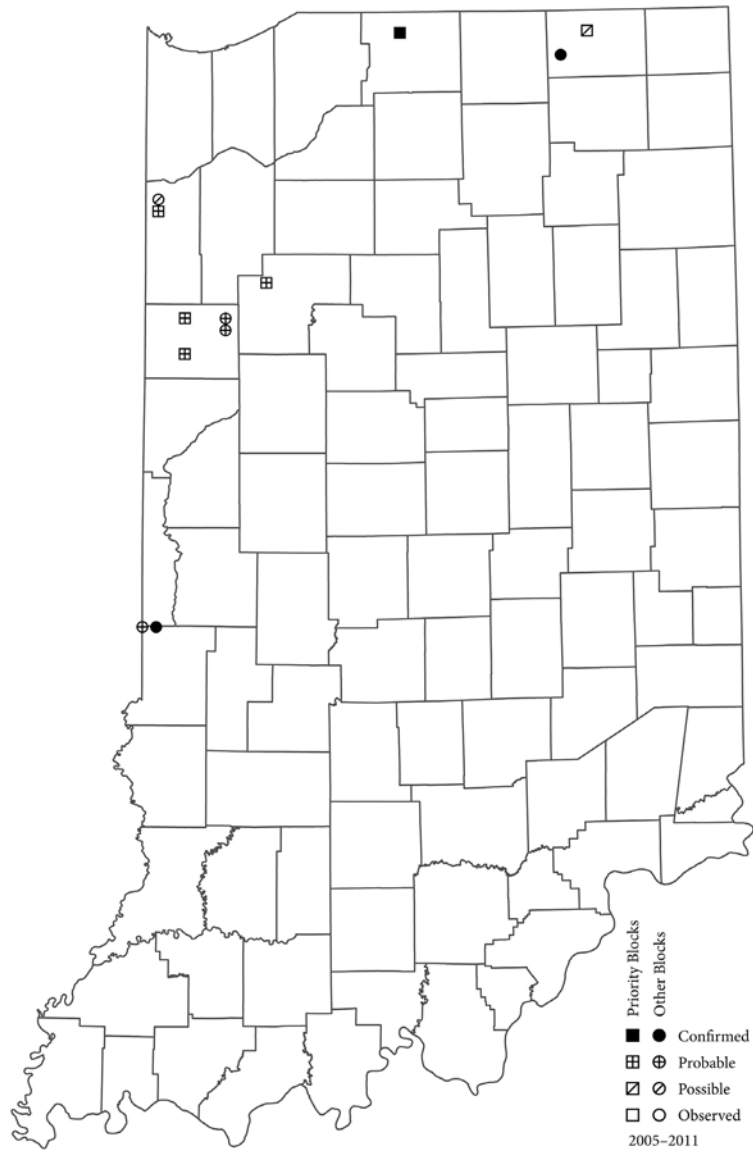


Figure 104. Map of the occurrences of the Upland Sandpiper in IBBA blocks during 2005–2011.

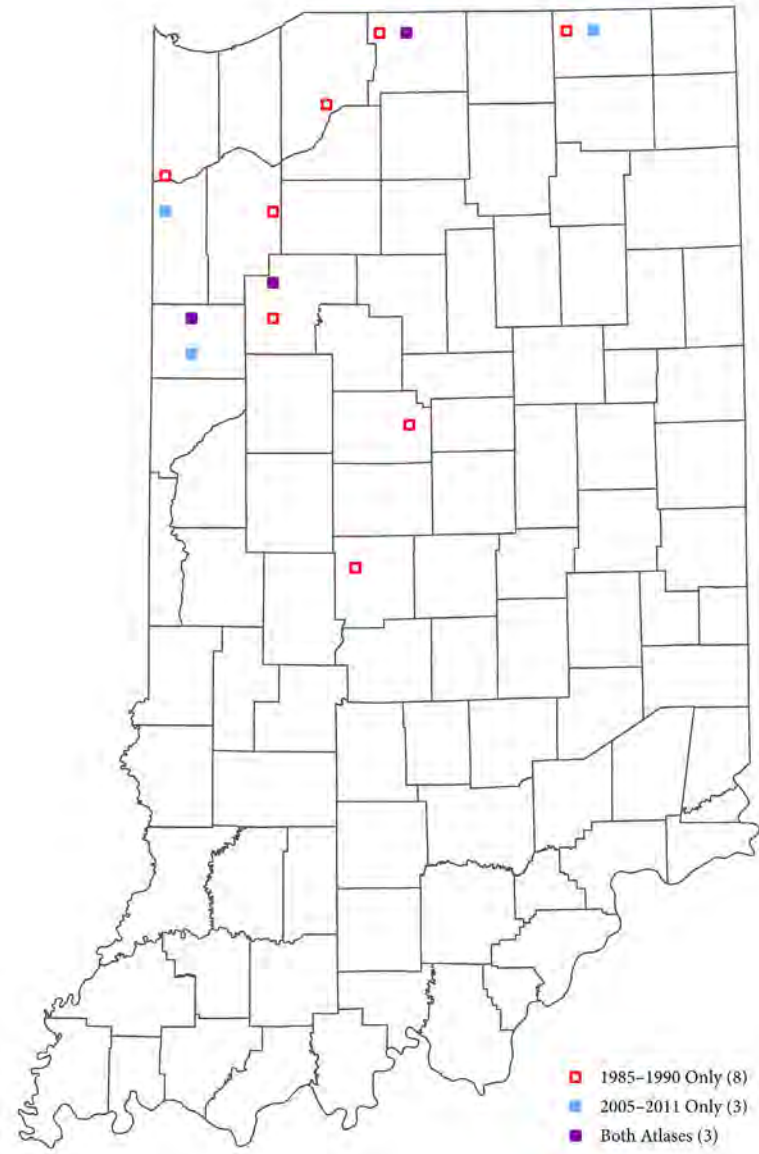


Figure 105. Map of the occurrences of the Upland Sandpiper in IBBA priority blocks during both atlas periods.

Wilson's Snipe



A Wilson's Snipe leans forward with the tip of its bill in vegetation dense water while raising its tail feathers in display. Photo by Shari McCollough.

Table 69. Regional occurrence and abundance information for the Wilson's Snipe.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | <1 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 1 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | <1 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | <1 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | <1 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | <1 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 0 | |
| Probable | 0 | 0 | 0 | |
| Possible | 3 | 100 | 0 | |
| Sum | 3 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 2 | | 0 | |
| Probable | 1 | | 0 | |
| Possible | 3 | | 0 | |
| Sum | 6 | | 0 | |
| Observed | 0 | | - | |

Wilson's Snipe

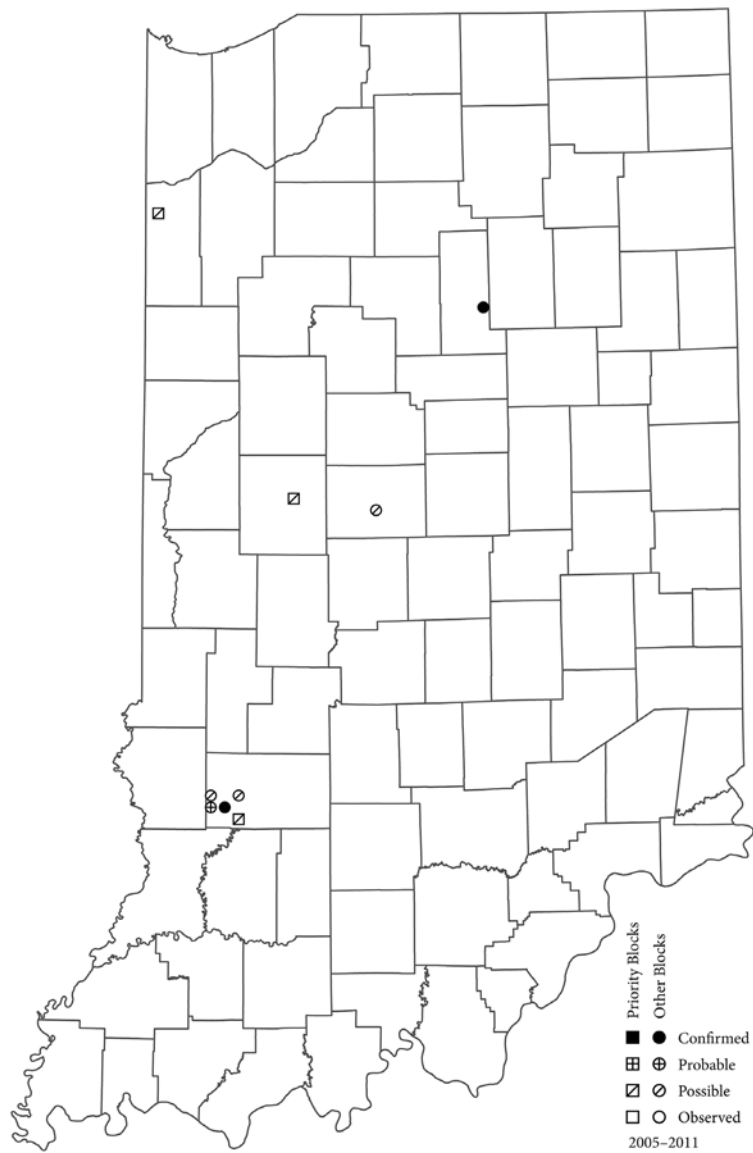


Figure 106. Map of the occurrences of the Wilson's Snipe in IBBA blocks during 2005-2011.

American Woodcock



An American Woodcock stands in a grassy area with fallen leaves. *Photo by Stephen Bell.*

Table 70. Regional occurrence and abundance information for the American Woodcock.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|-----------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 10 | 15 | 55 | 0.02 | 31 | 0.00 | | | | |
| Northwest | 73 | 5 | 16 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 17 | 13 | 21 | 0.05 | 12 | 0.00 | | | | |
| Central | 273 | 9 | 12 | 110 | <0.01 | 102 | 0.02 | | | | |
| West-central | 114 | 4 | 13 | 56 | 0.00 | 38 | 0.03 | | | | |
| East-central | 159 | 12 | 12 | 54 | 0.02 | 64 | 0.02 | | | | |
| South | 246 | 15 | 37 | 97 | 0.00 | 88 | 0.02 | | | | |
| Southwest | 106 | 23 | 38 | 47 | 0.00 | 39 | 0.05 | | | | |
| South-central | 87 | 10 | 43 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 9 | 28 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 12 | 22 | 262 | <0.01 | 221 | 0.02 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 13 | 17 | 22 | 15 |
| Probable | 19 | 25 | 47 | 32 |
| Possible | 43 | 57 | 76 | 52 |
| Sum | 75 | | 145 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 17 | | 2 | |
| Probable | 14 | | 5 | |
| Possible | 2 | | 3 | |
| Sum | 33 | | 10 | |
| Observed | 1 | | - | |

American Woodcock

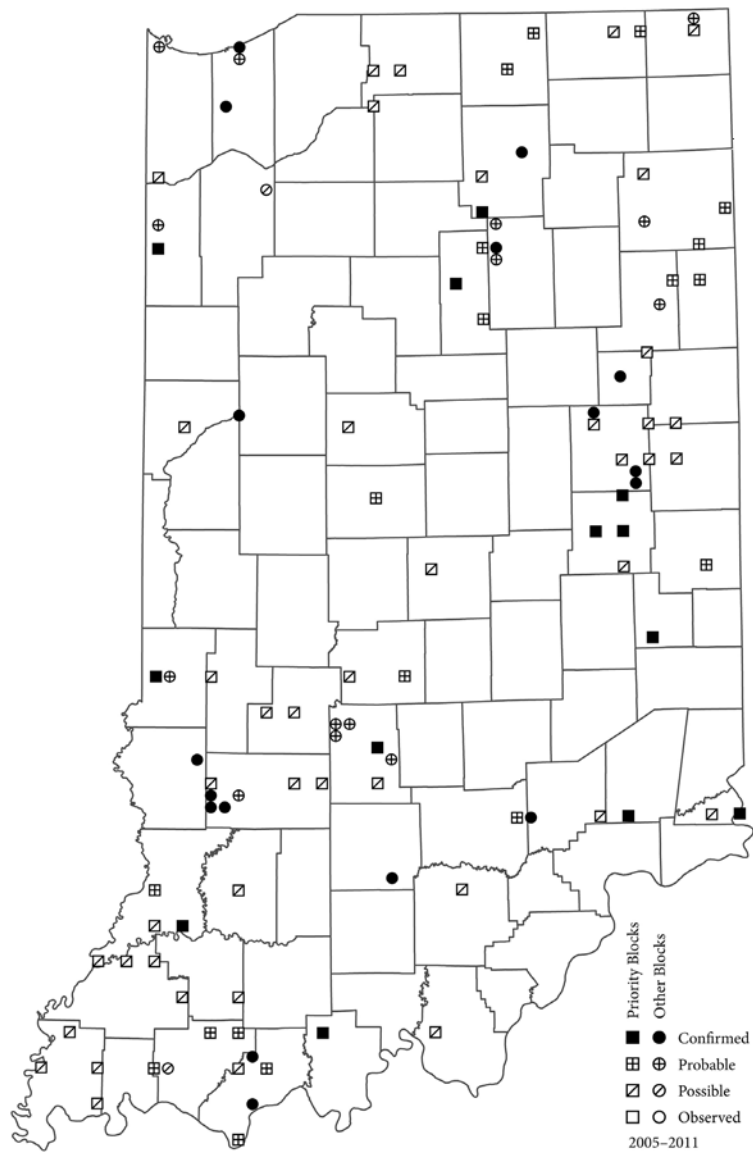


Figure 107. Map of the occurrences of the American Woodcock in IBBA blocks during 2005–2011.

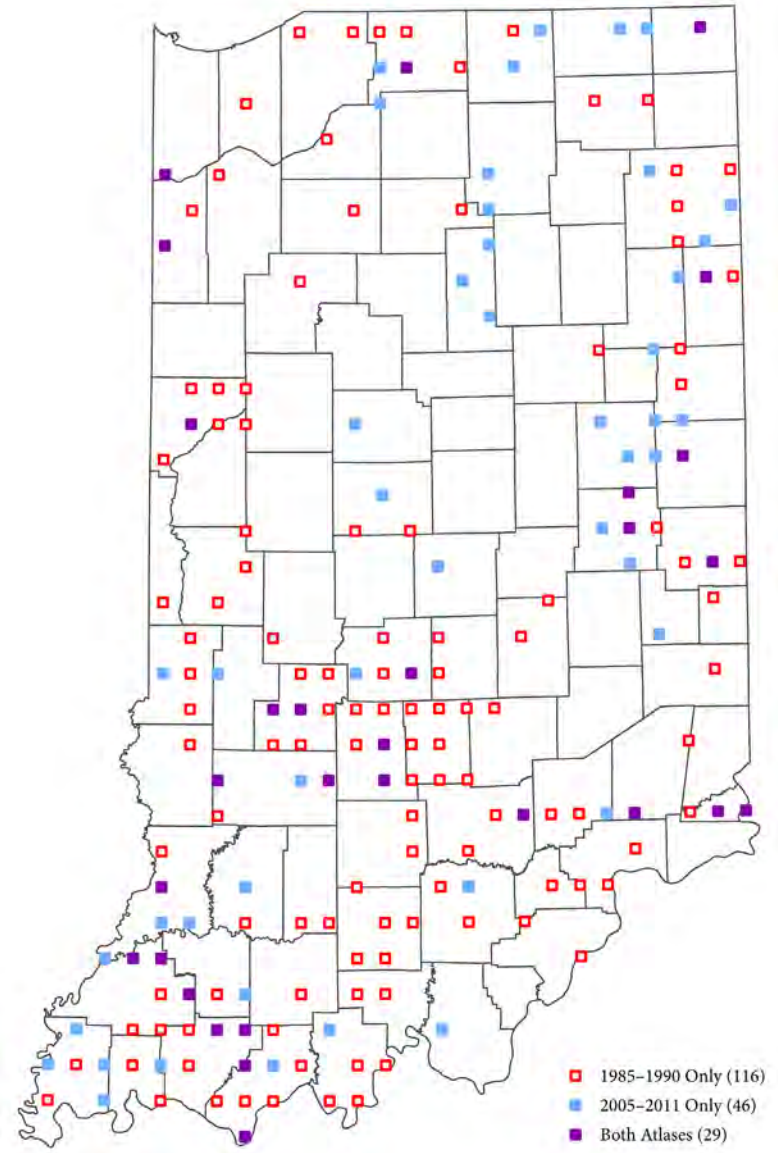


Figure 108. Map of the occurrences of the American Woodcock in IBBA priority blocks during both atlas periods.

Wilson's Phalarope



A breeding female Wilson's Phalarope stands in belly-deep water. *Photo by Ryan Sanderson.*

Table 71. Regional occurrence and abundance information for the Wilson's Phalarope.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | <1 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 1 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 0 | |
| Probable | 1 | 100 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 1 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 1 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 1 | | 0 | |
| Sum | 2 | | 0 | |
| Observed | 1 | | - | |

Wilson's Phalarope



Figure 109. Map of the occurrences of the Wilson's Phalarope in IBBA blocks during 2005-2011.

Ring-billed Gull



A non-breeding adult Ring-billed Gull in flight. *Photo by Ryan Sanderson.*

Table 72. Regional occurrence and abundance information for the Ring-billed Gull.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % | No. | % |
| North | 127 | 2 | 0 | 55 | 34.3 | 31 | 8.3 | | | | | | |
| Northwest | 73 | 1 | 0 | 34 | 54.9 | 19 | 13.6 | | | | | | |
| Northeast | 54 | 2 | 0 | 21 | 1.0 | 12 | 0.0 | | | | | | |
| Central | 273 | 0 | 0 | 110 | 0.0 | 102 | 0.0 | | | | | | |
| West-central | 114 | 0 | 0 | 56 | 0.0 | 38 | 0.0 | | | | | | |
| East-central | 159 | 0 | 0 | 54 | 0.0 | 64 | 0.0 | | | | | | |
| South | 246 | 0 | 0 | 97 | 0.0 | 88 | 0.0 | | | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0.0 | 39 | 0.0 | | | | | | |
| South-central | 87 | 0 | 0 | 35 | 0.0 | 35 | 0.0 | | | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.0 | 14 | 0.0 | | | | | | |
| Statewide | 646 | <1 | 0 | 262 | 7.2 | 221 | 1.2 | | | | | | |

| | No. | % | No. | % |
|------------------------|-----|-----|-----|---|
| Priority Blocks | | | | |
| Confirmed | 2 | 100 | 0 | |
| Probable | 0 | 0 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 2 | | 0 | |
| Observed | 10 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 1 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 5 | | 1 | |
| Observed | 5 | | - | |

Ring-billed Gull

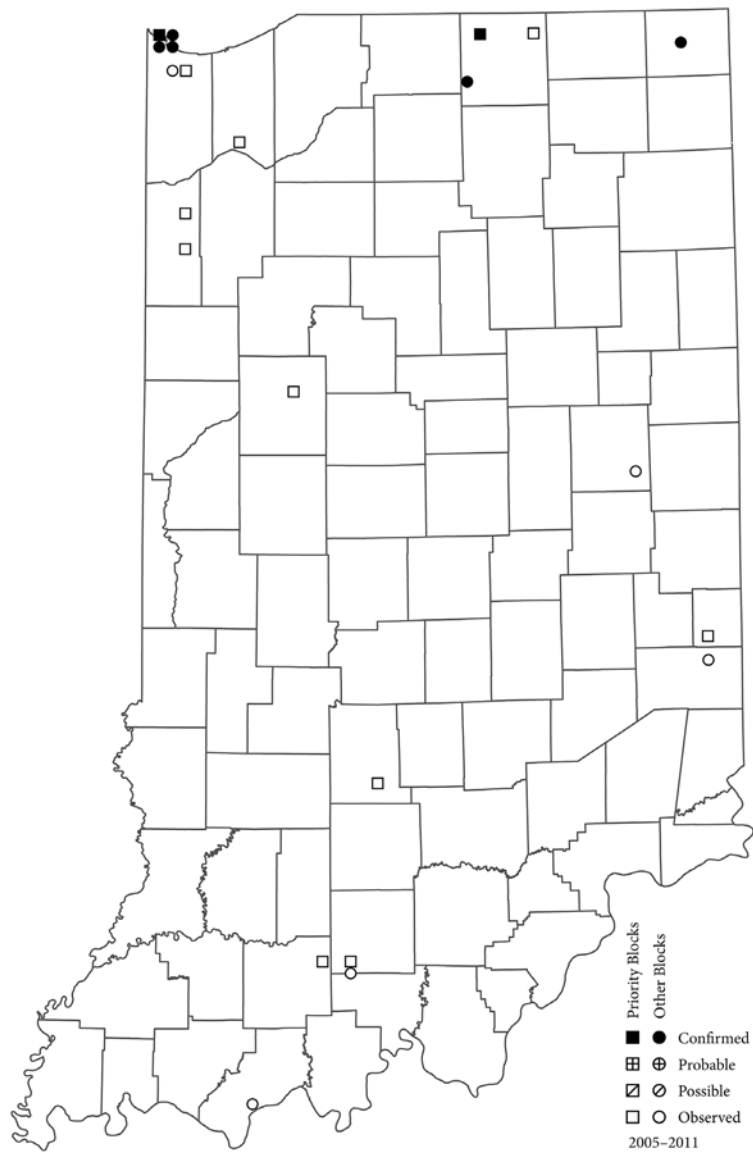


Figure 110. Map of the occurrences of the Ring-billed Gull in IBBA blocks during 2005–2011.

Herring Gull



A breeding adult Herring Gull stands on a pebbled shoreline. *Photo by Shari McCollough.*

Table 73. Regional occurrence and abundance information for the Herring Gull.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|------------------------|-----------|-----|---|-----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | <1 | 0 | 55 | 0.02 | 31 | 0.07 | Priority Blocks | | | | |
| Northwest | 73 | 1 | 0 | 34 | 0.03 | 19 | 0.11 | Confirmed | 1 | 100 | 1 | 100 |
| Northeast | 54 | 0 | 0 | 21 | 0.00 | 12 | 0.00 | Probable | 0 | 0 | 0 | 0 |
| Central | 273 | 0 | <1 | 110 | 0.00 | 102 | 0.00 | Possible | 0 | 0 | 0 | 0 |
| West-central | 114 | 0 | 0 | 56 | 0.00 | 38 | 0.00 | Sum | 1 | | 1 | |
| East-central | 159 | 0 | <1 | 54 | 0.00 | 64 | 0.00 | Observed | 1 | | - | |
| South | 246 | 0 | 0 | 97 | 0.00 | 88 | 0.00 | Other blocks | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0.00 | 39 | 0.00 | Confirmed | 2 | | 1 | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.00 | Probable | 0 | | 0 | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | Possible | 0 | | 0 | |
| Statewide | 646 | <1 | <1 | 262 | <0.01 | 221 | <0.01 | Sum | 2 | | 1 | |
| | | | | | | | | Observed | 2 | | - | |

Herring Gull



Figure 111. Map of the occurrences of the Herring Gull in IBBA blocks during 2005–2011.



Figure 112. Map of the occurrences of the Herring Gull in IBBA priority blocks during both atlas periods.

Least Tern



An immature Least Tern stands on wet sand. *Photo by John Kendall.*

Table 74. Regional occurrence and abundance information for the Least Tern.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------------|--------------|----------|----------------------|------------------|-------------|-------------------|---------------------|---|-----------|---|
| | Total blocks 2005–2011 | % blocks | % blocks | No. surveys | Birds/ survey | No. surveys | Birds/ surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | <1 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 2 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 2 | 100 | 0 | |
| Probable | 0 | 0 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 2 | | 0 | |
| Observed | 1 | | - | |
| Other blocks | | | | |
| Confirmed | 6 | | 1 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 6 | | 1 | |
| Observed | 3 | | - | |

Least Tern



Figure 113. Map of the occurrences of the Least Tern in IBBA blocks during 2005–2011.

Caspian Tern



A non-breeding adult Caspian Tern holds its mouth open while standing on a rock or fallen tree that is just breaching the water's surface. *Photo by Ryan Shean.*

Table 75. Regional occurrence and abundance information for the Caspian Tern.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | <1 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 1 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 1 | 100 | 0 | |
| Probable | 0 | 0 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 1 | | 0 | |
| Observed | 4 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 3 | | - | |

Caspian Tern



Figure 114. Map of the occurrences of the Caspian Tern in IBBA blocks during 2005-2011.

Black Tern



A molting adult Black Tern stands on top of a capped metal pole holding its mouth slightly open. *Photo by Michael Brown.*

Table 76. Regional occurrence and abundance information for the Black Tern.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 3 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 4 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 4 | |
| Observed | 5 | | - | |

Black Tern



Figure 115. Map of the occurrences of the Black Tern in IBBA blocks during 2005–2011.

Pigeons and Doves (Columbiformes)

Tables 77–79, Fig. 116–120

THREE SPECIES OF doves and pigeons now nest in Indiana: the common, native Mourning Dove and two introduced species, the Rock Pigeon and Eurasian Collared-Dove. The latter species is a recent addition to Indiana's avifauna that was first observed in the late 1990s (Brock 2006) and has now been recorded in at least 66 counties (Brock 2017). Mourning Doves are one of Indiana's most common birds and are found in open areas from urban to suburban to rural and agricultural areas (Mirarchi and Baskett 1994). About the only locations where they are difficult to find are largely forested landscapes. Rock Pigeons are associated with people and found from heavily urban and industrial areas to small towns and around farms (Johnston 1993). Mourning Doves nest in deciduous and evergreen trees and shrubs, rarely on the ground. Rock Pigeons nest on building ledges or crevices, under bridges, or in barns or other outbuildings. Nests are flimsy structures made of sticks. Eurasian Collared-Doves are restricted to small towns or urban areas, and are often found near feed mills (Romagosa 2002) nesting in a variety of trees and shrubs. All three doves feed on the ground picking up waste grain and weed seeds. All are found year-round in Indiana. Mourning Doves, which show migratory movements during the fall and spring, are least common in the winter and are a popular game bird. Rock Pigeons and Eurasian Collared-Doves are not protected.

Mourning Doves were found in virtually every atlas block in the state, Rock Pigeons in approximately three-fourths of all blocks, and Eurasian Collared-Doves in a handful of blocks scattered throughout Indiana. Frequencies of occurrence were similar between atlas periods for Mourning Doves, but declined significantly for Rock Pigeons in every region of Indiana and increased significantly for Eurasian Collared-Doves. Population trends on BBS routes in Indiana for the 1985–2011 period showed a statistically significant decrease for Rock Pigeons and a non-significant increase for Mourning Doves. Eurasian Collared-Dove numbers are expected to increase as they colonize the state.

This group showed consistent patterns of relative abundance and change among atlases in Indiana, Ohio, and Michigan. Mourning Doves were found in virtually every block in Indiana and Ohio. A vast majority of Michigan blocks recorded this species. Rock Pigeons were somewhat less frequently reported. Between atlas periods, Rock Pigeons exhibited moderate declines in records, while relative frequencies for Mourning Doves were similar between atlas periods for all three states. Eurasian Collared-Doves were not reported on the first atlas in any of these states, but this species is now a confirmed and consistent breeder with atlas records greatest in Indiana and fewest in Michigan.

Rock Pigeon



A Rock Pigeon stands in a stone water fountain and sticks its beak into the upturned faucet. *Photo by Stephen Bell.*

Table 77. Regional occurrence and abundance information for the Rock Pigeon.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 80 | 83 | 55 | 17 | 31 | 29 | | | | |
| Northwest | 73 | 71 | 78 | 34 | 6 | 19 | 36 | | | | |
| Northeast | 54 | 93 | 91 | 21 | 34 | 12 | 17 | | | | |
| Central | 273 | 82 | 96 | 110 | 7 | 102 | 16 | | | | |
| West-central | 114 | 76 | 94 | 56 | 4 | 38 | 10 | | | | |
| East-central | 159 | 86 | 97 | 54 | 9 | 64 | 20 | | | | |
| South | 246 | 70 | 85 | 97 | 5 | 88 | 9 | | | | |
| Southwest | 106 | 77 | 86 | 47 | 4 | 39 | 11 | | | | |
| South-central | 87 | 66 | 86 | 35 | 8 | 35 | 7 | | | | |
| Southeast | 53 | 60 | 83 | 15 | 1 | 14 | 9 | | | | |
| Statewide | 646 | 77 | 89 | 262 | 8 | 221 | 15 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 136 | 27 | 217 | 38 |
| Probable | 257 | 52 | 275 | 48 |
| Possible | 103 | 21 | 85 | 15 |
| Sum | 496 | | 577 | |
| Observed | 3 | | - | |
| Other blocks | | | | |
| Confirmed | 2 | | 6 | |
| Probable | 4 | | 3 | |
| Possible | 4 | | 1 | |
| Sum | 10 | | 10 | |
| Observed | 1 | | - | |

Rock Pigeon

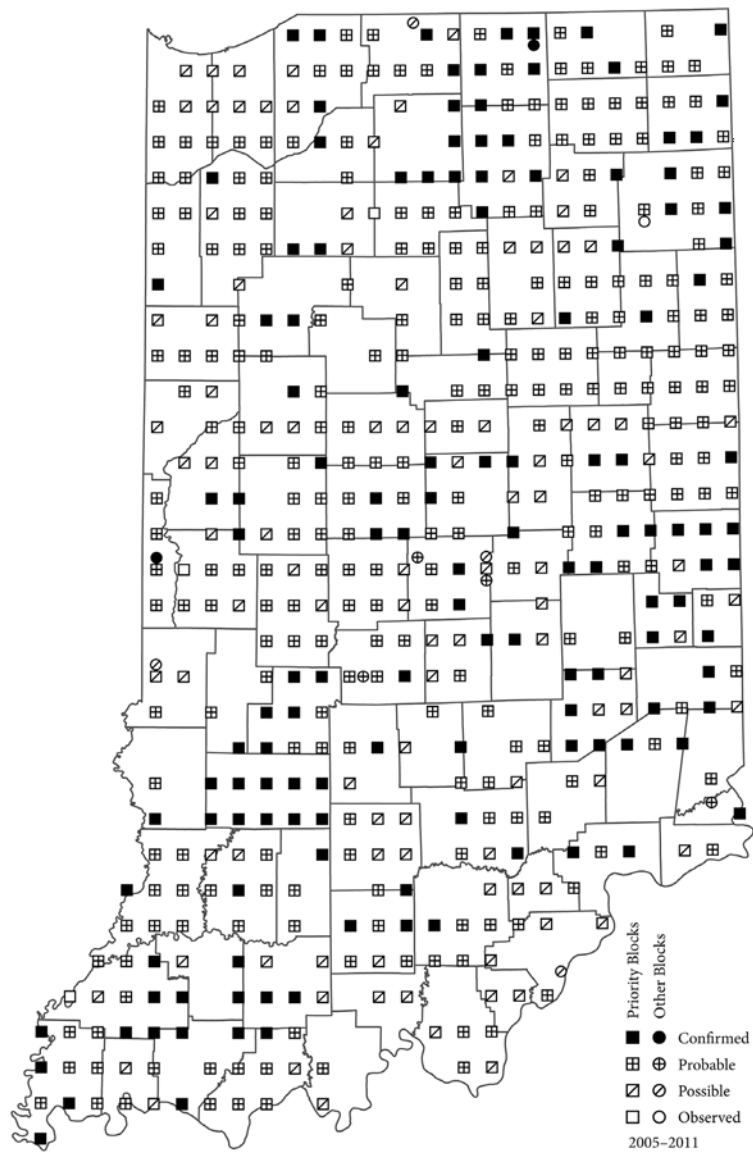


Figure 116. Map of the occurrences of the Rock Pigeon in IBBA blocks during 2005–2011.

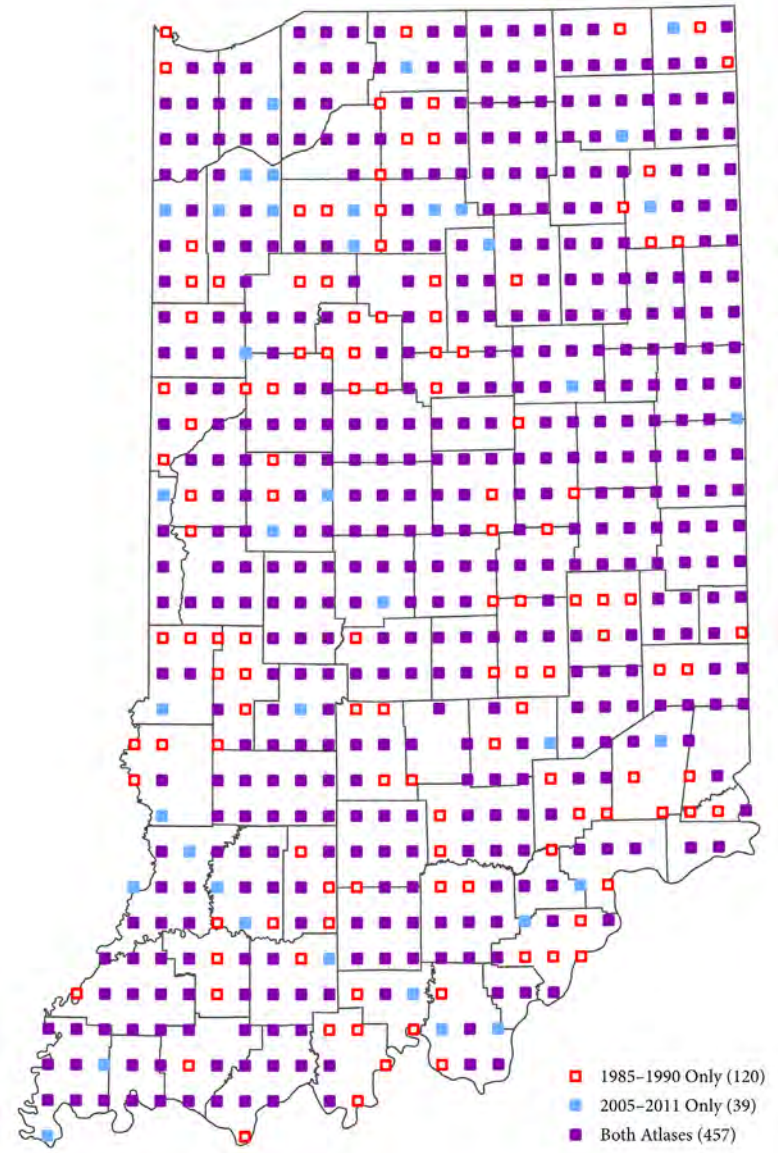


Figure 117. Map of the occurrences of the Rock Pigeon in IBBA priority blocks during both atlas periods.

Eurasian Collared-Dove



A Eurasian Collared-Dove stands on top of a horizontal rusty metal railing. *Photo by Stephen Bell.*

Table 78. Regional occurrence and abundance information for the Eurasian Collared-Dove.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|------------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 4 | 0 | 55 | 0.05 | 31 | 0.00 | Priority Blocks | | | |
| Northwest | 73 | 1 | 0 | 34 | 0.06 | 19 | 0.00 | Confirmed | 7 | 26 | 0 |
| Northeast | 54 | 7 | 0 | 21 | 0.05 | 12 | 0.00 | Probable | 13 | 48 | 0 |
| Central | 273 | 3 | 0 | 110 | 0.00 | 102 | 0.00 | Possible | 7 | 26 | 0 |
| West-central | 114 | 6 | 0 | 56 | 0.00 | 38 | 0.00 | Sum | 27 | | 0 |
| East-central | 159 | 1 | 0 | 54 | 0.00 | 64 | 0.00 | Observed | 0 | | - |
| South | 246 | 5 | 0 | 97 | 0.22 | 88 | 0.00 | Other blocks | | | |
| Southwest | 106 | 11 | 0 | 47 | 0.45 | 39 | 0.00 | Confirmed | 5 | | 0 |
| South-central | 87 | 1 | 0 | 35 | 0.00 | 35 | 0.00 | Probable | 15 | | 0 |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | Possible | 7 | | 0 |
| Statewide | 646 | 4 | 0 | 262 | 0.09 | 221 | 0.00 | Sum | 27 | | 0 |
| | | | | | | | | Observed | 0 | | - |

Eurasian Collared-Dove

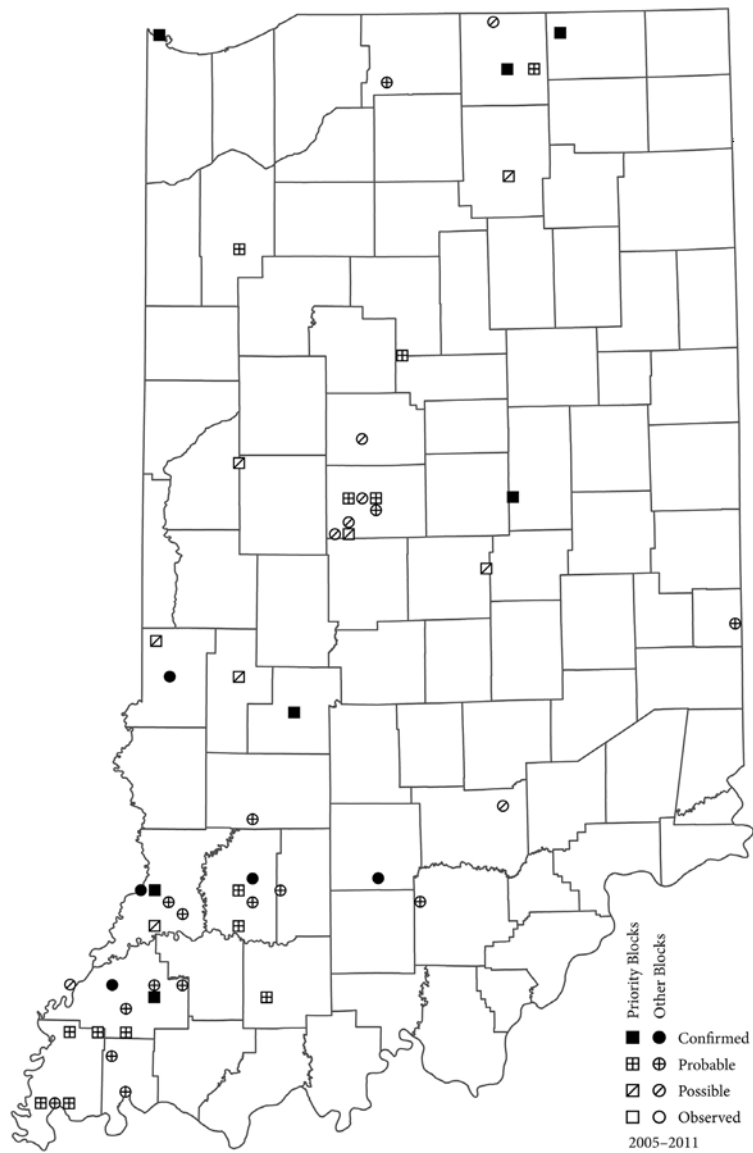


Figure 118. Map of the occurrences of the Eurasian Collared-Dove in IBBA blocks during 2005–2011.

Mourning Dove



A Mourning Dove perches on a broken branch. *Photo by Shari McCollough.*

Table 79. Regional occurrence and abundance information for the Mourning Dove.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 99 | 98 | 55 | 42 | 31 | 46 | | | | |
| Northwest | 73 | 99 | 97 | 34 | 45 | 19 | 55 | | | | |
| Northeast | 54 | 100 | 100 | 21 | 38 | 12 | 33 | | | | |
| Central | 273 | 100 | 99 | 110 | 58 | 102 | 51 | | | | |
| West-central | 114 | 99 | 100 | 56 | 53 | 38 | 43 | | | | |
| East-central | 159 | 100 | 99 | 54 | 64 | 64 | 56 | | | | |
| South | 246 | 100 | 100 | 97 | 49 | 88 | 53 | | | | |
| Southwest | 106 | 99 | 100 | 47 | 60 | 39 | 66 | | | | |
| South-central | 87 | 100 | 100 | 35 | 40 | 35 | 43 | | | | |
| Southeast | 53 | 100 | 100 | 15 | 39 | 14 | 43 | | | | |
| Statewide | 646 | 100 | 99 | 262 | 52 | 221 | 51 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 346 | 54 | 338 | 53 |
| Probable | 288 | 45 | 291 | 45 |
| Possible | 9 | 1 | 13 | 2 |
| Sum | 643 | | 642 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 10 | | 12 | |
| Probable | 19 | | 7 | |
| Possible | 18 | | 6 | |
| Sum | 47 | | 25 | |
| Observed | 0 | | - | |

Mourning Dove

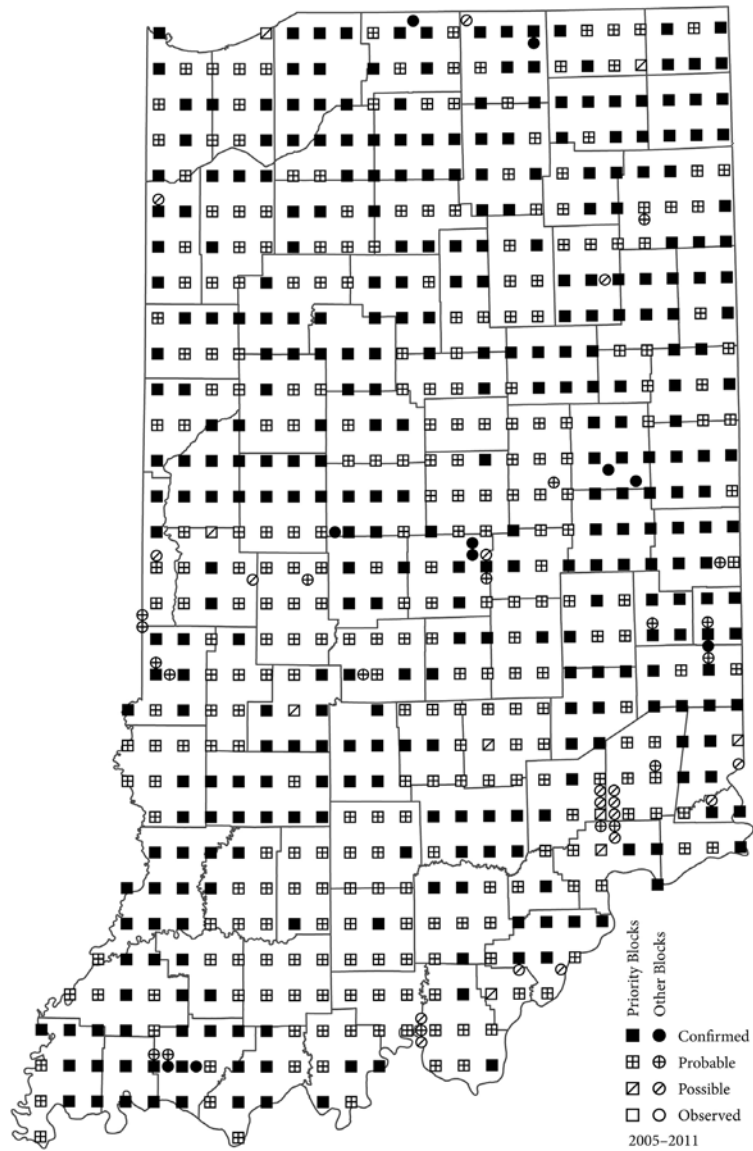


Figure 119. Map of the occurrences of the Mourning Dove in IBBA blocks during 2005-2011.

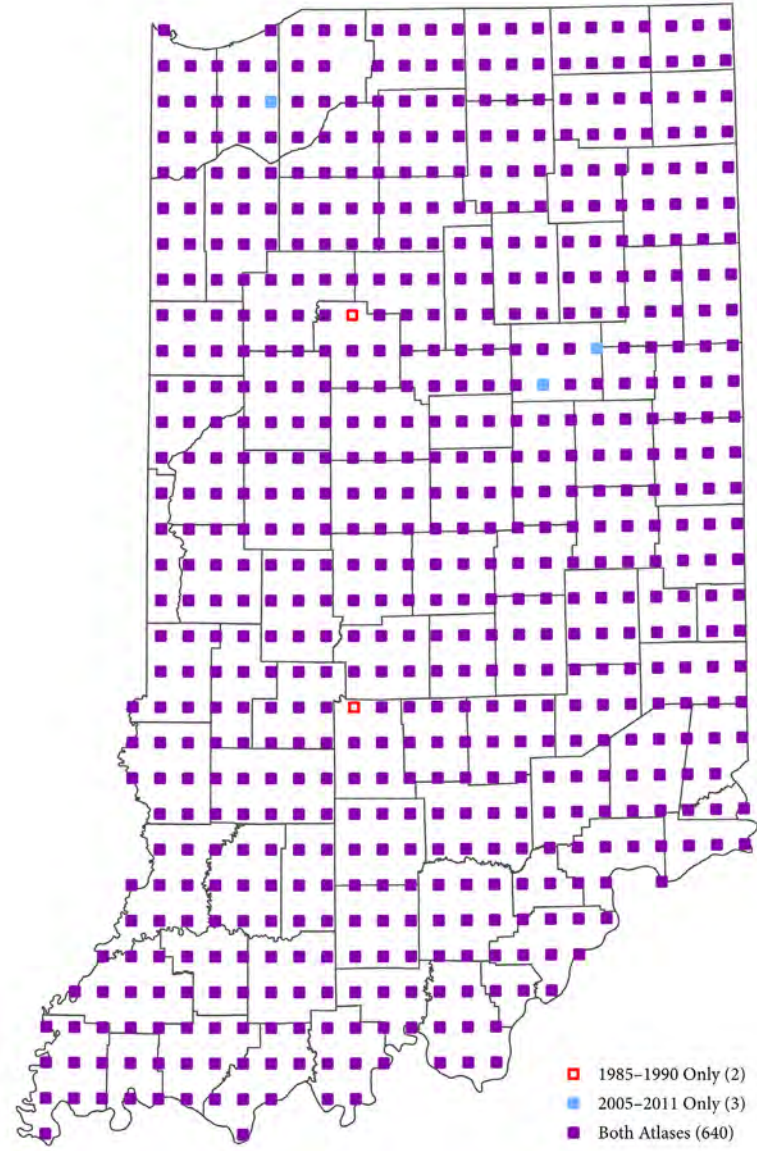


Figure 120. Map of the occurrences of the Mourning Dove in IBBA priority blocks during both atlas periods.

Cuckoos (Cuculiformes)

Tables 80–81, Fig. 121–124

OF THE TWO species of cuckoos that are found in Indiana, the Yellow-billed Cuckoo is much more common and is found in about 75% of atlas blocks. The Black-billed Cuckoo was reported in only 10% of blocks. Cuckoos are birds of shrubland, brushy areas, and forest edges where they build flimsy stick nests in small trees (Hughes 1999, 2001). They feed on insects and other invertebrates and are especially fond of hairy caterpillars. Cuckoo populations may respond to outbreaks of tent caterpillars and similar species. Cuckoos are long-distance migrants and winter in tropical areas.

Although the Yellow-billed Cuckoo is relatively common throughout Indiana, atlas frequencies and Breeding Bird Survey values were greatest in the more forested areas of southern Indiana. The Black-billed Cuckoo also has a statewide distribution, but was most often encountered in northern Indiana. Changes in frequencies of occurrence were statistically significant for both cuckoo species on the Indiana atlas. The Black-

billed Cuckoo was found in about half the number of blocks compared to the 1985–1990 atlas with declines noted in all regions. Breeding Bird Surveys also showed consistent moderate to strong declines in numbers in all regions of the state. The Yellow-billed Cuckoo was reported in slightly fewer priority blocks during the current atlas, although Breeding Bird Surveys indicate a more significant decline in numbers. Trends on Indiana BBS routes were significantly negative for both cuckoo species for the 1985–2011 period.

Yellow-billed Cuckoos were much more common than Black-billed Cuckoos on Indiana and Ohio atlases, but the relative number of records was similar in Michigan, where Yellow-billed Cuckoos are less frequently encountered. Detections of Yellow-billed Cuckoos declined slightly between atlas periods in Indiana and Ohio, with a small increase on the Michigan atlas. Black-billed Cuckoos showed consistent and more pronounced decreases in all states.

Yellow-billed Cuckoo



A Yellow-billed Cuckoo holds a small insect in its bill while perched on a bare branch. *Photo by Shari McCollough.*

Table 80. Regional occurrence and abundance information for the Yellow-billed Cuckoo.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 51 | 59 | 55 | 1.0 | 31 | 1.5 | | | | |
| Northwest | 73 | 45 | 66 | 34 | 0.6 | 19 | 1.9 | | | | |
| Northeast | 54 | 59 | 50 | 21 | 1.6 | 12 | 0.8 | | | | |
| Central | 273 | 75 | 72 | 110 | 1.2 | 102 | 1.1 | | | | |
| West-central | 114 | 63 | 73 | 56 | 1.2 | 38 | 1.4 | | | | |
| East-central | 159 | 83 | 72 | 54 | 1.2 | 64 | 0.9 | | | | |
| South | 246 | 85 | 97 | 97 | 3.4 | 88 | 5.2 | | | | |
| Southwest | 106 | 86 | 97 | 47 | 2.8 | 39 | 4.1 | | | | |
| South-central | 87 | 86 | 99 | 35 | 4.5 | 35 | 6.9 | | | | |
| Southeast | 53 | 79 | 94 | 15 | 2.8 | 14 | 4.1 | | | | |
| Statewide | 646 | 74 | 79 | 262 | 2.0 | 221 | 2.8 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 19 | 4 | 52 | 10 |
| Probable | 316 | 66 | 312 | 61 |
| Possible | 142 | 30 | 147 | 29 |
| Sum | 477 | | 511 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 8 | | 0 | |
| Probable | 26 | | 12 | |
| Possible | 13 | | 9 | |
| Sum | 47 | | 21 | |
| Observed | 0 | | - | |

Yellow-billed Cuckoo

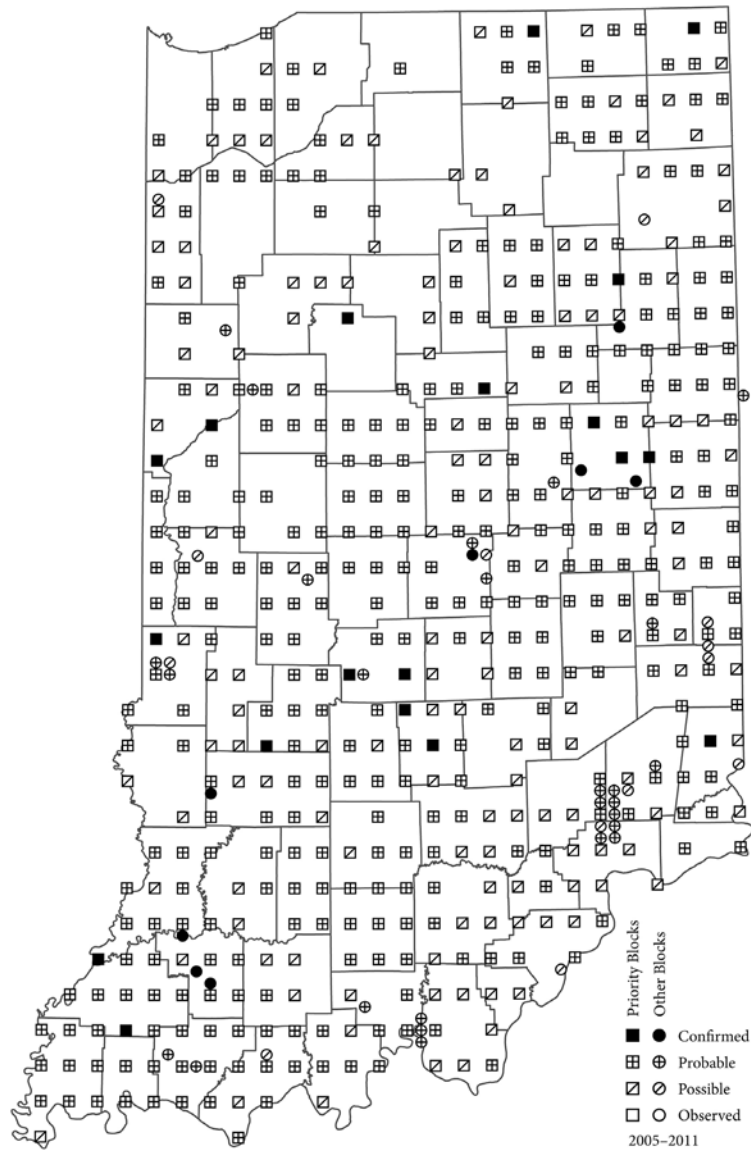


Figure 121. Map of the occurrences of the Yellow-billed Cuckoo in IBBA blocks during 2005–2011.

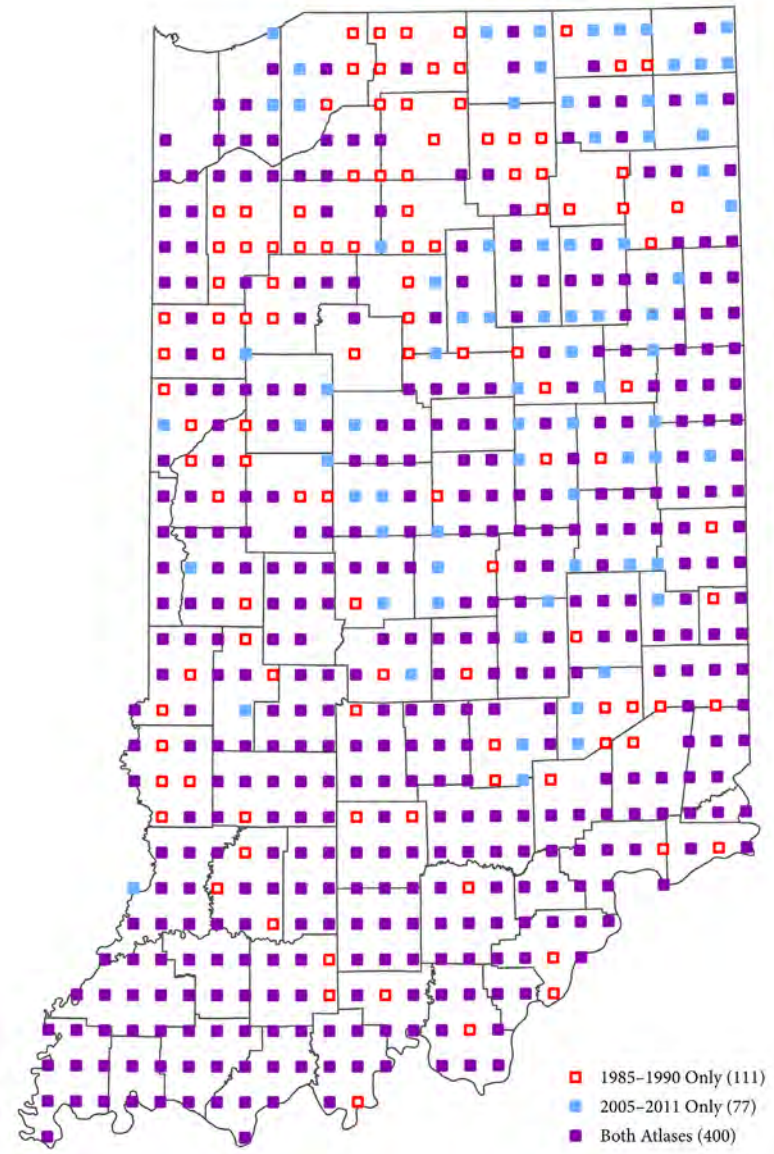
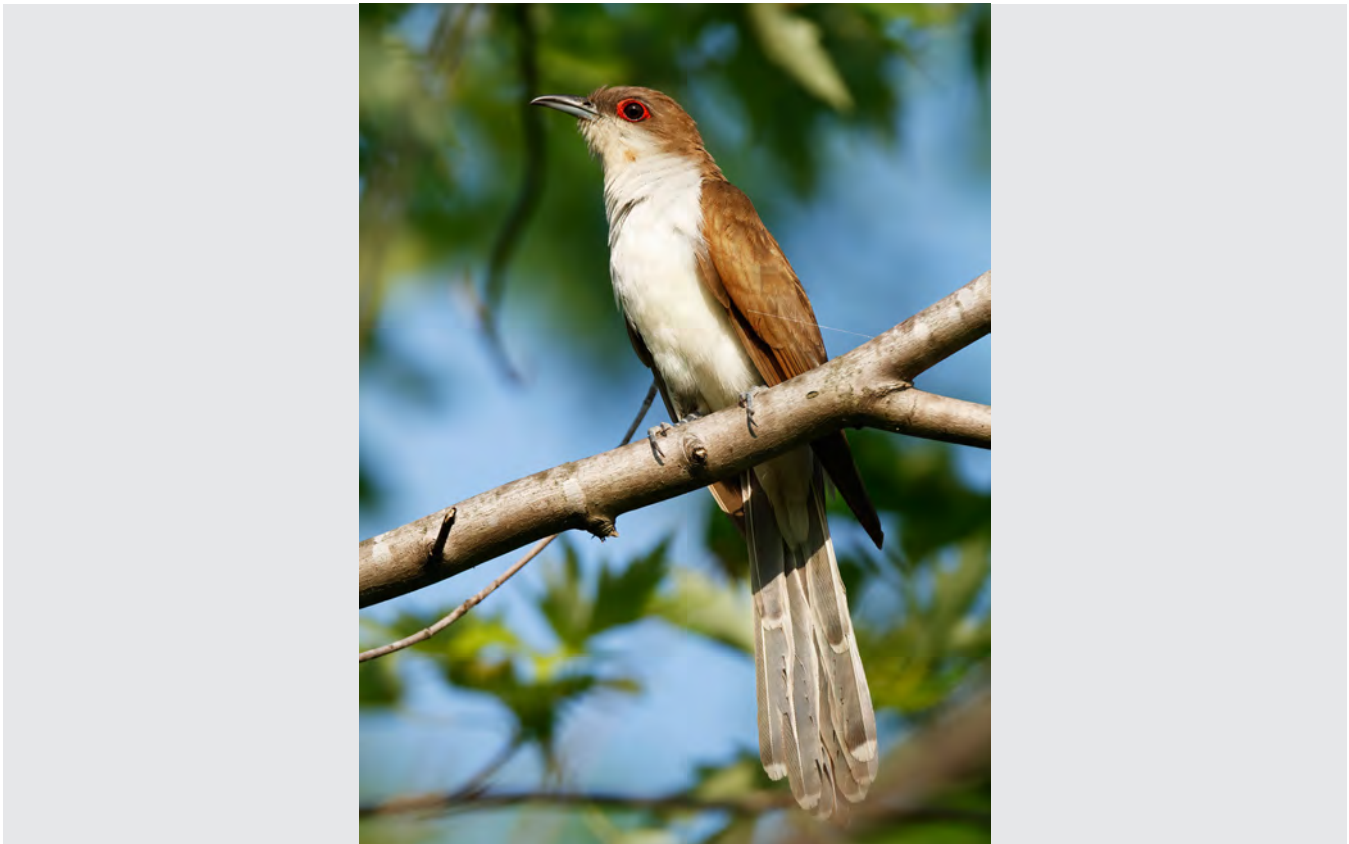


Figure 122. Map of the occurrences of the Yellow-billed Cuckoo in IBBA priority blocks during both atlas periods.

Black-billed Cuckoo



A Black-billed Cuckoo perches on a branch. *Photo by Michael Brown.*

Table 81. Regional occurrence and abundance information for the Black-billed Cuckoo.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 15 | 31 | 55 | 0.09 | 31 | 0.19 | | | | |
| Northwest | 73 | 11 | 29 | 34 | 0.06 | 19 | 0.16 | | | | |
| Northeast | 54 | 20 | 33 | 21 | 0.14 | 12 | 0.25 | | | | |
| Central | 273 | 10 | 12 | 110 | 0.07 | 102 | 0.19 | | | | |
| West-central | 114 | 11 | 12 | 56 | 0.07 | 38 | 0.18 | | | | |
| East-central | 159 | 9 | 12 | 54 | 0.07 | 64 | 0.19 | | | | |
| South | 246 | 9 | 28 | 97 | 0.02 | 88 | 0.26 | | | | |
| Southwest | 106 | 8 | 18 | 47 | 0.04 | 39 | 0.41 | | | | |
| South-central | 87 | 6 | 29 | 35 | 0.00 | 35 | 0.17 | | | | |
| Southeast | 53 | 17 | 47 | 15 | 0.00 | 14 | 0.07 | | | | |
| Statewide | 646 | 10 | 22 | 262 | 0.06 | 221 | 0.22 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 1 | 1 | 12 | 9 |
| Probable | 17 | 25 | 44 | 31 |
| Possible | 49 | 73 | 85 | 60 |
| Sum | 67 | | 141 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 2 | | 0 | |
| Probable | 3 | | 0 | |
| Possible | 9 | | 4 | |
| Sum | 14 | | 4 | |
| Observed | 0 | | - | |

Black-billed Cuckoo

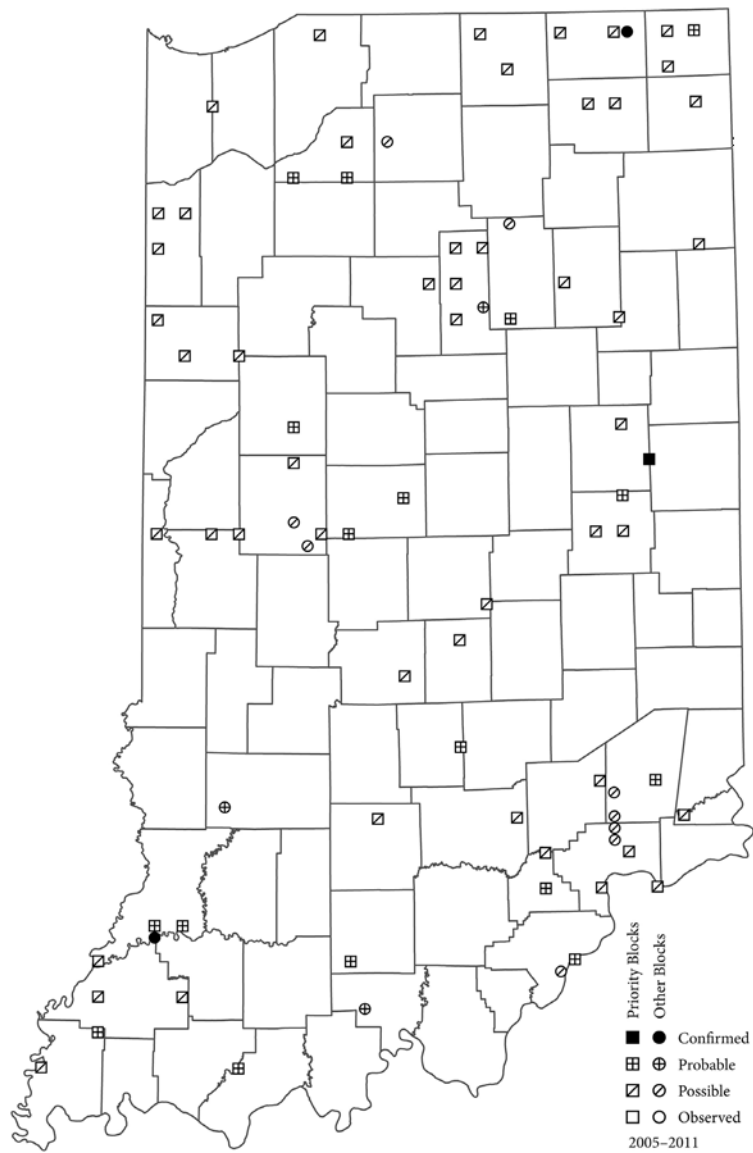


Figure 123. Map of the occurrences of the Black-billed Cuckoo in IBBA blocks during 2005–2011.

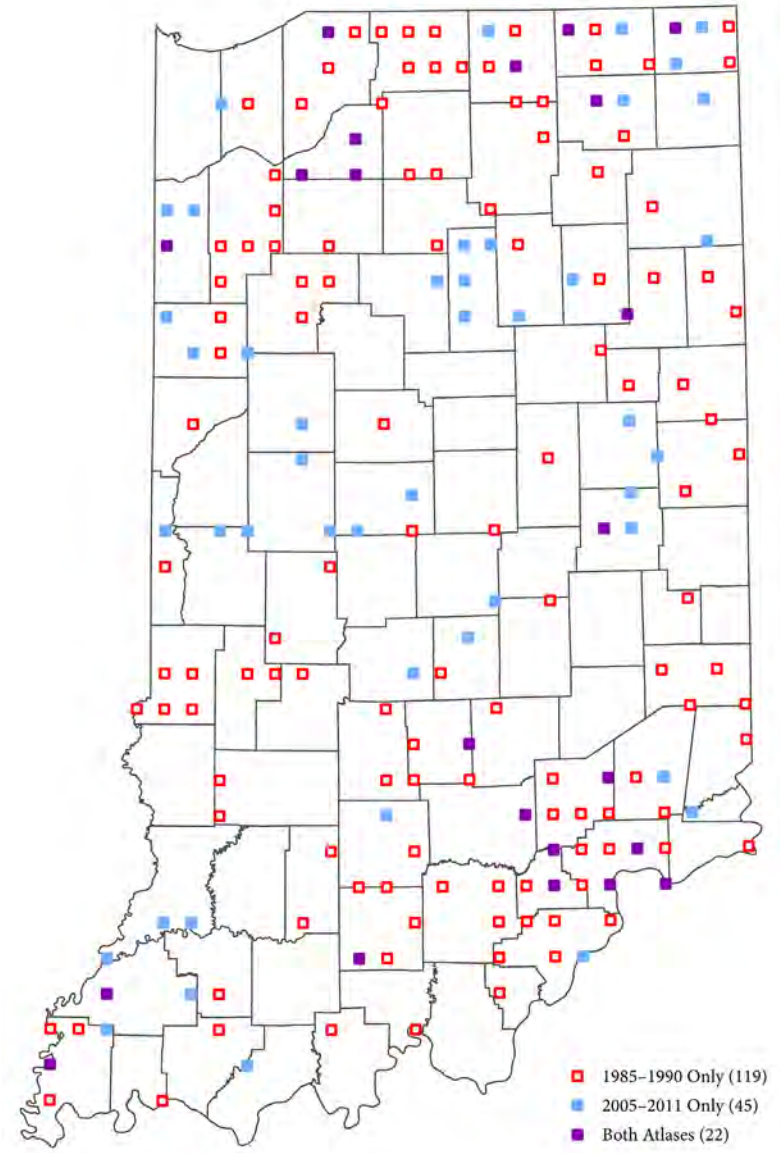


Figure 124. Map of the occurrences of the Black-billed Cuckoo in IBBA priority blocks during both atlas periods.

Owls (Strigiformes)

Tables 82–88, Fig. 125–133

INDIANA HAS FOUR species of owls that regularly breed in the state and three others that have nested sporadically. With their nocturnal habits, owls were undoubtedly underrepresented on atlas blocks as participants were less likely to expend nighttime efforts listening for owl vocalizations. The Eastern Screech-Owl was the most frequently encountered owl species in Indiana, while Great Horned Owl and Barred Owl were detected somewhat less often. Barn Owl was the least common of the regularly breeding owls, but numbers on the atlas are the most complete because of efforts by the Indiana Department of Natural Resources to monitor and provide nest boxes for this species. Short-eared Owls, Long-eared Owls, and Northern Saw-whet Owls have nested sporadically in the state, but there were no confirmed records on the current atlas.

Eastern Screech-Owl was detected in over half of atlas blocks, while Great Horned Owl and Barred Owl were recorded in equal frequencies, but in fewer than 50% of blocks. Fewer of all three species occurred in northern regions of Indiana. Slightly fewer Eastern Screech-Owls and Great Horned Owls were reported on the current atlas, while more Barred Owls were tallied. Differences were not statistically significant for these species or the Barn Owl, although they were significant for the Long-eared Owl and Short-eared Owl. Population trends on Indiana BBS routes for the 1985–2011 period were not statistically significant for Indiana's three most common owl species, but negative for Eastern Screech-Owl and Great Horned Owl and positive for Barred Owl. Barn Owl, although rarely detected, showed a decidedly southern distribution in Indiana with overall and regional numbers similar between atlas periods.

As in Indiana, Eastern Screech-Owl, Great Horned Owl, and Barred Owl were the most commonly detected owl species on atlases in Michigan and Ohio. Frequencies of occurrence for these species were similar between Ohio and Indiana, with Eastern Screech-Owl records found in greatest numbers. Atlas detections were much less frequent on the Michigan atlas with little difference among species, although Barred Owls ranked first. Rates

of occurrence of Eastern Screech-Owl and Great Horned Owl declined for all three states between atlas periods, with the differences most pronounced in Ohio for both species and for the Eastern Screech-Owl in Michigan. Barred Owl records declined moderately in Ohio, while the rates for this species increased somewhat in Indiana and Michigan. Other owl species are rare in these mid-western states, with Barn Owl most common in Ohio and Indiana and extremely infrequent in Michigan. There are no confirmed Barn Owl breeding records during the most recent atlas. Northern Saw-whet Owls were most common in Michigan, but Ohio atlasers recorded cases of confirmed breeding in two northern non-priority blocks. Great Gray Owls were only found in a handful of blocks in the Upper Peninsula of Michigan where they were confirmed nesting. Long-eared Owls and Short-eared Owls were rare in both Ohio and Michigan, but only confirmed nesting during both atlas projects in Michigan. Short-eared Owl was not confirmed breeding in Ohio during either atlas project, while the Long-eared Owl was confirmed nesting in Ohio and Indiana during the first atlas.

As raptors, owls feed on a variety of vertebrate and invertebrate animals (Marti 1992, Cannings 1993, Holt and Leasure 1993, Marks *et al.* 1994, Gehlbach 1995, Houston *et al.* 1998, Mazur and James 2000). Small mammals such as deer mice, voles, and shrews predominate in the diets of most Indiana owls. The smaller species (Eastern Screech-Owl, Northern Saw-whet Owl) feed more heavily on moths, beetles, and other flying insects, while larger species such as the Great Horned Owl feed on larger prey including rabbits, squirrels, skunks, and birds. Owls do not build stick nests, but use the nests of hawks and other tree-nesting birds or tree cavities. Barn Owls and Eastern Screech-Owls readily use nest boxes. Short-eared Owls nest on the ground in larger grassland areas. Great Horned Owls, Barred Owls, Barn Owls, and Eastern Screech-Owls exhibit little migratory movement, while Short-eared, Long-eared, and Northern Saw-whet Owls show definite migration patterns and are most often encountered in Indiana during winter months.

Barn Owl



A Barn Owl looks towards the camera while perched in a pine tree. *Photo by Jeff Timmons.*

Table 82. Regional occurrence and abundance information for the Barn Owl.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | | |
|------------------|---------------------|-----------|----------|----------------------|-----------|------------|-----------|---------------------|-----------|-----|---|-----|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | No. | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | | | |
| Central | 273 | <1 | <1 | 110 | 0 | 102 | 0 | | | | | | |
| West-central | 114 | <1 | 2 | 56 | 0 | 38 | 0 | | | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | | | |
| South | 246 | 5 | 6 | 97 | 0 | 88 | 0 | | | | | | |
| Southwest | 106 | 7 | 6 | 47 | 0 | 39 | 0 | | | | | | |
| South-central | 87 | 3 | 5 | 35 | 0 | 35 | 0 | | | | | | |
| Southeast | 53 | 4 | 8 | 15 | 0 | 14 | 0 | | | | | | |
| Statewide | 646 | 2 | 2 | 262 | 0 | 221 | 0 | | | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 9 | 69 | 5 | 31 |
| Probable | 0 | 0 | 3 | 19 |
| Possible | 4 | 31 | 8 | 50 |
| Sum | 13 | | 16 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 32 | | 30 | |
| Probable | 1 | | 0 | |
| Possible | 5 | | 0 | |
| Sum | 38 | | 30 | |
| Observed | 0 | | - | |

Barn Owl

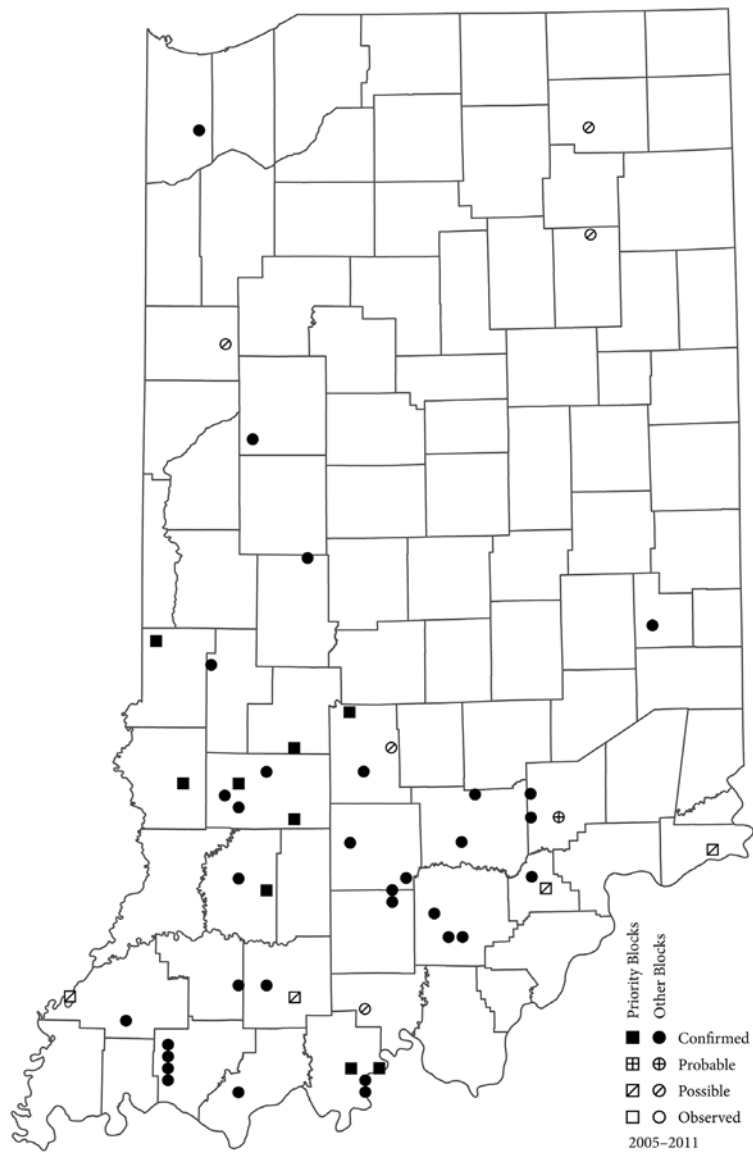


Figure 125. Map of the occurrences of the Barn Owl in IBBA blocks during 2005–2011.

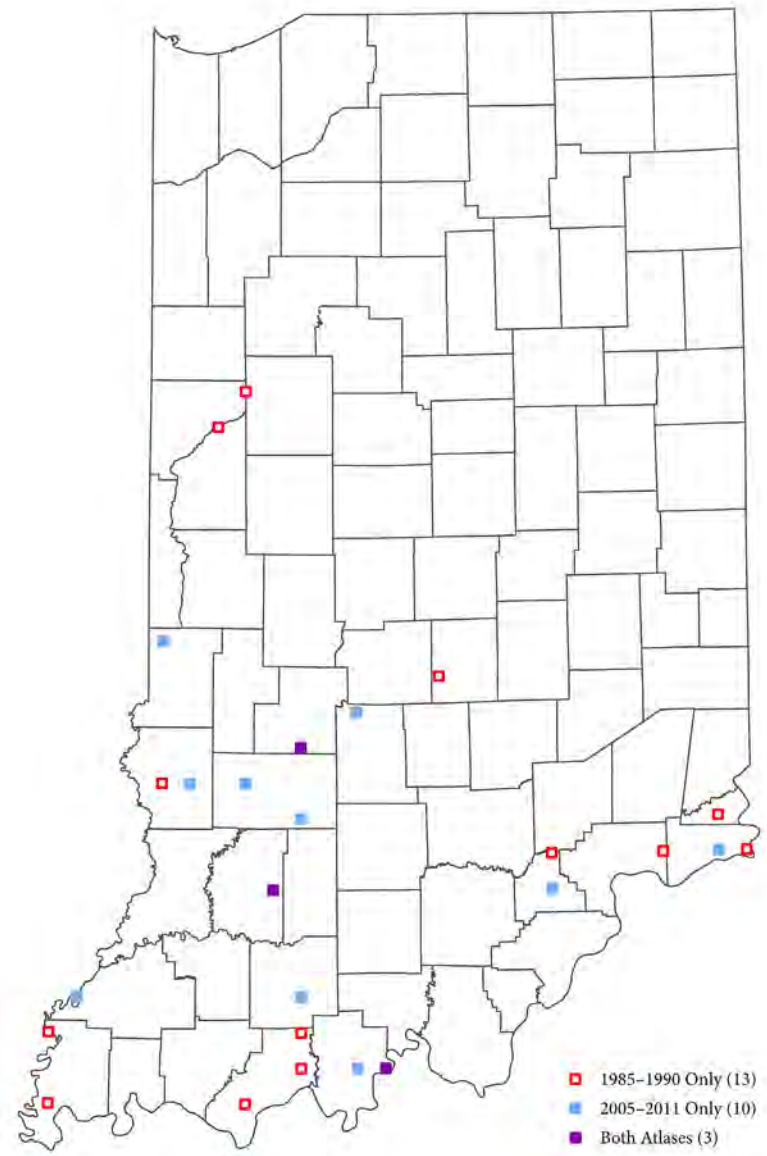


Figure 126. Map of the occurrences of the Barn Owl in IBBA priority blocks during both atlas periods.

Eastern Screech-Owl



A juvenile Eastern Screech-Owl perches on the branch of a spruce tree. *Photo by Shari McCollough.*

Table 83. Regional occurrence and abundance information for the Eastern Screech-Owl.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|-----------------|------------|-----------------|---------------------|-----------|--|--|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | |
| North | 127 | 40 | 53 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 29 | 47 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 56 | 61 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 63 | 53 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | 53 | 47 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 71 | 58 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 60 | 74 | 97 | 0.01 | 88 | 0.01 | | | | |
| Southwest | 106 | 66 | 69 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 48 | 84 | 35 | 0.03 | 35 | 0.03 | | | | |
| Southeast | 53 | 66 | 70 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 57 | 61 | 262 | <0.01 | 221 | <0.01 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 34 | 9 | 32 | 8 |
| Probable | 263 | 71 | 216 | 55 |
| Possible | 74 | 20 | 148 | 37 |
| Sum | 371 | | 396 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 26 | | 2 | |
| Probable | 2 | | 4 | |
| Possible | 3 | | 7 | |
| Sum | 31 | | 13 | |
| Observed | 0 | | - | |

Eastern Screech-Owl

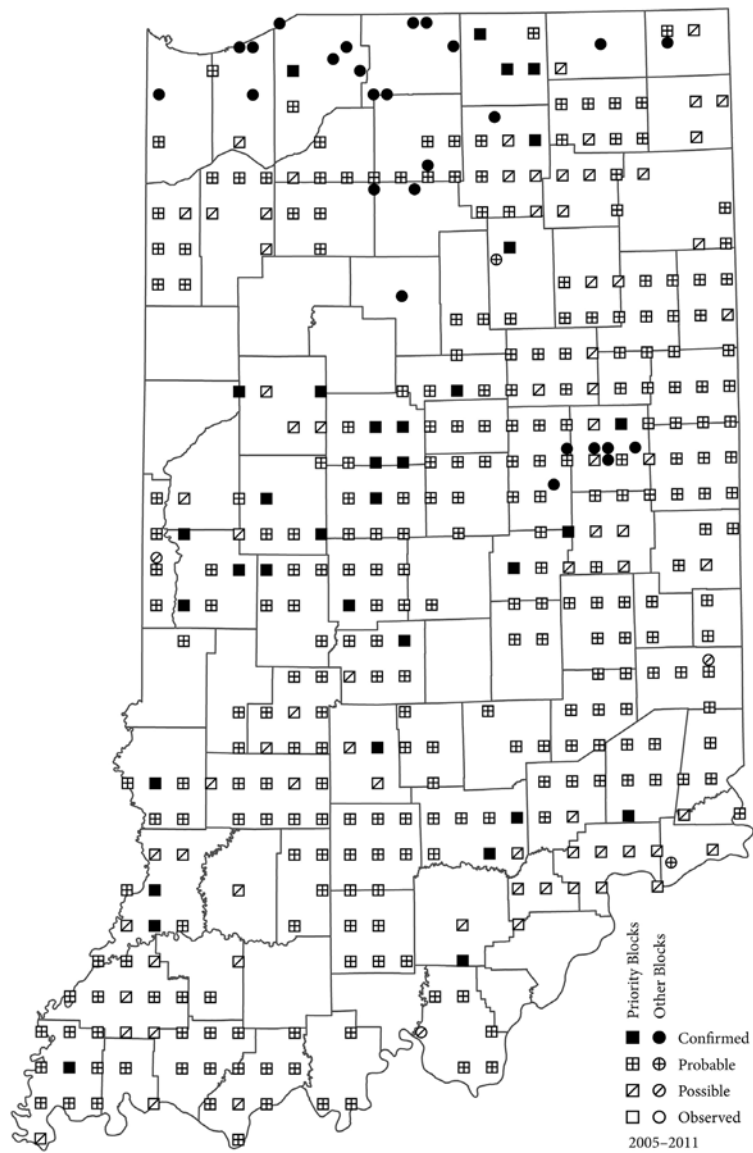


Figure 127. Map of the occurrences of the Eastern Screech-Owl in IBBA blocks during 2005–2011.

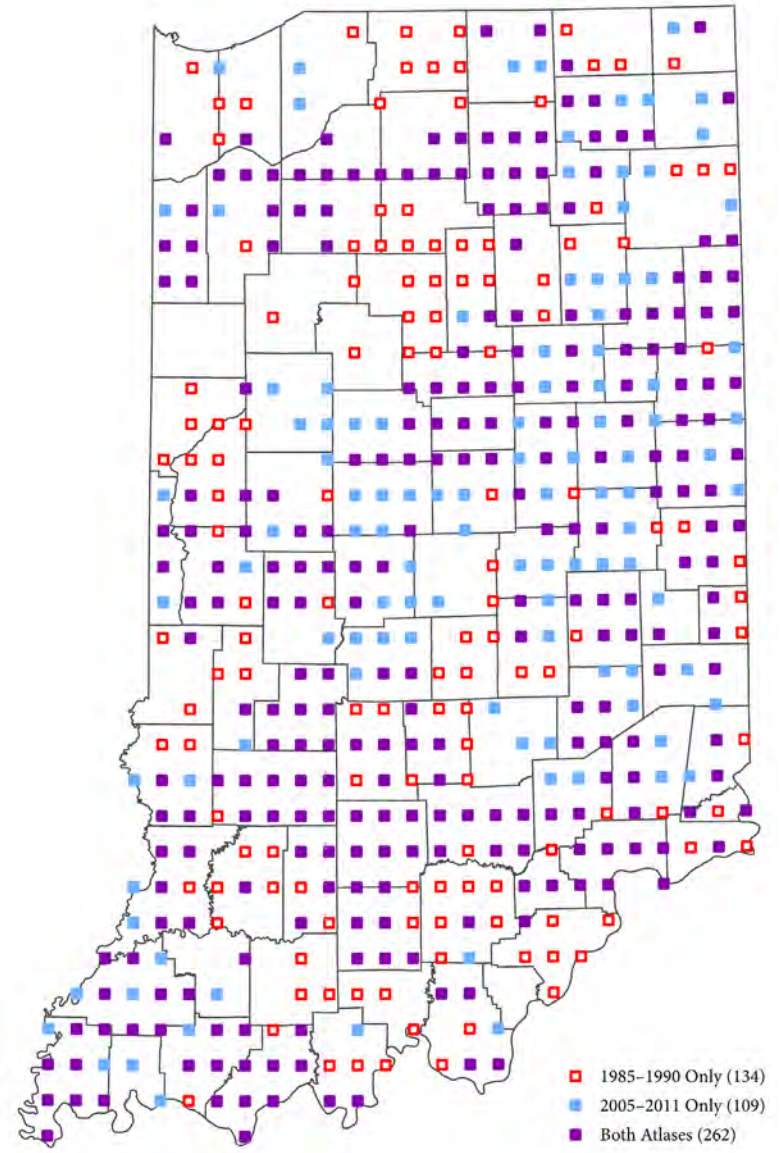


Figure 128. Map of the occurrences of the Eastern Screech-Owl in IBBA priority blocks during both atlas periods.

Great Horned Owl



A Great Horned Owl sits on driftwood. *Photo by Ryan Sanderson.*

Table 84. Regional occurrence and abundance information for the Great Horned Owl.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % | No. | % |
| North | 127 | 22 | 31 | 55 | 0.05 | 31 | 0.10 | | | | | | |
| Northwest | 73 | 7 | 21 | 34 | 0.09 | 19 | 0.11 | | | | | | |
| Northeast | 54 | 43 | 46 | 21 | 0.00 | 12 | 0.08 | | | | | | |
| Central | 273 | 53 | 36 | 110 | 0.14 | 102 | 0.18 | | | | | | |
| West-central | 114 | 44 | 33 | 56 | 0.05 | 38 | 0.34 | | | | | | |
| East-central | 159 | 60 | 38 | 54 | 0.22 | 64 | 0.08 | | | | | | |
| South | 246 | 43 | 68 | 97 | 0.06 | 88 | 0.27 | | | | | | |
| Southwest | 106 | 54 | 61 | 47 | 0.11 | 39 | 0.21 | | | | | | |
| South-central | 87 | 40 | 80 | 35 | 0.03 | 35 | 0.34 | | | | | | |
| Southeast | 53 | 25 | 60 | 15 | 0.00 | 14 | 0.29 | | | | | | |
| Statewide | 646 | 43 | 47 | 262 | 0.09 | 221 | 0.20 | | | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 43 | 15 | 60 | 20 |
| Probable | 152 | 54 | 86 | 28 |
| Possible | 84 | 30 | 159 | 52 |
| Sum | 279 | | 305 | |
| Observed | 3 | | - | |
| Other blocks | | | | |
| Confirmed | 45 | | 5 | |
| Probable | 5 | | 7 | |
| Possible | 8 | | 4 | |
| Sum | 58 | | 16 | |
| Observed | 0 | | - | |

Great Horned Owl

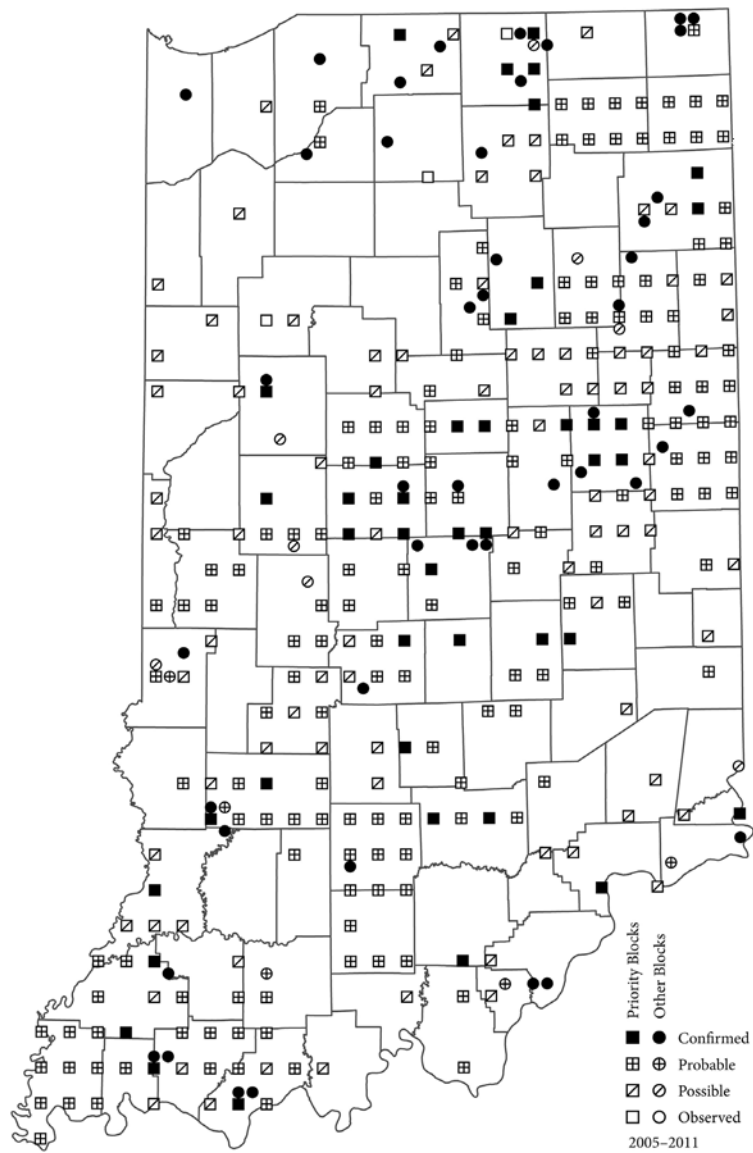


Figure 129. Map of the occurrences of the Great Horned Owl in IBBA blocks during 2005–2011.

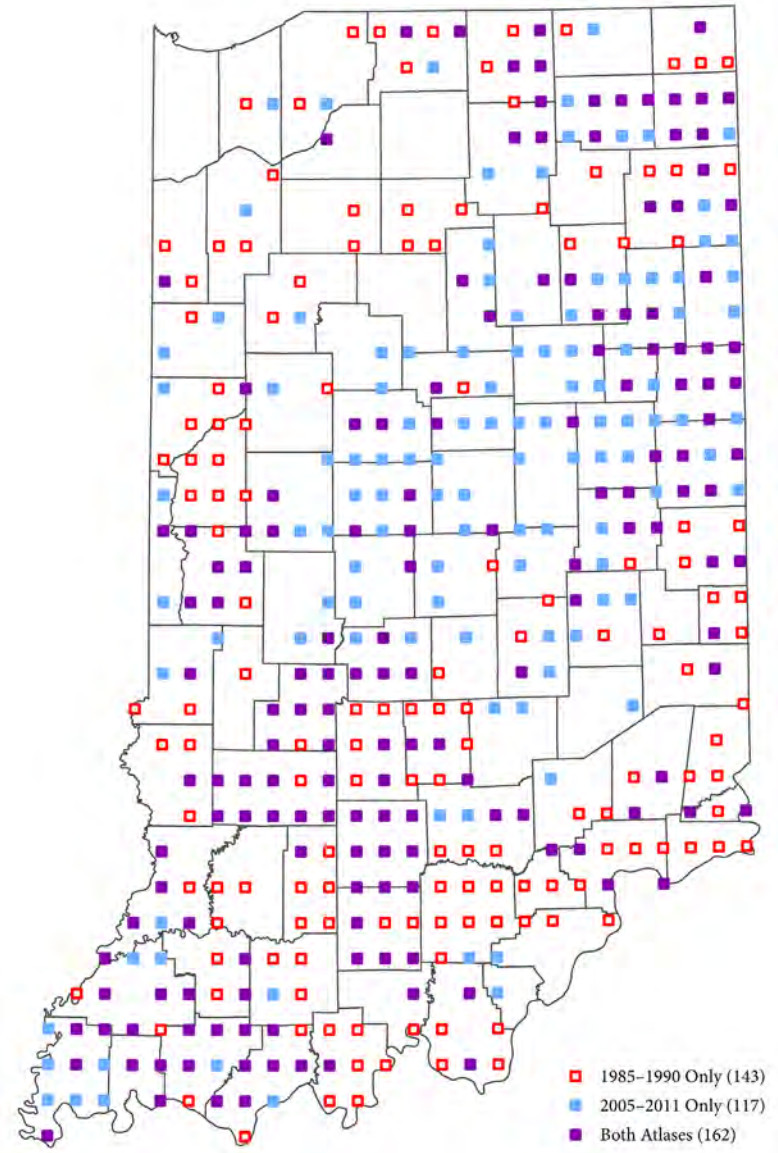


Figure 130. Map of the occurrences of the Great Horned Owl in IBBA priority blocks during both atlas periods.

Barred Owl



A Barred Owl perches on a bare branch. *Photo by Shari McCollough.*

Table 85. Regional occurrence and abundance information for the Barred Owl.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 27 | 20 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 15 | 21 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 43 | 19 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 36 | 21 | 110 | 0.04 | 102 | 0.02 | | | | |
| West-central | 114 | 30 | 25 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 40 | 19 | 54 | 0.07 | 64 | 0.03 | | | | |
| South | 246 | 60 | 66 | 97 | 0.04 | 88 | 0.16 | | | | |
| Southwest | 106 | 70 | 65 | 47 | 0.06 | 39 | 0.13 | | | | |
| South-central | 87 | 55 | 77 | 35 | 0.00 | 35 | 0.26 | | | | |
| Southeast | 53 | 47 | 49 | 15 | 0.07 | 14 | 0.00 | | | | |
| Statewide | 646 | 43 | 38 | 262 | 0.03 | 221 | 0.07 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 45 | 16 | 35 | 14 |
| Probable | 149 | 53 | 100 | 41 |
| Possible | 85 | 30 | 110 | 45 |
| Sum | 279 | | 245 | |
| Observed | 6 | | - | |
| Other blocks | | | | |
| Confirmed | 20 | | 5 | |
| Probable | 10 | | 4 | |
| Possible | 8 | | 6 | |
| Sum | 38 | | 15 | |
| Observed | 0 | | - | |

Barred Owl

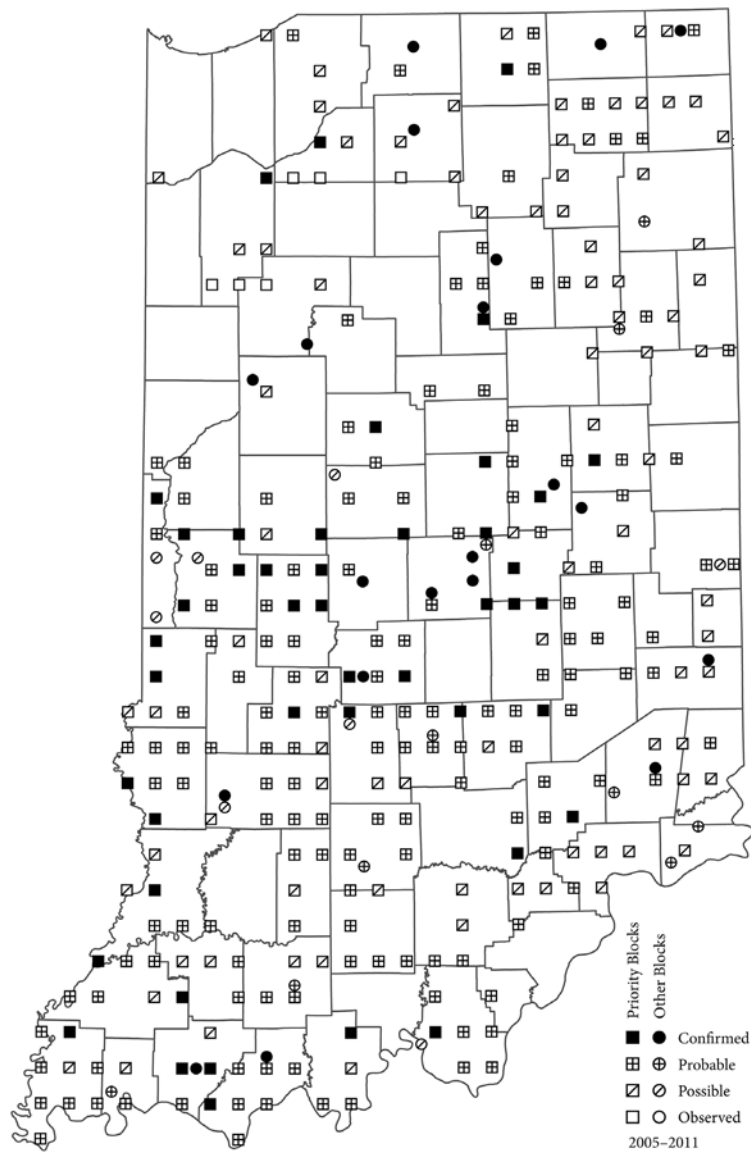


Figure 131. Map of the occurrences of the Barred Owl in IBBA blocks during 2005–2011.

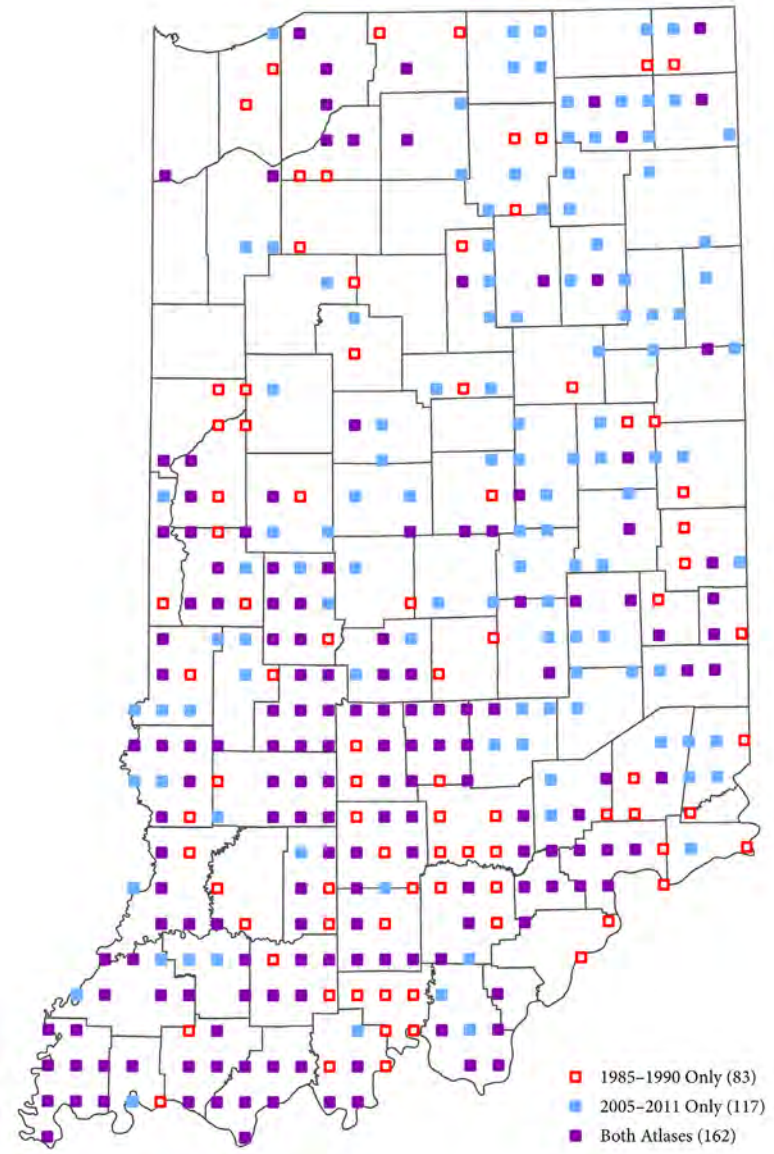


Figure 132. Map of the occurrences of the Barred Owl in IBBA priority blocks during both atlas periods.

Long-eared Owl



A Long-eared Owl perches in a tree and looks at the camera through a tangle of bare branches. *Photo by John Skene.*

Table 86. Regional occurrence and abundance information for the Long-eared Owl.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|--------------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 0 | 2 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 1 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 2 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | <1 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 1 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 2 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | <1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|----|
| Priority Blocks | | | | |
| Confirmed | 0 | | 1 | 25 |
| Probable | 0 | | 0 | 0 |
| Possible | 0 | | 3 | 75 |
| Sum | 0 | | 4 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 1 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 1 | |
| Observed | 0 | | - | |

Short-eared Owl



A Short-eared Owl stands in dead grasses with ear tufts raised. *Photo by Shari McCollough.*

Table 87. Regional occurrence and abundance information for the Short-eared Owl.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|------------------------|---|-----------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | Priority Blocks | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | Confirmed | 0 | 1 | 14 |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | Probable | 0 | 4 | 57 |
| Central | 273 | 0 | <1 | 110 | 0 | 102 | 0 | Possible | 0 | 2 | 29 |
| West-central | 114 | 0 | <1 | 56 | 0 | 38 | 0 | Sum | 0 | 7 | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | Observed | 0 | - | |
| South | 246 | 0 | 2 | 97 | 0 | 88 | 0 | Other blocks | | | |
| Southwest | 106 | 0 | 6 | 47 | 0 | 39 | 0 | Confirmed | 0 | 4 | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | Probable | 0 | 0 | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | Possible | 0 | 1 | |
| Statewide | 646 | 0 | 1 | 262 | 0 | 221 | 0 | Sum | 0 | 5 | |
| | | | | | | | | Observed | 0 | - | |

Northern Saw-whet Owl



A Northern Saw-whet owl looks towards the camera while perched on an eastern red cedar tree branch.
Photo by Ryan Sanderson.

Table 88. Regional occurrence and abundance information for the Northern Saw-whet Owl.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|--------------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | <1 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 1 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | <1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|-----|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | 0 |
| Probable | 0 | | 1 | 100 |
| Possible | 0 | | 0 | 0 |
| Sum | 0 | | 1 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 1 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 1 | | 0 | |
| Observed | 0 | | - | |

Northern Saw-whet Owl



Figure 133. Map of the occurrences of the Northern Saw-whet Owl in IBBA blocks during 2005–2011.

Nightjars (Caprimulgiformes)

Tables 89–91, Fig. 134–139

THREE MEMBERS OF this group of nocturnal birds are found in Indiana during the summer months. Common Nighthawks are often observed and heard at dusk, in constant flight in search of flying insects in lighted areas of cities and small towns (Poulin *et al.* 1996). Eastern Whip-poor-wills and Chuck-will's-widows also feed on flying insects taken on the wing but are found in more forested areas and more often heard than seen during twilight and dawn periods (Straight and Cooper 2000, Cink 2002). Calling may continue throughout moon-lit summer nights. Ground nests of these two species are cryptically concealed amongst the leaf litter. Common Nighthawks will also nest on the ground, but most nests in Indiana are shallow depressions on flat-topped buildings with roofs covered with small rock.

Like the owls, the three nightjar species were undoubtedly under-sampled due to their nocturnal habits. Eastern Whip-poor-wills were the most frequently reported of this group, followed by Common Nighthawks, and the more southerly distributed Chuck-will's-widow. Common Nighthawks are more scattered in distribution due to the occurrences of towns and urban areas, while Eastern Whip-poor-wills and Chuck-will's-widow were found in greatest frequencies in the more heavily forested areas of southern Indiana. All showed declines in occurrences between atlas periods, but only the Whip-poor-will lost statistically signifi-

cant numbers. The most dramatic declines were noted in the south-central region of the state and may be due to continued reforestation, fewer woodland openings, a reduction in timber cutting, and maturation of forests. Population trends on Indiana BBS routes for the 1985–2011 period showed a significant decline for Eastern Whip-poor-will, a statistically nonsignificant decline for Chuck-will's-widow, and a nonsignificant increase for Common Nighthawk.

All three species of nightjars were detected more frequently in Indiana during the recent atlas than in Ohio and Michigan. Decreases between atlas periods were >50% for Common Nighthawk and Eastern Whip-poor-will in Michigan and Ohio, with decreases less pronounced in Indiana, especially for Common Nighthawk. The Chuck-will's-widow occasionally occurs, but is not known to breed in southern Michigan. It was confirmed nesting in southern Ohio during both atlases, but at relative frequencies lower than in Indiana. Occurrences were similar between atlas periods in Ohio, but decreased in Indiana.

All three nightjar species are highly migratory and winter in tropical regions. Common Nighthawk movements are readily noticed in the fall as they migrate in large groups during daylight hours. Eastern Whip-poor-wills and Chuck-will's-widows slip away mostly unnoticed in August.

Common Nighthawk



A Common Nighthawk sits on pebbled ground with two slightly smaller juveniles resting under its breast.
Photo by Ryan Sanderson.

Table 89. Regional occurrence and abundance information for the Common Nighthawk.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 24 | 20 | 55 | 0.00 | 31 | 0.13 | | | | |
| Northwest | 73 | 18 | 22 | 34 | 0.00 | 19 | 0.21 | | | | |
| Northeast | 54 | 33 | 19 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 14 | 13 | 110 | 0.00 | 102 | 0.06 | | | | |
| West-central | 114 | 7 | 5 | 56 | 0.00 | 38 | 0.11 | | | | |
| East-central | 159 | 19 | 19 | 54 | 0.00 | 64 | 0.03 | | | | |
| South | 246 | 12 | 23 | 97 | 0.14 | 88 | 0.05 | | | | |
| Southwest | 106 | 17 | 31 | 47 | 0.28 | 39 | 0.08 | | | | |
| South-central | 87 | 8 | 22 | 35 | 0.03 | 35 | 0.03 | | | | |
| Southeast | 53 | 8 | 8 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 15 | 18 | 262 | 0.05 | 221 | 0.06 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 3 | 3 | 10 | 8 |
| Probable | 38 | 38 | 54 | 46 |
| Possible | 58 | 59 | 54 | 46 |
| Sum | 99 | | 118 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 3 | | 1 | |
| Probable | 12 | | 3 | |
| Possible | 9 | | 9 | |
| Sum | 24 | | 13 | |
| Observed | 0 | | - | |

Common Nighthawk

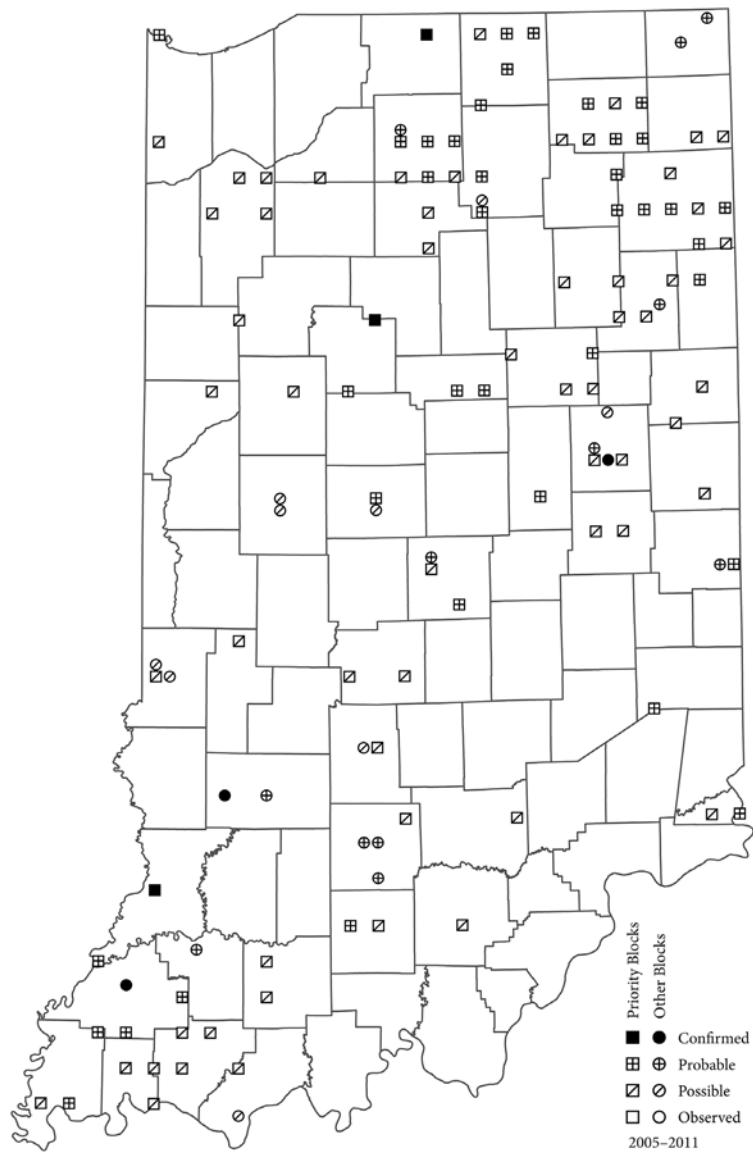


Figure 134. Map of the occurrences of the Common Nighthawk in IBBA blocks during 2005–2011.

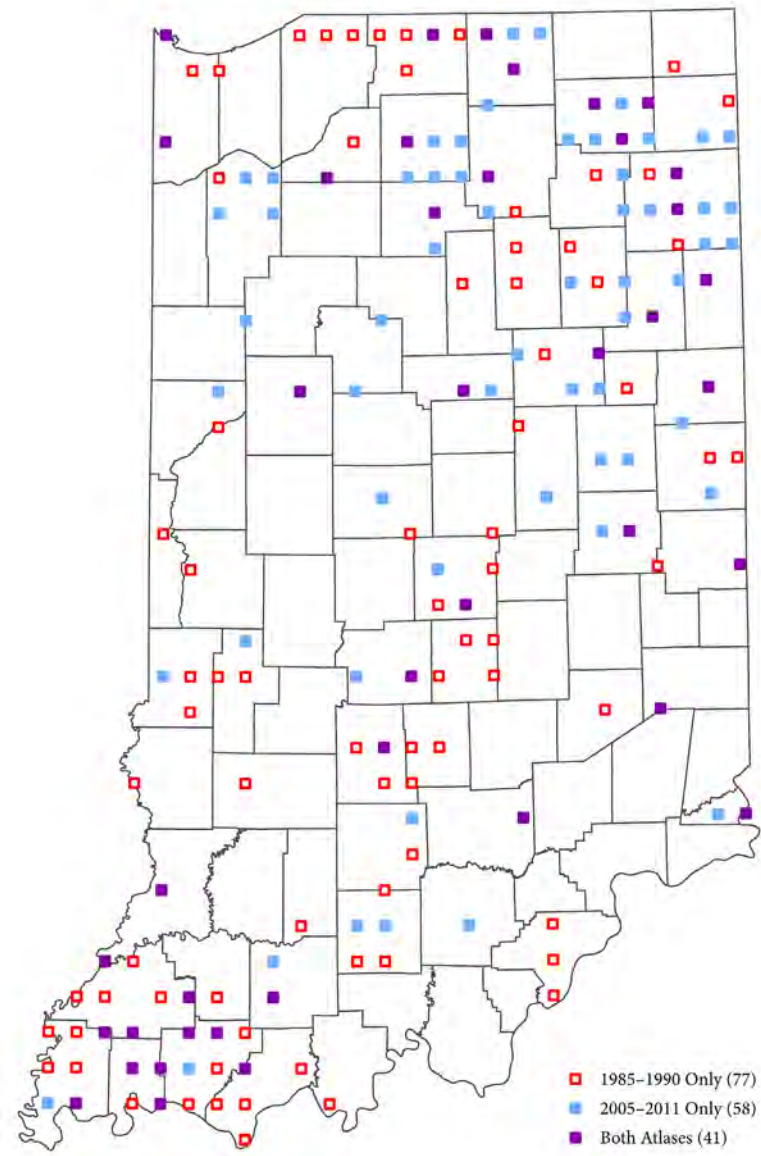


Figure 135. Map of the occurrences of the Common Nighthawk in IBBA priority blocks during both atlas periods.

Chuck-will's-widow



A Chuck-will's-widow perches on a bare branch. *Photo by Ryan Sanderson.*

Table 90. Regional occurrence and abundance information for the Chuck-will's-widow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | <1 | 1 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 1 | 1 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | <1 | 0 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | <1 | 0 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 7 | 12 | 97 | 0.06 | 88 | 0.16 | | | | |
| Southwest | 106 | 8 | 7 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 8 | 20 | 35 | 0.17 | 35 | 0.40 | | | | |
| Southeast | 53 | 0 | 9 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 3 | 5 | 262 | 0.02 | 221 | 0.06 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 0 | 0 |
| Probable | 6 | 33 | 11 | 37 |
| Possible | 12 | 67 | 19 | 63 |
| Sum | 18 | | 30 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 7 | | 5 | |
| Possible | 3 | | 2 | |
| Sum | 10 | | 7 | |
| Observed | 0 | | - | |

Chuck-will's-widow

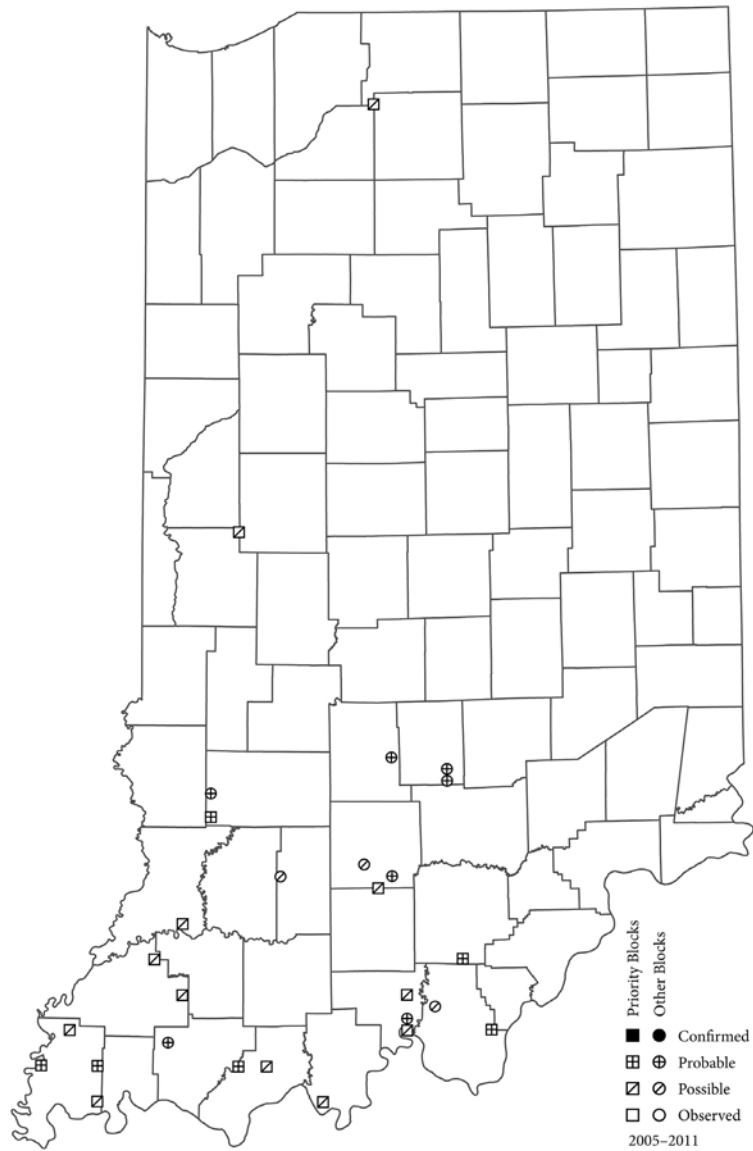


Figure 136. Map of the occurrences of the Chuck-will's-widow in IBBA blocks during 2005-2011.

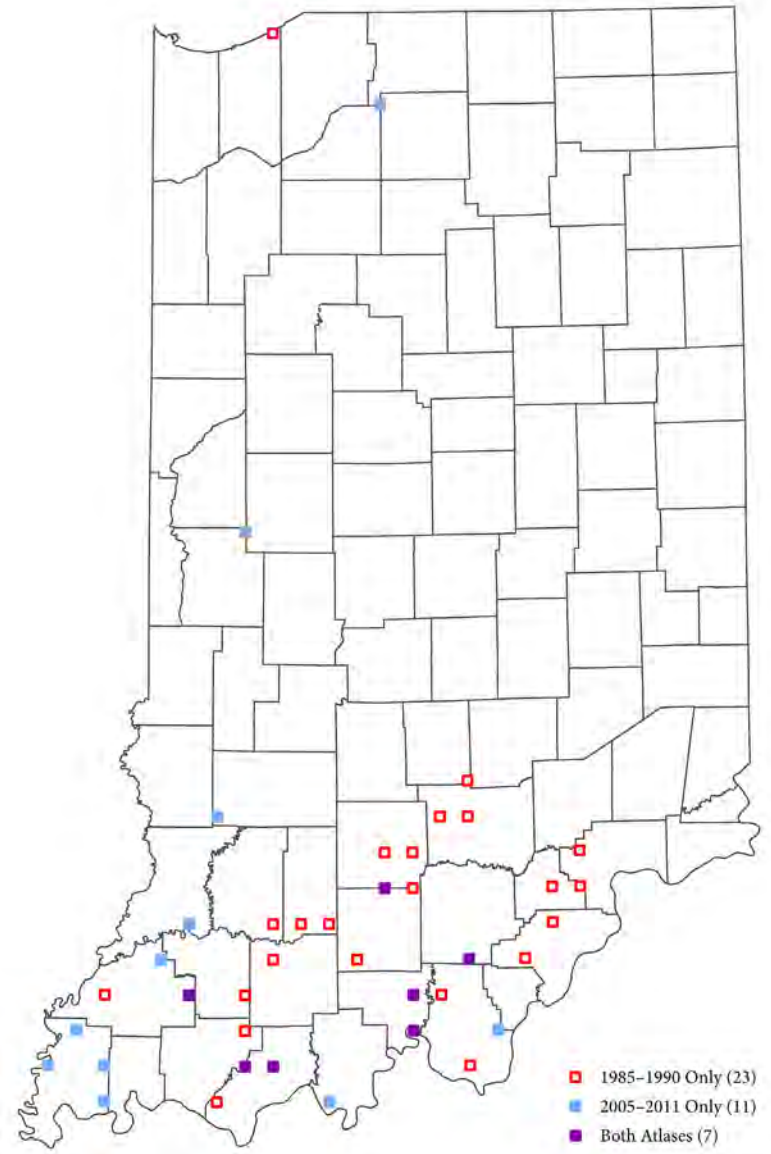


Figure 137. Map of the occurrences of the Chuck-will's-widow in IBBA priority blocks during both atlas periods.

Eastern Whip-poor-will



An Eastern Whip-poor-will sits in a tree with its eyes partially closed. *Photo by Jeff Timmons.*

Table 91. Regional occurrence and abundance information for the Eastern Whip-poor-will.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 18 | 17 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 16 | 23 | 34 | 0.00 | 19 | 0.11 | | | | |
| Northeast | 54 | 20 | 9 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 11 | 9 | 110 | 0.00 | 102 | 0.06 | | | | |
| West-central | 114 | 4 | 16 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 15 | 4 | 54 | 0.00 | 64 | 0.09 | | | | |
| South | 246 | 32 | 68 | 97 | 0.14 | 88 | 0.66 | | | | |
| Southwest | 106 | 29 | 56 | 47 | 0.06 | 39 | 0.46 | | | | |
| South-central | 87 | 34 | 87 | 35 | 0.31 | 35 | 1.14 | | | | |
| Southeast | 53 | 32 | 62 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 20 | 33 | 262 | 0.05 | 221 | 0.29 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 7 | 3 |
| Probable | 63 | 48 | 123 | 57 |
| Possible | 67 | 52 | 84 | 39 |
| Sum | 130 | | 214 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 1 | | 0 | |
| Probable | 20 | | 4 | |
| Possible | 10 | | 6 | |
| Sum | 31 | | 10 | |
| Observed | 0 | | - | |

Eastern Whip-poor-will

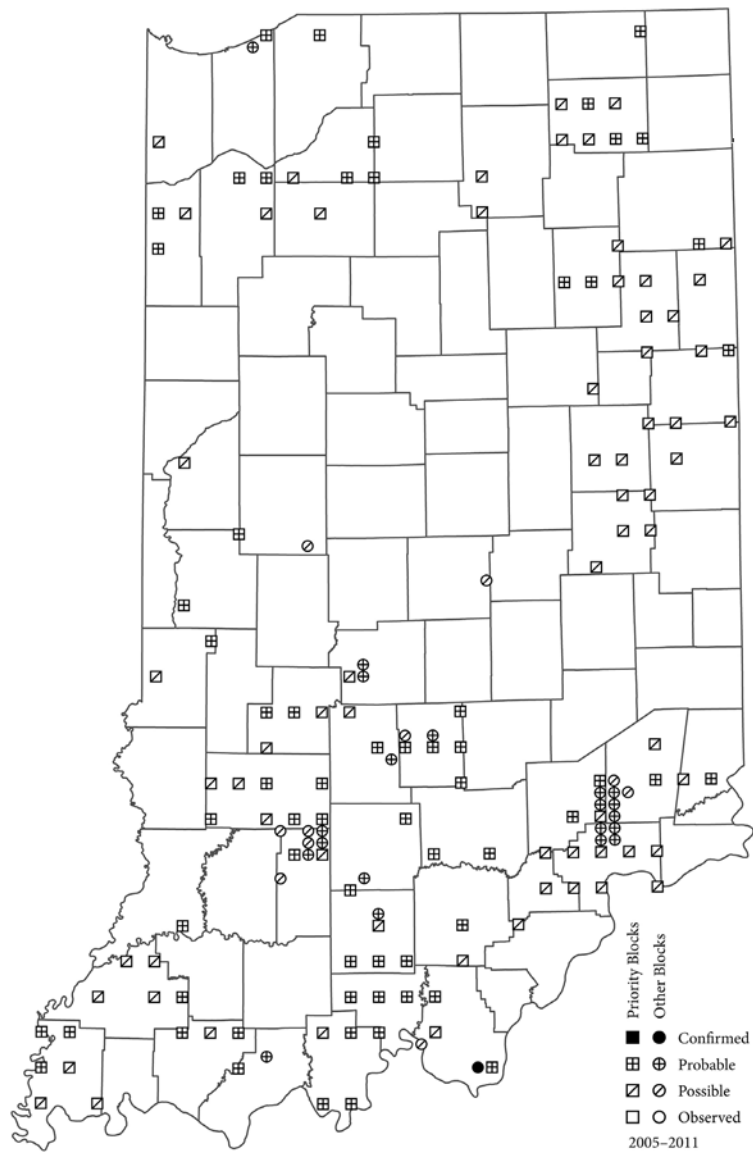


Figure 138. Map of the occurrences of the Eastern Whip-poor-will in IBBA blocks during 2005–2011.

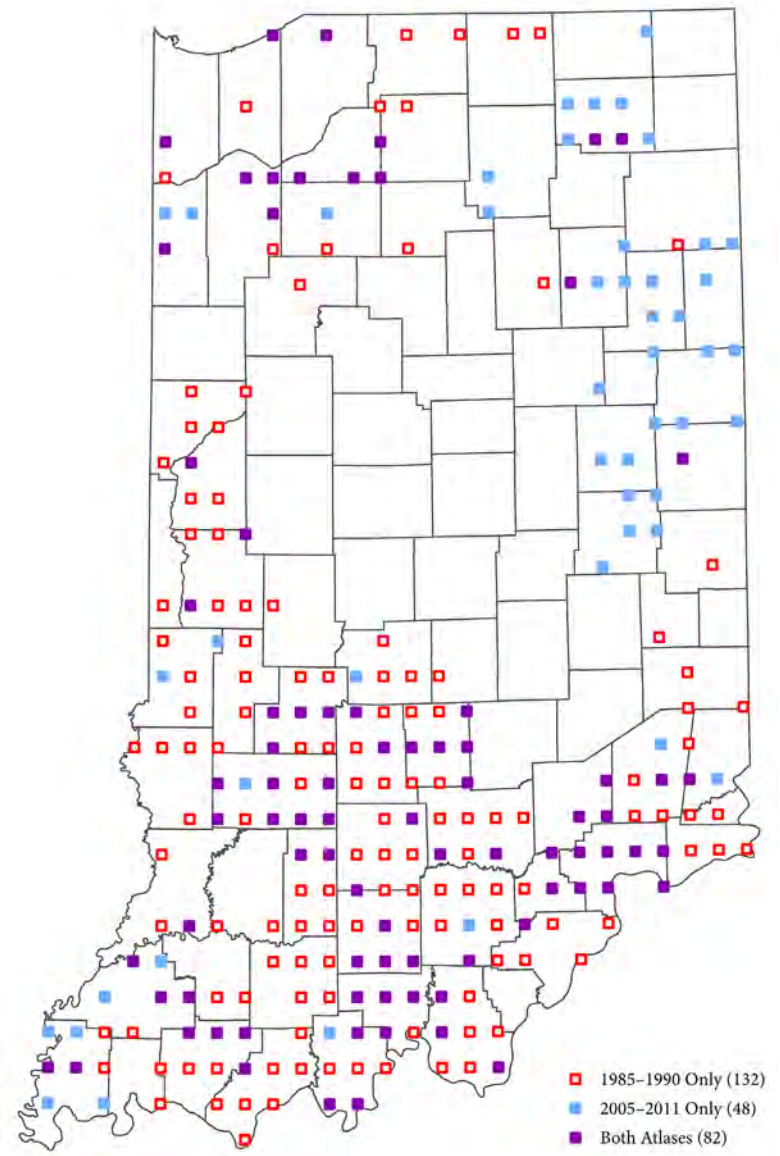


Figure 139. Map of the occurrences of the Eastern Whip-poor-will in IBBA priority blocks during both atlas periods.

Swifts and Hummingbirds (Apodiformes)

Tables 92–93, Fig. 140–143

TWO STRIKINGLY DISSIMILAR birds make up this avian group in Indiana, the Chimney Swift and Ruby-throated Hummingbird. Almost always seen in frantic flight, Chimney Swifts are constantly in the air pursuing flying insects (Cink and Collins 2002). They also gather small sticks while in flight and build nests glued with their saliva to the inside of brick or stone chimneys or other vertical structures. Hollow trees were typically used for nesting before European settlers arrived, but trees are seldom used today. Cities and small towns with older buildings and smoke stacks are common haunts for Chimney Swifts, but they can be encountered in most habitats throughout the state. Although a suitable chimney will host no more than one nesting pair, later in the season, Chimney Swifts gather in large flocks and roost in chimneys and smoke stacks during the night prior to migration. A common bird throughout much of the eastern United States in warmer months, Chimney Swifts winter in South America.

Chimney Swifts are easily detectable. The vast majority of Indiana atlas blocks registered this species, but occurrences were somewhat less frequent in northern Indiana. Little change was seen between atlas projects, but Breeding Bird Survey figures suggest a rather substantial decline in numbers in most regions of the state. The population trend on Indiana BBS routes for the period was a drop of 2.6% annually, a statistically significant decline. The loss of suitable nest sites is certainly a factor in this decline as capped and steel-lined chimneys increasingly replace open ones made up of brick and stone. Records of occurrence of Chimney Swifts on the Ohio atlas were slightly more frequent than in Indiana, while Michigan records were considerably less

frequent. All three states had fewer records on the most recent atlas, although the differences were small.

The Ruby-throated Hummingbird is familiar to most people and the only hummingbird found breeding in the eastern United States. It is the only nectar specialist found in the state, although it supplements its diet with small insects, spiders, and tree sap (Robinson *et al.* 1996). A wide variety of native and cultivated flowers is visited as well as feeders filled with sugar water. Ruby-throated Hummingbirds are found in a variety of open habitats, including well-landscaped urban areas and forest edges and openings. As the smallest bird species to frequent Indiana, its nest is also the most diminutive, a delicate construction of plant fibers, spider silk, and lichens placed on a tree branch in the lower tree canopy. Ruby-throated Hummingbirds winter primarily in Central America.

Ruby-throated Hummingbirds were found in most blocks throughout the state, although they occurred in fewer blocks in northwestern and west-central Indiana. Significantly more priority blocks reported this species during the current atlas project. Numbers on Breeding Bird Surveys were also up considerably from 20 years ago with lowest densities in central Indiana. Numbers increased most in the northern two-thirds of the state. Population trend on Indiana BBS routes for the 1985–2011 period was a 2.5% increase annually, a statistically significant increase. Rates of occurrence of Ruby-throated Hummingbirds were nearly identical on the recent atlases in Indiana and Ohio, but considerably lower in Michigan. Increased numbers were recorded on the recent Indiana and Michigan atlases, while Ohio tallied somewhat fewer observations.

Chimney Swift



A Chimney Swift in flight. *Photo by Ryan Sanderson.*

Table 92. Regional occurrence and abundance information for the Chimney Swift.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 69 | 72 | 55 | 5 | 31 | 9 | | | | |
| Northwest | 73 | 68 | 63 | 34 | 3 | 19 | 10 | | | | |
| Northeast | 54 | 70 | 85 | 21 | 9 | 12 | 7 | | | | |
| Central | 273 | 87 | 87 | 110 | 9 | 102 | 11 | | | | |
| West-central | 114 | 90 | 88 | 56 | 8 | 38 | 14 | | | | |
| East-central | 159 | 84 | 87 | 54 | 10 | 64 | 9 | | | | |
| South | 246 | 94 | 95 | 97 | 9 | 88 | 19 | | | | |
| Southwest | 106 | 95 | 93 | 47 | 11 | 39 | 25 | | | | |
| South-central | 87 | 95 | 99 | 35 | 9 | 35 | 15 | | | | |
| Southeast | 53 | 89 | 91 | 15 | 6 | 14 | 14 | | | | |
| Statewide | 646 | 86 | 87 | 262 | 8 | 221 | 14 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 108 | 19 | 111 | 20 |
| Probable | 310 | 56 | 301 | 53 |
| Possible | 138 | 25 | 151 | 27 |
| Sum | 556 | | 563 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 8 | | 3 | |
| Probable | 5 | | 4 | |
| Possible | 20 | | 5 | |
| Sum | 33 | | 12 | |
| Observed | 0 | | - | |

Chimney Swift

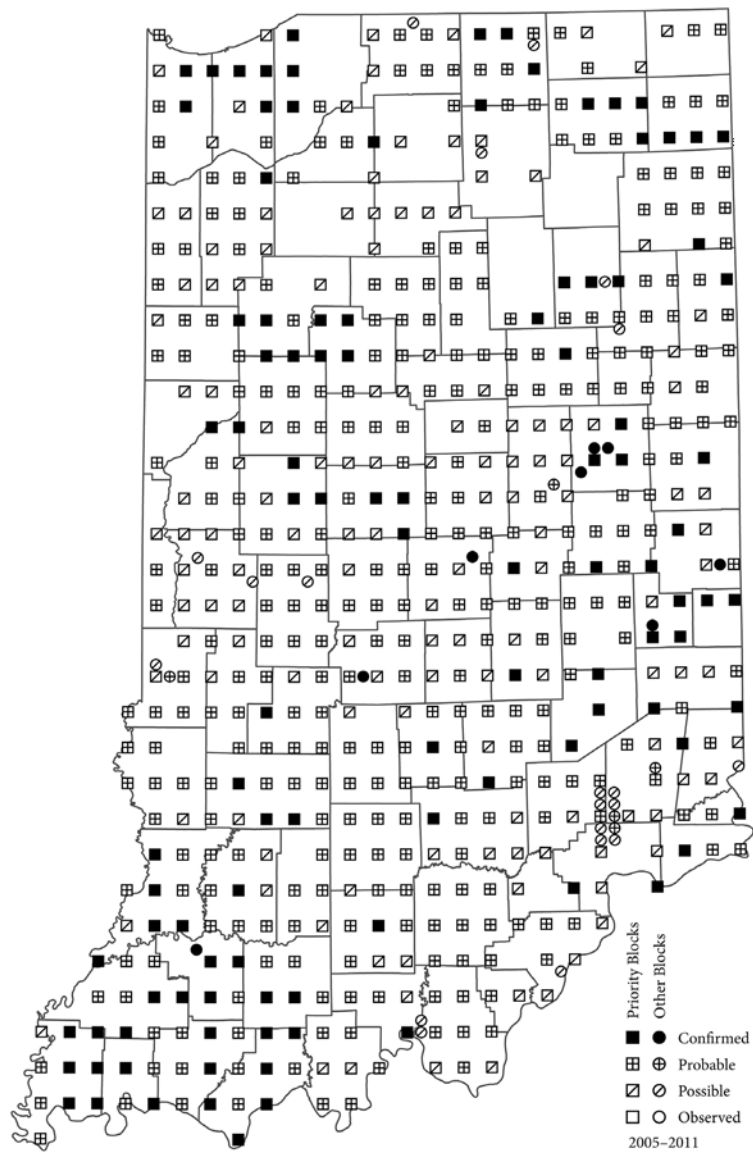


Figure 140. Map of the occurrences of the Chimney Swift in IBBA blocks during 2005–2011.

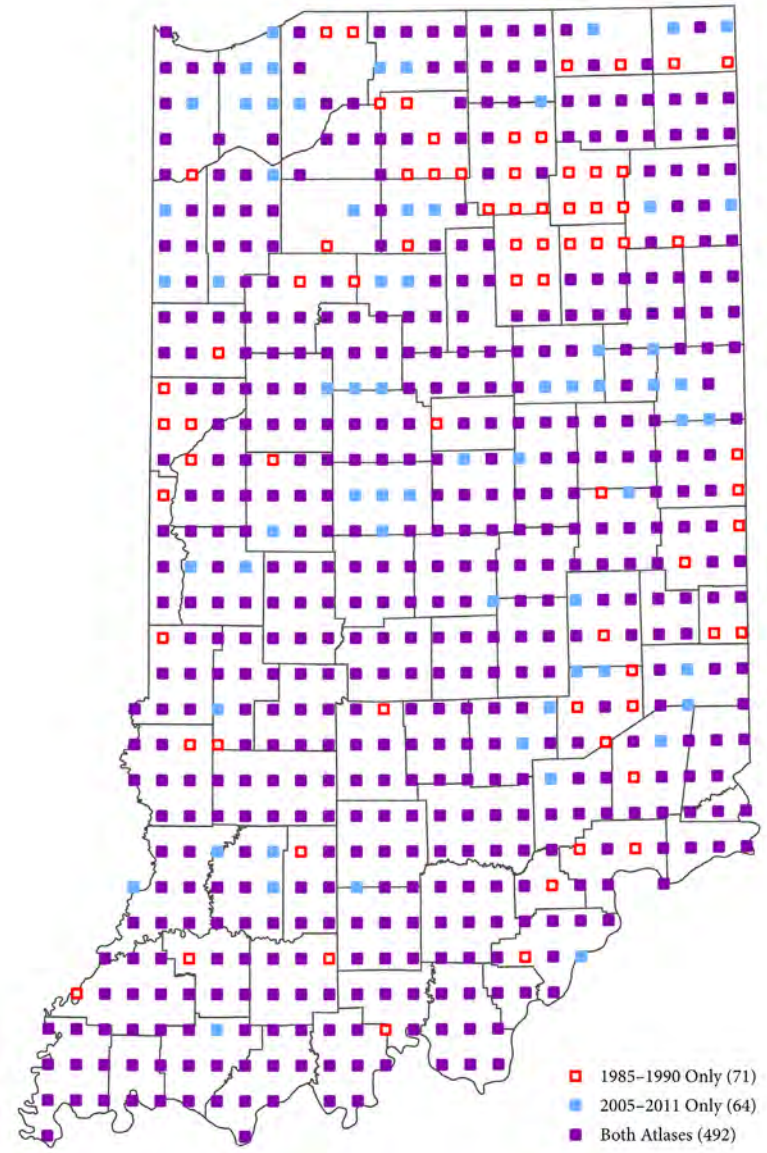


Figure 141. Map of the occurrences of the Chimney Swift in IBBA priority blocks during both atlas periods.

Ruby-throated Hummingbird



A male Ruby-throated Hummingbird perches on a bare branch with its tongue sticking out. *Photo by Ryan Sanderson.*

Table 93. Regional occurrence and abundance information for the Ruby-throated Hummingbird.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 75 | 52 | 55 | 1.18 | 31 | 0.32 | | | | |
| Northwest | 73 | 60 | 42 | 34 | 0.74 | 19 | 0.26 | | | | |
| Northeast | 54 | 94 | 65 | 21 | 1.90 | 12 | 0.42 | | | | |
| Central | 273 | 83 | 46 | 110 | 0.75 | 102 | 0.17 | | | | |
| West-central | 114 | 77 | 42 | 56 | 0.79 | 38 | 0.18 | | | | |
| East-central | 159 | 87 | 48 | 54 | 0.70 | 64 | 0.16 | | | | |
| South | 246 | 93 | 88 | 97 | 1.43 | 88 | 1.05 | | | | |
| Southwest | 106 | 94 | 82 | 47 | 1.34 | 39 | 0.67 | | | | |
| South-central | 87 | 92 | 94 | 35 | 1.71 | 35 | 1.54 | | | | |
| Southeast | 53 | 91 | 91 | 15 | 1.07 | 14 | 0.86 | | | | |
| Statewide | 646 | 85 | 63 | 262 | 1.09 | 221 | 0.54 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|-----------|
| Priority Blocks | | | | |
| Confirmed | 69 | 13 | 45 | |
| Probable | 280 | 51 | 157 | 11 |
| Possible | 200 | 36 | 206 | 38 |
| Sum | 549 | | 408 | 50 |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 7 | | 0 | |
| Probable | 8 | | 9 | |
| Possible | 22 | | 7 | |
| Sum | 37 | | 16 | |
| Observed | 0 | | - | |

Ruby-throated Hummingbird

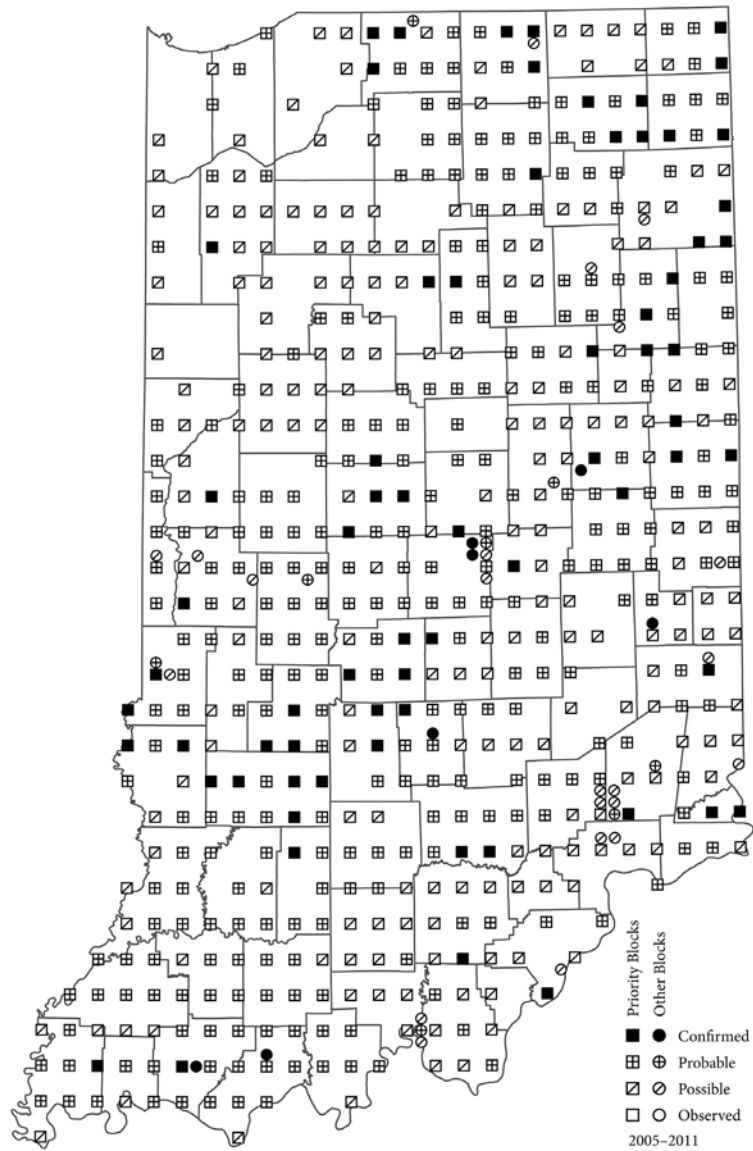


Figure 142. Map of the occurrences of the Ruby-throated Hummingbird in IBBA blocks during 2005–2011.

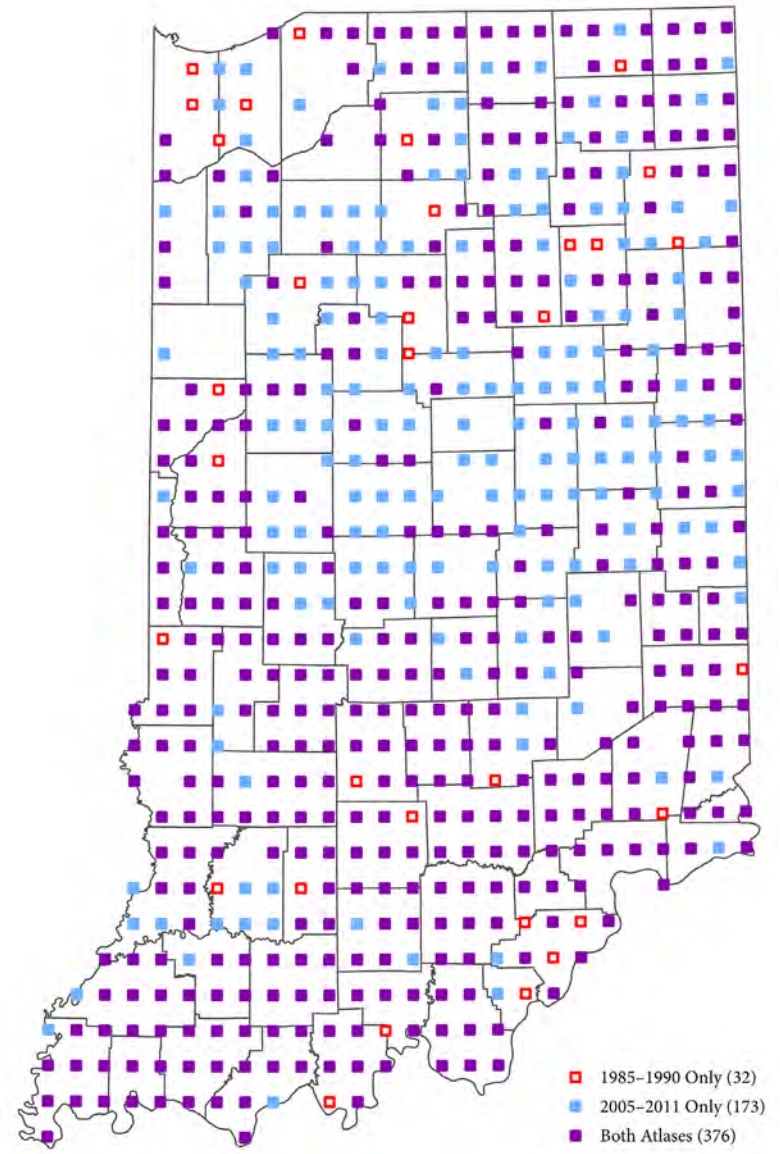


Figure 143. Map of the occurrences of the Ruby-throated Hummingbird in IBBA priority blocks during both atlas periods.

Kingfishers (Coraciiformes)

Table 94, Fig. 144–145

OF THE THREE species of kingfishers that occur in North America, the Belted Kingfisher is the only one to occur in Indiana and most of the United States. Belted Kingfishers are found along rivers, streams, ditches, and the shorelines of lakes and ponds (Hamas 1994). They hunt from a perch or hover before diving into shallow water to capture small fish and other aquatic animals. A nest consists of a long, horizontal burrow excavated in a vertical bank of sand or soil. Belted Kingfishers are found in Indiana throughout the year, although more northern birds move south to ice-free waters.

Belted Kingfishers were found in a majority of atlas blocks throughout Indiana with a rather uniform dis-

tribution. Slightly fewer blocks registered this species during the current atlas—a difference in occurrence that was statistically significant. Relative abundance on Breeding Bird Surveys was similar in central Indiana during both atlas periods with increases in northern Indiana and declines in the south. The statewide population trend on Indiana BBS routes for the period was a drop of 1.9% annually, a statistically significant decline. Frequencies of occurrence for the Belted Kingfisher were similar on the recent atlases in Indiana and Ohio, but values were lower in Michigan. All three states showed declines in relative occurrence from their initial atlases with differences greatest for Michigan and Ohio.

Belted Kingfisher



A female Belted Kingfisher perches on a branch. *Photo by Shari McCollough.*

Table 94. Regional occurrence and abundance information for the Belted Kingfisher.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 61 | 65 | 55 | 0.24 | 31 | 0.10 | | | | |
| Northwest | 73 | 53 | 63 | 34 | 0.21 | 19 | 0.05 | | | | |
| Northeast | 54 | 70 | 67 | 21 | 0.29 | 12 | 0.17 | | | | |
| Central | 273 | 56 | 58 | 110 | 0.33 | 102 | 0.32 | | | | |
| West-central | 114 | 55 | 57 | 56 | 0.29 | 38 | 0.53 | | | | |
| East-central | 159 | 57 | 59 | 54 | 0.37 | 64 | 0.20 | | | | |
| South | 246 | 59 | 74 | 97 | 0.21 | 88 | 0.59 | | | | |
| Southwest | 106 | 57 | 75 | 47 | 0.21 | 39 | 0.46 | | | | |
| South-central | 87 | 61 | 74 | 35 | 0.29 | 35 | 0.74 | | | | |
| Southeast | 53 | 60 | 72 | 15 | 0.00 | 14 | 0.57 | | | | |
| Statewide | 646 | 58 | 65 | 262 | 0.26 | 221 | 0.40 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 37 | 10 | 80 | 19 |
| Probable | 165 | 44 | 164 | 39 |
| Possible | 173 | 46 | 179 | 42 |
| Sum | 375 | | 423 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 4 | |
| Probable | 8 | | 4 | |
| Possible | 13 | | 8 | |
| Sum | 26 | | 16 | |
| Observed | 0 | | - | |

Belted Kingfisher

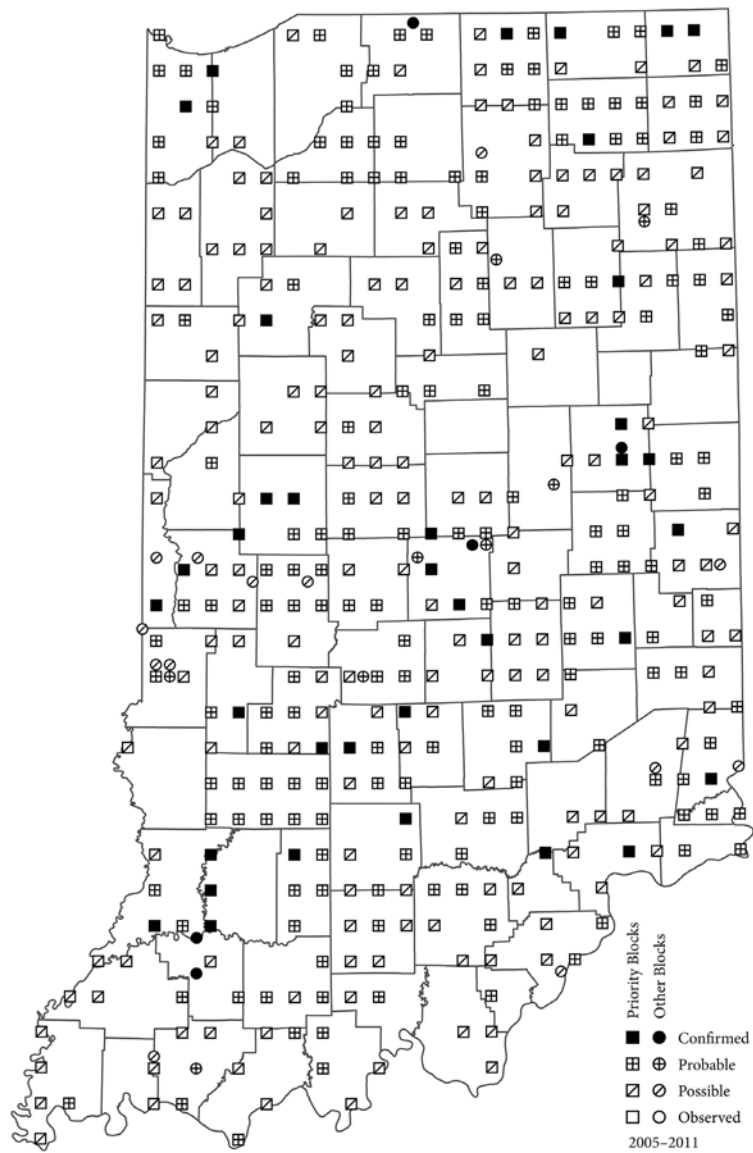


Figure 144. Map of the occurrences of the Belted Kingfisher in IBBA blocks during 2005–2011.

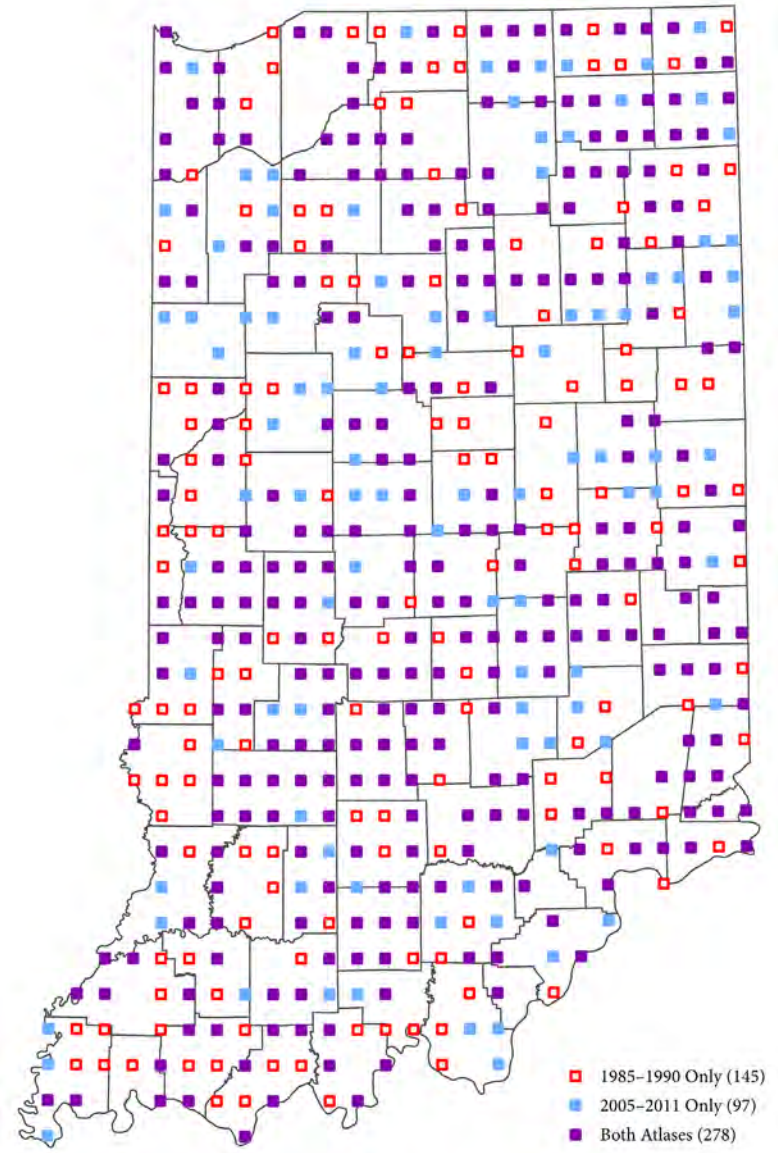


Figure 145. Map of the occurrences of the Belted Kingfisher in IBBA priority blocks during both atlas periods.

Woodpeckers (Piciformes)

Tables 95–101, Fig. 146–158

SIX SPECIES OF woodpeckers commonly breed throughout the state, but there are only sporadic reports of Yellow-bellied Sapsucker nesting in Indiana. Woodpeckers excavate nesting cavities in live and dead trees, so all can be considered dependent on forests. However, many do well in areas with a mosaic of wooded and open habitats (Bull and Jackson 1995, Moore 1995, Shackelford *et al.* 2000, Smith *et al.* 2000, Jackson *et al.* 2002, Jackson and Ouellet 2002). Diets consist mostly of beetles, ants, and other invertebrates found under or on tree bark. Some species such as the Northern Flicker and Red-headed Woodpecker also feed extensively on the ground. Fruit, seeds, acorns, and other nuts are also important components of their diet, especially in the fall and winter. Many readily visit bird feeders for seeds and suet. All can be found in Indiana throughout the year, although Northern Flickers show some migratory movements and Red-headed Woodpeckers may be virtually absent during the winter if acorn crops are poor. Yellow-bellied Sapsuckers nest primarily north of Indiana and are mostly considered a migrant and winter resident in the state.

Downy Woodpecker, Red-bellied Woodpecker, and Northern Flicker occurred in over 90% of priority atlas blocks while Red-headed Woodpecker, Hairy Woodpecker, and Pileated Woodpecker were found in over half the blocks. BBS values suggest that the most common woodpecker in Indiana is the Red-bellied, followed by Northern Flicker, Downy Woodpecker, Red-headed Woodpecker, Pileated Woodpecker, and Hairy Woodpecker. Given their dependence on forest habitats, it is not surprising that occurrences are greatest for most woodpecker species in southern Indiana.

Pileated Woodpecker and Red-bellied Woodpecker were found in significantly more blocks during the current atlas, while Northern Flickers and Red-headed Woodpeckers showed statistically significant reductions in frequency of occurrence among the woodpeckers. Detections of Downy Woodpecker and Hairy Woodpecker were similar between atlas periods. Relative densities on BBS routes also indicate that Pileated Woodpecker and Red-bellied Woodpecker are increas-

ing, while the other species declined in most regions, most notably Red-headed Woodpecker and Northern Flicker. Population trends on Indiana BBS routes for the period 1985–2011 showed significant increases for Red-bellied Woodpecker and Pileated Woodpecker, a statistically nonsignificant increase for the Hairy Woodpecker, a nonsignificant downward trend for Downy Woodpecker, and significant declines for Red-headed Woodpeckers and Northern Flickers.

The Downy Woodpecker, Red-bellied Woodpecker, and Northern Flicker were the most common woodpeckers found on atlases in Indiana and Ohio, with detection in nearly all priority blocks. Rates on the Michigan atlas were much lower where the Hairy Woodpecker takes the place of the Red-bellied Woodpecker in the list of the top three ranked species. Increased frequencies between atlas periods were observed in all three states for Red-bellied Woodpecker, while occurrences of Downy Woodpeckers and Northern Flickers were similar or somewhat fewer on the recent atlas. The greatest differences were apparent in Michigan. Relative frequencies of Hairy Woodpeckers were virtually unchanged in Indiana between atlases, only slightly lower in Michigan, with a more moderate decrease in Ohio.

Red-headed Woodpeckers occurred in the largest number of blocks on the Indiana atlas, but the fewest in Michigan. All three states showed moderate to large declines in rates of occurrence between atlas periods. The opposite trend occurred for the Pileated Woodpecker, which moderately increased in occurrence in all states. Yellow-bellied Sapsuckers occurred in nearly all blocks in the Upper Peninsula and the Northern Lower Peninsula of Michigan, but were primarily restricted to a small portion of northeastern Ohio. Yellow-bellied Sapsuckers were not confirmed nesting in Indiana during either atlas. Records increased noticeably between atlas periods in Michigan and Ohio. Black-backed Woodpeckers and American Three-toed Woodpeckers occurred only in northern Michigan, with the former species confirmed nesting at low rates in the Upper Peninsula. Only one nesting record from 1953 has been accepted for the American Three-toed Woodpecker in the state.

Red-headed Woodpecker



A Red-headed Woodpecker grasps onto a vertical branch. *Photo by Ryan Sanderson.*

Table 95. Regional occurrence and abundance information for the Red-headed Woodpecker.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 88 | 91 | 55 | 2.0 | 31 | 3.3 | | | | |
| Northwest | 73 | 86 | 95 | 34 | 2.5 | 19 | 4.4 | | | | |
| Northeast | 54 | 91 | 87 | 21 | 1.2 | 12 | 1.7 | | | | |
| Central | 273 | 78 | 82 | 110 | 1.6 | 102 | 2.7 | | | | |
| West-central | 114 | 82 | 84 | 56 | 1.9 | 38 | 4.4 | | | | |
| East-central | 159 | 75 | 81 | 54 | 1.3 | 64 | 1.7 | | | | |
| South | 246 | 71 | 84 | 97 | 1.4 | 88 | 3.5 | | | | |
| Southwest | 106 | 81 | 99 | 47 | 1.6 | 39 | 5.6 | | | | |
| South-central | 87 | 66 | 79 | 35 | 1.3 | 35 | 1.8 | | | | |
| Southeast | 53 | 60 | 62 | 15 | 1.1 | 14 | 1.9 | | | | |
| Statewide | 646 | 77 | 85 | 262 | 1.6 | 221 | 3.1 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 176 | 35 | 223 | 41 |
| Probable | 232 | 46 | 235 | 43 |
| Possible | 92 | 18 | 89 | 16 |
| Sum | 500 | | 547 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 7 | | 3 | |
| Probable | 10 | | 7 | |
| Possible | 10 | | 4 | |
| Sum | 27 | | 14 | |
| Observed | 0 | | - | |

Red-headed Woodpecker

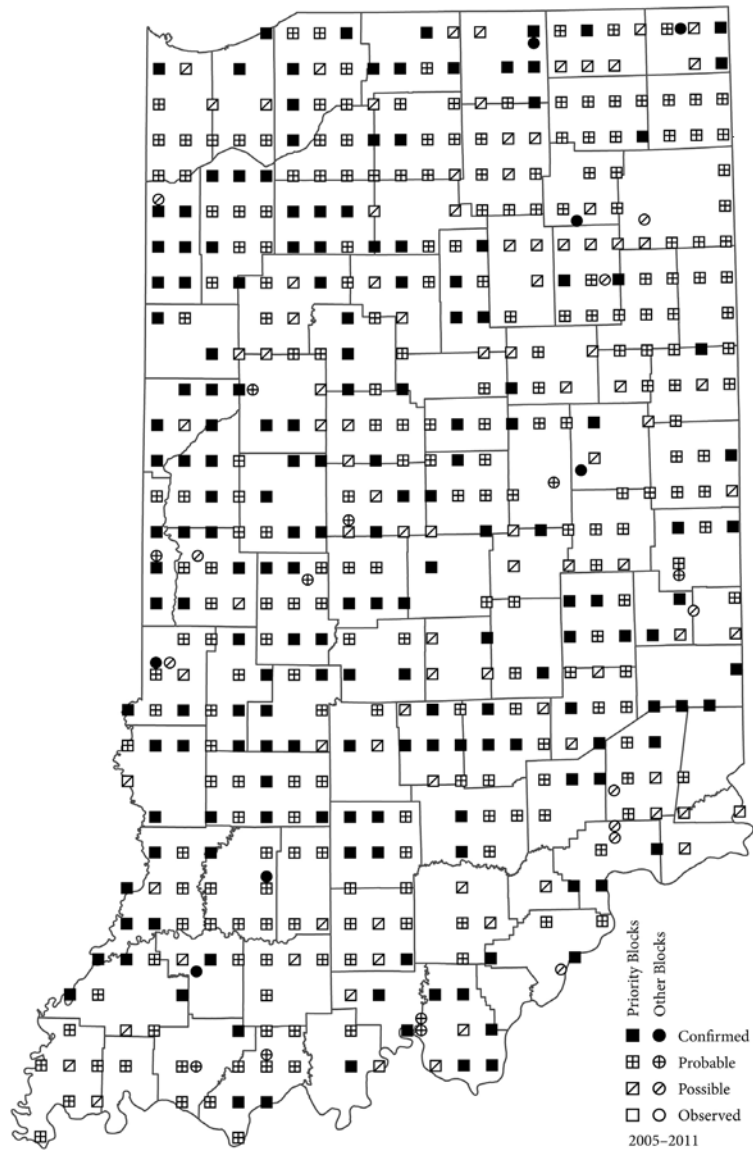


Figure 146. Map of the occurrences of the Red-headed Woodpecker in IBBA blocks during 2005–2011.

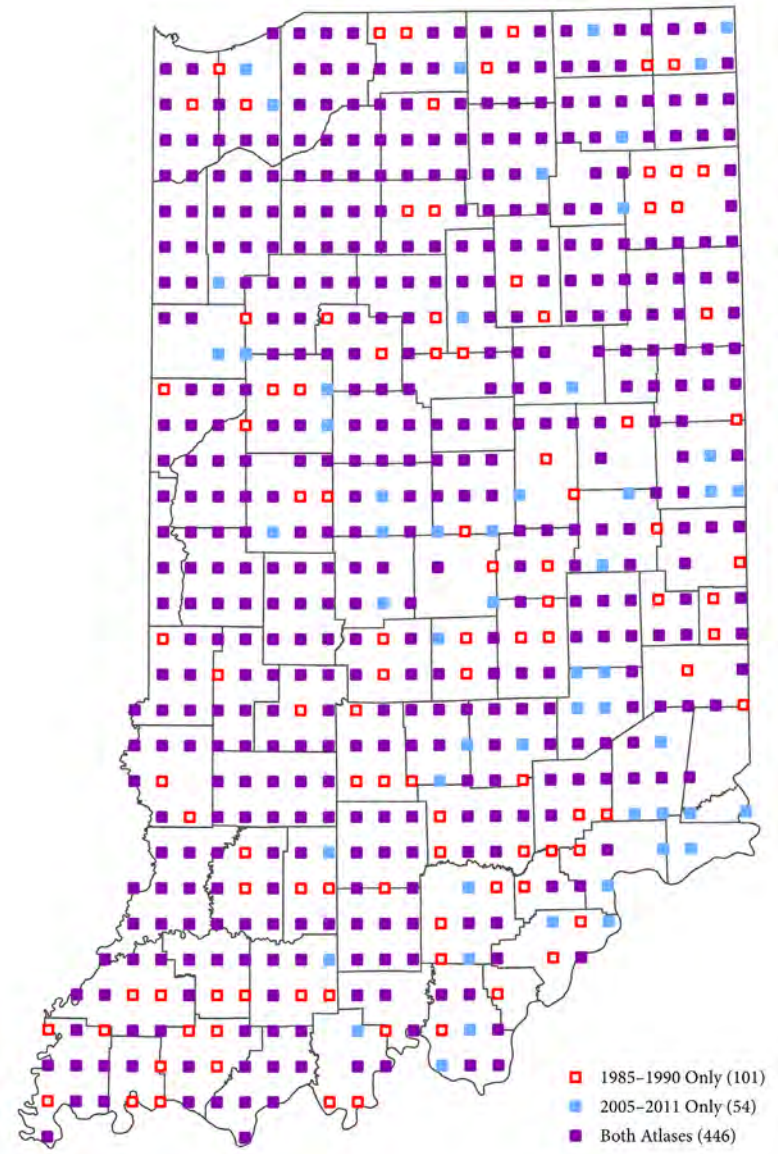


Figure 147. Map of the occurrences of the Red-headed Woodpecker in IBBA priority blocks during both atlas periods.

Red-bellied Woodpecker



A male Red-bellied Woodpecker perches on a branch. *Photo by Shari McCollough.*

Table 96. Regional occurrence and abundance information for the Red-bellied Woodpecker.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 91 | 79 | 55 | 6.1 | 31 | 2.0 | | | | |
| Northwest | 73 | 84 | 75 | 34 | 6.2 | 19 | 1.7 | | | | |
| Northeast | 54 | 100 | 83 | 21 | 5.9 | 12 | 2.5 | | | | |
| Central | 273 | 91 | 81 | 110 | 6.3 | 102 | 2.6 | | | | |
| West-central | 114 | 82 | 69 | 56 | 7.6 | 38 | 2.9 | | | | |
| East-central | 159 | 97 | 90 | 54 | 4.8 | 64 | 2.5 | | | | |
| South | 246 | 99 | 98 | 97 | 12.8 | 88 | 10.4 | | | | |
| Southwest | 106 | 98 | 97 | 47 | 13.2 | 39 | 11.3 | | | | |
| South-central | 87 | 99 | 99 | 35 | 12.9 | 35 | 9.7 | | | | |
| Southeast | 53 | 100 | 98 | 15 | 11.4 | 14 | 9.4 | | | | |
| Statewide | 646 | 94 | 87 | 262 | 8.6 | 221 | 5.6 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 180 | 30 | 203 | 36 |
| Probable | 363 | 60 | 254 | 45 |
| Possible | 63 | 10 | 106 | 19 |
| Sum | 606 | | 563 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 8 | | 5 | |
| Probable | 20 | | 11 | |
| Possible | 20 | | 4 | |
| Sum | 48 | | 20 | |
| Observed | 0 | | - | |

Red-bellied Woodpecker

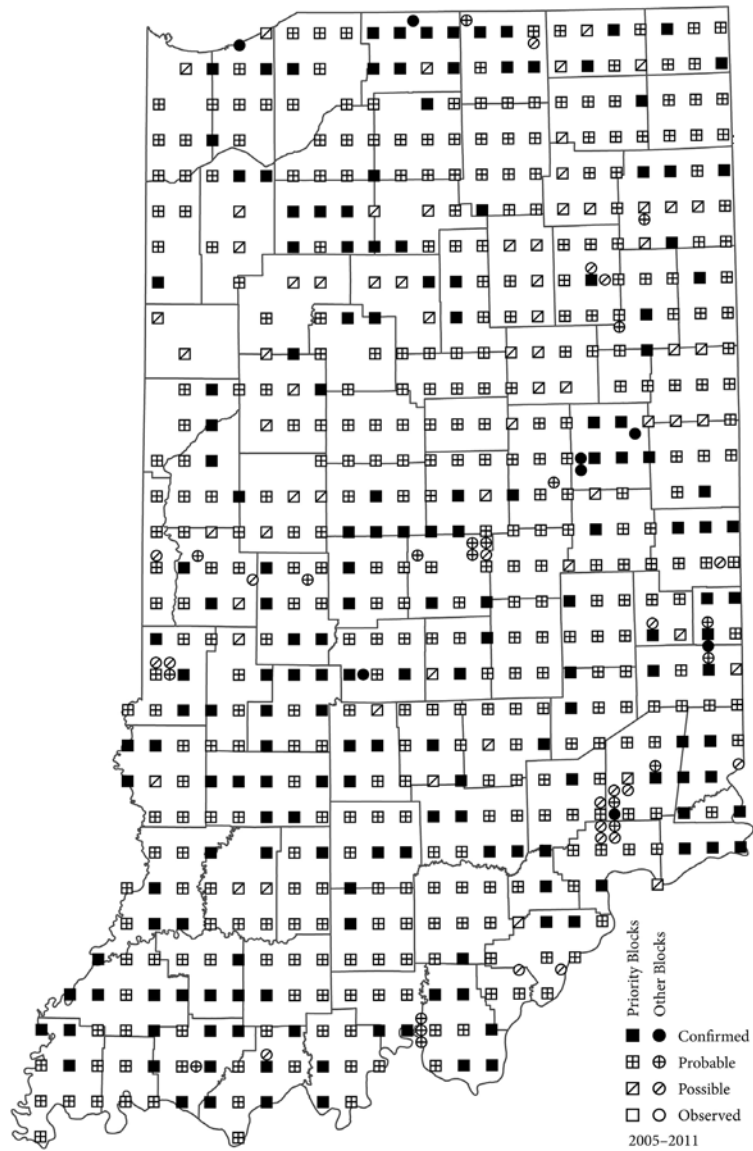


Figure 148. Map of the occurrences of the Red-bellied Woodpecker in IBBA blocks during 2005–2011.

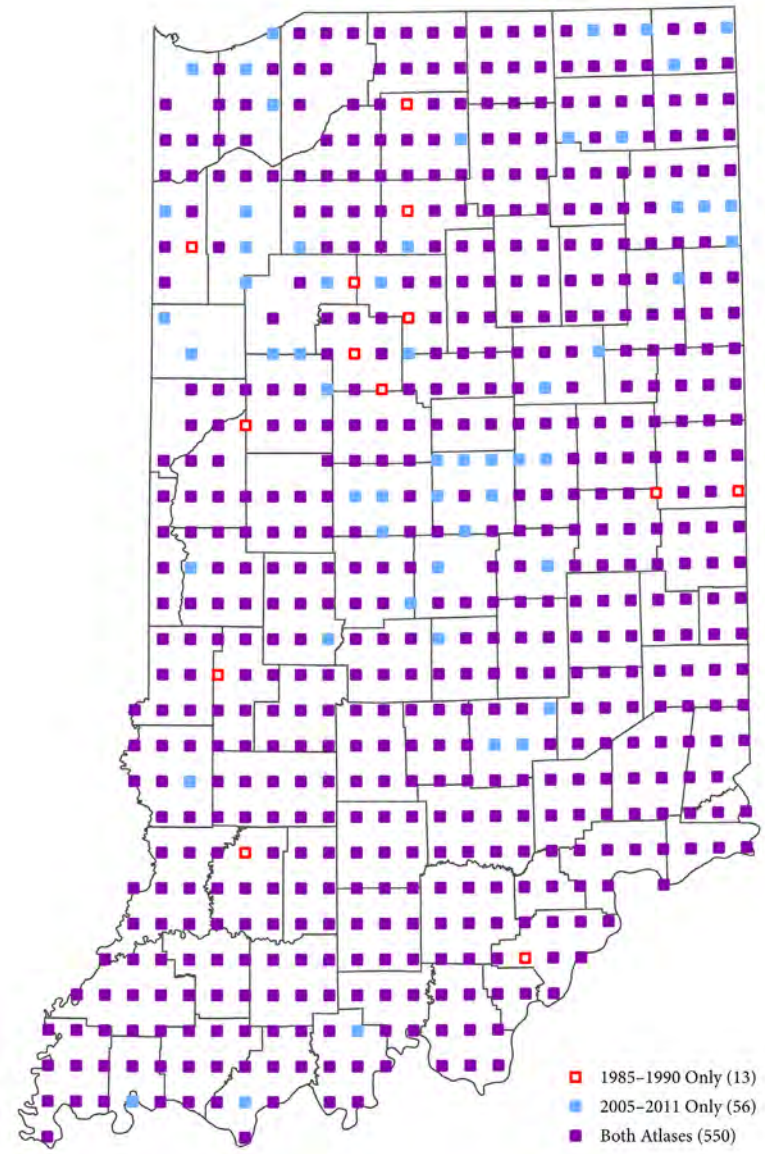


Figure 149. Map of the occurrences of the Red-bellied Woodpecker in IBBA priority blocks during both atlas periods.

Yellow-bellied Sapsucker



An male Yellow-bellied Sapsucker clings vertically to a tree with a line of small holes drilled into the bark.
Photo by Jeff Timmons.

Table 97. Regional occurrence and abundance information for the Yellow-bellied Sapsucker.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | 2005–2011 | 1985–1990 |
|------------------------|-----------|-----------|
| Priority Blocks | | |
| Confirmed | 0 | 0 |
| Probable | 0 | 0 |
| Possible | 0 | 0 |
| Sum | 0 | 0 |
| Observed | 0 | - |
| Other blocks | | |
| Confirmed | 0 | 0 |
| Probable | 0 | 0 |
| Possible | 1 | 0 |
| Sum | 1 | 0 |
| Observed | 0 | - |

Yellow-bellied Sapsucker



Figure 150. Map of the occurrences of the Yellow-bellied Sapsucker in IBBA blocks during 2005–2011.

Downy Woodpecker



A female Downy Woodpecker grasps onto a frost-covered branch. *Photo by Shari McCollough.*

Table 98. Regional occurrence and abundance information for the Downy Woodpecker.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|------------|------------|------------|---------------------|-----------|--|--|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | |
| North | 127 | 96 | 97 | 55 | 1.6 | 31 | 2.3 | | | | |
| Northwest | 73 | 93 | 97 | 34 | 1.4 | 19 | 2.2 | | | | |
| Northeast | 54 | 100 | 96 | 21 | 2.0 | 12 | 2.4 | | | | |
| Central | 273 | 96 | 95 | 110 | 2.0 | 102 | 2.5 | | | | |
| West-central | 114 | 91 | 93 | 56 | 2.0 | 38 | 3.6 | | | | |
| East-central | 159 | 99 | 96 | 54 | 1.9 | 64 | 1.8 | | | | |
| South | 246 | 96 | 99 | 97 | 2.5 | 88 | 3.4 | | | | |
| Southwest | 106 | 99 | 98 | 47 | 1.6 | 39 | 3.0 | | | | |
| South-central | 87 | 95 | 100 | 35 | 3.5 | 35 | 3.7 | | | | |
| Southeast | 53 | 91 | 98 | 15 | 2.9 | 14 | 3.5 | | | | |
| Statewide | 646 | 96 | 97 | 262 | 2.1 | 221 | 2.8 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 195 | 32 | 251 | 40 |
| Probable | 350 | 57 | 299 | 48 |
| Possible | 74 | 12 | 74 | 12 |
| Sum | 619 | | 624 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 15 | | 4 | |
| Probable | 10 | | 12 | |
| Possible | 26 | | 6 | |
| Sum | 51 | | 22 | |
| Observed | 0 | | - | |

Downy Woodpecker

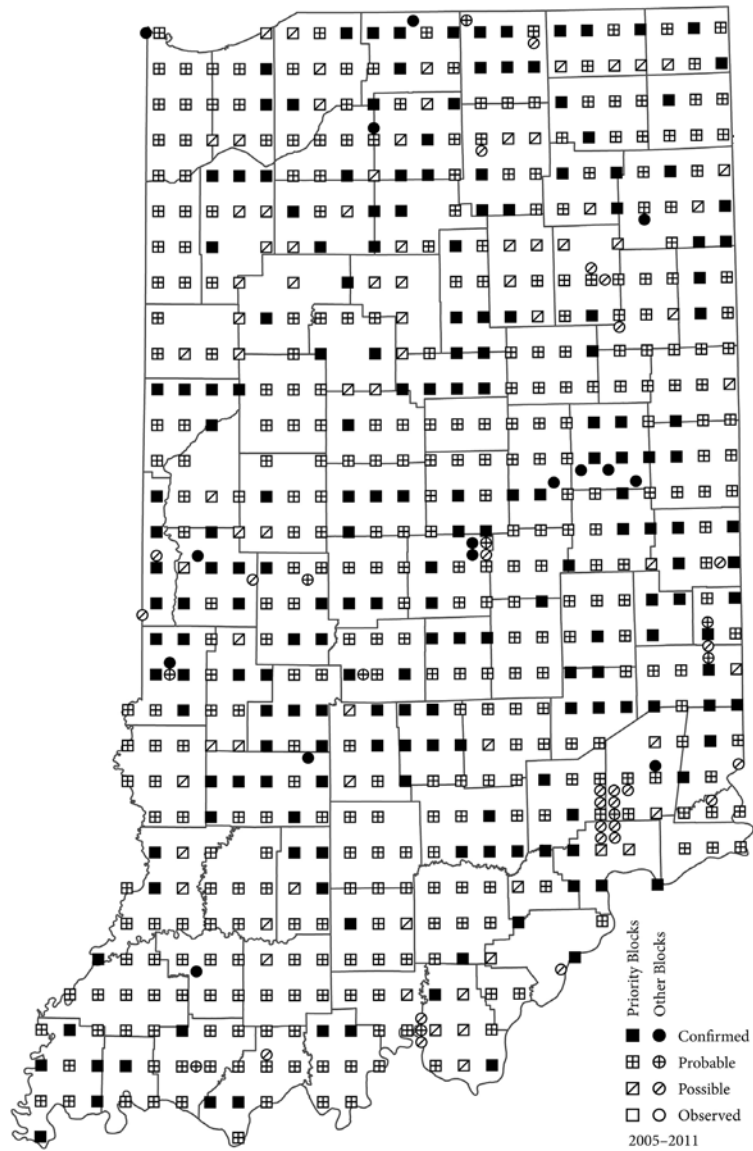


Figure 151. Map of the occurrences of the Downy Woodpecker in IBBA blocks during 2005–2011.

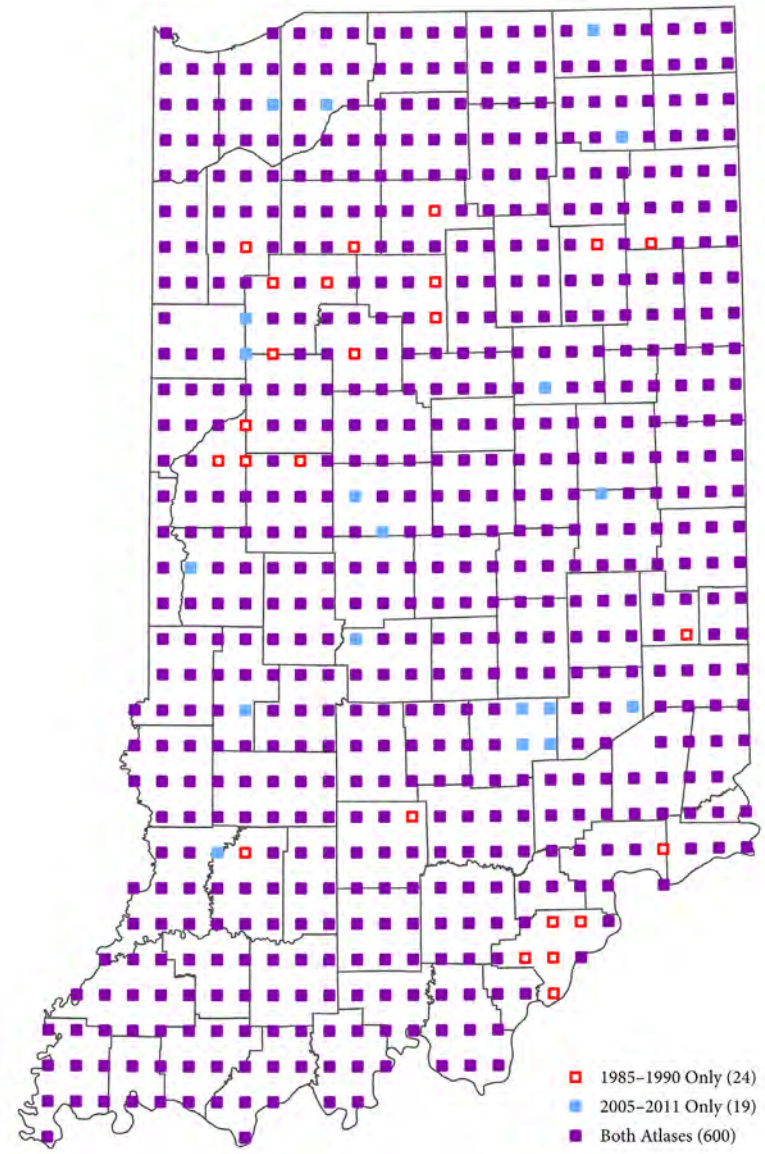


Figure 152. Map of the occurrences of the Downy Woodpecker in IBBA priority blocks during both atlas periods.

Hairy Woodpecker



A female Hairy Woodpecker perches on a branch with purple flowers in the foreground. *Photo by Shari McCollough.*

Table 99. Regional occurrence and abundance information for the Hairy Woodpecker.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|-------------|------------|-------------|---------------------|-----------|--|--|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | |
| North | 127 | 61 | 65 | 55 | 0.09 | 31 | 0.42 | | | | |
| Northwest | 73 | 51 | 66 | 34 | 0.09 | 19 | 0.42 | | | | |
| Northeast | 54 | 74 | 65 | 21 | 0.10 | 12 | 0.42 | | | | |
| Central | 273 | 66 | 60 | 110 | 0.12 | 102 | 0.16 | | | | |
| West-central | 114 | 59 | 52 | 56 | 0.11 | 38 | 0.21 | | | | |
| East-central | 159 | 72 | 65 | 54 | 0.13 | 64 | 0.13 | | | | |
| South | 246 | 73 | 76 | 97 | 0.56 | 88 | 0.58 | | | | |
| Southwest | 106 | 74 | 71 | 47 | 0.23 | 39 | 0.46 | | | | |
| South-central | 87 | 69 | 89 | 35 | 0.80 | 35 | 0.63 | | | | |
| Southeast | 53 | 77 | 66 | 15 | 1.00 | 14 | 0.79 | | | | |
| Statewide | 646 | 68 | 67 | 262 | 0.27 | 221 | 0.36 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 66 | 15 | 63 | 15 |
| Probable | 218 | 50 | 191 | 44 |
| Possible | 153 | 35 | 179 | 41 |
| Sum | 437 | | 433 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 4 | |
| Probable | 6 | | 10 | |
| Possible | 19 | | 3 | |
| Sum | 30 | | 17 | |
| Observed | 0 | | - | |

Hairy Woodpecker

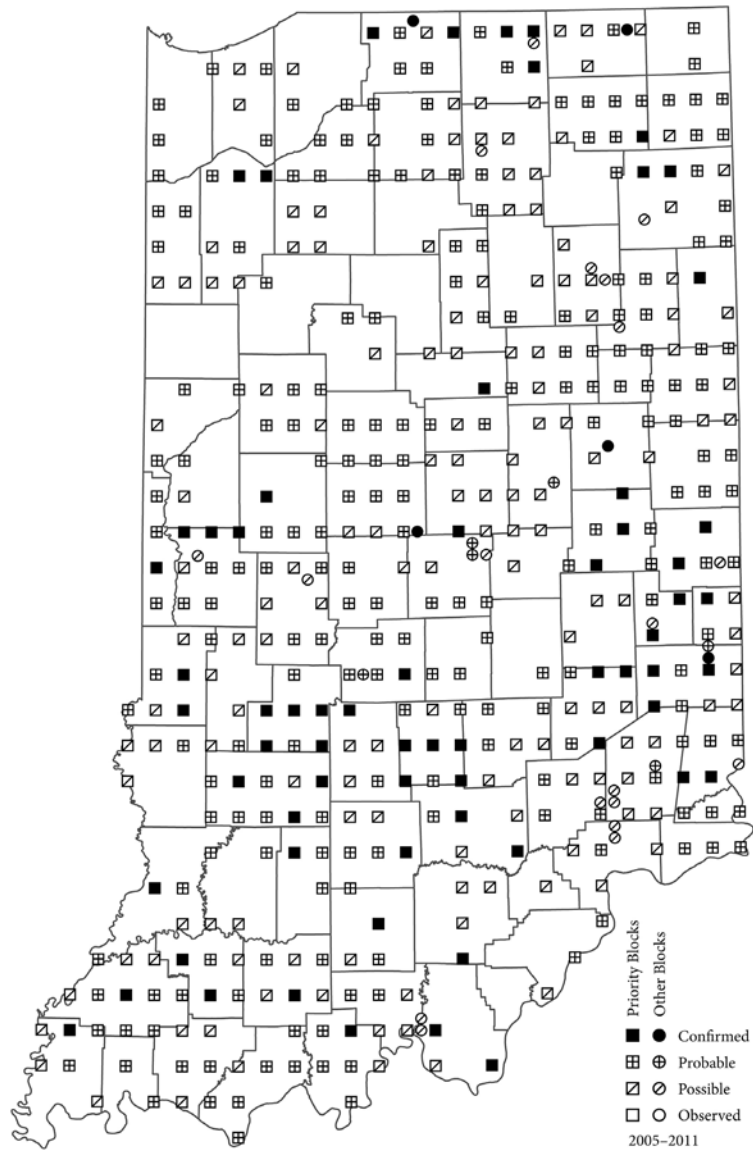


Figure 153. Map of the occurrences of the Hairy Woodpecker in IBBA blocks during 2005–2011.

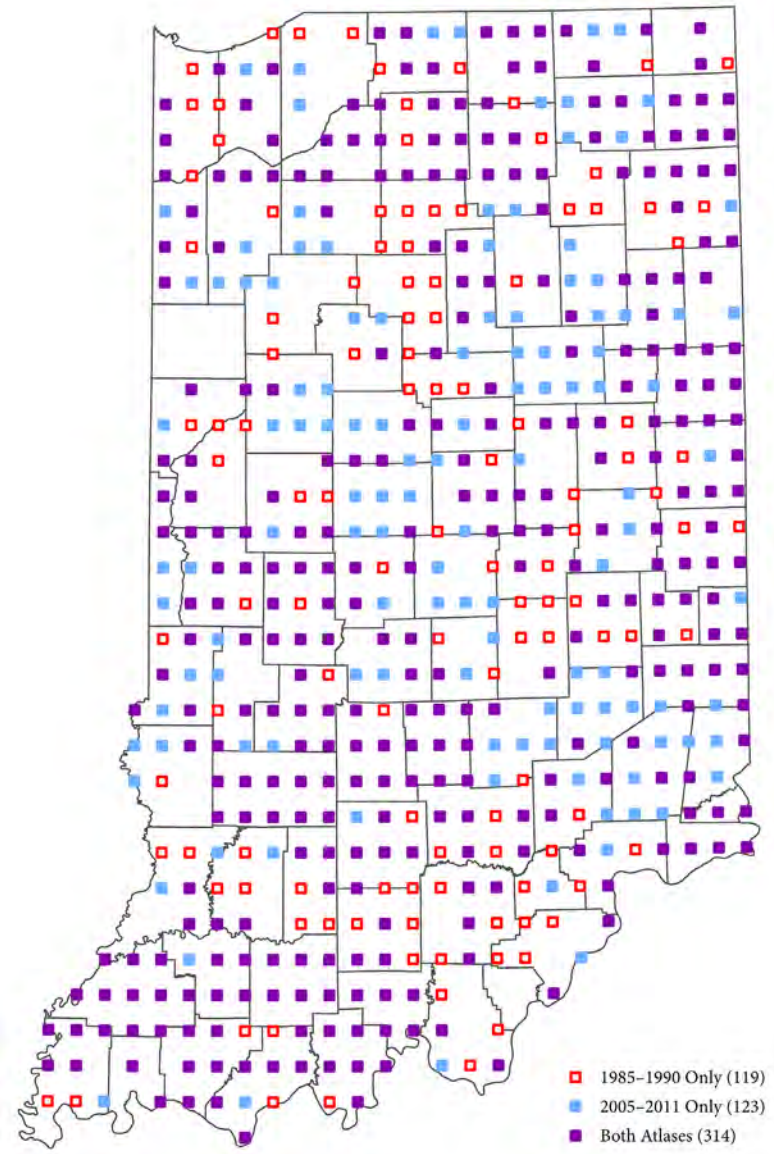


Figure 154. Map of the occurrences of the Hairy Woodpecker in IBBA priority blocks during both atlas periods.

Northern Flicker



A male Northern Flicker (yellow-shafted) perches on a broken branch. *Photo by Shari McCollough.*

Table 100. Regional occurrence and abundance information for the Northern Flicker.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 98 | 98 | 55 | 2.6 | 31 | 6.1 | | | | |
| Northwest | 73 | 99 | 99 | 34 | 2.6 | 19 | 7.8 | | | | |
| Northeast | 54 | 98 | 96 | 21 | 2.5 | 12 | 3.5 | | | | |
| Central | 273 | 91 | 97 | 110 | 2.0 | 102 | 3.8 | | | | |
| West-central | 114 | 88 | 96 | 56 | 1.9 | 38 | 4.3 | | | | |
| East-central | 159 | 93 | 98 | 54 | 2.1 | 64 | 3.5 | | | | |
| South | 246 | 93 | 99 | 97 | 2.2 | 88 | 4.1 | | | | |
| Southwest | 106 | 92 | 99 | 47 | 2.2 | 39 | 4.3 | | | | |
| South-central | 87 | 98 | 99 | 35 | 2.3 | 35 | 3.9 | | | | |
| Southeast | 53 | 91 | 100 | 15 | 2.3 | 14 | 3.9 | | | | |
| Statewide | 646 | 93 | 98 | 262 | 2.2 | 221 | 4.2 | | | | |

| | 2005–2011 | | 1985–1990 | |
|------------------------|------------|----|------------|----|
| | No. | % | No. | % |
| Priority Blocks | | | | |
| Confirmed | 138 | 23 | 196 | 31 |
| Probable | 344 | 57 | 357 | 56 |
| Possible | 121 | 20 | 80 | 13 |
| Sum | 603 | | 633 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 2 | | 7 | |
| Probable | 11 | | 9 | |
| Possible | 20 | | 5 | |
| Sum | 33 | | 21 | |
| Observed | 0 | | - | |

Northern Flicker

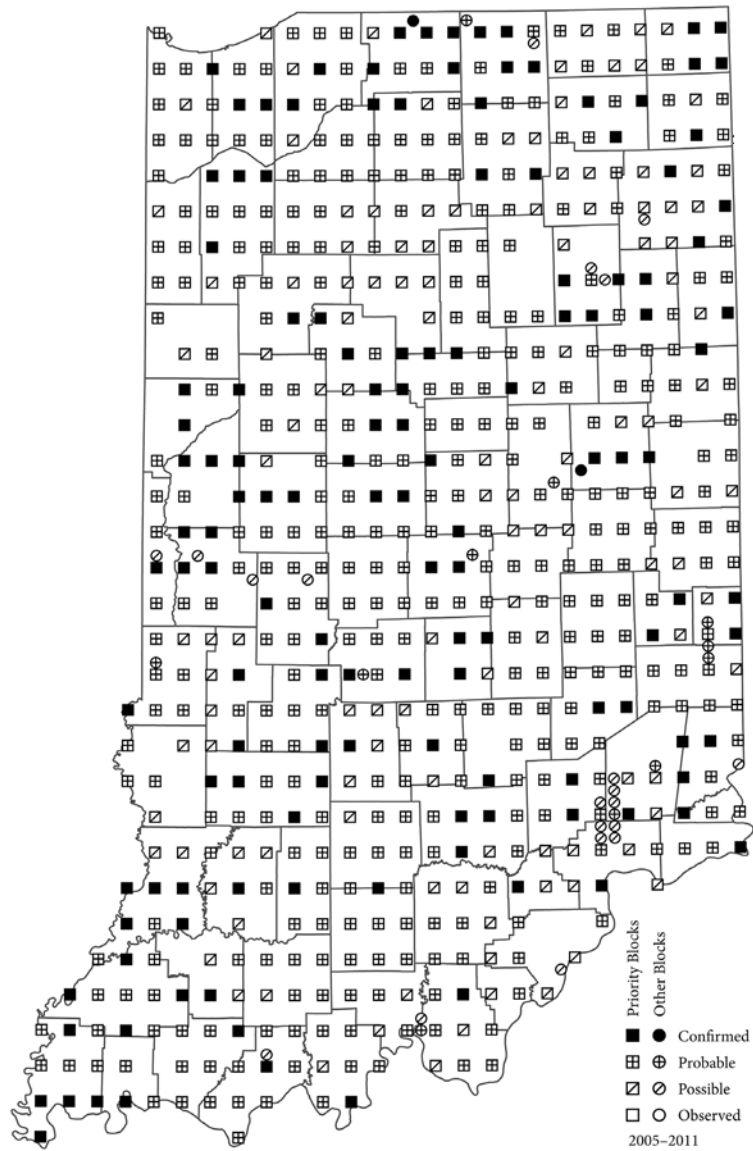


Figure 155. Map of the occurrences of the Northern Flicker in IBBA blocks during 2005–2011.

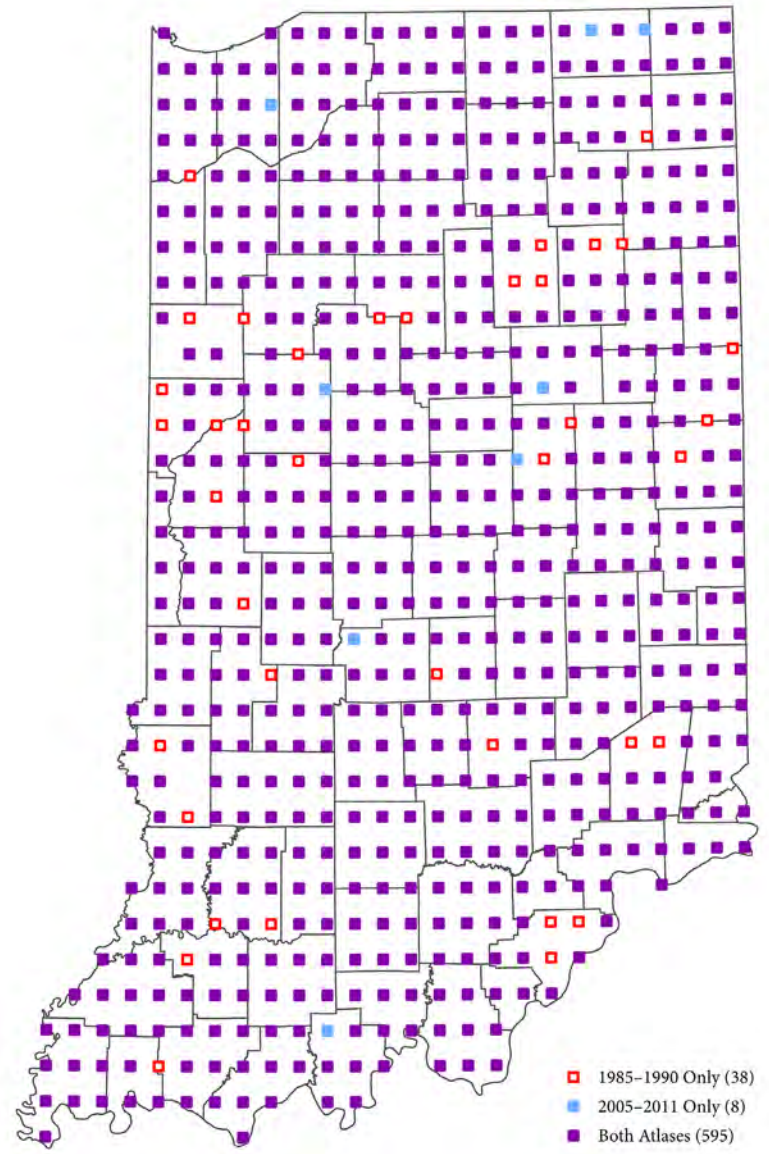


Figure 156. Map of the occurrences of the Northern Flicker in IBBA priority blocks during both atlas periods.

Pileated Woodpecker



A portrait of a female Pileated Woodpecker. *Photo by Ryan Sanderson.*

Table 101. Regional occurrence and abundance information for the Pileated Woodpecker.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----|------------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 24 | 6 | 55 | 0.11 | 31 | 0.00 | Priority Blocks | | | | |
| Northwest | 73 | 19 | 10 | 34 | 0.09 | 19 | 0.00 | Confirmed | 29 | 8 | 49 | 17 |
| Northeast | 54 | 31 | 2 | 21 | 0.14 | 12 | 0.00 | Probable | 241 | 65 | 139 | 49 |
| Central | 273 | 44 | 26 | 110 | 0.23 | 102 | 0.12 | Possible | 99 | 27 | 95 | 34 |
| West-central | 114 | 50 | 33 | 56 | 0.36 | 38 | 0.11 | Sum | 369 | | 283 | |
| East-central | 159 | 39 | 21 | 54 | 0.09 | 64 | 0.13 | Observed | 0 | | - | |
| South | 246 | 89 | 83 | 97 | 2.25 | 88 | 1.59 | Other blocks | | | | |
| Southwest | 106 | 79 | 72 | 47 | 0.83 | 39 | 0.62 | Confirmed | 10 | | 4 | |
| South-central | 87 | 97 | 95 | 35 | 4.20 | 35 | 2.63 | Probable | 16 | | 8 | |
| Southeast | 53 | 96 | 85 | 15 | 2.13 | 14 | 1.71 | Possible | 16 | | 9 | |
| Statewide | 646 | 57 | 44 | 262 | 0.95 | 221 | 0.69 | Sum | 42 | | 21 | |
| | | | | | | | | Observed | 0 | | - | |

Pileated Woodpecker

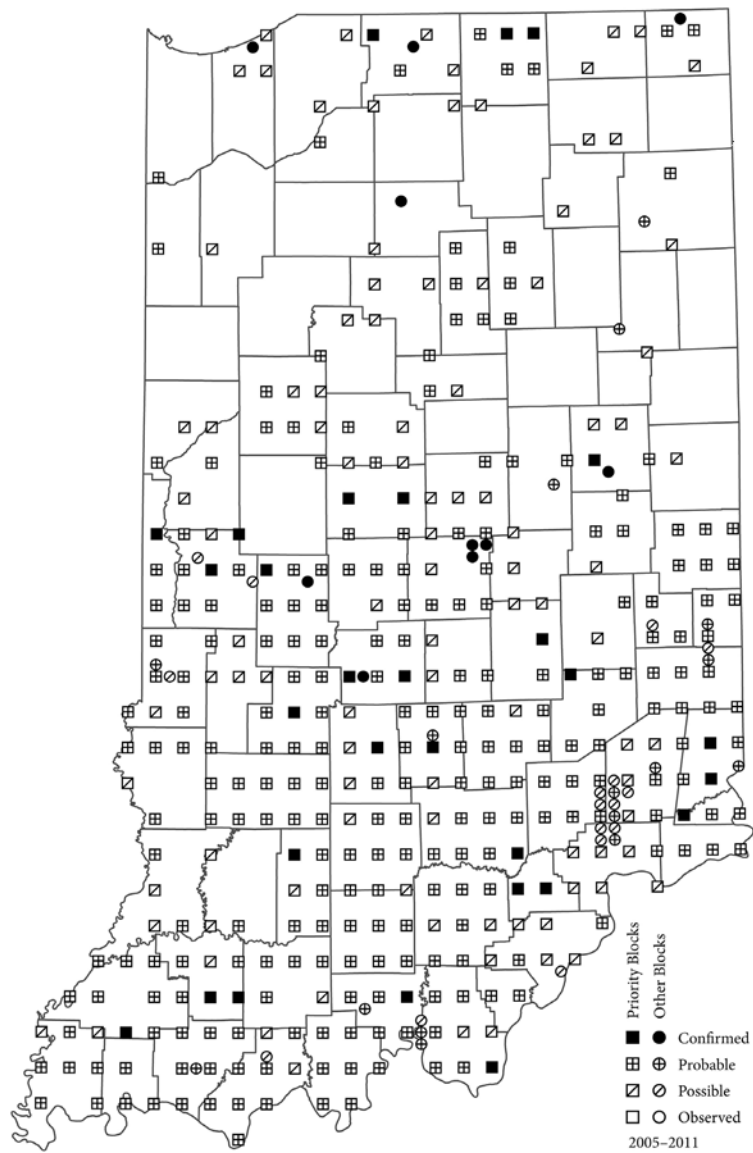


Figure 157. Map of the occurrences of the Pileated Woodpecker in IBBA blocks during 2005–2011.

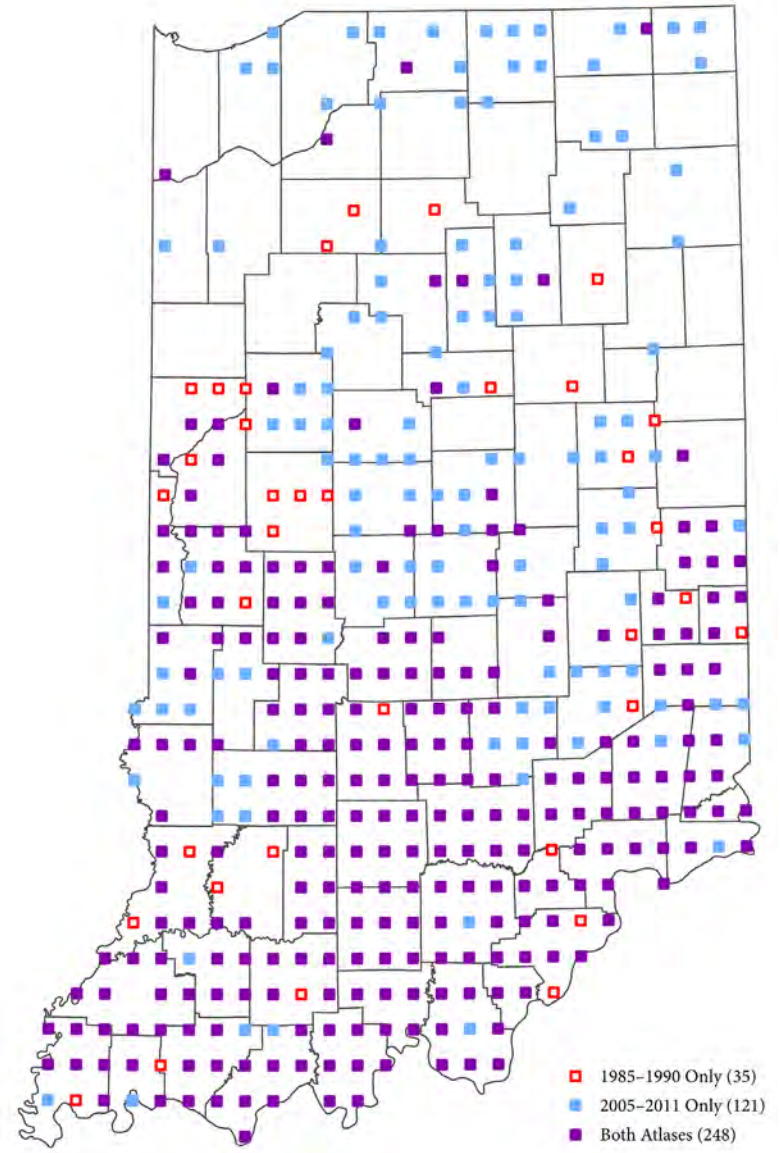


Figure 158. Map of the occurrences of the Pileated Woodpecker in IBBA priority blocks during both atlas periods.

Falcons (Falconiformes)

Tables 102–103, Fig. 159–161

THE TRADITIONAL PLACEMENT of this group follows the Accipitriformes, but recent phylogenetic studies have concluded that falcons are more closely related to songbirds and other groups than hawks. Two species of falcons, the common American Kestrel and the relatively rare Peregrine Falcon regularly nest in Indiana. The first state breeding record of a Merlin recently occurred in Indiana when a nest was discovered in extreme northeastern (Steuben County) Indiana during 2013 (Wooley 2013). This species is experiencing a range expansion south of its typical range in the northern boreal forests. More recent Indiana records include confirmed nesting in Monroe County (Brock 2021) with probable and possible breeding evidence in Elkhart, Madison, and Porter counties (Brock 2020, 2021, Carper 2018). The first Ohio atlas did not have any confirmed nesting records for this species, but the most recent one contained two. This species is much more common in Michigan, especially the Upper Peninsula, and the rate of occurrence increased substantially between atlas periods.

American Kestrels are widely distributed throughout the state and were detected in slightly fewer blocks than in the earlier Breeding Bird Atlas. Breeding Bird Survey data suggest a moderate decline in numbers in recent years and the trend data were negative, but not statistically significant. Rates of occurrence for this species on atlas projects were similar between Indiana and Ohio, with considerably fewer detected in Michigan. Declines between atlas periods occurred in all three states and were more pronounced in Michigan and Ohio. American Kestrels nest in tree cavities, eaves

of buildings, grain silos and other enclosed areas, and also nest boxes. They hunt from perches or by hovering and feed on small mammals, insects, and small birds (Smallwood and Bird 2002). They are found in a variety of open habitats ranging from urban, industrial, and agricultural areas to forest edges. Although some migratory movements occur, American Kestrels are found in Indiana throughout the year.

Peregrine Falcon nests are closely monitored due to their previously endangered status and restoration efforts that took place in the early 1990s in Indiana and even earlier in adjacent states. Their status in Indiana was changed from endangered to special concern in 2013. During the 1985–1990 atlas, only two nests were known, none in priority blocks. Today, there are about 20 breeding territories, although only one pair occurred within a priority block. Nesting is concentrated along Lake Michigan, but occurs throughout the state where appropriate nest sites are available. In Indiana, Peregrine Falcons are found at centers of larger cities, power plants, steel mills, and other industrial settings. Nesting occurs on ledges of tall buildings, on smoke-stack catwalks, and under bridges. Nest boxes and platforms are readily used and provided at most existing nest locations. Peregrine Falcons feed on other birds that are taken in flight after high-speed dives or chases (White *et al.* 2002). Although Peregrine Falcons breeding in more northern areas migrate through Indiana, resident pairs in the state remain in the vicinity of nesting territories throughout the year. Records on Michigan and Ohio atlases have also increased as a result of midwestern restoration efforts.

American Kestrel



A male American Kestrel perches on a branch covered with small dead flowers. *Photo by Ryan Sanderson.*

Table 102. Regional occurrence and abundance information for the American Kestrel.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 72 | 73 | 55 | 0.8 | 31 | 1.4 | | | | |
| Northwest | 73 | 62 | 63 | 34 | 0.7 | 19 | 1.4 | | | | |
| Northeast | 54 | 87 | 87 | 21 | 1.1 | 12 | 1.3 | | | | |
| Central | 273 | 86 | 78 | 110 | 0.9 | 102 | 1.8 | | | | |
| West-central | 114 | 75 | 68 | 56 | 0.9 | 38 | 1.5 | | | | |
| East-central | 159 | 94 | 86 | 54 | 0.9 | 64 | 2.0 | | | | |
| South | 246 | 70 | 83 | 97 | 1.5 | 88 | 1.7 | | | | |
| Southwest | 106 | 72 | 83 | 47 | 1.8 | 39 | 1.7 | | | | |
| South-central | 87 | 67 | 80 | 35 | 1.2 | 35 | 1.9 | | | | |
| Southeast | 53 | 74 | 89 | 15 | 1.1 | 14 | 1.1 | | | | |
| Statewide | 646 | 77 | 79 | 262 | 1.1 | 221 | 1.7 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 123 | 25 | 140 | 27 |
| Probable | 231 | 46 | 224 | 44 |
| Possible | 145 | 29 | 148 | 29 |
| Sum | 499 | | 512 | |
| Observed | 3 | | - | |
| Other blocks | | | | |
| Confirmed | 29 | | 1 | |
| Probable | 4 | | 5 | |
| Possible | 4 | | 1 | |
| Sum | 37 | | 7 | |
| Observed | 0 | | - | |

American Kestrel

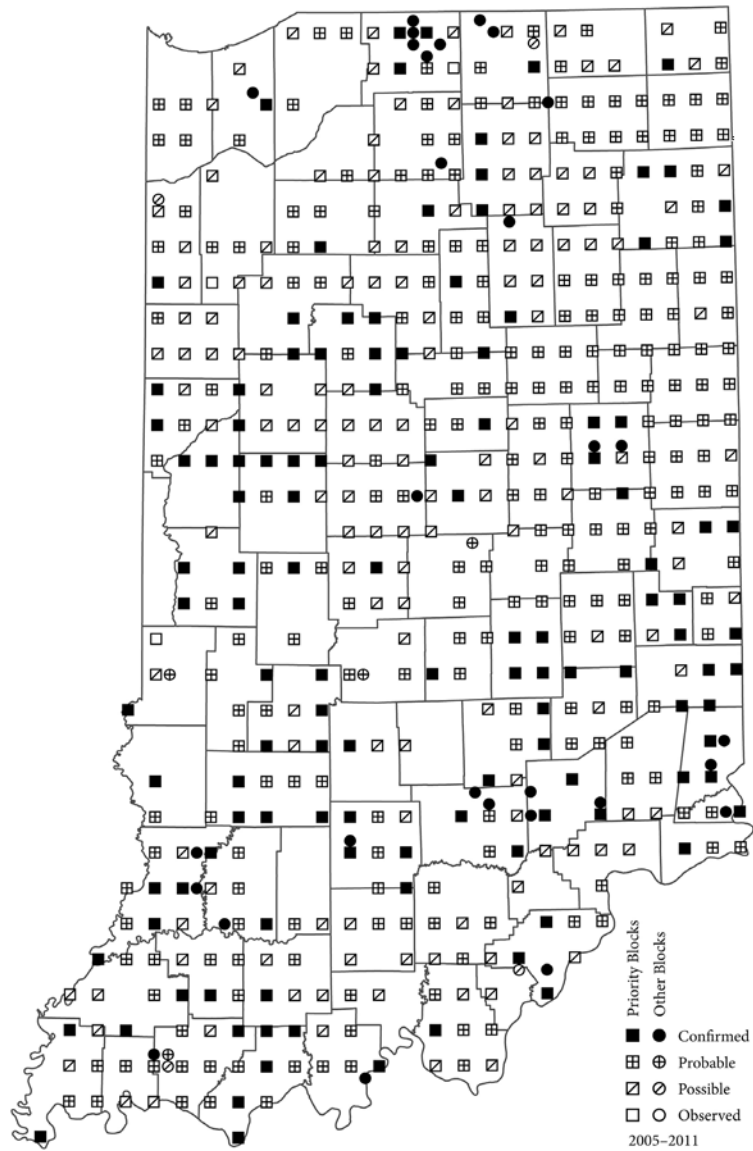


Figure 159. Map of the occurrences of the American Kestrel in IBBA blocks during 2005–2011.

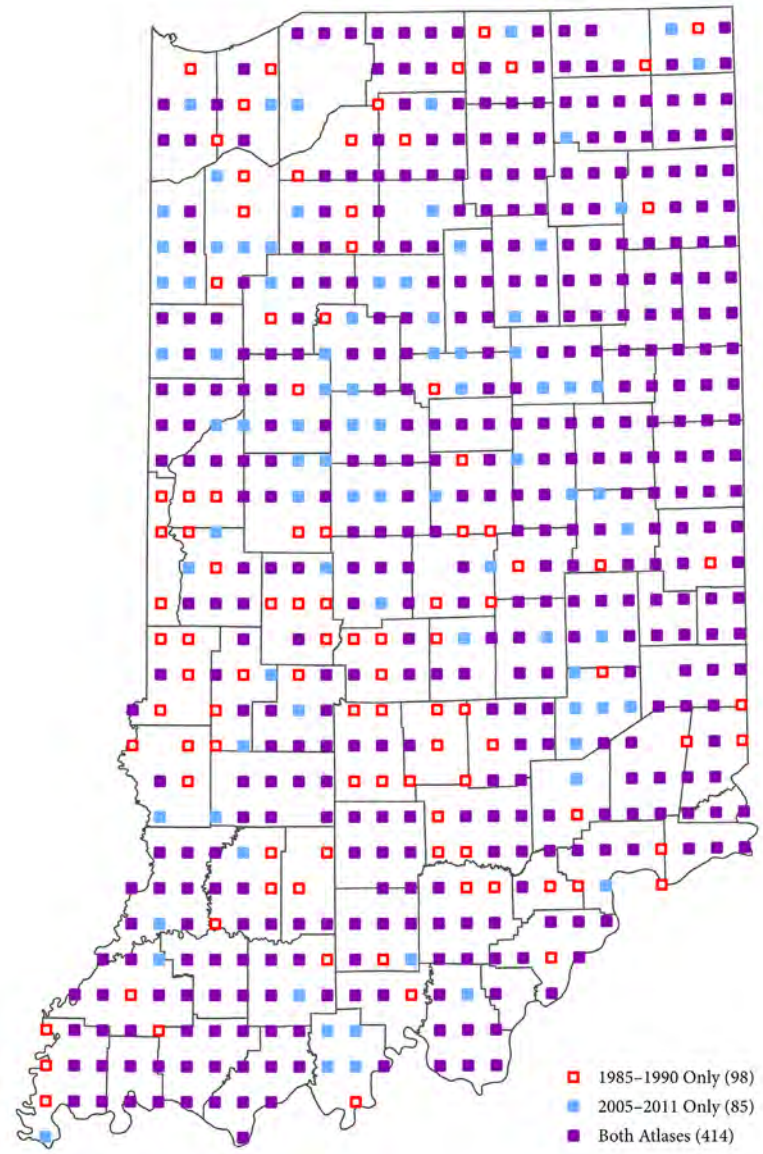


Figure 160. Map of the occurrences of the American Kestrel in IBBA priority blocks during both atlas periods.

Peregrine Falcon



An immature Peregrine Falcon perches at the top of a small dead tree. *Photo by Shari McCollough.*

Table 103. Regional occurrence and abundance information for the Peregrine Falcon.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | <1 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 1 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 1 | 100 | 0 | |
| Probable | 0 | 0 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 1 | | 0 | |
| Observed | 2 | | - | |
| Other blocks | | | | |
| Confirmed | 16 | | 2 | |
| Probable | 1 | | 1 | |
| Possible | 1 | | 0 | |
| Sum | 18 | | 3 | |
| Observed | 0 | | - | |

Peregrine Falcon

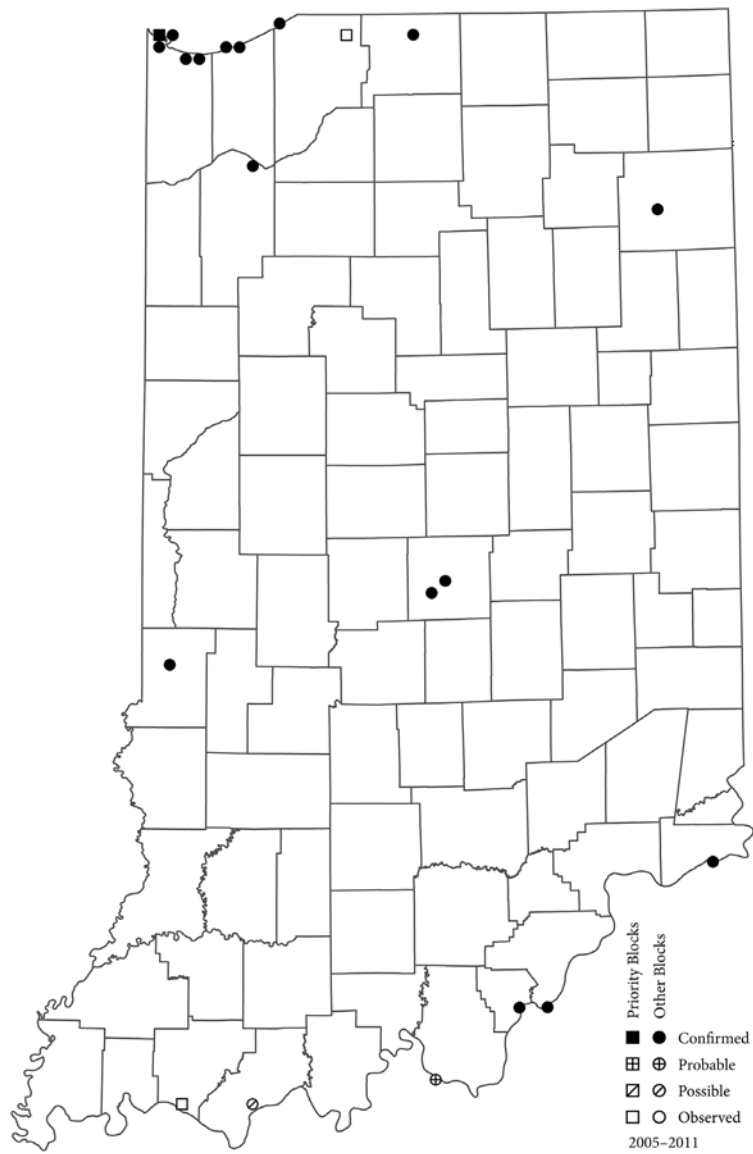


Figure 161. Map of the occurrences of the Peregrine Falcon in IBBA blocks during 2005–2011.

Parrots (Psittaciformes)

Table 104, Fig. 162

THE NONNATIVE MONK Parakeet appears to have become locally established in northwestern Indiana during the past few years after observations of nests with eggs and chicks were first reported in 2005 (Marsh 2006). One priority and three non-priority blocks had evidence of confirmed breeding, all in Lake County. A population has been present in the Chicago area since the 1960s and is undoubtedly the source of the Lake County birds (Spreyer and Bucher 1998). Monk Parakeets were sporadically reported in Indiana from 1969–1981 with records from seven counties (Mumford and Keller 1984) including nests reported in Lake, Mari-

on, and Delaware counties. This species was included on the first Michigan atlas due to a single instance of breeding, but only a single bird was reported during the second atlas. Monk Parakeets were not included in either Ohio atlas. Large nests are built of sticks, usually on metal utility towers, with multiple nest chambers hosting several pairs of parakeets in each colony. Utility companies sometimes dismantle nests when they interfere with structures on towers. Monk Parakeets feed on fruit and seeds and are found in urban areas throughout the year.

Monk Parakeet



A Monk Parakeet grasps onto a small branch. *Photo by Jeff Timmons.*

Table 104. Regional occurrence and abundance information for the Monk Parakeet.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | <1 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 1 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 1 | 100 | 0 | |
| Probable | 0 | 0 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 1 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 3 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 3 | | 0 | |
| Observed | 0 | | - | |

Monk Parakeet



Figure 162. Map of the occurrences of the Monk Parakeet in IBBA blocks during 2005–2011.

Passeriformes (Songbirds)

Tyrant Flycatchers (Tyrannidae)

Tables 105–114, Fig. 163–180

THIS LARGE GROUP of songbirds consists of nine species that regularly breed and two western species (Western Wood-Pewee, Western Kingbird) that only sporadically occur during the summer in Indiana. Another flycatcher, the Scissor-tailed Flycatcher, has a single record of nesting in Indiana during 1974 (Howell and Theroff 1976) and was not reported during either atlas project. Indiana's second nesting record occurred in Johnson County during 2021 (Brock 2021). All flycatchers feed primarily on insects and other invertebrates, typically giving chase from a perch. All are migrants and do not occur in Indiana during the winter—except for small numbers of Eastern Phoebes. Nests are built of grasses and sticks in a tree or shrub. The Great Crested Flycatcher is an exception in that it nests in tree cavities.

The four most common species (Eastern Wood-Pewee, Eastern Kingbird, Great Crested Flycatcher, Eastern Phoebe) occurred in virtually all atlas blocks. The Acadian Flycatcher and Willow Flycatcher were also found statewide, but in more moderate numbers. Least Flycatcher and Alder Flycatcher are at the southern edge of their range in Indiana and were found in few atlas blocks. Alder Flycatchers have rarely been confirmed nesting in the state, although their consistent appearance annually in suitable habitat strongly suggests they certainly do.

Eastern Wood-Pewee, Acadian Flycatcher, Least Flycatcher, Eastern Phoebe, and Great Crested Flycatcher are forest birds (Briskie 1994, Weeks 1994, McCarty 1996, Lanyon 1997, Whitehead and Taylor 2002). As a result, all but Least Flycatcher occurred more frequently and at higher densities in the more heavily wooded areas of southern Indiana. The primary range of the Least Flycatcher is north of Indiana. Alder Flycatcher, Willow Flycatcher, Western Kingbird, and Eastern Kingbird favor shrubland and more open areas (Gamble and Bergin 1996, Murphy 1996, Lowther 1999, Sedgwick 2000). Alder Flycatchers frequent bogs and

other wet shrubby areas in northeastern Indiana, while Willow Flycatchers favor patches of short willows and other shrubs and small trees and are more common in northern Indiana. Eastern Kingbirds are conspicuous along roadsides with shrubs and scattered trees and at woodland edges statewide. Densities of this species on Breeding Bird Surveys are greatest in southern Indiana.

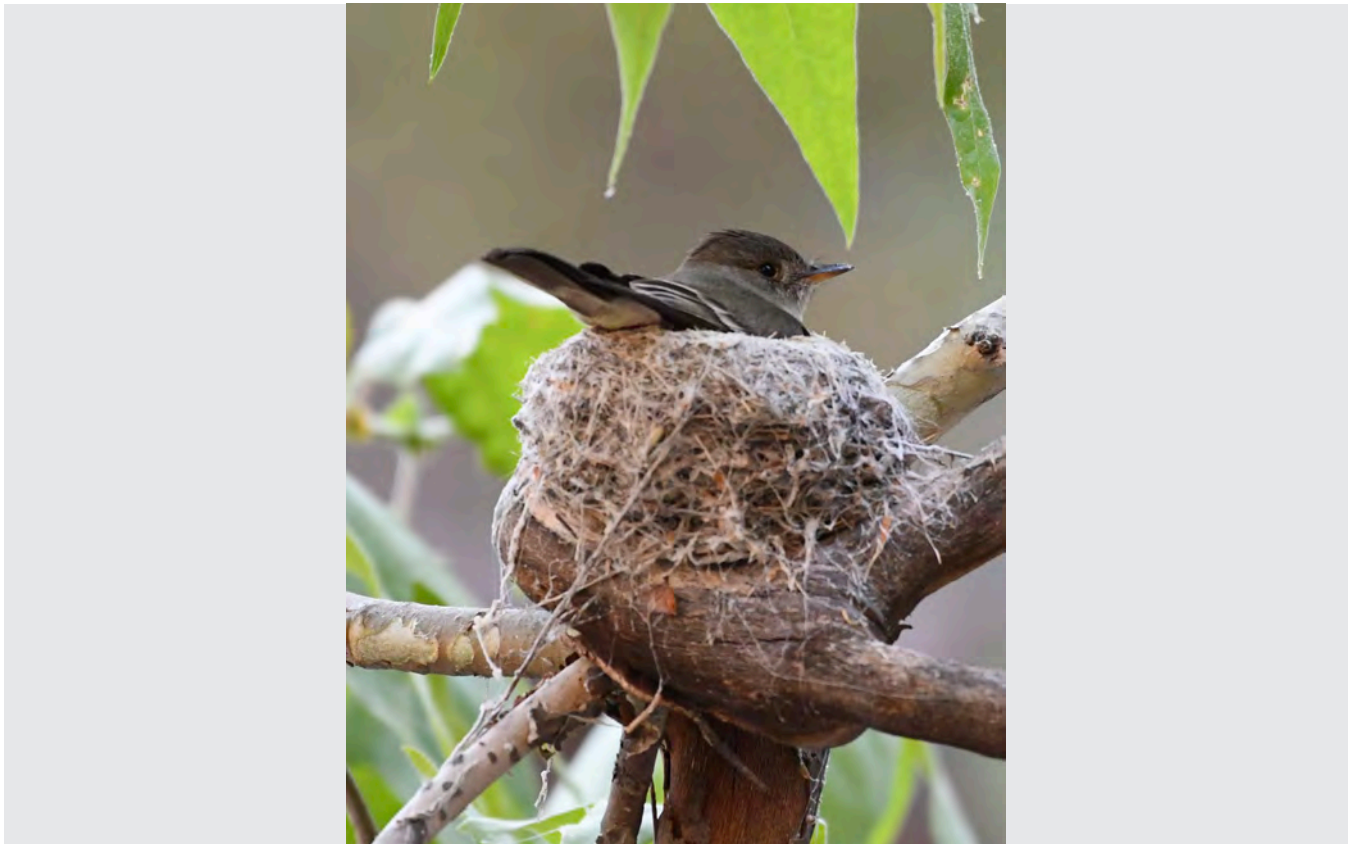
Differences in occurrences between atlas projects were negligible for most flycatchers. Only Acadian Flycatcher and Eastern Phoebe registering statistically significant changes, both positive. Relative densities on BBS routes suggest little change in abundance between atlas periods among flycatcher species except for higher numbers of Eastern Phoebe and fewer of Eastern Kingbird. Eastern Phoebes increased most dramatically in northern and central areas of the state, while Eastern Kingbird densities declined most in southern Indiana. Population trends on Indiana BBS routes for the 1985–2011 period were significantly greater for Eastern Phoebe, but negative for Acadian Flycatcher and Eastern Kingbird. Other trends were not statistically significant, with negative values for Eastern Wood-Pewee, Willow Flycatcher, and Great Crested Flycatcher and with positive values for Alder Flycatcher and Least Flycatcher.

On atlas projects in Indiana, Ohio, and Michigan, Eastern Wood-Pewee, Eastern Kingbird, Great Crested Flycatcher, and Eastern Phoebe were the most frequently detected among the flycatchers. These species were found in most of the Ohio and Indiana blocks. Lower rates were reported in Michigan. Differences between atlas periods were minor for Eastern Wood-Pewee for all three states. For the Eastern Kingbird and Great Crested Flycatcher, numbers were virtually identical in Indiana. However, these species showed small decreases in Ohio and more moderate declines in Michigan. Eastern Phoebe exhibited increased rates of occurrence in all three states between atlases, with the greatest difference in Indiana. Willow Flycatcher and Acadian

Flycatcher ranked next in abundance in Indiana and Ohio, but Least Flycatcher was the next most common flycatcher species in Michigan. The Least Flycatcher is infrequently found in Ohio and Indiana. Differences in the number of records were small for Willow Flycatcher in all three states between atlas periods. Acadian Flycatcher records increased in Indiana and Michigan, but were somewhat fewer in Ohio. All three states showed small to moderate declines in the rates of occurrence for the Least Flycatcher. As a more northern species, Alder Flycatcher was most frequently found in Michigan and observations were somewhat more numerous

in all three states during the more recent atlases. Olive-sided Flycatchers and Yellow-bellied Flycatchers nest primarily in the Upper Peninsula of Michigan and were not found on atlases in Indiana and Ohio. The Western Kingbird had a single confirmed breeding record for Indiana on the recent atlas as well as the first atlas in Michigan. Western Wood-Pewees are included due to a single unconfirmed breeding report in Indiana on the first atlas. A pair was present in Vanderburgh County during 2015 and 2016 and possibly nested (Carper 2015, 2016).

Western Wood-Pewee



A Western Wood-Pewee sits in its nest. *Photo by Stephen Bell.*

Table 105. Regional occurrence and abundance information for the Western Wood-Pewee.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|--------------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | <1 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | <1 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | <1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|-----|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | 0 |
| Probable | 0 | | 0 | 0 |
| Possible | 0 | | 1 | 100 |
| Sum | 0 | | 1 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 1 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 1 | | 0 | |
| Observed | 0 | | - | |

Western Wood-Pewee



Figure 163. Map of the occurrences of the Western Wood-Pewee in IBBA blocks during 2005–2011.

Eastern Wood-Pewee



A fledgling Eastern Wood-Pewee perches on a small branch, mouth agape. *Photo by Shari McCollough.*

Table 106. Regional occurrence and abundance information for the Eastern Wood-Pewee.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----------|------------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 89 | 83 | 55 | 5.0 | 31 | 3.7 | Priority Blocks | | | | |
| Northwest | 73 | 82 | 78 | 34 | 3.8 | 19 | 3.2 | Confirmed | 93 | 15 | 75 | 12 |
| Northeast | 54 | 98 | 91 | 21 | 7.0 | 12 | 4.6 | Probable | 471 | 76 | 461 | 77 |
| Central | 273 | 96 | 93 | 110 | 4.8 | 102 | 3.1 | Possible | 53 | 9 | 66 | 11 |
| West-central | 114 | 96 | 93 | 56 | 5.9 | 38 | 5.1 | Sum | 617 | | 602 | |
| East-central | 159 | 96 | 93 | 54 | 3.7 | 64 | 1.9 | Observed | 0 | | - | |
| South | 246 | 98 | 98 | 97 | 7.9 | 88 | 10.5 | Other blocks | | | | |
| Southwest | 106 | 100 | 97 | 47 | 5.6 | 39 | 6.7 | Confirmed | 14 | | 0 | |
| South-central | 87 | 97 | 100 | 35 | 11.5 | 35 | 14.1 | Probable | 26 | | 18 | |
| Southeast | 53 | 98 | 98 | 15 | 6.5 | 14 | 11.9 | Possible | 12 | | 3 | |
| Statewide | 646 | 96 | 93 | 262 | 6.0 | 221 | 6.1 | Sum | 52 | | 21 | |
| | | | | | | | | Observed | 0 | | - | |

Eastern Wood-Pewee

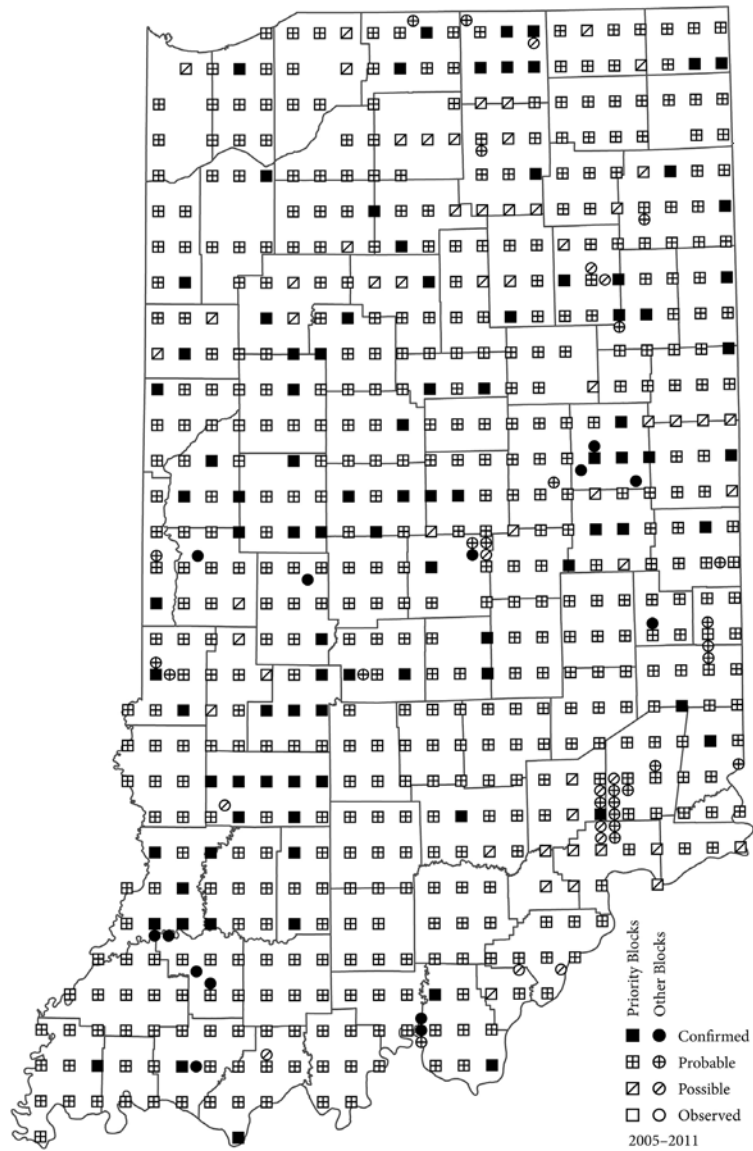


Figure 164. Map of the occurrences of the Eastern Wood-Pewee in IBBA blocks during 2005–2011.

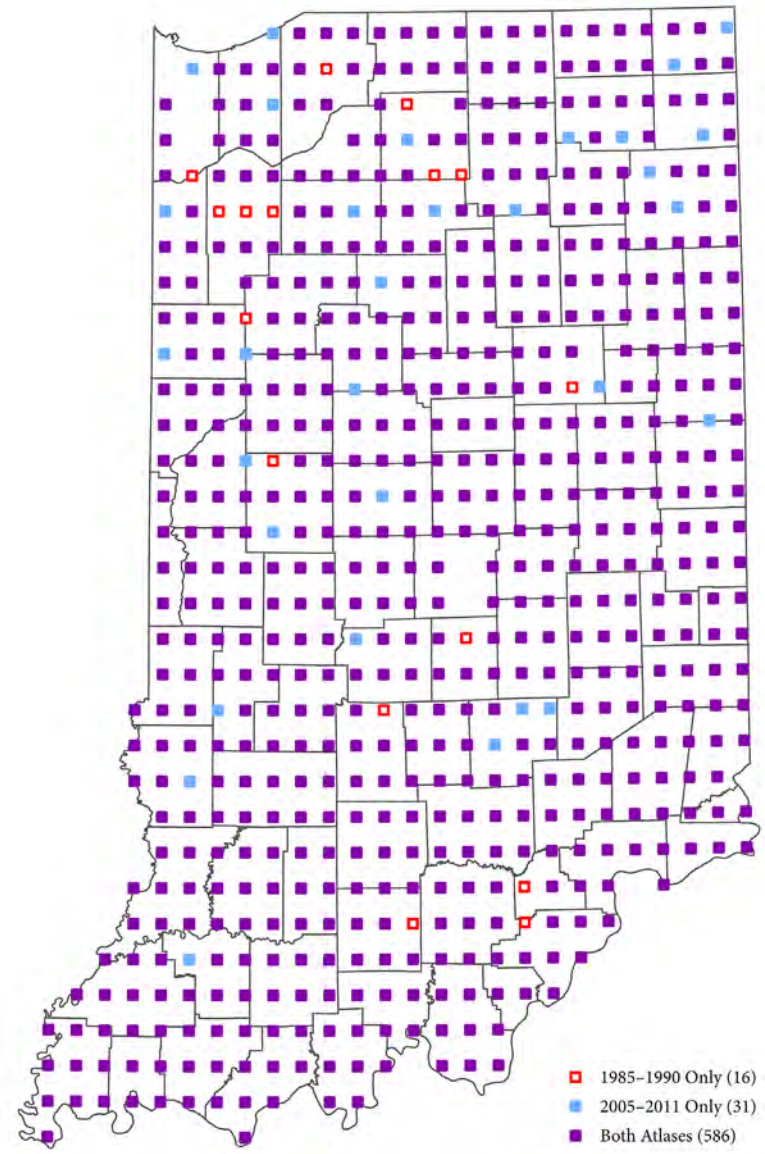


Figure 165. Map of the occurrences of the Eastern Wood-Pewee in IBBA priority blocks during both atlas periods.

Acadian Flycatcher



An Acadian Flycatcher perches on a branch. *Photo by Ryan Sanderson.*

Table 107. Regional occurrence and abundance information for the Acadian Flycatcher.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 48 | 37 | 55 | 0.6 | 31 | 0.5 | | | | |
| Northwest | 73 | 30 | 25 | 34 | 0.1 | 19 | 0.2 | | | | |
| Northeast | 54 | 72 | 54 | 21 | 1.4 | 12 | 0.9 | | | | |
| Central | 273 | 55 | 38 | 110 | 0.8 | 102 | 0.3 | | | | |
| West-central | 114 | 56 | 32 | 56 | 1.5 | 38 | 0.6 | | | | |
| East-central | 159 | 54 | 43 | 54 | 0.1 | 64 | <0.1 | | | | |
| South | 246 | 85 | 84 | 97 | 4.8 | 88 | 5.4 | | | | |
| Southwest | 106 | 80 | 75 | 47 | 0.9 | 39 | 0.9 | | | | |
| South-central | 87 | 91 | 92 | 35 | 10.9 | 35 | 11.2 | | | | |
| Southeast | 53 | 85 | 89 | 15 | 2.9 | 14 | 3.4 | | | | |
| Statewide | 646 | 65 | 55 | 262 | 2.2 | 221 | 2.3 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 54 | 13 | 48 | 13 |
| Probable | 270 | 64 | 228 | 64 |
| Possible | 96 | 23 | 82 | 23 |
| Sum | 420 | | 358 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 14 | | 2 | |
| Probable | 23 | | 13 | |
| Possible | 8 | | 1 | |
| Sum | 45 | | 16 | |
| Observed | 0 | | - | |

Acadian Flycatcher

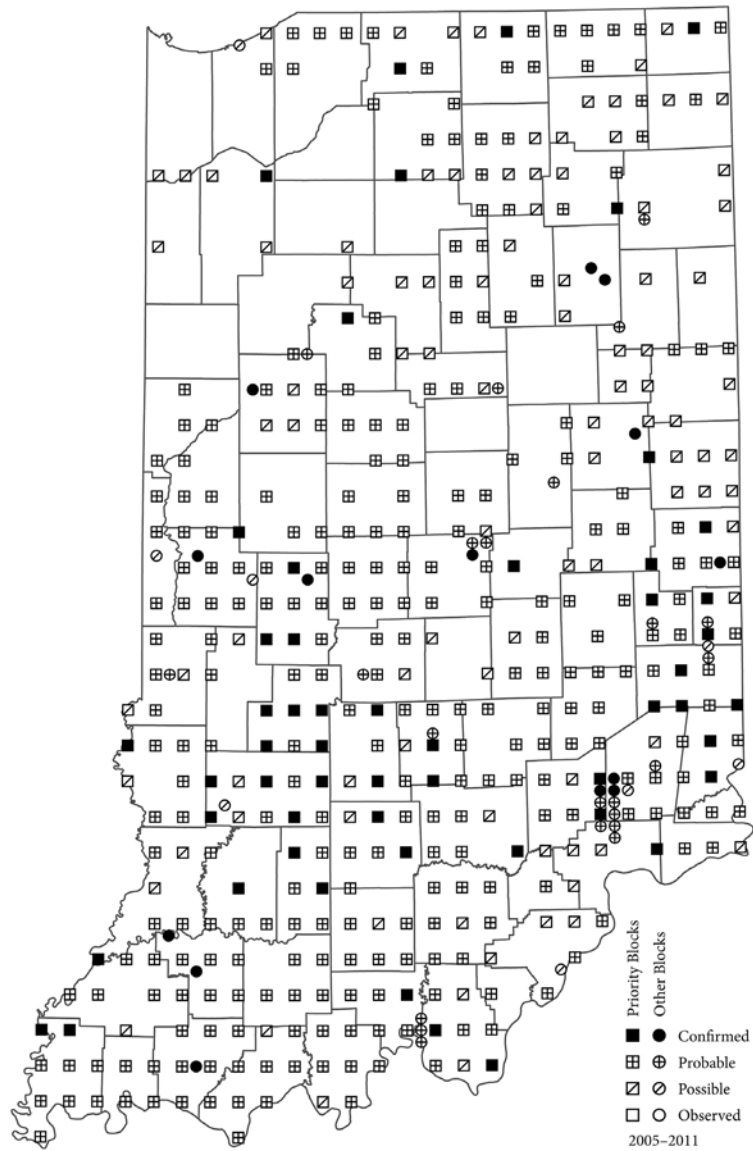


Figure 166. Map of the occurrences of the Acadian Flycatcher in IBBA blocks during 2005–2011.

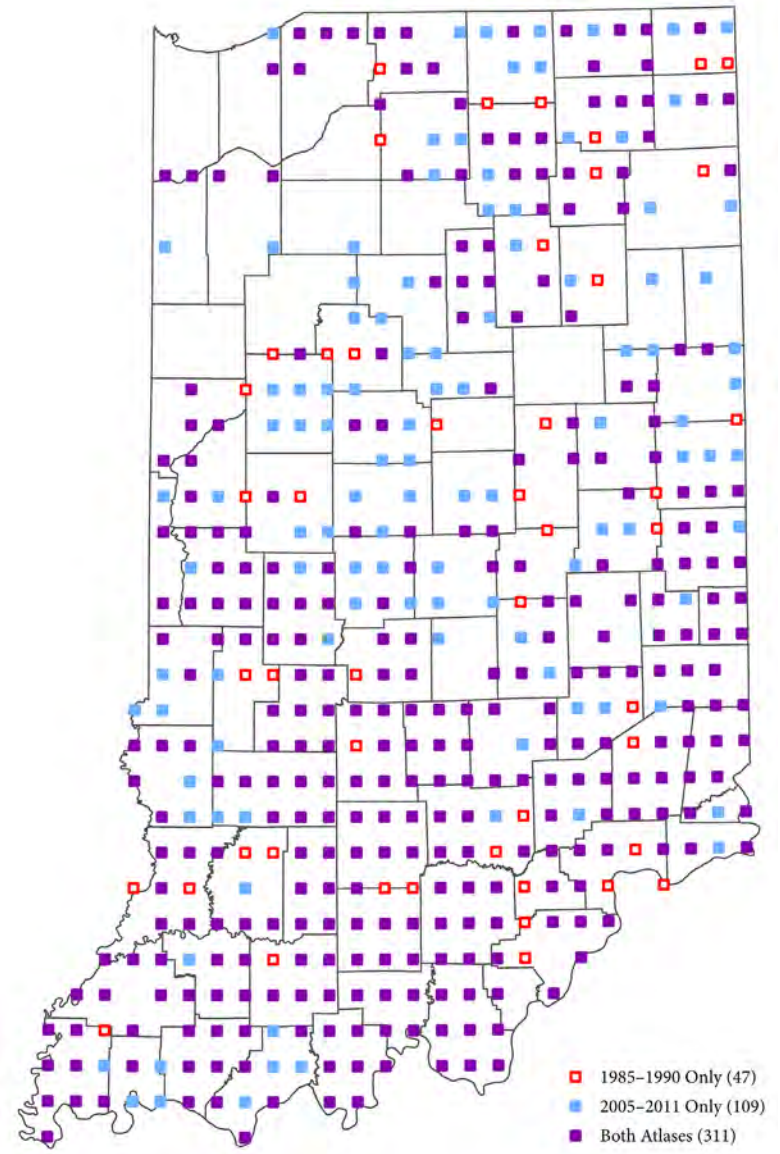


Figure 167. Map of the occurrences of the Acadian Flycatcher in IBBA priority blocks during both atlas periods.

Alder Flycatcher



An Alder Flycatcher perches on a small branch. *Photo by Michael Brown.*

Table 108. Regional occurrence and abundance information for the Alder Flycatcher.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|-----------------|------------------------|-----------|-----|----------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 8 | 6 | 55 | 0.04 | 31 | 0.00 | Priority Blocks | | | | |
| Northwest | 73 | 4 | 8 | 34 | 0.00 | 19 | 0.00 | Confirmed | 0 | 0 | 1 | 13 |
| Northeast | 54 | 13 | 4 | 21 | 0.10 | 12 | 0.00 | Probable | 5 | 42 | 5 | 63 |
| Central | 273 | <1 | 0 | 110 | <0.01 | 102 | 0.01 | Possible | 7 | 58 | 2 | 25 |
| West-central | 114 | <1 | 0 | 56 | 0.02 | 38 | 0.00 | Sum | 12 | | 8 | |
| East-central | 159 | 0 | 0 | 54 | 0.00 | 64 | 0.02 | Observed | 0 | | - | |
| South | 246 | <1 | 0 | 97 | 0.00 | 88 | 0.00 | Other blocks | | | | |
| Southwest | 106 | <1 | 0 | 47 | 0.00 | 39 | 0.00 | Confirmed | 0 | | 0 | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.00 | Probable | 2 | | 2 | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | Possible | 3 | | 2 | |
| Statewide | 646 | 2 | 1 | 262 | 0.01 | 221 | <0.01 | Sum | 5 | | 4 | |
| | | | | | | | | Observed | 0 | | - | |

Alder Flycatcher



Figure 168. Map of the occurrences of the Alder Flycatcher in IBBA blocks during 2005–2011.



Figure 169. Map of the occurrences of the Alder Flycatcher in IBBA priority blocks during both atlas periods.

Willow Flycatcher



A Willow Flycatcher perches on a branch with its mouth open. *Photo by Michael Brown.*

Table 109. Regional occurrence and abundance information for the Willow Flycatcher.

| Region | Breeding Bird Atlas | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|----------------------|-------------|--------------|-------------|---------------------|-----|-----------|-----|---|
| | 2005–2011 | 1985–1990 | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 70 | 68 | 55 | 3.0 | 31 | 3.6 | | | | |
| Northwest | 73 | 59 | 58 | 34 | 1.1 | 19 | 1.2 | | | | |
| Northeast | 54 | 85 | 81 | 21 | 6.0 | 12 | 7.5 | | | | |
| Central | 273 | 69 | 71 | 110 | 1.6 | 102 | 1.5 | | | | |
| West-central | 114 | 60 | 71 | 56 | 1.6 | 38 | 2.4 | | | | |
| East-central | 159 | 76 | 71 | 54 | 1.7 | 64 | 1.0 | | | | |
| South | 246 | 45 | 42 | 97 | 0.7 | 88 | 0.8 | | | | |
| Southwest | 106 | 57 | 55 | 47 | 0.9 | 39 | 1.0 | | | | |
| South-central | 87 | 33 | 30 | 35 | 0.1 | 35 | 0.5 | | | | |
| Southeast | 53 | 40 | 38 | 15 | 1.1 | 14 | 0.7 | | | | |
| Statewide | 646 | 60 | 59 | 262 | 1.6 | 221 | 1.5 | | | | |

| | Breeding Bird Atlas | | Breeding Bird Atlas | |
|------------------------|---------------------|-----------|---------------------|-----------|
| | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 |
| | No. | % | No. | % |
| Priority Blocks | | | | |
| Confirmed | 43 | 11 | 41 | 11 |
| Probable | 241 | 62 | 226 | 59 |
| Possible | 104 | 27 | 117 | 30 |
| Sum | 388 | | 384 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 1 | |
| Probable | 7 | | 3 | |
| Possible | 13 | | 5 | |
| Sum | 25 | | 9 | |
| Observed | 0 | | - | |

Willow Flycatcher

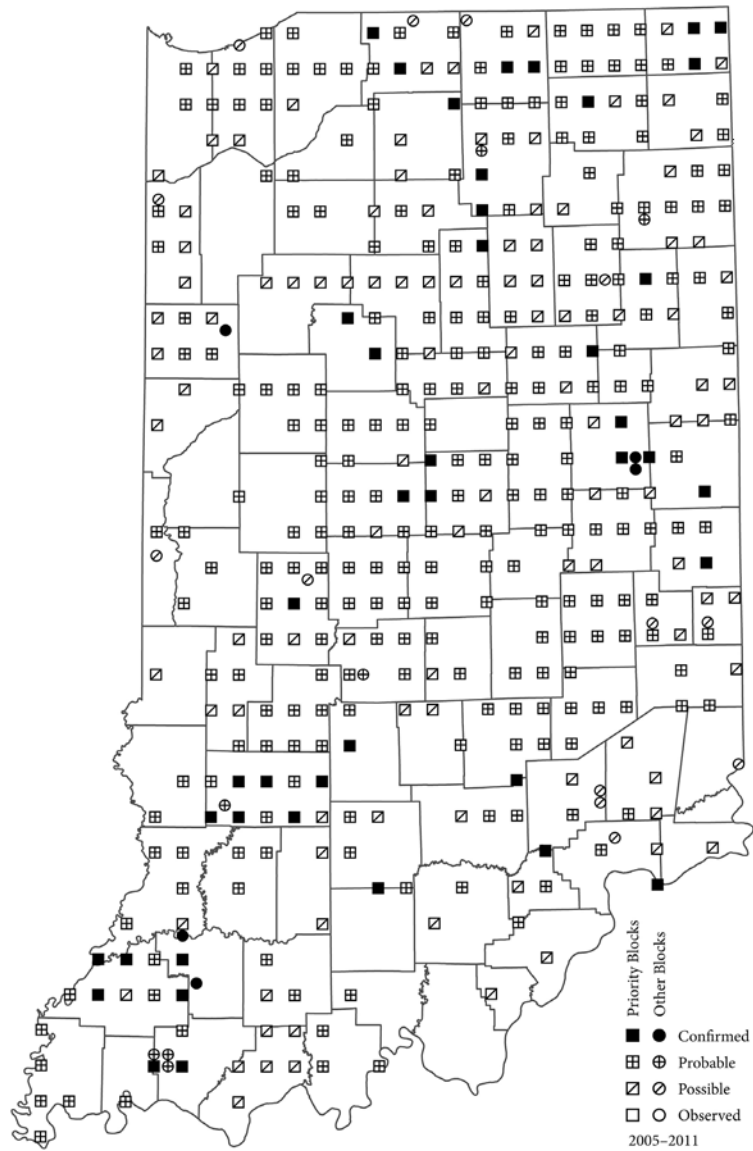


Figure 170. Map of the occurrences of the Willow Flycatcher in IBBA blocks during 2005–2011.

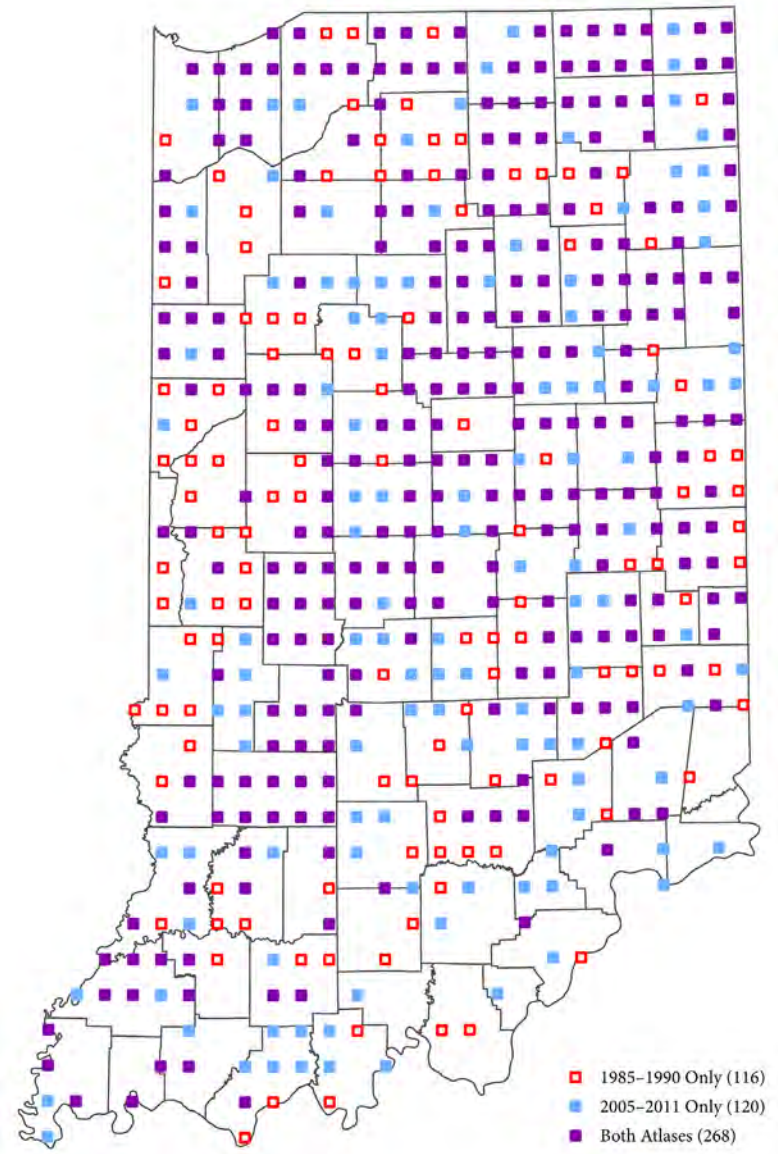


Figure 171. Map of the occurrences of the Willow Flycatcher in IBBA priority blocks during both atlas periods.

Least Flycatcher



A Least Flycatcher perches on a branch. *Photo by Ryan Sanderson.*

Table 110. Regional occurrence and abundance information for the Least Flycatcher.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 12 | 16 | 55 | 0.13 | 31 | 0.00 | | | | |
| Northwest | 73 | 11 | 11 | 34 | 0.15 | 19 | 0.00 | | | | |
| Northeast | 54 | 13 | 22 | 21 | 0.10 | 12 | 0.00 | | | | |
| Central | 273 | 2 | 4 | 110 | <0.01 | 102 | 0.08 | | | | |
| West-central | 114 | 0 | 4 | 56 | 0.02 | 38 | 0.03 | | | | |
| East-central | 159 | 4 | 4 | 54 | 0.00 | 64 | 0.11 | | | | |
| South | 246 | 1 | 2 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | 0 | 2 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 2 | 2 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 2 | 4 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 4 | 6 | 262 | 0.03 | 221 | 0.04 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 2 | 8 | 2 | 5 |
| Probable | 7 | 29 | 5 | 14 |
| Possible | 15 | 63 | 30 | 81 |
| Sum | 24 | | 37 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 1 | | 3 | |
| Possible | 4 | | 6 | |
| Sum | 5 | | 9 | |
| Observed | 0 | | - | |

Least Flycatcher

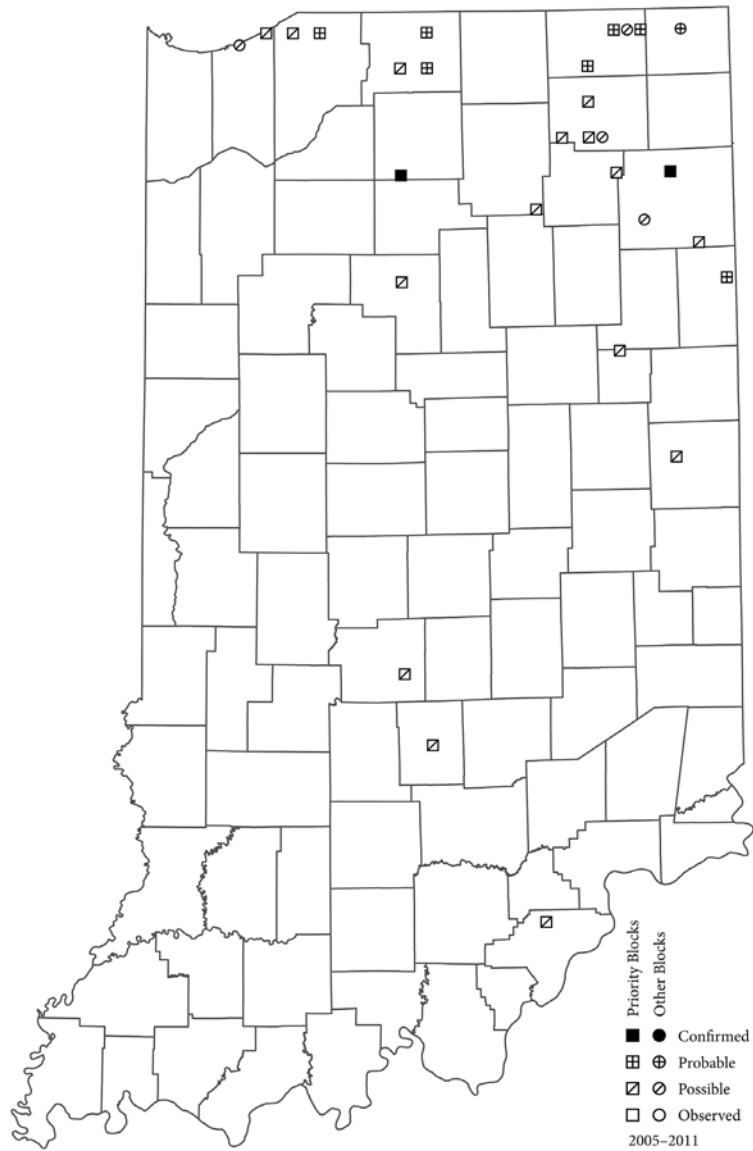


Figure 172. Map of the occurrences of the Least Flycatcher in IBBA blocks during 2005–2011.

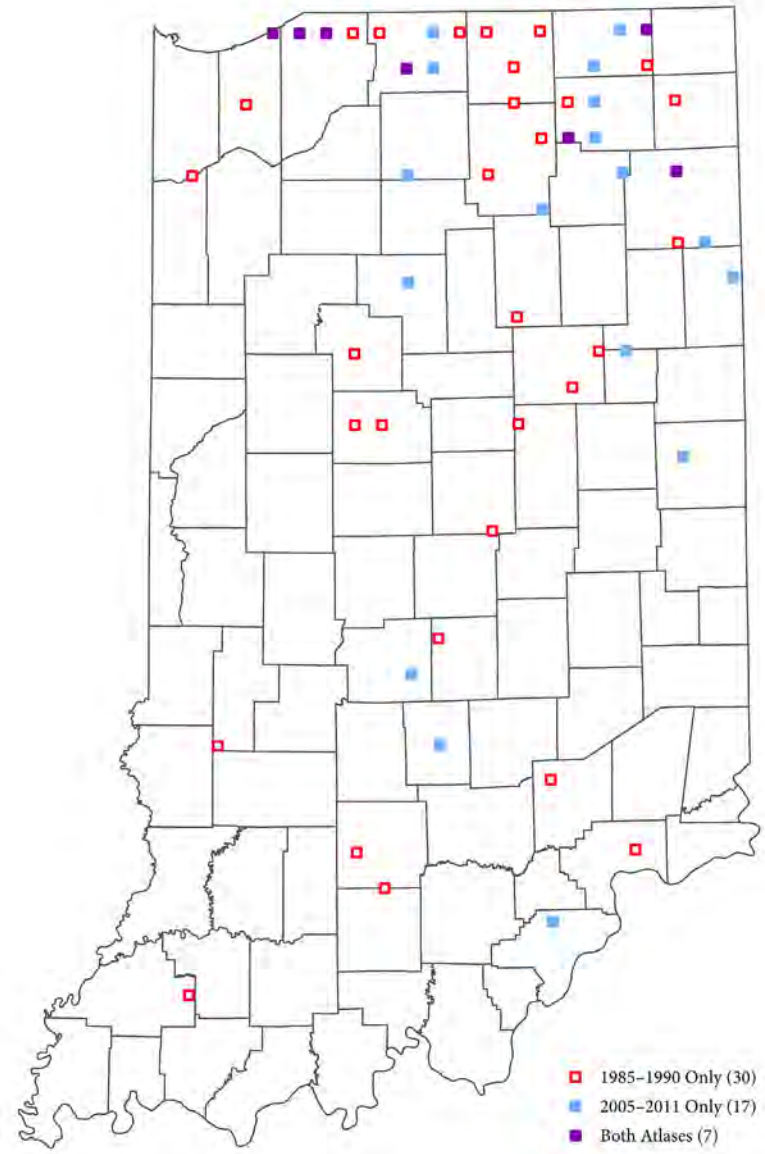


Figure 173. Map of the occurrences of the Least Flycatcher in IBBA priority blocks during both atlas periods.

Eastern Phoebe



An adult Eastern Phoebe perches atop a dead mullein inflorescence. *Photo by Michael Brown.*

Table 111. Regional occurrence and abundance information for the Eastern Phoebe.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 75 | 31 | 55 | 1.18 | 31 | 0.16 | | | | |
| Northwest | 73 | 64 | 27 | 34 | 1.09 | 19 | 0.16 | | | | |
| Northeast | 54 | 89 | 35 | 21 | 1.33 | 12 | 0.17 | | | | |
| Central | 273 | 85 | 45 | 110 | 1.29 | 102 | 0.31 | | | | |
| West-central | 114 | 82 | 46 | 56 | 1.68 | 38 | 0.47 | | | | |
| East-central | 159 | 88 | 45 | 54 | 0.89 | 64 | 0.22 | | | | |
| South | 246 | 98 | 85 | 97 | 2.89 | 88 | 1.93 | | | | |
| Southwest | 106 | 97 | 73 | 47 | 1.70 | 39 | 0.67 | | | | |
| South-central | 87 | 98 | 97 | 35 | 4.60 | 35 | 3.09 | | | | |
| Southeast | 53 | 100 | 89 | 15 | 2.60 | 14 | 2.57 | | | | |
| Statewide | 646 | 88 | 57 | 262 | 1.86 | 221 | 0.94 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 371 | 65 | 241 | 65 |
| Probable | 123 | 22 | 76 | 20 |
| Possible | 75 | 13 | 54 | 15 |
| Sum | 569 | | 371 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 26 | | 6 | |
| Probable | 8 | | 5 | |
| Possible | 10 | | 3 | |
| Sum | 44 | | 14 | |
| Observed | 0 | | - | |

Eastern Phoebe

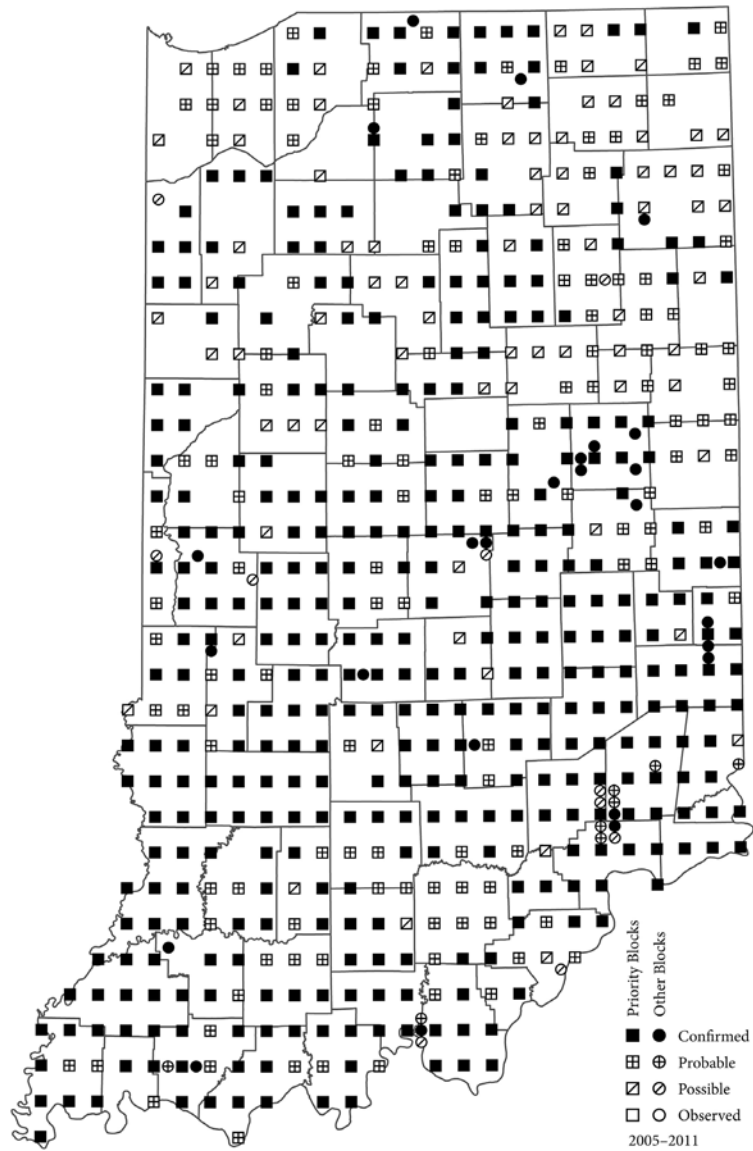


Figure 174. Map of the occurrences of the Eastern Phoebe in IBBA blocks during 2005–2011.

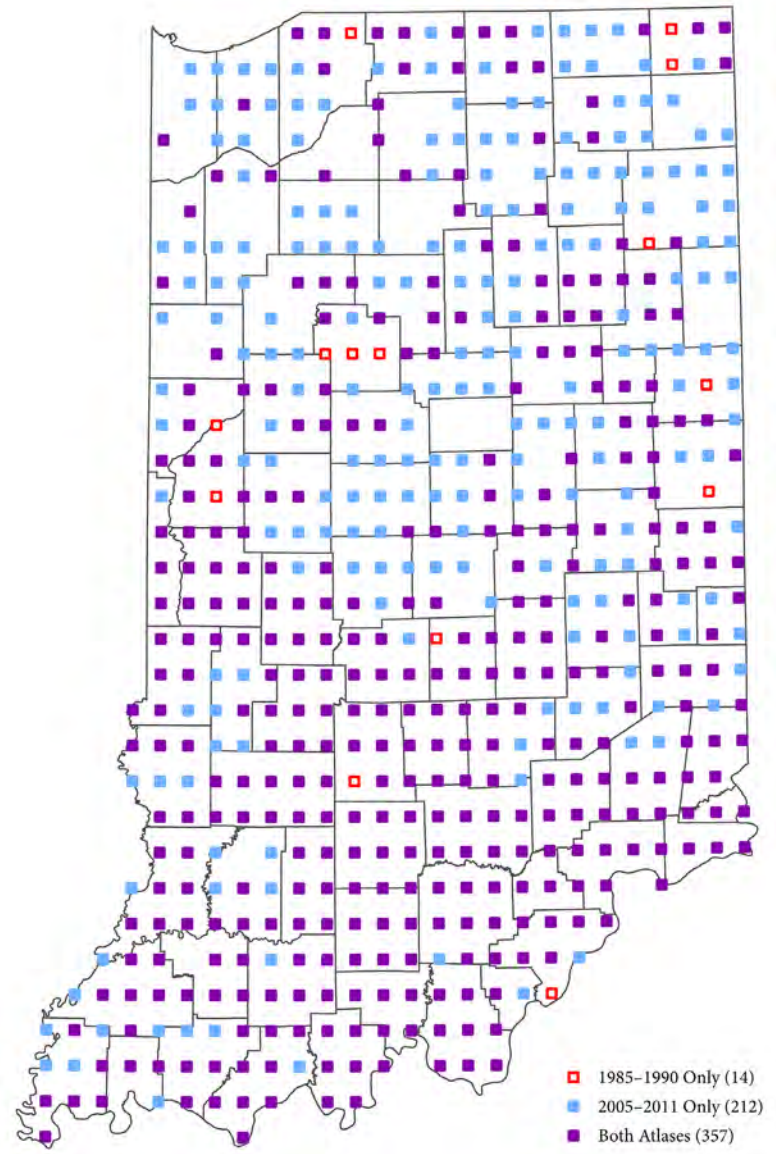


Figure 175. Map of the occurrences of the Eastern Phoebe in IBBA priority blocks during both atlas periods.

Great Crested Flycatcher



A Great Crested Flycatcher perches on a bare branch. *Photo by Michael Brown.*

Table 112. Regional occurrence and abundance information for the Great Crested Flycatcher.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 81 | 88 | 55 | 1.8 | 31 | 1.9 | | | | |
| Northwest | 73 | 73 | 84 | 34 | 1.2 | 19 | 2.2 | | | | |
| Northeast | 54 | 93 | 94 | 21 | 2.6 | 12 | 1.4 | | | | |
| Central | 273 | 88 | 85 | 110 | 2.5 | 102 | 2.2 | | | | |
| West-central | 114 | 82 | 82 | 56 | 3.3 | 38 | 3.3 | | | | |
| East-central | 159 | 92 | 88 | 54 | 1.6 | 64 | 1.5 | | | | |
| South | 246 | 93 | 92 | 97 | 2.6 | 88 | 3.1 | | | | |
| Southwest | 106 | 96 | 91 | 47 | 2.3 | 39 | 2.5 | | | | |
| South-central | 87 | 95 | 93 | 35 | 3.6 | 35 | 3.7 | | | | |
| Southeast | 53 | 81 | 92 | 15 | 1.2 | 14 | 3.4 | | | | |
| Statewide | 646 | 89 | 88 | 262 | 2.4 | 221 | 2.5 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 80 | 14 | 66 | 12 |
| Probable | 414 | 72 | 378 | 66 |
| Possible | 78 | 14 | 127 | 22 |
| Sum | 572 | | 571 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 10 | | 0 | |
| Probable | 23 | | 10 | |
| Possible | 15 | | 10 | |
| Sum | 48 | | 20 | |
| Observed | 0 | | - | |

Great Crested Flycatcher

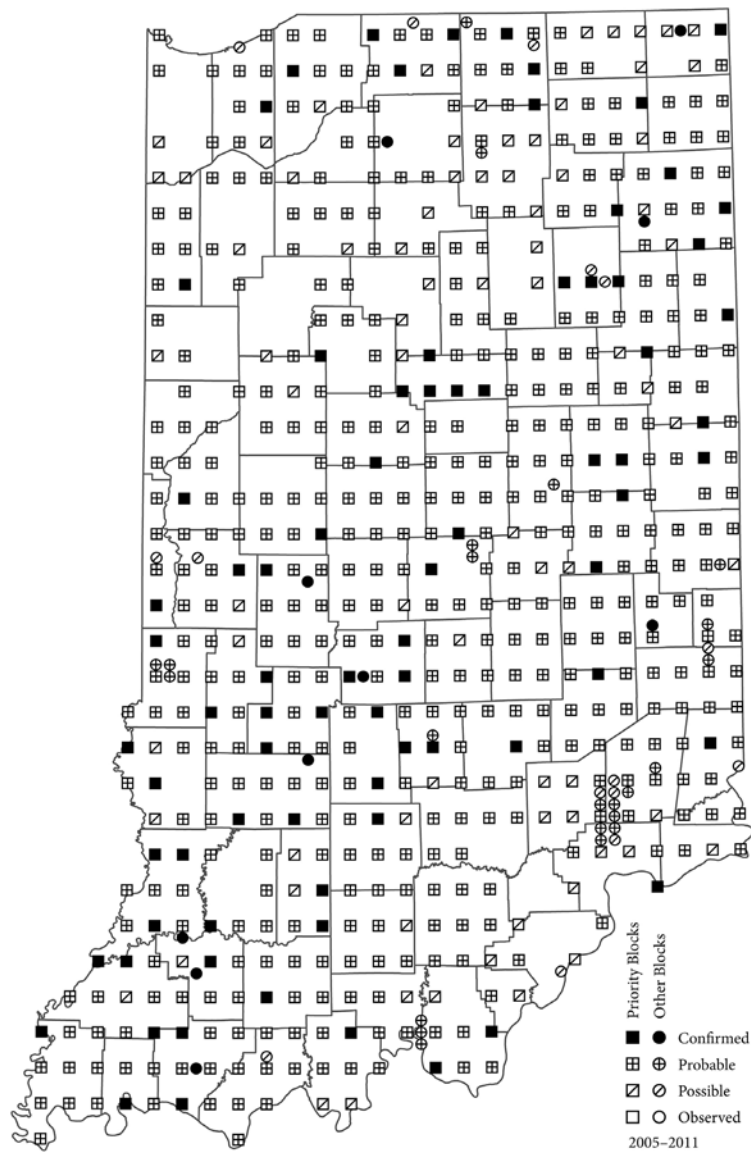


Figure 176. Map of the occurrences of the Great Crested Flycatcher in IBBA blocks during 2005–2011.

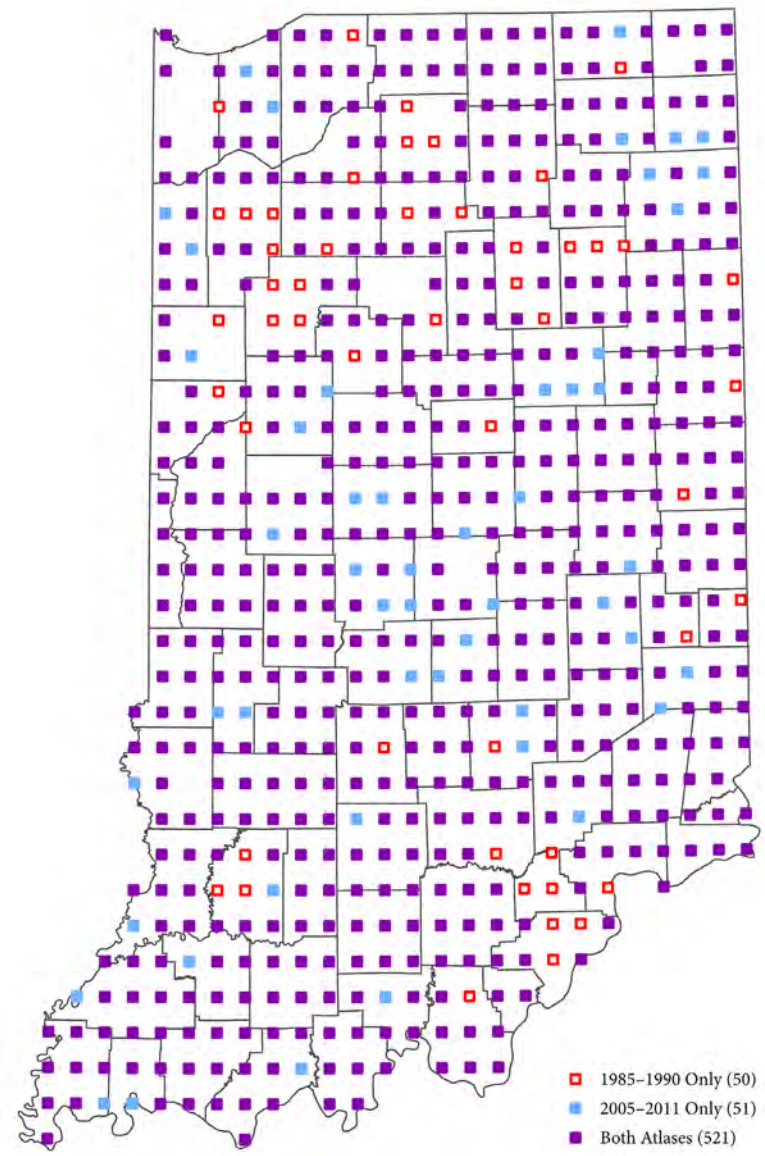


Figure 177. Map of the occurrences of the Great Crested Flycatcher in IBBA priority blocks during both atlas periods.

Western Kingbird



A Western Kingbird perches on a strand of barbed wire. *Photo by Evan Speck.*

Table 113. Regional occurrence and abundance information for the Western Kingbird.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 0 | 0 | 55 | 0.04 | 31 | 0.00 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0.06 | 19 | 0.00 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 0 | 0 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | <1 | 0 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | <1 | 0 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | <1 | 0 | 262 | <0.01 | 221 | 0.00 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 1 | 100 | 0 | |
| Probable | 0 | 0 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 1 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 1 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 1 | | 0 | |
| Observed | 0 | | - | |

Western Kingbird



Figure 178. Map of the occurrences of the Western Kingbird in IBBA blocks during 2005–2011.

Eastern Kingbird



An Eastern Kingbird tends to 3 fledglings perched on a branch. *Photo by Shari McCollough.*

Table 114. Regional occurrence and abundance information for the Eastern Kingbird.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 95 | 95 | 55 | 3.2 | 31 | 3.2 | | | | |
| Northwest | 73 | 92 | 92 | 34 | 2.9 | 19 | 2.8 | | | | |
| Northeast | 54 | 100 | 100 | 21 | 3.5 | 12 | 3.8 | | | | |
| Central | 273 | 96 | 96 | 110 | 2.1 | 102 | 2.9 | | | | |
| West-central | 114 | 96 | 95 | 56 | 2.9 | 38 | 5.1 | | | | |
| East-central | 159 | 97 | 96 | 54 | 1.2 | 64 | 1.7 | | | | |
| South | 246 | 97 | 98 | 97 | 4.1 | 88 | 6.7 | | | | |
| Southwest | 106 | 97 | 97 | 47 | 3.9 | 39 | 5.8 | | | | |
| South-central | 87 | 98 | 99 | 35 | 4.7 | 35 | 7.7 | | | | |
| Southeast | 53 | 96 | 100 | 15 | 3.6 | 14 | 6.9 | | | | |
| Statewide | 646 | 96 | 97 | 262 | 3.1 | 221 | 4.5 | | | | |

| | 2005–2011 | | 1985–1990 | |
|------------------------|------------|----|------------|----|
| | No. | % | No. | % |
| Priority Blocks | | | | |
| Confirmed | 249 | 40 | 255 | 41 |
| Probable | 324 | 52 | 316 | 51 |
| Possible | 50 | 8 | 53 | 8 |
| Sum | 623 | | 624 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 15 | | 2 | |
| Probable | 15 | | 11 | |
| Possible | 14 | | 6 | |
| Sum | 44 | | 19 | |
| Observed | 0 | | - | |

Eastern Kingbird

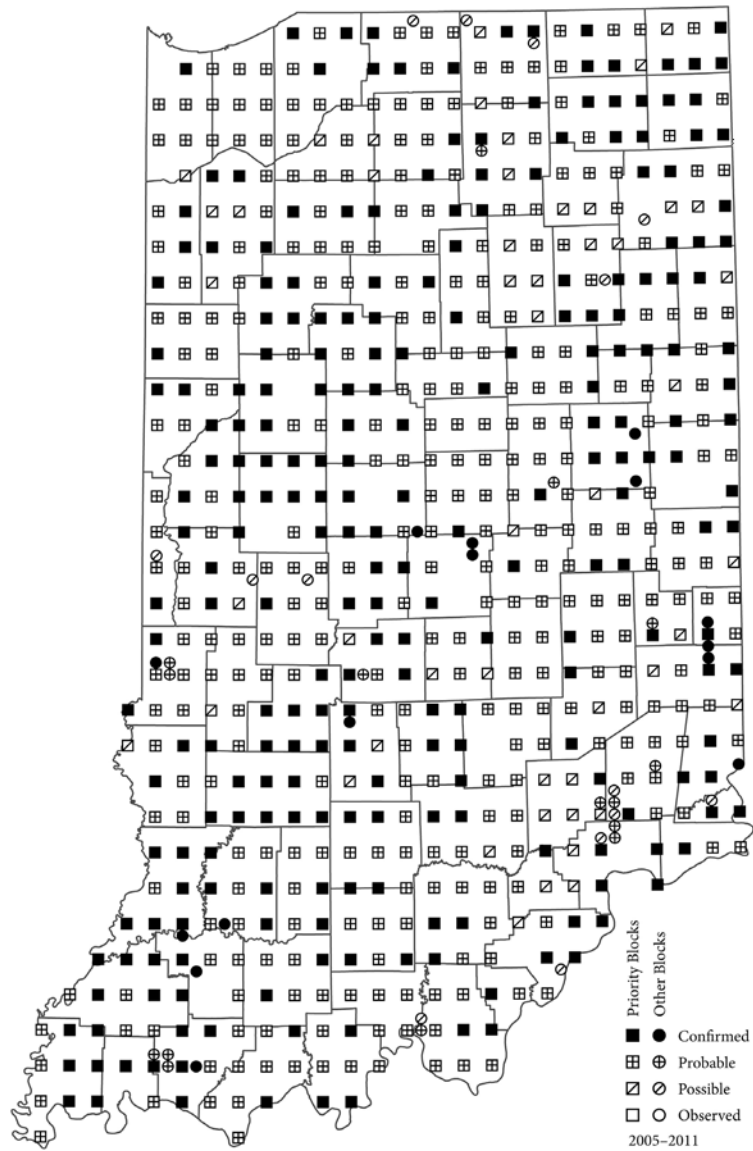


Figure 179. Map of the occurrences of the Eastern Kingbird in IBBA blocks during 2005–2011.

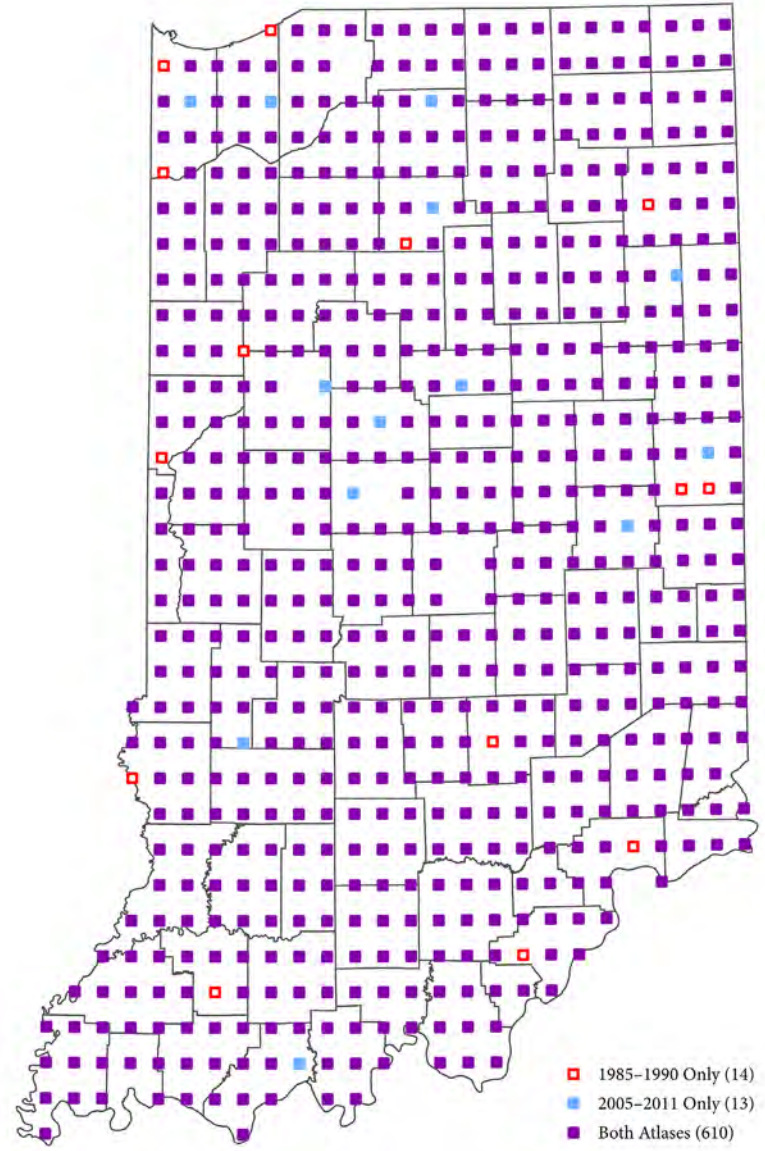


Figure 180. Map of the occurrences of the Eastern Kingbird in IBBA priority blocks during both atlas periods.

Shrikes (Laniidae)

Table 115, Fig. 181–182

ALTHOUGH BOTH THE Northern Shrike and Loggerhead Shrike occur in Indiana during the winter, only the latter species breeds, numbers boosted by short-distance migrants from the southern United States. This striking songbird with the habits of a small raptor has experienced one of the most dramatic declines of any of Indiana's birds in recent times. Nearly 90% fewer detections were reported in priority as well as non-priority blocks during the recent Indiana atlas, a statistically significant decline. Although records for the 1985–1990 atlas were boosted greatly by a research study during that time period (Burton 1993), follow-up studies in prime areas for Loggerhead Shrikes have indicated declines after 2000 (Castrale and Ferchak 2001). Sharp decreases in shrike populations have also been noted in other parts of their North American range. Both Ohio and Michigan atlases showed declines in records of this species with no confirmed breeding reported in Michigan on the most recent atlas. The trend on Indiana BBS routes during the 1985–2011 period showed a significant 5.1% annual decline. During the 1985–1990 atlas, Loggerhead Shrikes were found throughout southern

Indiana, but were concentrated in four southwestern counties with a few scattered records elsewhere in the state. The current atlas had blocks with confirmed breeding in parts of the earlier range in southwestern and south-central Indiana as well as a few records in northeastern Indiana. Nearly all were associated with Amish communities. Although large-scale habitat changes on the breeding grounds do not seem able to explain the decline, winter habitat changes or other factors may be responsible.

The Loggerhead Shrike prefers areas dominated by a mix of grasslands and shrubs and is often found in Amish farmlands in Indiana. Sturdy cup nests made of sticks and lined with fine materials are built in shrubs and small trees, especially eastern red cedar and multiflora rose (Yosef 1996). Insects and small vertebrates (mammals, birds, frogs, snakes) are preyed upon in low vegetation and shrikes have a unique habit of impaling prey on thorns and barbed wire. Loggerhead Shrikes are most often detected on utility lines or fences as they scan for prey.

Loggerhead Shrike



A juvenile Loggerhead Shrike perches on barbed wire. *Photo by Ryan Sanderson.*

Table 115. Regional occurrence and abundance information for the Loggerhead Shrike.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|-----------|----------------------|-----------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | <1 | 2 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 0 | 3 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 2 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 0 | 0 | 110 | 0.00 | 102 | 0.01 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0.00 | 64 | 0.02 | | | | |
| South | 246 | <1 | 13 | 97 | 0.02 | 88 | 0.22 | | | | |
| Southwest | 106 | <1 | 14 | 47 | 0.00 | 39 | 0.39 | | | | |
| South-central | 87 | 1 | 20 | 35 | 0.06 | 35 | 0.11 | | | | |
| Southeast | 53 | 0 | 2 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | <1 | 5 | 262 | <0.01 | 221 | 0.09 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 3 | 100 | 18 | 51 |
| Probable | 0 | 0 | 4 | 11 |
| Possible | 0 | 0 | 13 | 37 |
| Sum | 3 | | 35 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 6 | | 56 | |
| Probable | 1 | | 7 | |
| Possible | 2 | | 25 | |
| Sum | 9 | | 88 | |
| Observed | 0 | | - | |

Loggerhead Shrike

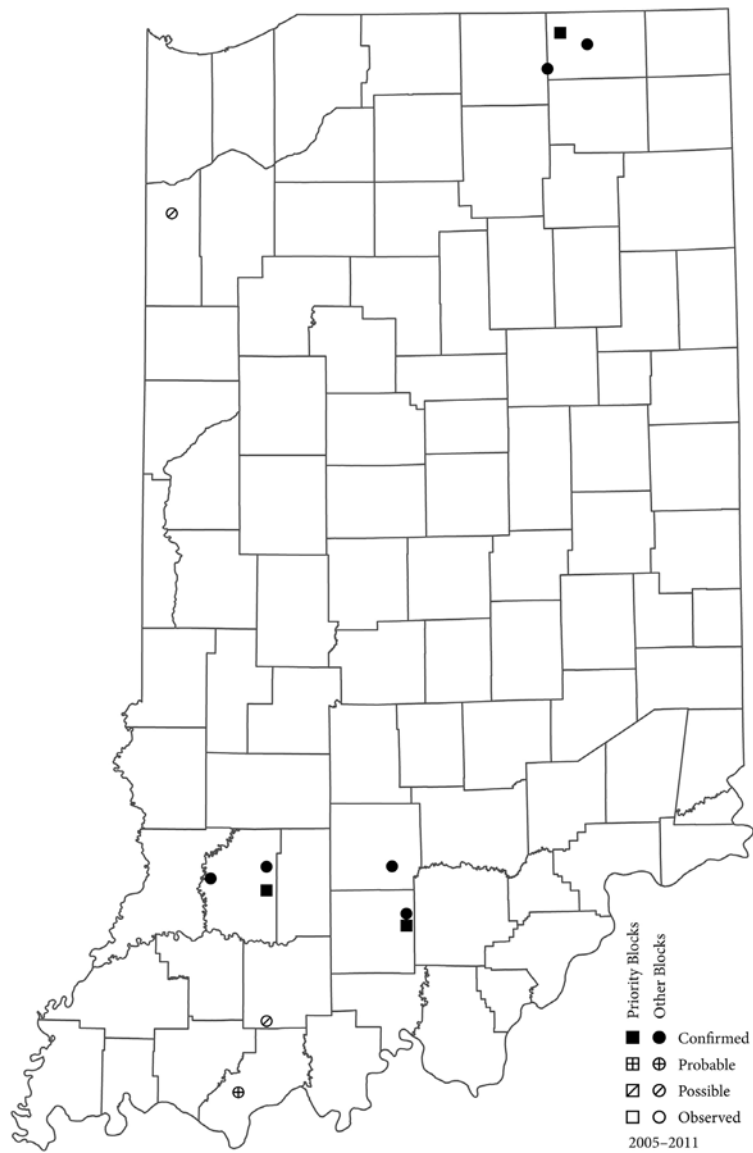


Figure 181. Map of the occurrences of the Loggerhead Shrike in IBBA blocks during 2005–2011.

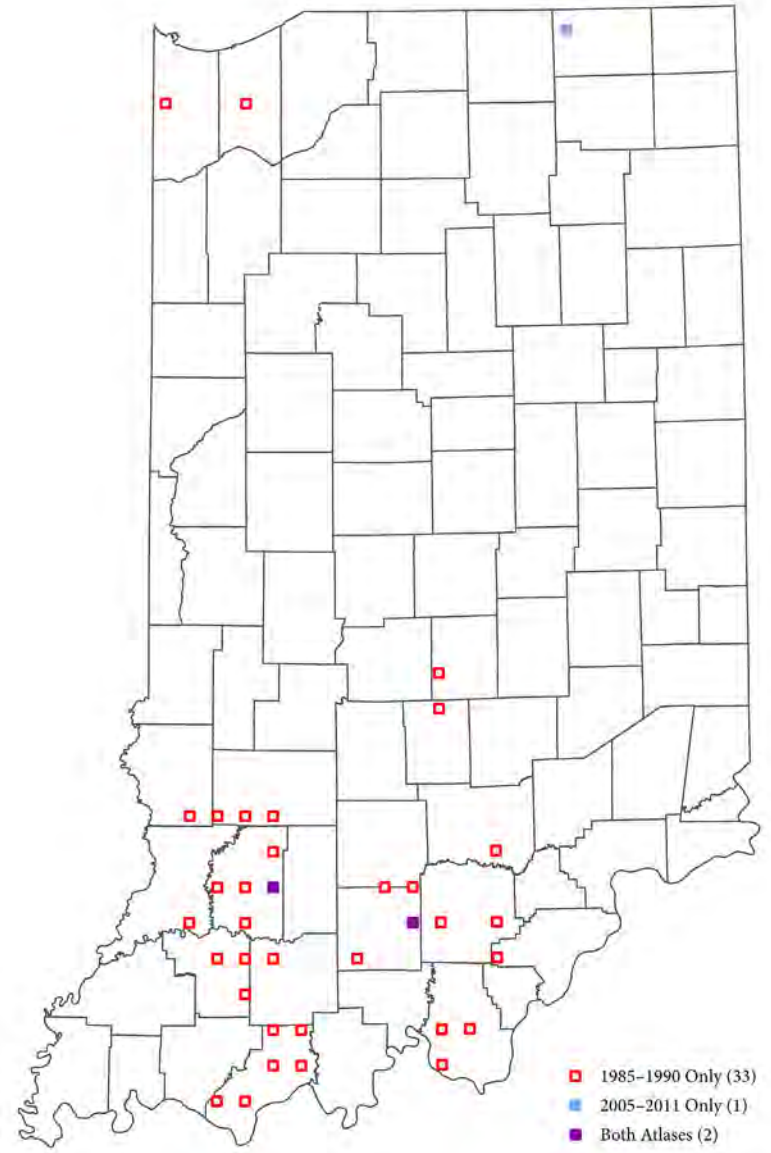


Figure 182. Map of the occurrences of the Loggerhead Shrike in IBBA priority blocks during both atlas periods.

Vireos (Vireonidae)

Tables 116–121, Fig. 183–193

FIVE SPECIES OF vireos nest regularly in Indiana and the Blue-headed Vireo has only been documented breeding three times in the state from 1980–2015 (Brock 2006), none during either atlas period. Red-eyed Vireo, Blue-headed Vireo, and Yellow-throated Vireo are found in landscapes with more extensive middle-aged and mature forests, Warbling Vireos prefer trees in more open areas, while White-eyed Vireo and Bell's Vireo are associated with shrubland and early successional forests (Brown 1993, Hopp *et al.* 1995, Rodewald and James 1996, James 1998, Cimprich *et al.* 2000, Gardali and Ballard 2000). Nests are usually placed in shrubs or small trees just a few feet off the ground. Vireos feed predominately on insects and other invertebrates by picking them from leaves and stems. All species migrate from Indiana and most winter in tropical areas and as far north as the southeastern United States.

Red-eyed Vireo and Warbling Vireo were found in most priority blocks, while Yellow-throated Vireo and White-eyed Vireo were reported in approximately half of all blocks. Bell's Vireo was recorded in 10% of atlas blocks. All vireo species were found in more blocks during the 2005–2011 atlas with statistically significant increases for Bell's Vireo, Yellow-throated Vireo, and Warbling Vireo. Breeding Bird Survey trends for Indiana from 1985–2011 were positive for all five vireo species, although none were statistically significant except for Bell's Vireo.

Red-eyed Vireo, Yellow-throated Vireo, and Warbling Vireo are widely distributed throughout Indiana, although the first two species show higher densities on BBS routes in the more heavily forested areas of southern Indiana. White-eyed Vireo is also encountered more often in southern Indiana, especially in south-central counties where they can be found along the edges or in openings of forests, recently cut woodlands, old fields, and other brushy areas. The Bell's Vireo is one of the few bird species in Indiana that shows a decidedly western distribution in the state with most birds concentrated in southwestern Indiana. Many of these birds are associated with reclaimed land around mines.

On the Indiana, Ohio, and Michigan atlas projects, Red-eyed Vireo was the most frequently recorded vireo species, followed by Warbling Vireo and Yellow-throated Vireo. White-eyed Vireo ranked fourth in Indiana and Ohio, while Blue-headed Vireo took this spot in Michigan. Bell's Vireo occurred in more blocks in Indiana than in the other two states and has not been confirmed nesting in Michigan. The Philadelphia Vireo is an uncommon confirmed breeder in the Upper Peninsula of Michigan, but does not nest in Indiana or Ohio. For most vireo species, rates of occurrence between atlas periods showed small differences in all three states. The most notable exceptions are increased numbers of Bell's Vireo in Indiana and Ohio and of Blue-headed Vireo in Michigan and Ohio.

White-eyed Vireo



A White-eyed Vireo holds its mouth open while perching on a bare branch. *Photo by Ryan Sanderson.*

Table 116. Regional occurrence and abundance information for the White-eyed Vireo.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 22 | 17 | 55 | 0.1 | 31 | 0.1 | | | | |
| Northwest | 73 | 19 | 21 | 34 | 0.1 | 19 | 0.1 | | | | |
| Northeast | 54 | 26 | 13 | 21 | 0.1 | 12 | 0.2 | | | | |
| Central | 273 | 35 | 29 | 110 | 0.3 | 102 | 0.1 | | | | |
| West-central | 114 | 39 | 34 | 56 | 0.3 | 38 | 0.2 | | | | |
| East-central | 159 | 33 | 25 | 54 | 0.2 | 64 | <0.1 | | | | |
| South | 246 | 82 | 87 | 97 | 2.9 | 88 | 3.7 | | | | |
| Southwest | 106 | 77 | 77 | 47 | 0.6 | 39 | 0.9 | | | | |
| South-central | 87 | 91 | 94 | 35 | 6.3 | 35 | 7.2 | | | | |
| Southeast | 53 | 75 | 96 | 15 | 2.4 | 14 | 2.7 | | | | |
| Statewide | 646 | 50 | 49 | 262 | 1.2 | 221 | 1.6 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 35 | 11 | 49 | 16 |
| Probable | 208 | 64 | 175 | 55 |
| Possible | 82 | 25 | 92 | 29 |
| Sum | 325 | | 316 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 8 | | 1 | |
| Probable | 20 | | 3 | |
| Possible | 10 | | 12 | |
| Sum | 38 | | 16 | |
| Observed | 0 | | - | |

White-eyed Vireo

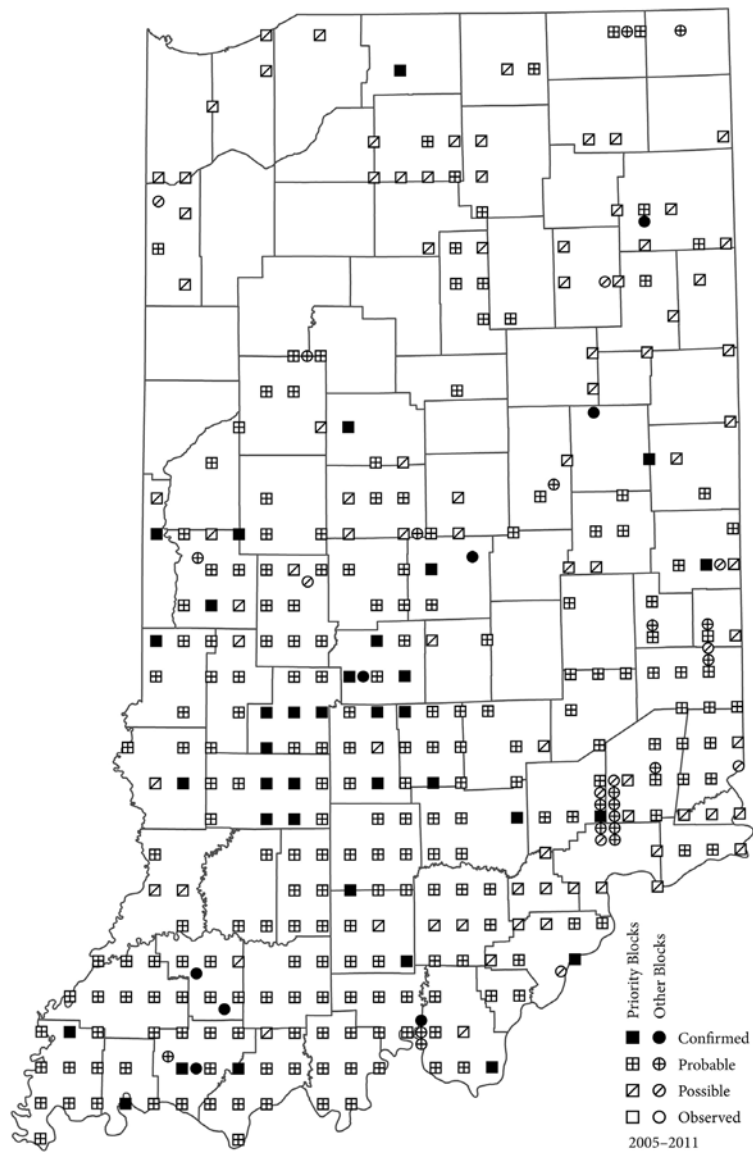


Figure 183. Map of the occurrences of the White-eyed Vireo in IBBA blocks during 2005–2011.

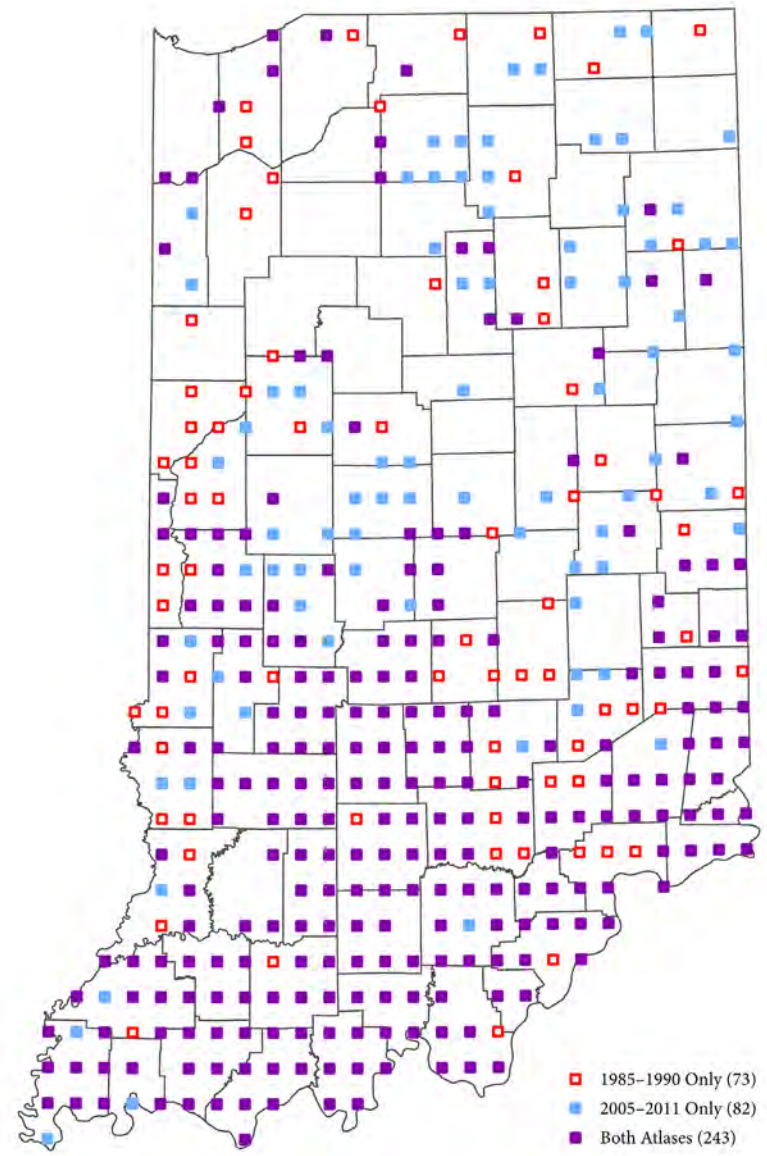


Figure 184. Map of the occurrences of the White-eyed Vireo in IBBA priority blocks during both atlas periods.

Bell's Vireo



A Bell's Vireo stands on a branch. *Photo by Michael Brown.*

Table 117. Regional occurrence and abundance information for the Bell's Vireo.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 4 | 2 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 7 | 3 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 0 | 2 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 4 | 4 | 110 | <0.01 | 102 | 0.01 | | | | |
| West-central | 114 | 7 | 6 | 56 | 0.02 | 38 | 0.03 | | | | |
| East-central | 159 | 1 | 3 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 19 | 6 | 97 | 0.57 | 88 | 0.10 | | | | |
| Southwest | 106 | 38 | 13 | 47 | 1.17 | 39 | 0.23 | | | | |
| South-central | 87 | 8 | 0 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 10 | 4 | 262 | 0.21 | 221 | 0.05 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 10 | 16 | 4 | 14 |
| Probable | 31 | 50 | 10 | 36 |
| Possible | 21 | 34 | 14 | 50 |
| Sum | 62 | | 28 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 6 | | 6 | |
| Probable | 8 | | 4 | |
| Possible | 10 | | 2 | |
| Sum | 24 | | 12 | |
| Observed | 0 | | - | |

Bell's Vireo

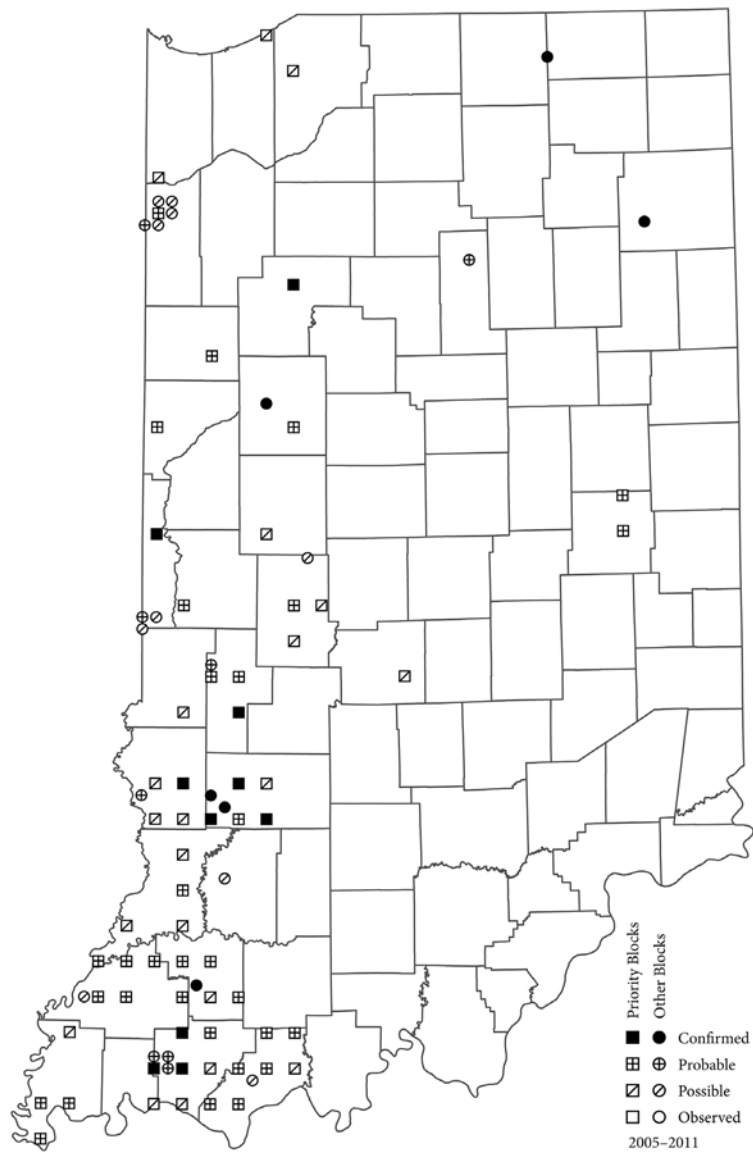


Figure 185. Map of the occurrences of the Bell's Vireo in IBBA blocks during 2005–2011.

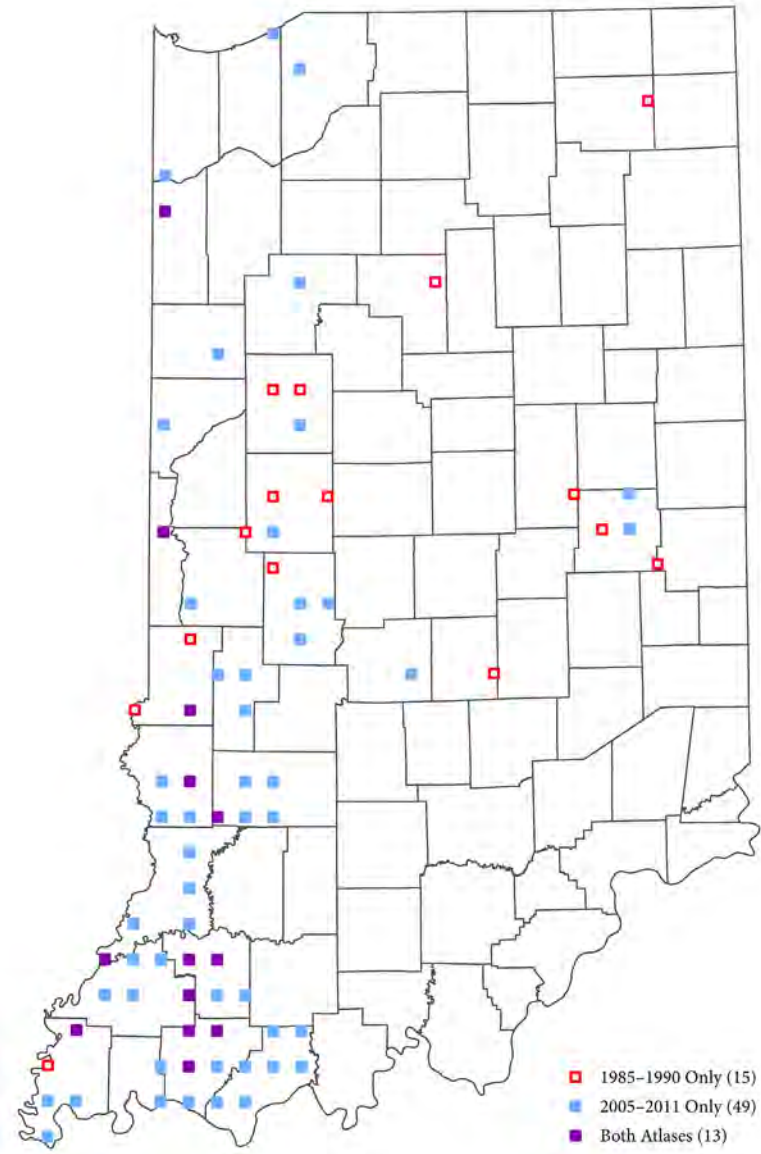


Figure 186. Map of the occurrences of the Bell's Vireo in IBBA priority blocks during both atlas periods.

Yellow-throated Vireo



A Yellow-throated Vireo leans forward while perched in a tree. *Photo by Shari McCollough.*

Table 118. Regional occurrence and abundance information for the Yellow-throated Vireo.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 48 | 54 | 55 | 1.2 | 31 | 1.3 | | | | |
| Northwest | 73 | 40 | 53 | 34 | 0.5 | 19 | 1.1 | | | | |
| Northeast | 54 | 59 | 56 | 21 | 2.3 | 12 | 1.6 | | | | |
| Central | 273 | 40 | 29 | 110 | 0.5 | 102 | 0.3 | | | | |
| West-central | 114 | 39 | 25 | 56 | 0.4 | 38 | 0.4 | | | | |
| East-central | 159 | 42 | 31 | 54 | 0.7 | 64 | 0.1 | | | | |
| South | 246 | 74 | 67 | 97 | 2.0 | 88 | 2.5 | | | | |
| Southwest | 106 | 61 | 54 | 47 | 0.6 | 39 | 1.1 | | | | |
| South-central | 87 | 83 | 80 | 35 | 4.0 | 35 | 4.2 | | | | |
| Southeast | 53 | 83 | 70 | 15 | 1.7 | 14 | 2.4 | | | | |
| Statewide | 646 | 54 | 48 | 262 | 1.2 | 221 | 1.3 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 15 | 4 | 14 | 5 |
| Probable | 226 | 64 | 179 | 58 |
| Possible | 111 | 32 | 118 | 38 |
| Sum | 352 | | 311 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 1 | |
| Probable | 14 | | 11 | |
| Possible | 19 | | 4 | |
| Sum | 38 | | 16 | |
| Observed | 0 | | - | |

Yellow-throated Vireo

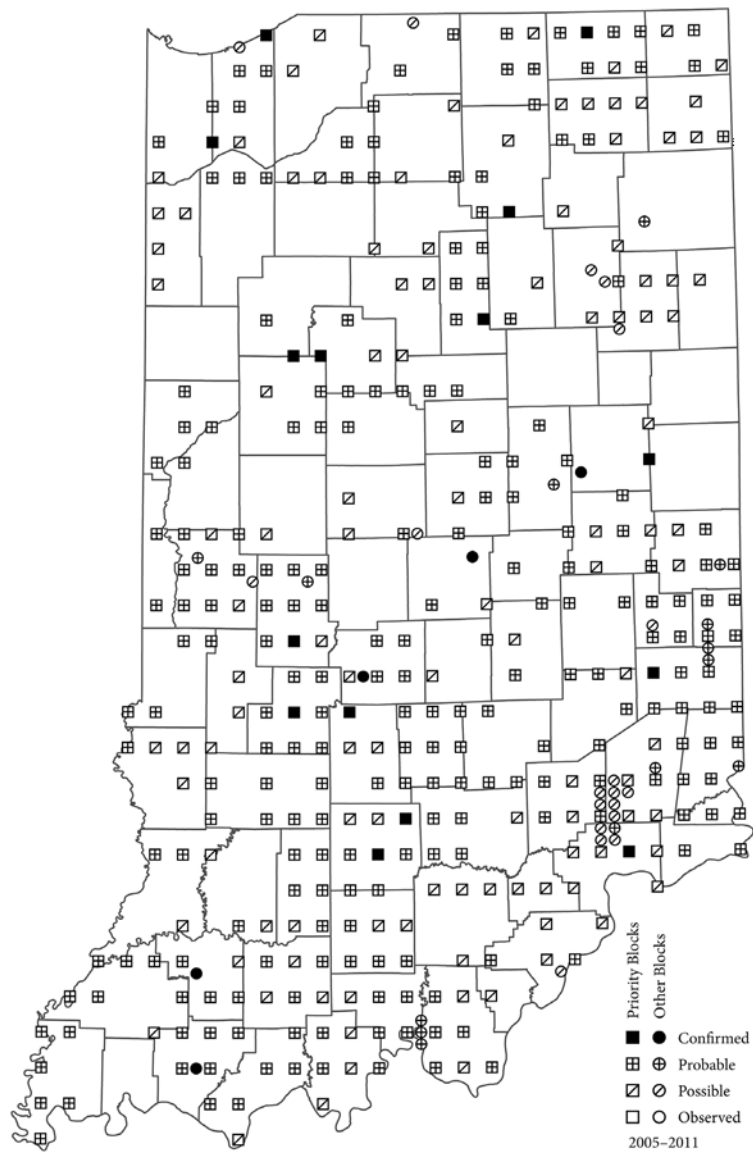


Figure 187. Map of the occurrences of the Yellow-throated Vireo in IBBA blocks during 2005–2011.

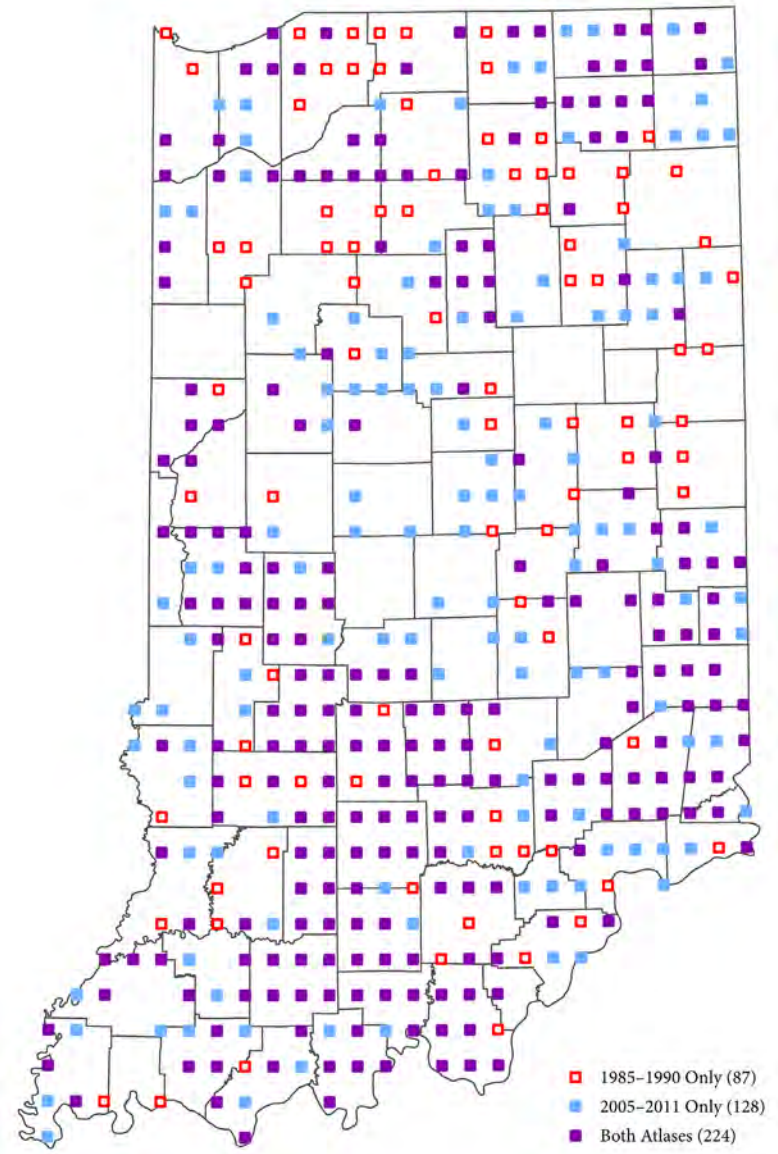


Figure 188. Map of the occurrences of the Yellow-throated Vireo in IBBA priority blocks during both atlas periods.

Blue-headed Vireo



A Blue-headed Vireo perches on a branch with emerging green leaves. *Photo by Ryan Sanderson.*

Table 119. Regional occurrence and abundance information for the Blue-headed Vireo.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % | No. | % |
| North | 127 | 2 | 0 | 55 | 0 | 31 | 0 | | | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | | | |
| Northeast | 54 | 4 | 0 | 21 | 0 | 12 | 0 | | | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | | | |

| | No. | % | No. | % |
|------------------------|----------|----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 0 | |
| Probable | 1 | 50 | 0 | |
| Possible | 1 | 50 | 0 | |
| Sum | 2 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 1 | | 0 | |
| Sum | 1 | | 0 | |
| Observed | 0 | | - | |

Blue-headed Vireo



Figure 189. Map of the occurrences of the Blue-headed Vireo in IBBA blocks during 2005–2011.

Warbling Vireo



A Warbling Vireo grasps onto a gray branch. *Photo by John Troth.*

Table 120. Regional occurrence and abundance information for the Warbling Vireo.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----------|------------|----|
| | 2005–2011 | | 1985–1990 | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 88 | 85 | 55 | 6.1 | 31 | 4.1 | | | | | |
| Northwest | 73 | 88 | 84 | 34 | 3.8 | 19 | 4.3 | | | | | |
| Northeast | 54 | 89 | 87 | 21 | 9.8 | 12 | 3.9 | | | | | |
| Central | 273 | 88 | 81 | 110 | 4.8 | 102 | 3.4 | | | | | |
| West-central | 114 | 84 | 75 | 56 | 4.9 | 38 | 6.1 | | | | | |
| East-central | 159 | 90 | 85 | 54 | 4.7 | 64 | 1.8 | | | | | |
| South | 246 | 88 | 86 | 97 | 4.8 | 88 | 5.0 | | | | | |
| Southwest | 106 | 94 | 91 | 47 | 5.1 | 39 | 5.2 | | | | | |
| South-central | 87 | 85 | 79 | 35 | 5.1 | 35 | 4.9 | | | | | |
| Southeast | 53 | 81 | 89 | 15 | 3.3 | 14 | 4.4 | | | | | |
| Statewide | 646 | 88 | 84 | 262 | 5.1 | 221 | 4.1 | | | | | |
| | | | | | | | | Priority Blocks | | | | |
| | | | | | | | | Confirmed | 64 | 11 | 58 | 11 |
| | | | | | | | | Probable | 408 | 72 | 365 | 67 |
| | | | | | | | | Possible | 96 | 17 | 118 | 22 |
| | | | | | | | | Sum | 568 | | 541 | |
| | | | | | | | | Observed | 0 | | - | |
| | | | | | | | | Other blocks | | | | |
| | | | | | | | | Confirmed | 6 | | 2 | |
| | | | | | | | | Probable | 14 | | 8 | |
| | | | | | | | | Possible | 7 | | 5 | |
| | | | | | | | | Sum | 27 | | 15 | |
| | | | | | | | | Observed | 0 | | - | |

Warbling Vireo

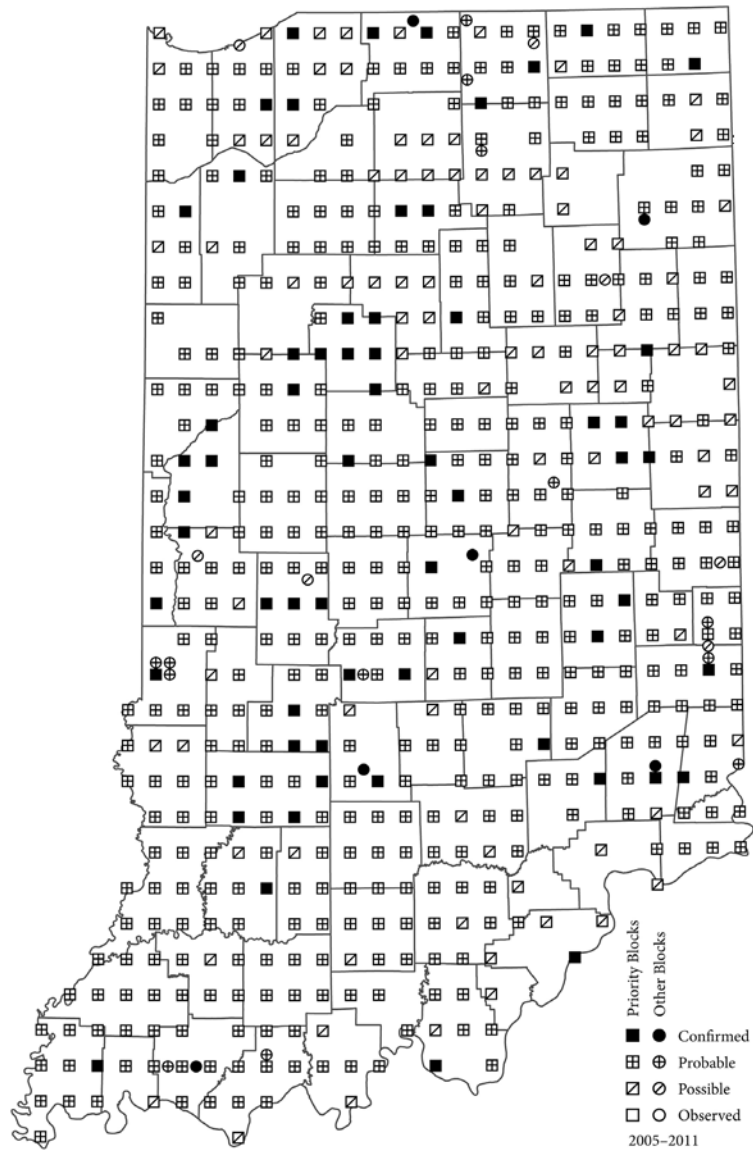


Figure 190. Map of the occurrences of the Warbling Vireo in IBBA blocks during 2005–2011.

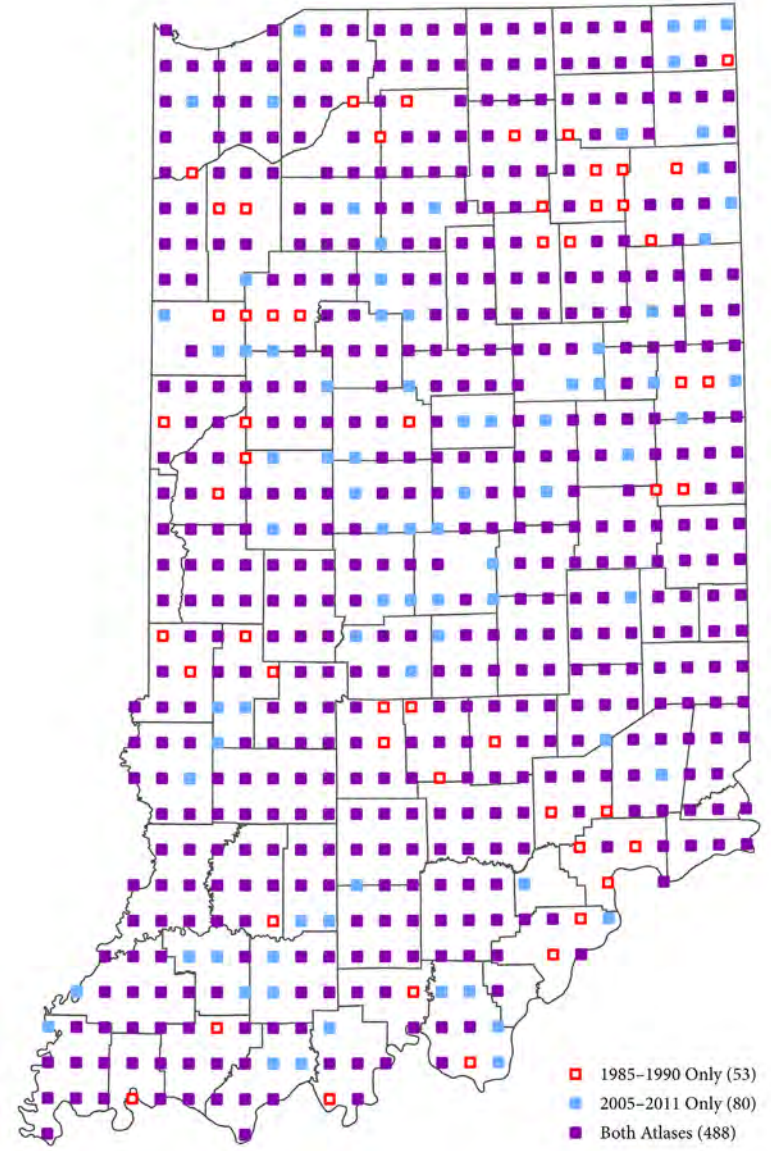


Figure 191. Map of the occurrences of the Warbling Vireo in IBBA priority blocks during both atlas periods.

Red-eyed Vireo



A Red-eyed Vireo perches in a fruiting dogwood tree. *Photo by Ryan Sanderson.*

Table 121. Regional occurrence and abundance information for the Red-eyed Vireo.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 80 | 84 | 55 | 2.2 | 31 | 2.7 | | | | |
| Northwest | 73 | 77 | 78 | 34 | 1.8 | 19 | 2.3 | | | | |
| Northeast | 54 | 85 | 93 | 21 | 2.8 | 12 | 3.3 | | | | |
| Central | 273 | 89 | 80 | 110 | 1.8 | 102 | 1.5 | | | | |
| West-central | 114 | 83 | 68 | 56 | 2.5 | 38 | 1.6 | | | | |
| East-central | 159 | 94 | 89 | 54 | 1.2 | 64 | 1.3 | | | | |
| South | 246 | 95 | 95 | 97 | 7.5 | 88 | 9.3 | | | | |
| Southwest | 106 | 92 | 90 | 47 | 1.7 | 39 | 2.8 | | | | |
| South-central | 87 | 100 | 99 | 35 | 15.8 | 35 | 17.2 | | | | |
| Southeast | 53 | 94 | 100 | 15 | 6.2 | 14 | 7.4 | | | | |
| Statewide | 646 | 90 | 87 | 262 | 4.0 | 221 | 4.7 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 73 | 13 | 50 | 9 |
| Probable | 420 | 72 | 418 | 75 |
| Possible | 87 | 15 | 91 | 16 |
| Sum | 580 | | 559 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 13 | | 0 | |
| Probable | 26 | | 14 | |
| Possible | 11 | | 3 | |
| Sum | 50 | | 17 | |
| Observed | 0 | | - | |

Red-eyed Vireo

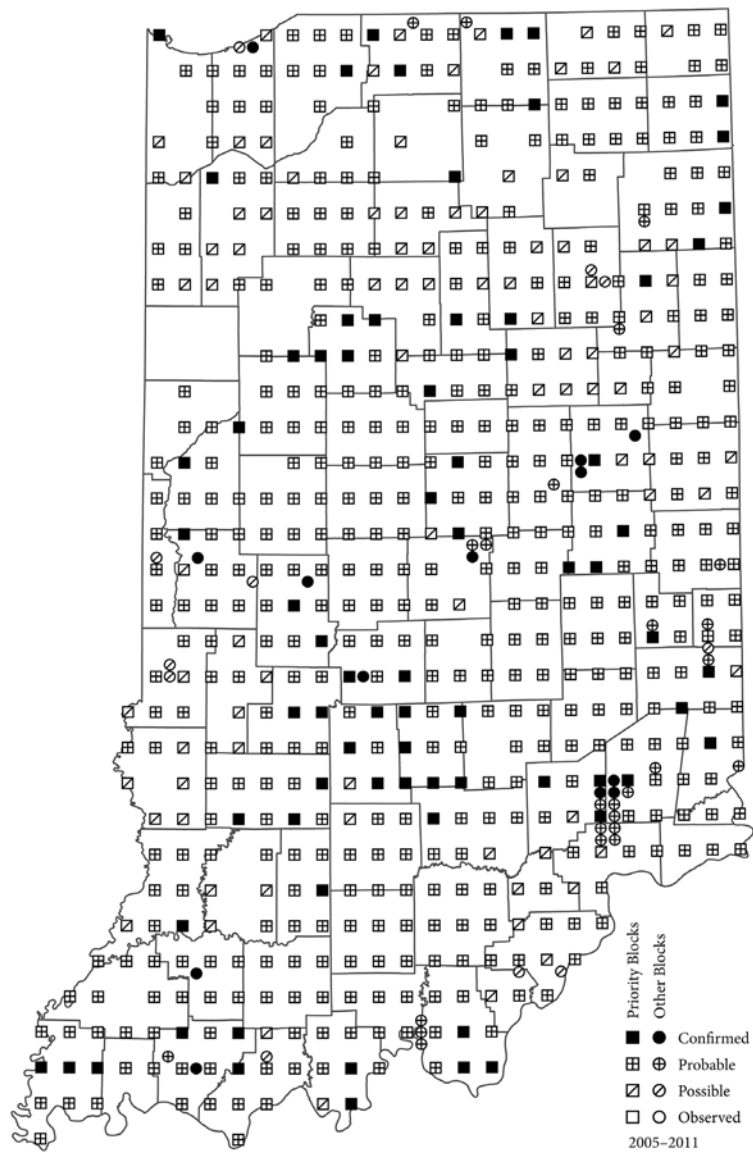


Figure 192. Map of the occurrences of the Red-eyed Vireo in IBBA blocks during 2005–2011.

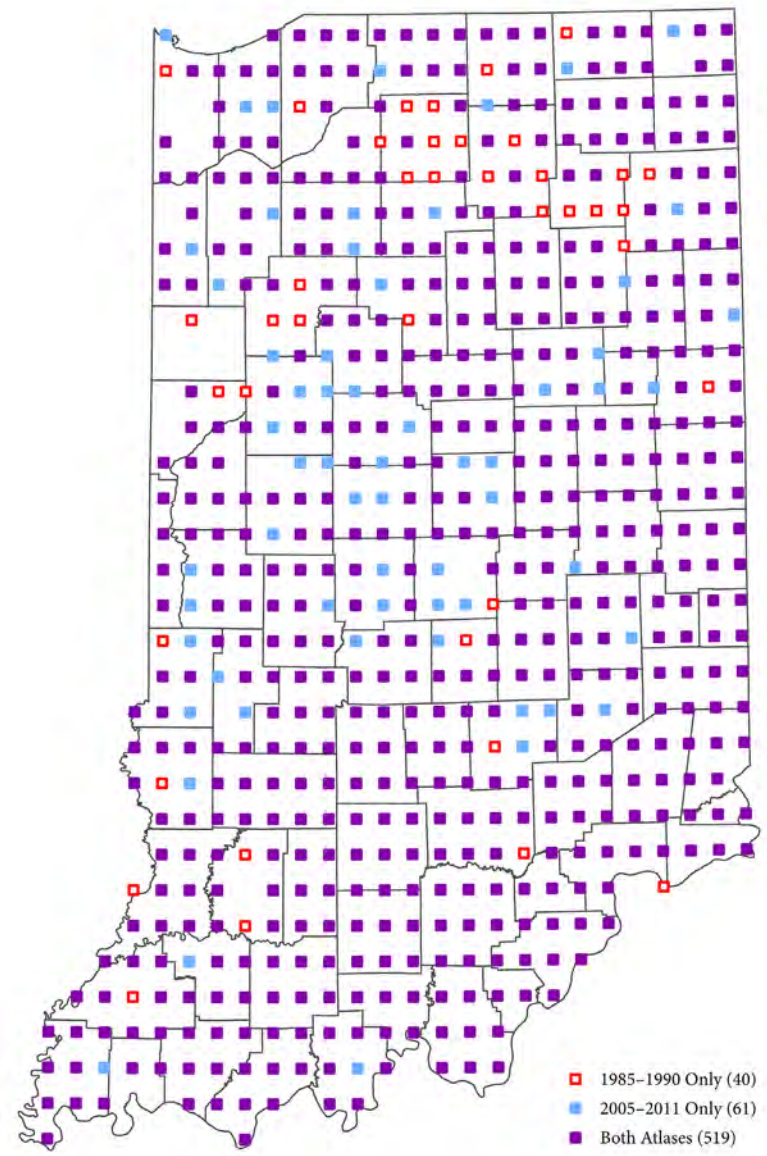


Figure 193. Map of the occurrences of the Red-eyed Vireo in IBBA priority blocks during both atlas periods.

Jays and Crows (Corvidae)

Tables 122–124, Fig. 194–198

BLUE JAYS AND American Crows are among Indiana's most common birds and found year-round in the state, although seasonal movements are noticeable. The Fish Crow has not been documented breeding in the state, although it likely does, judging by the regularity of sightings in the southwestern part of Indiana in recent years. Several birds have been regularly noted in Marion County in recent years (Kearns 2016, Ehn 2018). Fish Crows are showing dramatic increases in states within the interior population.

Blue Jays and American Crows are found in most habitats that possess at least some trees and are found in both rural and urban areas (Tarvin and Woolfenden 1999, Verbeek and Caffrey 2002). Fish Crows are associated with floodplain forests and eastern coastal areas (McGowan 2001). Members of this group build stick nests in trees and are omnivorous in their food habits, feeding on waste grain, seeds, nuts, fruit, insects, small animals, bird eggs and nestlings, carrion, and garbage. Outside of the breeding season, flocking behavior is seen, especially with American Crows where night roosts, consisting of thousands of individuals, form in urban and rural areas.

Blue Jays and American Crows likely occur in all Indiana atlas blocks, while Fish Crows were noted in only four blocks in southwestern Indiana. As populations expand northward from the Mississippi and Ohio rivers, occurrences in Indiana should become more

frequent in the future. On Breeding Bird Surveys, Blue Jays and American Crows were most abundant in the heavily forested areas of south-central and southeastern Indiana. Relative densities were somewhat less in most other regions and least in northern Indiana during the recent atlas period. Population trends for Blue Jays on Breeding Bird Surveys have shown statistically significant declines in Indiana and other midwestern states. American Crows, on the other hand, had been increasing until about 2000 and then declined, possibly due to West Nile virus. The overall population trend for the 1985–2011 period was positive but not statistically significant.

Blue Jay and American Crow were found in virtually every block during both atlases in Indiana, Ohio, and Michigan. Fish Crow was not detected on atlases in Ohio and Michigan, although this species was recently documented breeding in northeastern Ohio. Although not found in Indiana, the Common Raven nests in the Upper Peninsula and Northern Lower Peninsula of Michigan and was found in a few blocks of eastern Ohio during the more recent atlas with one confirmed record of breeding. Canada Jay also nests in the Upper Peninsula of Michigan, but was not found on the Ohio or Indiana atlases. Rates of occurrence between atlas periods were similar for all species in all states with the exception of moderate increases for Common Raven in Michigan.

Blue Jay



A Blue Jay perches on a broken branch. *Photo by Ryan Sanderson.*

Table 122. Regional occurrence and abundance information for the Blue Jay.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|------------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 99 | 98 | 55 | 6.5 | 31 | 11.9 | | | | |
| Northwest | 73 | 99 | 97 | 34 | 6.7 | 19 | 12.2 | | | | |
| Northeast | 54 | 100 | 98 | 21 | 6.1 | 12 | 11.5 | | | | |
| Central | 273 | 96 | 99 | 110 | 6.1 | 102 | 7.0 | | | | |
| West-central | 114 | 92 | 96 | 56 | 5.3 | 38 | 6.3 | | | | |
| East-central | 159 | 98 | 100 | 54 | 7.0 | 64 | 7.4 | | | | |
| South | 246 | 98 | 100 | 97 | 8.6 | 88 | 11.0 | | | | |
| Southwest | 106 | 95 | 100 | 47 | 6.3 | 39 | 11.2 | | | | |
| South-central | 87 | 99 | 100 | 35 | 10.6 | 35 | 10.7 | | | | |
| Southeast | 53 | 100 | 100 | 15 | 11.3 | 14 | 11.3 | | | | |
| Statewide | 646 | 97 | 99 | 262 | 7.1 | 221 | 9.3 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 184 | 29 | 254 | 40 |
| Probable | 387 | 62 | 313 | 49 |
| Possible | 56 | 9 | 72 | 11 |
| Sum | 627 | | 639 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 6 | | 11 | |
| Probable | 20 | | 4 | |
| Possible | 16 | | 9 | |
| Sum | 42 | | 24 | |
| Observed | 0 | | - | |

Blue Jay

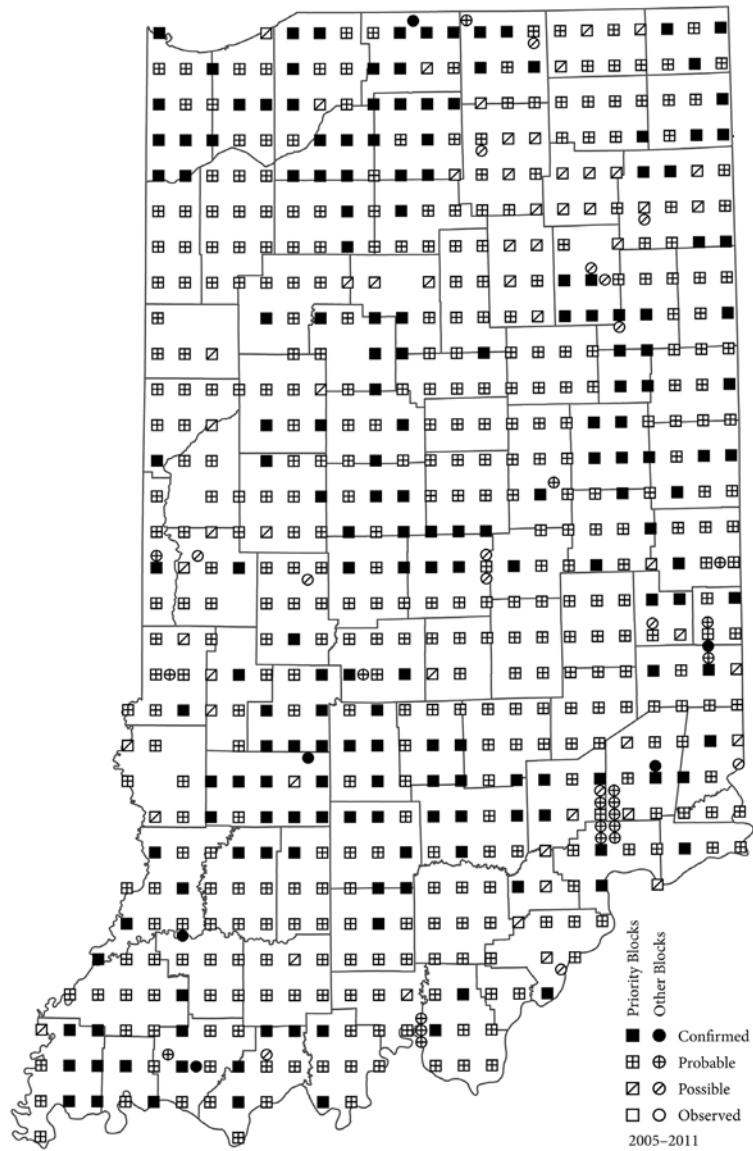


Figure 194. Map of the occurrences of the Blue Jay in IBBA blocks during 2005–2011.

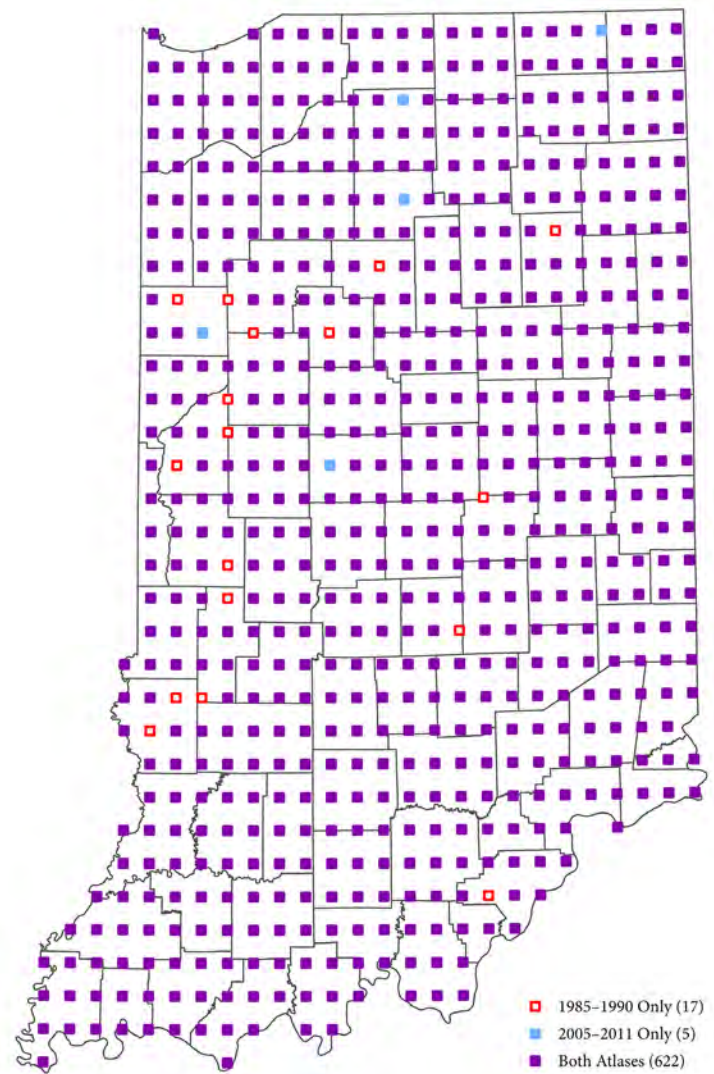


Figure 195. Map of the occurrences of the Blue Jay in IBBA priority blocks during both atlas periods.

American Crow



A portrait of an American Crow. *Photo by Ryan Sanderson.*

Table 123. Regional occurrence and abundance information for the American Crow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 100 | 94 | 55 | 24 | 31 | 32 | | | | |
| Northwest | 73 | 100 | 89 | 34 | 28 | 19 | 29 | | | | |
| Northeast | 54 | 100 | 100 | 21 | 18 | 12 | 38 | | | | |
| Central | 273 | 94 | 96 | 110 | 18 | 102 | 22 | | | | |
| West-central | 114 | 90 | 95 | 56 | 24 | 38 | 25 | | | | |
| East-central | 159 | 97 | 97 | 54 | 11 | 64 | 20 | | | | |
| South | 246 | 98 | 99 | 97 | 32 | 88 | 39 | | | | |
| Southwest | 106 | 97 | 98 | 47 | 23 | 39 | 25 | | | | |
| South-central | 87 | 100 | 100 | 35 | 46 | 35 | 54 | | | | |
| Southeast | 53 | 98 | 100 | 15 | 28 | 14 | 44 | | | | |
| Statewide | 646 | 97 | 97 | 262 | 24 | 221 | 30 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 196 | 31 | 231 | 37 |
| Probable | 315 | 50 | 278 | 44 |
| Possible | 115 | 18 | 116 | 19 |
| Sum | 626 | | 625 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 11 | | 4 | |
| Probable | 16 | | 12 | |
| Possible | 26 | | 6 | |
| Sum | 53 | | 22 | |
| Observed | 0 | | - | |

American Crow

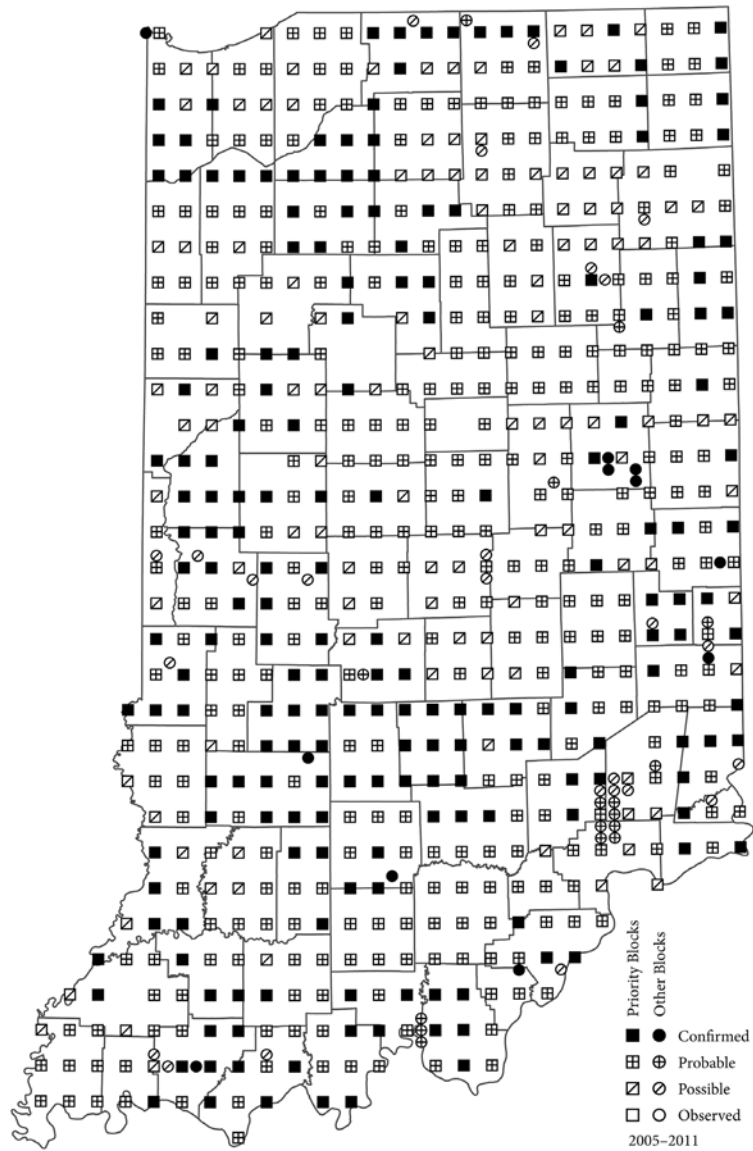


Figure 196. Map of the occurrences of the American Crow in IBBA blocks during 2005–2011.

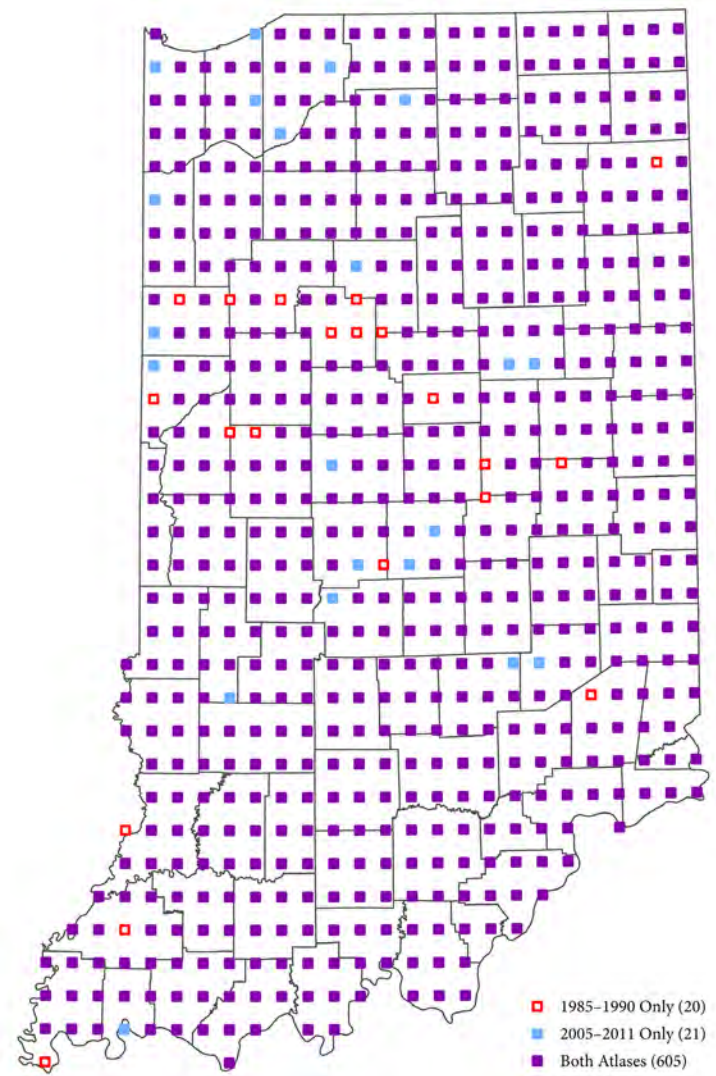


Figure 197. Map of the occurrences of the American Crow in IBBA priority blocks during both atlas periods.

Fish Crow



A Fish Crow fluffs out its feathers while grasping onto a bare branch. *Photo by Evan Speck.*

Table 124. Regional occurrence and abundance information for the Fish Crow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 1 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 3 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 0 | |
| Probable | 3 | 100 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 3 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 1 | | 0 | |
| Sum | 1 | | 0 | |
| Observed | 0 | | - | |

Fish Crow



Figure 198. Map of the occurrences of the Fish Crow in IBBA blocks during 2005–2011.

Larks (Alaudidae)

Table 125, Fig. 199–200

THE WIDE-RANGING Horned Lark is the Indiana bird most closely associated with extensive row-crop agriculture where diversity and numbers of most other birds are low. This species was found in most priority blocks throughout the state, except for the more predominately forested regions of south-central and southeastern Indiana. The number of priority blocks with this species was almost identical between atlas projects. Numbers on Breeding Bird Survey routes, however, suggest declines in central and northern Indiana and a small increase in southern regions. The trend on BBS routes for this species was significantly negative in Indiana and much of their North American range for the 1985–2011 period.

Horned Larks were found in a higher percentage of atlas blocks in Indiana compared to Ohio and Michigan. They are found most commonly in the Southern Lower Peninsula of Michigan and the eastern half of

Ohio. Although occurrences were virtually identical between atlas periods in Indiana, values declined moderately on the Ohio and Michigan atlases.

Horned Larks nest on the ground in agricultural fields and other areas with bare ground and sparse vegetation (Beason 1995). Nests consist of grasses and other vegetation in a slight depression in the ground. Breeding occurs early in the year and may be complete by the time corn and soybean fields are planted. Waste grain and seeds are main items in their diet, although insects are eaten extensively during the spring and summer months. Outside of the breeding season, Horned Larks are often seen in flocks. They are found in Indiana during all seasons, although short-distance migration occurs, especially among more northern populations. The Horned Lark has a large distribution throughout the Northern Hemisphere.

Horned Lark



A female Horned Lark holds dead plant material in her beak. *Photo by Michael Brown.*

Table 125. Regional occurrence and abundance information for the Horned Lark.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 77 | 80 | 55 | 15 | 31 | 19 | | | | |
| Northwest | 73 | 70 | 71 | 34 | 16 | 19 | 22 | | | | |
| Northeast | 54 | 87 | 93 | 21 | 14 | 12 | 15 | | | | |
| Central | 273 | 88 | 88 | 110 | 21 | 102 | 34 | | | | |
| West-central | 114 | 89 | 84 | 56 | 19 | 38 | 54 | | | | |
| East-central | 159 | 87 | 91 | 54 | 24 | 64 | 22 | | | | |
| South | 246 | 52 | 52 | 97 | 7 | 88 | 3 | | | | |
| Southwest | 106 | 74 | 74 | 47 | 12 | 39 | 5 | | | | |
| South-central | 87 | 25 | 23 | 35 | 1 | 35 | <1 | | | | |
| Southeast | 53 | 53 | 55 | 15 | 7 | 14 | 3 | | | | |
| Statewide | 646 | 72 | 73 | 262 | 15 | 221 | 20 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 102 | 22 | 109 | 23 |
| Probable | 278 | 60 | 285 | 61 |
| Possible | 86 | 18 | 75 | 16 |
| Sum | 466 | | 469 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 6 | | 1 | |
| Probable | 4 | | 6 | |
| Possible | 9 | | 2 | |
| Sum | 19 | | 9 | |
| Observed | 0 | | - | |

Horned Lark

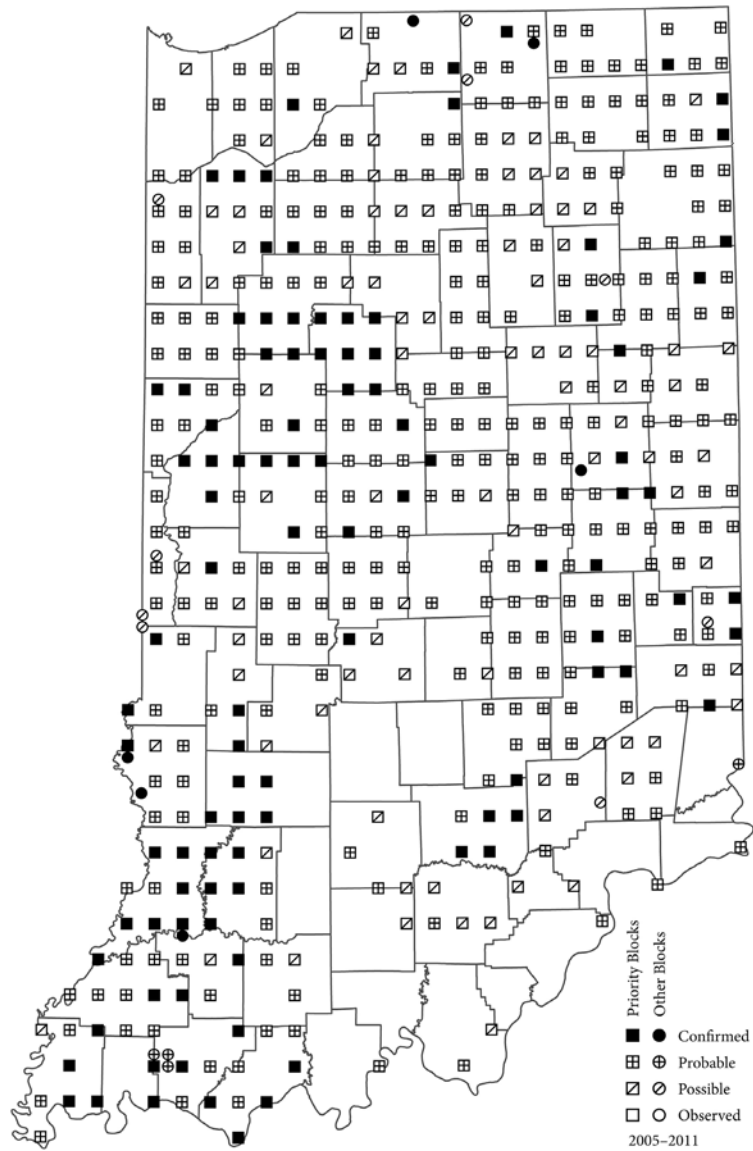


Figure 199. Map of the occurrences of the Horned Lark in IBBA blocks during 2005–2011.

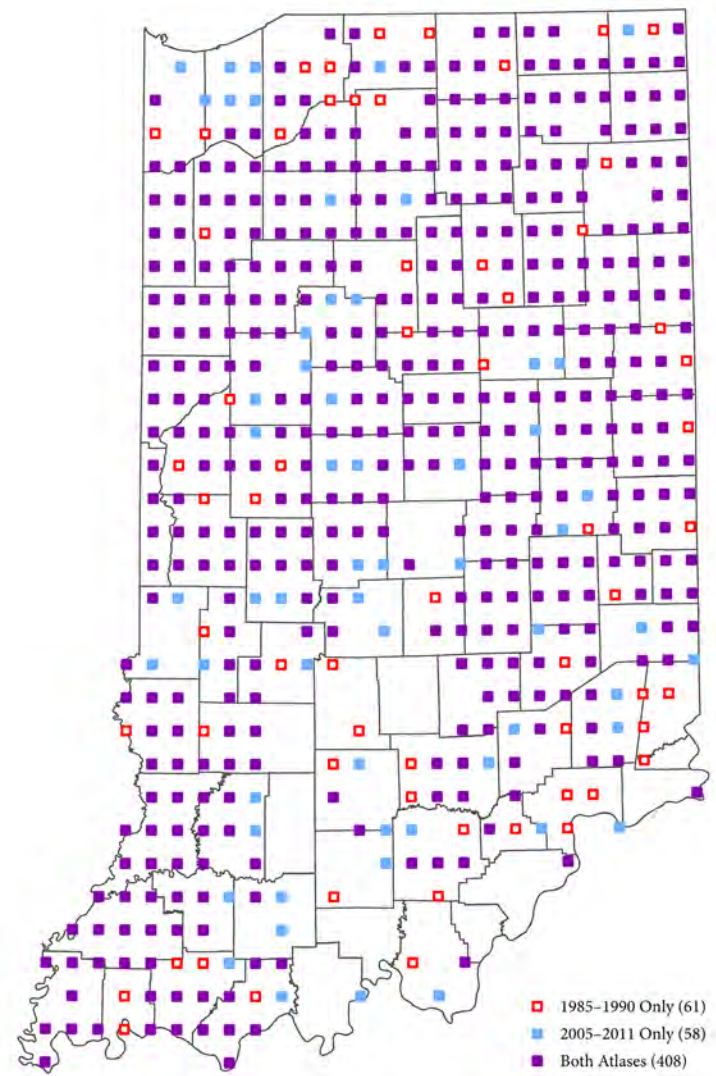


Figure 200. Map of the occurrences of the Horned Lark in IBBA priority blocks during both atlas periods.

Swallows (Hirundinidae)

Tables 126–131, Fig. 201–212

SIX SPECIES OF swallows, including the Purple Martin, regularly breed in Indiana and are widespread in the state during the summer before migrating south. Swallows can be found in a wide variety of habitats including scattered forests, wetlands, grasslands, agricultural areas, and even urban areas (Purple Martin). Most favor open areas near water with an abundance of flying insects. Diets and feeding behaviors of the swallows are similar: all aggressively pursuing flying insects with agile flights (Robertson *et al.* 1992, Brown and Brown 1995, Dejong 1996, Brown 1997, Brown and Brown 1999, Garrison 1999). Nest sites are much more specialized. Barn Swallows and Cliff Swallows build nests consisting of mud pellets that are attached to vertical surfaces. Cliff Swallows are highly colonial and virtually all colonies are found under concrete or wooden bridges over water. Nests resemble gourds. Barn Swallows nest singly or in small groups with an open cup nest. Although nests are found under bridges, this species is most likely found nesting on or in buildings: porches of houses, abandoned residences, barns, and outbuildings. Nests are sometimes found on rock faces, usually associated with streams or caves. Northern Rough-winged Swallows nest in rock crevices or in horizontal drainage pipes. Rock cuts along highways, railroad right-of-ways, or rock quarries are likely places to find small groups of this species. Bank Swallows are also colonial and the most specialized in nesting habitat, burrowing horizontally into sandy banks along streams, rivers, and sand quarries or in large sawdust piles at sawmills. Tree Swallows are cavity nesters, nesting singly in tree cavities and readily using nest boxes provided for Eastern Bluebirds. Nests are lined with grasses and feathers. Purple Martins are largely dependent on human-provided nesting structures consisting of multiple compartments and natural and artificial gourds with appropriately sized entrance holes.

The Barn Swallow is one of the most common birds in Indiana. The Barn Swallow, Purple Martin, Tree Swallow, and Northern Rough-winged Swallow are found in over 50% of priority blocks. Cliff Swallows and Bank Swallows were the least common within this

group. Priority blocks with Barn Swallows were evenly distributed throughout the state, although Breeding Bird Survey values were greatest in northeastern Indiana. Purple Martin occurrences and relative densities were highest in southern Indiana, especially south-central and southeastern regions. Northern Rough-winged Swallows were rather evenly distributed throughout the state, while Tree Swallows and Bank Swallows occurred more often and in greater densities in northern Indiana, especially the northeast. Cliff Swallow numbers were greatest in southwestern and south-central Indiana.

Of the six swallow species in Indiana, Barn Swallow and Northern Rough-winged Swallow showed little change in frequencies of occurrence and relative densities. Purple Martin numbers on Breeding Bird Surveys suggest a moderate population decline, although occurrences in atlas blocks were less pronounced. Bank Swallow was also found in slightly fewer blocks, with the Breeding Bird Survey showing a decline in northern Indiana, but greater numbers in central and southern regions. Only Tree Swallow and Cliff Swallow showed a statistically significant change in frequency of occurrence on the atlas. Both were found in at least twice as many priority blocks as in the previous atlas, and Breeding Bird Survey values indicate a dramatic increase in abundance. These increases were consistent in virtually all regions of the state. Statewide population trends on BBS routes were positive for Tree Swallow, Cliff Swallow, Northern Rough-winged Swallow, and Bank Swallow. Population increases were statistically significant for the first two. Purple Martin exhibited a statistically significant population decline, while Barn Swallow trends were negative but not significant.

Barn Swallow was the most commonly recorded swallow species on atlases with virtually every block reporting this species in Indiana and Ohio. Somewhat lower rates were recorded in Michigan, where a moderate decline was indicated between atlas periods. Although Tree Swallows were reported in nearly as many blocks in Michigan as Barn Swallows, their numbers suggest a moderate decline. In contrast, rates of occurrence of Tree Swallows have nearly doubled in Indiana

and Ohio. Northern Rough-winged Swallows and Purple Martins are found in moderate numbers of blocks in all three states. Differences between atlas periods were small for the Northern Rough-winged Swallow: positive in Indiana, negative in Ohio, and virtually unchanged in Michigan. Declines were seen for the Purple Martin in all three states, although the difference was small in Indiana, moderate in Ohio, and most pro-

nounced in Michigan. Bank Swallow and Cliff Swallow were the least commonly encountered swallows in Indiana and Ohio, although Bank Swallow ranked third in Michigan. Bank Swallow appeared to have declined moderately in all three states. Cliff Swallow numbers more than doubled in Indiana and Ohio, but decreased moderately in Michigan.

Purple Martin



A pair of Purple Martins perch on a ledge in front of an opening of a bird house. *Photo by Shari McCollough.*

Table 126. Regional occurrence and abundance information for the Purple Martin.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----|------------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 54 | 61 | 55 | 3.0 | 31 | 3.0 | Priority Blocks | | | | |
| Northwest | 73 | 41 | 55 | 34 | 0.1 | 19 | 2.9 | Confirmed | 300 | 75 | 313 | 73 |
| Northeast | 54 | 70 | 70 | 21 | 7.8 | 12 | 3.1 | Probable | 62 | 15 | 51 | 12 |
| Central | 273 | 50 | 52 | 110 | 2.1 | 102 | 3.3 | Possible | 40 | 10 | 62 | 15 |
| West-central | 114 | 37 | 46 | 56 | 1.9 | 38 | 3.3 | Sum | 402 | | 426 | |
| East-central | 159 | 60 | 55 | 54 | 2.2 | 64 | 3.3 | Observed | 0 | | - | |
| South | 246 | 80 | 84 | 97 | 6.2 | 88 | 8.3 | Other blocks | | | | |
| Southwest | 106 | 75 | 76 | 47 | 3.6 | 39 | 5.7 | Confirmed | 12 | | 7 | |
| South-central | 87 | 85 | 89 | 35 | 8.2 | 35 | 10.5 | Probable | 1 | | 3 | |
| Southeast | 53 | 81 | 92 | 15 | 9.7 | 14 | 9.7 | Possible | 4 | | 2 | |
| Statewide | 646 | 62 | 66 | 262 | 3.8 | 221 | 5.2 | Sum | 17 | | 12 | |
| | | | | | | | | Observed | 0 | | - | |

Purple Martin

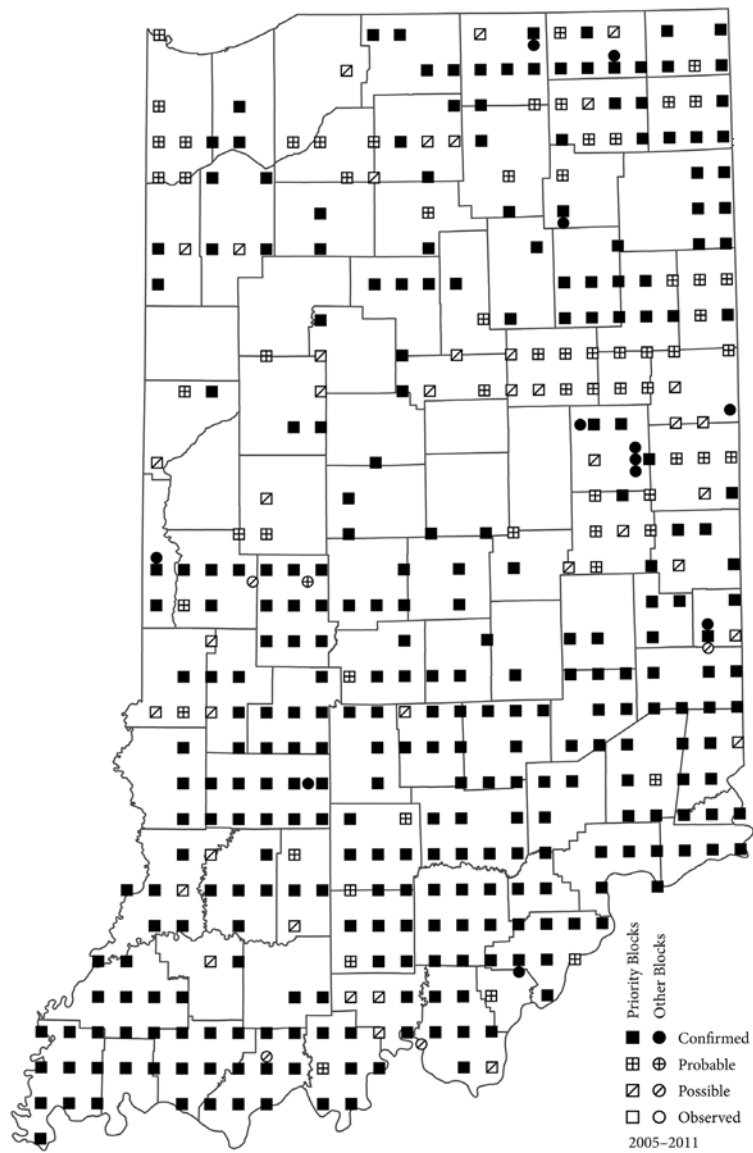


Figure 201. Map of the occurrences of the Purple Martin in IBBA blocks during 2005–2011.

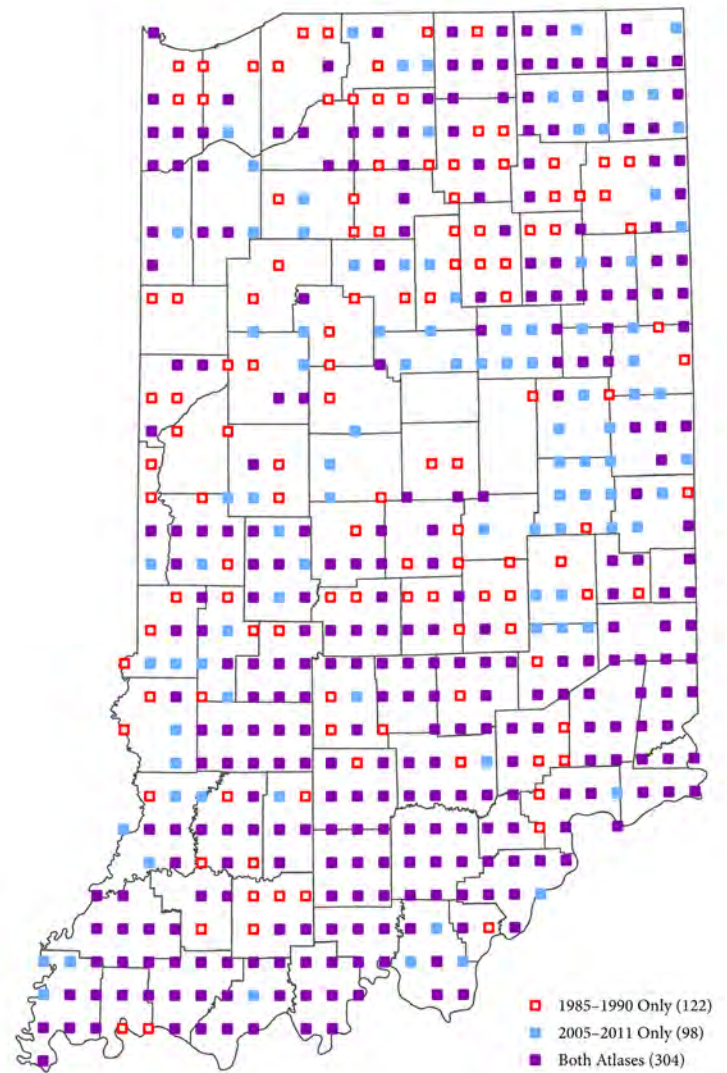


Figure 202. Map of the occurrences of the Purple Martin in IBBA priority blocks during both atlas periods.

Tree Swallow



A Tree Swallow flies low over water. *Photo by Ryan Sanderson.*

Table 127. Regional occurrence and abundance information for the Tree Swallow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|----------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 83 | 60 | 55 | 7.4 | 31 | 1.7 | | | | |
| Northwest | 73 | 73 | 49 | 34 | 4.6 | 19 | 0.8 | | | | |
| Northeast | 54 | 96 | 74 | 21 | 12.0 | 12 | 3.2 | | | | |
| Central | 273 | 54 | 18 | 110 | 1.1 | 102 | <0.1 | | | | |
| West-central | 114 | 40 | 11 | 56 | 1.0 | 38 | <0.1 | | | | |
| East-central | 159 | 64 | 22 | 54 | 1.3 | 64 | <0.1 | | | | |
| South | 246 | 72 | 33 | 97 | 2.2 | 88 | 0.3 | | | | |
| Southwest | 106 | 64 | 36 | 47 | 1.4 | 39 | 0.3 | | | | |
| South-central | 87 | 78 | 34 | 35 | 3.1 | 35 | 0.3 | | | | |
| Southeast | 53 | 77 | 26 | 15 | 2.5 | 14 | 0.2 | | | | |
| Statewide | 646 | 67 | 32 | 262 | 2.8 | 221 | 0.4 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 235 | 55 | 95 | 46 |
| Probable | 85 | 20 | 44 | 21 |
| Possible | 110 | 26 | 67 | 33 |
| Sum | 430 | | 206 | |
| Observed | 6 | | - | |
| Other blocks | | | | |
| Confirmed | 17 | | 4 | |
| Probable | 7 | | 2 | |
| Possible | 8 | | 3 | |
| Sum | 32 | | 9 | |
| Observed | 0 | | - | |

Tree Swallow

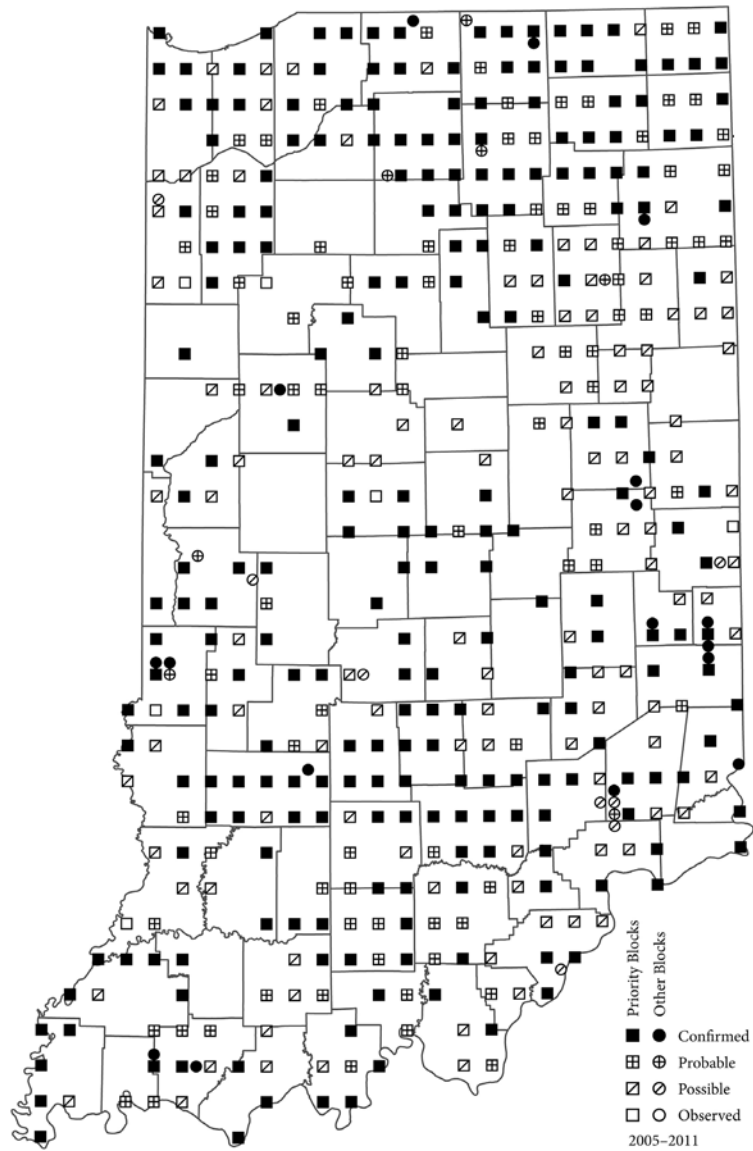


Figure 203. Map of the occurrences of the Tree Swallow in IBBA blocks during 2005–2011.

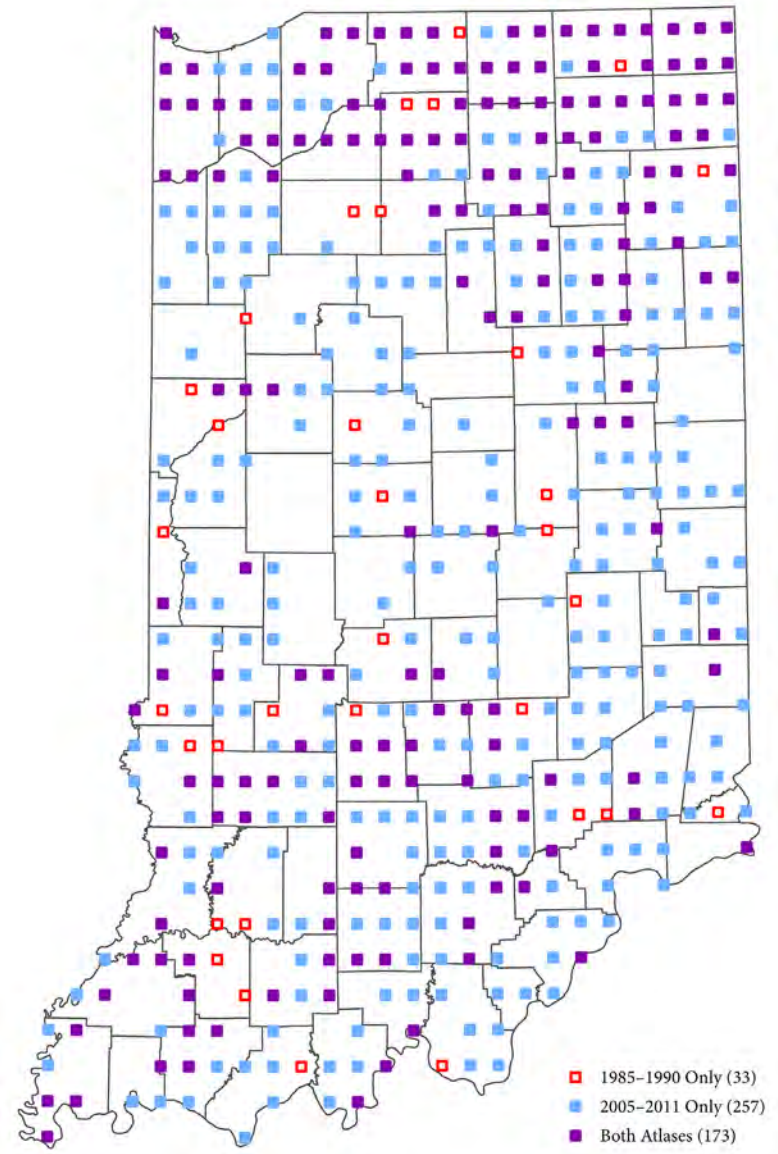


Figure 204. Map of the occurrences of the Tree Swallow in IBBA priority blocks during both atlas periods.

Northern Rough-winged Swallow



A Northern Rough-winged Swallow fluffs up its feathers while perched at the end of a broken branch.
Photo by Ryan Sanderson.

Table 128. Regional occurrence and abundance information for the Northern Rough-winged Swallow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----|------------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 64 | 62 | 55 | 1.8 | 31 | 2.1 | Priority Blocks | | | | |
| Northwest | 73 | 58 | 62 | 34 | 1.0 | 19 | 2.6 | Confirmed | 149 | 33 | 149 | 35 |
| Northeast | 54 | 72 | 63 | 21 | 3.0 | 12 | 1.3 | Probable | 160 | 35 | 170 | 40 |
| Central | 273 | 71 | 62 | 110 | 1.6 | 102 | 1.6 | Possible | 145 | 32 | 110 | 26 |
| West-central | 114 | 66 | 63 | 56 | 1.9 | 38 | 2.8 | Sum | 454 | | 429 | |
| East-central | 159 | 75 | 62 | 54 | 1.3 | 64 | 0.9 | Observed | 2 | | - | |
| South | 246 | 72 | 73 | 97 | 2.3 | 88 | 1.8 | Other blocks | | | | |
| Southwest | 106 | 71 | 70 | 47 | 1.6 | 39 | 1.7 | Confirmed | 7 | | 0 | |
| South-central | 87 | 75 | 75 | 35 | 4.0 | 35 | 2.3 | Probable | 5 | | 8 | |
| Southeast | 53 | 72 | 77 | 15 | 0.4 | 14 | 1.1 | Possible | 9 | | 2 | |
| Statewide | 646 | 70 | 66 | 262 | 1.9 | 221 | 1.8 | Sum | 21 | | 10 | |
| | | | | | | | | Observed | 1 | | - | |

Northern Rough-winged Swallow

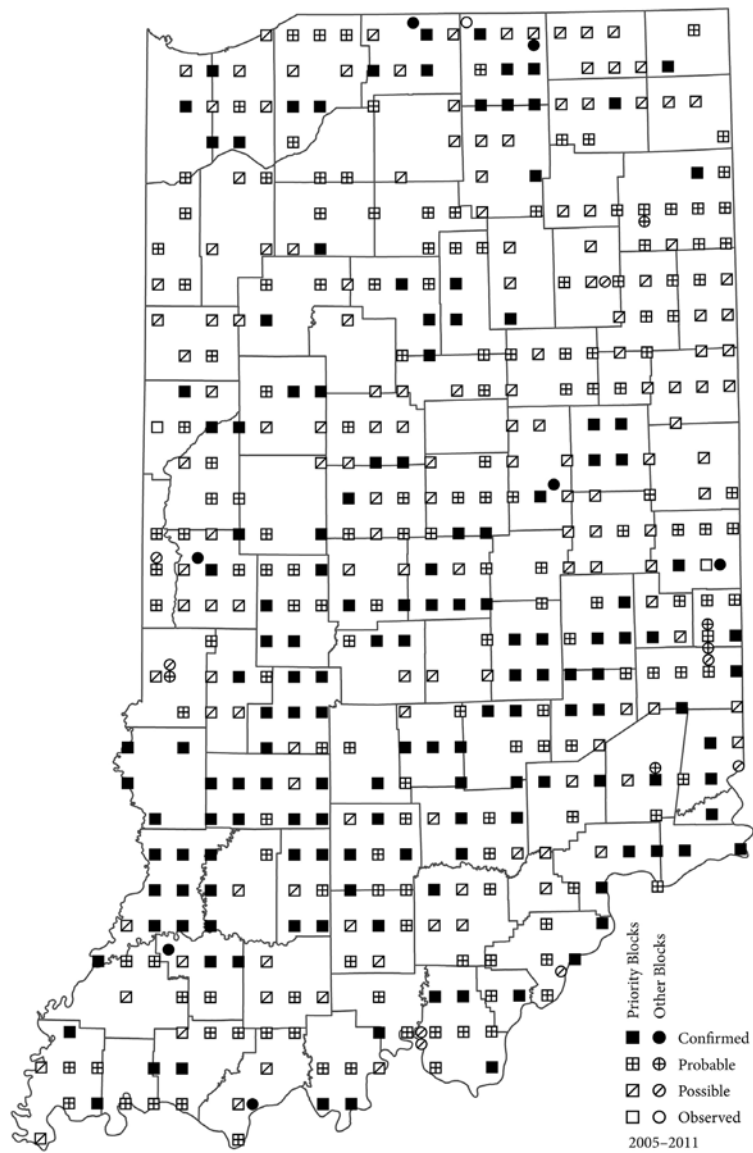


Figure 205. Map of the occurrences of the Northern Rough-winged Swallow in IBBA blocks during 2005–2011.

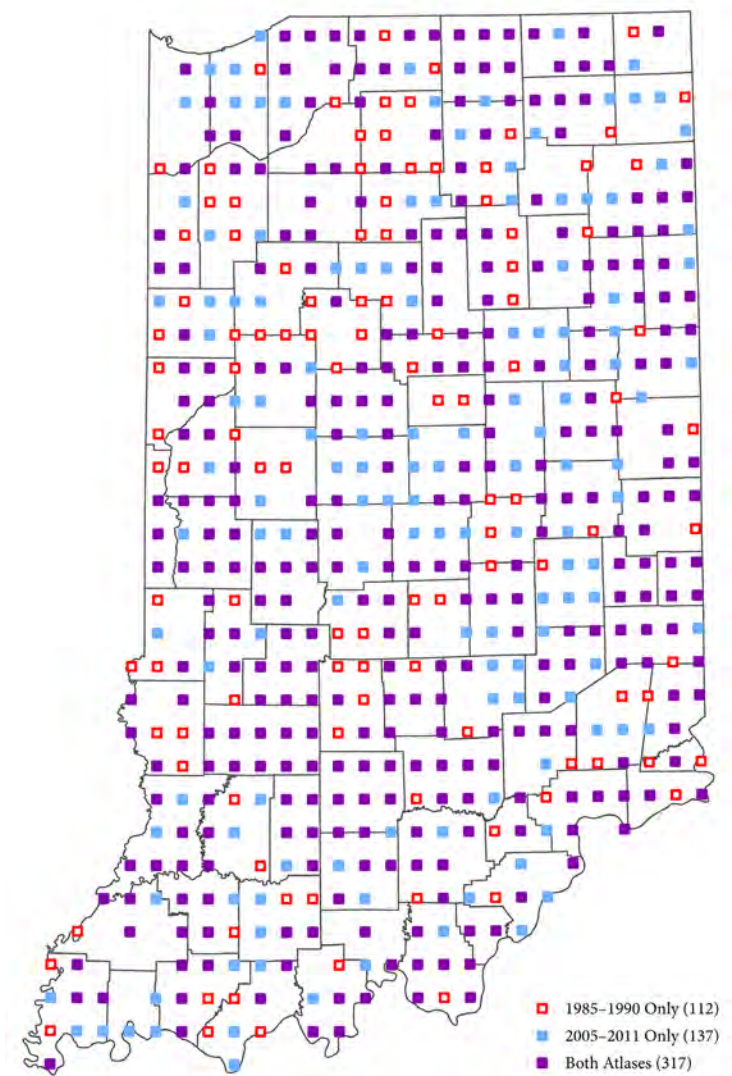


Figure 206. Map of the occurrences of the Northern Rough-winged Swallow in IBBA priority blocks during both atlas periods.

Bank Swallow



A Bank Swallow in flight, as seen from below. *Photo by Michael Brown.*

Table 129. Regional occurrence and abundance information for the Bank Swallow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | | 1985–1990 | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 22 | 30 | 55 | 2.24 | 31 | 3.94 | | | | |
| Northwest | 73 | 18 | 26 | 34 | 0.71 | 19 | 2.95 | | | | |
| Northeast | 54 | 28 | 35 | 21 | 4.71 | 12 | 5.50 | | | | |
| Central | 273 | 12 | 15 | 110 | 0.52 | 102 | 0.16 | | | | |
| West-central | 114 | 11 | 11 | 56 | 0.38 | 38 | 0.16 | | | | |
| East-central | 159 | 13 | 17 | 54 | 0.67 | 64 | 0.16 | | | | |
| South | 246 | 13 | 13 | 97 | 0.32 | 88 | 0.15 | | | | |
| Southwest | 106 | 17 | 19 | 47 | 0.28 | 39 | 0.21 | | | | |
| South-central | 87 | 9 | 8 | 35 | 0.46 | 35 | 0.14 | | | | |
| Southeast | 53 | 13 | 9 | 15 | 0.13 | 14 | 0.00 | | | | |
| Statewide | 646 | 14 | 17 | 262 | 0.81 | 221 | 0.68 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 38 | 41 | 62 | 56 |
| Probable | 18 | 19 | 28 | 25 |
| Possible | 37 | 40 | 20 | 18 |
| Sum | 93 | | 110 | |
| Observed | 12 | | - | |
| Other blocks | | | | |
| Confirmed | 18 | | 3 | |
| Probable | 1 | | 3 | |
| Possible | 2 | | 1 | |
| Sum | 21 | | 7 | |
| Observed | 2 | | - | |

Bank Swallow

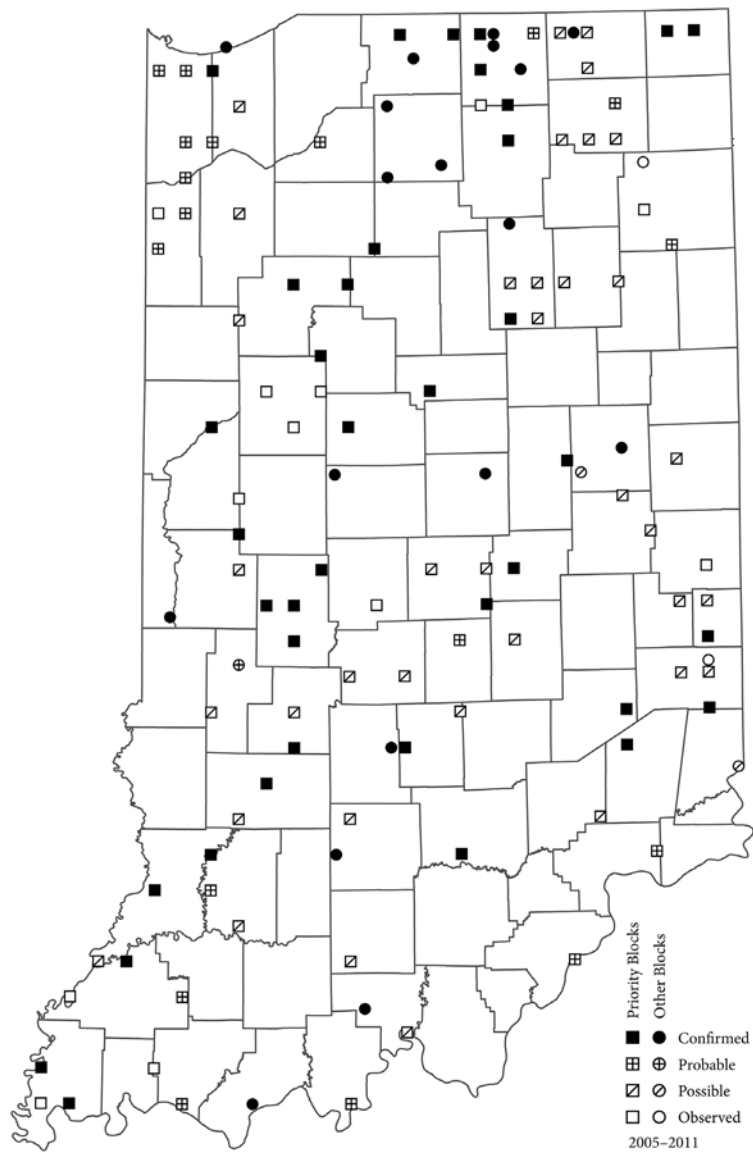


Figure 207. Map of the occurrences of the Bank Swallow in IBBA blocks during 2005–2011.

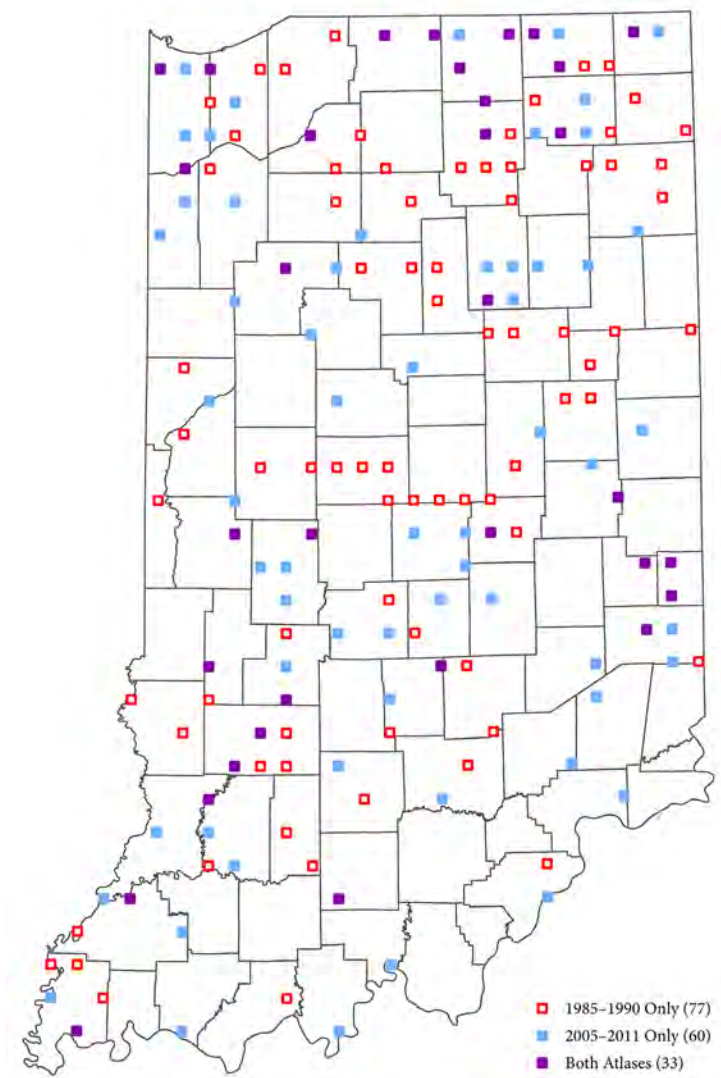


Figure 208. Map of the occurrences of the Bank Swallow in IBBA priority blocks during both atlas periods.

Cliff Swallow



A Cliff Swallow stands on a muddy bank and holds its wings up while gathering a clump of mud in its beak.
Photo by Michael Brown.

Table 130. Regional occurrence and abundance information for the Cliff Swallow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 11 | 9 | 55 | 1.93 | 31 | 0.23 | | | | |
| Northwest | 73 | 8 | 7 | 34 | 1.82 | 19 | 0.11 | | | | |
| Northeast | 54 | 15 | 11 | 21 | 2.10 | 12 | 0.42 | | | | |
| Central | 273 | 16 | 5 | 110 | 1.15 | 102 | 0.03 | | | | |
| West-central | 114 | 25 | 5 | 56 | 1.20 | 38 | 0.08 | | | | |
| East-central | 159 | 10 | 6 | 54 | 1.11 | 64 | 0.00 | | | | |
| South | 246 | 26 | 11 | 97 | 7.66 | 88 | 0.00 | | | | |
| Southwest | 106 | 33 | 11 | 47 | 4.47 | 39 | 0.00 | | | | |
| South-central | 87 | 24 | 16 | 35 | 15.23 | 35 | 0.00 | | | | |
| Southeast | 53 | 17 | 4 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 19 | 8 | 262 | 3.73 | 221 | 0.05 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 101 | 82 | 34 | 63 |
| Probable | 7 | 6 | 6 | 11 |
| Possible | 15 | 12 | 14 | 26 |
| Sum | 123 | | 54 | |
| Observed | 13 | | - | |
| Other blocks | | | | |
| Confirmed | 56 | | 16 | |
| Probable | 4 | | 0 | |
| Possible | 8 | | 0 | |
| Sum | 68 | | 16 | |
| Observed | 1 | | - | |

Cliff Swallow

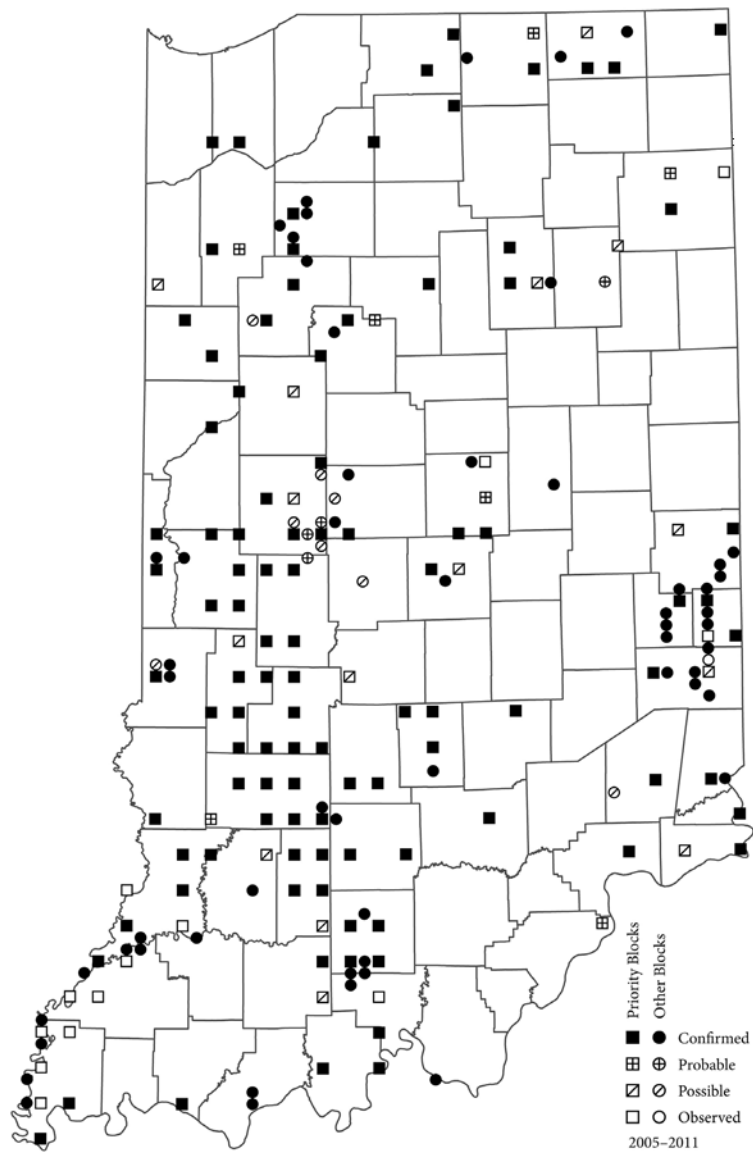


Figure 209. Map of the occurrences of the Cliff Swallow in IBBA blocks during 2005–2011.

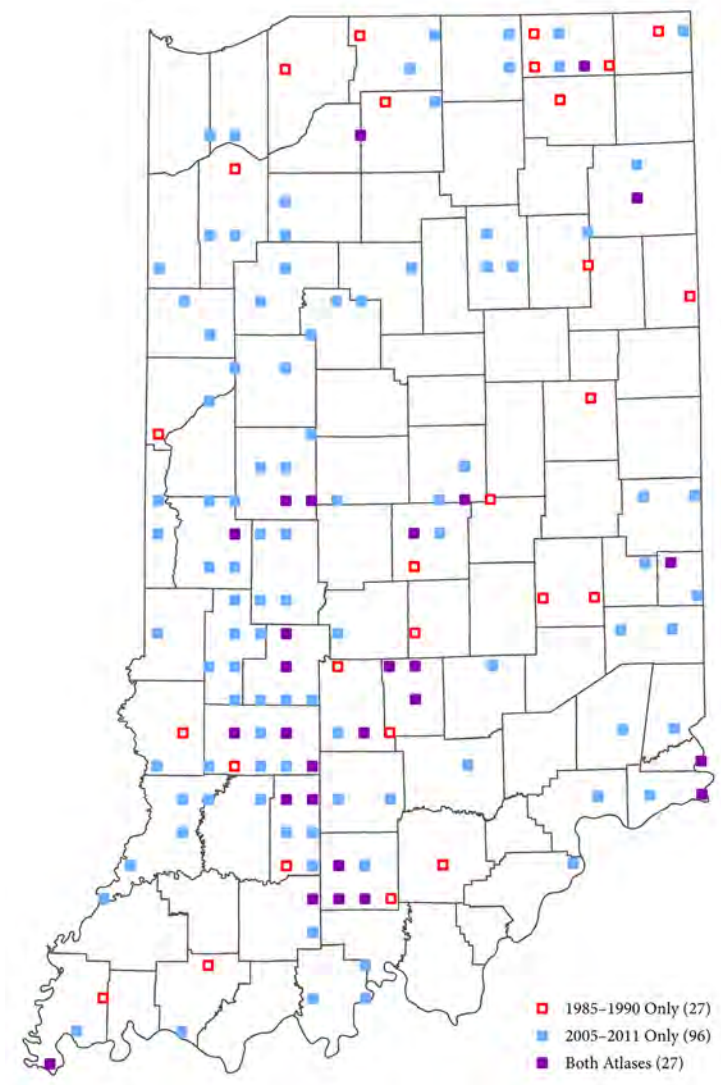


Figure 210. Map of the occurrences of the Cliff Swallow in IBBA priority blocks during both atlas periods.

Barn Swallow



A male Barn Swallow stands on top of a female perched on a branch to mate. *Photo by Ryan Sanderson.*

Table 131. Regional occurrence and abundance information for the Barn Swallow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | | 1985–1990 | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 99 | 96 | 55 | 30 | 31 | 23 | | | | |
| Northwest | 73 | 99 | 93 | 34 | 23 | 19 | 21 | | | | |
| Northeast | 54 | 100 | 100 | 21 | 42 | 12 | 26 | | | | |
| Central | 273 | 99 | 97 | 110 | 19 | 102 | 17 | | | | |
| West-central | 114 | 100 | 97 | 56 | 20 | 38 | 21 | | | | |
| East-central | 159 | 98 | 97 | 54 | 17 | 64 | 14 | | | | |
| South | 246 | 98 | 99 | 97 | 22 | 88 | 22 | | | | |
| Southwest | 106 | 98 | 97 | 47 | 19 | 39 | 18 | | | | |
| South-central | 87 | 99 | 100 | 35 | 23 | 35 | 25 | | | | |
| Southeast | 53 | 96 | 100 | 15 | 28 | 14 | 28 | | | | |
| Statewide | 646 | 99 | 98 | 262 | 22 | 221 | 20 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 526 | 83 | 474 | 75 |
| Probable | 90 | 14 | 136 | 22 |
| Possible | 21 | 3 | 20 | 3 |
| Sum | 637 | | 630 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 12 | | 10 | |
| Probable | 8 | | 6 | |
| Possible | 20 | | 3 | |
| Sum | 40 | | 19 | |
| Observed | 0 | | - | |

Barn Swallow

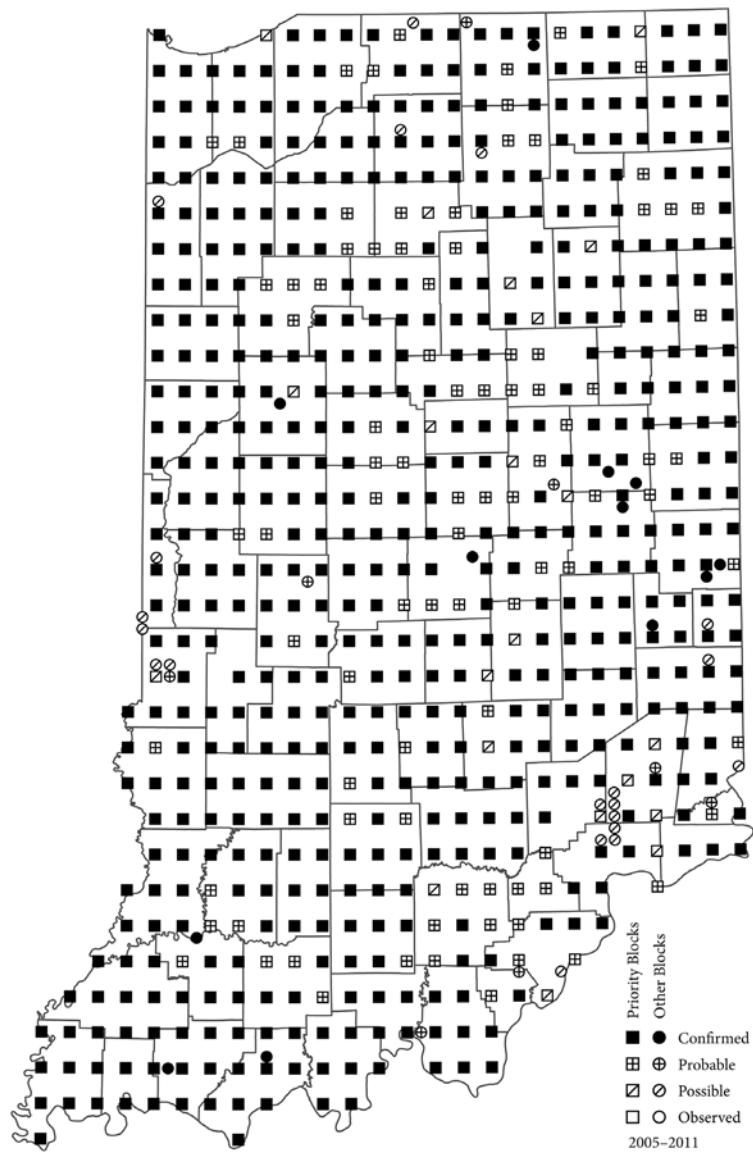


Figure 211. Map of the occurrences of the Barn Swallow in IBBA blocks during 2005–2011.

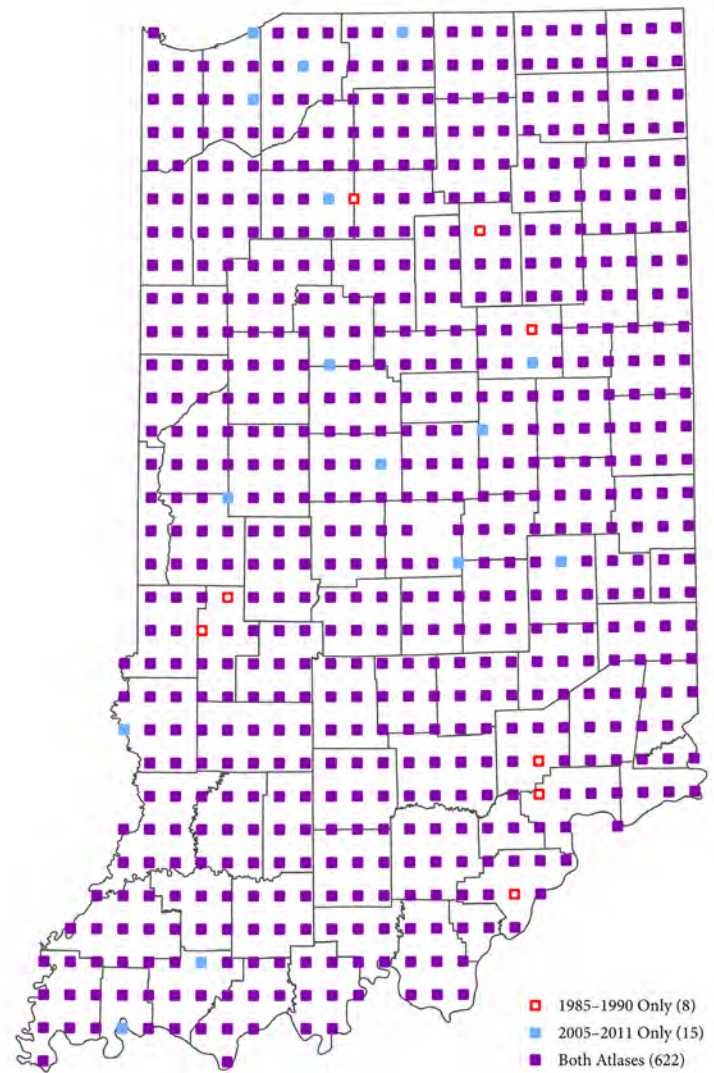


Figure 212. Map of the occurrences of the Barn Swallow in IBBA priority blocks during both atlas periods.

Chickadees and Titmice (Paridae)

Tables 132–134, Fig. 213–218

THIS GROUP CONTAINS two species of chickadee and the Tufted Titmouse, all found year-round in Indiana with little seasonal movement. All three nest in low tree cavities as well as nest boxes and prefer a mix of wooded and open habitats, both rural and urban (Smith 1993, Grubb and Pravosudov 1994, Mostrom *et al.* 2002). Diets of these species consist of insects, spiders, and other invertebrates during the warmer months, heavily supplemented by seeds, nuts, and fruits. They are among the most common species that frequent bird feeders.

The chickadees are unique among Indiana's birds in that a sharp range delineation occurs where the Carolina Chickadee replaces the Black-capped Chickadee generally south of the Wabash River. The Black-capped Chickadee has the more restricted range in Indiana, although a more widespread distribution in North America than the more southern Carolina Chickadee. The latter species becomes more abundant in southern Indiana with BBS values greatest in the south-central region. Black-capped Chickadee and Carolina Chickadee distributions in Indiana show very little overlap and a small area occurs without the presence of either species. Taken together, chickadees were reported in 90% of priority blocks with only two blocks reporting both species. The similarity in appearance between the two species, some cases of apparent hybridization, and song sharing makes precise delineation of their ever shifting range uncertain. Atlas occurrences were similar and not statistically significant between survey

periods for both chickadee species; BBS values showed few differences. Population trends based on BBS values were positive, but not statistically different for the 1985–2011 time period.

Black-capped Chickadees were found in most atlas blocks throughout Michigan, with no Carolina Chickadees recorded. Boreal Chickadees also nest in small numbers in the Upper Peninsula of Michigan, but are not found in Indiana or Ohio. The range of the Carolina Chickadee is greater than that of the Black-capped Chickadee in both Indiana and Ohio. Both species show nearly identical rates of occurrence between atlas periods in Indiana and Ohio, with a small reduction in blocks for the Black-capped Chickadee in Michigan.

The Tufted Titmouse is common throughout the state, although BBS counts show that this species becomes increasingly more abundant from northern to southern Indiana. In both atlas projects the Tufted Titmouse was found in an identical number of blocks, both times a high percentage of blocks statewide. Regional differences in occurrences seem minor, although BBS data suggest a slight decline in northern Indiana. The statewide BBS population trend showed a statistically nonsignificant increase. Tufted Titmice were found in virtually every atlas block in Indiana and Ohio. They are most common in the Southern Lower Peninsula of Michigan and virtually absent in the Upper Peninsula. Occurrences were identical between atlas periods in Indiana and Ohio, with a slight increase on the recent Michigan atlas.

Carolina Chickadee



A Carolina Chickadee perches on a thorny branch while holding dead plant matter with its beak. *Photo by Michael Brown.*

Table 132. Regional occurrence and abundance information for the Carolina Chickadee.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 11 | 12 | 55 | 0.2 | 31 | <0.1 | | | | |
| Northwest | 73 | 14 | 12 | 34 | 0.0 | 19 | 0.0 | | | | |
| Northeast | 54 | 7 | 11 | 21 | 0.4 | 12 | 0.2 | | | | |
| Central | 273 | 82 | 79 | 110 | 1.7 | 102 | 0.9 | | | | |
| West-central | 114 | 71 | 68 | 56 | 1.5 | 38 | 1.5 | | | | |
| East-central | 159 | 90 | 87 | 54 | 1.8 | 64 | 0.6 | | | | |
| South | 246 | 98 | 99 | 97 | 4.9 | 88 | 6.0 | | | | |
| Southwest | 106 | 96 | 98 | 47 | 3.3 | 39 | 3.5 | | | | |
| South-central | 87 | 100 | 100 | 35 | 6.7 | 35 | 8.8 | | | | |
| Southeast | 53 | 98 | 98 | 15 | 5.9 | 14 | 6.0 | | | | |
| Statewide | 646 | 74 | 74 | 262 | 2.6 | 221 | 2.8 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 220 | 46 | 207 | 44 |
| Probable | 223 | 47 | 234 | 49 |
| Possible | 36 | 8 | 34 | 7 |
| Sum | 479 | | 475 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 19 | | 8 | |
| Probable | 11 | | 9 | |
| Possible | 21 | | 2 | |
| Sum | 51 | | 19 | |
| Observed | 0 | | - | |

Carolina Chickadee

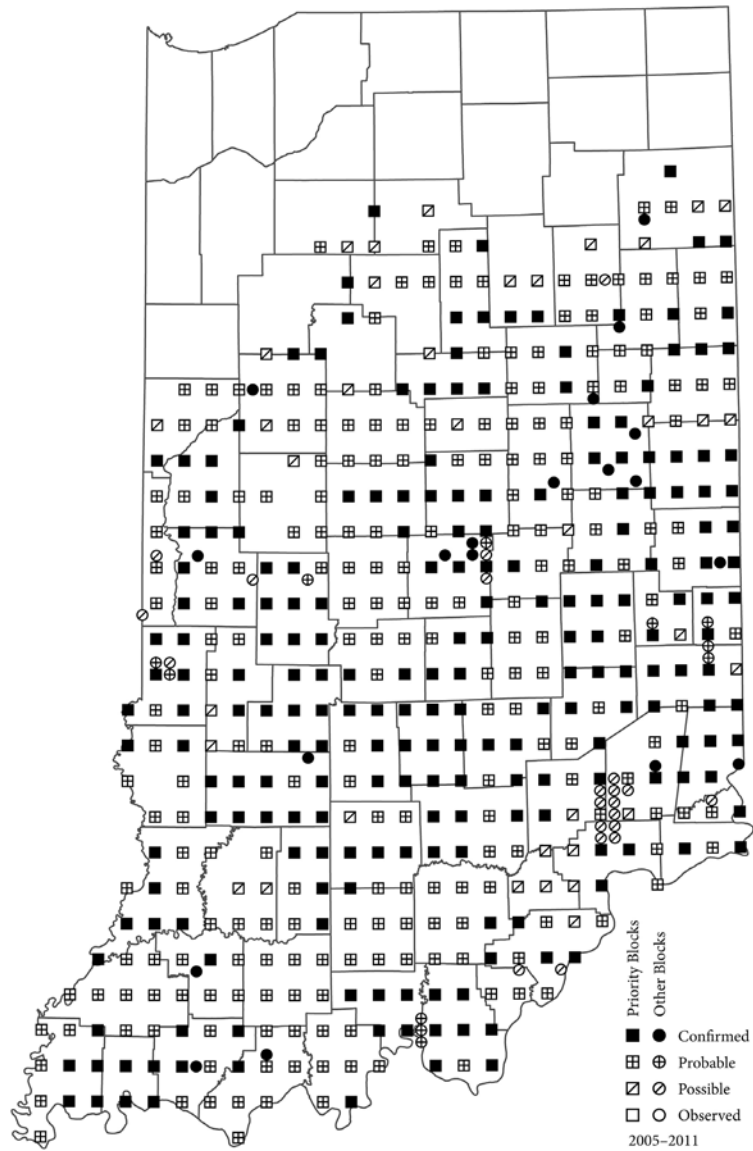


Figure 213. Map of the occurrences of the Carolina Chickadee in IBBA blocks during 2005–2011.

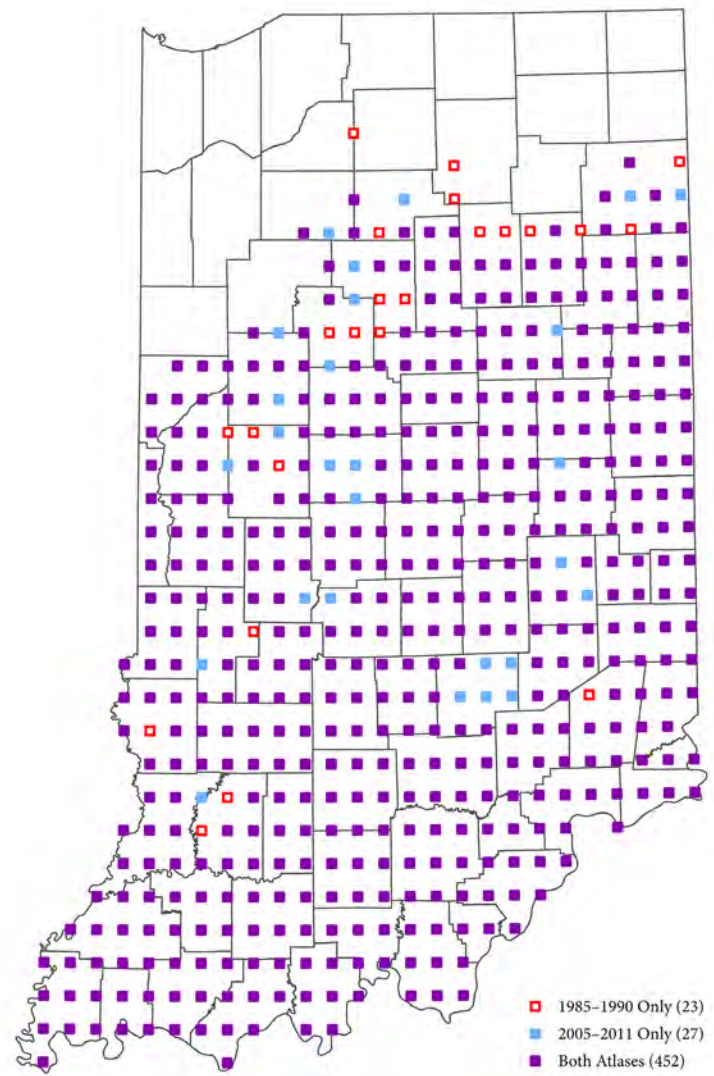


Figure 214. Map of the occurrences of the Carolina Chickadee in IBBA priority blocks during both atlas periods.

Black-capped Chickadee



A Black-capped Chickadee stands on the edge of a cut tree trunk with a pile of bird seed placed on it. *Photo by Julie Gidwitz.*

Table 133. Regional occurrence and abundance information for the Black-capped Chickadee.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|-------------|------------|-------------|---------------------|-----------|--|--|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | |
| North | 127 | 74 | 76 | 55 | 0.58 | 31 | 0.87 | | | | |
| Northwest | 73 | 64 | 73 | 34 | 0.50 | 19 | 0.47 | | | | |
| Northeast | 54 | 87 | 80 | 21 | 0.71 | 12 | 1.50 | | | | |
| Central | 273 | 4 | 5 | 110 | 0.00 | 102 | 0.04 | | | | |
| West-central | 114 | <1 | 3 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 6 | 8 | 54 | 0.00 | 64 | 0.06 | | | | |
| South | 246 | 0 | 0 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 16 | 17 | 262 | 0.12 | 221 | 0.14 | | | | |

| | Breeding Bird Atlas | | Breeding Bird Atlas | |
|------------------------|---------------------|-----------|---------------------|-----------|
| | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 |
| Priority Blocks | | | | |
| Confirmed | 44 | 42 | 28 | 25 |
| Probable | 50 | 48 | 59 | 53 |
| Possible | 10 | 10 | 24 | 22 |
| Sum | 104 | | 111 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 1 | |
| Probable | 2 | | 0 | |
| Possible | 2 | | 1 | |
| Sum | 9 | | 2 | |
| Observed | 0 | | - | |

Black-capped Chickadee

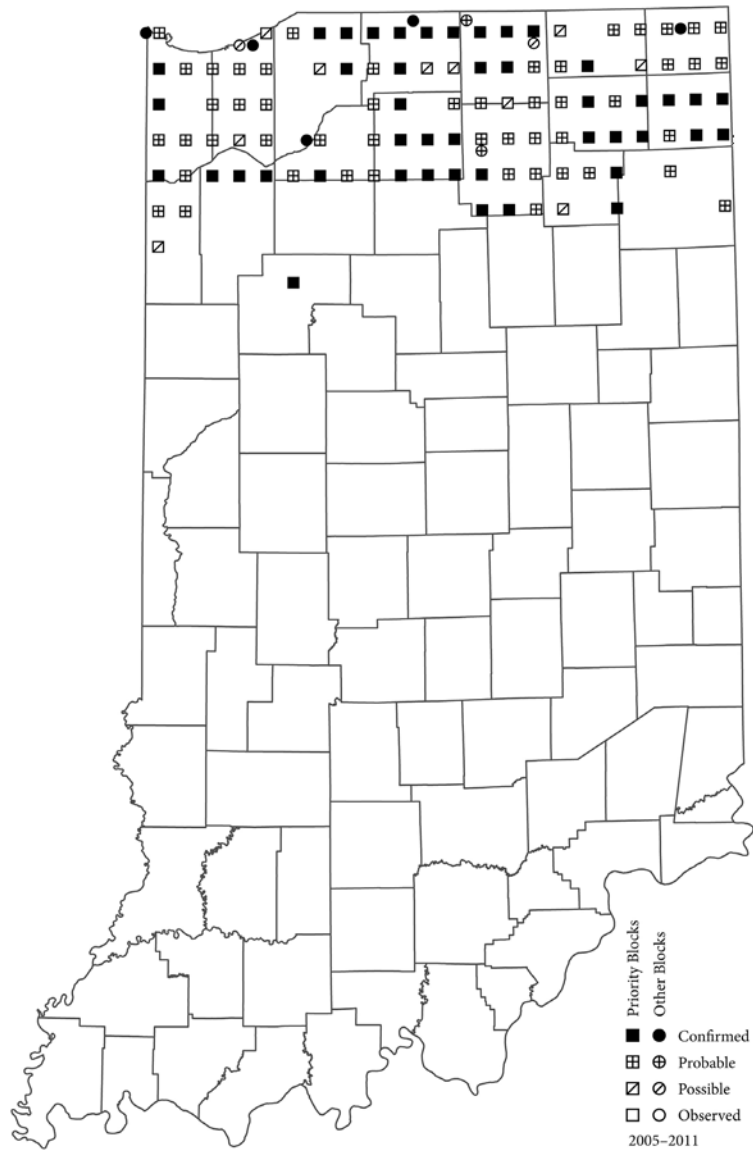


Figure 215. Map of the occurrences of the Black-capped Chickadee in IBBA blocks during 2005–2011.

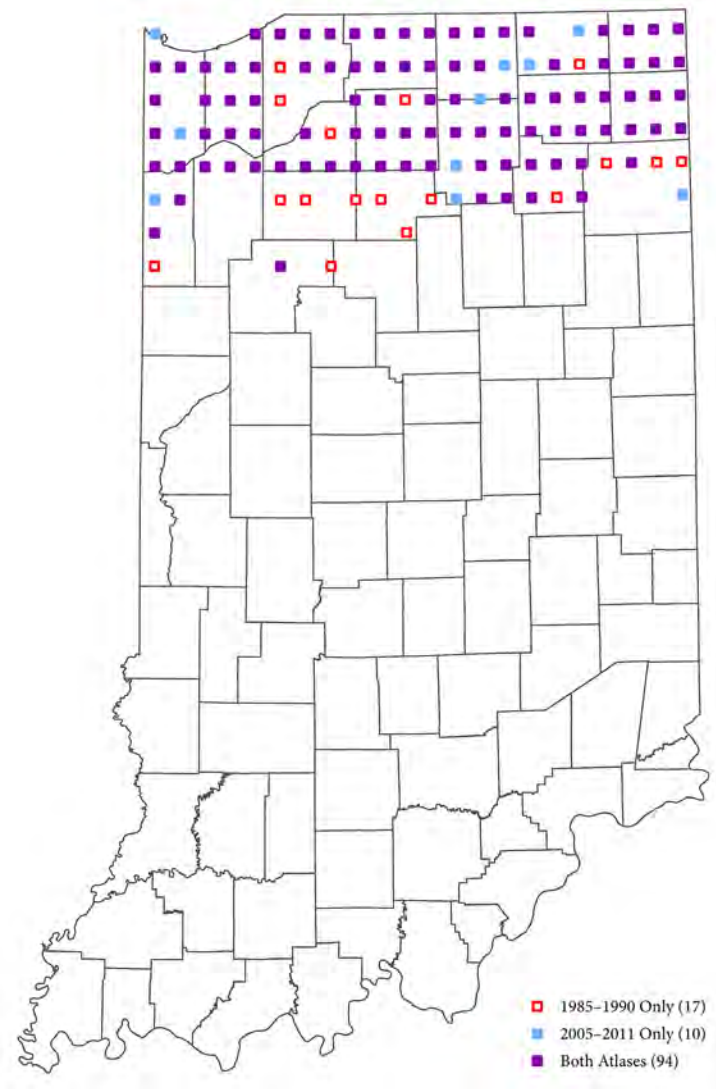


Figure 216. Map of the occurrences of the Black-capped Chickadee in IBBA priority blocks during both atlas periods.

Tufted Titmouse



A Tufted Titmouse holds an insect larva with its beak while standing on a broken branch. *Photo by Michael Brown.*

Table 134. Regional occurrence and abundance information for the Tufted Titmouse.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 90 | 87 | 55 | 2.3 | 31 | 5.6 | | | | |
| Northwest | 73 | 84 | 82 | 34 | 2.0 | 19 | 5.1 | | | | |
| Northeast | 54 | 98 | 94 | 21 | 2.8 | 12 | 6.6 | | | | |
| Central | 273 | 90 | 90 | 110 | 5.1 | 102 | 6.2 | | | | |
| West-central | 114 | 82 | 81 | 56 | 5.2 | 38 | 7.3 | | | | |
| East-central | 159 | 96 | 97 | 54 | 4.9 | 64 | 5.5 | | | | |
| South | 246 | 100 | 100 | 97 | 14.9 | 88 | 14.4 | | | | |
| Southwest | 106 | 99 | 100 | 47 | 11.3 | 39 | 10.8 | | | | |
| South-central | 87 | 100 | 100 | 35 | 21.3 | 35 | 18.3 | | | | |
| Southeast | 53 | 100 | 100 | 15 | 10.8 | 14 | 14.9 | | | | |
| Statewide | 646 | 93 | 93 | 262 | 8.1 | 221 | 9.4 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 229 | 38 | 254 | 42 |
| Probable | 331 | 55 | 295 | 49 |
| Possible | 44 | 7 | 55 | 9 |
| Sum | 604 | | 604 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 15 | | 7 | |
| Probable | 18 | | 10 | |
| Possible | 18 | | 4 | |
| Sum | 51 | | 21 | |
| Observed | 0 | | - | |

Tufted Titmouse

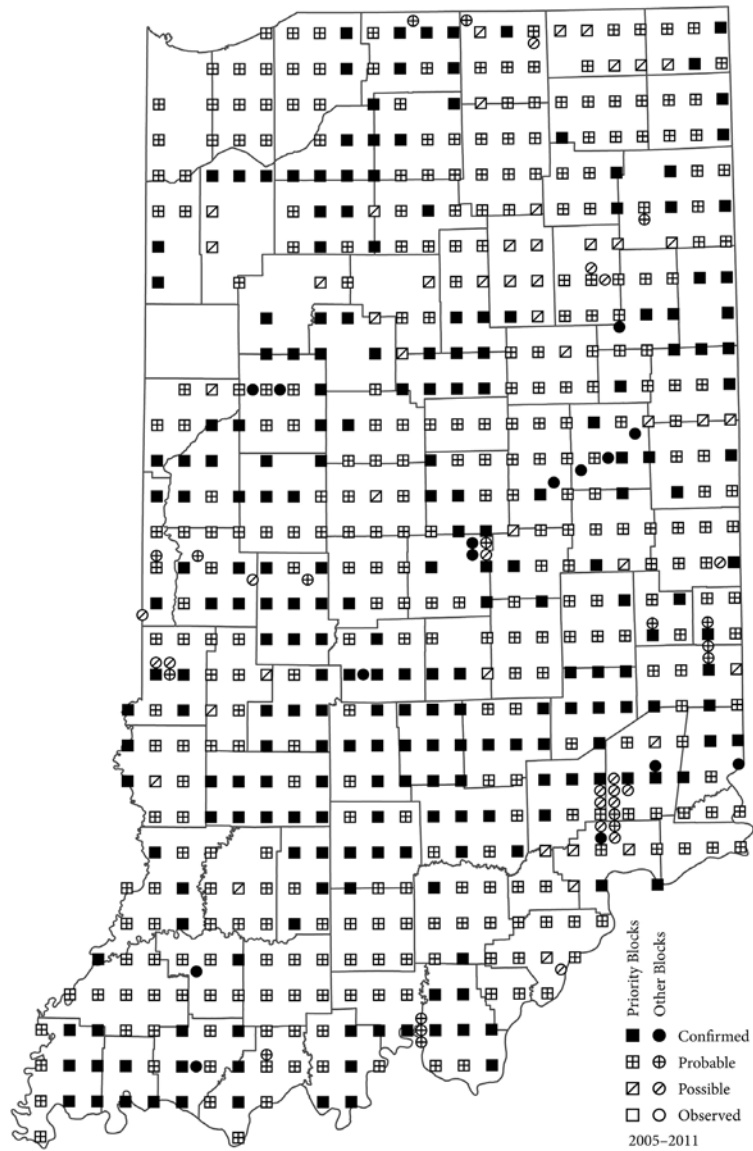


Figure 217. Map of the occurrences of the Tufted Titmouse in IBBA blocks during 2005–2011.

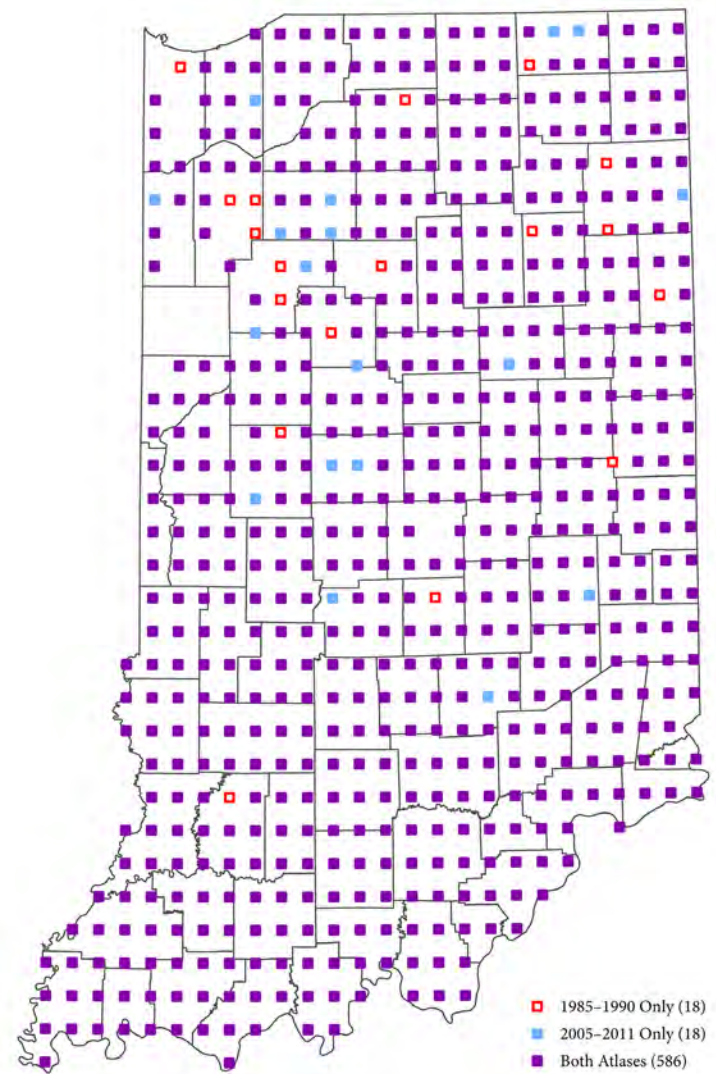


Figure 218. Map of the occurrences of the Tufted Titmouse in IBBA priority blocks during both atlas periods.

Nuthatches (Sittidae)

Tables 135–136, Fig. 219–221

TWO SPECIES OF nuthatches are regularly found in Indiana. The White-breasted Nuthatch is a common bird throughout Indiana and favors a mix of forest and open habitats with nesting occurring in tree cavities (Pravosudov and Grubb 1993). As a permanent resident in the state, it regularly visits feeders; dines on seeds and suet; and searches the bark of trees for insects, spiders, and other invertebrates. White-breasted Nuthatches were found in most priority blocks during the 2005–2011 atlas project, with somewhat lower frequencies in northwestern and west-central regions. Breeding Bird Surveys show that densities were greatest in the more heavily forested regions of southern Indiana. Values suggest a small and statistically significant increase in occurrence between atlas periods and the positive population trend in Indiana on the BBS for 1985–2011 was statistically significant. White-breasted Nuthatch was found in nearly all atlas blocks in Indiana and Ohio. They were widespread in Michigan, although rates of occurrence were lower in the Upper Peninsula. Records were slightly more numerous on the recent atlases in Indiana and Michigan, but declined slightly in Michigan.

Red-breasted Nuthatch was not found on the 1985–1990 atlas, but was sporadically recorded during the 2005–2011 period with three instances of confirmed breeding. This species has habits similar to the White-breasted Nuthatch, but it favors coniferous forests (Ghalambor and Martin 1999). Its normal breeding range is north of Indiana in the Great Lake States and Canada. All blocks with this species were in the northern part of the state. More recent reports of recently fledged young in Delaware (2017) and Elkhart (2018) counties represent the ninth and tenth records of breeding for this species in Indiana (Brock 2017, 2018). During winters when food supplies are in short supply, moderate numbers of Red-breasted Nuthatches venture south to Indiana, while at other times they are virtually absent. Red-breasted Nuthatches commonly breed in the Upper Peninsula and Northern Lower Peninsula of Michigan, but are infrequent nesters in northern Ohio and rare in Indiana. A moderate increase in the rate of occurrence was seen between atlas periods in Michigan.

Red-breasted Nuthatch



A male Red-breasted Nuthatch grasps onto a small vertical branch. *Photo by Shari McCollough.*

Table 135. Regional occurrence and abundance information for the Red-breasted Nuthatch.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|-----------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 2 | 0 | 55 | 0.02 | 31 | 0.00 | | | | |
| Northwest | 73 | 3 | 0 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 2 | 0 | 21 | 0.05 | 12 | 0.00 | | | | |
| Central | 273 | 0 | 0 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 0 | 0 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | <1 | 0 | 262 | <0.01 | 221 | 0.00 | | | | |

| | No. | % | No. | % |
|------------------------|----------|----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 1 | 33 | 0 | |
| Probable | 1 | 33 | 0 | |
| Possible | 1 | 33 | 0 | |
| Sum | 3 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 2 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 2 | | 0 | |
| Observed | 1 | | - | |

Red-breasted Nuthatch



Figure 219. Map of the occurrences of the Red-breasted Nuthatch in IBBA blocks during 2005–2011.

White-breasted Nuthatch



A male White-breasted Nuthatch holds a sunflower seed with its beak while clinging to a tree trunk.
Photo by Shari McCollough.

Table 136. Regional occurrence and abundance information for the White-breasted Nuthatch.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 91 | 88 | 55 | 1.6 | 31 | 2.4 | | | | |
| Northwest | 73 | 84 | 84 | 34 | 1.1 | 19 | 1.8 | | | | |
| Northeast | 54 | 100 | 94 | 21 | 2.5 | 12 | 3.3 | | | | |
| Central | 273 | 90 | 84 | 110 | 1.9 | 102 | 1.4 | | | | |
| West-central | 114 | 79 | 71 | 56 | 2.2 | 38 | 1.6 | | | | |
| East-central | 159 | 97 | 94 | 54 | 1.5 | 64 | 1.2 | | | | |
| South | 246 | 96 | 95 | 97 | 4.7 | 88 | 4.1 | | | | |
| Southwest | 106 | 96 | 91 | 47 | 2.5 | 39 | 1.3 | | | | |
| South-central | 87 | 98 | 100 | 35 | 7.8 | 35 | 7.3 | | | | |
| Southeast | 53 | 94 | 94 | 15 | 4.1 | 14 | 3.9 | | | | |
| Statewide | 646 | 92 | 89 | 262 | 2.9 | 221 | 2.6 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 153 | 26 | 140 | 24 |
| Probable | 385 | 64 | 364 | 63 |
| Possible | 59 | 10 | 71 | 12 |
| Sum | 597 | | 575 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 12 | | 4 | |
| Probable | 13 | | 13 | |
| Possible | 17 | | 7 | |
| Sum | 42 | | 24 | |
| Observed | 0 | | - | |

White-breasted Nuthatch

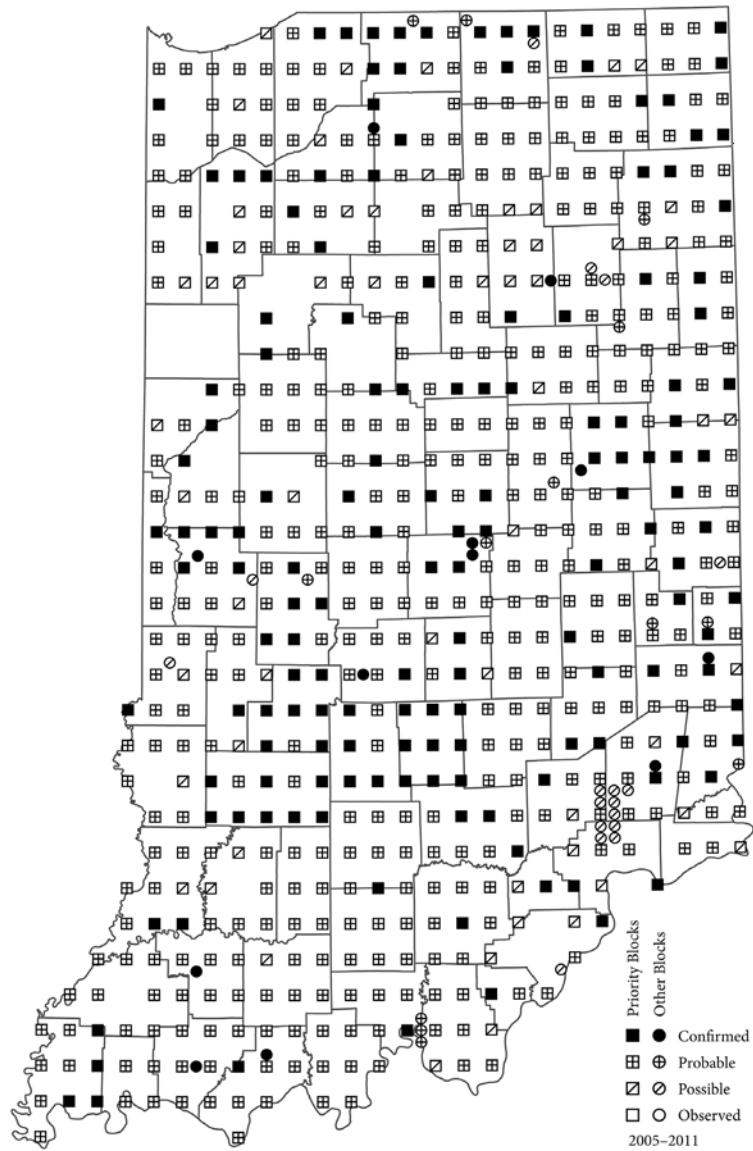


Figure 220. Map of the occurrences of the White-breasted Nuthatch in IBBA blocks during 2005-2011.

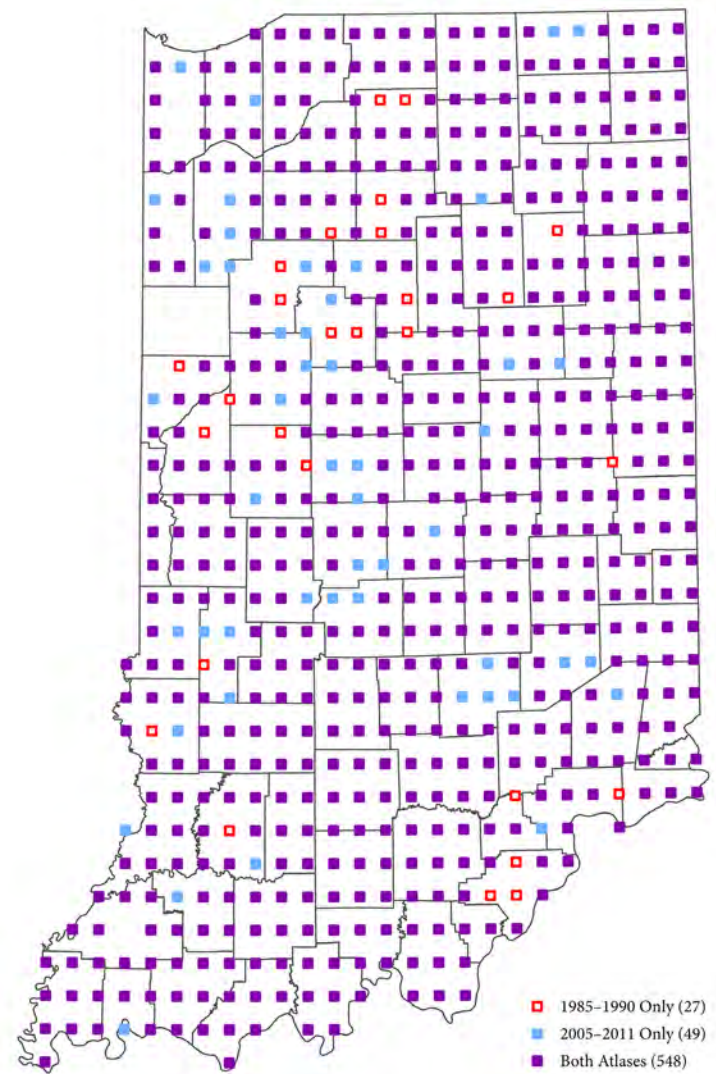


Figure 221. Map of the occurrences of the White-breasted Nuthatch in IBBA priority blocks during both atlas periods.

Creepers (Certhiidae)

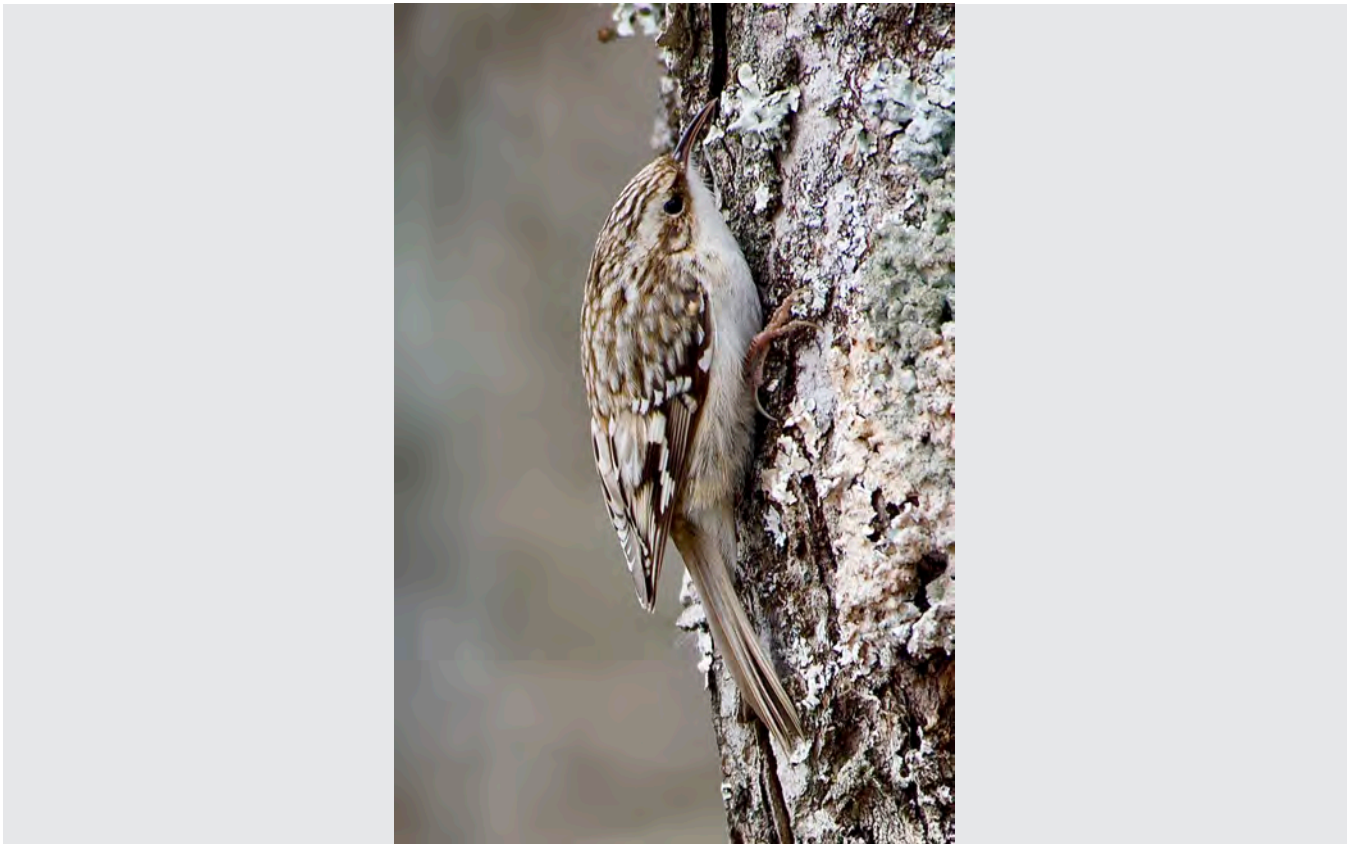
Table 137, Fig. 222–223

THE BROWN CREEPER is an easily overlooked bird that nests in small numbers in Indiana. During the summer it is most often found along wooded riparian areas near water where it nests under the loose bark of a tree and probes for insects and spiders in tree crevices (Hejl *et al.* 2002). Gorney (2000) provided an extensive review of the historical occurrence of the Brown Creeper in Indiana as well as a study of a nesting population in Marion County. On the current atlas, Brown Creepers were found in a small number of blocks throughout Indiana with the number of records increasing over the previous atlas project, although the difference was not

statistically significant. Most observations of Brown Creeper occur in Indiana during fall and spring migration periods, but this species regularly winters and is least common during the summer season.

Among the Indiana, Michigan, and Ohio atlases, Brown Creeper was found in higher frequencies in Michigan, especially more northern areas, and in similarly low rates in Indiana and Ohio. Ohio records are mostly in the northeastern part of the state and widely scattered elsewhere. All three states reported more observations of this species in the more recent atlas.

Brown Creeper



A Brown Creeper clings vertically to a tree trunk. *Photo by Stephen Bell.*

Table 137. Regional occurrence and abundance information for the Brown Creeper.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 3 | <1 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 1 | 1 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 6 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | <1 | <1 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 1 | <1 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 3 | 2 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | <1 | 2 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 3 | 5 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 6 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 2 | 1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|----------|----|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 2 | 25 |
| Probable | 5 | 38 | 2 | 25 |
| Possible | 8 | 62 | 4 | 50 |
| Sum | 13 | | 8 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 4 | | 2 | |
| Probable | 5 | | 1 | |
| Possible | 5 | | 2 | |
| Sum | 14 | | 5 | |
| Observed | 0 | | - | |

Brown Creeper

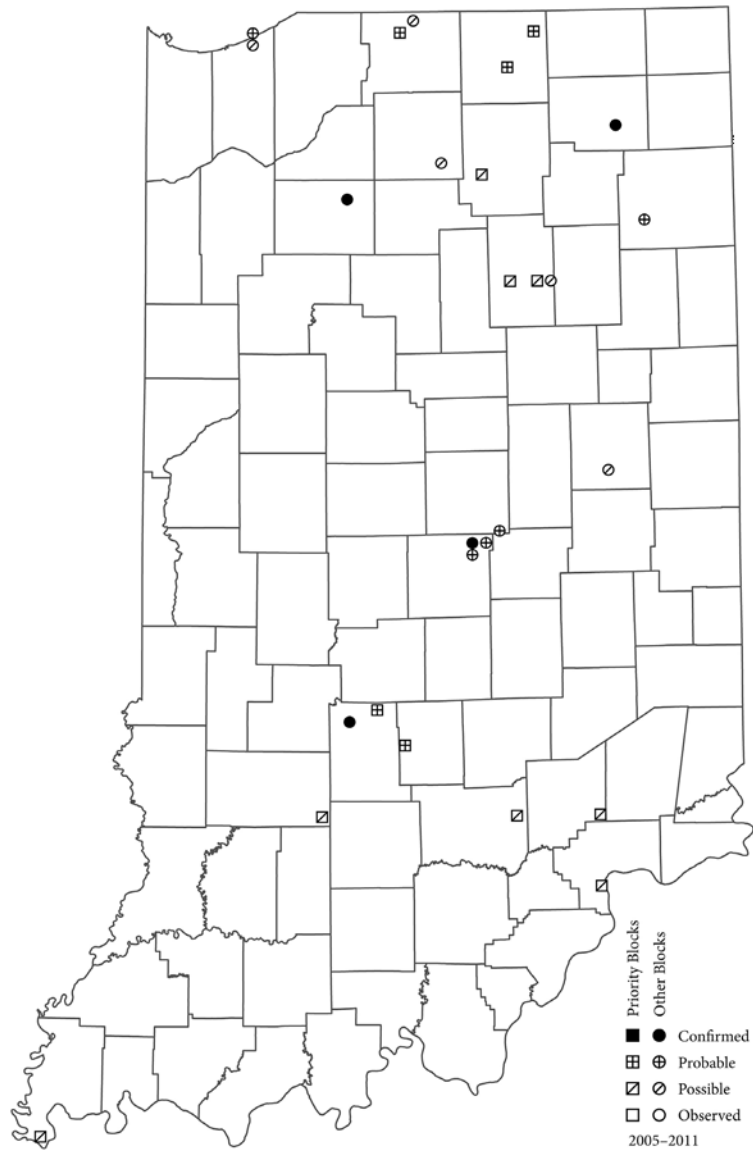


Figure 222. Map of the occurrences of the Brown Creeper in IBBA blocks during 2005–2011.

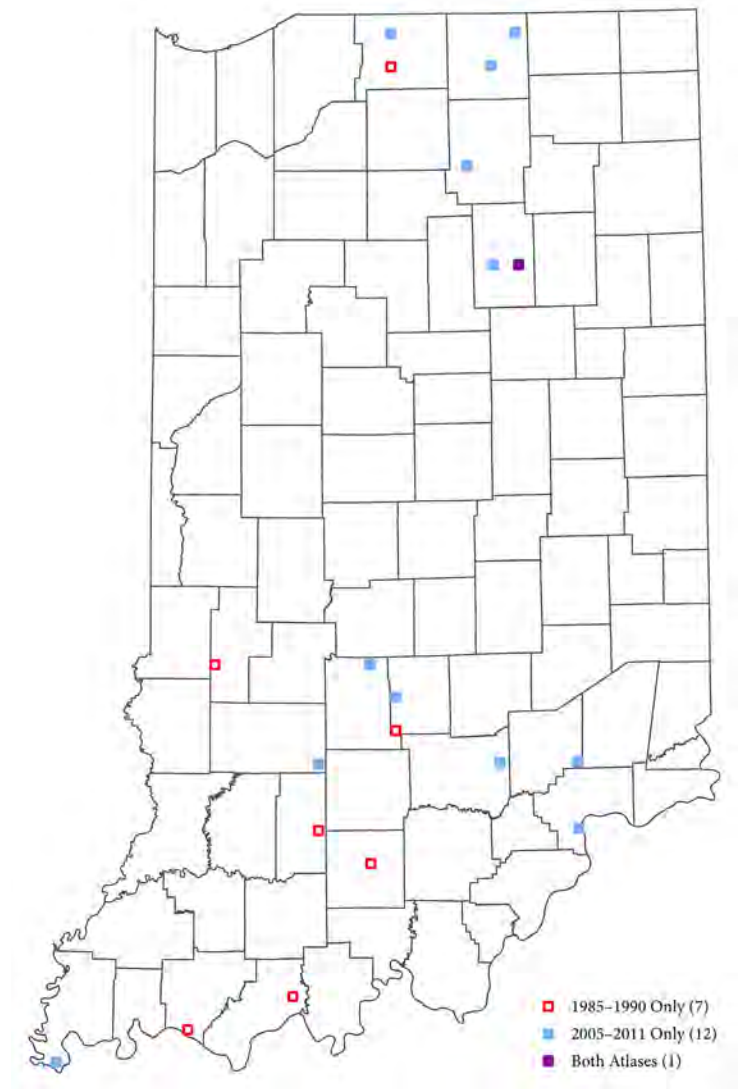


Figure 223. Map of the occurrences of the Brown Creeper in IBBA priority blocks during both atlas periods.

Wrens (Troglodytidae)

Tables 138–143, Fig. 224–233

THIS GROUP CONTAINS two common species (House Wren and Carolina Wren) that inhabit brushy areas and two others (Sedge Wren, Marsh Wren) that regularly breed at much lower densities in wetland habitats. In addition, the Bewick's Wren formerly nested in the state. Summer records of Winter Wren are rare; this species has never been known to breed in Indiana. The Carolina Wren is the only wren to winter in large numbers in Indiana, while the other breeding wrens are short-distance migrants and seldom found during the winter. The Winter Wren breeds north of Indiana, but regularly winters in small numbers.

The House Wren was the most common wren detected on the atlas, being found in virtually all blocks in all regions except for south-central and southeastern Indiana. Breeding Bird Surveys also show the House Wren to be much more common in central and northern Indiana as well as western parts of each major region. The Carolina Wren was the second most common wren on the atlas. It was detected in almost all blocks in southern Indiana, but was less often detected northward. Regional abundance from the BBS data shows a similar but more pronounced pattern with greatest densities in south-central Indiana. Sedge Wren was found in relatively few atlas blocks. More were reported in northern and central Indiana, with BBS densities showing a similar regional pattern. The Marsh Wren is the least common of the regularly breeding wren species in Indiana, with most records in northern regions. Bewick's Wren and Winter Wren were included in the Indiana atlas based on single records, both with unconfirmed breeding evidence. Neither was detected on BBS routes.

House Wren occurred in a similar number of blocks in each atlas period, with little regional difference except for fewer detections in southeastern Indiana and more records in the south-central region. Densities on BBS routes showed a similar pattern, although populations appear to have increased moderately in all major portions of the state. Carolina Wren numbers showed moderate, consistent, and statistically significant increases between atlas periods in both atlas frequencies and BBS densities, with the greatest differences seen in

central and northern Indiana. Records of Sedge Wren and Marsh Wren increased somewhat between atlas periods, mostly in northern and central regions, and the difference was statistically significant for Sedge Wren. House Wren and Carolina Wren populations increased significantly on BBS routes from 1985–2011, while the trend for Sedge Wren, although positive, was not statistically significant.

Among the atlas projects in Indiana, Ohio, and Michigan, House Wrens occurred in the most blocks compared to other wren species. Occurrence rates were similar between atlas periods in Indiana and Ohio, and somewhat lower in Michigan. Carolina Wrens were only slightly less likely to be encountered in Indiana and Ohio. This species is mostly confined to the three southern tiers of counties in Michigan. Many more Carolina Wrens were reported on the recent atlases in all three states. Winter Wren was the second most frequent wren species in Michigan where they breed commonly in the Upper Peninsula and the Northern Lower Peninsula. They have not been confirmed breeding in Indiana, although they do nest in low numbers in Ohio, primarily in the northeastern part of the state. Values were moderately higher for this species on the second atlases in Michigan and Ohio. Sedge Wrens nest in moderate numbers in scattered locations throughout Indiana, Ohio, and Michigan and the number of blocks recording this species was moderately to substantially greater on the recent atlases in all three states. Marsh Wrens were fewer in number than Sedge Wrens in all three states with a decidedly northern distribution in Indiana and Ohio. Differences in the number of observations between atlas periods were small. The Bewick's Wren was confirmed nesting in two blocks on the first Ohio atlas, but there have been no recent nesting records for this species in all three states.

The diet of wrens consists almost entirely of invertebrates, mainly insects and spiders, but also millipedes and snails (Haggerty and Morton 1995, Kennedy and White 1997, Kroodsmas and Verner 1997, Johnson 1998, Herkert *et al.* 2001, Hejl *et al.* 2002). House Wrens and Carolina Wrens are found in a variety of

habitats in Indiana including forests, woodland edges, and around human dwellings. House Wrens can be abundant in bottomland forests as well as in small towns where brushy areas are present. Carolina Wrens prefer more upland forests and more rural areas. Both species are cavity nesters using tree cavities, nest boxes, and other recesses where they construct their nests of sticks (House Wren) and leaves (Carolina Wren). Sedge Wrens and Marsh Wrens, on the other hand, prefer open habitat and build globular nests of grass, cattails,

and other soft vegetation. Marsh Wrens inhabit extensive, emergent marshes, especially those dominated by cattails. Sedge Wrens are found in drier areas of marshes, sedge meadows, and even in upland grasslands, including reclaimed mine lands. Habitats and habits of the Bewick's Wren are similar to those of the House Wren. Competition between these species is the primary cause for the total regional loss of Bewick's Wren in the eastern United States.

House Wren



A House Wren holds a small clump of grasses with its beak while standing atop a dead tree. *Photo by Ryan Sanderson.*

Table 138. Regional occurrence and abundance information for the House Wren.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 97 | 97 | 55 | 14.7 | 31 | 11.3 | | | | |
| Northwest | 73 | 95 | 96 | 34 | 14.9 | 19 | 13.3 | | | | |
| Northeast | 54 | 100 | 98 | 21 | 14.2 | 12 | 8.2 | | | | |
| Central | 273 | 97 | 99 | 110 | 15.3 | 102 | 10.4 | | | | |
| West-central | 114 | 99 | 97 | 56 | 17.9 | 38 | 16.9 | | | | |
| East-central | 159 | 95 | 100 | 54 | 12.7 | 64 | 6.5 | | | | |
| South | 246 | 77 | 74 | 97 | 3.6 | 88 | 2.8 | | | | |
| Southwest | 106 | 92 | 92 | 47 | 5.2 | 39 | 5.1 | | | | |
| South-central | 87 | 62 | 47 | 35 | 1.7 | 35 | 0.3 | | | | |
| Southeast | 53 | 72 | 81 | 15 | 2.7 | 14 | 2.8 | | | | |
| Statewide | 646 | 89 | 89 | 262 | 10.8 | 221 | 7.5 | | | | |

| | Breeding Bird Atlas | | Breeding Bird Atlas | |
|------------------------|---------------------|----|---------------------|----|
| | 2005–2011 | % | 1985–1990 | % |
| Priority Blocks | | | | |
| Confirmed | 281 | 49 | 212 | 37 |
| Probable | 245 | 43 | 309 | 54 |
| Possible | 50 | 9 | 53 | 9 |
| Sum | 576 | | 574 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 17 | | 9 | |
| Probable | 13 | | 8 | |
| Possible | 9 | | 2 | |
| Sum | 39 | | 19 | |
| Observed | 0 | | - | |

House Wren

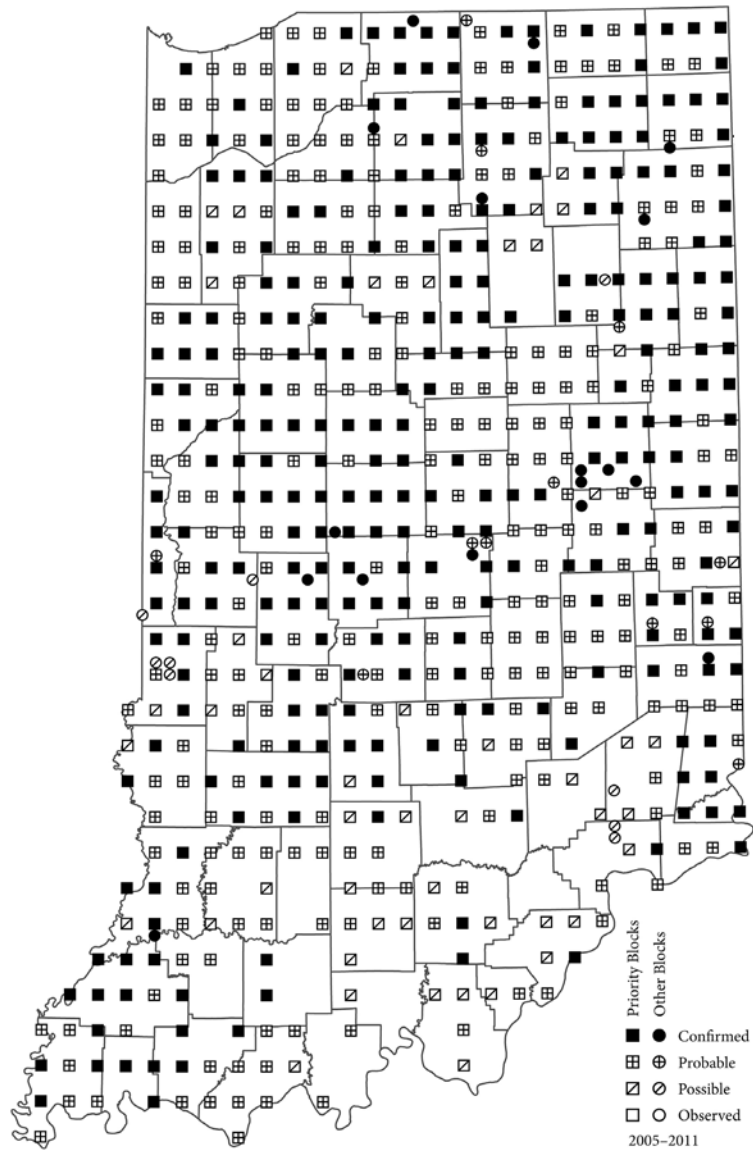


Figure 224. Map of the occurrences of the House Wren in IBBA blocks during 2005–2011.

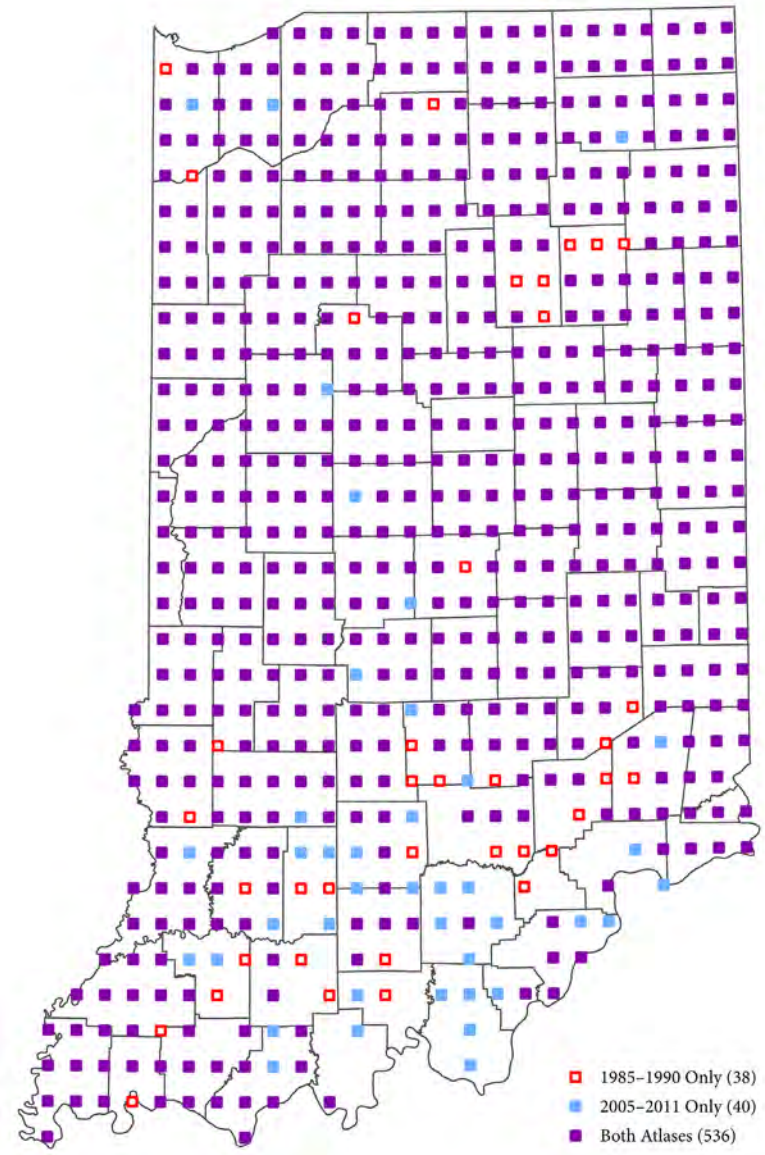


Figure 225. Map of the occurrences of the House Wren in IBBA priority blocks during both atlas periods.

Winter Wren



A Winter Wren stands on a tree branch. *Photo by Shari McCollough.*

Table 139. Regional occurrence and abundance information for the Winter Wren.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|------------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | <1 | 0 | 55 | 0 | 31 | 0 | Priority Blocks | | | |
| Northwest | 73 | 1 | 0 | 34 | 0 | 19 | 0 | Confirmed | 0 | 0 | 0 |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | Probable | 1 | 100 | 0 |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | Possible | 0 | 0 | 0 |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | Sum | 1 | | 0 |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | Observed | 0 | | - |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | Other blocks | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | Confirmed | 0 | | 0 |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | Probable | 0 | | 0 |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | Possible | 0 | | 0 |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | Sum | 0 | | 0 |
| | | | | | | | | Observed | 0 | | - |

Winter Wren



Figure 226. Map of the occurrences of the Winter Wren in IBBA blocks during 2005–2011.

Sedge Wren



A Sedge Wren clings to reeds, grasping a different stalk in each foot. *Photo by Ryan Sanderson.*

Table 140. Regional occurrence and abundance information for the Sedge Wren.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 11 | 8 | 55 | 0.24 | 31 | 0.00 | | | | |
| Northwest | 73 | 11 | 4 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 11 | 13 | 21 | 0.62 | 12 | 0.00 | | | | |
| Central | 273 | 12 | 4 | 110 | 0.05 | 102 | 0.08 | | | | |
| West-central | 114 | 18 | 6 | 56 | 0.09 | 38 | 0.21 | | | | |
| East-central | 159 | 9 | 2 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 7 | 7 | 97 | 0.00 | 88 | 0.03 | | | | |
| Southwest | 106 | 10 | 11 | 47 | 0.00 | 39 | 0.05 | | | | |
| South-central | 87 | 5 | 3 | 35 | 0.00 | 35 | 0.03 | | | | |
| Southeast | 53 | 6 | 4 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 10 | 6 | 262 | 0.07 | 221 | 0.05 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 1 | 2 | 2 | 5 |
| Probable | 37 | 56 | 15 | 41 |
| Possible | 28 | 42 | 20 | 54 |
| Sum | 66 | | 37 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 4 | | 3 | |
| Probable | 14 | | 8 | |
| Possible | 12 | | 13 | |
| Sum | 30 | | 24 | |
| Observed | 0 | | - | |

Sedge Wren

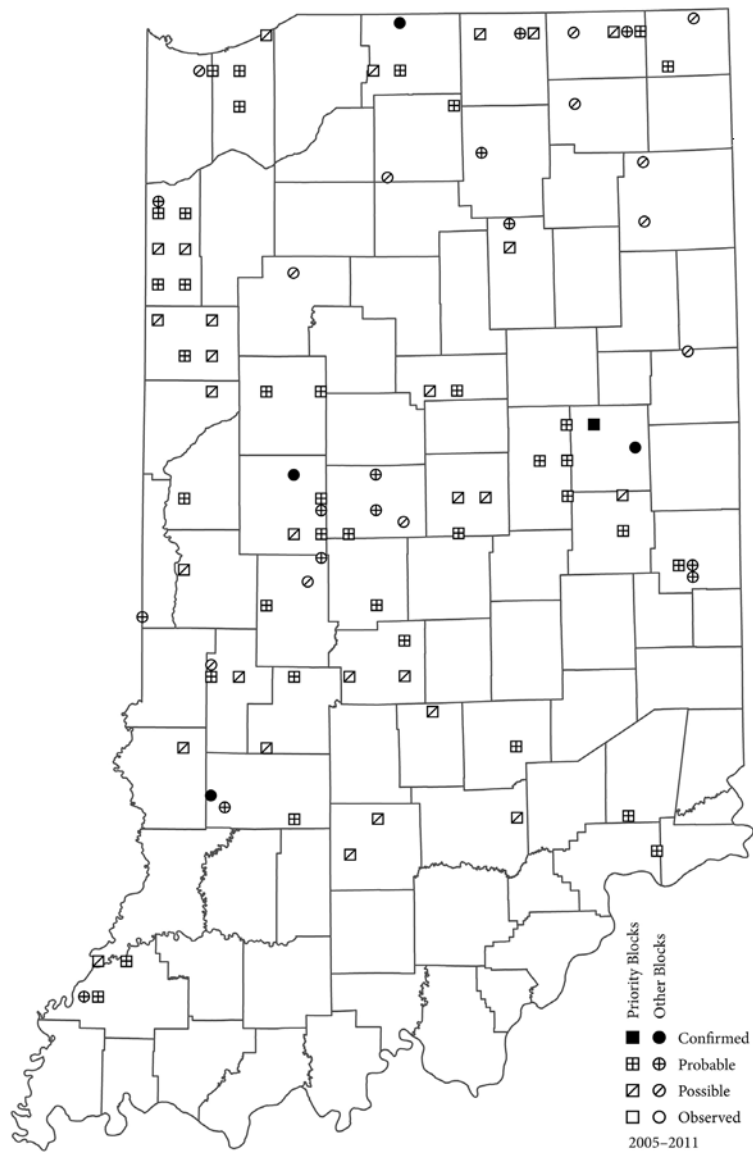


Figure 227. Map of the occurrences of the Sedge Wren in IBBA blocks during 2005–2011.

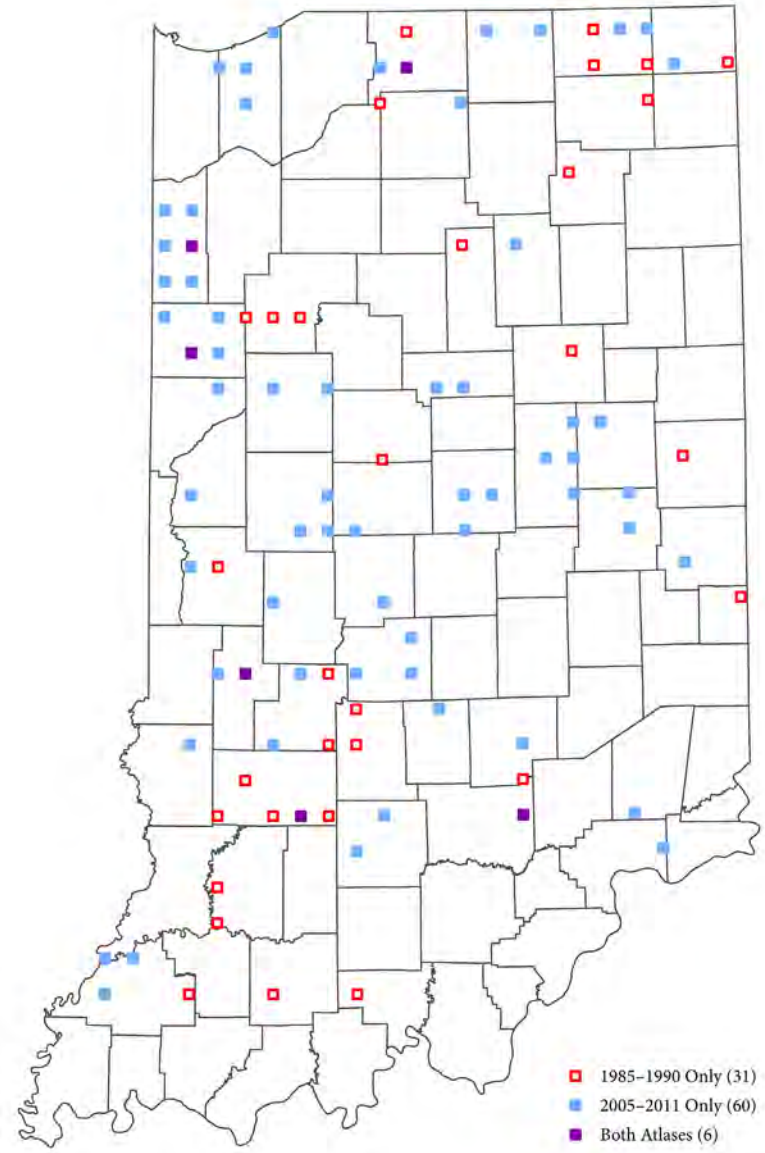


Figure 228. Map of the occurrences of the Sedge Wren in IBBA priority blocks during both atlas periods.

Marsh Wren



A Marsh Wren stands on dead reeds, holding its tail up and mouth open. *Photo by Ryan Sanderson.*

Table 141. Regional occurrence and abundance information for the Marsh Wren.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|--------------|----------------------|-------------|------------|-------------|---------------------|-----------|--|--|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | | |
| North | 127 | 12 | 8 | 55 | 0.00 | 31 | 0.19 | | | | |
| Northwest | 73 | 7 | 7 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 19 | 9 | 21 | 0.00 | 12 | 0.50 | | | | |
| Central | 273 | 2 | <1 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | <1 | 0 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 3 | 1 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 0 | <1 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | 0 | 2 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 3 | 2 | 262 | 0.00 | 221 | 0.03 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 1 | 5 | 1 | 7 |
| Probable | 8 | 40 | 9 | 64 |
| Possible | 11 | 55 | 4 | 29 |
| Sum | 20 | | 14 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 4 | | 0 | |
| Probable | 7 | | 18 | |
| Possible | 7 | | 3 | |
| Sum | 18 | | 21 | |
| Observed | 0 | | - | |

Marsh Wren

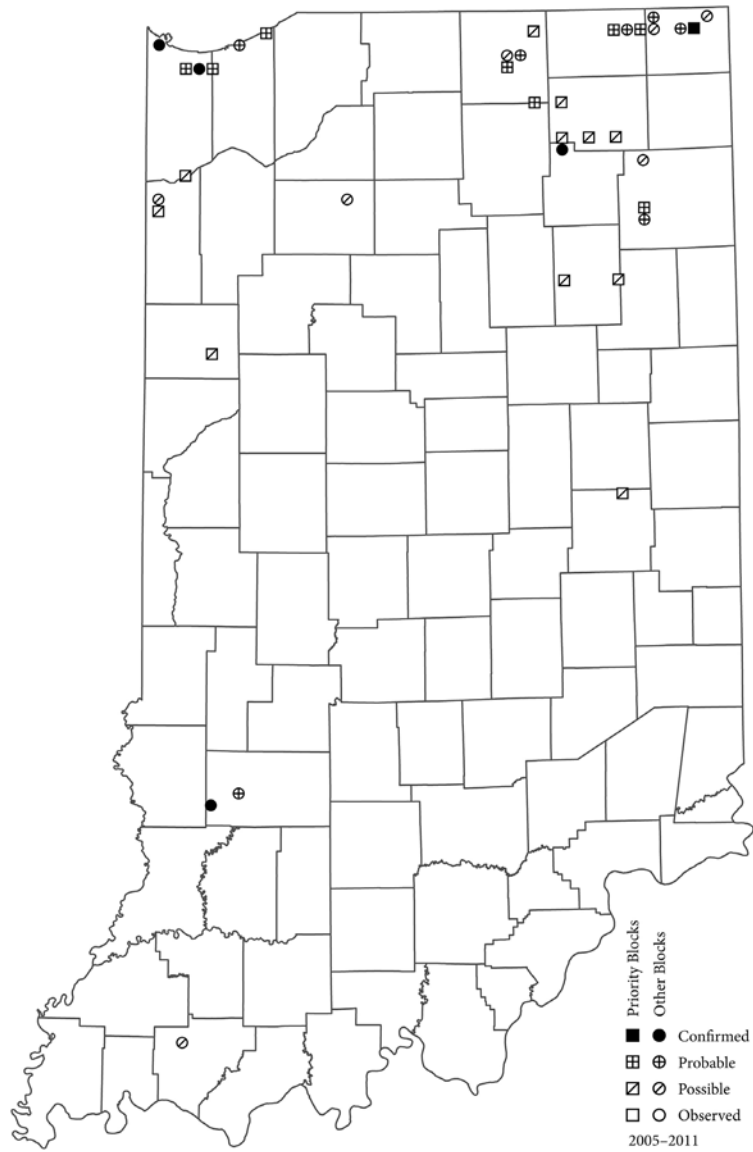


Figure 229. Map of the occurrences of the Marsh Wren in IBBA blocks during 2005–2011.

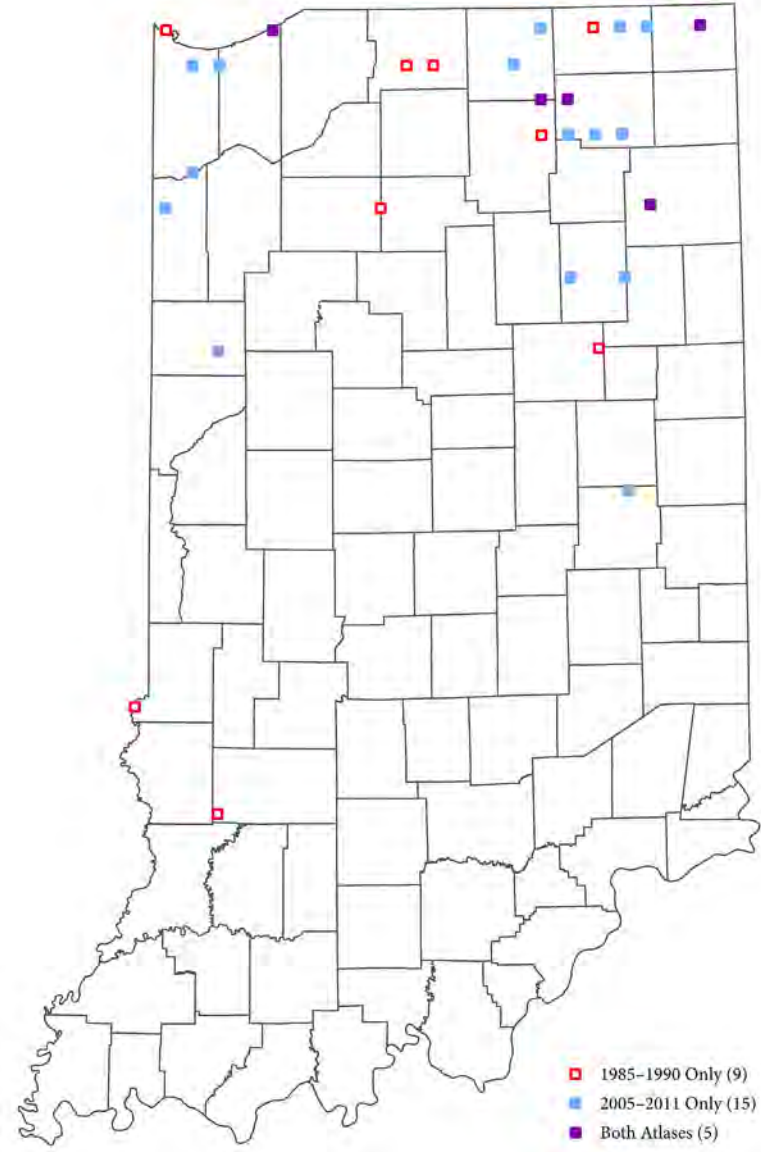


Figure 230. Map of the occurrences of the Marsh Wren in IBBA priority blocks during both atlas periods.

Carolina Wren



A Carolina Wren stands at the end of a broken tree branch. *Photo by Shari McCollough.*

Table 142. Regional occurrence and abundance information for the Carolina Wren.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % | No. | % |
| North | 127 | 50 | 23 | 55 | 0.4 | 31 | 0.0 | | | | | | |
| Northwest | 73 | 37 | 21 | 34 | 0.2 | 19 | 0.0 | | | | | | |
| Northeast | 54 | 69 | 26 | 21 | 0.7 | 12 | 0.0 | | | | | | |
| Central | 273 | 77 | 50 | 110 | 1.7 | 102 | 0.5 | | | | | | |
| West-central | 114 | 68 | 42 | 56 | 1.9 | 38 | 0.6 | | | | | | |
| East-central | 159 | 84 | 56 | 54 | 1.5 | 64 | 0.5 | | | | | | |
| South | 246 | 99 | 98 | 97 | 8.8 | 88 | 6.8 | | | | | | |
| Southwest | 106 | 98 | 97 | 47 | 7.7 | 39 | 5.7 | | | | | | |
| South-central | 87 | 100 | 99 | 35 | 11.0 | 35 | 8.0 | | | | | | |
| Southeast | 53 | 98 | 100 | 15 | 6.9 | 14 | 6.8 | | | | | | |
| Statewide | 646 | 80 | 63 | 262 | 4.1 | 221 | 3.0 | | | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 116 | 22 | 100 | 25 |
| Probable | 319 | 62 | 253 | 62 |
| Possible | 82 | 16 | 55 | 13 |
| Sum | 517 | | 408 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 16 | | 4 | |
| Probable | 14 | | 7 | |
| Possible | 19 | | 8 | |
| Sum | 49 | | 19 | |
| Observed | 0 | | - | |

Carolina Wren

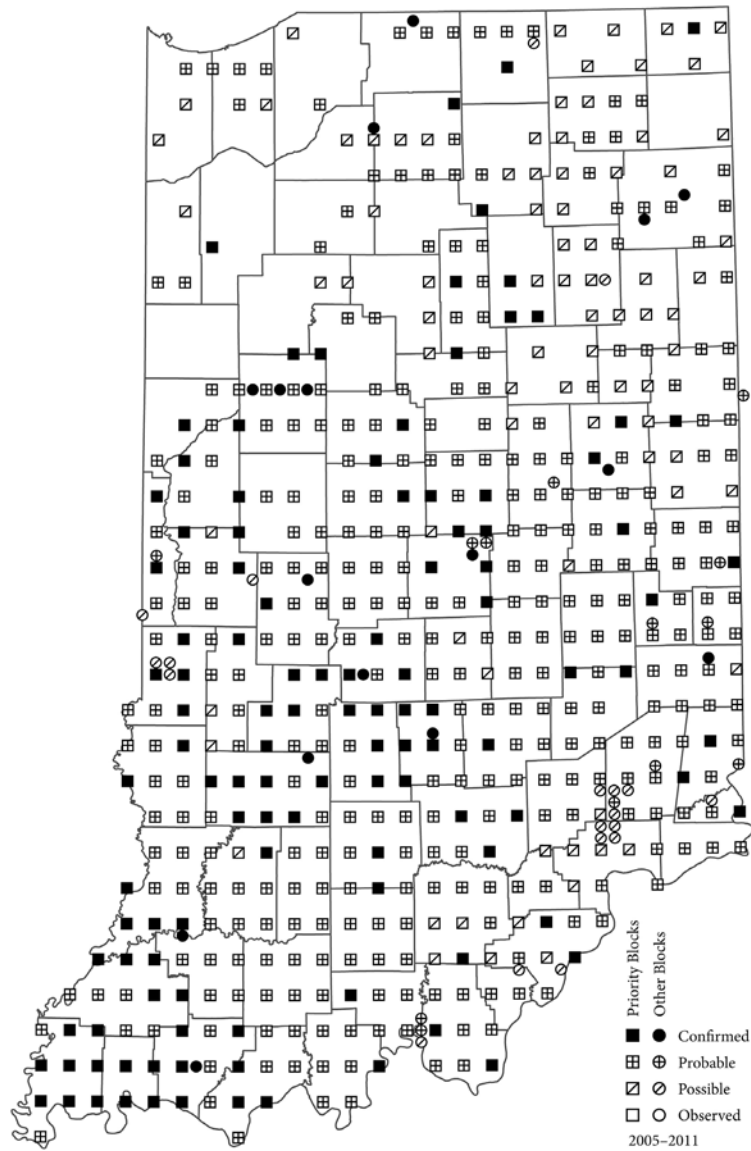


Figure 231. Map of the occurrences of the Carolina Wren in IBBA blocks during 2005–2011.

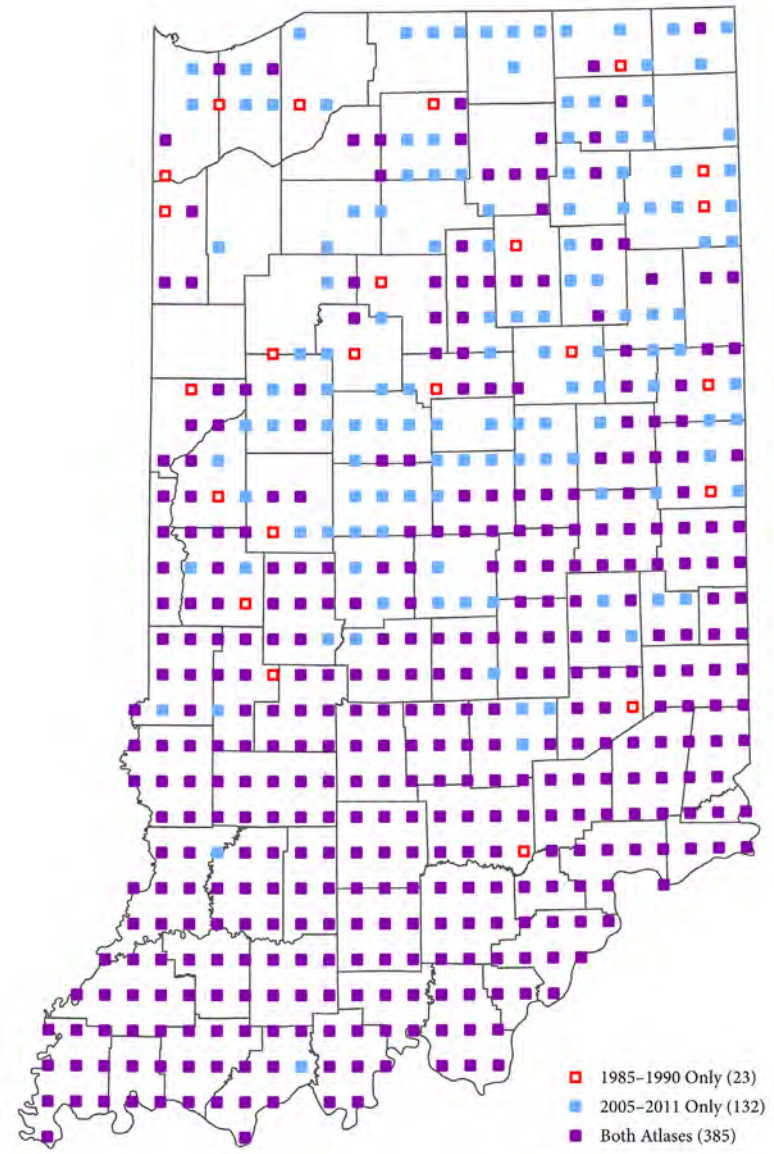


Figure 232. Map of the occurrences of the Carolina Wren in IBBA priority blocks during both atlas periods.

Bewick's Wren



A Bewick's Wren perches on a coyote brush shrub. *Photo by John Skene.*

Table 143. Regional occurrence and abundance information for the Bewick's Wren.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | - | |
| Observed | 0 | | | |
| Other blocks | | | 0 | |
| Confirmed | 0 | | 0 | |
| Probable | 1 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 1 | | - | |
| Observed | 0 | | | |

Bewick's Wren



Figure 233. Map of the occurrences of the Bewick's Wren in IBBA blocks during 2005-2011.

Gnatcatchers (Poliophilidae)

Table 144, Fig. 234–235

THE BLUE-GRAY Gnatcatcher is the only representative of this group in the eastern United States and is a common summer bird. In Indiana it is found statewide, but atlas occurrences and Breeding Bird Survey values are highest in southern regions of the state. Atlas participants reported this species in significantly more blocks on the current atlas with increases most pronounced in northern and central Indiana. Relative densities on Breeding Bird Surveys also suggest a population increase throughout the state, although the positive trend on the BBS in Indiana for 1985–2011 was not statistically significant.

Blue-gray Gnatcatchers were recorded in a large

majority of atlas blocks in Indiana and Ohio, but were mostly restricted to the Southern Lower Peninsula of Michigan. Ohio reported nearly identical rates of this species between atlas periods, while Michigan and Indiana exhibited moderate increases.

The Blue-gray Gnatcatcher is a forest generalist, but can be found in more open habitats where trees and tall shrubs are present (Ellison 1992). They glean insects and spiders from leaves and other parts of trees. The birds build lichen-covered cup nests in forks or on horizontal tree limbs. Blue-gray Gnatcatchers migrate from Indiana to winter in the southern United States, Central America, and the Caribbean.

Blue-gray Gnatcatcher



A breeding male Blue-gray Gnatcatcher leans forward and raises his tail while perched on a branch.
Photo by Shari McCollough.

Table 144. Regional occurrence and abundance information for the Blue-gray Gnatcatcher.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 59 | 29 | 55 | 0.8 | 31 | 0.3 | | | | |
| Northwest | 73 | 40 | 22 | 34 | 0.2 | 19 | 0.0 | | | | |
| Northeast | 54 | 85 | 39 | 21 | 1.8 | 12 | 0.7 | | | | |
| Central | 273 | 74 | 44 | 110 | 1.3 | 102 | 0.5 | | | | |
| West-central | 114 | 71 | 43 | 56 | 1.8 | 38 | 0.9 | | | | |
| East-central | 159 | 76 | 45 | 54 | 0.7 | 64 | 0.2 | | | | |
| South | 246 | 93 | 89 | 97 | 5.0 | 88 | 3.2 | | | | |
| Southwest | 106 | 96 | 82 | 47 | 2.2 | 39 | 1.6 | | | | |
| South-central | 87 | 91 | 97 | 35 | 8.9 | 35 | 5.4 | | | | |
| Southeast | 53 | 91 | 91 | 15 | 4.9 | 14 | 1.9 | | | | |
| Statewide | 646 | 78 | 58 | 262 | 2.6 | 221 | 1.5 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 141 | 28 | 111 | 29 |
| Probable | 285 | 56 | 195 | 52 |
| Possible | 80 | 16 | 71 | 19 |
| Sum | 506 | | 377 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 15 | | 5 | |
| Probable | 19 | | 8 | |
| Possible | 13 | | 4 | |
| Sum | 47 | | 17 | |
| Observed | 0 | | - | |

Blue-gray Gnatcatcher

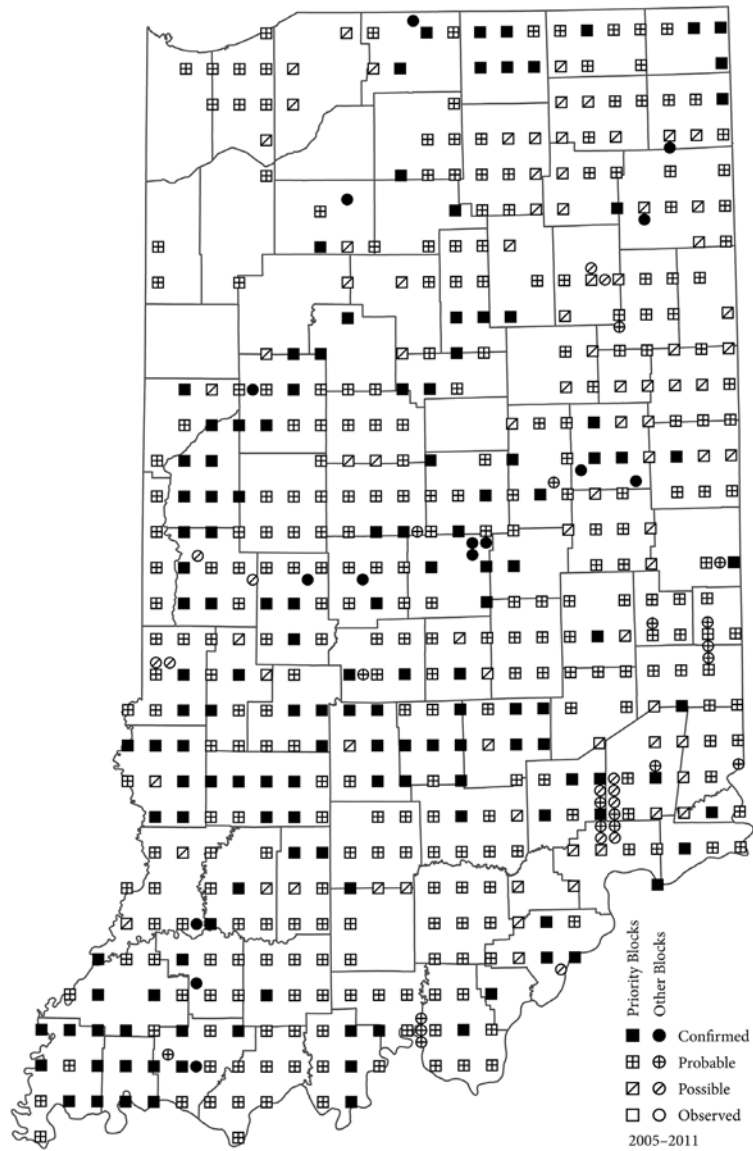


Figure 234. Map of the occurrences of the Blue-gray Gnatcatcher in IBBA blocks during 2005–2011.

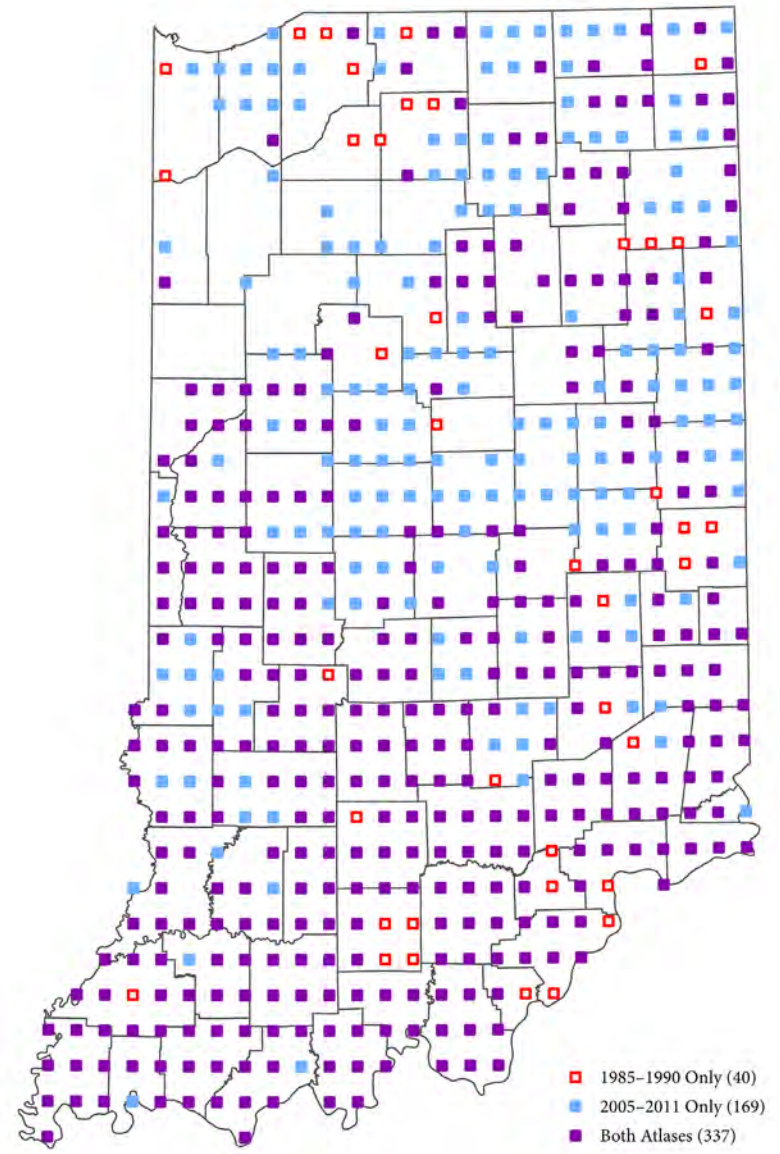


Figure 235. Map of the occurrences of the Blue-gray Gnatcatcher in IBBA priority blocks during both atlas periods.

Kinglets (Regulidae)

Table 145, Fig. 236

THE GOLDEN-CROWNED Kinglet is included because of one record in a non-priority block in Indiana and a single nesting record from 1982. This species was not detected on the 1985–1990 Indiana atlas. This insectivore is a common winter resident of forested areas in Indiana and nests in woodlands of southern Canada. More recent observations of singing males, pairs, and adults with juveniles were restricted to Pigeon River Fish and Wildlife Area and LaGrange County during the period of 2015–2020 (Brock 2015, 2020, Kearns

2016). In Michigan, Golden-crowned Kinglets and Ruby-crowned Kinglets nest primarily in the Upper Peninsula, where Golden-crowned Kinglets are more frequently encountered. Ruby-crowned Kinglets were not included on atlases in Indiana and Ohio. Golden-crowned Kinglets were confirmed breeding on the recent Ohio atlas, primarily in the northeastern part of the state. They were not included in the first Ohio atlas. Frequencies of occurrence increased moderately in Michigan.

Golden-crowned Kinglet



A Golden-crowned Kinglet grasps onto a small budding branch. *Photo by Shari McCollough.*

Table 145. Regional occurrence and abundance information for the Golden-crowned Kinglet.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 1 | | 0 | |
| Sum | 1 | | 0 | |
| Observed | 0 | | - | |

Golden-crowned Kinglet



Figure 236. Map of the occurrences of the Golden-crowned Kinglet in IBBA blocks during 2005–2011.

Thrushes (Turdidae)

Tables 146–149, Fig. 237–244

FOUR SPECIES OF thrushes breed in Indiana: the ubiquitous American Robin, the endearing Eastern Bluebird, the melodious Wood Thrush, and the uncommon Veery. The last is a northern species with records mostly in the northern quarter of Indiana and a few detections scattered in the southern half of the state. American Robins were found in all atlas blocks. Eastern Bluebirds and Wood Thrushes were reported in the vast majority of blocks. While American Robins were found in all priority blocks during both atlas periods, Eastern Bluebirds and Wood Thrushes were recorded significantly more often in the most recent atlas. Eastern Bluebirds were found in virtually all blocks in the southern part of the state, but central and northern regions witnessed the largest increases in occurrences. Wood Thrushes were also recorded in almost all southern blocks, but were found with increasing frequency in central and northeastern Indiana in the present atlas. The Veery was detected in fewer blocks during the current atlas with declines in both northern regions where this species is most often found.

On BBS surveys, relative densities were greatest in southern Indiana for Eastern Bluebirds and Wood Thrushes, while higher numbers of American Robins were tallied in the central and northern regions of the state. Only routes in northeastern Indiana reported Veeries. Numbers of Eastern Bluebirds doubled between atlas periods in northern regions, increased to a lesser extent in central Indiana and declined somewhat in southern regions. Changes in Wood Thrush densities were small in most regions between atlas periods; the greatest differences were a decline in northwestern Indiana and an increase in southeastern Indiana. Densities of American Robin on BBS routes increased in all regions of the state, while there was no apparent change for the uncommon Veery. Statewide population trends on BBS for the 1985–2011 period were positive and statistically significant for Eastern Bluebird and American Robin, but negative and not statistically significant for Wood Thrush and Veery.

American Robins were likely present in every atlas block in Indiana, Ohio, and Michigan. Eastern Blue-

birds ranked second among thrushes in all three states. Third in ranking was the Wood Thrush, with rates of occurrence greatest in Ohio, slightly lower in Indiana, and lowest in Michigan where they are less likely to be encountered in the northern half of the state. Values for Wood Thrush, Veery, and Hermit Thrush were similar in Michigan with the latter two species being more commonly recorded in the Upper Peninsula and Northern Lower Peninsula. The Swainson's Thrush also breeds in a small portion of the Upper Peninsula of Michigan but not in Indiana or Ohio. Veery was least commonly found on the Indiana atlas. In Ohio Veery was mostly concentrated in the northeastern part of the state. Hermit Thrushes, uncommon breeders in Ohio, were found mostly in scattered areas of eastern Ohio.

Differences between atlas periods varied considerably among species and states. Eastern Bluebirds showed consistent increases. Veery numbers declined, especially in Ohio. Hermit Thrush records also increased in Michigan and Ohio. Relative frequencies of Wood Thrush were slightly higher in Indiana, but somewhat lower in Ohio and Michigan. No differences could be discerned for the ubiquitous American Robin in Indiana and Ohio, but frequencies were somewhat lower in Michigan.

The Wood Thrush is the quintessential species of eastern and midwestern deciduous forests and larger woodlots in Indiana, while the Veery is found in younger forests and along wooded streams in northern areas of Indiana and other states and southern Canada. American Robin and Eastern Bluebird are birds of open areas and have adapted well to the Indiana landscape. Robins, one of our most common urban birds, feed extensively on earthworms and insects in lawns and in ornamental plants that provide fruit. Eastern Bluebirds are found in small towns and are especially common in rural areas with forest edges and grassy areas for foraging (Gowaty and Plissner 1998). Indiana's thrushes are highly insectivorous during the summer months, although they eat fruit throughout the year, especially in the late summer and fall. Foraging takes place on the ground in grassy areas and leaf litter or in low vege-

tation. Eastern Bluebirds are cavity nesters, with nest boxes extensively used along with rotted fence posts, tree cavities, and other recesses. Wood Thrushes and American Robins build open nests in lower levels of trees or shrubs. American Robins also nest on ledges on houses or under bridges (Roth *et al.* 1996, Sallabanks

and James 1999). Veeries nest on the ground or low in shrubs or small trees (Moskoff 1995).

The Wood Thrush and Veery winter mostly in tropical regions. American Robins are much less apparent in Indiana during the winter, but are present in sizable numbers. Eastern Bluebirds do not appear to migrate.

Eastern Bluebird



A male Eastern Bluebird fluffs up his feathers while perched on a small branch. *Photo by Ryan Sanderson.*

Table 146. Regional occurrence and abundance information for the Eastern Bluebird.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 87 | 78 | 55 | 4.8 | 31 | 2.2 | | | | |
| Northwest | 73 | 78 | 70 | 34 | 4.9 | 19 | 2.2 | | | | |
| Northeast | 54 | 98 | 89 | 21 | 4.7 | 12 | 2.3 | | | | |
| Central | 273 | 92 | 70 | 110 | 3.0 | 102 | 1.6 | | | | |
| West-central | 114 | 88 | 61 | 56 | 3.6 | 38 | 1.4 | | | | |
| East-central | 159 | 95 | 75 | 54 | 2.5 | 64 | 1.7 | | | | |
| South | 246 | 98 | 98 | 97 | 7.8 | 88 | 10.3 | | | | |
| Southwest | 106 | 97 | 96 | 47 | 5.1 | 39 | 7.5 | | | | |
| South-central | 87 | 100 | 100 | 35 | 11.5 | 35 | 12.4 | | | | |
| Southeast | 53 | 98 | 100 | 15 | 7.3 | 14 | 12.6 | | | | |
| Statewide | 646 | 93 | 82 | 262 | 5.2 | 221 | 5.1 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 425 | 70 | 367 | 69 |
| Probable | 146 | 24 | 124 | 23 |
| Possible | 32 | 5 | 40 | 8 |
| Sum | 603 | | 531 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 16 | | 12 | |
| Probable | 15 | | 6 | |
| Possible | 11 | | 5 | |
| Sum | 42 | | 23 | |
| Observed | 0 | | - | |

Eastern Bluebird

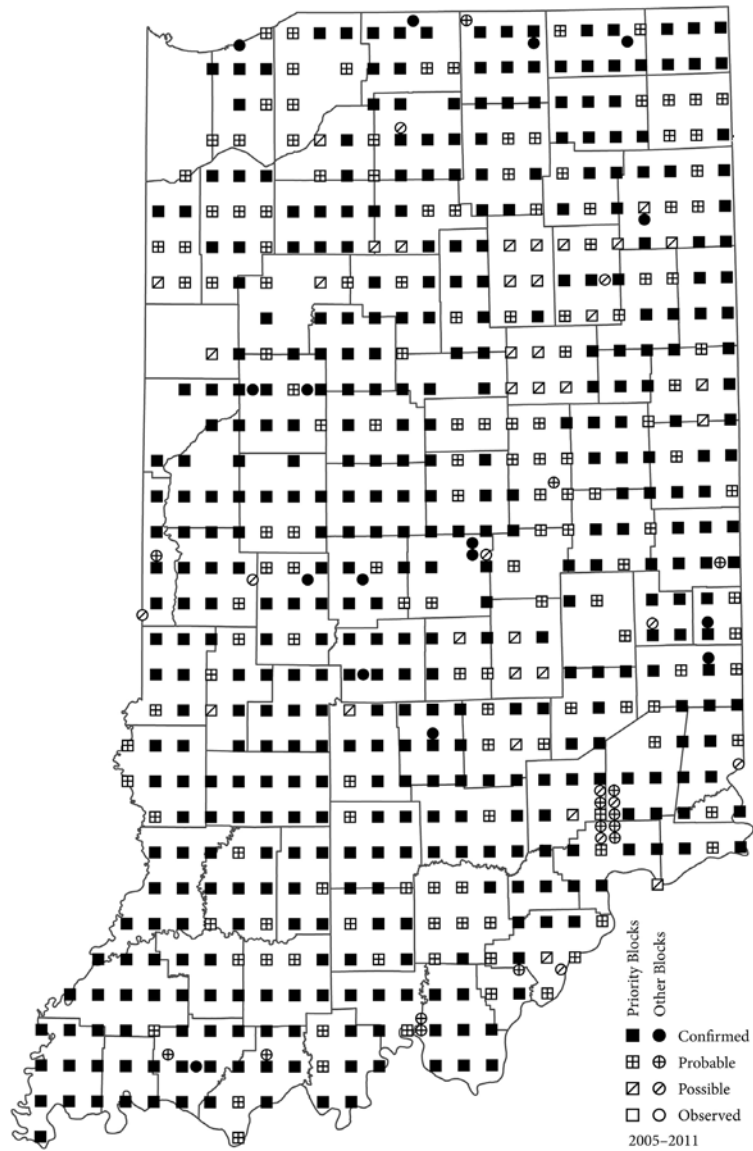


Figure 237. Map of the occurrences of the Eastern Bluebird in IBBA blocks during 2005–2011.

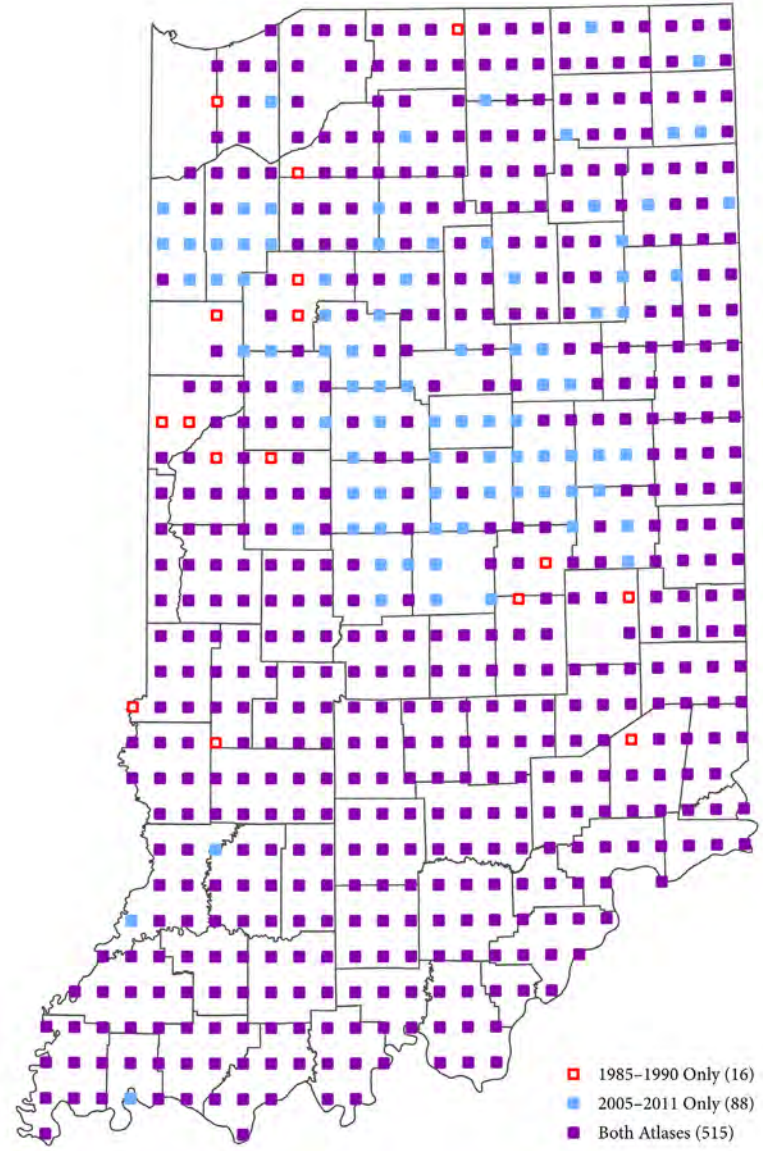


Figure 238. Map of the occurrences of the Eastern Bluebird in IBBA priority blocks during both atlas periods.

Veery



A Veery perches on a branch. *Photo by Ryan Sanderson.*

Table 147. Regional occurrence and abundance information for the Veery.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|-----------------|-------------|-----------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 18 | 28 | 55 | 0.02 | 31 | 0.03 | | | | |
| Northwest | 73 | 14 | 26 | 34 | 0.00 | 19 | 0.05 | | | | |
| Northeast | 54 | 24 | 31 | 21 | 0.05 | 12 | 0.00 | | | | |
| Central | 273 | 3 | 3 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | 2 | 3 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 4 | 3 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 0 | 0 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 5 | 7 | 262 | <0.01 | 221 | <0.01 | | | | |

| | Breeding Bird Atlas | | Breeding Bird Atlas | |
|------------------------|---------------------|----|---------------------|----|
| | No. | % | No. | % |
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 2 | 5 |
| Probable | 13 | 41 | 25 | 58 |
| Possible | 19 | 59 | 16 | 37 |
| Sum | 32 | | 43 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 1 | | 0 | |
| Probable | 2 | | 5 | |
| Possible | 8 | | 4 | |
| Sum | 11 | | 9 | |
| Observed | 0 | | - | |

Veery

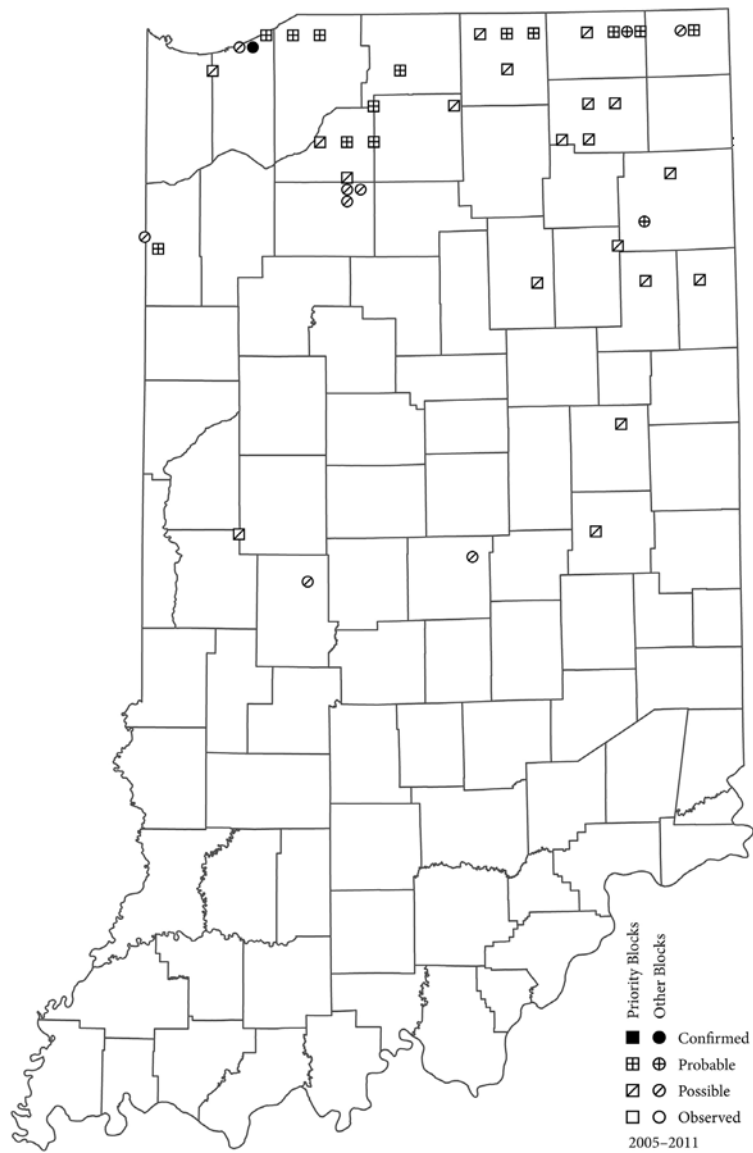


Figure 239. Map of the occurrences of the Veery in IBBA blocks during 2005–2011.

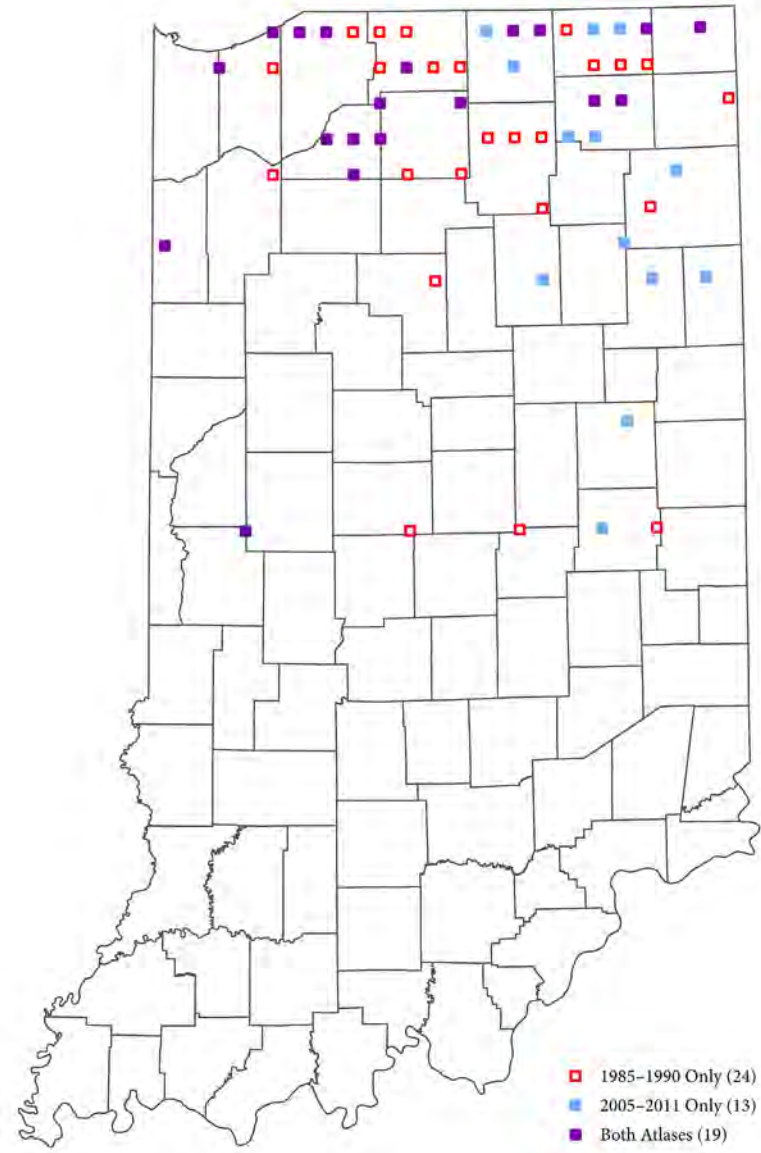


Figure 240. Map of the occurrences of the Veery in IBBA priority blocks during both atlas periods.

Wood Thrush



A Wood Thrush stands on a fallen tree with its mouth agape. *Photo by Ryan Sanderson.*

Table 148. Regional occurrence and abundance information for the Wood Thrush.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 76 | 73 | 55 | 1.1 | 31 | 1.8 | | | | |
| Northwest | 73 | 70 | 73 | 34 | 0.7 | 19 | 2.1 | | | | |
| Northeast | 54 | 85 | 74 | 21 | 1.8 | 12 | 1.5 | | | | |
| Central | 273 | 86 | 78 | 110 | 1.6 | 102 | 1.7 | | | | |
| West-central | 114 | 80 | 71 | 56 | 1.8 | 38 | 2.3 | | | | |
| East-central | 159 | 91 | 83 | 54 | 1.4 | 64 | 1.3 | | | | |
| South | 246 | 94 | 93 | 97 | 6.7 | 88 | 6.4 | | | | |
| Southwest | 106 | 92 | 86 | 47 | 2.2 | 39 | 2.8 | | | | |
| South-central | 87 | 95 | 100 | 35 | 11.9 | 35 | 10.6 | | | | |
| Southeast | 53 | 98 | 98 | 15 | 8.6 | 14 | 5.5 | | | | |
| Statewide | 646 | 87 | 83 | 262 | 3.4 | 221 | 3.6 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 48 | 9 | 55 | 10 |
| Probable | 424 | 75 | 368 | 69 |
| Possible | 92 | 16 | 113 | 21 |
| Sum | 564 | | 536 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 11 | | 2 | |
| Probable | 24 | | 17 | |
| Possible | 10 | | 4 | |
| Sum | 45 | | 23 | |
| Observed | 0 | | - | |

Wood Thrush

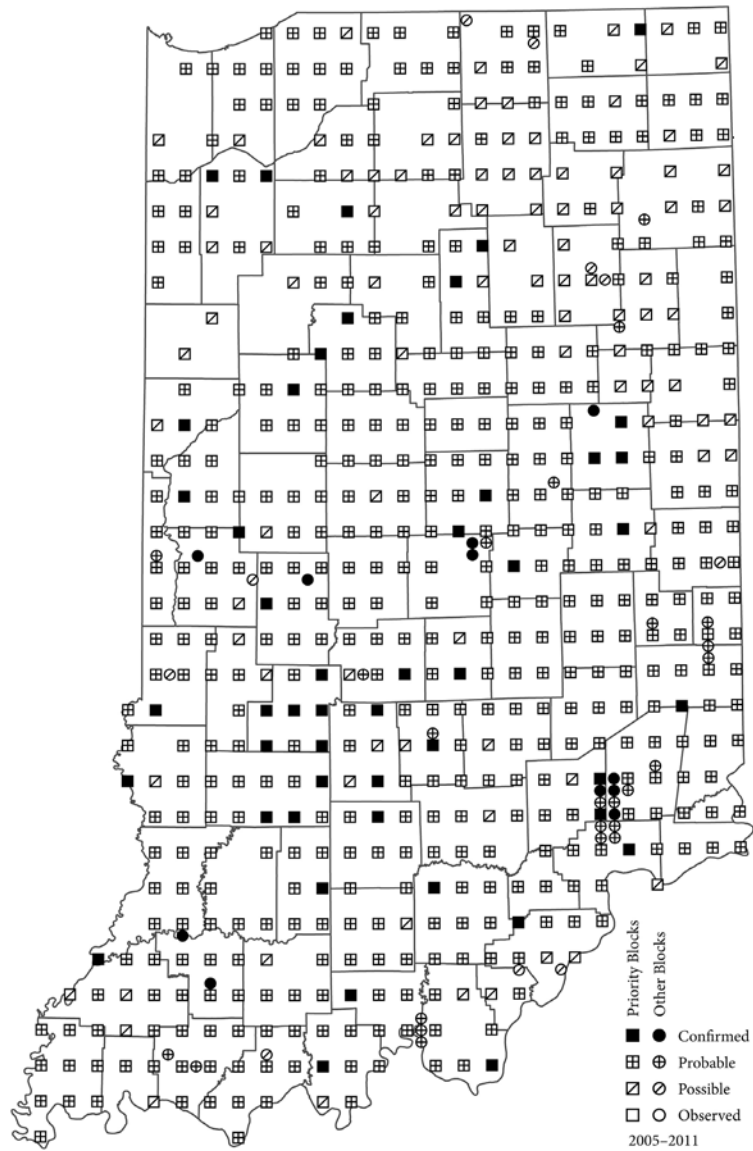


Figure 241. Map of the occurrences of the Wood Thrush in IBBA blocks during 2005-2011.

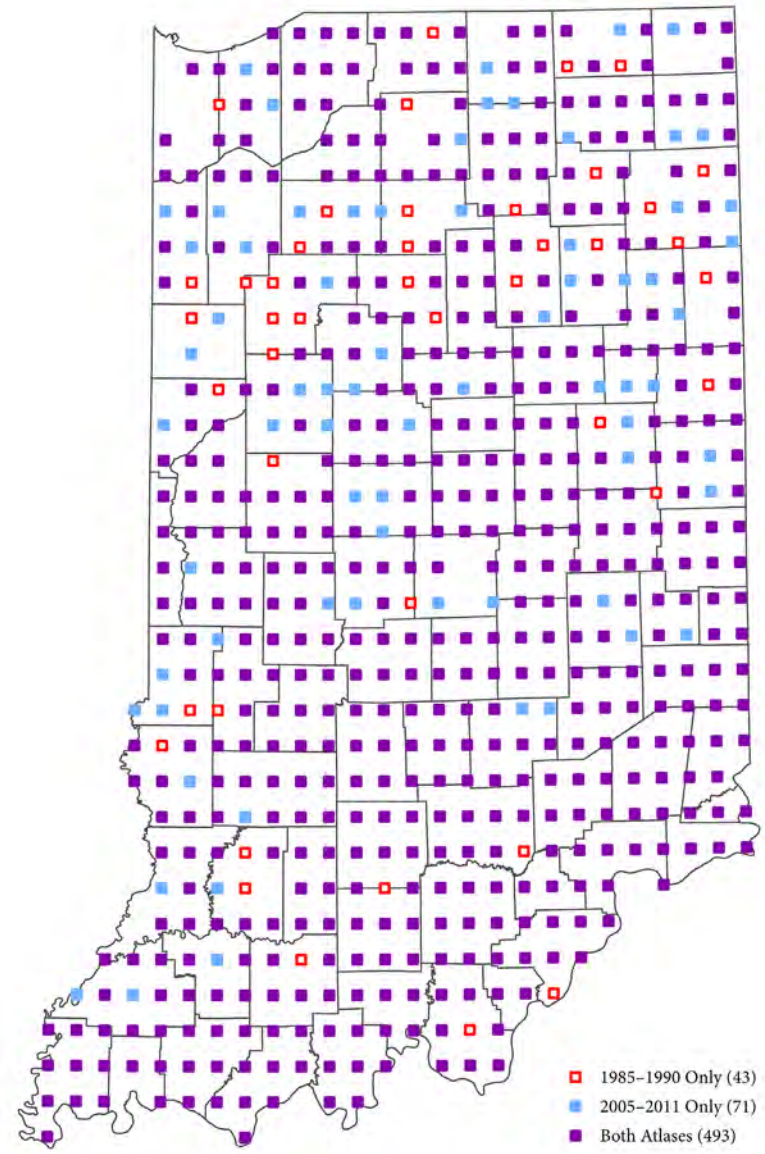


Figure 242. Map of the occurrences of the Wood Thrush in IBBA priority blocks during both atlas periods.

American Robin



An American Robin holds a worm in its beak while a juvenile begs to be fed, mouth agape. *Photo by Michael Brown.*

Table 149. Regional occurrence and abundance information for the American Robin.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|------------|------------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 100 | 100 | 55 | 100 | 31 | 87 | | | | |
| Northwest | 73 | 100 | 100 | 34 | 111 | 19 | 94 | | | | |
| Northeast | 54 | 100 | 100 | 21 | 83 | 12 | 76 | | | | |
| Central | 273 | 100 | 100 | 110 | 113 | 102 | 79 | | | | |
| West-central | 114 | 100 | 100 | 56 | 114 | 38 | 84 | | | | |
| East-central | 159 | 99 | 99 | 54 | 112 | 64 | 76 | | | | |
| South | 246 | 100 | 100 | 97 | 66 | 88 | 44 | | | | |
| Southwest | 106 | 100 | 100 | 47 | 94 | 39 | 53 | | | | |
| South-central | 87 | 100 | 100 | 35 | 31 | 35 | 30 | | | | |
| Southeast | 53 | 100 | 100 | 15 | 57 | 14 | 50 | | | | |
| Statewide | 646 | 100 | 100 | 262 | 93 | 221 | 66 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 584 | 91 | 565 | 87 |
| Probable | 61 | 9 | 76 | 12 |
| Possible | 0 | 0 | 5 | 1 |
| Sum | 645 | | 646 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 32 | | 15 | |
| Probable | 14 | | 8 | |
| Possible | 12 | | 3 | |
| Sum | 58 | | 26 | |
| Observed | 0 | | - | |

American Robin

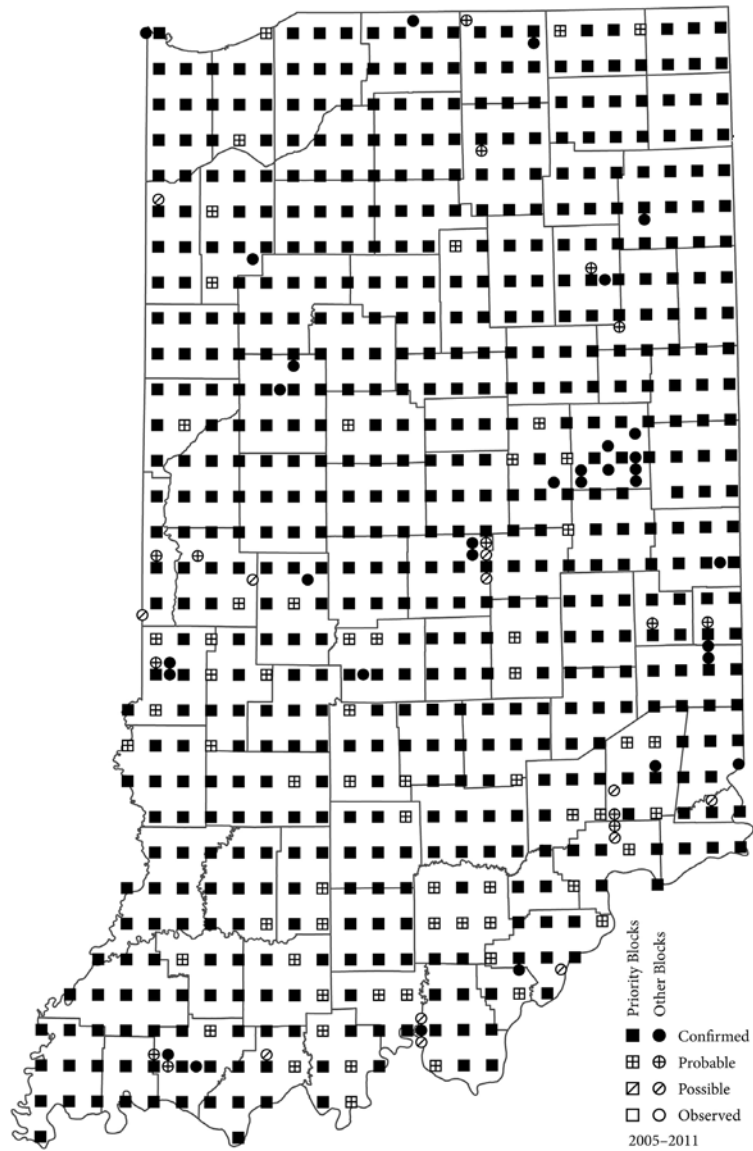


Figure 243. Map of the occurrences of the American Robin in IBBA blocks during 2005–2011.

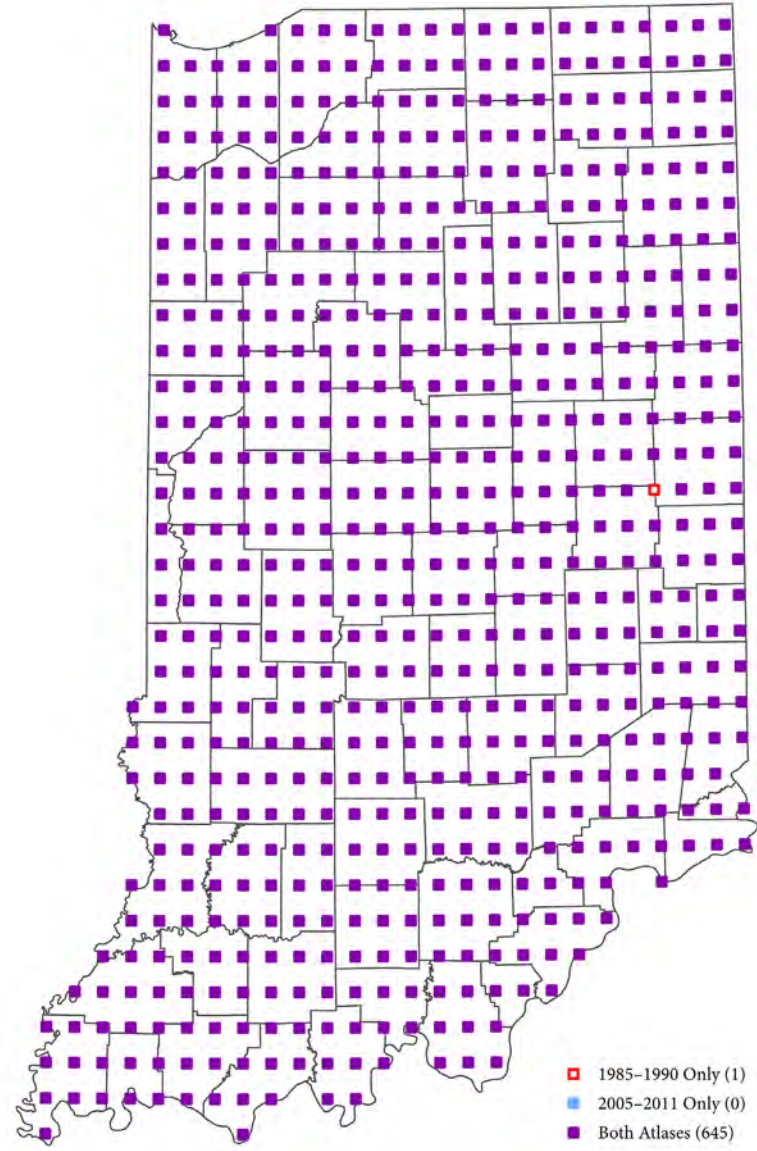


Figure 244. Map of the occurrences of the American Robin in IBBA priority blocks during both atlas periods.

Mimic Thrushes (Mimidae)

Tables 150–152, Fig. 245–250

THREE SPECIES OF mimic thrushes are commonly found in Indiana and are associated with brushy areas where nests are built a few feet off the ground in shrubs, small trees, or vines (Derrickson and Breitwisch 1992, Cimprish and Moore 1995, Cavitt and Haas 2000). Gray Catbird usually occurs in areas with more forest cover. Northern Mockingbird frequents areas with the most open and manicured habitats and are often found around human habitations, even urban and suburban neighborhoods. Brown Thrasher, intermediate in habitat preferences, is often associated with brushy fencerows bordering fields. Gray Catbirds and Brown Thrashers are generally absent from Indiana during the winter, with Gray Catbirds migrating farther distances. Northern Mockingbird populations seem relatively sedentary throughout the year. All three species feed heavily on insects and other invertebrates during the breeding season, but consume large amounts of fruit especially during the fall and winter seasons. Brown Thrashers spend more time feeding on the ground, while Gray Catbirds and Northern Mockingbirds frequent small trees and shrubs in search of food.

Gray Catbirds and Brown Thrashers were found in nearly all priority blocks in Indiana during the 2005–2011 BBA. Northern Mockingbirds occur in the vast majority of blocks in southern Indiana and become less frequent northward. Breeding Bird Survey data show that Gray Catbird is the most numerous of the three species. Northern Mockingbird is found at slightly higher densities overall than Brown Thrasher. Brown Thrasher densities were similar throughout most regions of the state, while Gray Catbird was more common northward, and Northern Mockingbird occurred in greater numbers in southern Indiana.

The number of atlas blocks with Gray Catbirds was nearly identical between survey periods. Brown Thrashers had slightly fewer occurrences in the most recent atlas. Neither difference was statistically significant. Breeding Bird Survey values suggest a modest decline in numbers of Gray Catbird for southern Indiana and small to moderate reductions for Brown Thrasher throughout the state. Northern Mockingbird is becoming significantly more common and widespread in Indiana judging by atlas records and Breeding Bird Survey figures. Differences were most pronounced as one moves northward. Population trends on BBS routes for the 1985–2011 period in Indiana showed a statistically significant increase for Northern Mockingbird and declines for Brown Thrasher and Gray Catbird, although in the case of the latter, it was not statistically significant.

Gray Catbird was the most frequently encountered species in this group in atlases in Indiana, Ohio, and Michigan, although Brown Thrasher was only slightly less common in Indiana and Ohio. In Michigan, these species were recorded much less frequently in the Upper Peninsula. Rates of occurrence for Gray Catbird were similar between atlas periods in Indiana and Ohio, but declined slightly in Michigan. All three states had fewer records of Brown Thrasher on the second atlas, although the difference was small for Indiana and a bit greater for Ohio and Michigan. Due to their more southerly distribution, frequencies of occurrence were more moderate for Northern Mockingbird in Indiana and Ohio. This species was only occasionally encountered in Michigan, primarily in the Lower Peninsula. Rates of occurrence increased moderately between atlas periods in Indiana and Ohio, but less so in Michigan.

Gray Catbird



A Gray Catbird stands on a branch. *Photo by Shari McCollough.*

Table 150. Regional occurrence and abundance information for the Gray Catbird.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 99 | 99 | 55 | 9.6 | 31 | 9.6 | | | | |
| Northwest | 73 | 100 | 99 | 34 | 8.3 | 19 | 8.6 | | | | |
| Northeast | 54 | 98 | 100 | 21 | 11.8 | 12 | 11.3 | | | | |
| Central | 273 | 98 | 97 | 110 | 6.5 | 102 | 6.2 | | | | |
| West-central | 114 | 96 | 96 | 56 | 6.8 | 38 | 7.6 | | | | |
| East-central | 159 | 99 | 97 | 54 | 6.1 | 64 | 5.5 | | | | |
| South | 246 | 95 | 98 | 97 | 4.3 | 88 | 6.9 | | | | |
| Southwest | 106 | 97 | 96 | 47 | 3.2 | 39 | 5.5 | | | | |
| South-central | 87 | 90 | 99 | 35 | 5.9 | 35 | 8.5 | | | | |
| Southeast | 53 | 100 | 98 | 15 | 4.1 | 14 | 6.4 | | | | |
| Statewide | 646 | 97 | 98 | 262 | 6.3 | 221 | 7.0 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 291 | 46 | 212 | 34 |
| Probable | 291 | 46 | 377 | 60 |
| Possible | 46 | 7 | 41 | 7 |
| Sum | 628 | | 630 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 13 | | 4 | |
| Probable | 20 | | 10 | |
| Possible | 16 | | 7 | |
| Sum | 49 | | 21 | |
| Observed | 0 | | - | |

Gray Catbird

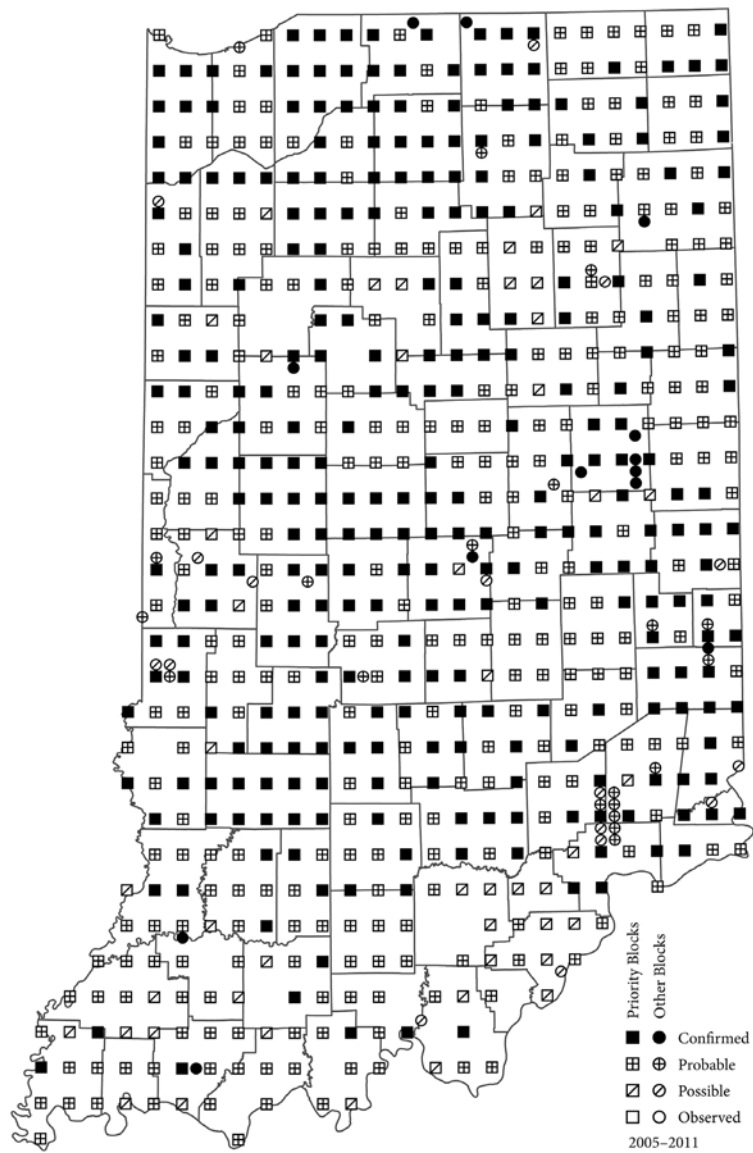


Figure 245. Map of the occurrences of the Gray Catbird in IBBA blocks during 2005–2011.

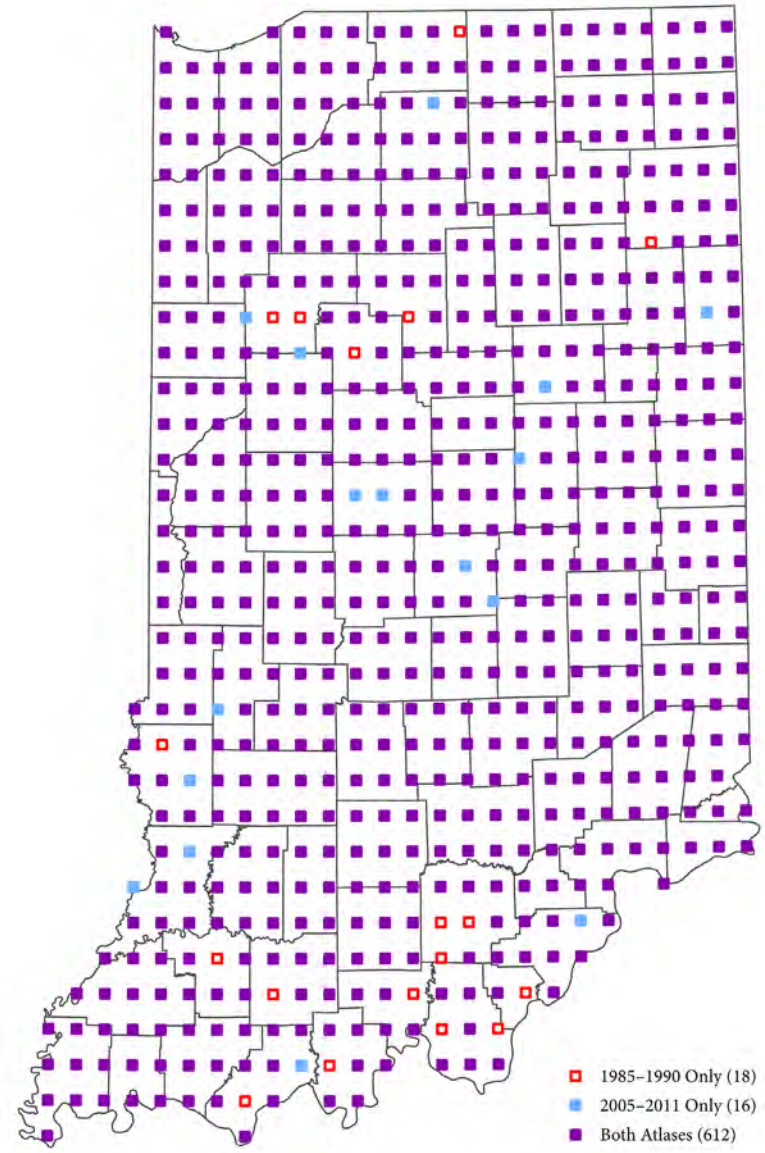


Figure 246. Map of the occurrences of the Gray Catbird in IBBA priority blocks during both atlas periods.

Brown Thrasher



A Brown Thrasher sits on the ground covered with leaf litter. *Photo by Steve Gifford.*

Table 151. Regional occurrence and abundance information for the Brown Thrasher.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----|------------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 90 | 94 | 55 | 3.3 | 31 | 3.6 | Priority Blocks | | | | |
| Northwest | 73 | 86 | 92 | 34 | 4.1 | 19 | 3.8 | Confirmed | 219 | 36 | 262 | 42 |
| Northeast | 54 | 94 | 96 | 21 | 2.0 | 12 | 3.4 | Probable | 316 | 52 | 290 | 46 |
| Central | 273 | 93 | 97 | 110 | 3.5 | 102 | 4.3 | Possible | 77 | 13 | 74 | 12 |
| West-central | 114 | 90 | 95 | 56 | 4.9 | 38 | 5.9 | Sum | 612 | | 626 | |
| East-central | 159 | 96 | 99 | 54 | 2.0 | 64 | 3.3 | Observed | 0 | | - | |
| South | 246 | 99 | 98 | 97 | 4.4 | 88 | 5.6 | Other blocks | | | | |
| Southwest | 106 | 98 | 97 | 47 | 4.6 | 39 | 6.0 | Confirmed | 10 | | 5 | |
| South-central | 87 | 99 | 100 | 35 | 4.2 | 35 | 5.4 | Probable | 14 | | 9 | |
| Southeast | 53 | 100 | 98 | 15 | 4.4 | 14 | 5.1 | Possible | 16 | | 6 | |
| Statewide | 646 | 95 | 97 | 262 | 3.8 | 221 | 4.7 | Sum | 40 | | 20 | |
| | | | | | | | | Observed | 0 | | - | |

Brown Thrasher

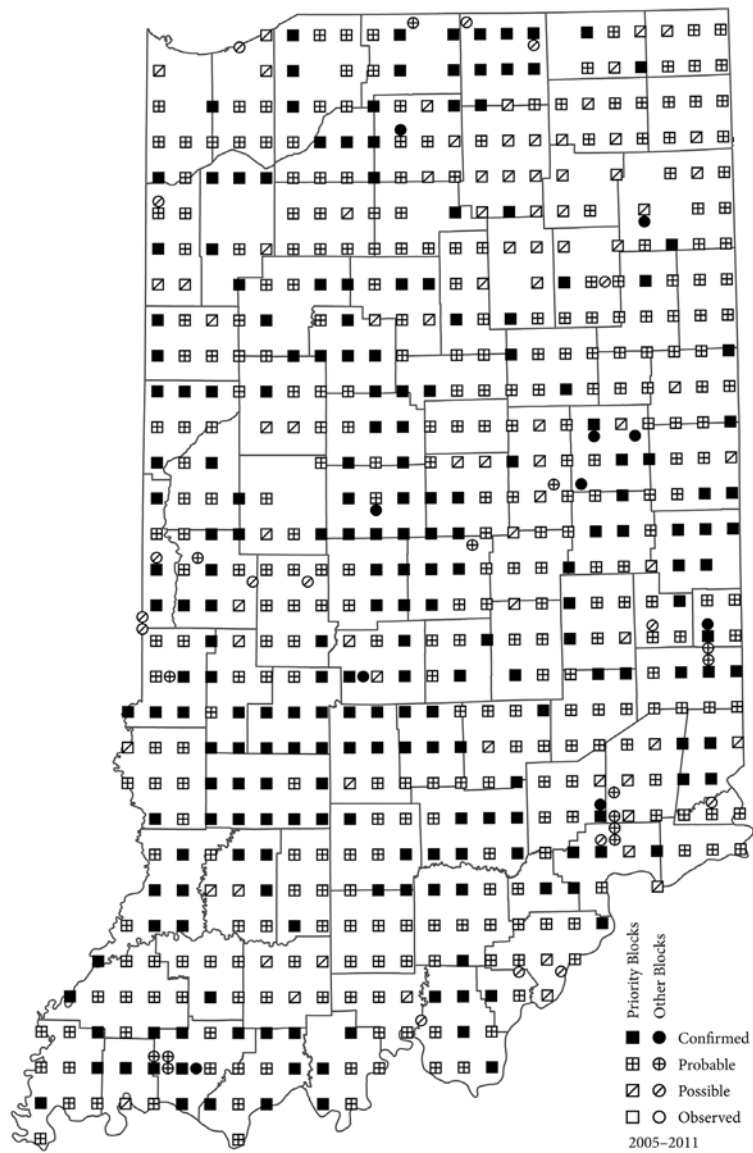


Figure 247. Map of the occurrences of the Brown Thrasher in IBBA blocks during 2005-2011.

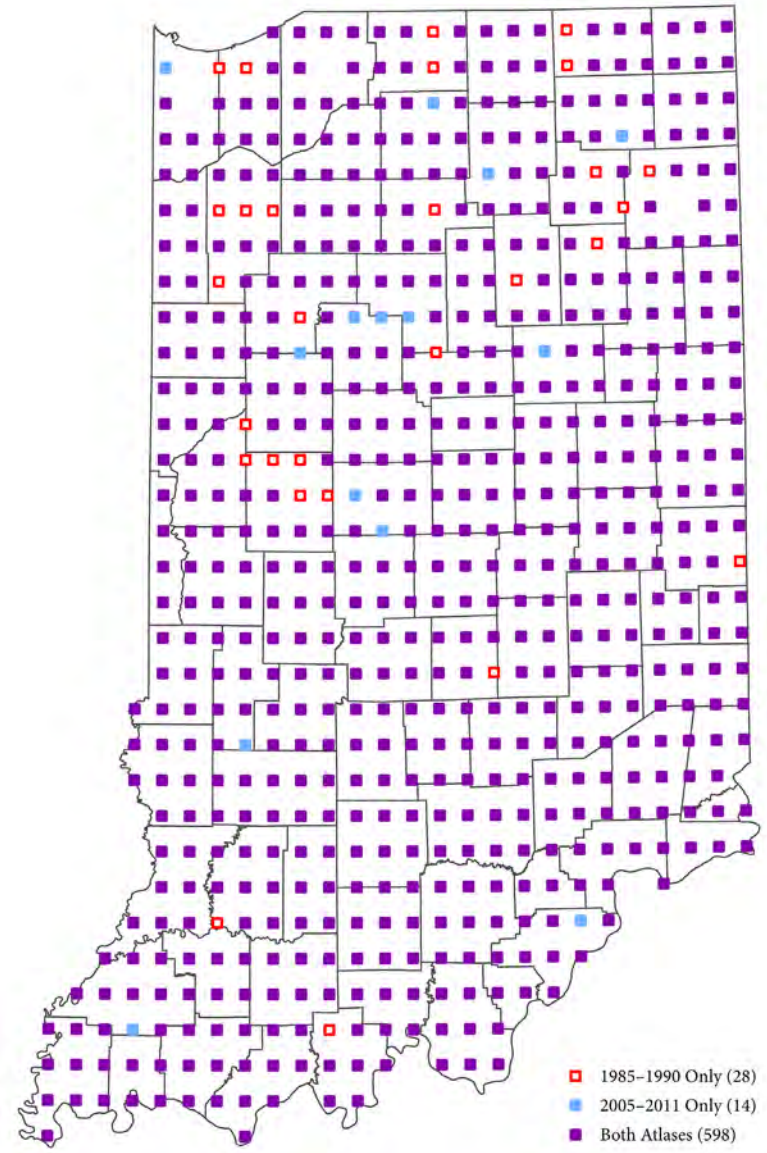


Figure 248. Map of the occurrences of the Brown Thrasher in IBBA priority blocks during both atlas periods.

Northern Mockingbird



A Northern Mockingbird perches on a pokeweed branch with fruiting berries. *Photo by Julie Gidwitz.*

Table 152. Regional occurrence and abundance information for the Northern Mockingbird.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|------------|------------|------------|---------------------|-----------|--|--|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | | |
| North | 127 | 35 | 16 | 55 | 1.4 | 31 | 0.5 | | | | |
| Northwest | 73 | 29 | 18 | 34 | 1.5 | 19 | 0.6 | | | | |
| Northeast | 54 | 43 | 13 | 21 | 1.2 | 12 | 0.3 | | | | |
| Central | 273 | 62 | 48 | 110 | 2.1 | 102 | 1.3 | | | | |
| West-central | 114 | 44 | 39 | 56 | 1.7 | 38 | 1.2 | | | | |
| East-central | 159 | 75 | 55 | 54 | 2.5 | 64 | 1.4 | | | | |
| South | 246 | 91 | 91 | 97 | 9.8 | 88 | 8.7 | | | | |
| Southwest | 106 | 92 | 93 | 47 | 10.7 | 39 | 12.7 | | | | |
| South-central | 87 | 89 | 87 | 35 | 9.4 | 35 | 4.3 | | | | |
| Southeast | 53 | 91 | 91 | 15 | 7.7 | 14 | 8.8 | | | | |
| Statewide | 646 | 68 | 58 | 262 | 4.8 | 221 | 4.1 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 125 | 29 | 113 | 30 |
| Probable | 229 | 52 | 178 | 47 |
| Possible | 83 | 19 | 84 | 22 |
| Sum | 437 | | 375 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 6 | | 3 | |
| Probable | 6 | | 4 | |
| Possible | 10 | | 3 | |
| Sum | 22 | | 10 | |
| Observed | 0 | | - | |

Northern Mockingbird

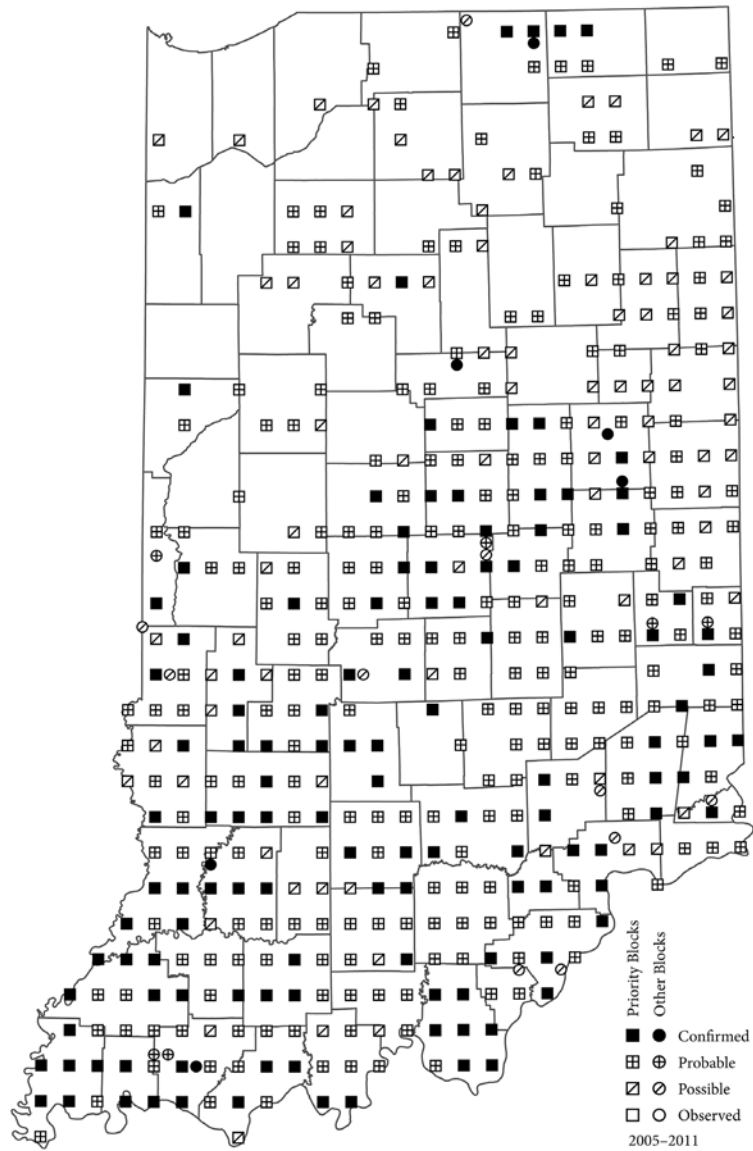


Figure 249. Map of the occurrences of the Northern Mockingbird in IBBA blocks during 2005–2011.

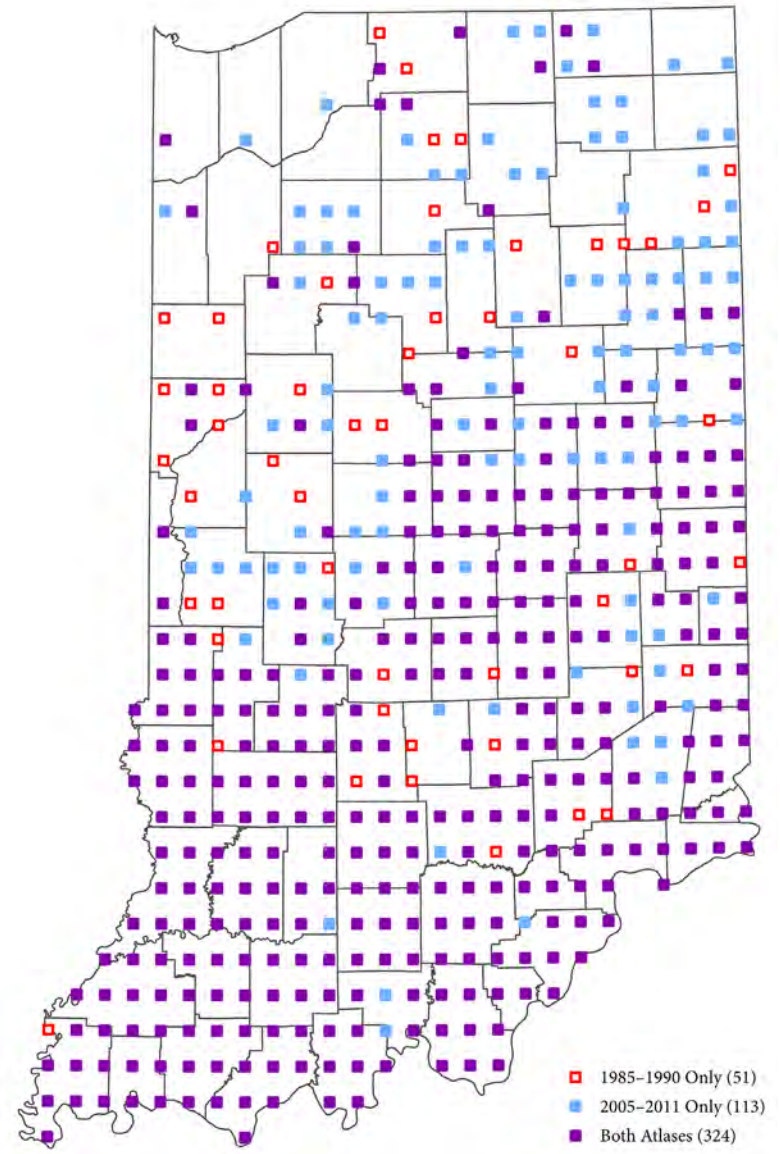


Figure 250. Map of the occurrences of the Northern Mockingbird in IBBA priority blocks during both atlas periods.

Starlings (Sturnidae)

Table 153, Fig. 251–252

THE NONNATIVE EUROPEAN Starling was found in nearly every priority block during both Indiana atlas projects. The small difference in occurrence was not statistically significant. European Starling was the second most abundant bird recorded on Breeding Bird Surveys in Indiana with similar relative densities between atlas periods. There were some regional variations. The population trend on statewide BBS routes was positive for the European Starling, but not statistically significant.

European Starlings are found in a wide variety of habitats in rural, urban, industrial, and agricultural areas of the state, with lower numbers in the more heavily forested areas of south-central Indiana. Resident year round, European Starlings form large flocks in late

summer and throughout the winter. They compete with woodpeckers and other cavity nesters for breeding sites in tree cavities, but also lay eggs in nest boxes, recesses, and crevices on buildings and in rock cuts (Cabe 1993). They forage mostly on the ground with a diverse diet consisting of insects, grain, seeds, fruit, livestock feed, and garbage.

As in Indiana, the European Starling was found in virtually every atlas block in Ohio and in the Lower Peninsula of Michigan. However, reports were more scattered in occurrence in the Upper Peninsula. Frequencies were nearly identical in Indiana and Ohio, but moderately lower in Michigan.

European Starling



A European Starling raises its head to the sky and fluffs out its neck feathers while perched on a branch.
Photo by Shari McCollough.

Table 153. Regional occurrence and abundance information for the European Starling.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 100 | 98 | 55 | 115 | 31 | 139 | | | | |
| Northwest | 73 | 100 | 96 | 34 | 113 | 19 | 149 | | | | |
| Northeast | 54 | 100 | 100 | 21 | 118 | 12 | 124 | | | | |
| Central | 273 | 100 | 97 | 110 | 144 | 102 | 167 | | | | |
| West-central | 114 | 100 | 96 | 56 | 119 | 38 | 125 | | | | |
| East-central | 159 | 100 | 98 | 54 | 170 | 64 | 191 | | | | |
| South | 246 | 98 | 99 | 97 | 124 | 88 | 91 | | | | |
| Southwest | 106 | 99 | 98 | 47 | 122 | 39 | 117 | | | | |
| South-central | 87 | 97 | 100 | 35 | 95 | 35 | 59 | | | | |
| Southeast | 53 | 98 | 100 | 15 | 201 | 14 | 95 | | | | |
| Statewide | 646 | 99 | 98 | 262 | 131 | 221 | 133 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 551 | 86 | 506 | 80 |
| Probable | 83 | 13 | 108 | 17 |
| Possible | 7 | 1 | 20 | 3 |
| Sum | 641 | | 634 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 20 | | 11 | |
| Probable | 6 | | 4 | |
| Possible | 14 | | 4 | |
| Sum | 40 | | 19 | |
| Observed | 0 | | - | |

European Starling

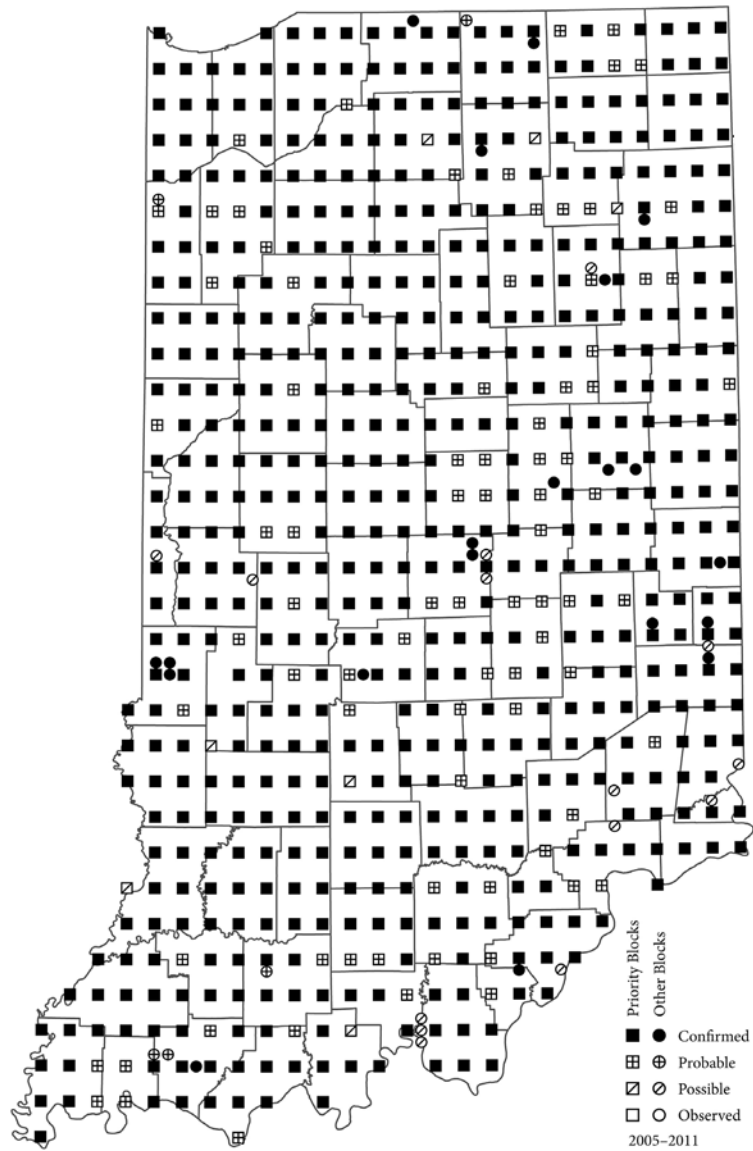


Figure 251. Map of the occurrences of the European Starling in IBBA blocks during 2005–2011.

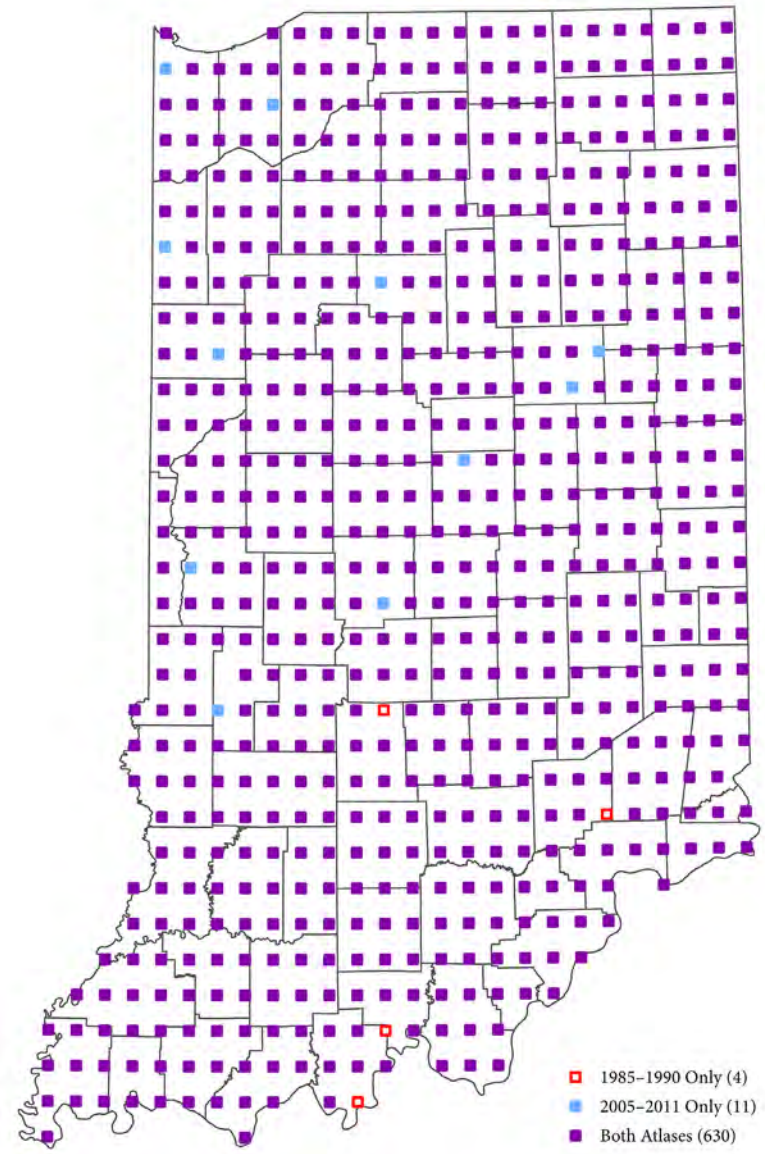


Figure 252. Map of the occurrences of the European Starling in IBBA priority blocks during both atlas periods.

Waxwings (Bombycillidae)

Table 154, Fig. 253–254

ALTHOUGH TWO SPECIES of waxwings occur in Indiana, Bohemian Waxwings do not nest and are rare winter visitors while Cedar Waxwings are common breeders encountered throughout the year. No other species of bird in Indiana is more specialized for feeding on fruit than the Cedar Waxwing, although they also eat insects during the spring and summer months (Witmer *et al.* 1997). Most of the year Cedar Waxwings are found in flocks, but disassociate into pairs during the breeding season. They can be found in a variety of open and wooded habitats and construct nests in many types of deciduous and coniferous trees and shrubs.

Cedar Waxwings were found in most priority at-

las blocks throughout Indiana with a relatively uniform statewide distribution. The number of occurrences increased significantly from the previous atlas in all regions except southern Indiana. Breeding Bird Survey densities also indicate a large population upswing in all sections of the state. Cedar Waxwings showed a statistically significant increase on BBS routes over the 1985–2011 period. This species was also found in most atlas blocks in Ohio and Michigan. Rates of occurrence between atlas periods suggested a moderate increase in Indiana, a slight decrease in Michigan, and essentially no change in Ohio.

Cedar Waxwing



A Cedar Waxwing perches on a small branch. *Photo by Ryan Sanderson.*

Table 154. Regional occurrence and abundance information for the Cedar Waxwing.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 87 | 80 | 55 | 8.9 | 31 | 4.0 | | | | |
| Northwest | 73 | 84 | 75 | 34 | 6.8 | 19 | 3.4 | | | | |
| Northeast | 54 | 91 | 87 | 21 | 12.2 | 12 | 5.1 | | | | |
| Central | 273 | 85 | 65 | 110 | 7.5 | 102 | 2.1 | | | | |
| West-central | 114 | 90 | 63 | 56 | 6.9 | 38 | 3.4 | | | | |
| East-central | 159 | 81 | 66 | 54 | 8.1 | 64 | 1.3 | | | | |
| South | 246 | 80 | 73 | 97 | 7.0 | 88 | 2.3 | | | | |
| Southwest | 106 | 86 | 65 | 47 | 6.7 | 39 | 2.2 | | | | |
| South-central | 87 | 80 | 79 | 35 | 8.5 | 35 | 2.7 | | | | |
| Southeast | 53 | 66 | 77 | 15 | 4.5 | 14 | 1.8 | | | | |
| Statewide | 646 | 83 | 71 | 262 | 7.6 | 221 | 2.5 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 145 | 27 | 71 | 16 |
| Probable | 273 | 51 | 246 | 54 |
| Possible | 120 | 22 | 141 | 31 |
| Sum | 538 | | 458 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 9 | | 1 | |
| Probable | 11 | | 4 | |
| Possible | 14 | | 7 | |
| Sum | 34 | | 12 | |
| Observed | 0 | | - | |

Cedar Waxwing

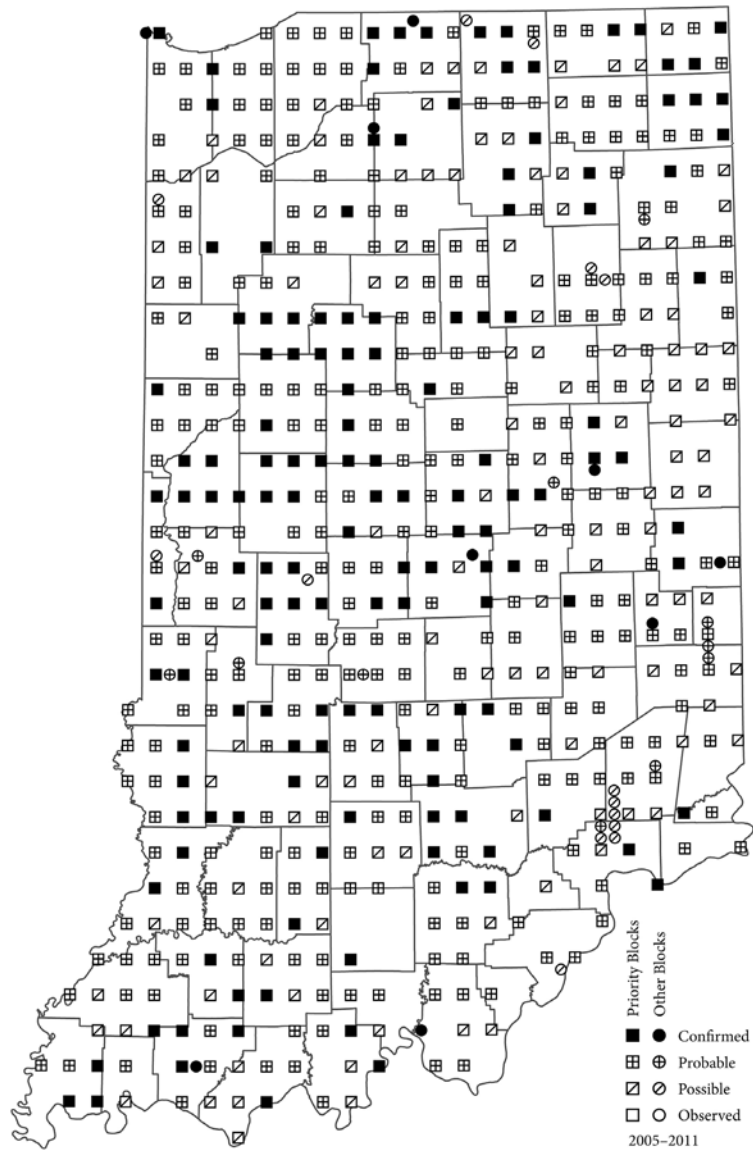


Figure 253. Map of the occurrences of the Cedar Waxwing in IBBA blocks during 2005–2011.

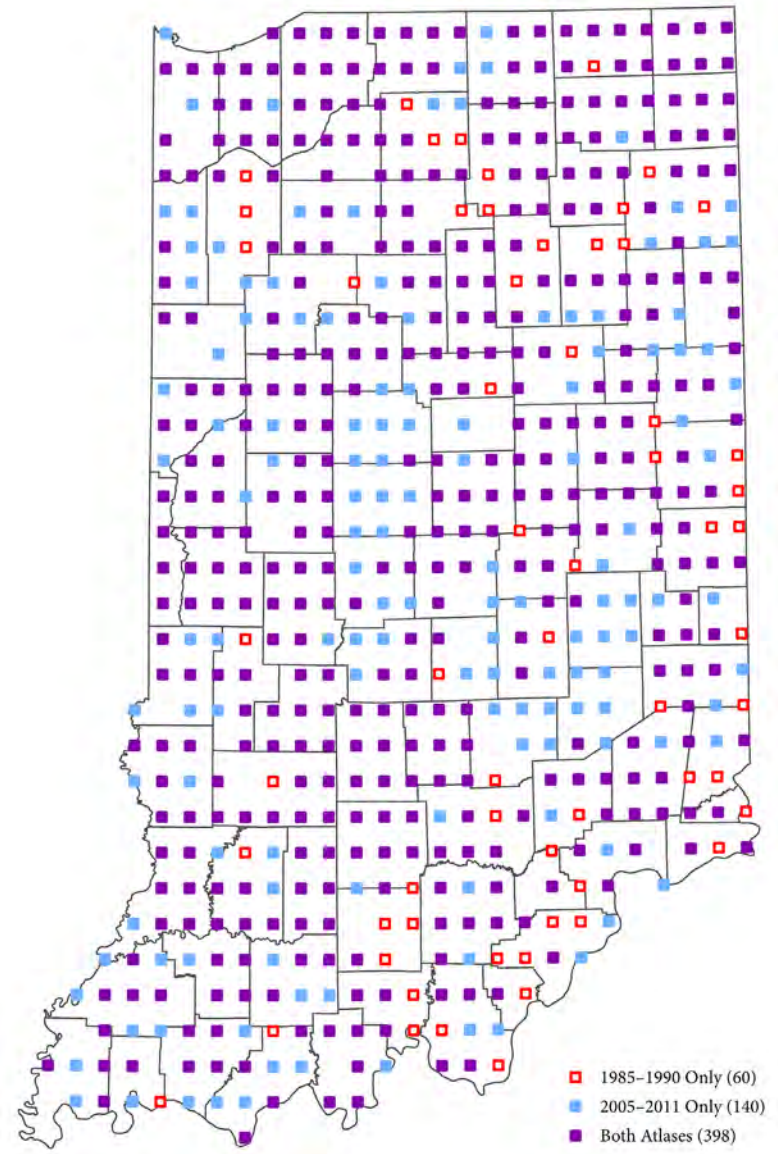


Figure 254. Map of the occurrences of the Cedar Waxwing in IBBA priority blocks during both atlas periods.

Warblers (Parulidae)

Tables 155–179, Fig. 255–299

THIS LARGE GROUP of colorful birds consists of 18 species that regularly breed plus six that have sporadically or formerly nested in Indiana. The latter include the Northern Waterthrush, Golden-winged Warbler, Magnolia Warbler, Blackburnian Warbler, Black-throated Green Warbler, and Canada Warbler. All were recorded during the atlas projects, but none were confirmed breeding. In addition, the Mourning Warbler is included in this publication because of regular summer records, although it has never been confirmed nesting in Indiana.

By far, the Common Yellowthroat is the most widely distributed and abundant warbler in Indiana during the summer and likely occurs in every atlas block in the state. Only two other warblers, the Yellow Warbler and Yellow-breasted Chat, occurred in over half of the priority blocks. Other species that occurred in more than a quarter of priority blocks are Northern Parula, Yellow-throated Warbler, Kentucky Warbler, and Prairie Warbler. American Redstart, Louisiana Waterthrush, and Ovenbird were found in fewer than 25% of the blocks. Regular, but less common breeders, are Prothonotary Warbler, Blue-winged Warbler, Cerulean Warbler, Worm-eating Warbler, Pine Warbler, and Black-and-white Warbler. Chestnut-sided Warbler and Black-throated Green Warbler are rare and local. Golden-winged Warbler and Canada Warbler had a few records, none in priority blocks, but once nested regularly in the northern part of the state. The remaining species (Northern Waterthrush, Mourning Warbler, Magnolia Warbler, and Blackburnian Warbler) were reported in a handful of blocks, but none with confirmed breeding evidence. A photo of a Blackburnian Warbler carrying nest material in Porter County during 2016 would constitute confirmed breeding (Brock 2016). Indiana's first nesting record for Black-throated Blue Warbler occurred during 2017 in Brown County where a female was paired with a Cerulean Warbler (Brock 2017). A nest and three nestlings were observed.

Of the 25 species of warblers considered in the atlas, two occurred in the same number of priority blocks, while 14 species were recorded in a greater number of

blocks during the 2005–2011 atlas and nine in fewer blocks. Increases in occurrences were statistically significant for six species (in ranked order): Northern Parula, Yellow-throated Warbler, Hooded Warbler, Pine Warbler, American Redstart, and Black-and-white Warbler. Species with significant declines in occurrence are: Cerulean Warbler, Common Yellowthroat, Chestnut-sided Warbler, and Blue-winged Warbler. Values on Breeding Bird Survey routes suggested similar changes in populations. Five species had statistically significant increases: Northern Parula, Hooded Warbler, Louisiana Waterthrush, Prothonotary Warbler, and Yellow-throated Warbler. Other species showing positive, although statistically insignificant trends were Pine Warbler, Worm-eating Warbler, American Redstart, Ovenbird, Yellow Warbler, Yellow-breasted Chat, and Kentucky Warbler. Only two species exhibited statistically significant negative population trends, the Cerulean Warbler and Common Yellowthroat. Nonsignificant declines were observed for Blue-winged Warbler, Prairie Warbler, Chestnut-sided Warbler, and Black-and-white Warbler.

The 31 warbler species confirmed breeding on the recent Michigan atlas exceeded those from Ohio (26 species) and Indiana (18 species). Breeding warblers unique to Michigan were the Golden-winged Warbler, Tennessee Warbler, Connecticut Warbler, Kirtland's Warbler, Cape May Warbler, Bay-breasted Warbler, Palm Warbler, and Yellow-rumped Warbler. Golden-winged Warblers were moderately common, while the remaining species had low rates of occurrence and were found mostly in the Upper Peninsula and more locally in the Northern Lower Peninsula where the core area for Kirtland's Warblers exists. Wilson's Warbler occurred and was confirmed nesting on the first atlas, but not the most recent one. Another group of northern warblers (Northern Waterthrush, Nashville Warbler, Mourning Warbler, Magnolia Warbler, Blackburnian Warbler, Black-throated Blue Warbler, Black-throated Green Warbler, Canada Warbler) were confirmed breeding in both Michigan and Ohio, but not in Indiana. Rates of occurrence were moderate in the Upper

Peninsula and Northern Lower Peninsula of Michigan and much lower in Ohio, where they were found most often in the northeastern and eastern regions. Ovenbirds, Black-and-white Warblers, Chestnut-sided Warblers, and Pine Warblers were more common in Michigan, especially the northern region of the state, than in Indiana and Ohio. Warblers with a more southerly distribution that were not confirmed breeding in Michigan included Worm-eating Warbler, Kentucky Warbler, and Yellow-throated Warbler, while others (Louisiana Waterthrush, Blue-winged Warbler, Prothonotary Warbler, Hooded Warbler, Cerulean Warbler, Prairie Warbler, Yellow-breasted Chat) had confirmed nesting records, but generally low rates of occurrence. These were found mostly in the Southern Lower Peninsula of Michigan. The most frequently recorded species of warblers found in Indiana and Ohio were the Common Yellowthroat, Yellow Warbler, and Yellow-breasted Chat. Common Yellowthroat, Yellow Warbler, and Ovenbird were most often recorded in Michigan. Prothonotary Warbler, Kentucky Warbler, Northern Parula, Yellow-throated Warbler, and Yellow-breasted Chat had greater relative frequencies in Indiana compared to Ohio and Michigan. Differences in rates of occurrences between atlas periods were consistent only for a few warbler species. Cerulean Warbler exhibited the largest decreases with smaller declines seen in Golden-winged Warbler, Yellow-breasted Chat, Common Yellowthroat, and Canada Warbler. Northern Parula had the most dramatic increase in records, but consistent increases were also noted for Black-and-white Warbler, Hooded Warbler, Magnolia Warbler, Pine Warbler, Yellow-throated Warbler, and Black-throated Green Warbler. Ovenbird, Blue-winged Warbler, Kentucky Warbler, and Prairie Warbler showed moderate declines in Ohio, while American Redstart displayed a pronounced increase in Indiana and Michigan.

Breeding habitat for this diverse group of birds spans a variety of types dominated by forests and shrubland, with few species encountered in marshes or grasslands. Deciduous forests host the largest group of Indiana's breeding warblers: Black-and-white Warbler, Northern Parula, Cerulean Warbler, Worm-eating Warbler, Ovenbird, Kentucky Warbler, Hooded Warbler, American Redstart, and Canada Warbler. Pine Warbler, Black-throated Green Warbler, Mag-

olia Warbler, and Blackburnian Warbler are typically associated with coniferous or mixed deciduous/coniferous forests. Yellow-throated Warbler is most often coupled with American sycamores, but will also breed in pine forests. Prothonotary Warbler is found in bald cypress swamps or bottomland hardwoods with standing water. Northern Waterthrush prefers wooded swamps, bogs, and the edges of ponds or streams. Louisiana Waterthrush prefers wooded perennial streams. Blue-winged Warbler, Golden-winged Warbler, Chestnut-sided Warbler, Prairie Warbler, Mourning Warbler, and Yellow-breasted Chat are associated with brushy fields, thickets, abandoned fields, forest openings, and other early successional woody habitat. Common Yellowthroat and Yellow Warbler are more generalists and occur in fields, grassy areas, marshes, brushy areas, and woodland edges.

Most warblers are associated with more extensively forested areas, and the majority of species occurred most frequently in south-central Indiana: Ovenbird, Worm-eating Warbler, Louisiana Waterthrush, Kentucky Warbler, Hooded Warbler, Cerulean Warbler, Pine Warbler, Yellow-throated Warbler, Prairie Warbler, Black-throated Green Warbler, and Yellow-breasted Chat. Priority blocks in southwestern Indiana had the greatest rates of occurrence for Black-and-white Warbler, Prothonotary Warbler, and Northern Parula. Blue-winged Warblers were found in the most blocks in southeastern Indiana. Only two of the relatively common species were more prevalent in northern Indiana. Yellow Warblers were found less often in southern Indiana and most often in northeastern Indiana. The relatively rare Chestnut-sided Warbler was found most often in northwestern Indiana. Common Yellowthroats were recorded in virtually all blocks throughout Indiana with slightly fewer blocks in the northwestern part of the state.

Warblers feed almost exclusively on invertebrates, including insects such as caterpillars, flies, and beetles; spiders; snails; and other invertebrates during the summer months. They may eat fruits and seeds in small amounts during other seasons (Confer 1992, Morse 1993, Pitocchelli 1993, Hall 1994, Morse 1994, Ogden and Stutchbury 1994, Van Horn and Donovan 1994, Kricher 1995, Richardson and Brauning 1995, Hall 1996, Moldenhauer and Regelski 1996, Sherry and

Holmes 1997, Hanners and Patton 1998, McDonald 1998, Conway 1999, Guzy and Ritchison 1999, Lowther *et al.* 1999, Nolan *et al.* 1999, Petit 1999, Rodewald *et al.* 1999, Hamel 2000, Eckerle and Thompson 2001, Gill *et al.* 2001). The waterthrushes feed on terrestrial and aquatic invertebrates and occasionally small fish (Eaton 1995, Robinson 1995). Warbler foraging techniques are varied and include gleaning or picking food from the ground, leaf litter, leaves, twigs, branches or bark of trees, shrubs, or other vegetation. Some species also hover while gleaning food; others chase invertebrates or pursue them in the air. Some of the more atypical behaviors are seen in Black-and-white Warblers that forage like White-breasted Nuthatches and in Yellow-throated Warblers that regularly probe under loose bark or extract invertebrates from open pine cones.

Eggs of warblers are generally laid in cup nests that consist of a wide variety of materials including leaves, twigs, grasses, weeds, plant stems, bark strips, pine needles, rootlets, plant down, moss, lichens, hair, feathers, and spider webs. Among the more unique nests are the pendant nest of the Northern Parula, the domed nest of the Ovenbird, and waterthrush nests built into stream banks among the exposed roots of trees. Several warblers typically nest on the ground, including Ovenbird, Worm-eating Warbler, Black-and-white Warbler, Louisiana Waterthrush, and Northern Waterthrush. Others, including Golden-winged Warbler, Blue-winged Warbler, Chestnut-sided Warbler, Kentucky Warbler, Mourning Warbler, Common Yellowthroat, and Can-

ada Warbler are on or near the ground. Nests of Yellow Warbler, Prairie Warbler, Yellow-breasted Chat, Hooded Warbler, and Magnolia Warbler are generally a few feet off the ground in vines, shrubs, or small trees. Species whose nests are generally higher in trees include Northern Parula, Black-throated Green Warbler, Cerulean Warbler, Blackburnian Warbler, Yellow-throated Warbler, Pine Warbler, and American Redstart. Prothonotary Warblers are unique among Indiana's warblers in that they nest in tree cavities and nest boxes.

The breeding range of most warblers summering in Indiana is the eastern half of the United States, while Yellow Warbler, American Redstart, Common Yellowthroat, and Yellow-breasted Chat have a more extensive range that includes more western areas and Canada. The major ranges for the species that nest sporadically in Indiana are in the northern Great Lakes states and Canada. These species include Northern Waterthrush, Magnolia Warbler, Golden-winged Warbler, Blackburnian Warbler, Canada Warbler, Chestnut-sided Warbler, Black-throated Green Warbler, and Mourning Warbler.

Most North American warblers are long-distance migrants wintering in subtropical and tropical areas of Central and South America, including the Caribbean. The Yellow-rumped Warbler is the only warbler species that regularly winters in moderate numbers in Indiana. Of Indiana's breeding species, Pine Warbler winters extensively in the southeastern United States and a few other species winter in Florida or along the Gulf Coast.

Ovenbird



An Ovenbird perches on a branch. *Photo by Shari McCollough.*

Table 155. Regional occurrence and abundance information for the Ovenbird.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 20 | 20 | 55 | 0.09 | 31 | 0.03 | | | | |
| Northwest | 73 | 12 | 22 | 34 | 0.00 | 19 | 0.05 | | | | |
| Northeast | 54 | 30 | 17 | 21 | 0.24 | 12 | 0.00 | | | | |
| Central | 273 | 7 | 10 | 110 | 0.02 | 102 | 0.02 | | | | |
| West-central | 114 | 11 | 10 | 56 | 0.04 | 38 | 0.03 | | | | |
| East-central | 159 | 5 | 9 | 54 | 0.00 | 64 | 0.02 | | | | |
| South | 246 | 40 | 35 | 97 | 0.61 | 88 | 1.03 | | | | |
| Southwest | 106 | 25 | 13 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 59 | 62 | 35 | 1.51 | 35 | 2.49 | | | | |
| Southeast | 53 | 40 | 32 | 15 | 0.40 | 14 | 0.29 | | | | |
| Statewide | 646 | 22 | 21 | 262 | 0.25 | 221 | 0.43 | | | | |

| | Breeding Bird Atlas | | Breeding Bird Atlas | |
|------------------------|---------------------|----|---------------------|----|
| | 2005–2011 | % | 1985–1990 | % |
| Priority Blocks | | | | |
| Confirmed | 13 | 9 | 7 | 5 |
| Probable | 71 | 49 | 76 | 56 |
| Possible | 60 | 42 | 53 | 39 |
| Sum | 144 | | 136 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 7 | | 1 | |
| Probable | 18 | | 3 | |
| Possible | 15 | | 5 | |
| Sum | 40 | | 9 | |
| Observed | 0 | | - | |

Ovenbird

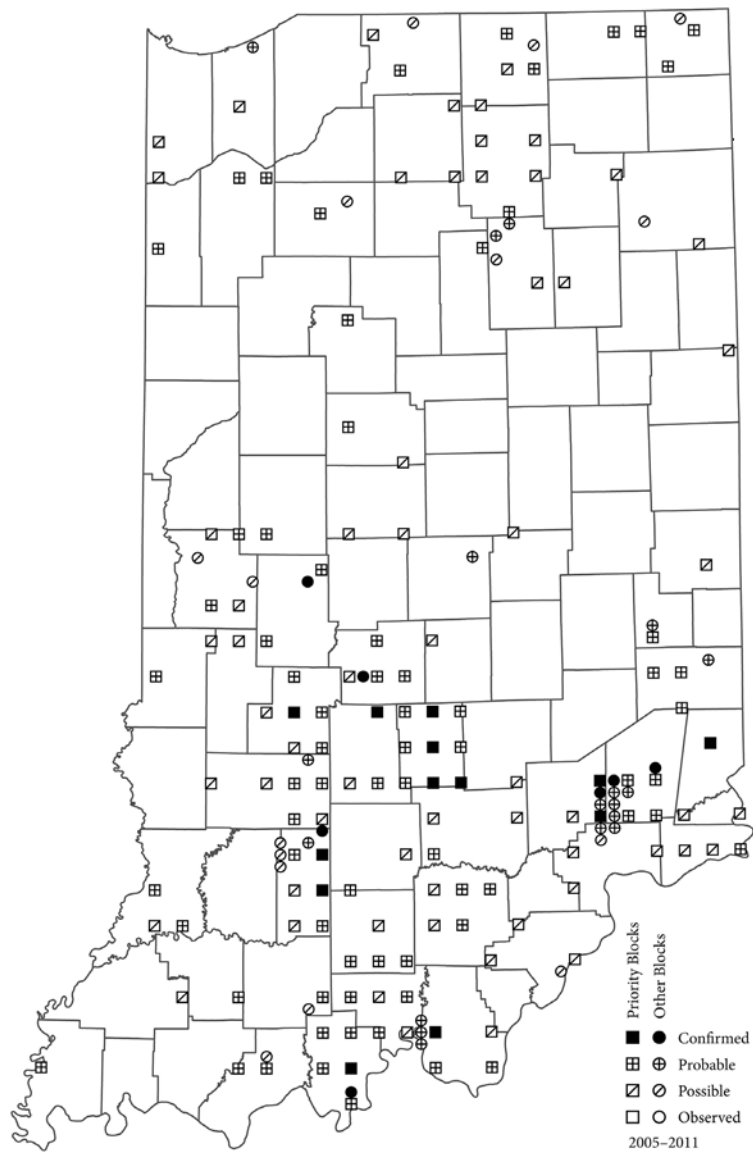


Figure 255. Map of the occurrences of the Ovenbird in IBBA blocks during 2005–2011.

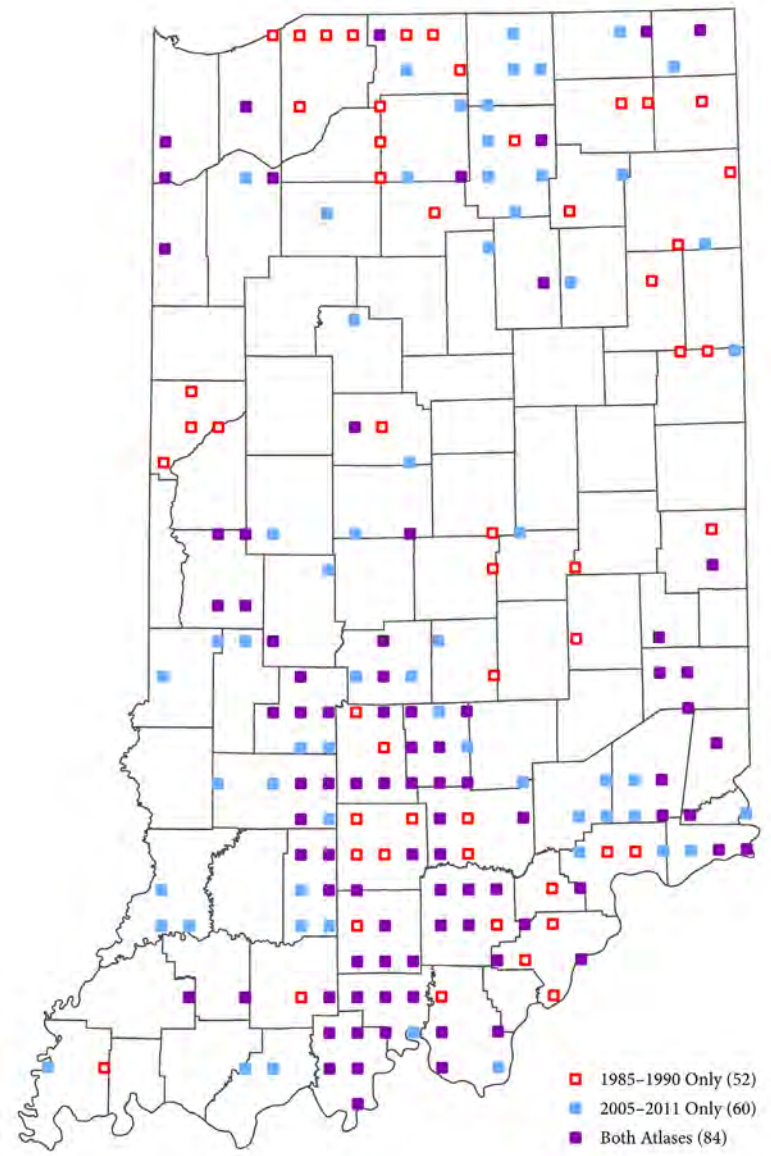


Figure 256. Map of the occurrences of the Ovenbird in IBBA priority blocks during both atlas periods.

Worm-eating Warbler



A Worm-eating Warbler perches on a branch with its mouth open. *Photo by Stephen Bell.*

Table 156. Regional occurrence and abundance information for the Worm-eating Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 0 | <1 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 0 | 2 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 1 | 2 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | 3 | 4 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 0 | <1 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 25 | 20 | 97 | 0.43 | 88 | 0.21 | | | | |
| Southwest | 106 | 18 | 7 | 47 | 0.00 | 39 | 0.03 | | | | |
| South-central | 87 | 44 | 41 | 35 | 1.20 | 35 | 0.49 | | | | |
| Southeast | 53 | 9 | 13 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 10 | 9 | 262 | 0.16 | 221 | 0.08 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 16 | 25 | 7 | 13 |
| Probable | 29 | 45 | 23 | 41 |
| Possible | 20 | 31 | 26 | 46 |
| Sum | 65 | | 56 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 7 | | 5 | |
| Probable | 10 | | 8 | |
| Possible | 6 | | 5 | |
| Sum | 23 | | 18 | |
| Observed | 0 | | - | |

Worm-eating Warbler

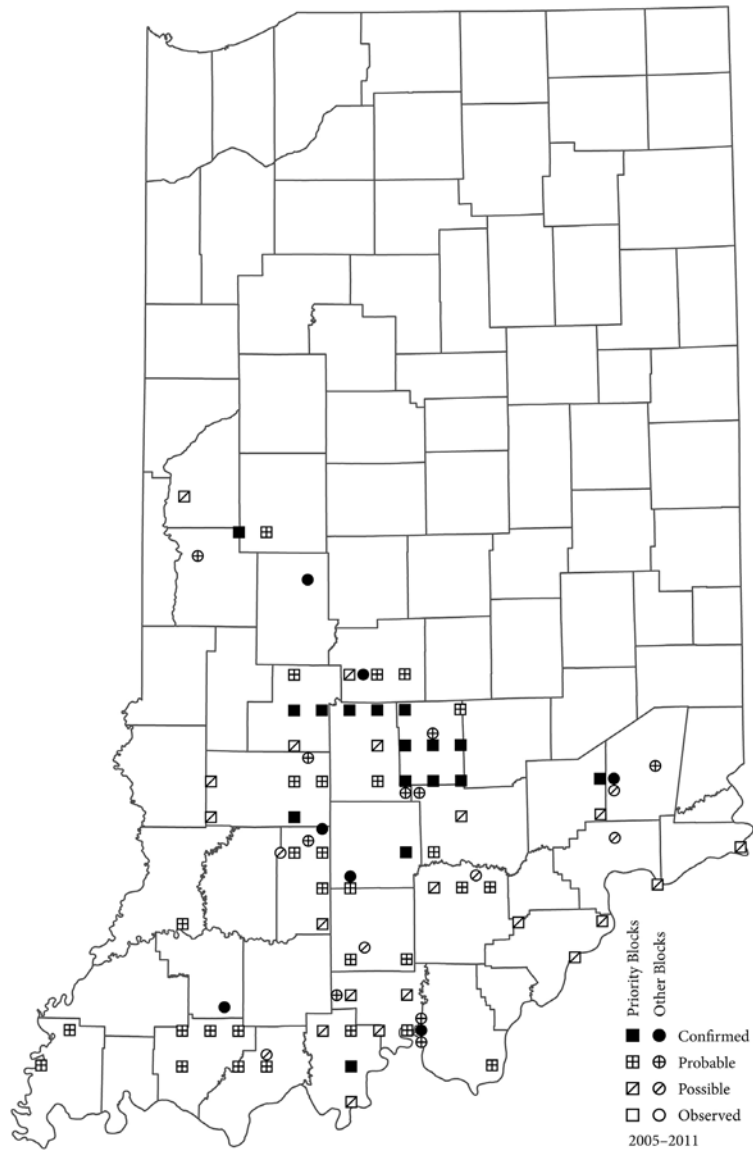


Figure 257. Map of the occurrences of the Worm-eating Warbler in IBBA blocks during 2005–2011.

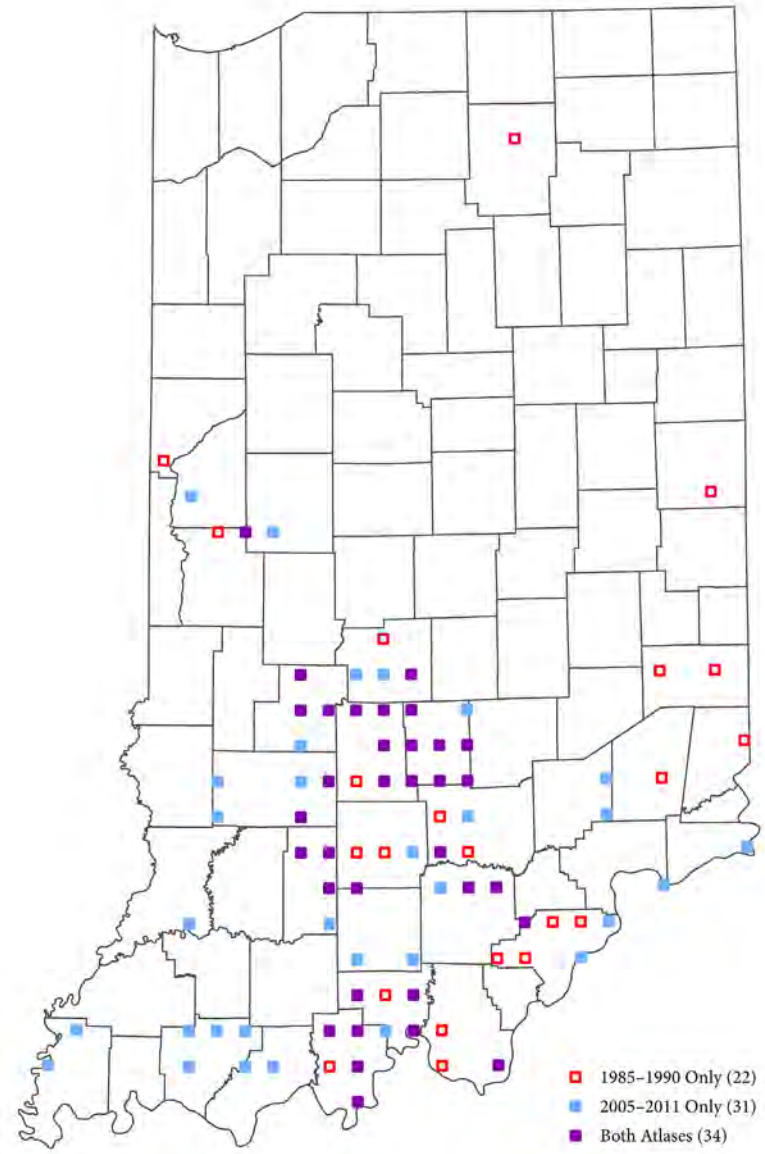


Figure 258. Map of the occurrences of the Worm-eating Warbler in IBBA priority blocks during both atlas periods.

Louisiana Waterthrush



A Louisiana Waterthrush stands on a rocky bank and raises its head to the sky with its mouth open. *Photo by Ryan Sanderson.*

Table 157. Regional occurrence and abundance information for the Louisiana Waterthrush.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 3 | 3 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 3 | 4 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 4 | 2 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 8 | 7 | 110 | 0.04 | 102 | 0.02 | | | | |
| West-central | 114 | 12 | 14 | 56 | 0.07 | 38 | 0.05 | | | | |
| East-central | 159 | 6 | 3 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 46 | 47 | 97 | 0.60 | 88 | 0.38 | | | | |
| Southwest | 106 | 31 | 26 | 47 | 0.04 | 39 | 0.08 | | | | |
| South-central | 87 | 62 | 72 | 35 | 1.46 | 35 | 0.69 | | | | |
| Southeast | 53 | 49 | 47 | 15 | 0.33 | 14 | 0.43 | | | | |
| Statewide | 646 | 22 | 22 | 262 | 0.24 | 221 | 0.16 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 30 | 21 | 37 | 26 |
| Probable | 77 | 55 | 56 | 40 |
| Possible | 33 | 24 | 47 | 34 |
| Sum | 140 | | 140 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 2 | |
| Probable | 14 | | 12 | |
| Possible | 12 | | 4 | |
| Sum | 31 | | 18 | |
| Observed | 0 | | - | |

Louisiana Waterthrush

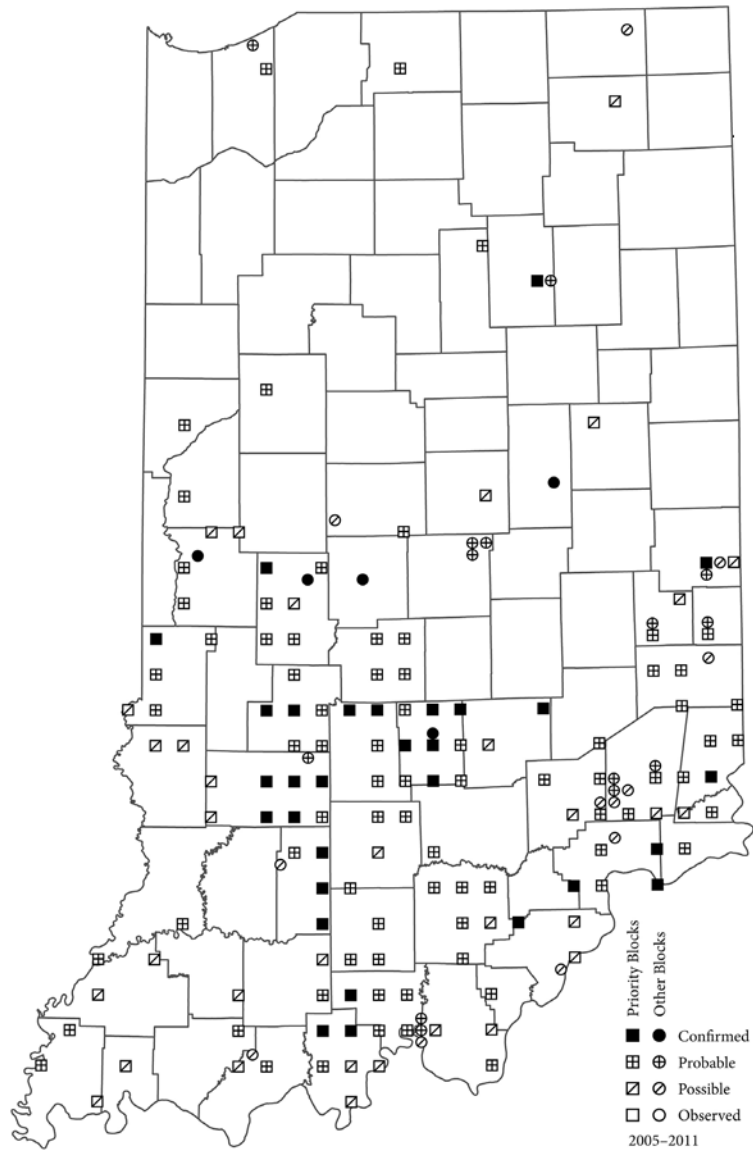


Figure 259. Map of the occurrences of the Louisiana Waterthrush in IBBA blocks during 2005–2011.

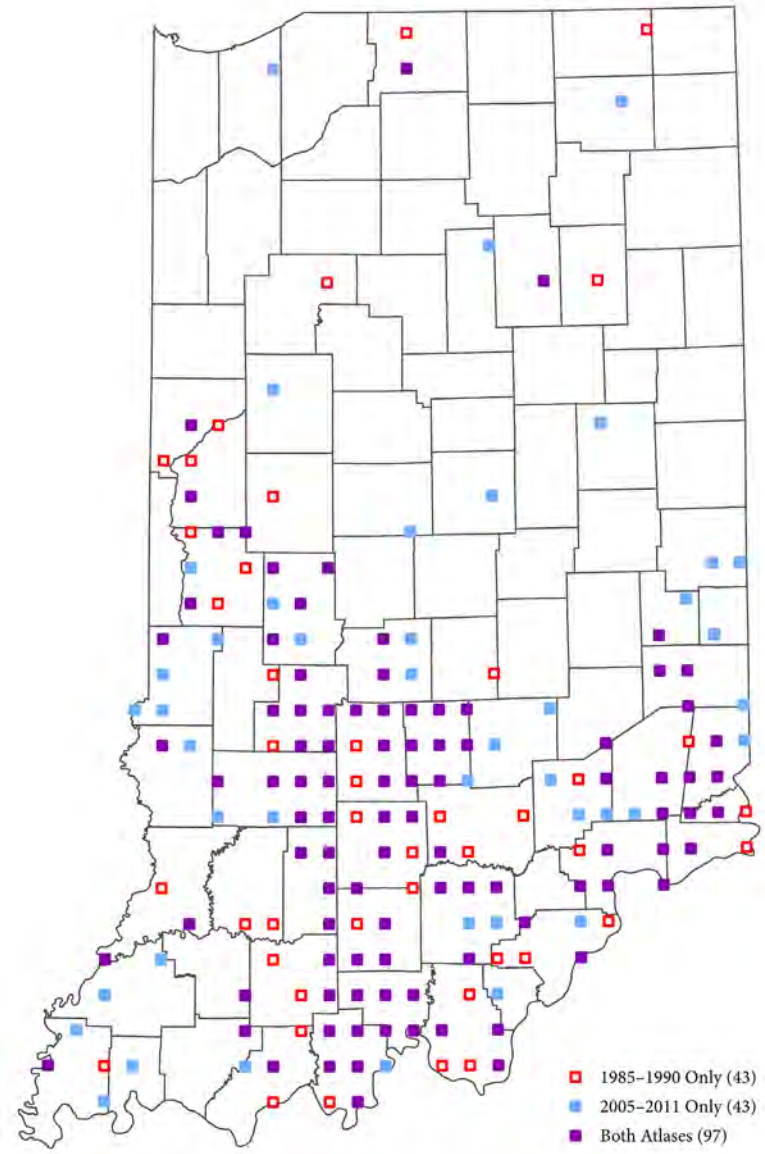


Figure 260. Map of the occurrences of the Louisiana Waterthrush in IBBA priority blocks during both atlas periods.

Northern Waterthrush



A Northern Waterthrush perches on a branch, raising its head to the sky with its mouth open. *Photo by Ryan Sanderson.*

Table 158. Regional occurrence and abundance information for the Northern Waterthrush.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|--------------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | <1 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | <1 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | <1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|-----|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | 0 |
| Probable | 0 | | 1 | 100 |
| Possible | 0 | | 0 | 0 |
| Sum | 0 | | 1 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 1 | | 1 | |
| Sum | 1 | | 1 | |
| Observed | 0 | | - | |

Northern Waterthrush



Figure 261. Map of the occurrences of the Northern Waterthrush in IBBA blocks during 2005–2011.

Golden-winged Warbler



A male Golden-winged Warbler grasps onto a small branch. *Photo by Ryan Sanderson.*

Table 159. Regional occurrence and abundance information for the Golden-winged Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|--------------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 0 | 2 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 3 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | <1 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | <1 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | <1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|-----|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | 0 |
| Probable | 0 | | 3 | 100 |
| Possible | 0 | | 0 | 0 |
| Sum | 0 | | 3 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 1 | | 0 | |
| Possible | 0 | | 2 | |
| Sum | 1 | | 2 | |
| Observed | 0 | | - | |

Golden-winged Warbler



Figure 262. Map of the occurrences of the Golden-winged Warbler in IBBA blocks during 2005–2011.

Blue-winged Warbler



A male Blue-winged Warbler stands on a branch with its mouth open. *Photo by Ryan Sanderson.*

Table 160. Regional occurrence and abundance information for the Blue-winged Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 8 | 11 | 55 | 0.07 | 31 | 0.13 | | | | |
| Northwest | 73 | 5 | 7 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 11 | 17 | 21 | 0.19 | 12 | 0.33 | | | | |
| Central | 273 | 5 | 7 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | 5 | 8 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 5 | 7 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 29 | 36 | 97 | 0.39 | 88 | 0.33 | | | | |
| Southwest | 106 | 22 | 19 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 32 | 47 | 35 | 0.94 | 35 | 0.80 | | | | |
| Southeast | 53 | 40 | 53 | 15 | 0.33 | 14 | 0.07 | | | | |
| Statewide | 646 | 15 | 19 | 262 | 0.16 | 221 | 0.15 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 12 | 13 | 19 | 15 |
| Probable | 47 | 49 | 52 | 42 |
| Possible | 37 | 39 | 52 | 42 |
| Sum | 96 | | 123 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 2 | | 0 | |
| Probable | 14 | | 3 | |
| Possible | 13 | | 7 | |
| Sum | 29 | | 10 | |
| Observed | 0 | | - | |

Blue-winged Warbler

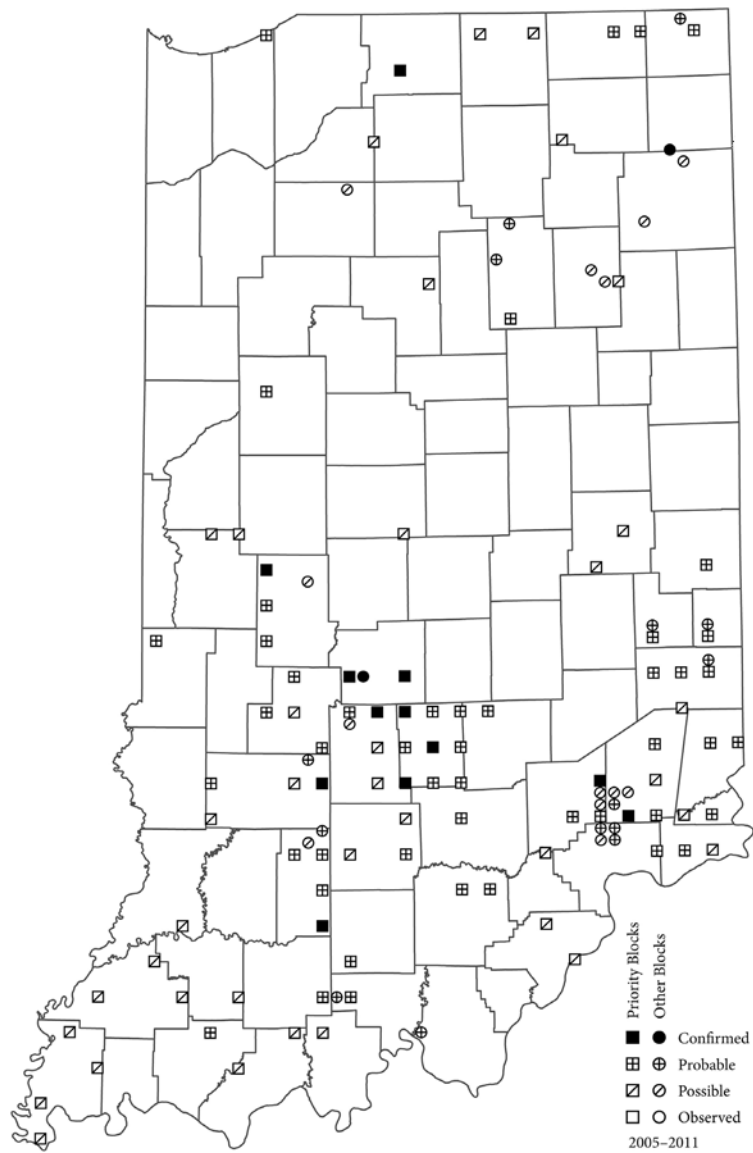


Figure 263. Map of the occurrences of the Blue-winged Warbler in IBBA blocks during 2005–2011.

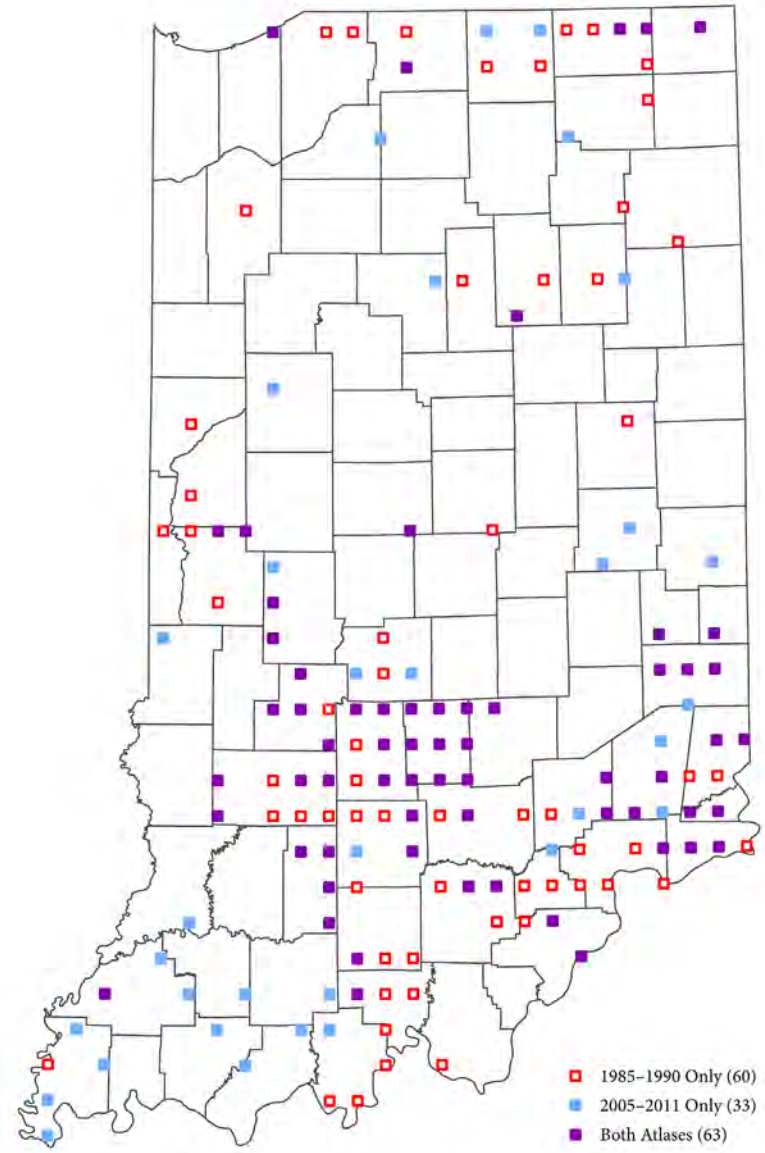


Figure 264. Map of the occurrences of the Blue-winged Warbler in IBBA priority blocks during both atlas periods.

Black-and-white Warbler



A female Black-and-white Warbler perches on a branch. *Photo by Shari McCollough.*

Table 161. Regional occurrence and abundance information for the Black-and-white Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|-----------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 6 | <1 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 1 | 1 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 11 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 2 | 3 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | 0 | 2 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 3 | 4 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 14 | 8 | 97 | 0.05 | 88 | 0.02 | | | | |
| Southwest | 106 | 20 | 5 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 14 | 15 | 35 | 0.14 | 35 | 0.06 | | | | |
| Southeast | 53 | 2 | 2 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 7 | 4 | 262 | 0.02 | 221 | <0.01 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 5 | 11 | 2 | 7 |
| Probable | 20 | 43 | 10 | 36 |
| Possible | 21 | 46 | 16 | 57 |
| Sum | 46 | | 28 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 1 | | 0 | |
| Probable | 4 | | 1 | |
| Possible | 15 | | 8 | |
| Sum | 20 | | 9 | |
| Observed | 0 | | - | |

Black-and-white Warbler

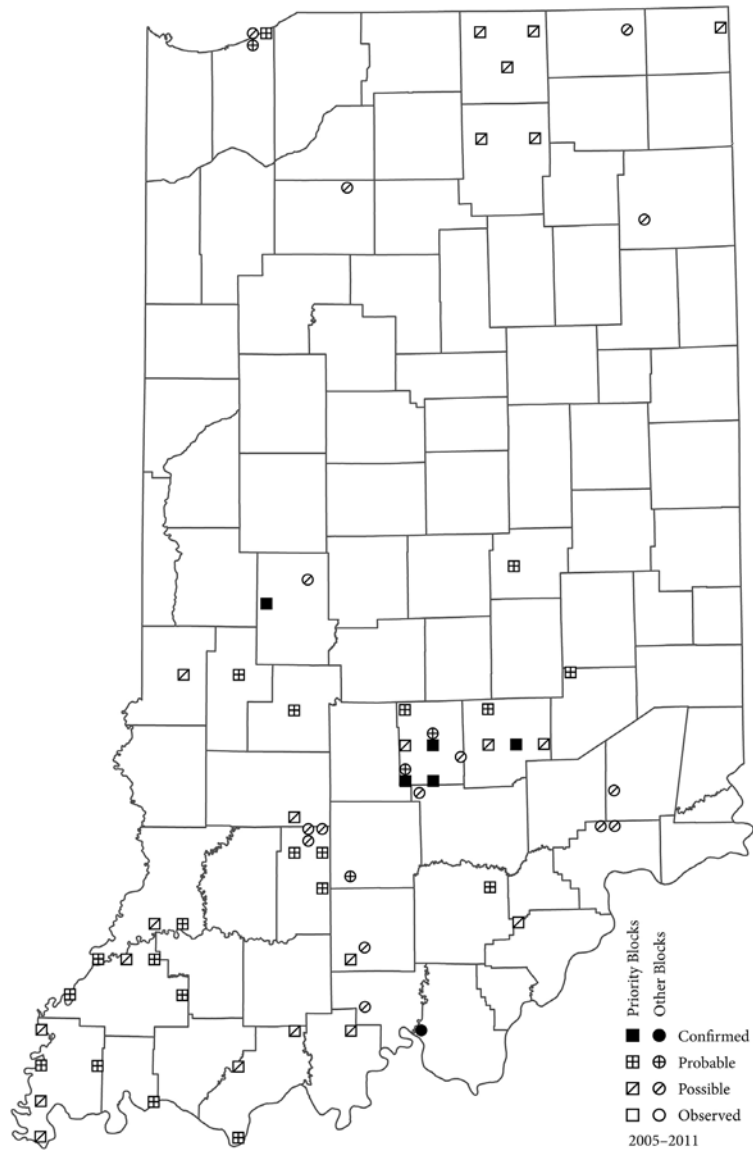


Figure 265. Map of the occurrences of the Black-and-white Warbler in IBBA blocks during 2005–2011.

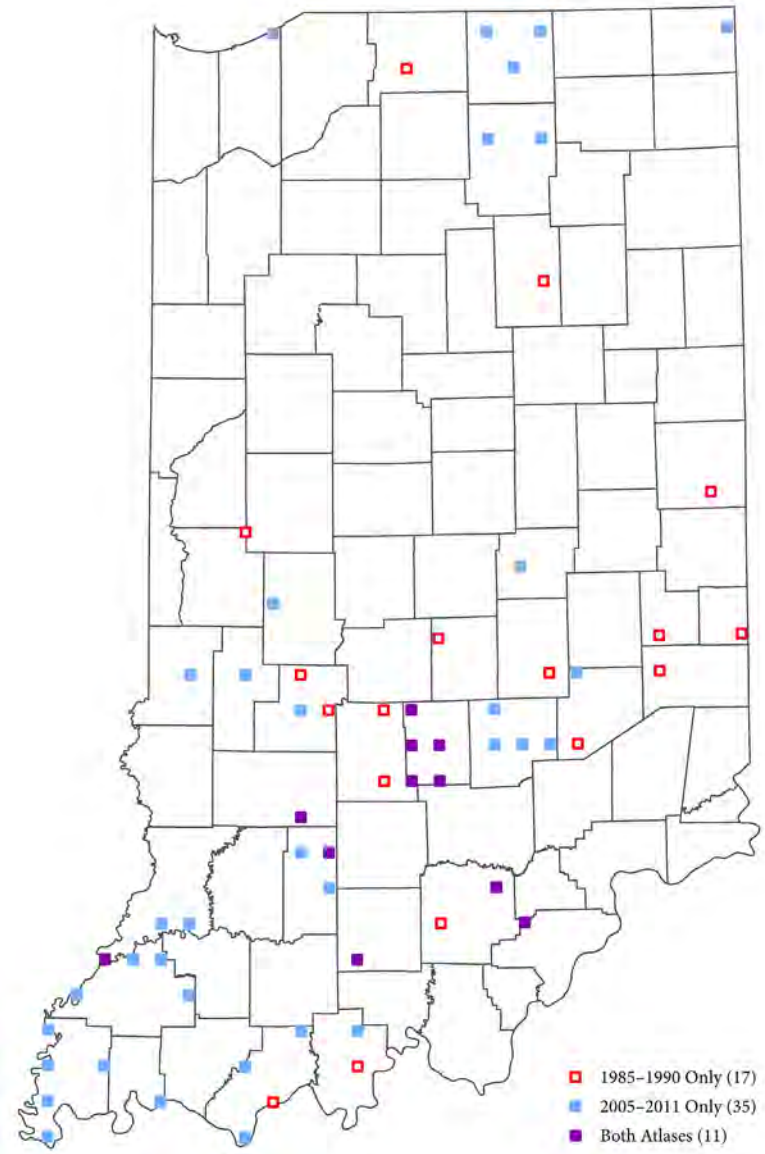


Figure 266. Map of the occurrences of the Black-and-white Warbler in IBBA priority blocks during both atlas periods.

Prothonotary Warbler



A Prothonotary Warbler perches on a small branch that is stapled to a bird house and carries nesting material in his beak. *Photo by Shari McCollough.*

Table 162. Regional occurrence and abundance information for the Prothonotary Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 9 | 6 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 7 | 8 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 13 | 4 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 4 | 2 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | 4 | 3 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 4 | 1 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 35 | 33 | 97 | 0.54 | 88 | 0.36 | | | | |
| Southwest | 106 | 52 | 46 | 47 | 0.94 | 39 | 0.41 | | | | |
| South-central | 87 | 24 | 28 | 35 | 0.23 | 35 | 0.46 | | | | |
| Southeast | 53 | 19 | 13 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 17 | 14 | 262 | 0.20 | 221 | 0.15 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 27 | 25 | 22 | 24 |
| Probable | 55 | 50 | 50 | 54 |
| Possible | 27 | 25 | 21 | 23 |
| Sum | 109 | | 93 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 11 | | 5 | |
| Probable | 16 | | 8 | |
| Possible | 10 | | 2 | |
| Sum | 37 | | 15 | |
| Observed | 0 | | - | |

Prothonotary Warbler

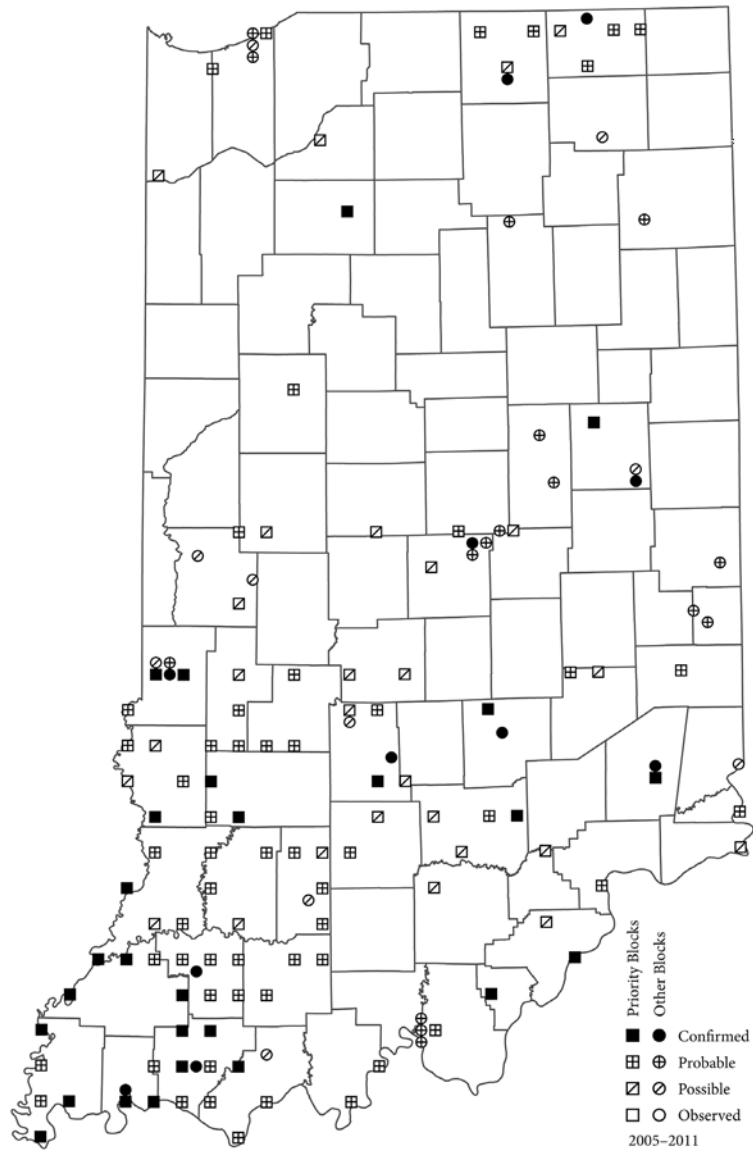


Figure 267. Map of the occurrences of the Prothonotary Warbler in IBBA blocks during 2005–2011.

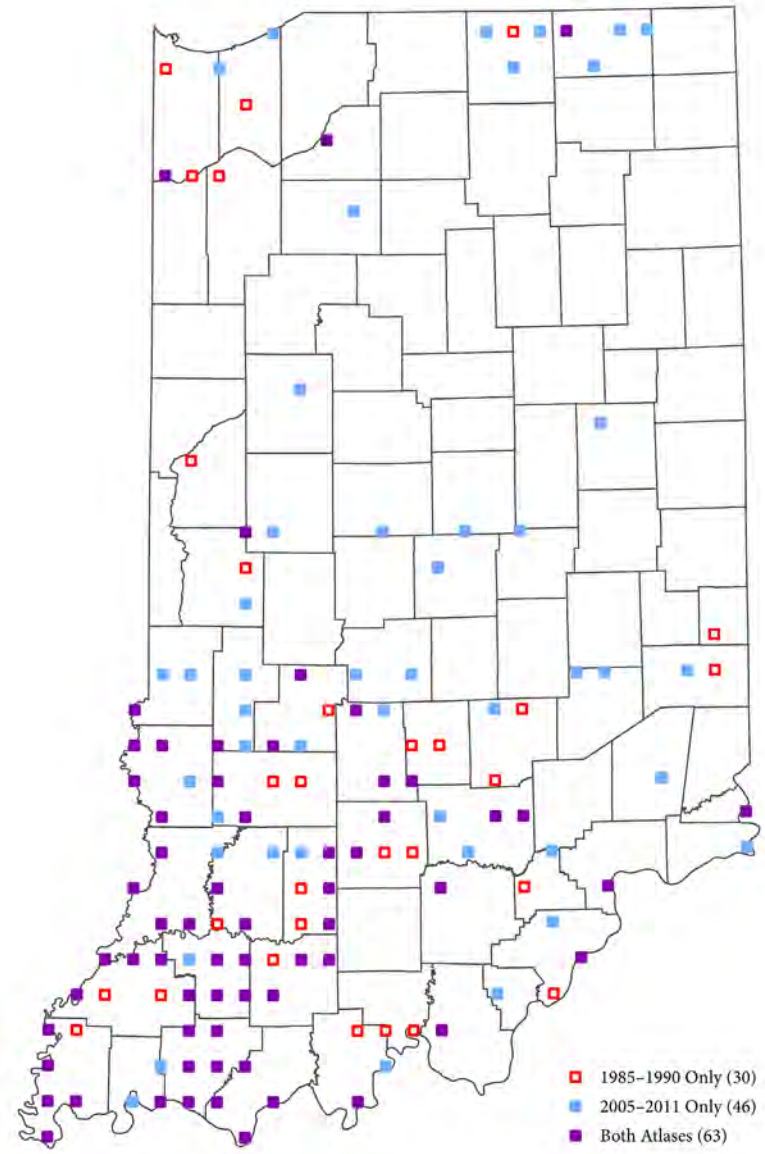


Figure 268. Map of the occurrences of the Prothonotary Warbler in IBBA priority blocks during both atlas periods.

Mourning Warbler



A male Mourning Warbler perches on a branch. *Photo by Ryan Sanderson.*

Table 163. Regional occurrence and abundance information for the Mourning Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|--------------|----------------------|-----------|------------|----------|---------------------|-----------|--|--|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | |
| North | 127 | 2 | 2 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 1 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 4 | 2 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | <1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|-----|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 0 | 0 |
| Probable | 2 | 100 | 2 | 100 |
| Possible | 0 | 0 | 0 | 0 |
| Sum | 2 | | 2 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 1 | | 0 | |
| Sum | 1 | | 0 | |
| Observed | 0 | | - | |

Mourning Warbler



Figure 269. Map of the occurrences of the Mourning Warbler in IBBA blocks during 2005–2011.



Figure 270. Map of the occurrences of the Mourning Warbler in IBBA priority blocks during both atlas periods.

Kentucky Warbler



A male Kentucky Warbler stands on a branch and raises his head to the sky, vocalizing. *Photo by Ryan Sanderson.*

Table 164. Regional occurrence and abundance information for the Kentucky Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 6 | 2 | 55 | <0.1 | 31 | 0.0 | | | | |
| Northwest | 73 | 3 | 4 | 34 | 0.0 | 19 | 0.0 | | | | |
| Northeast | 54 | 9 | 0 | 21 | 0.2 | 12 | 0.0 | | | | |
| Central | 273 | 15 | 15 | 110 | <0.1 | 102 | <0.1 | | | | |
| West-central | 114 | 21 | 20 | 56 | <0.1 | 38 | <0.1 | | | | |
| East-central | 159 | 11 | 11 | 54 | <0.1 | 64 | <0.1 | | | | |
| South | 246 | 76 | 74 | 97 | 3.5 | 88 | 4.2 | | | | |
| Southwest | 106 | 64 | 57 | 47 | 0.3 | 39 | 1.2 | | | | |
| South-central | 87 | 89 | 92 | 35 | 7.2 | 35 | 8.7 | | | | |
| Southeast | 53 | 81 | 79 | 15 | 4.5 | 14 | 1.4 | | | | |
| Statewide | 646 | 37 | 35 | 262 | 1.3 | 221 | 1.7 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 46 | 19 | 54 | 24 |
| Probable | 149 | 63 | 126 | 56 |
| Possible | 41 | 17 | 46 | 20 |
| Sum | 236 | | 226 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 13 | | 3 | |
| Probable | 19 | | 10 | |
| Possible | 11 | | 3 | |
| Sum | 43 | | 16 | |
| Observed | 0 | | - | |

Kentucky Warbler

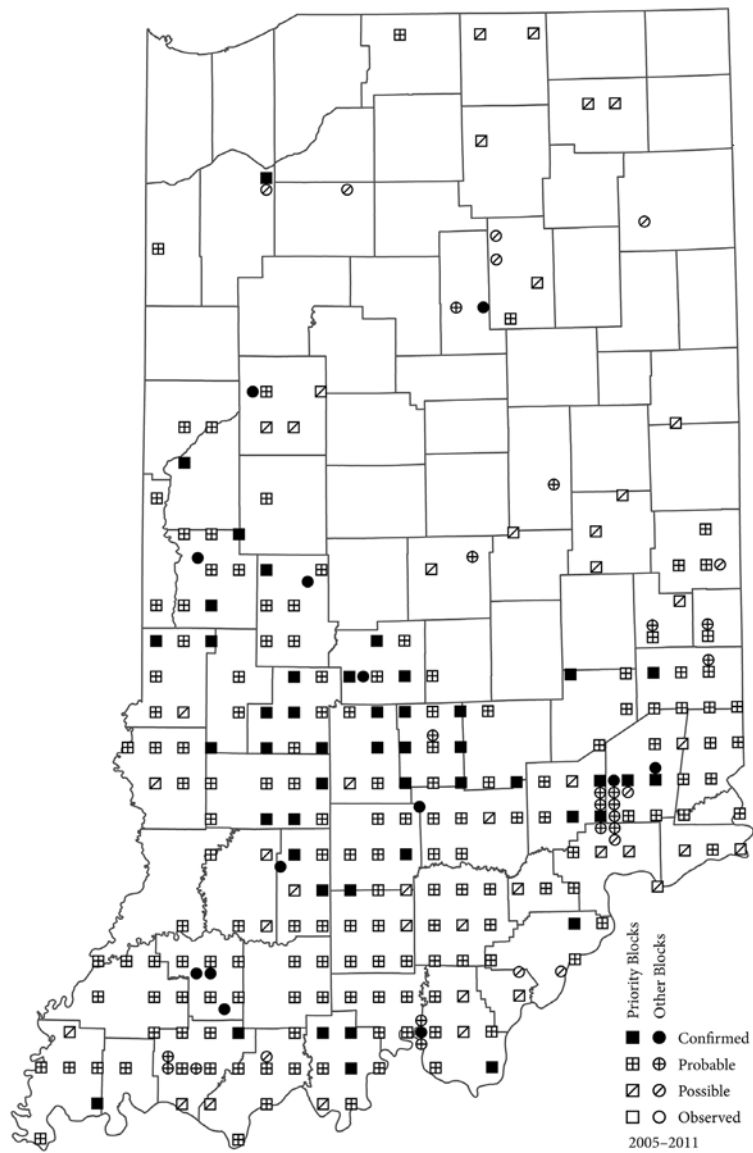


Figure 271. Map of the occurrences of the Kentucky Warbler in IBBA blocks during 2005–2011.

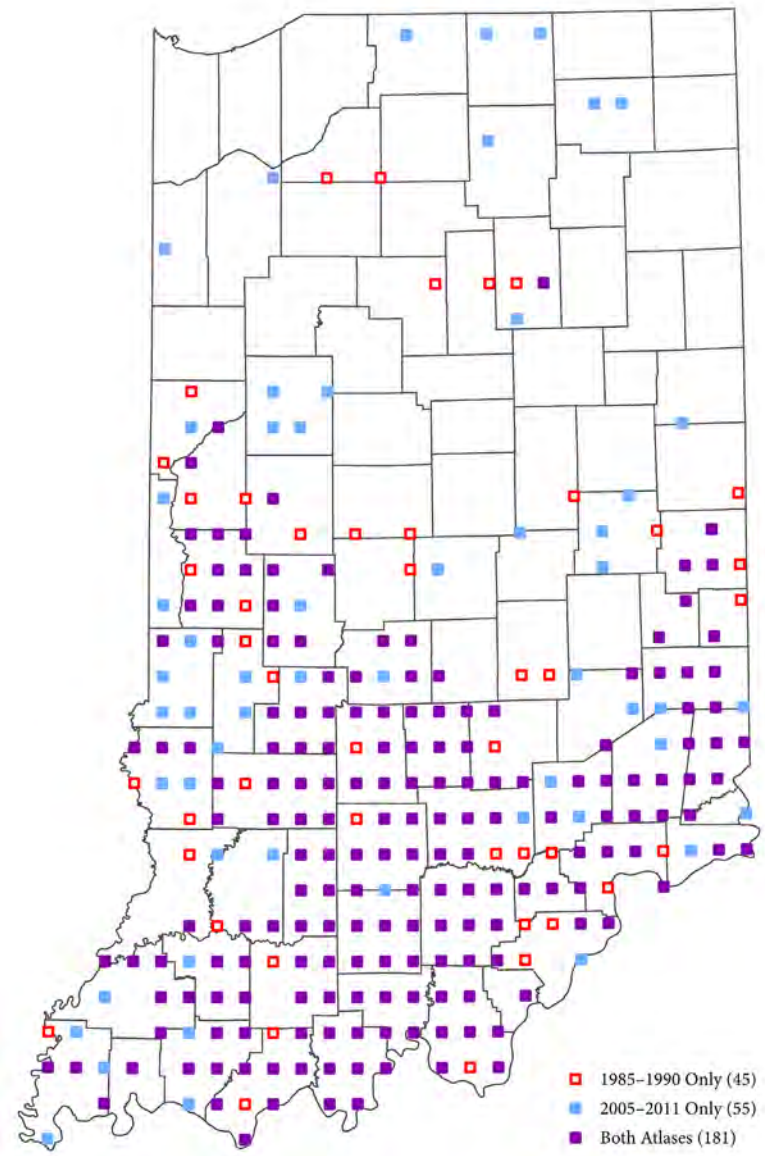


Figure 272. Map of the occurrences of the Kentucky Warbler in IBBA priority blocks during both atlas periods.

Common Yellowthroat



A male Common Yellowthroat grasps onto a dead cattail stalk. *Photo by Ryan Sanderson.*

Table 165. Regional occurrence and abundance information for the Common Yellowthroat.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 90 | 97 | 55 | 13 | 31 | 13 | | | | |
| Northwest | 73 | 89 | 96 | 34 | 9 | 19 | 12 | | | | |
| Northeast | 54 | 91 | 98 | 21 | 19 | 12 | 15 | | | | |
| Central | 273 | 97 | 100 | 110 | 9 | 102 | 11 | | | | |
| West-central | 114 | 97 | 99 | 56 | 11 | 38 | 18 | | | | |
| East-central | 159 | 97 | 100 | 54 | 6 | 64 | 7 | | | | |
| South | 246 | 98 | 100 | 97 | 21 | 88 | 25 | | | | |
| Southwest | 106 | 96 | 99 | 47 | 21 | 39 | 25 | | | | |
| South-central | 87 | 98 | 100 | 35 | 21 | 35 | 27 | | | | |
| Southeast | 53 | 100 | 100 | 15 | 23 | 14 | 21 | | | | |
| Statewide | 646 | 96 | 99 | 262 | 14 | 221 | 17 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 170 | 27 | 157 | 25 |
| Probable | 406 | 66 | 446 | 70 |
| Possible | 43 | 7 | 37 | 6 |
| Sum | 619 | | 640 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 11 | | 2 | |
| Probable | 28 | | 13 | |
| Possible | 12 | | 8 | |
| Sum | 51 | | 23 | |
| Observed | 0 | | - | |

Common Yellowthroat

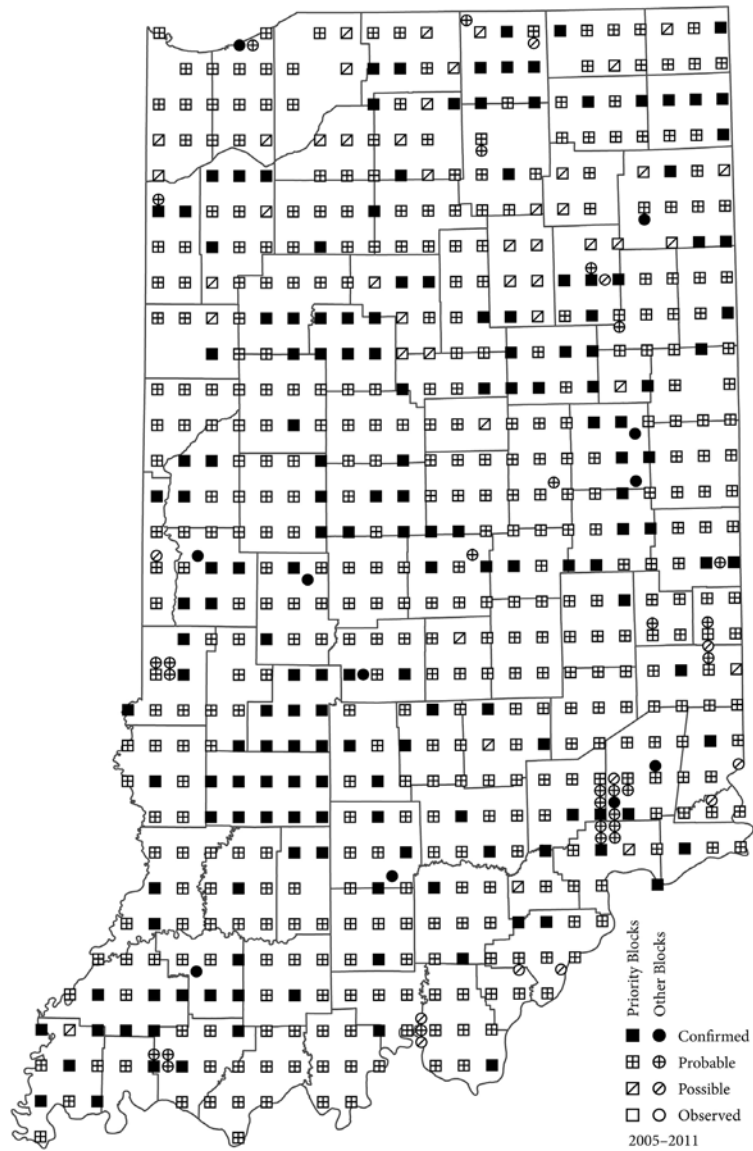


Figure 273. Map of the occurrences of the Common Yellowthroat in IBBA blocks during 2005–2011.

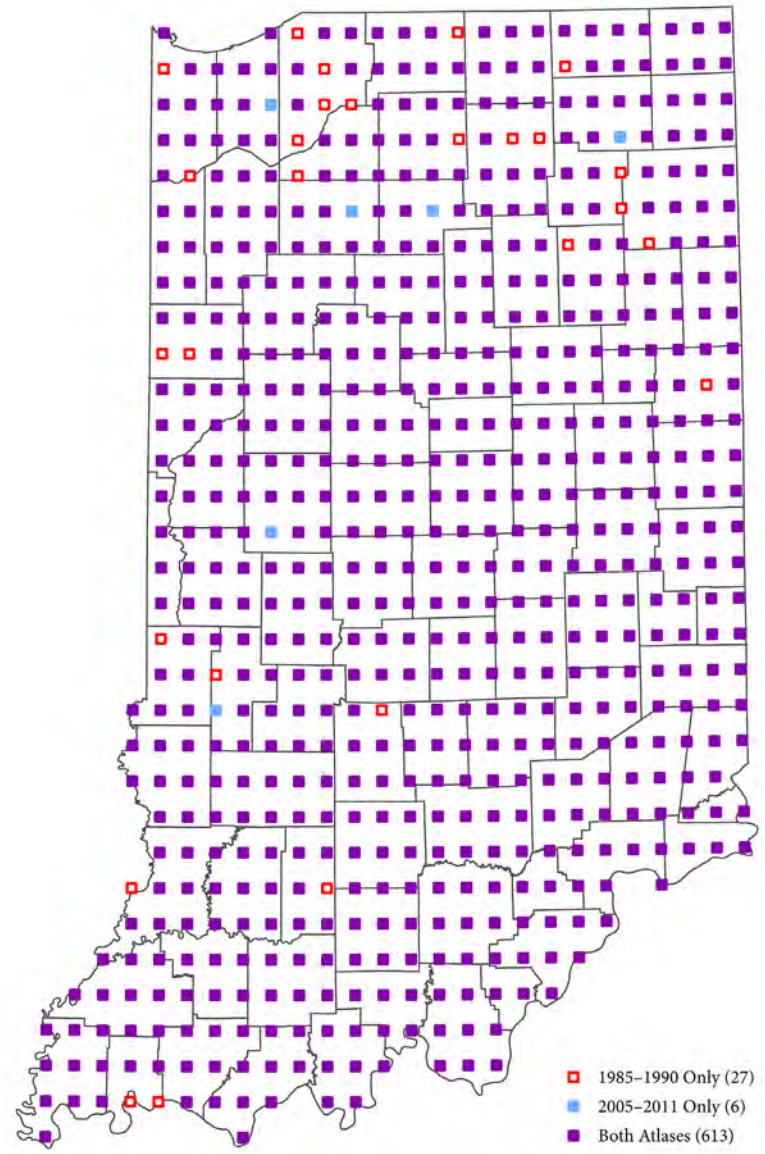


Figure 274. Map of the occurrences of the Common Yellowthroat in IBBA priority blocks during both atlas periods.

Hooded Warbler



A male Hooded Warbler grasps onto a branch. Photo by Jeff Timmons.

Table 166. Regional occurrence and abundance information for the Hooded Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 5 | 3 | 55 | 0.02 | 31 | 0.00 | | | | |
| Northwest | 73 | 3 | 1 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 7 | 6 | 21 | 0.05 | 12 | 0.00 | | | | |
| Central | 273 | 4 | 2 | 110 | 0.05 | 102 | 0.00 | | | | |
| West-central | 114 | 4 | <1 | 56 | 0.07 | 38 | 0.00 | | | | |
| East-central | 159 | 3 | 3 | 54 | 0.04 | 64 | 0.00 | | | | |
| South | 246 | 30 | 17 | 97 | 0.57 | 88 | 0.28 | | | | |
| Southwest | 106 | 20 | 8 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 45 | 37 | 35 | 1.49 | 35 | 0.71 | | | | |
| Southeast | 53 | 25 | 6 | 15 | 0.20 | 14 | 0.00 | | | | |
| Statewide | 646 | 14 | 8 | 262 | 0.24 | 221 | 0.11 | | | | |

| | Breeding Bird Atlas | | Breeding Bird Atlas | |
|------------------------|---------------------|----|---------------------|----|
| | No. | % | No. | % |
| Priority Blocks | | | | |
| Confirmed | 11 | 12 | 5 | 10 |
| Probable | 49 | 55 | 21 | 40 |
| Possible | 29 | 33 | 26 | 50 |
| Sum | 89 | | 52 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 0 | |
| Probable | 26 | | 11 | |
| Possible | 18 | | 4 | |
| Sum | 49 | | 15 | |
| Observed | 0 | | - | |

Hooded Warbler

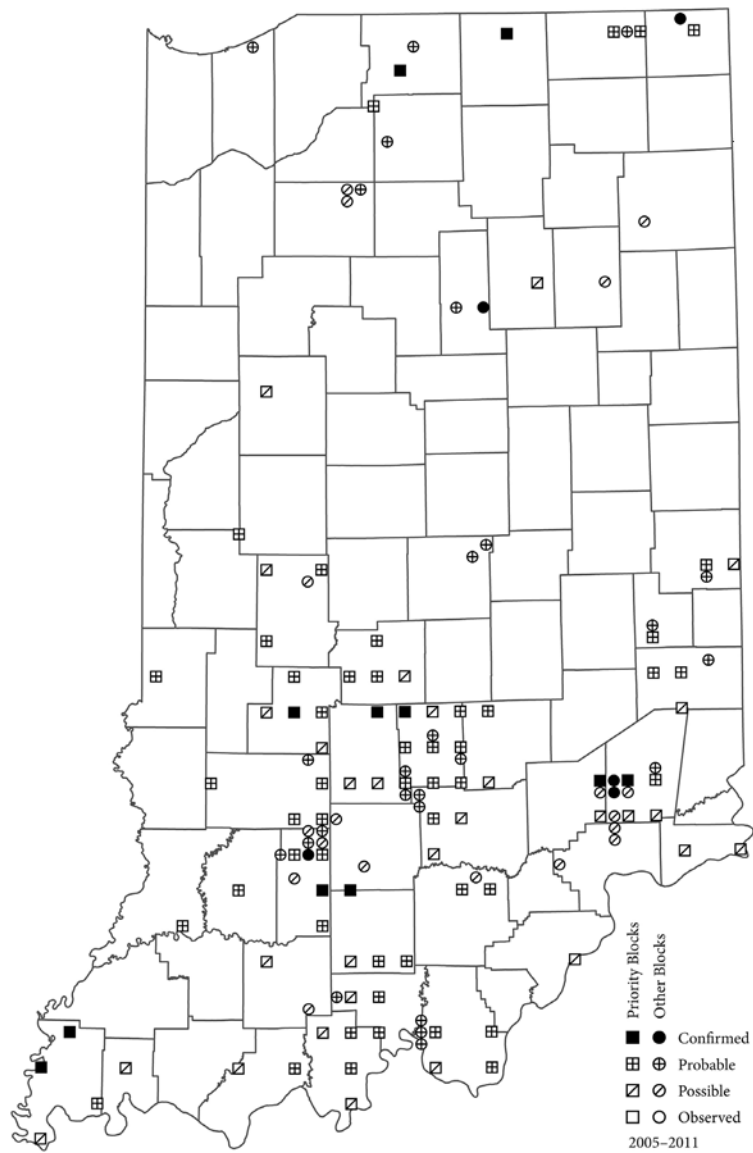


Figure 275. Map of the occurrences of the Hooded Warbler in IBBA blocks during 2005–2011.

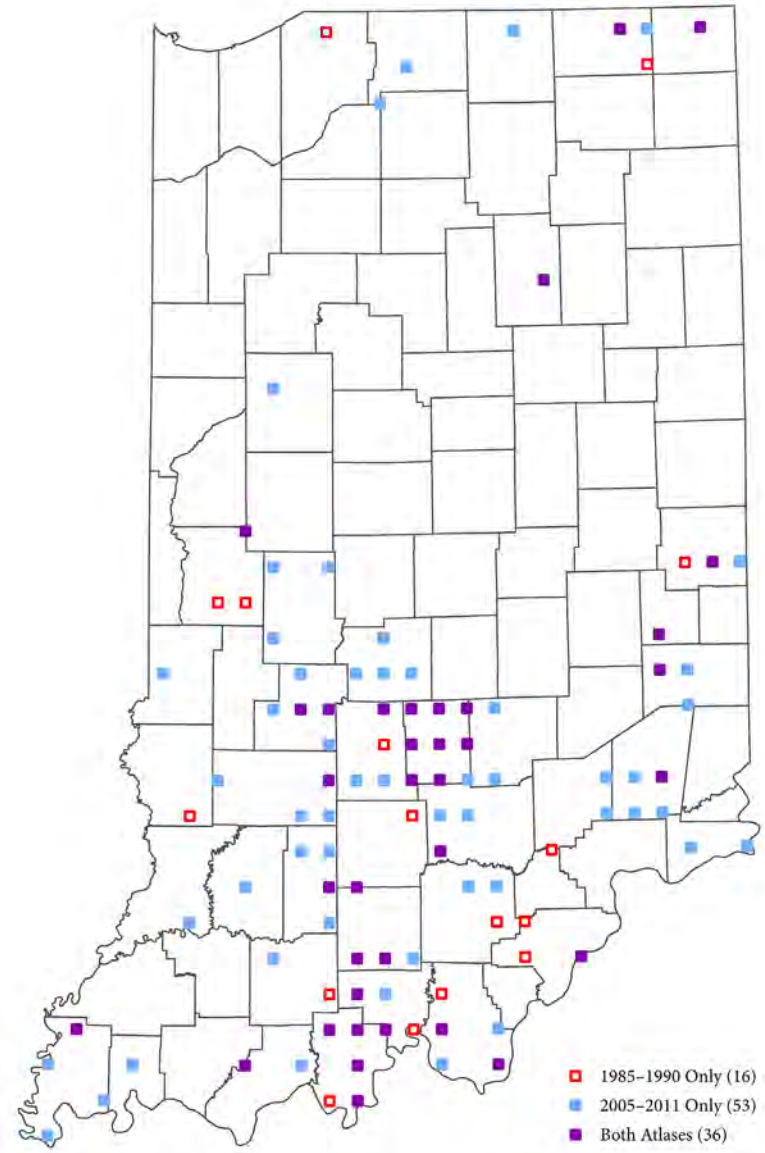


Figure 276. Map of the occurrences of the Hooded Warbler in IBBA priority blocks during both atlas periods.

American Redstart



A female American Redstart perches on a branch. *Photo by Peter Finley.*

Table 167. Regional occurrence and abundance information for the American Redstart.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 22 | 28 | 55 | 0.47 | 31 | 0.19 | | | | |
| Northwest | 73 | 7 | 27 | 34 | 0.03 | 19 | 0.00 | | | | |
| Northeast | 54 | 43 | 30 | 21 | 1.19 | 12 | 0.50 | | | | |
| Central | 273 | 27 | 14 | 110 | 0.22 | 102 | 0.23 | | | | |
| West-central | 114 | 21 | 12 | 56 | 0.30 | 38 | 0.61 | | | | |
| East-central | 159 | 32 | 15 | 54 | 0.13 | 64 | 0.00 | | | | |
| South | 246 | 21 | 20 | 97 | 0.16 | 88 | 0.18 | | | | |
| Southwest | 106 | 34 | 23 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 11 | 17 | 35 | 0.37 | 35 | 0.46 | | | | |
| Southeast | 53 | 9 | 17 | 15 | 0.20 | 14 | 0.00 | | | | |
| Statewide | 646 | 24 | 19 | 262 | 0.25 | 221 | 0.20 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 15 | 10 | 16 | 13 |
| Probable | 72 | 47 | 51 | 42 |
| Possible | 67 | 44 | 55 | 45 |
| Sum | 154 | | 122 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 2 | | 1 | |
| Probable | 13 | | 4 | |
| Possible | 8 | | 4 | |
| Sum | 23 | | 9 | |
| Observed | 0 | | - | |

American Redstart

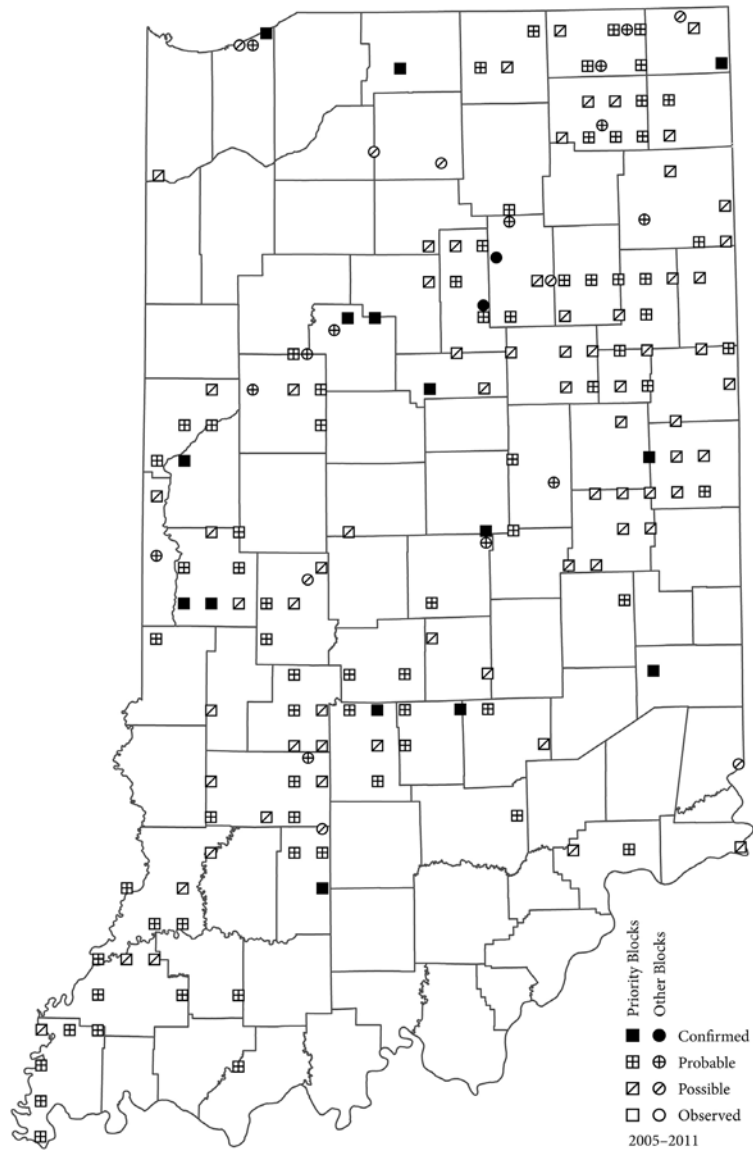


Figure 277. Map of the occurrences of the American Redstart in IBBA blocks during 2005–2011.

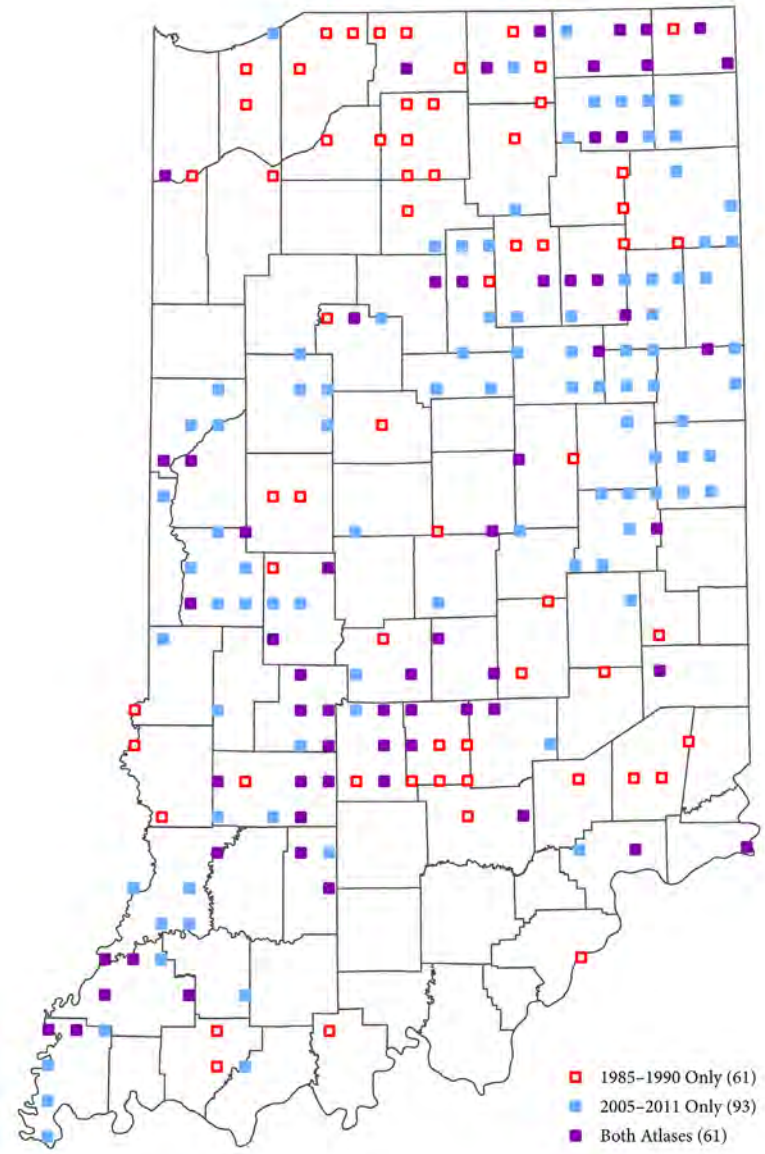


Figure 278. Map of the occurrences of the American Redstart in IBBA priority blocks during both atlas periods.

Cerulean Warbler



A male Cerulean Warbler grasps onto a branch. *Photo by Ryan Sanderson.*

Table 168. Regional occurrence and abundance information for the Cerulean Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 7 | 11 | 55 | 0.05 | 31 | 0.07 | | | | |
| Northwest | 73 | 4 | 8 | 34 | 0.00 | 19 | 0.05 | | | | |
| Northeast | 54 | 11 | 15 | 21 | 0.14 | 12 | 0.08 | | | | |
| Central | 273 | 6 | 13 | 110 | 0.03 | 102 | 0.07 | | | | |
| West-central | 114 | 7 | 14 | 56 | 0.02 | 38 | 0.11 | | | | |
| East-central | 159 | 6 | 13 | 54 | 0.04 | 64 | 0.05 | | | | |
| South | 246 | 24 | 36 | 97 | 0.25 | 88 | 0.52 | | | | |
| Southwest | 106 | 21 | 26 | 47 | 0.00 | 39 | 0.13 | | | | |
| South-central | 87 | 31 | 41 | 35 | 0.63 | 35 | 1.03 | | | | |
| Southeast | 53 | 21 | 45 | 15 | 0.13 | 14 | 0.36 | | | | |
| Statewide | 646 | 13 | 21 | 262 | 0.11 | 221 | 0.25 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 10 | 12 | 6 | 4 |
| Probable | 43 | 50 | 59 | 43 |
| Possible | 33 | 38 | 73 | 53 |
| Sum | 86 | | 138 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 8 | | 0 | |
| Probable | 24 | | 4 | |
| Possible | 16 | | 9 | |
| Sum | 48 | | 13 | |
| Observed | 0 | | - | |

Cerulean Warbler

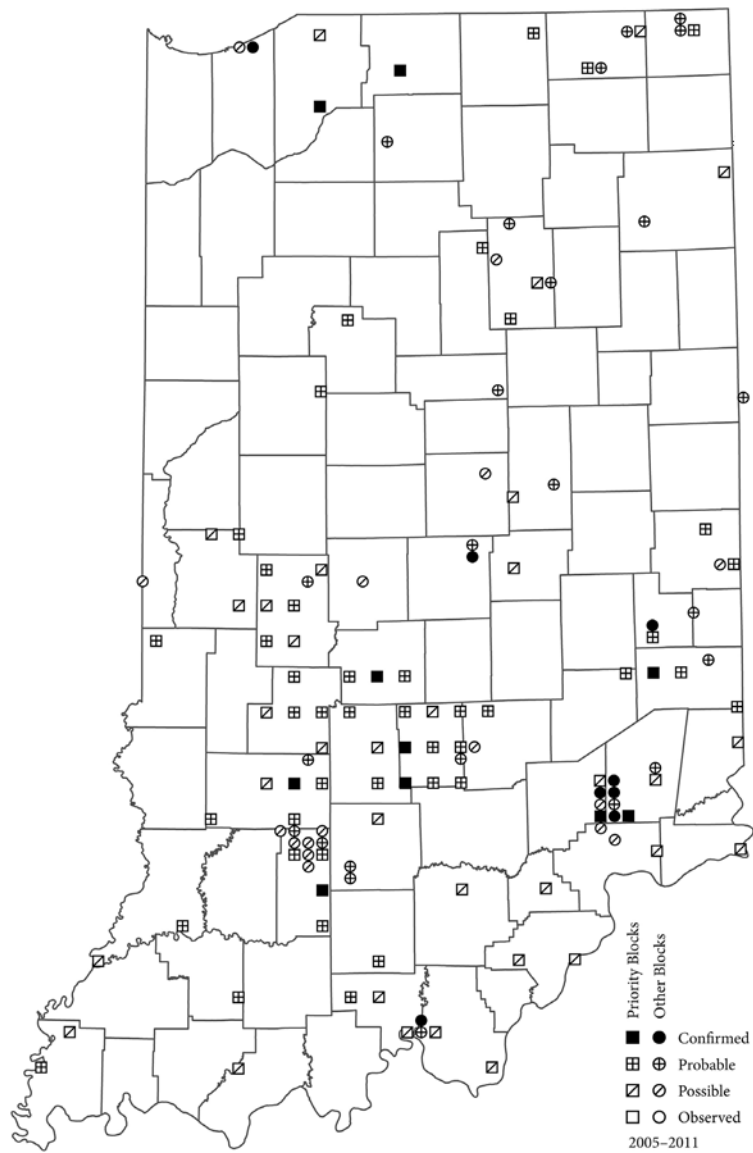


Figure 279. Map of the occurrences of the Cerulean Warbler in IBBA blocks during 2005–2011.

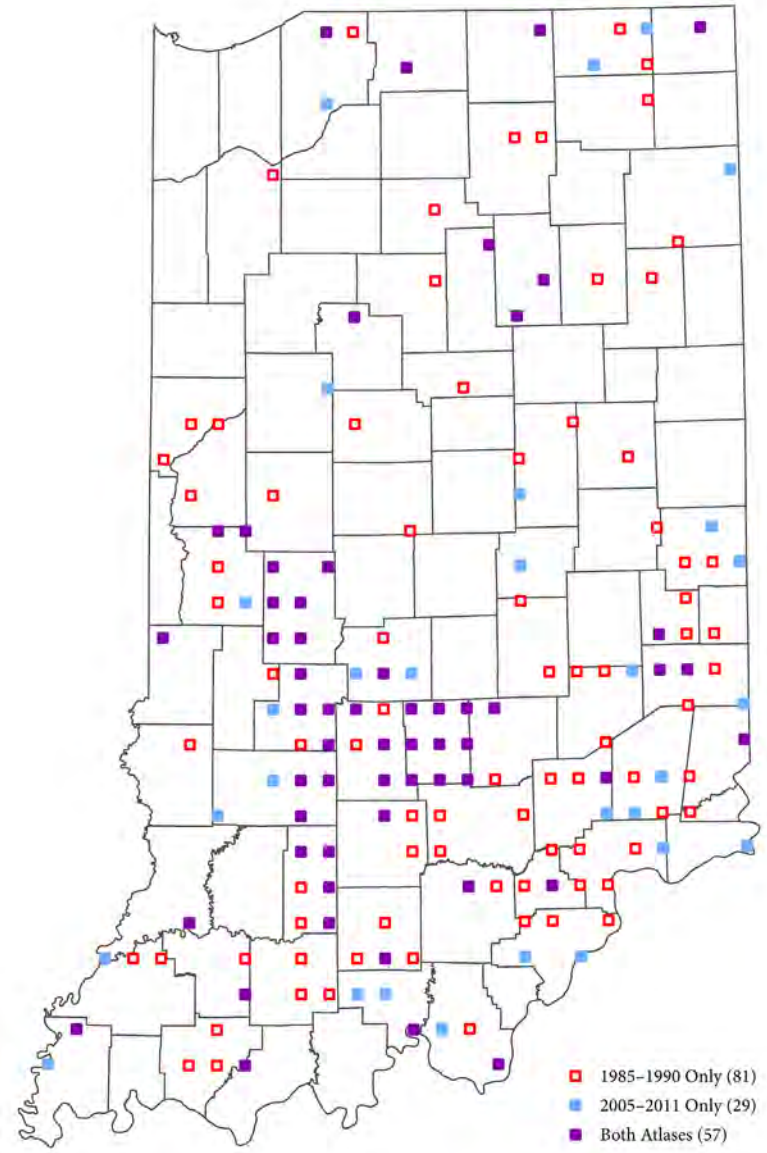


Figure 280. Map of the occurrences of the Cerulean Warbler in IBBA priority blocks during both atlas periods.

Northern Parula



A male Northern Parula perches at the end of a box elder tree branch holding a small caterpillar with its beak.
Photo by Ryan Sanderson.

Table 169. Regional occurrence and abundance information for the Northern Parula.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 10 | 2 | 55 | 0.04 | 31 | 0.00 | | | | |
| Northwest | 73 | 4 | 3 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 19 | 0 | 21 | 0.10 | 12 | 0.00 | | | | |
| Central | 273 | 35 | 11 | 110 | 0.38 | 102 | 0.02 | | | | |
| West-central | 114 | 51 | 16 | 56 | 0.52 | 38 | 0.03 | | | | |
| East-central | 159 | 23 | 7 | 54 | 0.24 | 64 | 0.02 | | | | |
| South | 246 | 82 | 47 | 97 | 1.96 | 88 | 0.34 | | | | |
| Southwest | 106 | 87 | 56 | 47 | 0.94 | 39 | 0.18 | | | | |
| South-central | 87 | 83 | 53 | 35 | 3.80 | 35 | 0.63 | | | | |
| Southeast | 53 | 70 | 19 | 15 | 0.87 | 14 | 0.07 | | | | |
| Statewide | 646 | 48 | 23 | 262 | 0.89 | 221 | 0.15 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 20 | 6 | 6 | 4 |
| Probable | 223 | 72 | 94 | 64 |
| Possible | 66 | 21 | 46 | 32 |
| Sum | 309 | | 146 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 6 | | 2 | |
| Probable | 29 | | 5 | |
| Possible | 30 | | 4 | |
| Sum | 65 | | 11 | |
| Observed | 0 | | - | |

Northern Parula

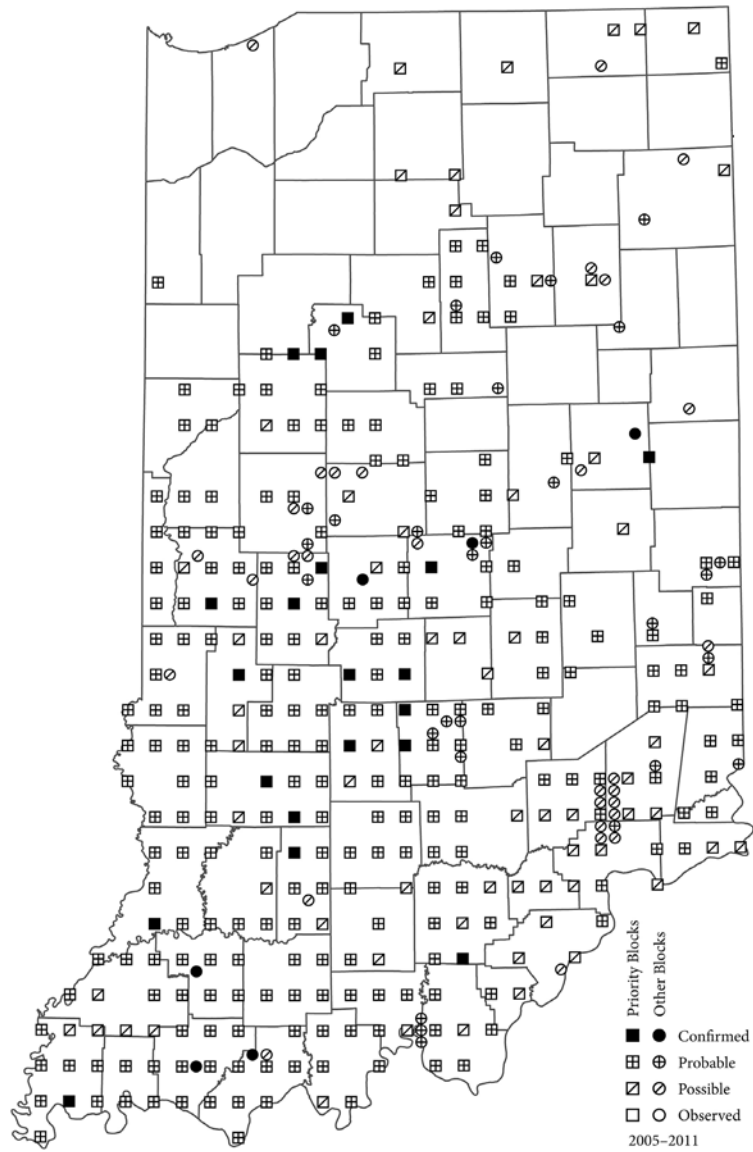


Figure 281. Map of the occurrences of the Northern Parula in IBBA blocks during 2005–2011.

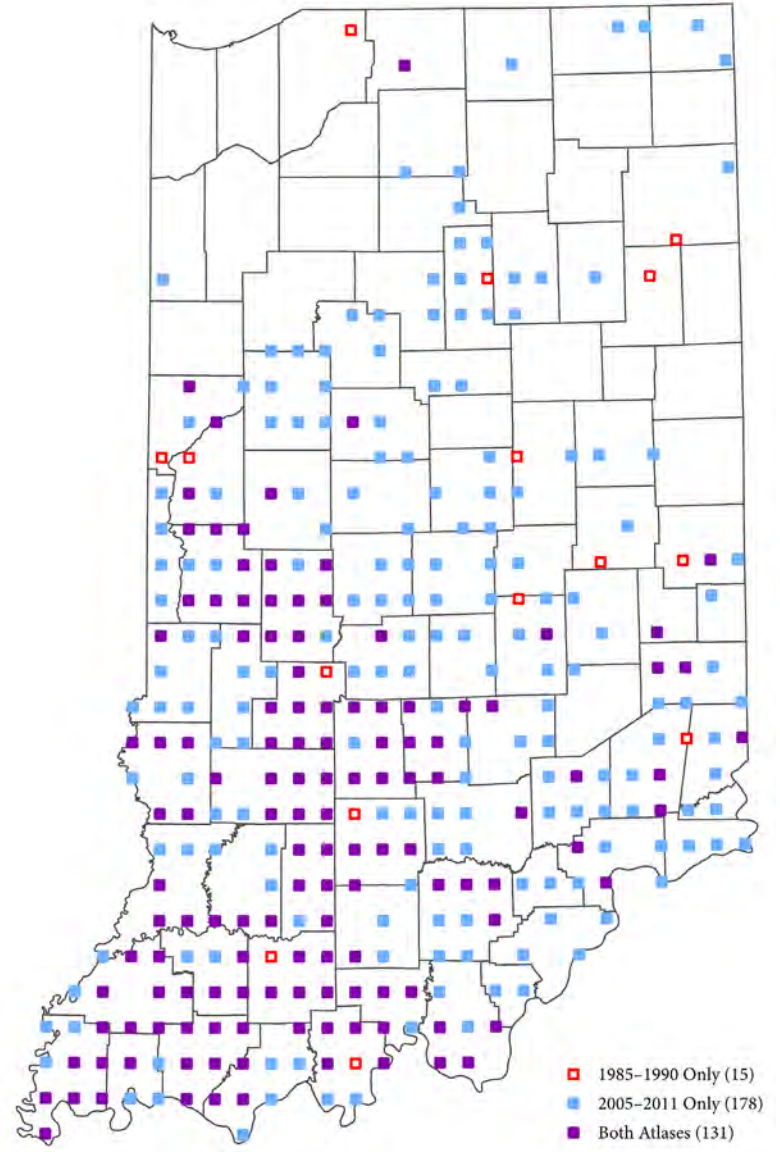


Figure 282. Map of the occurrences of the Northern Parula in IBBA priority blocks during both atlas periods.

Magnolia Warbler



A male Magnolia Warbler looks towards the camera while perched on a green branch. *Photo by Shari McCollough.*

Table 170. Regional occurrence and abundance information for the Magnolia Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | <1 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 2 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|-----|---|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 0 | |
| Probable | 1 | 100 | 100 | |
| Possible | 0 | 0 | 0 | |
| Sum | 1 | | | |
| Observed | 2 | | | |
| Other blocks | | | | |
| Confirmed | 0 | | | |
| Probable | 0 | | | |
| Possible | 1 | | | |
| Sum | 1 | | | |
| Observed | 1 | | | |

Magnolia Warbler



Figure 283. Map of the occurrences of the Magnolia Warbler in IBBA blocks during 2005–2011.

Blackburnian Warbler



A male Blackburnian Warbler grasps onto a small American elm branch. *Photo by Shari McCollough.*

Table 171. Regional occurrence and abundance information for the Blackburnian Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|--------------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 0 | <1 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 2 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | <1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|-----|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | 0 |
| Probable | 0 | | 1 | 100 |
| Possible | 0 | | 0 | 0 |
| Sum | 0 | | 1 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 3 | | 0 | |
| Sum | 3 | | 0 | |
| Observed | 0 | | - | |

Blackburnian Warbler



Figure 284. Map of the occurrences of the Blackburnian Warbler in IBBA blocks during 2005–2011.

Yellow Warbler



A male Yellow Warbler perches on a budding branch while raising his head with his mouth agape. *Photo by Michael Brown.*

Table 172. Regional occurrence and abundance information for the Yellow Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----------|------------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 90 | 83 | 55 | 6.1 | 31 | 2.6 | | | | | |
| Northwest | 73 | 89 | 75 | 34 | 2.4 | 19 | 1.4 | | | | | |
| Northeast | 54 | 91 | 94 | 21 | 12.2 | 12 | 4.6 | | | | | |
| Central | 273 | 85 | 77 | 110 | 3.3 | 102 | 2.4 | | | | | |
| West-central | 114 | 80 | 70 | 56 | 3.8 | 38 | 4.3 | | | | | |
| East-central | 159 | 89 | 82 | 54 | 2.7 | 64 | 1.2 | | | | | |
| South | 246 | 62 | 63 | 97 | 1.1 | 88 | 1.6 | | | | | |
| Southwest | 106 | 68 | 58 | 47 | 0.4 | 39 | 1.7 | | | | | |
| South-central | 87 | 56 | 60 | 35 | 2.3 | 35 | 2.1 | | | | | |
| Southeast | 53 | 58 | 75 | 15 | 0.9 | 14 | 0.4 | | | | | |
| Statewide | 646 | 77 | 73 | 262 | 3.1 | 221 | 2.1 | | | | | |
| | | | | | | | | Priority Blocks | | | | |
| | | | | | | | | Confirmed | 120 | 24 | 88 | 19 |
| | | | | | | | | Probable | 295 | 59 | 255 | 54 |
| | | | | | | | | Possible | 83 | 17 | 127 | 27 |
| | | | | | | | | Sum | 498 | | 470 | |
| | | | | | | | | Observed | 0 | | - | |
| | | | | | | | | Other blocks | | | | |
| | | | | | | | | Confirmed | 7 | | 2 | |
| | | | | | | | | Probable | 13 | | 5 | |
| | | | | | | | | Possible | 9 | | 8 | |
| | | | | | | | | Sum | 29 | | 15 | |
| | | | | | | | | Observed | 0 | | - | |

Yellow Warbler

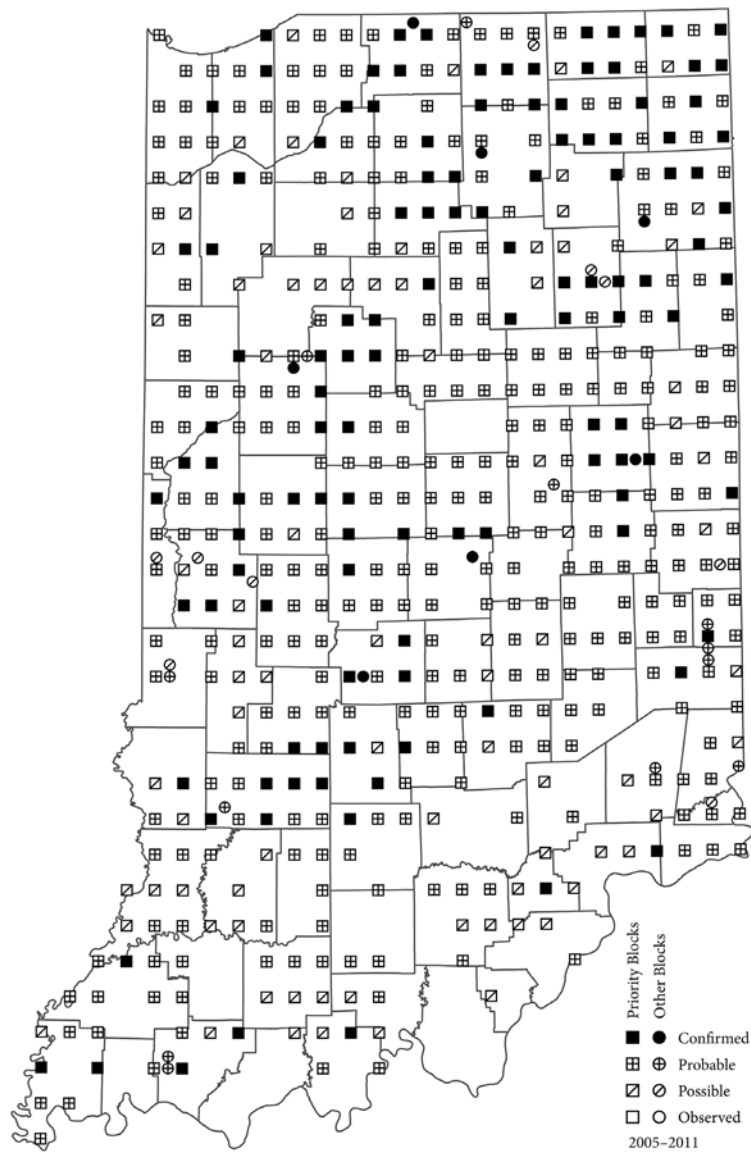


Figure 285. Map of the occurrences of the Yellow Warbler in IBBA blocks during 2005–2011.

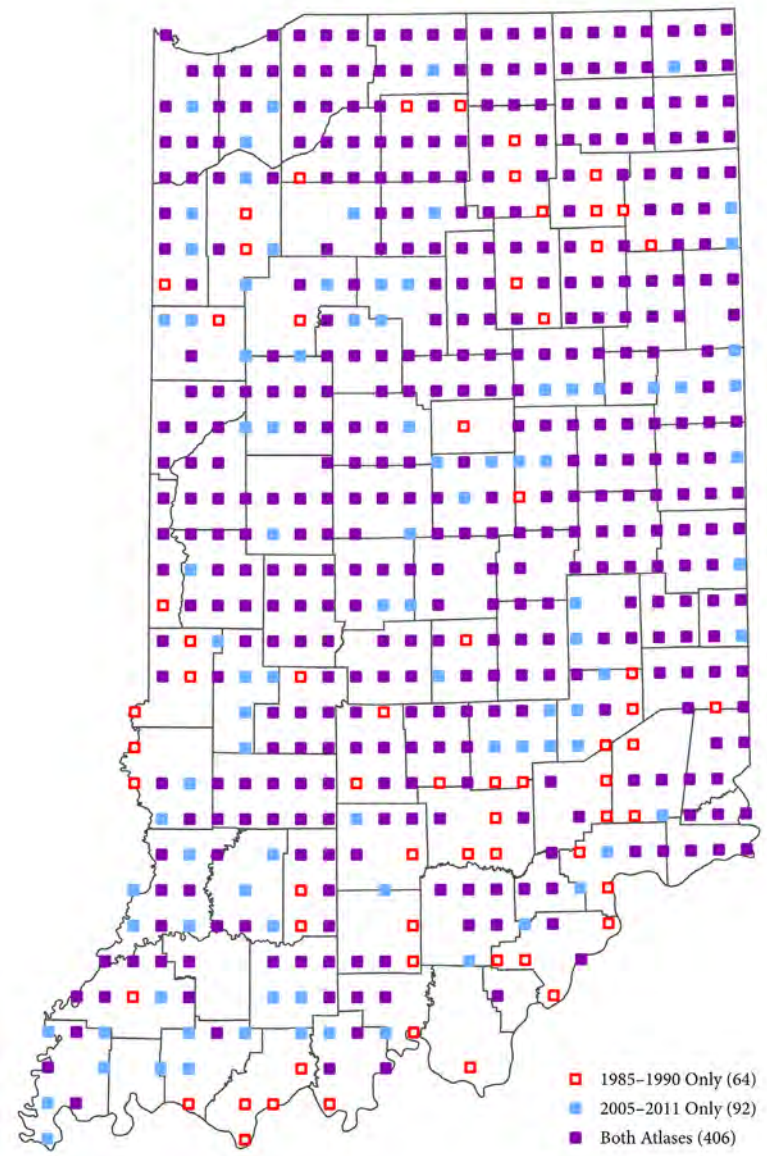


Figure 286. Map of the occurrences of the Yellow Warbler in IBBA priority blocks during both atlas periods.

Chestnut-sided Warbler



A breeding male Chestnut-sided Warbler perches on a branch holding a small insect in its beak. *Photo by Shari McCollough.*

Table 173. Regional occurrence and abundance information for the Chestnut-sided Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|-----------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 5 | 15 | 55 | 0.04 | 31 | 0.00 | | | | |
| Northwest | 73 | 5 | 18 | 34 | 0.06 | 19 | 0.00 | | | | |
| Northeast | 54 | 4 | 11 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 2 | <1 | 110 | 0.00 | 102 | 0.01 | | | | |
| West-central | 114 | 0 | <1 | 56 | 0.00 | 38 | 0.03 | | | | |
| East-central | 159 | 3 | <1 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 2 | 3 | 97 | 0.02 | 88 | 0.00 | | | | |
| Southwest | 106 | 2 | <1 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 0 | 7 | 35 | 0.06 | 35 | 0.00 | | | | |
| Southeast | 53 | 4 | 2 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 2 | 4 | 262 | 0.02 | 221 | <0.01 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 1 | 7 | 3 | 10 |
| Probable | 5 | 33 | 8 | 28 |
| Possible | 9 | 60 | 18 | 62 |
| Sum | 15 | | 29 | |
| Observed | 1 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 1 | |
| Probable | 5 | | 4 | |
| Possible | 6 | | 2 | |
| Sum | 11 | | 7 | |
| Observed | 1 | | - | |

Chestnut-sided Warbler

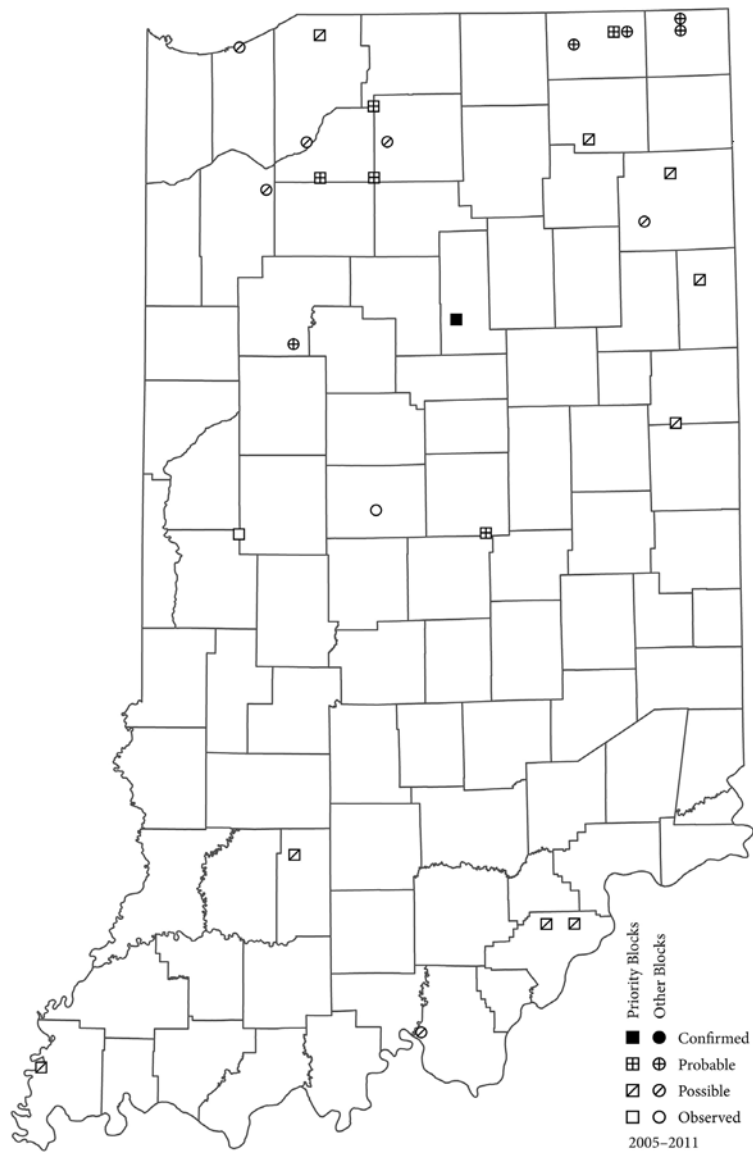


Figure 287. Map of the occurrences of the Chestnut-sided Warbler in IBBA blocks during 2005–2011.

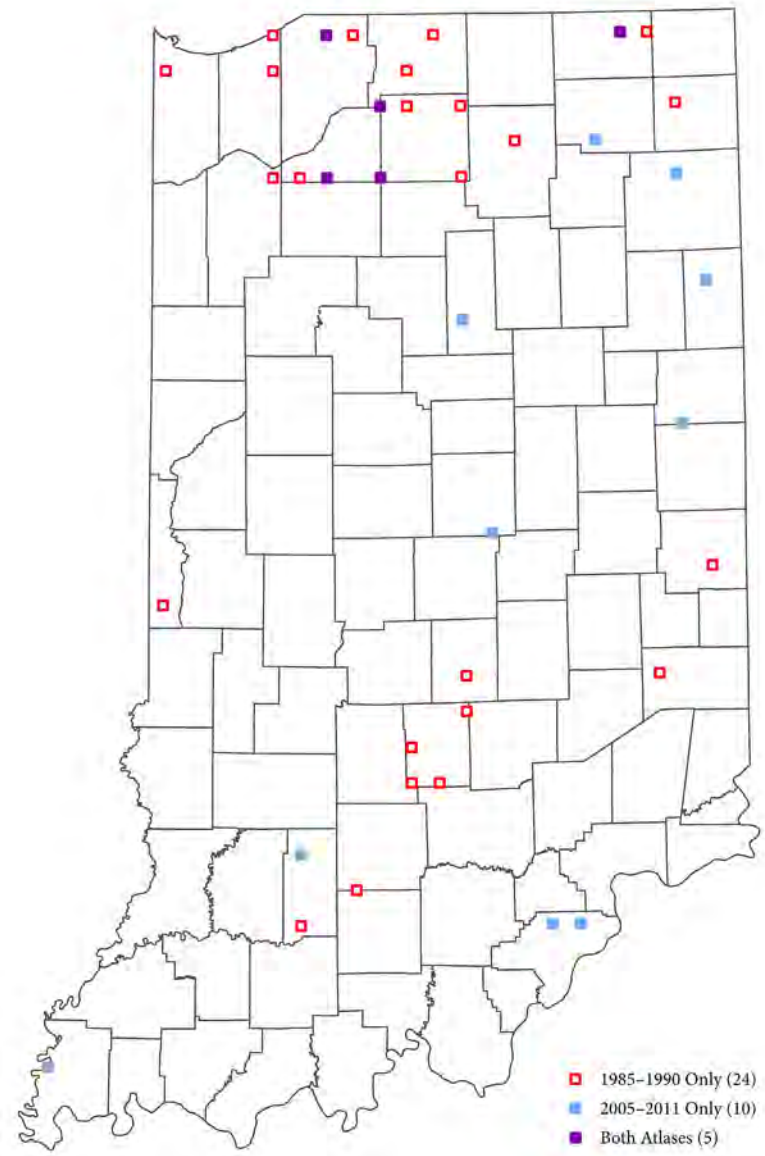


Figure 288. Map of the occurrences of the Chestnut-sided Warbler in IBBA priority blocks during both atlas periods.

Pine Warbler



A male Pine Warbler stands on a branch with his mouth agape. *Photo by Stephen Bell.*

Table 174. Regional occurrence and abundance information for the Pine Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 2 | 0 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 6 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | <1 | <1 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | <1 | 0 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 0 | 1 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 17 | 8 | 97 | 0.09 | 88 | 0.07 | | | | |
| Southwest | 106 | 8 | 4 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 32 | 16 | 35 | 0.23 | 35 | 0.17 | | | | |
| Southeast | 53 | 9 | 4 | 15 | 0.07 | 14 | 0.00 | | | | |
| Statewide | 646 | 7 | 3 | 262 | 0.03 | 221 | 0.03 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 6 | 13 | 7 | 32 |
| Probable | 28 | 61 | 11 | 50 |
| Possible | 12 | 26 | 4 | 18 |
| Sum | 46 | | 22 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 4 | | 2 | |
| Probable | 7 | | 8 | |
| Possible | 5 | | 3 | |
| Sum | 16 | | 13 | |
| Observed | 0 | | - | |

Pine Warbler

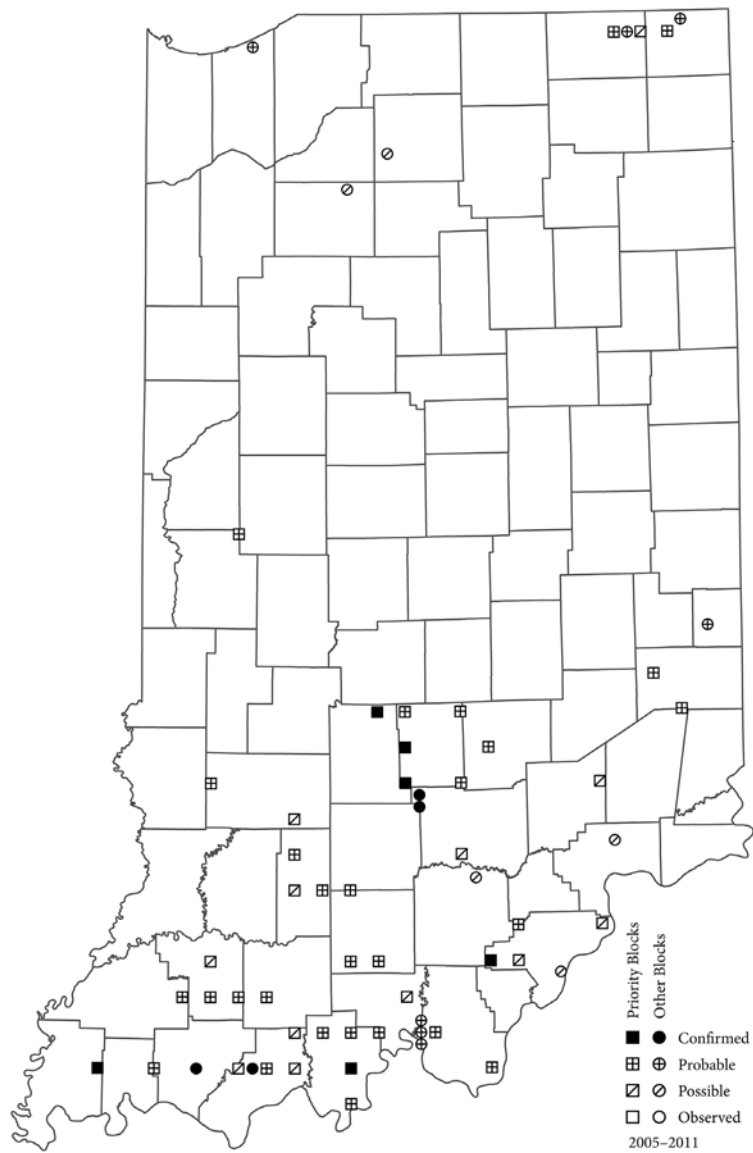


Figure 289. Map of the occurrences of the Pine Warbler in IBBA blocks during 2005–2011.

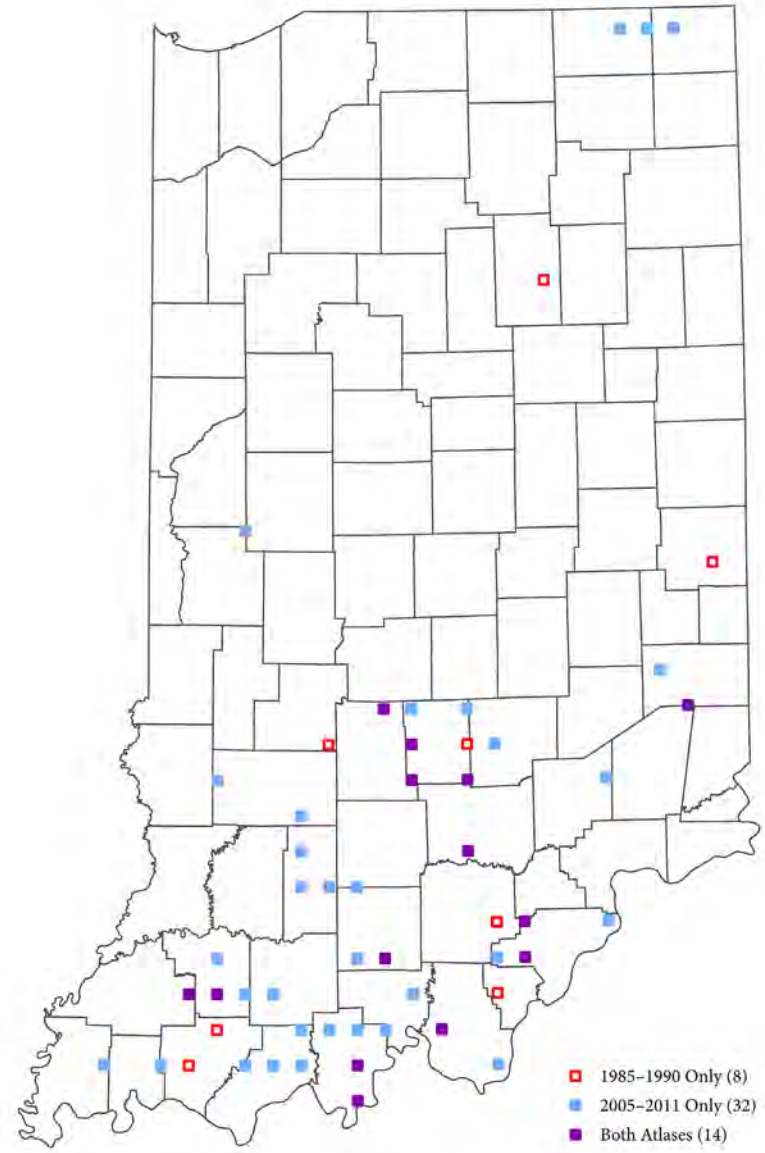


Figure 290. Map of the occurrences of the Pine Warbler in IBBA priority blocks during both atlas periods.

Yellow-throated Warbler



A Yellow-throated Warbler lifts its head to vocalize while perched on an eastern redbud tree branch. *Photo by Ryan Sanderson.*

Table 175. Regional occurrence and abundance information for the Yellow-throated Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 20 | 6 | 55 | 0.07 | 31 | 0.03 | | | | |
| Northwest | 73 | 14 | 5 | 34 | 0.09 | 19 | 0.05 | | | | |
| Northeast | 54 | 28 | 7 | 21 | 0.05 | 12 | 0.00 | | | | |
| Central | 273 | 33 | 19 | 110 | 0.18 | 102 | 0.15 | | | | |
| West-central | 114 | 35 | 21 | 56 | 0.21 | 38 | 0.37 | | | | |
| East-central | 159 | 31 | 18 | 54 | 0.15 | 64 | 0.02 | | | | |
| South | 246 | 74 | 68 | 97 | 1.07 | 88 | 1.26 | | | | |
| Southwest | 106 | 71 | 58 | 47 | 0.40 | 39 | 0.18 | | | | |
| South-central | 87 | 89 | 82 | 35 | 2.29 | 35 | 2.80 | | | | |
| Southeast | 53 | 58 | 66 | 15 | 0.33 | 14 | 0.43 | | | | |
| Statewide | 646 | 46 | 35 | 262 | 0.49 | 221 | 0.58 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 25 | 8 | 21 | 9 |
| Probable | 211 | 71 | 140 | 61 |
| Possible | 61 | 21 | 68 | 30 |
| Sum | 297 | | 229 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 1 | |
| Probable | 15 | | 10 | |
| Possible | 10 | | 4 | |
| Sum | 30 | | 15 | |
| Observed | 0 | | - | |

Yellow-throated Warbler

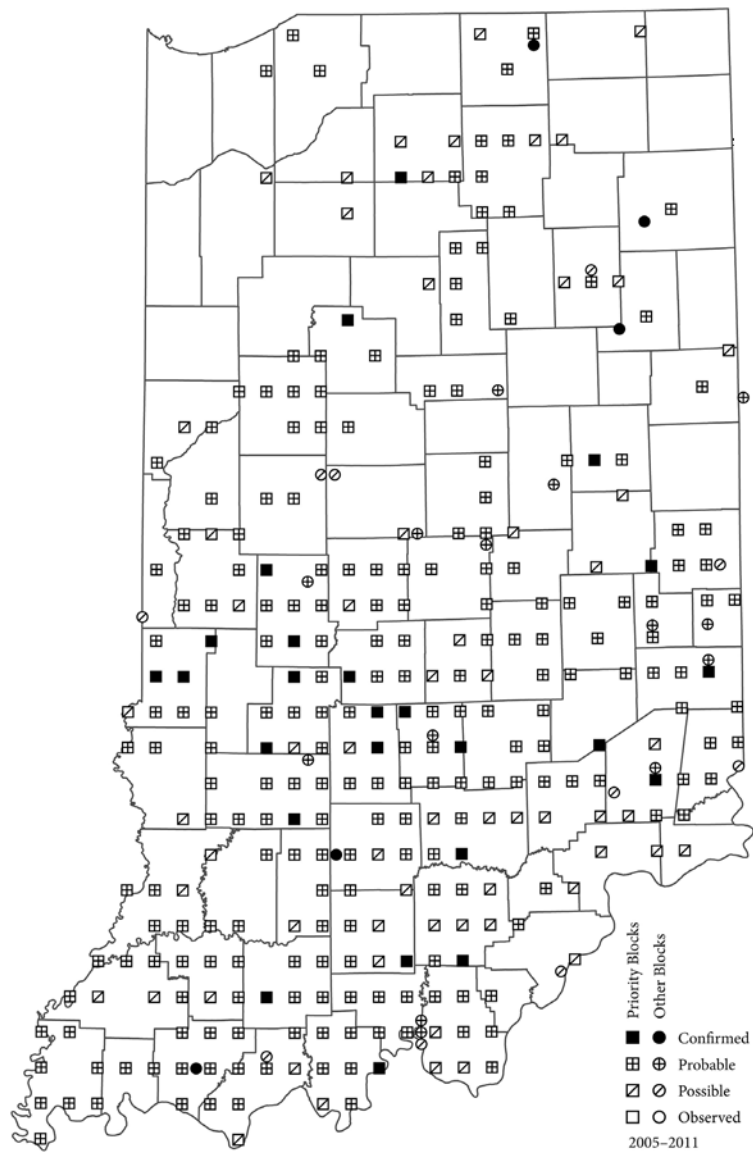


Figure 291. Map of the occurrences of the Yellow-throated Warbler in IBBA blocks during 2005–2011.

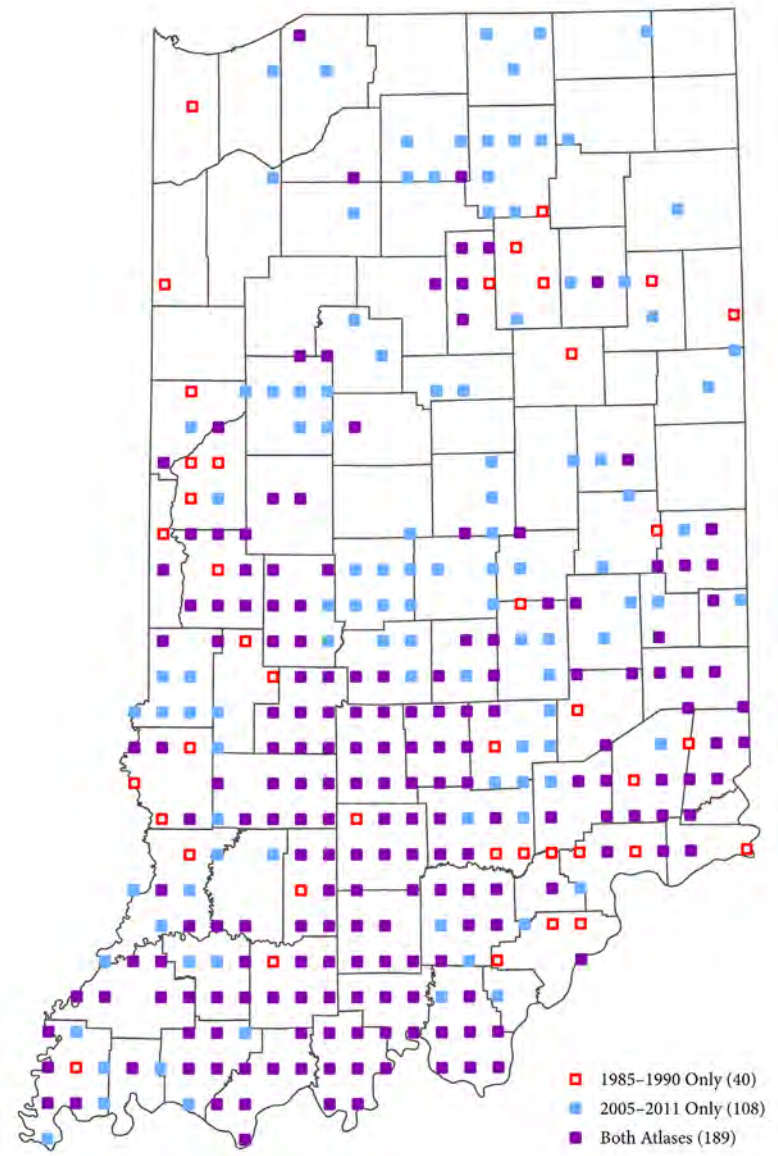


Figure 292. Map of the occurrences of the Yellow-throated Warbler in IBBA priority blocks during both atlas periods.

Prairie Warbler



A male Prairie Warbler perches at the end of a broken branch while raising his head, mouth agape. *Photo by Ryan Sanderson.*

Table 176. Regional occurrence and abundance information for the Prairie Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 2 | 2 | 55 | 0.00 | 31 | 0.03 | | | | |
| Northwest | 73 | 3 | 1 | 34 | 0.00 | 19 | 0.05 | | | | |
| Northeast | 54 | 0 | 2 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 4 | 4 | 110 | 0.05 | 102 | 0.02 | | | | |
| West-central | 114 | 4 | 4 | 56 | 0.09 | 38 | 0.00 | | | | |
| East-central | 159 | 3 | 5 | 54 | 0.00 | 64 | 0.03 | | | | |
| South | 246 | 61 | 57 | 97 | 1.53 | 88 | 1.33 | | | | |
| Southwest | 106 | 40 | 31 | 47 | 0.09 | 39 | 0.18 | | | | |
| South-central | 87 | 85 | 83 | 35 | 3.31 | 35 | 2.74 | | | | |
| Southeast | 53 | 62 | 64 | 15 | 1.87 | 14 | 1.00 | | | | |
| Statewide | 646 | 25 | 24 | 262 | 0.58 | 221 | 0.54 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 10 | 6 | 25 | 16 |
| Probable | 113 | 70 | 101 | 66 |
| Possible | 38 | 24 | 27 | 18 |
| Sum | 161 | | 153 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 1 | |
| Probable | 19 | | 2 | |
| Possible | 7 | | 6 | |
| Sum | 31 | | 9 | |
| Observed | 0 | | - | |

Prairie Warbler

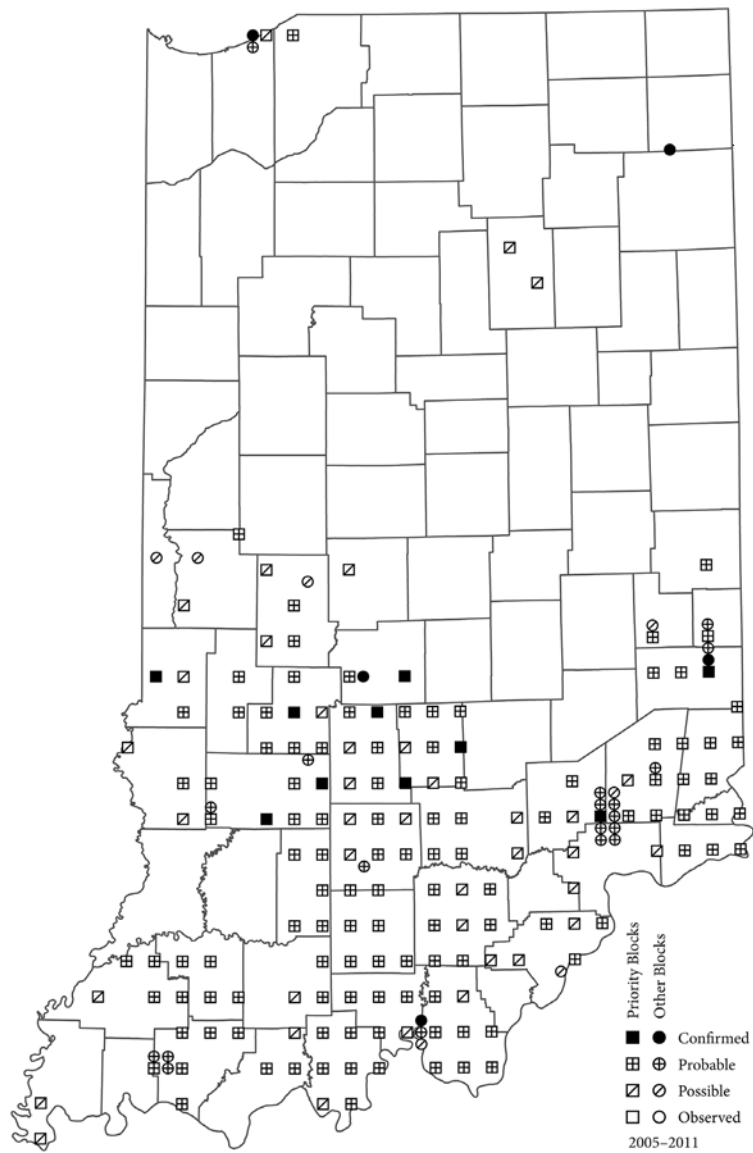


Figure 293. Map of the occurrences of the Prairie Warbler in IBBA blocks during 2005–2011.

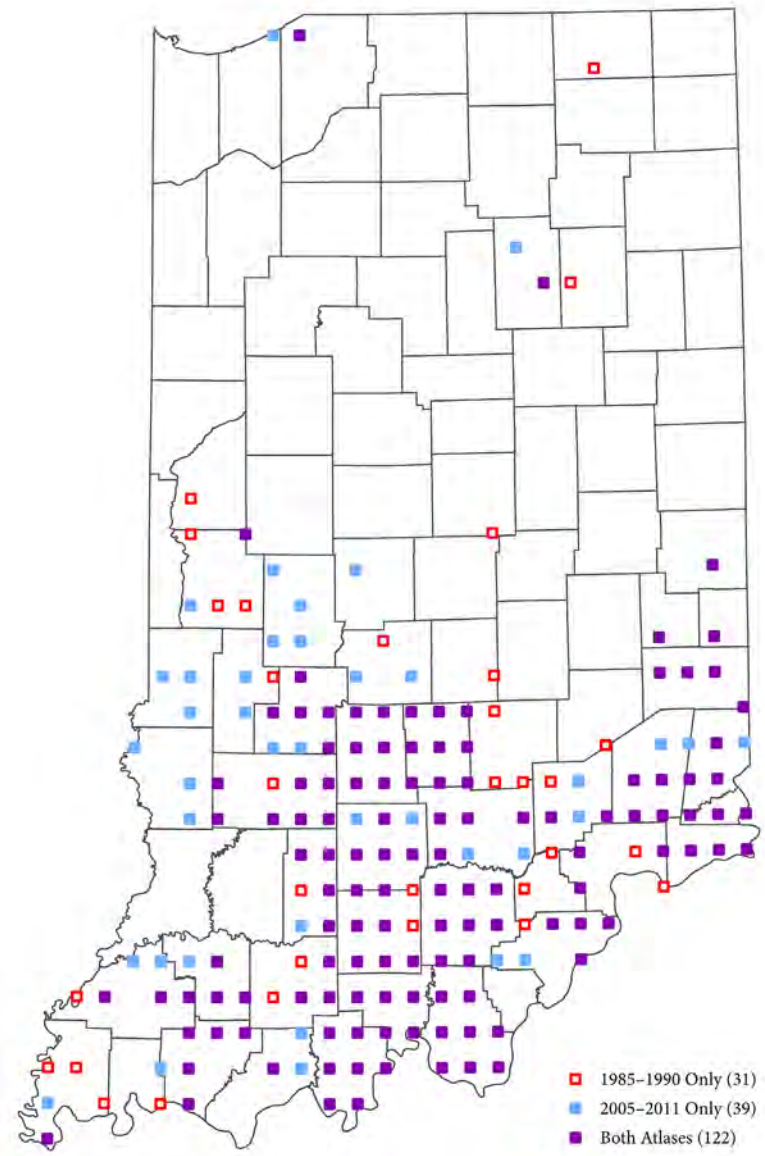


Figure 294. Map of the occurrences of the Prairie Warbler in IBBA priority blocks during both atlas periods.

Black-throated Green Warbler



A female/immature Black-throated Green Warbler grasps onto a small branch with dead leaves. *Photo by Shari McCollough.*

Table 177. Regional occurrence and abundance information for the Black-throated Green Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|--------------|--------------|----------------------|--------------|-------------|---------------|------------------------|-----------|-----|----------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 2 | <1 | 55 | 0 | 31 | 0 | Priority Blocks | | | | |
| Northwest | 73 | 0 | 1 | 34 | 0 | 19 | 0 | Confirmed | 0 | 0 | 0 | 0 |
| Northeast | 54 | 6 | 0 | 21 | 0 | 12 | 0 | Probable | 5 | 38 | 3 | 60 |
| Central | 273 | <1 | <1 | 110 | 0 | 102 | 0 | Possible | 8 | 62 | 2 | 40 |
| West-central | 114 | <1 | 0 | 56 | 0 | 38 | 0 | Sum | 13 | | 5 | |
| East-central | 159 | <1 | <1 | 54 | 0 | 64 | 0 | Observed | 0 | | - | |
| South | 246 | 3 | 1 | 97 | 0 | 88 | 0 | Other blocks | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | Confirmed | 0 | | 0 | |
| South-central | 87 | 9 | 3 | 35 | 0 | 35 | 0 | Probable | 7 | | 0 | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | Possible | 6 | | 3 | |
| Statewide | 646 | 2 | <1 | 262 | 0 | 221 | 0 | Sum | 13 | | 3 | |
| | | | | | | | | Observed | 0 | | - | |

Black-throated Green Warbler

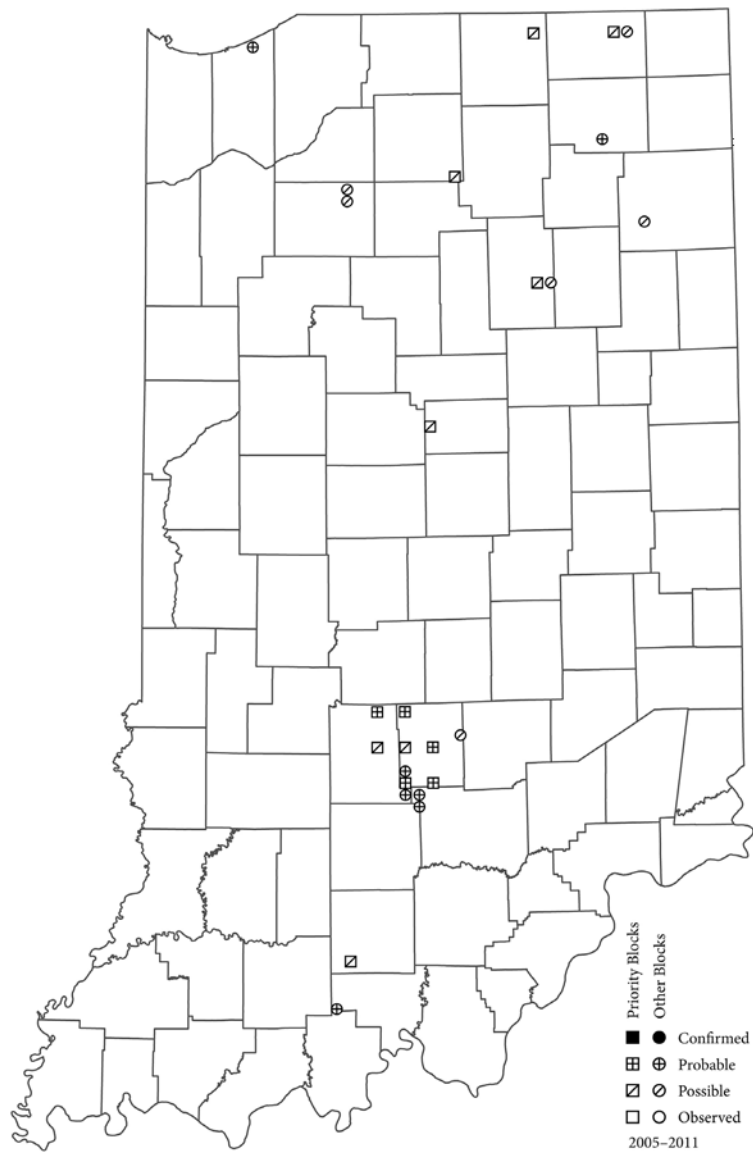


Figure 295. Map of the occurrences of the Black-throated Green Warbler in IBBA blocks during 2005–2011.

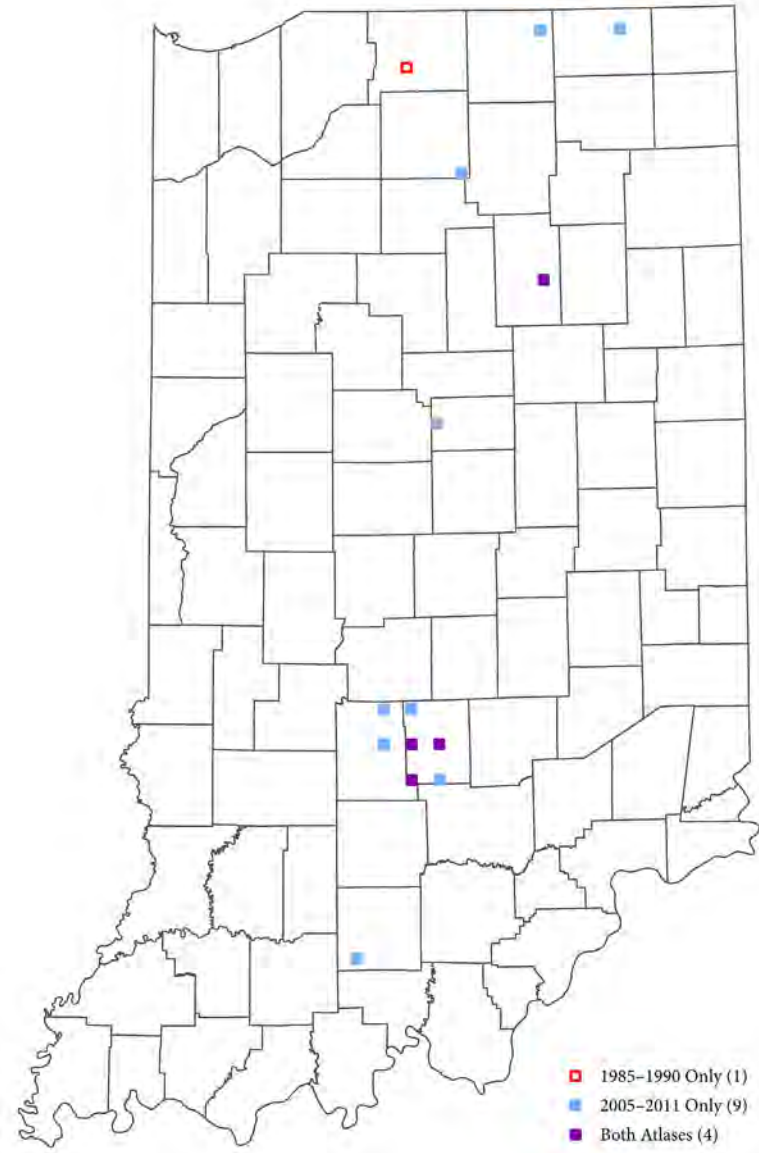


Figure 296. Map of the occurrences of the Black-throated Green Warbler in IBBA priority blocks during both atlas periods.

Canada Warbler



A male Canada Warbler grasps onto a bare branch. *Photo by Jining Han.*

Table 178. Regional occurrence and abundance information for the Canada Warbler.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|--------------|----------------------|-----------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 0 | <1 | 55 | 0.02 | 31 | 0.00 | | | | |
| Northwest | 73 | 0 | 1 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0.05 | 12 | 0.00 | | | | |
| Central | 273 | 0 | <1 | 110 | 0.00 | 102 | 0.00 | | | | |
| West-central | 114 | 0 | <1 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 0 | 0 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 0 | <1 | 262 | <0.01 | 221 | 0.00 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|----|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | 0 |
| Probable | 0 | | 1 | 50 |
| Possible | 0 | | 1 | 50 |
| Sum | 0 | | 2 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 1 | |
| Probable | 0 | | 0 | |
| Possible | 2 | | 0 | |
| Sum | 2 | | 1 | |
| Observed | 0 | | - | |

Canada Warbler



Figure 297. Map of the occurrences of the Canada Warbler in IBBA blocks during 2005–2011.

Yellow-breasted Chat



A Yellow-breasted Chat perches on a branch, mouth agape. *Photo by Michael Brown.*

Table 179. Regional occurrence and abundance information for the Yellow-breasted Chat.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 22 | 36 | 55 | 0.4 | 31 | 0.3 | | | | |
| Northwest | 73 | 16 | 34 | 34 | 0.3 | 19 | 0.3 | | | | |
| Northeast | 54 | 30 | 39 | 21 | 0.4 | 12 | 0.3 | | | | |
| Central | 273 | 42 | 40 | 110 | 0.4 | 102 | 0.9 | | | | |
| West-central | 114 | 39 | 42 | 56 | 0.6 | 38 | 0.7 | | | | |
| East-central | 159 | 44 | 38 | 54 | 0.2 | 64 | 1.0 | | | | |
| South | 246 | 91 | 91 | 97 | 8.8 | 88 | 7.9 | | | | |
| Southwest | 106 | 92 | 87 | 47 | 5.5 | 39 | 3.2 | | | | |
| South-central | 87 | 93 | 94 | 35 | 13.7 | 35 | 13.7 | | | | |
| Southeast | 53 | 87 | 92 | 15 | 7.8 | 14 | 6.4 | | | | |
| Statewide | 646 | 57 | 58 | 262 | 3.5 | 221 | 3.6 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 40 | 11 | 53 | 14 |
| Probable | 252 | 69 | 226 | 60 |
| Possible | 75 | 20 | 98 | 26 |
| Sum | 367 | | 377 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 3 | | 4 | |
| Probable | 29 | | 4 | |
| Possible | 9 | | 8 | |
| Sum | 41 | | 16 | |
| Observed | 0 | | - | |

Yellow-breasted Chat

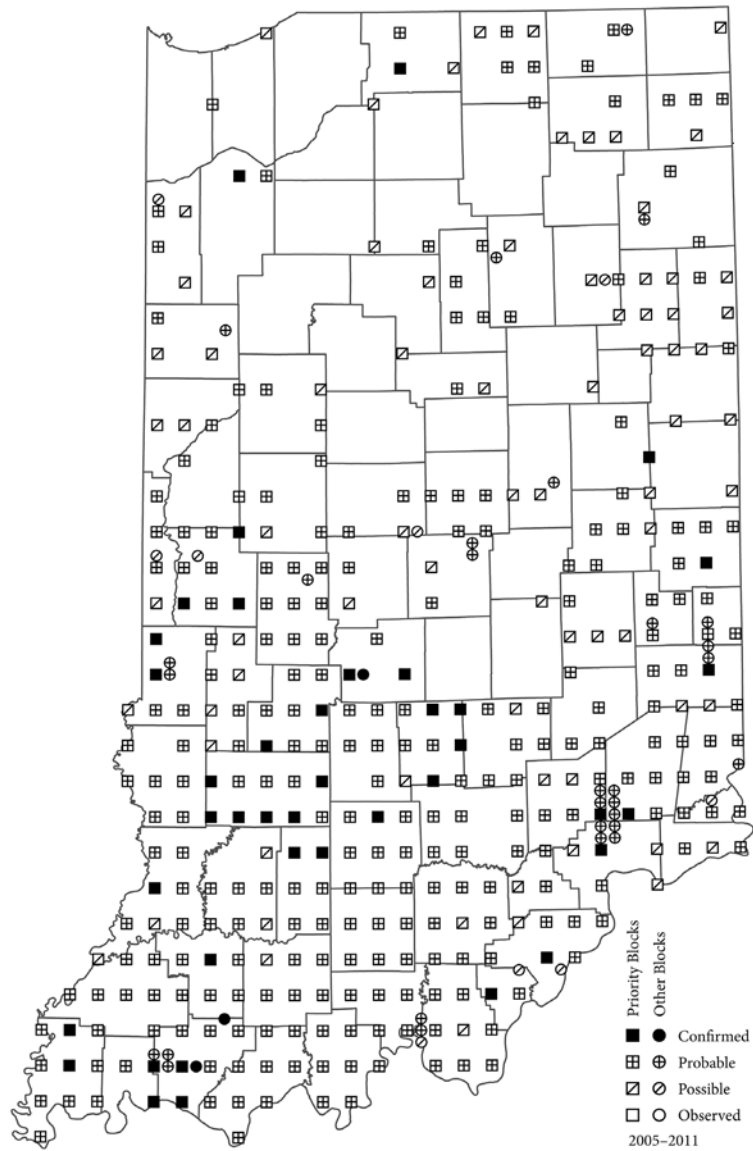


Figure 298. Map of the occurrences of the Yellow-breasted Chat in IBBA blocks during 2005–2011.

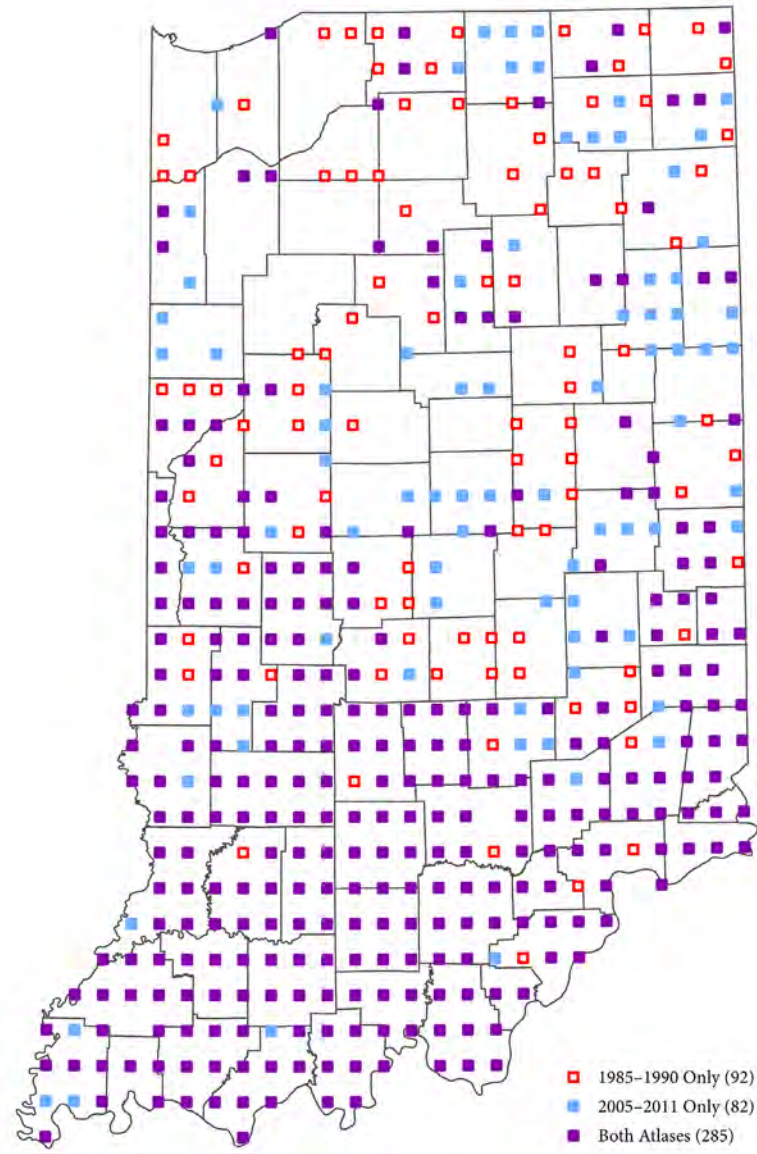


Figure 299. Map of the occurrences of the Yellow-breasted Chat in IBBA priority blocks during both atlas periods.

Sparrows (Emberizidae)

Tables 180–191, Fig. 300–320

TEN SPECIES OF sparrows regularly nest in Indiana. Occurrences in atlas blocks of the ten species ranged throughout the state, although Swamp Sparrow, Savannah Sparrow, and Vesper Sparrow were encountered least often in southern Indiana. Song Sparrow, Chipping Sparrow and Field Sparrow occurred in virtually every priority block. Nearly 90% of blocks recorded Eastern Towhee. About half of the blocks had Vesper Sparrow, Savannah Sparrow, and Grasshopper Sparrow. Considerably fewer blocks recorded Henslow's Sparrow, Lark Sparrow, and Swamp Sparrow. Lark Sparrow was most often tallied in western portions of the state, while Henslow's Sparrow was seldom reported in central regions of Indiana. Increased frequencies of occurrence between atlas periods were statistically significant for Chipping Sparrow, Lark Sparrow, and Henslow's Sparrow, while Field Sparrow, Vesper Sparrow, and Grasshopper Sparrow were found in significantly fewer blocks. Clay-colored Sparrow (two atlas records) was sometimes found during the summer, but has not nested. During 2016, territorial birds were reported in the northern counties of Newton, Porter, Steuben, and LaGrange (Brock 2016). Bachman's Sparrow once regularly bred in Indiana but the range of this southeastern species has retracted and no longer includes the state.

Breeding Bird Survey indices give a better picture of sparrow abundance in Indiana. Relative densities of Song Sparrow was rather even among all regions of Indiana. Half of the species are more common in southern Indiana with substantially greater numbers of Eastern Towhee and Henslow's Sparrow detected in south-central and southeastern areas. Field Sparrow and Grasshopper Sparrow densities were about twice as great in southern Indiana than other regions. Lark Sparrow was restricted primarily to southwestern Indiana. Vesper Sparrow appears to be most abundant in western regions of the state, especially in central and northern areas. Savannah Sparrow was rarely encountered in southern Indiana while Chipping Sparrow densities were uniformly twice as abundant in northern and central regions compared to southern Indiana. Except for the Eastern Towhee, most species showed

notable differences in BBS abundance between atlas periods in at least some regions. Chipping Sparrow exhibited greater numbers in most regions, while Henslow's Sparrow and Lark Sparrow increased substantially in southern and southwestern areas, respectively. Vesper Sparrow exhibited declines in most regions while moderate declines in Savannah Sparrow and Grasshopper Sparrow were seen in northwestern and west-central regions. Field Sparrow numbers were somewhat reduced in most Indiana regions with greatest differences in northern areas. Swamp Sparrow was not detected on BBS routes during this atlas period in northwestern Indiana, but increased slightly in the northeast. The only species showing a statistically significant positive trend on Breeding Bird Surveys was the Chipping Sparrow. Significant declines were noted for Grasshopper Sparrow, Savannah Sparrow, Vesper Sparrow, and Field Sparrow. Trends for other species were not significant, with increases shown by Henslow's Sparrow and Lark Sparrow, and declines by Eastern Towhee, Song Sparrow, and Swamp Sparrow.

Fourteen species of sparrows were confirmed breeding on the recent Michigan atlas, compared to 12 for Ohio, and 10 in Indiana. Among these three state atlases, Le Conte's Sparrow, Lincoln's Sparrow, and White-throated Sparrow are unique breeders in Michigan, being mostly found in the Upper Peninsula and the Northern Lower Peninsula. Rates of occurrence are low for Le Conte's Sparrow and Lincoln's Sparrow and more moderate for White-throated Sparrow. Differences between atlas periods were small. Clay-colored Sparrow and Dark-eyed Junco also nest in Michigan and Ohio, but not in Indiana. Both are more frequently found in Michigan, especially northern portions of the state. Dark-eyed Junco records are concentrated in northeastern Ohio. The few Clay-colored Sparrow records are widely scattered across northern Ohio. Numbers of Dark-eyed Junco did not change much between atlas periods, but Clay-colored Sparrow records doubled in Michigan and did not occur on the first Ohio atlas. Lark Sparrow was not observed on the first Michigan atlas, while only one unconfirmed breeding

record was included on the second atlas. This species breeds in Indiana and Ohio, with much higher rates of occurrence observed in Indiana. Of the nine species of sparrows that were confirmed breeding in all three states, Song Sparrow and Chipping Sparrow were the most frequently detected sparrow species and occurred in nearly all atlas blocks. Both species were found in somewhat fewer atlas blocks on the second Michigan atlas, but little difference was seen in Indiana and Ohio. Field Sparrow was also recorded in virtually all blocks in Indiana and Ohio, but infrequently observed in the Upper Peninsula of Michigan. Rates of occurrence were only slightly less on the second atlas in Indiana and Ohio, with decidedly fewer found on the recent Michigan atlas. Eastern Towhee was reported at similar rates on the Indiana and Ohio atlases with fewer records in Michigan, especially in the Upper Peninsula. Frequencies of occurrence were moderately lower on the second atlases in Michigan and Ohio. Vesper Sparrow, Savannah Sparrow, and Grasshopper Sparrow were observed in about half of the atlas blocks in Indiana and Ohio, and in somewhat smaller numbers in Michigan, with Grasshopper Sparrow much less common in Michigan. All three species were reported less frequently on the recent atlases in all three states, although the difference was negligible for the Savannah Sparrow in Indiana. Rates of occurrence of Swamp Sparrow were greatest in Michigan, where they are distributed throughout the state, and where there was a more northerly range. Ohio concentrations were greatest in the northeastern region of the state. Differences between atlas periods were small in each case. Henslow's Sparrow records were relatively infrequent but most numerous in Indiana and Ohio. Values declined between atlas projects in Ohio and Michigan, but more than doubled in Indiana. With the exception of a single Bachman's Sparrow recorded as a possible breeder on the first Indiana atlas, this species did not occur on any of the atlas projects in

Indiana, Ohio, and Michigan.

Sparrows in Indiana are generally found in most open habitats of the state with many (Vesper Sparrow, Lark Sparrow, Savannah Sparrow, Grasshopper Sparrow, Henslow's Sparrow) associated with native prairies and artificial grasslands including pastures, hayfields, agricultural lands, and reclaimed mine lands. Others, including the Song Sparrow, Field Sparrow, and Eastern Towhee favor more brushy areas including old fields, forest openings, and edges of agricultural fields and roadsides. Chipping Sparrows frequent areas planted with trees and shrubs around human habitations, but also nest in forested areas planted with pines. The Swamp Sparrow is unique among Indiana's sparrows in that it is a wetland species.

Nests of most sparrows are constructed on the ground or in low herbaceous or woody vegetation and consist of soft materials, grass and weed stems, bark strips, leaves, and rootlets (Dunning 1993, Wheelwright and Rising 1993, Carey *et al.* 1994, Knapton 1994, Greenlaw 1996, Vickery 1996, Mowbray 1997, Middleton 1998, Martin and Parrish 2000, Arcese *et al.* 2002, Jones and Cornley 2002, Herkert *et al.* 2002). Sparrows generally feed on the ground or in low vegetation. Summer diets of most sparrows are an even mix of animal (insects, spiders, snails, other invertebrates) and plant foods (predominately seeds of grasses and forbs, with minor amounts of green vegetation and fruit). Seeds predominate during the winter.

Most of Indiana's sparrows are short-distance migrants that winter in southern portions of their breeding range, the southeastern United States, and Central America. Of the ten breeding species, Song Sparrow, Eastern Towhee, and Field Sparrow are the most likely species to be encountered during the winter. Swamp Sparrows are more often encountered during the winter in Indiana than during the summer.

Eastern Towhee



A female/immature Eastern Towhee perches on a branch. *Photo by Michael Brown.*

Table 180. Regional occurrence and abundance information for the Eastern Towhee.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----------|------------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 74 | 80 | 55 | 1.3 | 31 | 1.9 | Priority Blocks | | | | |
| Northwest | 73 | 78 | 85 | 34 | 1.6 | 19 | 2.4 | Confirmed | 80 | 14 | 103 | 19 |
| Northeast | 54 | 69 | 74 | 21 | 0.9 | 12 | 1.2 | Probable | 407 | 73 | 345 | 63 |
| Central | 273 | 84 | 75 | 110 | 1.3 | 102 | 1.0 | Possible | 73 | 13 | 102 | 19 |
| West-central | 114 | 82 | 70 | 56 | 1.5 | 38 | 1.3 | Sum | 560 | | 550 | |
| East-central | 159 | 85 | 79 | 54 | 1.1 | 64 | 0.8 | Observed | 0 | | - | |
| South | 246 | 97 | 98 | 97 | 7.7 | 88 | 7.6 | Other blocks | | | | |
| Southwest | 106 | 93 | 96 | 47 | 4.2 | 39 | 4.1 | Confirmed | 5 | | 2 | |
| South-central | 87 | 100 | 100 | 35 | 11.2 | 35 | 10.5 | Probable | 21 | | 9 | |
| Southeast | 53 | 98 | 100 | 15 | 10.5 | 14 | 9.9 | Possible | 13 | | 8 | |
| Statewide | 646 | 87 | 85 | 262 | 3.7 | 221 | 3.7 | Sum | 39 | | 19 | |
| | | | | | | | | Observed | 0 | | - | |

Eastern Towhee

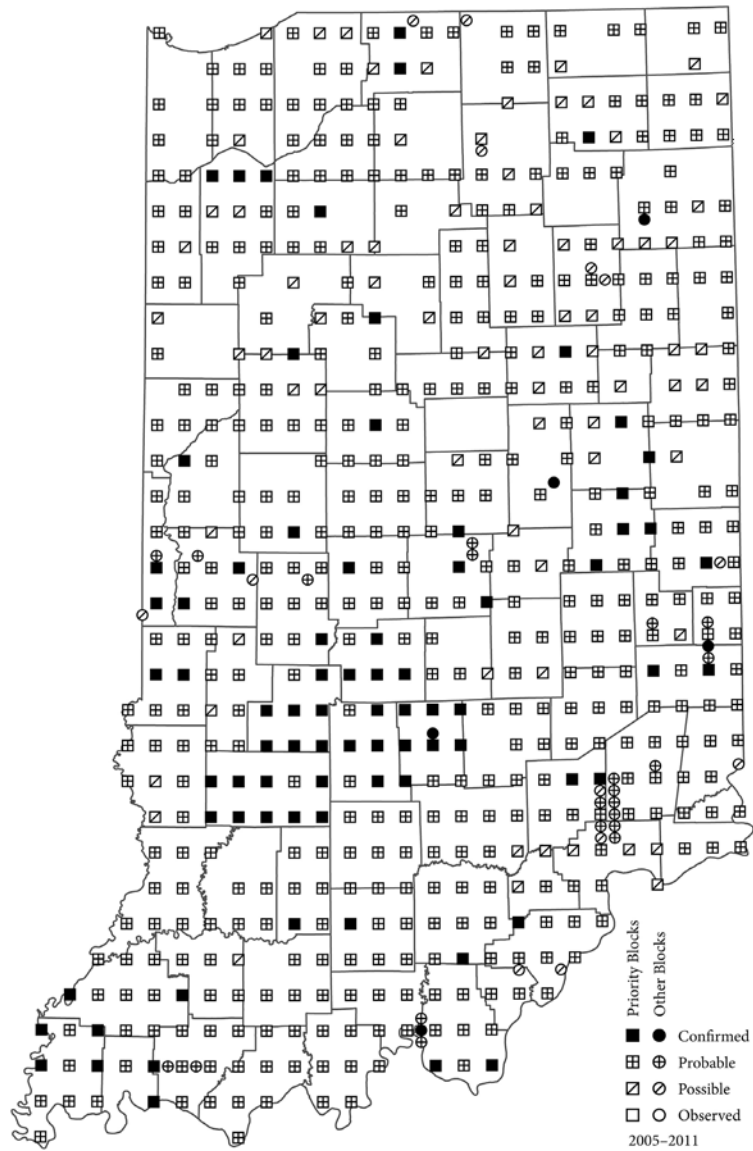


Figure 300. Map of the occurrences of the Eastern Towhee in IBBA blocks during 2005–2011.

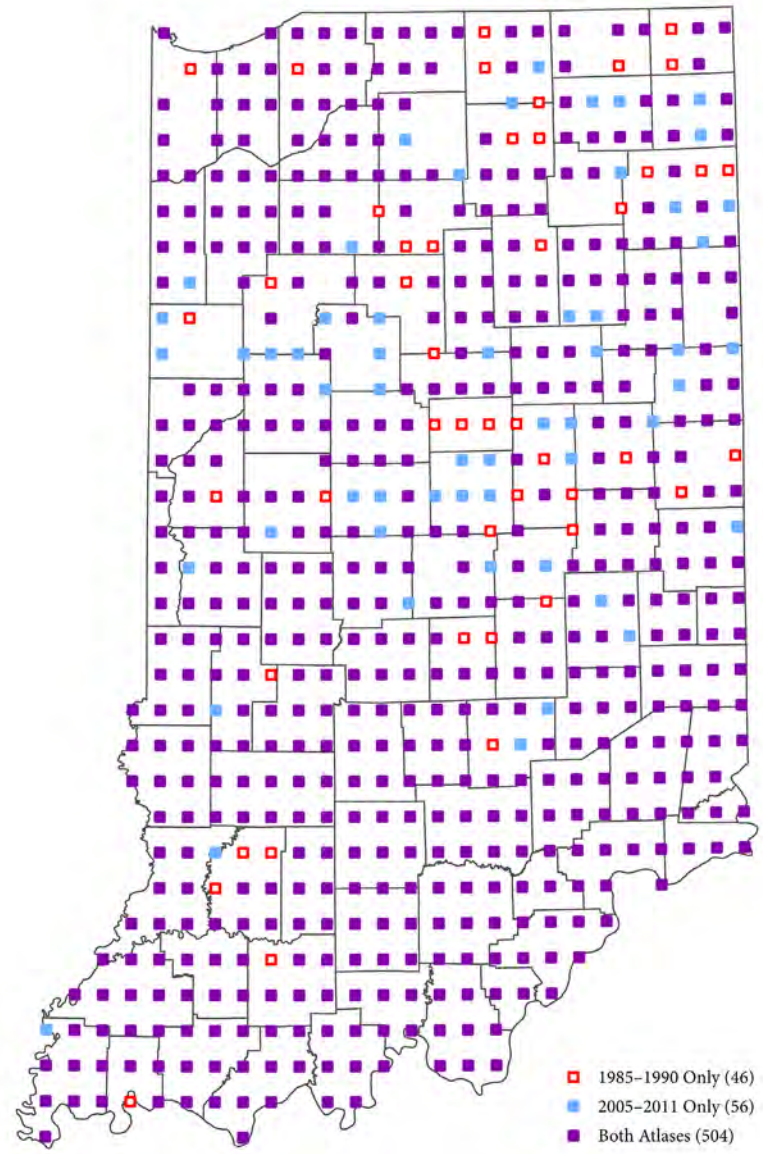


Figure 301. Map of the occurrences of the Eastern Towhee in IBBA priority blocks during both atlas periods.

Bachman's Sparrow



A Bachman's Sparrow perches on a branch. *Photo by Martina Nordstrand.*

Table 181. Regional occurrence and abundance information for the Bachman's Sparrow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|--------------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | <1 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 1 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | 0 | <1 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|---|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 1 | |
| Sum | 0 | | 1 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 0 | | - | |

Chipping Sparrow



A breeding adult Chipping Sparrow stands in grass and holds an insect in its beak while a juvenile begs to be fed.
Photo by Shari McCollough.

Table 182. Regional occurrence and abundance information for the Chipping Sparrow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 99 | 98 | 55 | 30 | 31 | 21 | | | | |
| Northwest | 73 | 99 | 99 | 34 | 31 | 19 | 21 | | | | |
| Northeast | 54 | 100 | 98 | 21 | 29 | 12 | 19 | | | | |
| Central | 273 | 99 | 97 | 110 | 30 | 102 | 13 | | | | |
| West-central | 114 | 99 | 96 | 56 | 25 | 38 | 20 | | | | |
| East-central | 159 | 99 | 98 | 54 | 35 | 64 | 9 | | | | |
| South | 246 | 98 | 93 | 97 | 14 | 88 | 9 | | | | |
| Southwest | 106 | 96 | 86 | 47 | 13 | 39 | 5 | | | | |
| South-central | 87 | 100 | 98 | 35 | 14 | 35 | 12 | | | | |
| Southeast | 53 | 98 | 98 | 15 | 15 | 14 | 12 | | | | |
| Statewide | 646 | 99 | 96 | 262 | 24 | 221 | 12 | | | | |

| | Breeding Bird Atlas | | Breeding Bird Atlas | |
|------------------------|---------------------|-----------|---------------------|-----------|
| | 2005–2011 | 1985–1990 | 2005–2011 | 1985–1990 |
| Priority Blocks | | | | |
| Confirmed | 336 | 53 | 267 | 43 |
| Probable | 277 | 43 | 296 | 48 |
| Possible | 25 | 4 | 55 | 9 |
| Sum | 638 | | 618 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 17 | | 6 | |
| Probable | 11 | | 4 | |
| Possible | 13 | | 6 | |
| Sum | 41 | | 16 | |
| Observed | 0 | | - | |

Chipping Sparrow

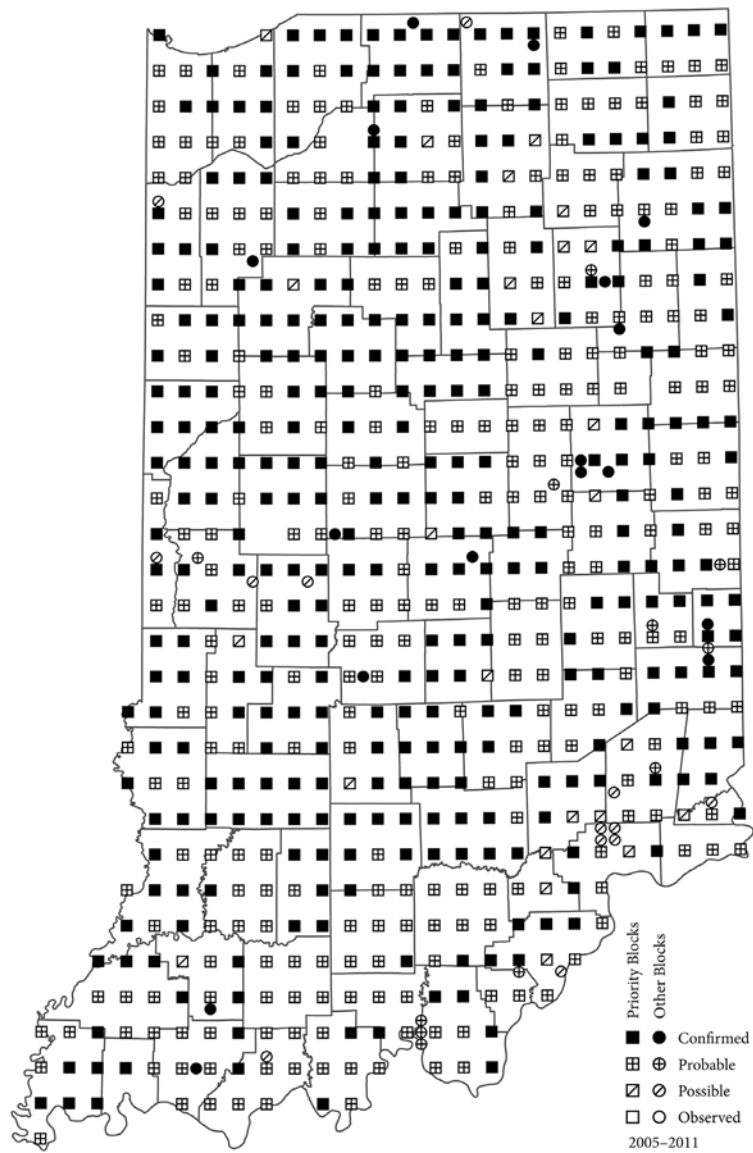


Figure 302. Map of the occurrences of the Chipping Sparrow in IBBA blocks during 2005–2011.

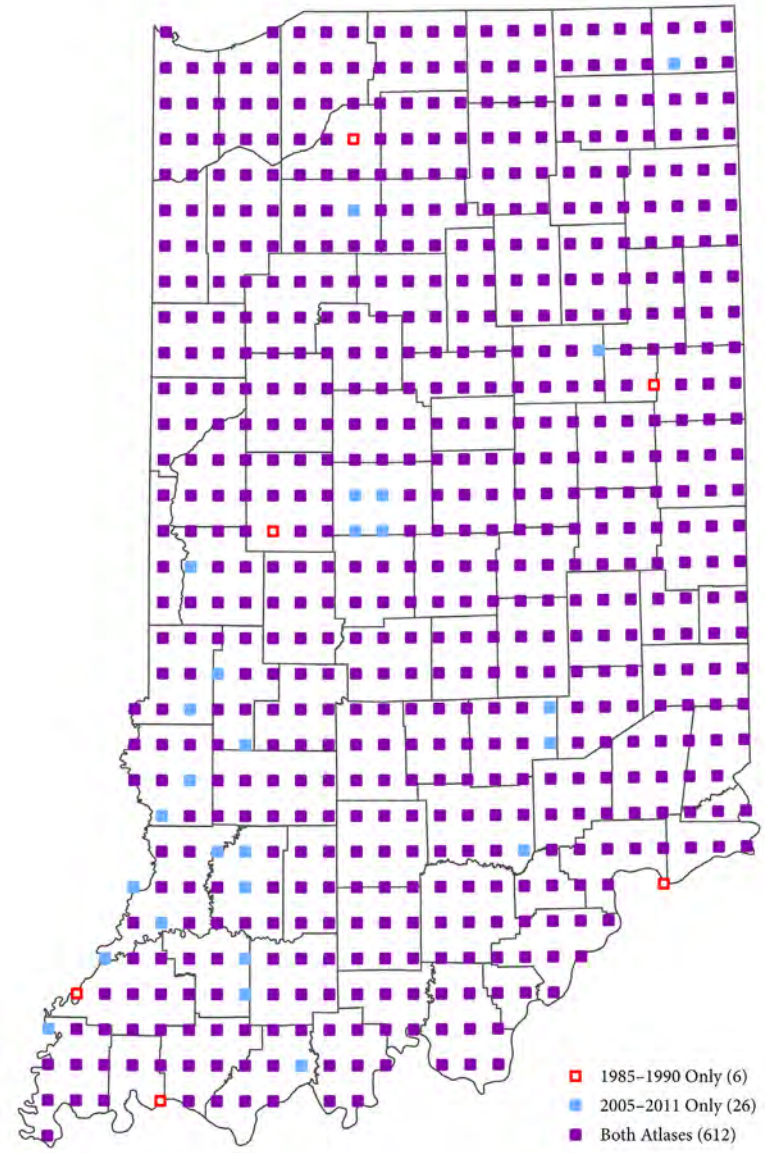


Figure 303. Map of the occurrences of the Chipping Sparrow in IBBA priority blocks during both atlas periods.

Clay-colored Sparrow



A non-breeding Clay-colored Sparrow perches on a branch with dead leaves. *Photo by Shari McCollough.*

Table 183. Regional occurrence and abundance information for the Clay-colored Sparrow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % |
| North | 127 | 2 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 4 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 0 | |
| Probable | 2 | 100 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 2 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 1 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 1 | |
| Observed | 0 | | - | |

Clay-colored Sparrow



Figure 304. Map of the occurrences of the Clay-colored Sparrow in IBBA blocks during 2005–2011.

Field Sparrow



A Field Sparrow perches at the top of a broken vertical branch. *Photo by Ryan Sanderson.*

Table 184. Regional occurrence and abundance information for the Field Sparrow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 92 | 97 | 55 | 7 | 31 | 14 | | | | |
| Northwest | 73 | 89 | 95 | 34 | 6 | 19 | 15 | | | | |
| Northeast | 54 | 96 | 100 | 21 | 8 | 12 | 14 | | | | |
| Central | 273 | 93 | 97 | 110 | 7 | 102 | 9 | | | | |
| West-central | 114 | 88 | 95 | 56 | 6 | 38 | 11 | | | | |
| East-central | 159 | 97 | 99 | 54 | 7 | 64 | 8 | | | | |
| South | 246 | 98 | 99 | 97 | 14 | 88 | 16 | | | | |
| Southwest | 106 | 99 | 99 | 47 | 12 | 39 | 12 | | | | |
| South-central | 87 | 99 | 98 | 35 | 15 | 35 | 19 | | | | |
| Southeast | 53 | 96 | 100 | 15 | 17 | 14 | 19 | | | | |
| Statewide | 646 | 95 | 98 | 262 | 9 | 221 | 13 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 204 | 33 | 246 | 39 |
| Probable | 364 | 59 | 353 | 56 |
| Possible | 46 | 7 | 32 | 5 |
| Sum | 614 | | 631 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 12 | | 6 | |
| Probable | 20 | | 10 | |
| Possible | 11 | | 5 | |
| Sum | 43 | | 21 | |
| Observed | 0 | | - | |

Field Sparrow

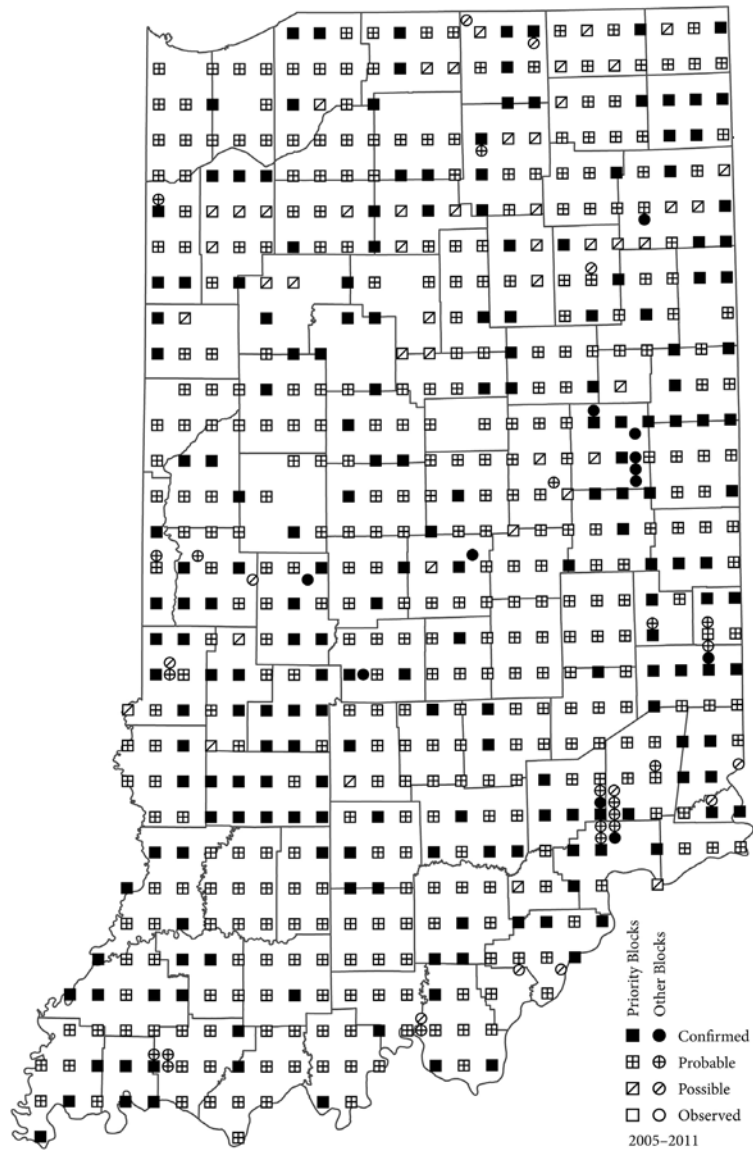


Figure 305. Map of the occurrences of the Field Sparrow in IBBA blocks during 2005–2011.

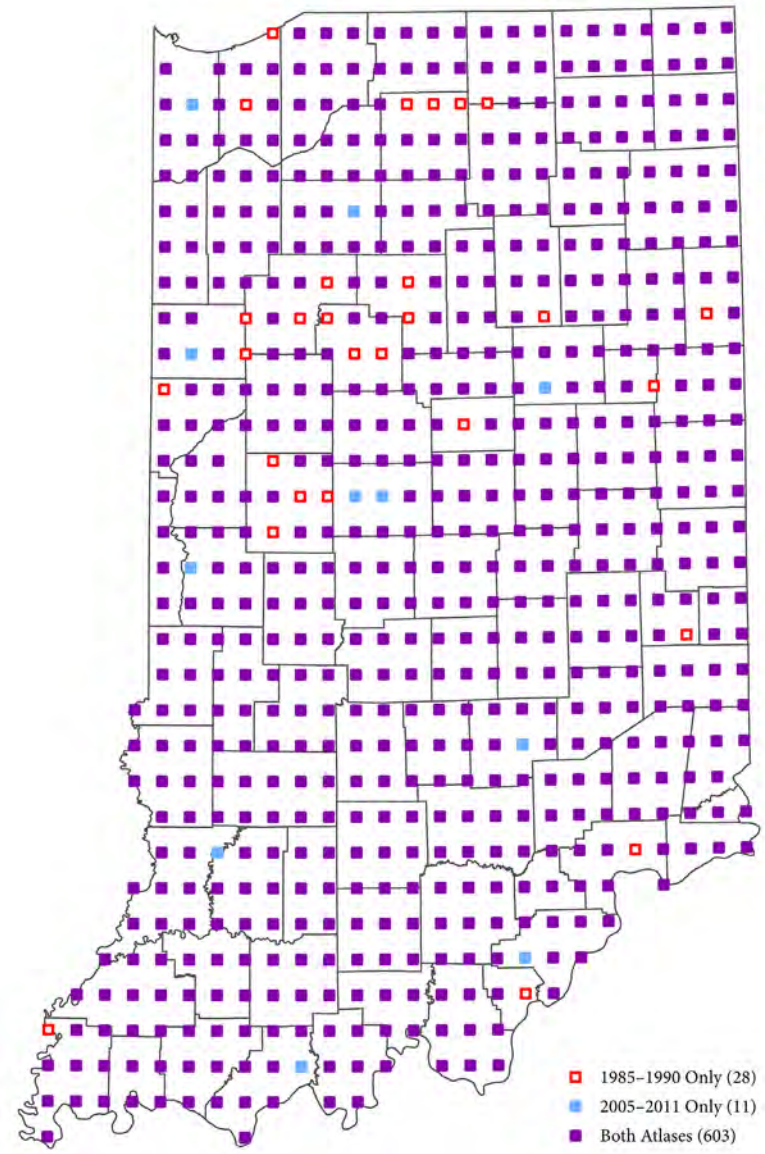


Figure 306. Map of the occurrences of the Field Sparrow in IBBA priority blocks during both atlas periods.

Vesper Sparrow



A Vesper Sparrow stands on a dirt road while some breast feathers blow in the wind. *Photo by Shari McCollough.*

Table 185. Regional occurrence and abundance information for the Vesper Sparrow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 66 | 82 | 55 | 6.7 | 31 | 14.1 | | | | |
| Northwest | 73 | 66 | 77 | 34 | 10.1 | 19 | 16.1 | | | | |
| Northeast | 54 | 67 | 89 | 21 | 1.1 | 12 | 11.1 | | | | |
| Central | 273 | 77 | 82 | 110 | 7.2 | 102 | 14.0 | | | | |
| West-central | 114 | 82 | 85 | 56 | 13.0 | 38 | 22.9 | | | | |
| East-central | 159 | 72 | 81 | 54 | 1.1 | 64 | 8.8 | | | | |
| South | 246 | 15 | 21 | 97 | 0.3 | 88 | 0.8 | | | | |
| Southwest | 106 | 25 | 27 | 47 | 0.4 | 39 | 1.1 | | | | |
| South-central | 87 | 3 | 3 | 35 | 0.1 | 35 | 0.2 | | | | |
| Southeast | 53 | 15 | 36 | 15 | 0.5 | 14 | 1.3 | | | | |
| Statewide | 646 | 51 | 59 | 262 | 4.5 | 221 | 8.8 | | | | |

| | 2005–2011 | 1985–1990 | No. | % |
|------------------------|------------|-----------|------------|----|
| Priority Blocks | | | | |
| Confirmed | 43 | 13 | 42 | 11 |
| Probable | 220 | 66 | 262 | 69 |
| Possible | 68 | 21 | 76 | 20 |
| Sum | 331 | | 380 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 2 | | 0 | |
| Probable | 6 | | 5 | |
| Possible | 7 | | 3 | |
| Sum | 15 | | 8 | |
| Observed | 0 | | - | |

Vesper Sparrow

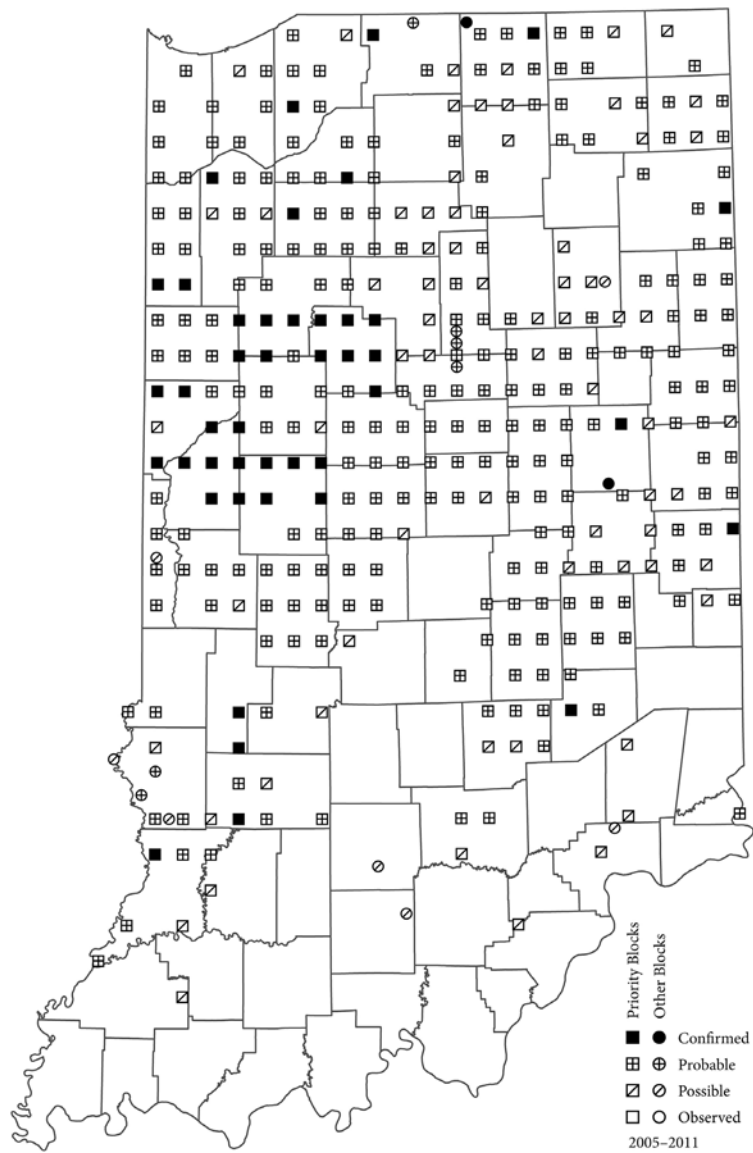


Figure 307. Map of the occurrences of the Vesper Sparrow in IBBA blocks during 2005–2011.

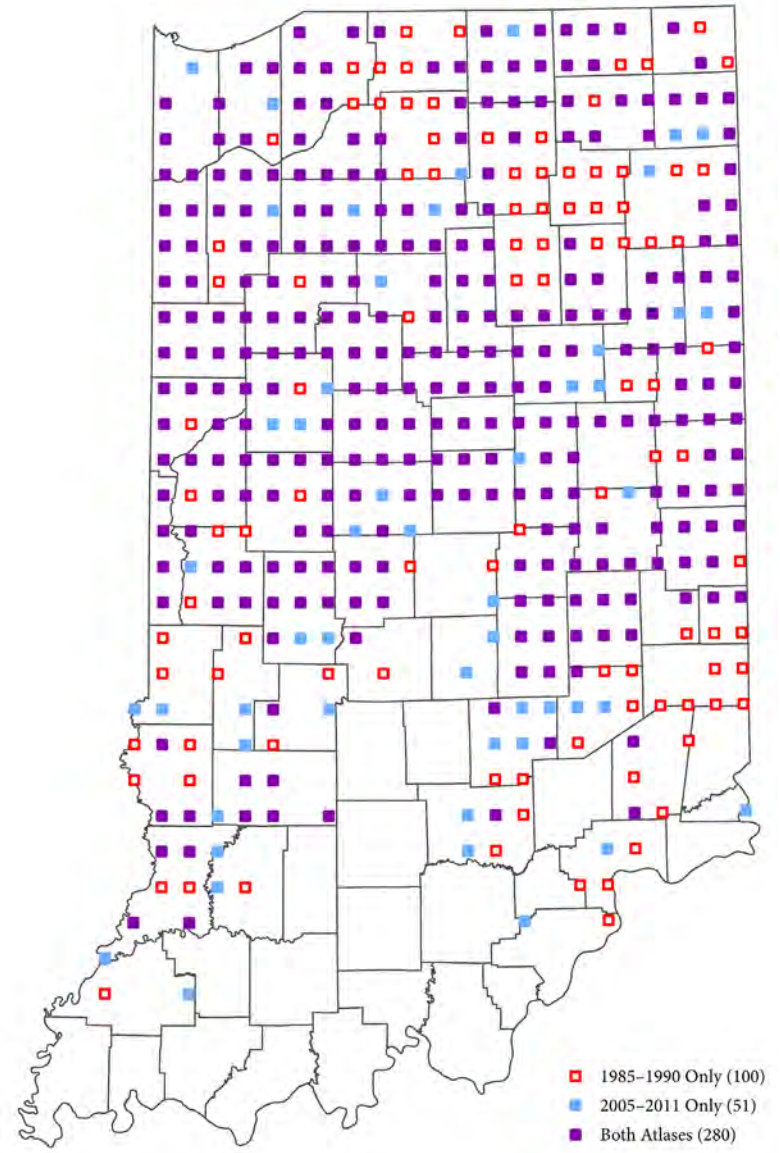


Figure 308. Map of the occurrences of the Vesper Sparrow in IBBA priority blocks during both atlas periods.

Lark Sparrow



A Lark Sparrow stands on sandy ground. Photo by Ryan Sanderson.

Table 186. Regional occurrence and abundance information for the Lark Sparrow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 6 | 2 | 55 | 0.00 | 31 | 0.07 | | | | |
| Northwest | 73 | 10 | 3 | 34 | 0.00 | 19 | 0.11 | | | | |
| Northeast | 54 | 2 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 3 | 1 | 110 | 0.00 | 102 | 0.01 | | | | |
| West-central | 114 | 4 | 3 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 2 | 0 | 54 | 0.00 | 64 | 0.02 | | | | |
| South | 246 | 9 | 4 | 97 | 0.19 | 88 | 0.00 | | | | |
| Southwest | 106 | 19 | 7 | 47 | 0.34 | 39 | 0.00 | | | | |
| South-central | 87 | 1 | 1 | 35 | 0.06 | 35 | 0.00 | | | | |
| Southeast | 53 | 2 | 2 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 6 | 2 | 262 | 0.07 | 221 | 0.01 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 16 | 42 | 5 | 36 |
| Probable | 14 | 37 | 4 | 29 |
| Possible | 8 | 21 | 5 | 36 |
| Sum | 38 | | 14 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 8 | | 3 | |
| Probable | 4 | | 5 | |
| Possible | 1 | | 4 | |
| Sum | 13 | | 12 | |
| Observed | 0 | | - | |

Lark Sparrow

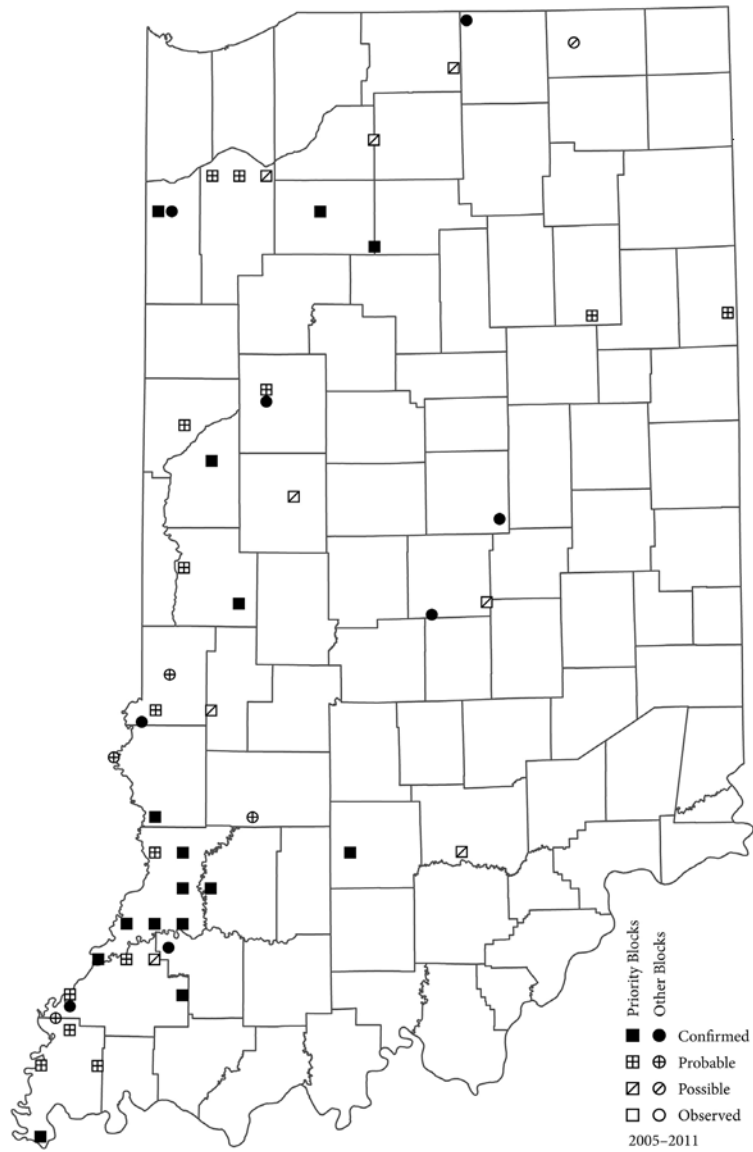


Figure 309. Map of the occurrences of the Lark Sparrow in IBBA blocks during 2005–2011.

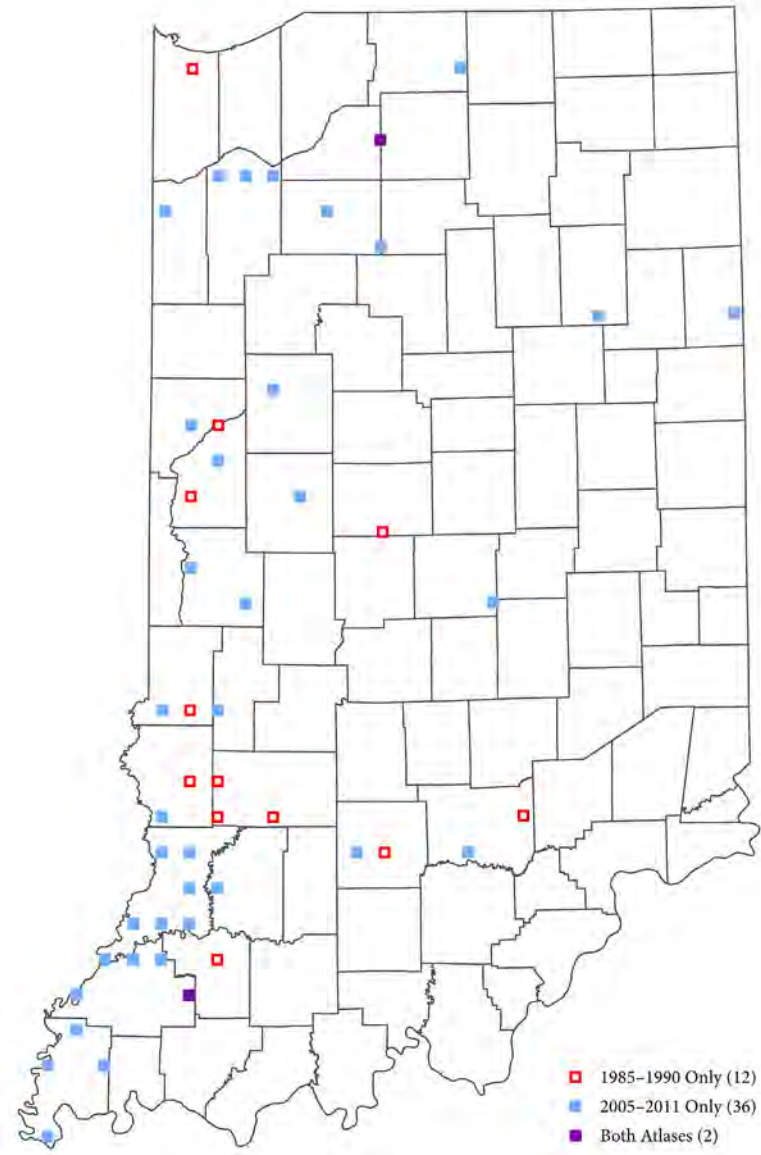


Figure 310. Map of the occurrences of the Lark Sparrow in IBBA priority blocks during both atlas periods.

Savannah Sparrow



A Savannah Sparrow perches while grasping onto different branches with each foot. *Photo by Shari McCollough.*

Table 187. Regional occurrence and abundance information for the Savannah Sparrow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----------|------------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 65 | 65 | 55 | 3.3 | 31 | 4.0 | Priority Blocks | | | | |
| Northwest | 73 | 60 | 53 | 34 | 0.9 | 19 | 1.9 | Confirmed | 27 | 8 | 20 | 6 |
| Northeast | 54 | 70 | 81 | 21 | 7.1 | 12 | 7.2 | Probable | 211 | 66 | 226 | 69 |
| Central | 273 | 72 | 78 | 110 | 3.7 | 102 | 5.5 | Possible | 80 | 25 | 83 | 25 |
| West-central | 114 | 72 | 74 | 56 | 2.5 | 38 | 7.0 | Sum | 318 | | 329 | |
| East-central | 159 | 72 | 81 | 54 | 5.1 | 64 | 4.6 | Observed | 0 | | - | |
| South | 246 | 16 | 13 | 97 | 0.2 | 88 | 0.2 | Other blocks | | | | |
| Southwest | 106 | 17 | 9 | 47 | 0.0 | 39 | 0.3 | Confirmed | 2 | | 0 | |
| South-central | 87 | 9 | 8 | 35 | 0.1 | 35 | <0.01 | Probable | 7 | | 3 | |
| Southeast | 53 | 25 | 30 | 15 | 1.0 | 14 | <0.01 | Possible | 7 | | 3 | |
| Statewide | 646 | 49 | 51 | 262 | 2.3 | 221 | 3.2 | Sum | 16 | | 6 | |
| | | | | | | | | Observed | 0 | | - | |

Savannah Sparrow

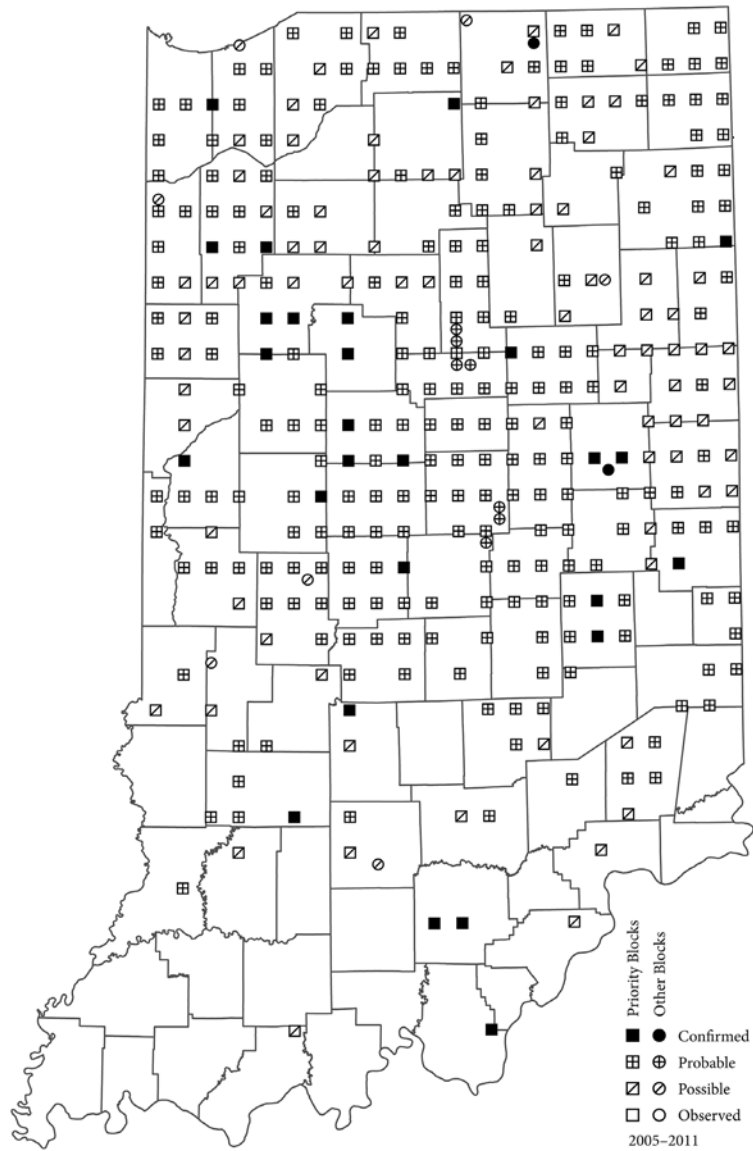


Figure 311. Map of the occurrences of the Savannah Sparrow in IBBA blocks during 2005–2011.

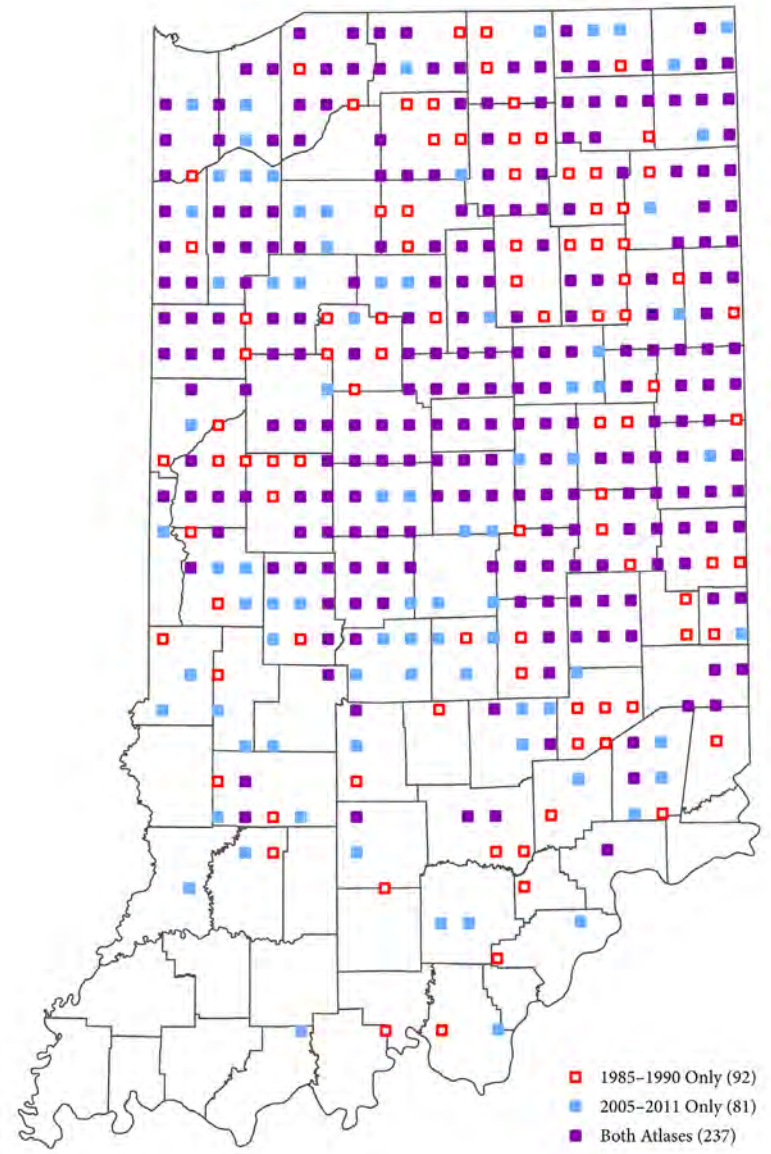


Figure 312. Map of the occurrences of the Savannah Sparrow in IBBA priority blocks during both atlas periods.

Grasshopper Sparrow



A Grasshopper Sparrow perches at the top of a branch, mouth agape. *Photo by Ryan Sanderson.*

Table 188. Regional occurrence and abundance information for the Grasshopper Sparrow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|-----------|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | 1985–1990 | No. | % |
| North | 127 | 48 | 66 | 55 | 0.9 | 31 | 2.9 | | | | |
| Northwest | 73 | 37 | 63 | 34 | 0.5 | 19 | 3.4 | | | | |
| Northeast | 54 | 63 | 70 | 21 | 1.5 | 12 | 2.2 | | | | |
| Central | 273 | 44 | 69 | 110 | 0.8 | 102 | 3.0 | | | | |
| West-central | 114 | 46 | 75 | 56 | 0.8 | 38 | 5.2 | | | | |
| East-central | 159 | 43 | 65 | 54 | 0.8 | 64 | 1.7 | | | | |
| South | 246 | 52 | 55 | 97 | 2.3 | 88 | 2.6 | | | | |
| Southwest | 106 | 69 | 66 | 47 | 2.7 | 39 | 3.9 | | | | |
| South-central | 87 | 41 | 49 | 35 | 1.7 | 35 | 1.5 | | | | |
| Southeast | 53 | 34 | 42 | 15 | 2.1 | 14 | 1.5 | | | | |
| Statewide | 646 | 48 | 63 | 262 | 1.4 | 221 | 2.8 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 20 | 6 | 39 | 10 |
| Probable | 189 | 61 | 263 | 65 |
| Possible | 100 | 32 | 105 | 26 |
| Sum | 309 | | 407 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 8 | | 1 | |
| Probable | 16 | | 7 | |
| Possible | 13 | | 9 | |
| Sum | 37 | | 17 | |
| Observed | 0 | | - | |

Grasshopper Sparrow

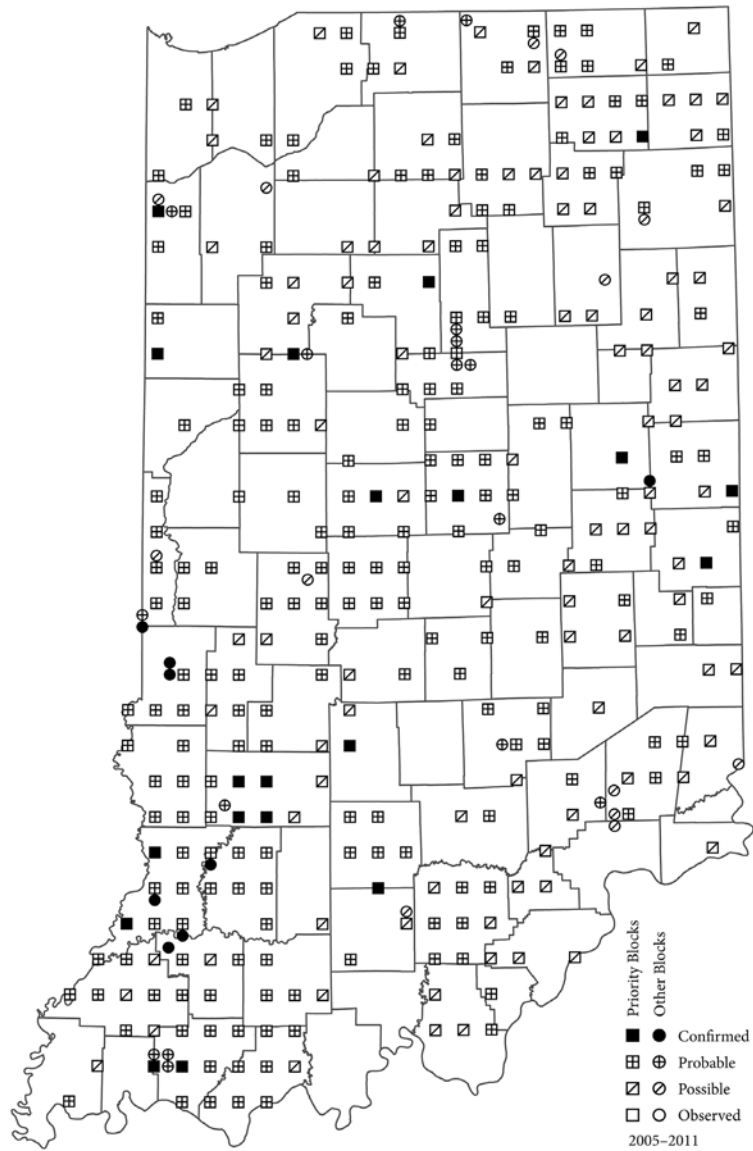


Figure 313. Map of the occurrences of the Grasshopper Sparrow in IBBA blocks during 2005–2011.

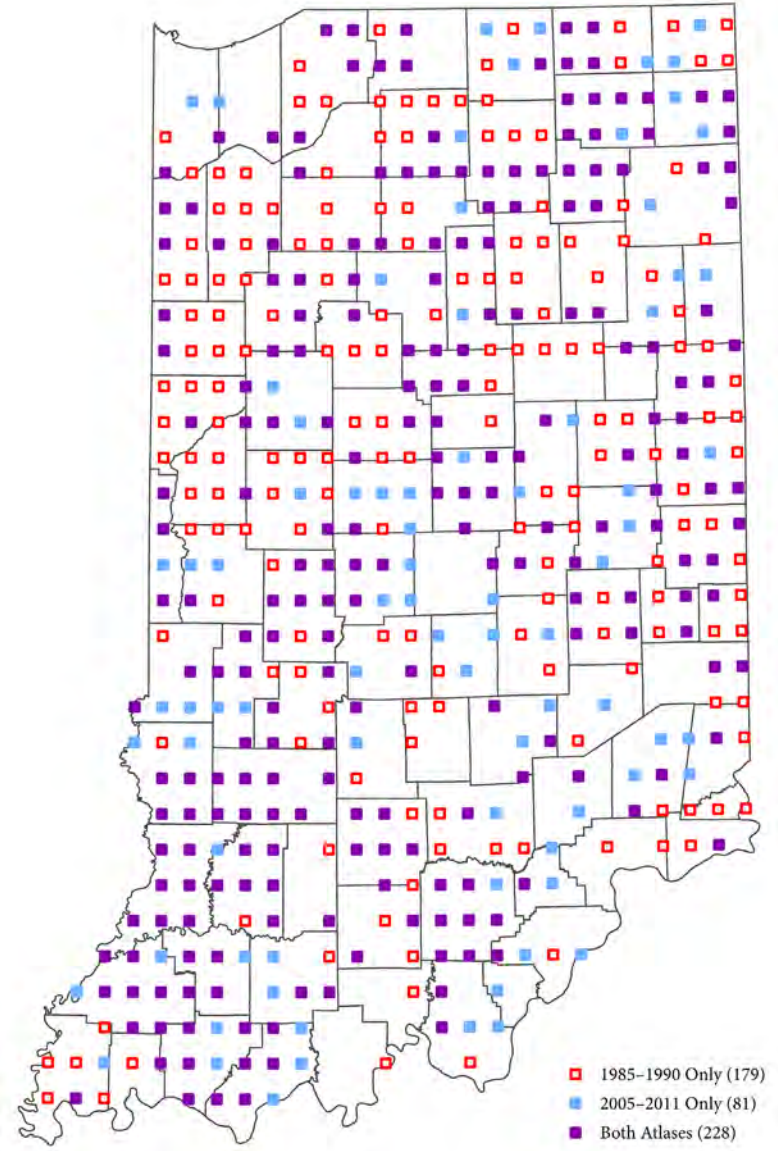


Figure 314. Map of the occurrences of the Grasshopper Sparrow in IBBA priority blocks during both atlas periods.

Henslow's Sparrow



A Henslow's Sparrow perches next to a large thorn on a branch with its mouth wide open. *Photo by Ryan Sanderson.*

Table 189. Regional occurrence and abundance information for the Henslow's Sparrow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 9 | 2 | 55 | 0.05 | 31 | 0.03 | | | | |
| Northwest | 73 | 10 | 1 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 7 | 4 | 21 | 0.14 | 12 | 0.08 | | | | |
| Central | 273 | 3 | <1 | 110 | <0.01 | 102 | 0.01 | | | | |
| West-central | 114 | 4 | 0 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 2 | 1 | 54 | 0.02 | 64 | 0.02 | | | | |
| South | 246 | 26 | 13 | 97 | 1.41 | 88 | 0.10 | | | | |
| Southwest | 106 | 25 | 8 | 47 | 0.21 | 39 | 0.00 | | | | |
| South-central | 87 | 36 | 20 | 35 | 1.63 | 35 | 0.20 | | | | |
| Southeast | 53 | 11 | 13 | 15 | 4.67 | 14 | 0.14 | | | | |
| Statewide | 646 | 13 | 6 | 262 | 0.54 | 221 | 0.05 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 5 | 6 | 4 | 11 |
| Probable | 53 | 64 | 20 | 53 |
| Possible | 25 | 30 | 14 | 37 |
| Sum | 83 | | 38 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 5 | | 2 | |
| Probable | 29 | | 11 | |
| Possible | 14 | | 9 | |
| Sum | 48 | | 22 | |
| Observed | 0 | | - | |

Henslow's Sparrow

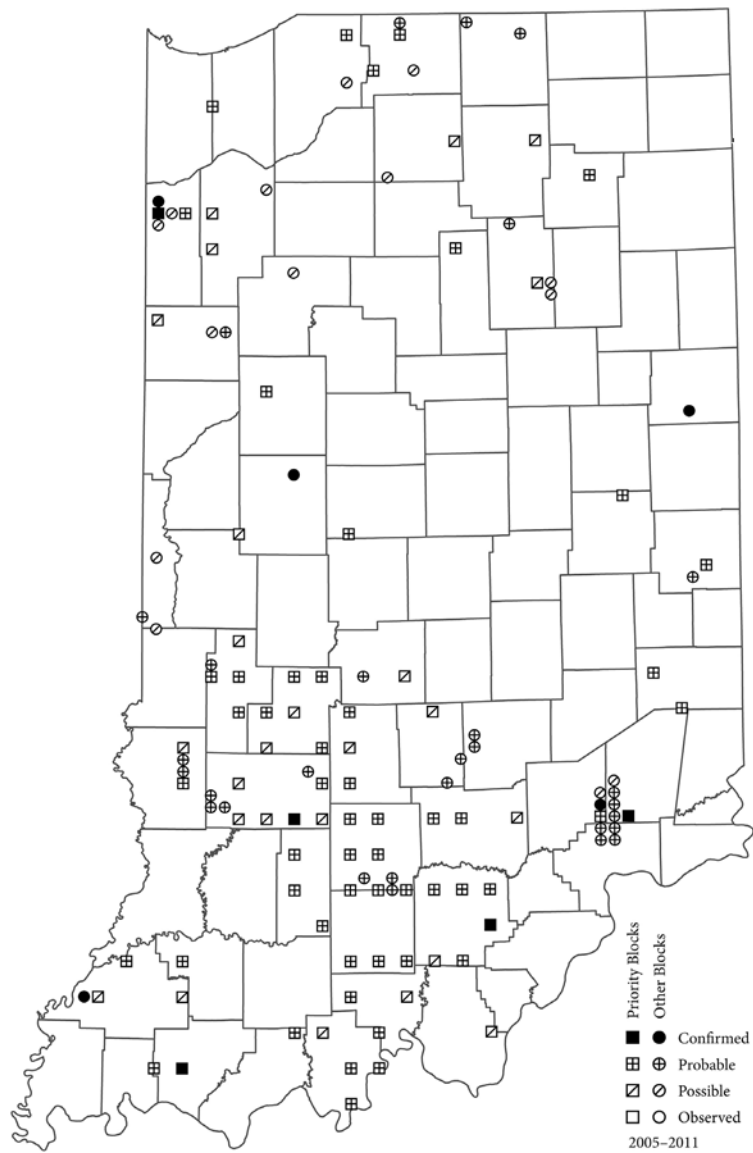


Figure 315. Map of the occurrences of the Henslow's Sparrow in IBBA blocks during 2005-2011.

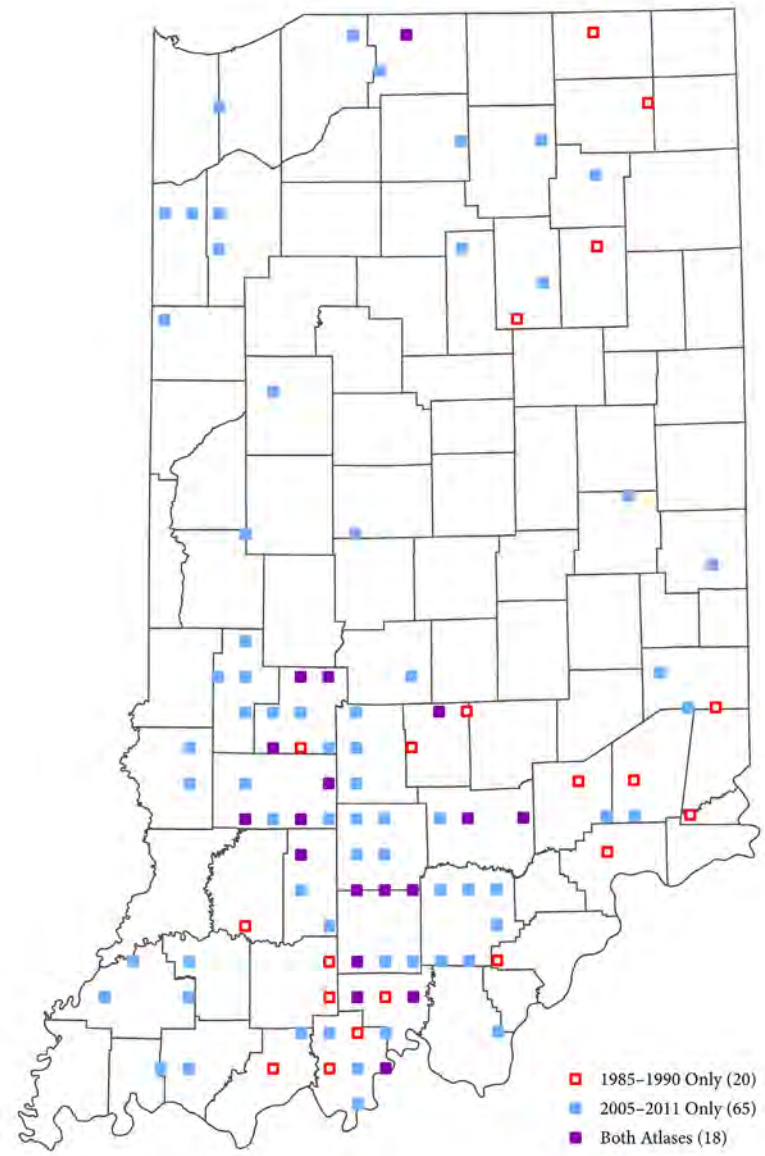


Figure 316. Map of the occurrences of the Henslow's Sparrow in IBBA priority blocks during both atlas periods.

Song Sparrow



A Song Sparrow opens its mouth while perched on a thorny multiflora rose branch. *Photo by Shari McCollough.*

Table 190. Regional occurrence and abundance information for the Song Sparrow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|------------|------------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 98 | 100 | 55 | 29 | 31 | 46 | | | | |
| Northwest | 73 | 99 | 100 | 34 | 25 | 19 | 45 | | | | |
| Northeast | 54 | 98 | 100 | 21 | 35 | 12 | 47 | | | | |
| Central | 273 | 100 | 100 | 110 | 33 | 102 | 43 | | | | |
| West-central | 114 | 100 | 99 | 56 | 31 | 38 | 46 | | | | |
| East-central | 159 | 100 | 100 | 54 | 37 | 64 | 42 | | | | |
| South | 246 | 100 | 100 | 97 | 30 | 88 | 32 | | | | |
| Southwest | 106 | 99 | 100 | 47 | 35 | 39 | 36 | | | | |
| South-central | 87 | 100 | 100 | 35 | 23 | 35 | 25 | | | | |
| Southeast | 53 | 100 | 100 | 15 | 34 | 14 | 40 | | | | |
| Statewide | 646 | 100 | 100 | 262 | 31 | 221 | 39 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 318 | 49 | 300 | 47 |
| Probable | 311 | 48 | 331 | 51 |
| Possible | 14 | 2 | 14 | 2 |
| Sum | 643 | | 645 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 17 | | 6 | |
| Probable | 27 | | 9 | |
| Possible | 11 | | 9 | |
| Sum | 55 | | 24 | |
| Observed | 0 | | - | |

Song Sparrow

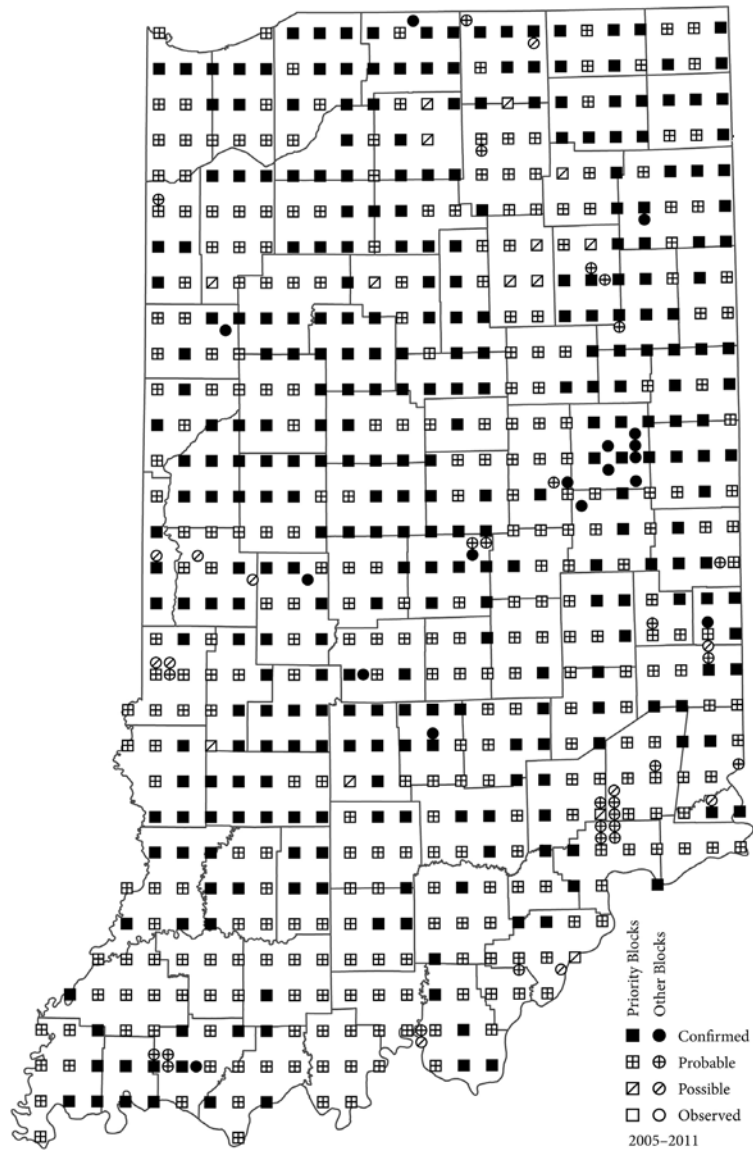


Figure 317. Map of the occurrences of the Song Sparrow in IBBA blocks during 2005-2011.

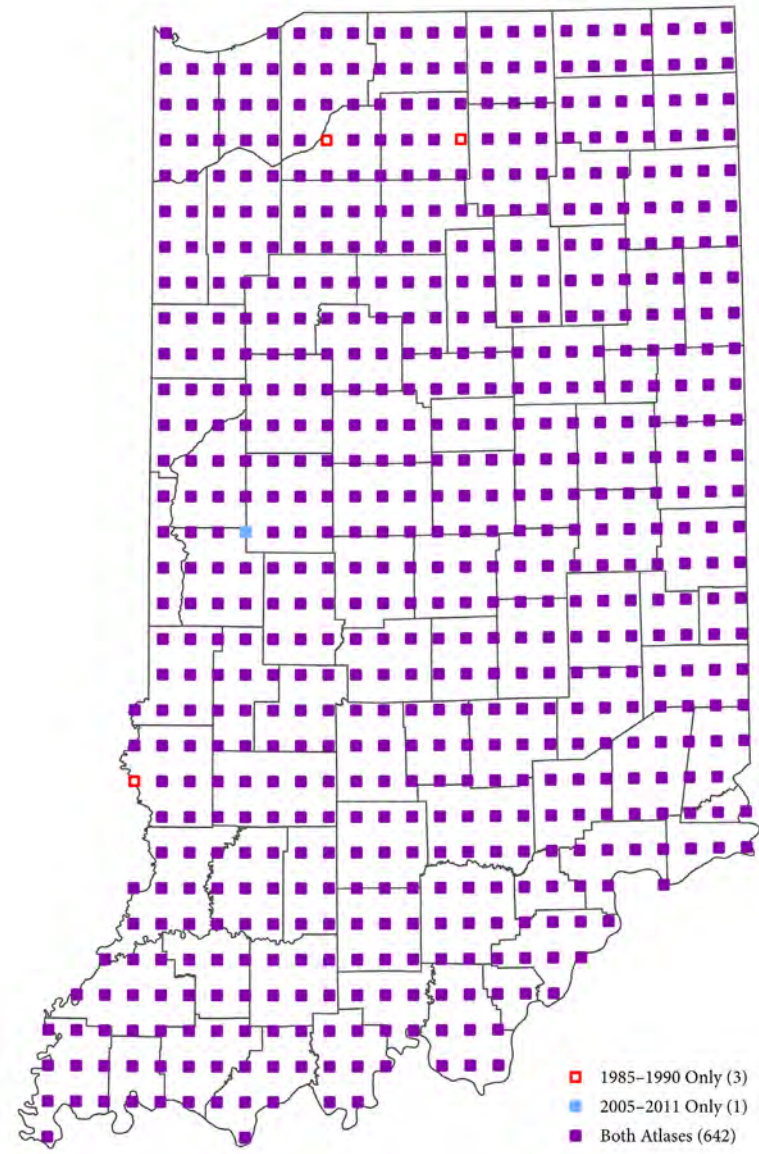


Figure 318. Map of the occurrences of the Song Sparrow in IBBA priority blocks during both atlas periods.

Swamp Sparrow



A Swamp Sparrow grasps onto a vertical branch. . Photo by Stephen Bell.

Table 191. Regional occurrence and abundance information for the Swamp Sparrow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|----------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 24 | 29 | 55 | 0.29 | 31 | 0.42 | | | | |
| Northwest | 73 | 14 | 23 | 34 | 0.00 | 19 | 0.26 | | | | |
| Northeast | 54 | 39 | 37 | 21 | 0.76 | 12 | 0.67 | | | | |
| Central | 273 | 1 | 2 | 110 | <0.01 | 102 | 0.00 | | | | |
| West-central | 114 | 0 | 2 | 56 | 0.00 | 38 | 0.00 | | | | |
| East-central | 159 | 2 | 3 | 54 | 0.02 | 64 | 0.00 | | | | |
| South | 246 | 2 | 0 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | <1 | 0 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 2 | 0 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 2 | 0 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 6 | 7 | 262 | 0.06 | 221 | 0.06 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 3 | 8 | 4 | 9 |
| Probable | 18 | 47 | 27 | 63 |
| Possible | 17 | 45 | 12 | 28 |
| Sum | 38 | | 43 | |
| Observed | 1 | | - | |
| Other blocks | | | | |
| Confirmed | 1 | | 2 | |
| Probable | 8 | | 2 | |
| Possible | 1 | | 0 | |
| Sum | 10 | | 4 | |
| Observed | 0 | | - | |

Swamp Sparrow

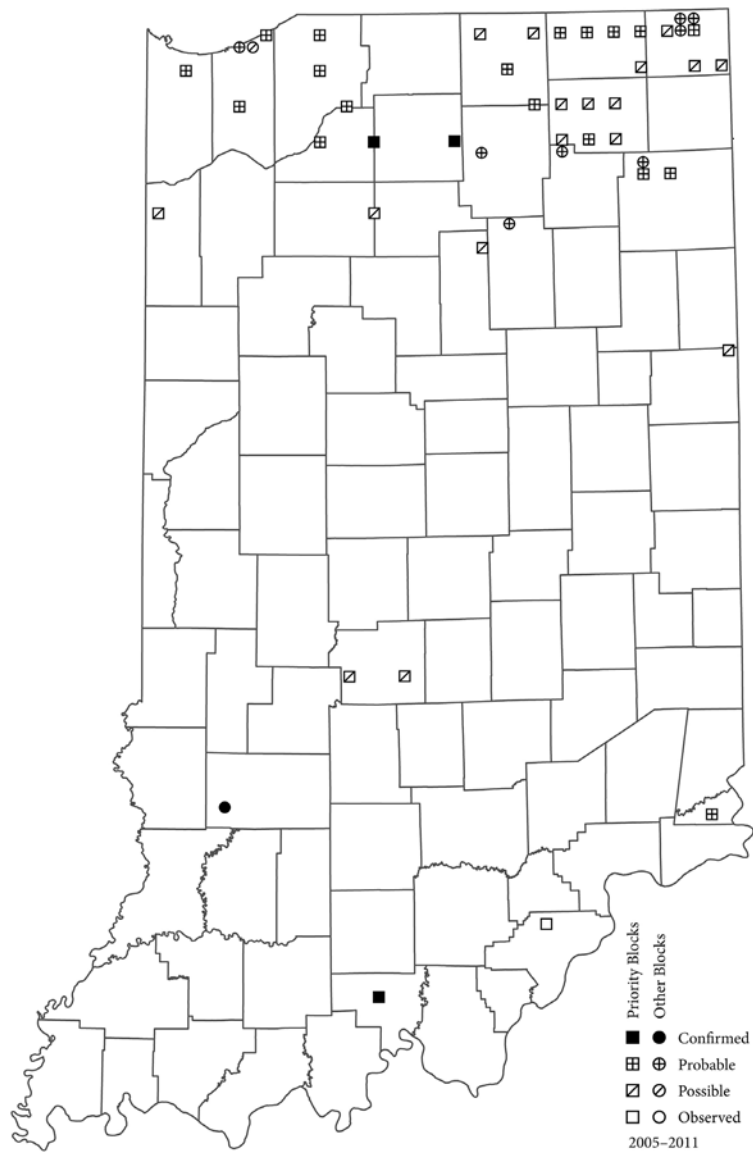


Figure 319. Map of the occurrences of the Swamp Sparrow in IBBA blocks during 2005–2011.

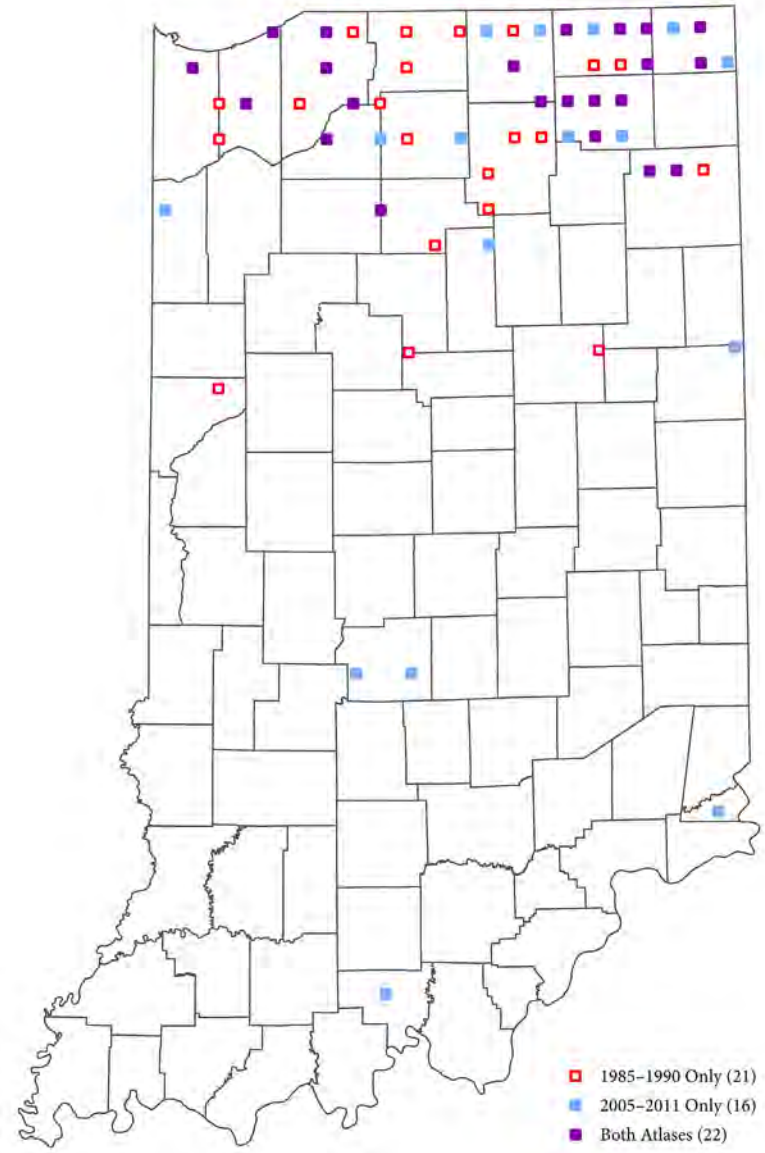


Figure 320. Map of the occurrences of the Swamp Sparrow in IBBA priority blocks during both atlas periods.

Tanagers, Cardinals, and Grosbeaks (Cardinalidae)

Tables 192–198, Fig. 321–334

THIS GROUP INCLUDES two species of tanagers (Summer Tanager, Scarlet Tanager) and five species of large-billed birds adept at eating seeds. The grosbeaks consist of two of Indiana's most common birds (Northern Cardinal, Indigo Bunting), as well as the Dickcissel, a widespread grassland obligate, the Blue Grosbeak, a shrubland specialist more common in the south, and the Rose-breasted Grosbeak, a northern forest generalist.

Summer Tanager and Scarlet Tanager are both forest birds that winter in tropical areas and breed in the eastern United States. Summer Tanagers have a more southern nesting range that extends to the southwestern United States into Mexico. Scarlet Tanagers range into southern Canada. Both species feed mostly on insects, other invertebrates, and fruit (Robinson 1996, Mowbray 1999b). Their flimsy nests made with sticks, weed stems, grasses, and leaves are placed on horizontal branches of trees at medium to high levels. Scarlet Tanagers occur throughout Indiana and are most abundant in the forested regions of southern, especially south-central, Indiana. Rates of occurrences were similar between atlas periods for Scarlet Tanagers with somewhat fewer records in northern Indiana, and greater numbers found in central regions. Summer Tanagers are uncommon in northern and central Indiana, although more occurrences occurred in northwestern and west-central regions in the most recent atlas. The overall increase in occurrence reached statistical significance. Numbers of both species detected on Breeding Bird Surveys were greatest in south-central and southeastern Indiana. Population trends on BBS routes were positive for both species and statistically significant for the Summer Tanager.

Scarlet Tanager was much more commonly reported than Summer Tanager on atlases in Indiana, Ohio, and Michigan with the latter species having a more southerly distribution. The few records of Summer Tanager in Michigan were in the extreme southern part of the state. The only confirmed breeding record was restricted to the second atlas. The number of atlas records for Scarlet Tanager and Summer Tanager were similar between atlas periods with small increases

noted for both in Indiana, moderate decreases in Ohio, and little change in Michigan.

The Northern Cardinal, Indiana's state bird, was reported in all but one priority block, tying with American Robin for the most frequently reported bird on the atlas. Abundance as reflected by Breeding Bird Surveys indicates similar densities in northern and central Indiana with somewhat greater numbers in the southern third of the state. Differences in BBS values were little changed between atlas periods and the population trend was flat. Northern Cardinals can be found in a variety of habitats from forests to shrubland to urban areas as long as brushy areas are present (Halkin and Linville 1999). Nests are built a few feet off the ground in shrubs, vines, and the lower reaches of trees. The diet consists of seeds, fruits, and insects. Northern Cardinals are permanent residents in Indiana and their range encompasses the eastern half of the United States and southern Canada and extends to southern Arizona and Mexico south to Guatemala.

Rose-breasted Grosbeaks have a northern breeding distribution in Indiana and are seldom found in the southern third of the state, especially south-central Indiana. During the current atlas, the number of blocks with this species increased moderately, but significantly, and the southern boundary appeared to have moved south slightly with occurrences greater in central and southern Indiana than in the previous atlas. Densities on Breeding Bird Surveys mirror this pattern of distribution and suggest a small to modest population increase in most Indiana regions, although the trend line was not statistically significant. Rose-breasted Grosbeaks frequent a wide variety of woodland areas and nest in shrubs or the lower levels of trees (Wyatt and Francis 2002). Insects, especially beetles, predominate in their spring and summer diets. Fruit and seeds are also important. Rose-breasted Grosbeaks breed in the northeastern and north-central United States and southern Canada west to northeastern British Columbia. They winter from central Mexico to northern parts of South America.

Atlas records for the Blue Grosbeak show a species

expanding its range and occurring more frequently in Indiana. The Blue Grosbeak has a decidedly southern distribution in the state and is one of a few species more likely to be found in western parts of Indiana. Relative densities as shown by BBS values were much greater in southern Indiana, especially in southwestern and south-central areas. Atlas occurrences increased significantly in all regions of the state with Breeding Bird Survey values also greater in most regions. The BBS population trend was among the highest of any Indiana bird species and statistically significant. Blue Grosbeaks favor brushy habitats and are often found in fencerows, abandoned fields, and forest edges (Ingold 1993). Their well-constructed cup nests are built low in shrubs, vines, or small trees. During the summer, Blue Grosbeaks are mostly insectivorous, although grass seeds and grains are also eaten in moderate amounts. Blue Grosbeaks breed across the southern United States south through much of Central America. Northern populations withdraw to spend the winter in Central America.

The Indigo Bunting ranks among the top ten in atlas occurrences. It is found virtually anywhere that forest edges and brushy areas exist (Payne 1992). Breeding Bird Surveys for this species show that densities increase from northern to southern Indiana. Although numbers of atlas occurrences were nearly identical between survey periods, relative abundance on BBS routes appeared to have declined in most regions between atlas periods and the BBS trend shows a statistically significant statewide reduction in numbers. Indigo Buntings feed on a wide variety of insects, spiders, seeds, and fruit taken from on the ground to upper levels of trees. Cup-shaped nests are well concealed in nonwoody plants as well as vines, shrubs, and trees. Indigo Buntings migrate from Indiana to winter in Central America and the West Indies.

Dickcissels are found in grassland habitats throughout Indiana including pastures, hayfields, reclaimed mine lands, row-crop field edges, roadsides, and fallow fields (Temple 2002). They seem especially abundant in fields where forbs predominate. Nests are placed on the ground or in low vegetation and are composed of grass-

es, weed stalks, and leaves. Dickcissels feed primarily on grasshoppers, katydids, and a wide variety of other insects during the breeding season as well as grass seeds and waste grain. Dickcissels occurred in over half of the atlas blocks in all regions of the state, although frequencies were greater in western areas of Indiana. Records increased significantly statewide and in most areas between atlas periods with the exception of the northeastern region. Relative densities on Breeding Bird Surveys show a rather uniform pattern of abundance among regions with the exception of southwestern Indiana, where numbers were much greater. BBS values between atlas periods were greater in all regions with the exception of northeastern Indiana. The BBS population trend increased significantly. Its breeding range is primarily the Great Plains and Midwest from southern Canada to Texas and the Gulf Coast. Wintering areas extend from central Mexico to northern countries of South America.

The Indigo Bunting was found in virtually every atlas block in Indiana, Ohio, and Michigan. The same can be said about the Northern Cardinal, except for atlas blocks in the Upper Peninsula and the Northern Lower Peninsula of Michigan. Rates of occurrence were virtually identical between atlas periods in all three states for both species. Rose-breasted Grosbeak was found in a majority of blocks throughout Michigan, but found most often in northern regions of Indiana and in eastern and northern parts of Ohio. Moderate increases were noted between atlas projects in Indiana and Ohio, while Michigan registered a small decline. Frequencies of occurrence were much lower for Dickcissel and Blue Grosbeak in Ohio and Michigan with greatest values for these species observed in Indiana. Dickcissel has a decidedly western distribution in Ohio while Blue Grosbeak is found primarily in the southwestern part of this state. Blue Grosbeak was not detected on the first Michigan atlas and only three records were included on the second atlas, one of these in the confirmed breeding category. Blue Grosbeak records increased dramatically on the most recent atlases in Indiana and Ohio, while the number of Dickcissel observations also improved moderately in these two states.

Summer Tanager



A male Summer Tanager perches on a branch with his mouth partially open. *Photo by Shari McCollough.*

Table 192. Regional occurrence and abundance information for the Summer Tanager.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 6 | <1 | 55 | 0.00 | 31 | 0.00 | | | | |
| Northwest | 73 | 8 | 0 | 34 | 0.00 | 19 | 0.00 | | | | |
| Northeast | 54 | 2 | 2 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 13 | 10 | 110 | <0.01 | 102 | 0.02 | | | | |
| West-central | 114 | 18 | 12 | 56 | 0.02 | 38 | 0.00 | | | | |
| East-central | 159 | 10 | 9 | 54 | 0.00 | 64 | 0.03 | | | | |
| South | 246 | 85 | 76 | 97 | 2.00 | 88 | 2.07 | | | | |
| Southwest | 106 | 80 | 58 | 47 | 1.09 | 39 | 0.80 | | | | |
| South-central | 87 | 94 | 93 | 35 | 3.23 | 35 | 3.06 | | | | |
| Southeast | 53 | 81 | 87 | 15 | 2.00 | 14 | 3.14 | | | | |
| Statewide | 646 | 39 | 34 | 262 | 0.74 | 221 | 0.83 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 23 | 9 | 24 | 11 |
| Probable | 173 | 68 | 132 | 61 |
| Possible | 57 | 23 | 61 | 28 |
| Sum | 253 | | 217 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 6 | | 1 | |
| Probable | 15 | | 9 | |
| Possible | 10 | | 4 | |
| Sum | 31 | | 14 | |
| Observed | 0 | | - | |

Summer Tanager

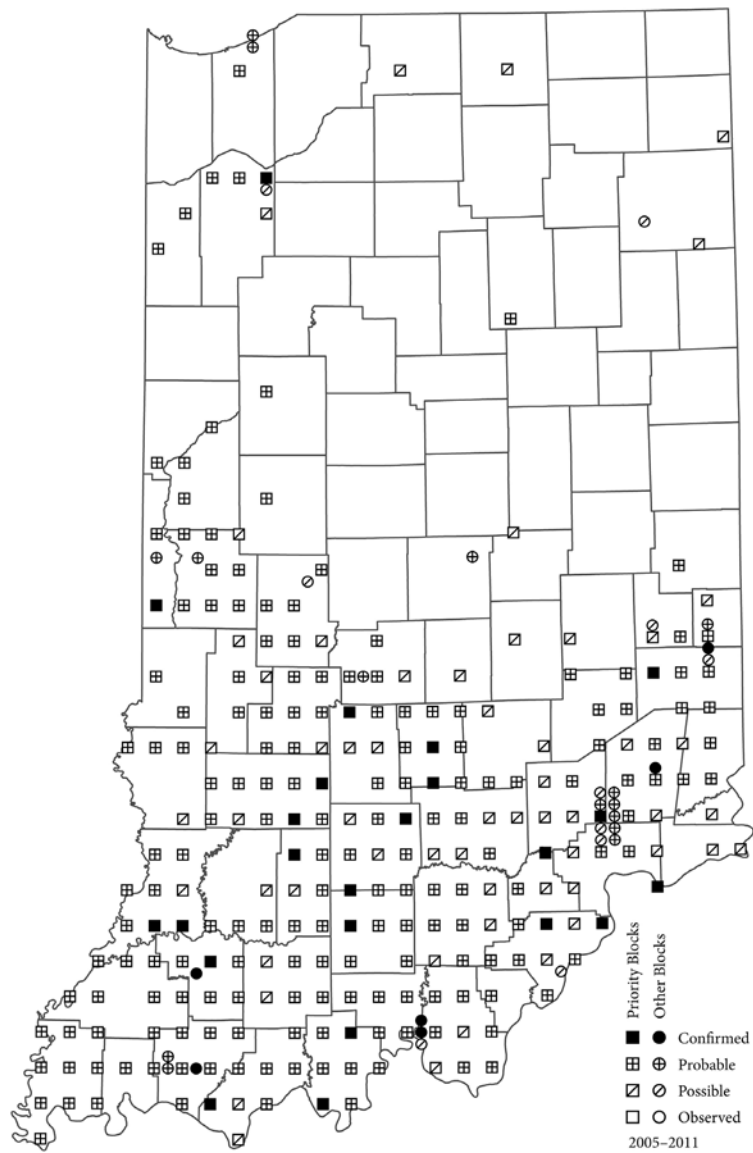


Figure 321. Map of the occurrences of the Summer Tanager in IBBA blocks during 2005–2011.

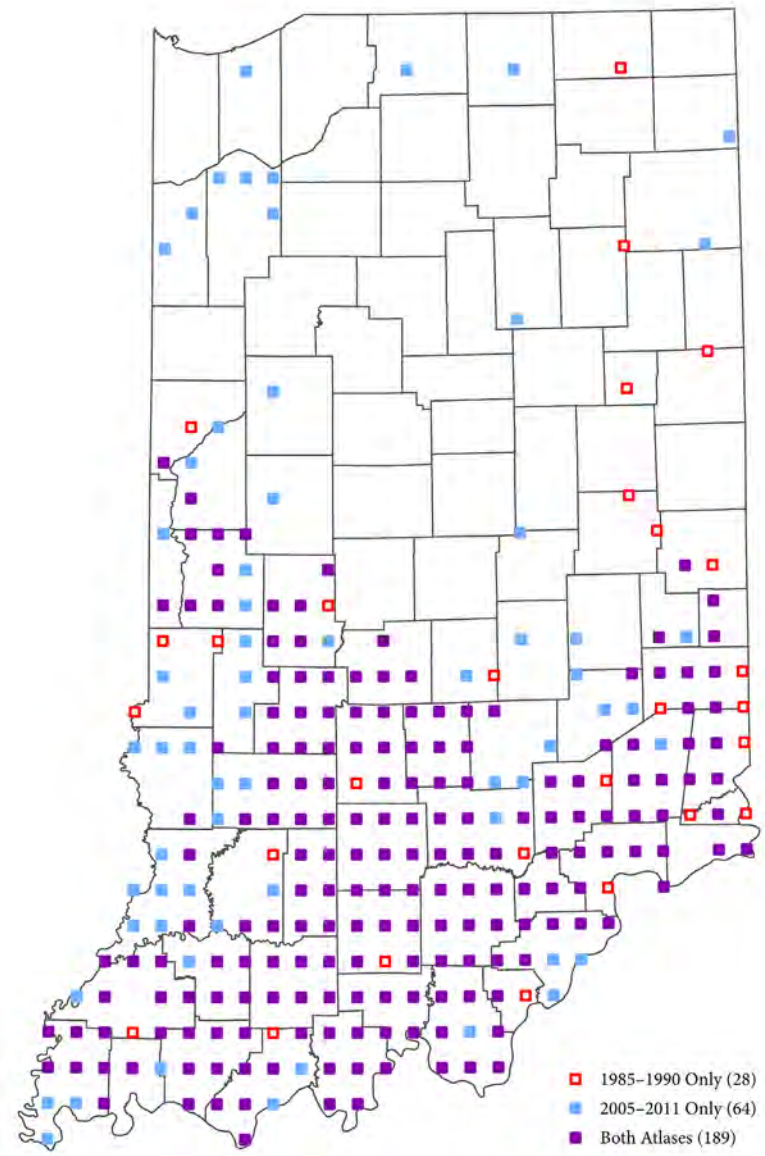


Figure 322. Map of the occurrences of the Summer Tanager in IBBA priority blocks during both atlas periods.

Scarlet Tanager



A breeding male Scarlet Tanager perches on a black walnut branch with catkins. *Photo by Shari McCollough.*

Table 193. Regional occurrence and abundance information for the Scarlet Tanager.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----|------------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 57 | 67 | 55 | 0.5 | 31 | 0.8 | Priority Blocks | | | | |
| Northwest | 73 | 59 | 66 | 34 | 0.2 | 19 | 0.6 | Confirmed | 33 | 8 | 42 | 10 |
| Northeast | 54 | 54 | 69 | 21 | 1.0 | 12 | 1.2 | Probable | 264 | 63 | 243 | 60 |
| Central | 273 | 59 | 48 | 110 | 0.3 | 102 | 0.3 | Possible | 120 | 29 | 120 | 30 |
| West-central | 114 | 57 | 47 | 56 | 0.5 | 38 | 0.4 | Sum | 417 | | 405 | |
| East-central | 159 | 60 | 48 | 54 | 0.2 | 64 | 0.3 | Observed | 0 | | - | |
| South | 246 | 75 | 77 | 97 | 2.7 | 88 | 3.9 | Other blocks | | | | |
| Southwest | 106 | 68 | 60 | 47 | 0.3 | 39 | 0.7 | Confirmed | 9 | | 2 | |
| South-central | 87 | 86 | 91 | 35 | 6.0 | 35 | 8.4 | Probable | 15 | | 10 | |
| Southeast | 53 | 72 | 87 | 15 | 2.2 | 14 | 1.4 | Possible | 15 | | 4 | |
| Statewide | 646 | 65 | 63 | 262 | 1.2 | 221 | 1.8 | Sum | 39 | | 16 | |
| | | | | | | | | Observed | 0 | | - | |

Scarlet Tanager

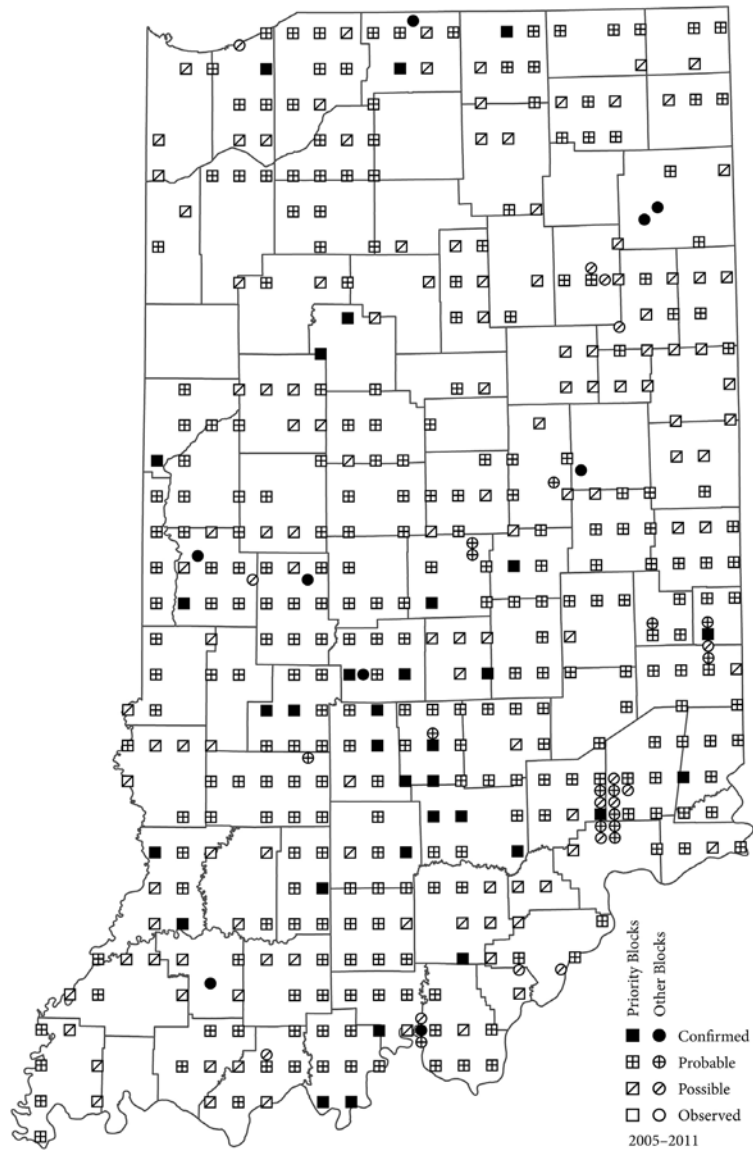


Figure 323. Map of the occurrences of the Scarlet Tanager in IBBA blocks during 2005–2011.

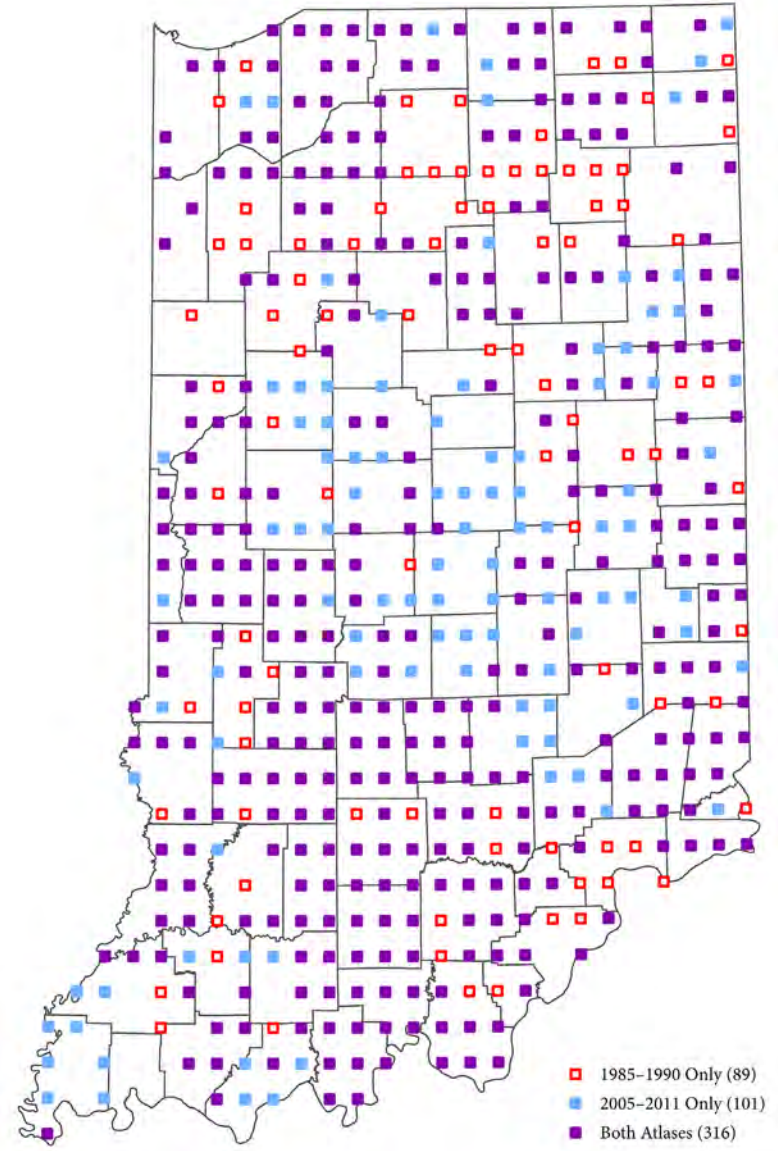


Figure 324. Map of the occurrences of the Scarlet Tanager in IBBA priority blocks during both atlas periods.

Northern Cardinal



A female Northern Cardinal stands in snow. *Photo by Shari McCollough.*

Table 194. Regional occurrence and abundance information for the Northern Cardinal.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|------------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 100 | 99 | 55 | 23 | 31 | 19 | | | | |
| Northwest | 73 | 100 | 99 | 34 | 25 | 19 | 18 | | | | |
| Northeast | 54 | 100 | 100 | 21 | 18 | 12 | 21 | | | | |
| Central | 273 | 100 | 99 | 110 | 23 | 102 | 19 | | | | |
| West-central | 114 | 99 | 97 | 56 | 23 | 38 | 18 | | | | |
| East-central | 159 | 100 | 100 | 54 | 24 | 64 | 20 | | | | |
| South | 246 | 100 | 100 | 97 | 36 | 88 | 37 | | | | |
| Southwest | 106 | 100 | 100 | 47 | 40 | 39 | 37 | | | | |
| South-central | 87 | 100 | 100 | 35 | 33 | 35 | 36 | | | | |
| Southeast | 53 | 100 | 100 | 15 | 31 | 14 | 42 | | | | |
| Statewide | 646 | 100 | 99 | 262 | 28 | 221 | 26 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 384 | 60 | 336 | 52 |
| Probable | 255 | 40 | 287 | 45 |
| Possible | 6 | 1 | 19 | 3 |
| Sum | 645 | | 642 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 23 | | 13 | |
| Probable | 24 | | 8 | |
| Possible | 10 | | 4 | |
| Sum | 57 | | 25 | |
| Observed | 0 | | - | |

Northern Cardinal

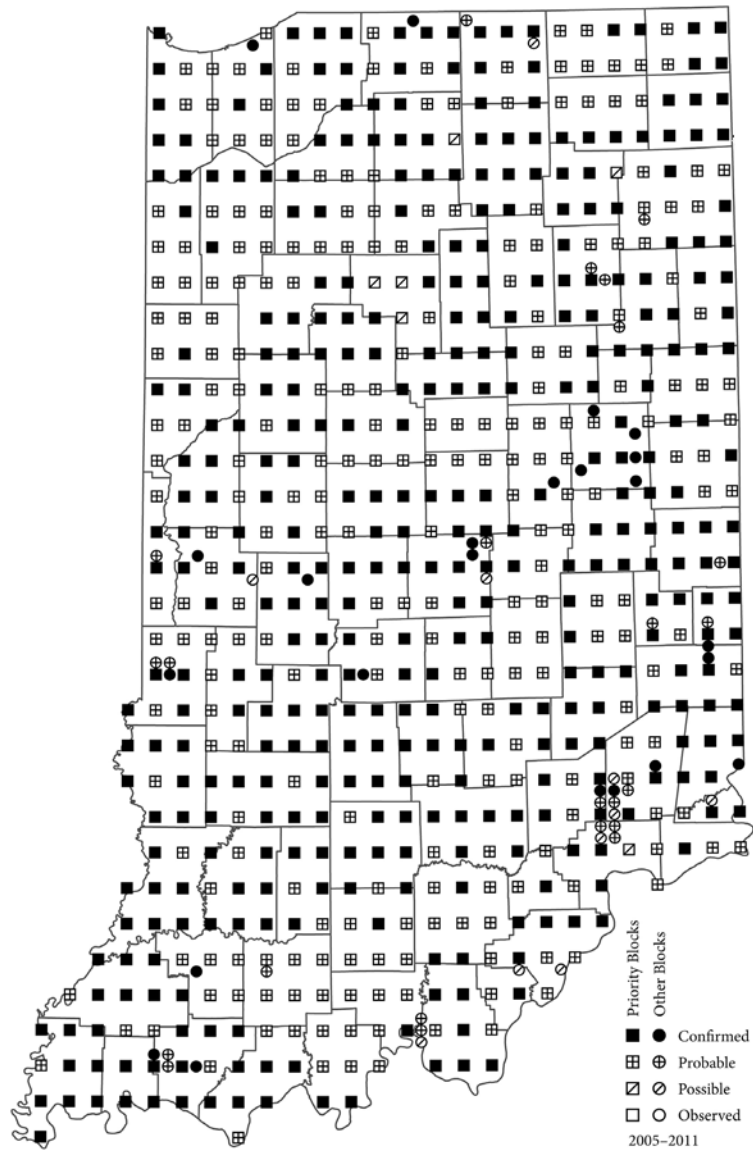


Figure 325. Map of the occurrences of the Northern Cardinal in IBBA blocks during 2005–2011.

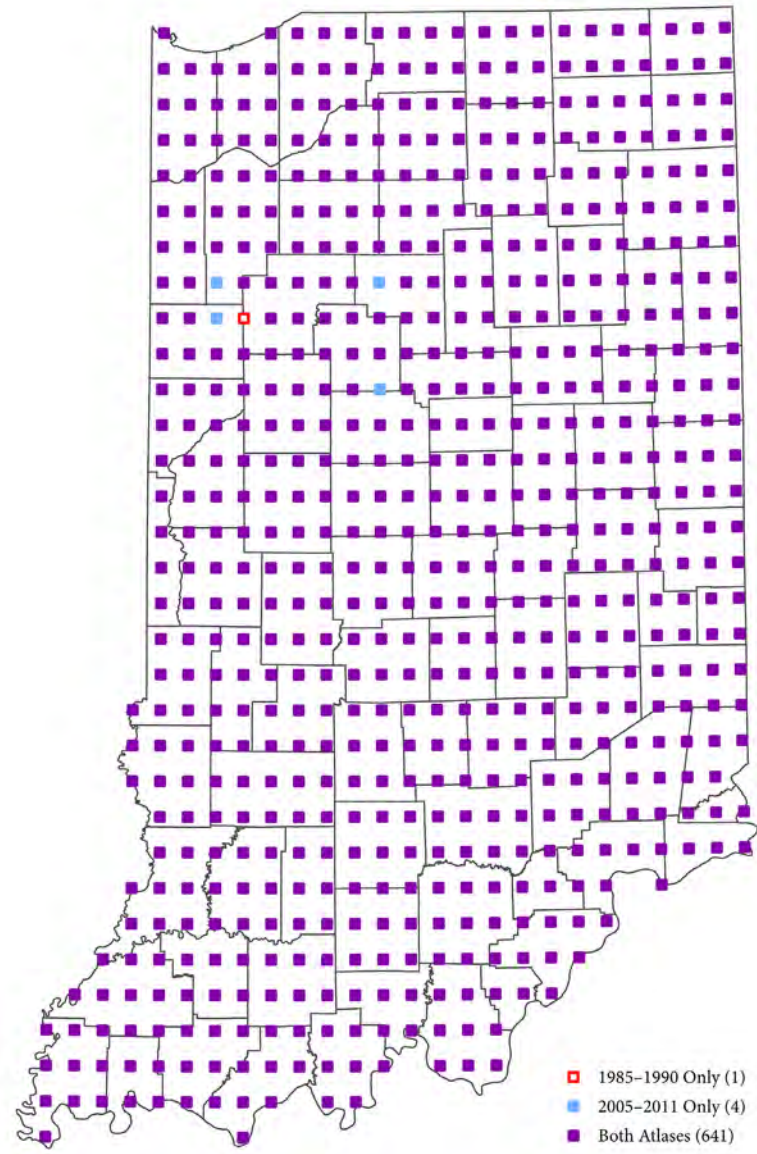


Figure 326. Map of the occurrences of the Northern Cardinal in IBBA priority blocks during both atlas periods.

Rose-breasted Grosbeak



A female Rose-breasted Grosbeak perches on an eastern hemlock branch. *Photo by Michael Brown.*

Table 195. Regional occurrence and abundance information for the Rose-breasted Grosbeak.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|------------------------|-----------|-----|-----|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 84 | 82 | 55 | 1.82 | 31 | 1.58 | Priority Blocks | | | | |
| Northwest | 73 | 82 | 82 | 34 | 1.82 | 19 | 1.42 | Confirmed | 41 | 15 | 32 | 14 |
| Northeast | 54 | 87 | 81 | 21 | 1.81 | 12 | 1.83 | Probable | 155 | 57 | 133 | 56 |
| Central | 273 | 54 | 44 | 110 | 0.78 | 102 | 0.51 | Possible | 78 | 28 | 72 | 30 |
| West-central | 114 | 70 | 61 | 56 | 1.07 | 38 | 1.08 | Sum | 274 | | 237 | |
| East-central | 159 | 42 | 31 | 54 | 0.48 | 64 | 0.17 | Observed | 0 | | - | |
| South | 246 | 8 | 5 | 97 | 0.18 | 88 | 0.08 | Other blocks | | | | |
| Southwest | 106 | 9 | 8 | 47 | 0.15 | 39 | 0.13 | Confirmed | 6 | | 4 | |
| South-central | 87 | 5 | 5 | 35 | 0.00 | 35 | 0.00 | Probable | 6 | | 3 | |
| Southeast | 53 | 11 | 0 | 15 | 0.67 | 14 | 0.14 | Possible | 6 | | 2 | |
| Statewide | 646 | 42 | 37 | 262 | 0.77 | 221 | 0.49 | Sum | 18 | | 9 | |
| | | | | | | | | Observed | 0 | | - | |

Rose-breasted Grosbeak

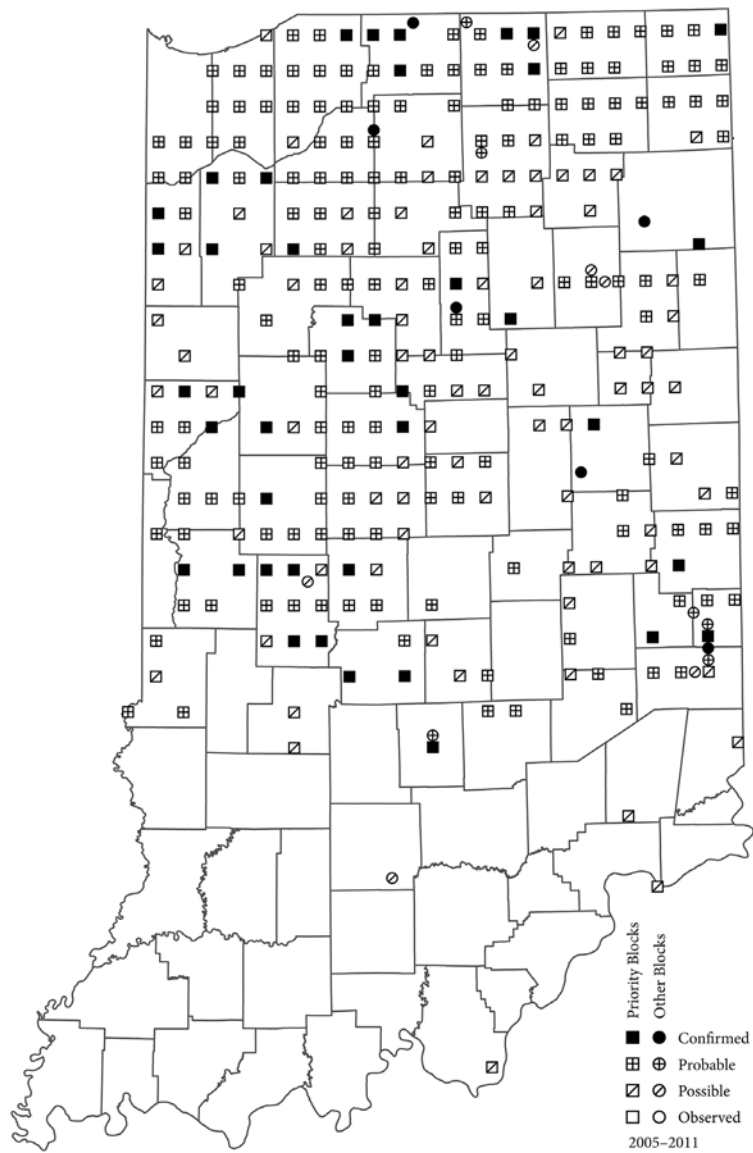


Figure 327. Map of the occurrences of the Rose-breasted Grosbeak in IBBA blocks during 2005–2011.

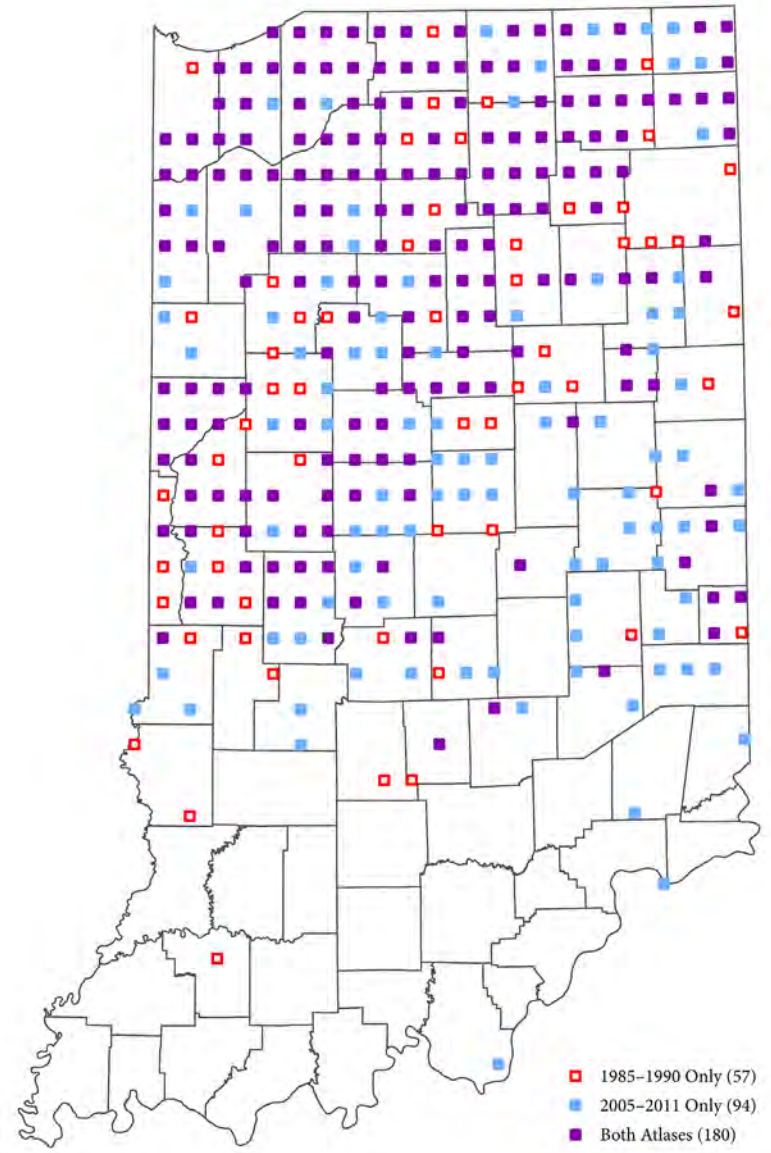


Figure 328. Map of the occurrences of the Rose-breasted Grosbeak in IBBA priority blocks during both atlas periods.

Blue Grosbeak



A breeding male Blue Grosbeak in flight. *Photo by Ryan Sanderson.*

Table 196. Regional occurrence and abundance information for the Blue Grosbeak.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 3 | <1 | 55 | 0.02 | 31 | 0.00 | | | | |
| Northwest | 73 | 4 | 1 | 34 | 0.03 | 19 | 0.00 | | | | |
| Northeast | 54 | 2 | 0 | 21 | 0.00 | 12 | 0.00 | | | | |
| Central | 273 | 15 | 2 | 110 | 0.02 | 102 | 0.01 | | | | |
| West-central | 114 | 24 | 3 | 56 | 0.04 | 38 | 0.03 | | | | |
| East-central | 159 | 9 | 2 | 54 | 0.00 | 64 | 0.00 | | | | |
| South | 246 | 65 | 32 | 97 | 3.46 | 88 | 1.03 | | | | |
| Southwest | 106 | 75 | 32 | 47 | 4.09 | 39 | 0.51 | | | | |
| South-central | 87 | 68 | 45 | 35 | 3.49 | 35 | 1.97 | | | | |
| Southeast | 53 | 38 | 11 | 15 | 1.47 | 14 | 0.14 | | | | |
| Statewide | 646 | 32 | 13 | 262 | 1.29 | 221 | 0.42 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 43 | 21 | 7 | 8 |
| Probable | 114 | 56 | 38 | 44 |
| Possible | 47 | 23 | 41 | 48 |
| Sum | 204 | | 86 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 8 | | 6 | |
| Probable | 24 | | 5 | |
| Possible | 17 | | 14 | |
| Sum | 49 | | 25 | |
| Observed | 0 | | - | |

Blue Grosbeak

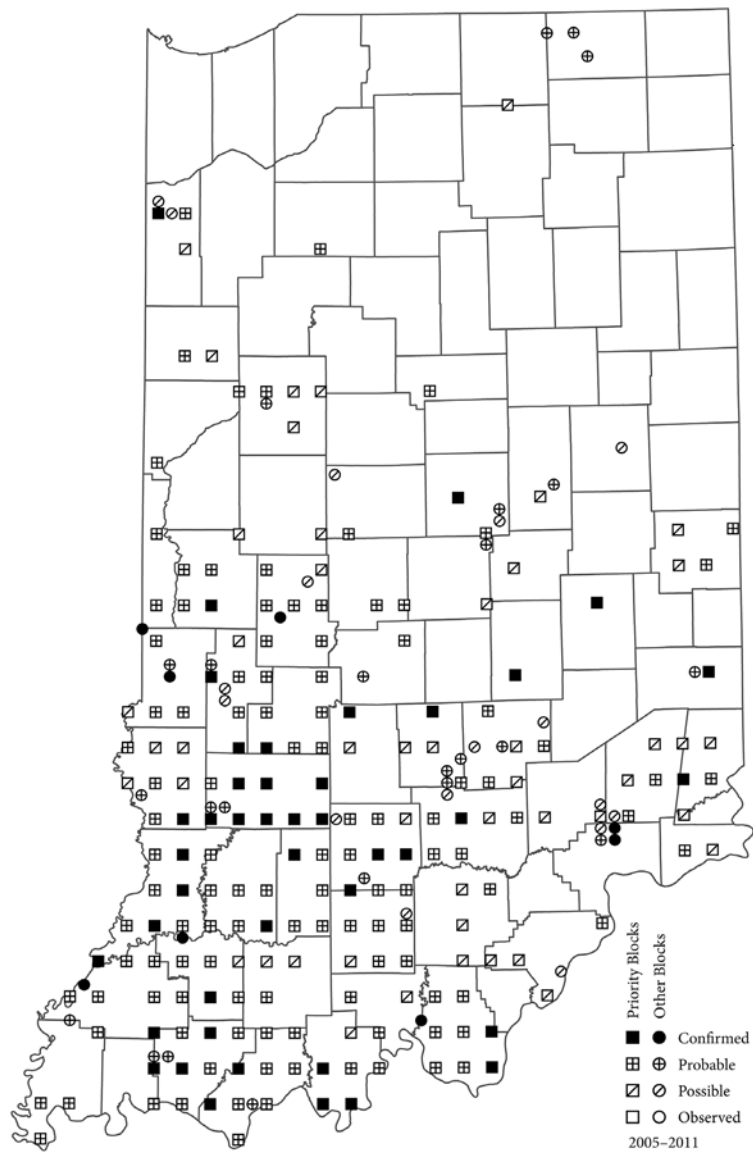


Figure 329. Map of the occurrences of the Blue Grosbeak in IBBA blocks during 2005–2011.

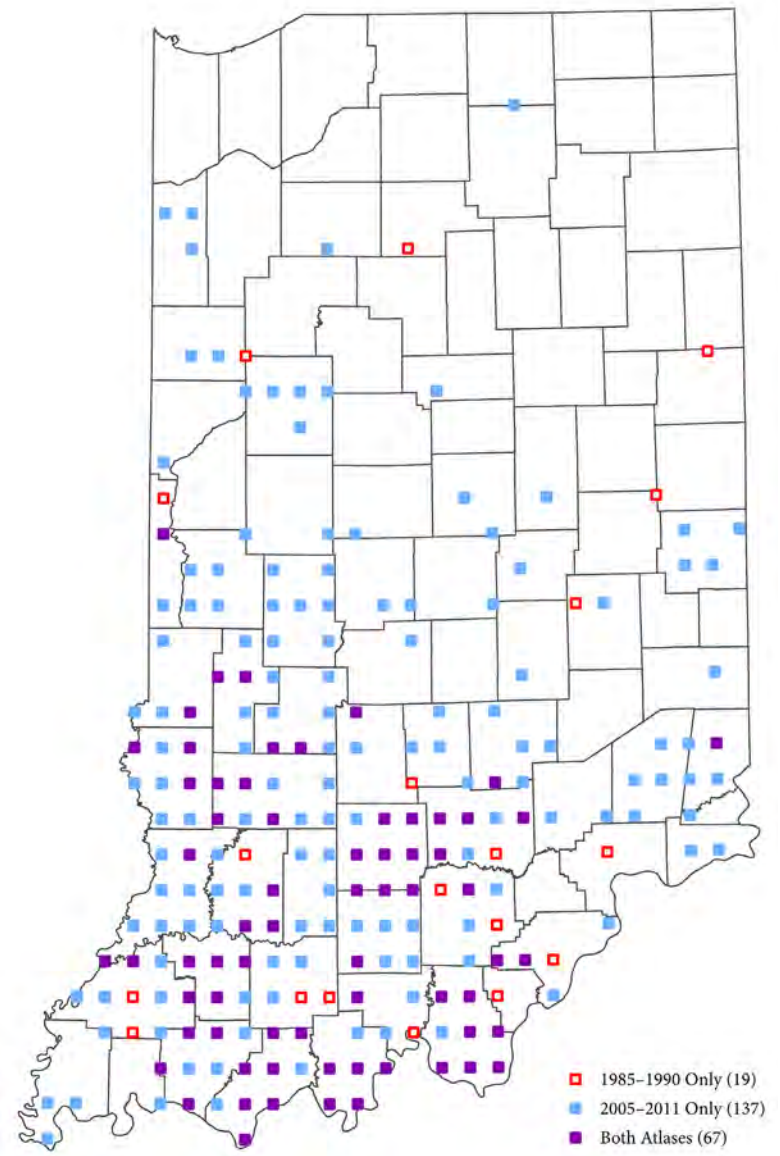


Figure 330. Map of the occurrences of the Blue Grosbeak in IBBA priority blocks during both atlas periods.

Indigo Bunting



A breeding male Indigo Bunting grasps onto a thorny raspberry branch, mouth agape. *Photo by Michael Brown.*

Table 197. Regional occurrence and abundance information for the Indigo Bunting.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 98 | 97 | 55 | 15 | 31 | 20 | | | | |
| Northwest | 73 | 99 | 95 | 34 | 17 | 19 | 22 | | | | |
| Northeast | 54 | 98 | 100 | 21 | 12 | 12 | 19 | | | | |
| Central | 273 | 99 | 99 | 110 | 23 | 102 | 25 | | | | |
| West-central | 114 | 100 | 98 | 56 | 25 | 38 | 35 | | | | |
| East-central | 159 | 97 | 100 | 54 | 20 | 64 | 19 | | | | |
| South | 246 | 100 | 100 | 97 | 49 | 88 | 62 | | | | |
| Southwest | 106 | 99 | 100 | 47 | 48 | 39 | 51 | | | | |
| South-central | 87 | 100 | 100 | 35 | 46 | 35 | 75 | | | | |
| Southeast | 53 | 100 | 100 | 15 | 59 | 14 | 59 | | | | |
| Statewide | 646 | 99 | 99 | 262 | 31 | 221 | 39 | | | | |

| | 2005–2011 | | 1985–1990 | |
|------------------------|------------|----|------------|----|
| | No. | % | No. | % |
| Priority Blocks | | | | |
| Confirmed | 257 | 40 | 229 | 36 |
| Probable | 372 | 58 | 394 | 62 |
| Possible | 10 | 2 | 17 | 3 |
| Sum | 639 | | 640 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 19 | | 1 | |
| Probable | 31 | | 16 | |
| Possible | 5 | | 4 | |
| Sum | 55 | | 21 | |
| Observed | 0 | | - | |

Indigo Bunting

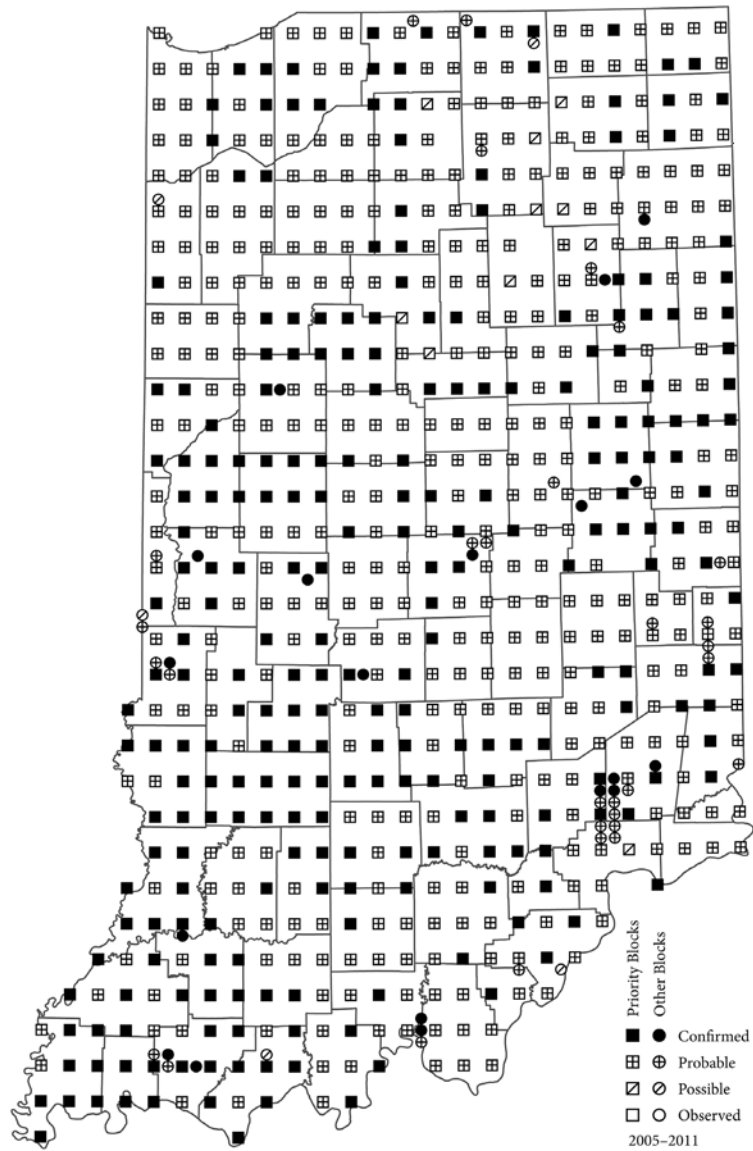


Figure 331. Map of the occurrences of the Indigo Bunting in IBBA blocks during 2005–2011.

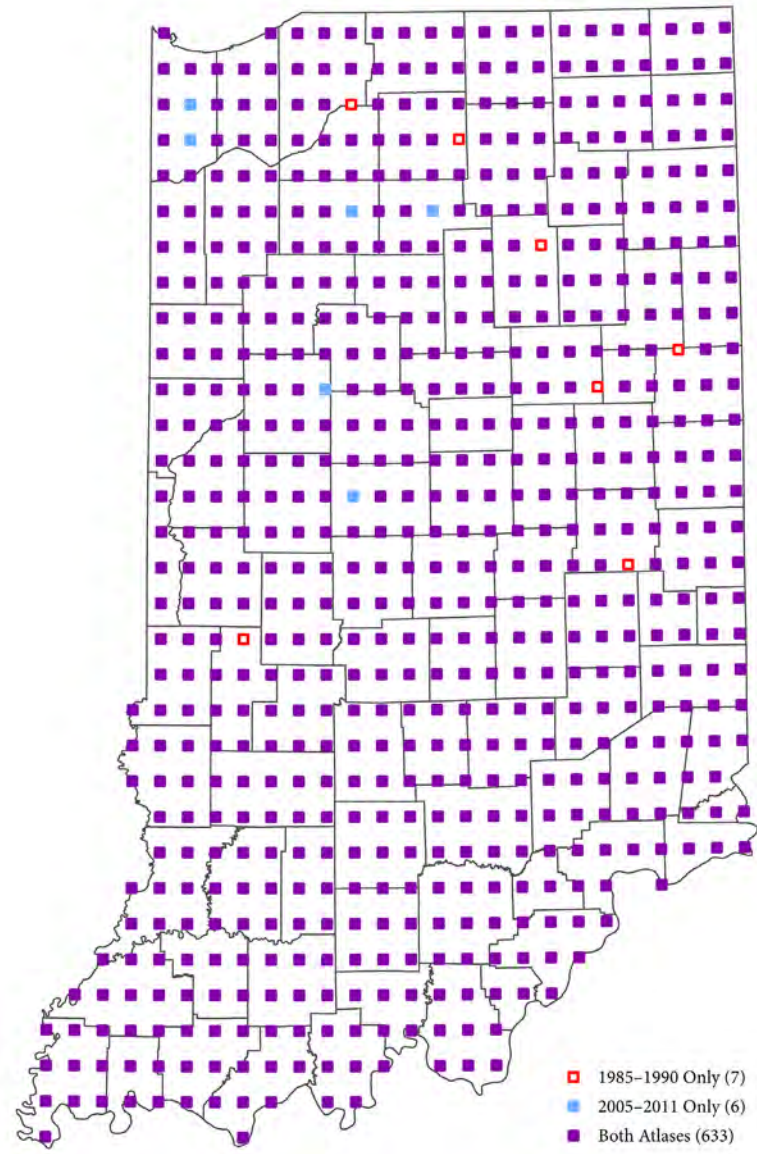


Figure 332. Map of the occurrences of the Indigo Bunting in IBBA priority blocks during both atlas periods.

Dickcissel



A breeding male Dickcissel perches on top of a broken dead cattail and vocalizes with his mouth agape.
Photo by Shari McCollough.

Table 198. Regional occurrence and abundance information for the Dickcissel.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 56 | 54 | 55 | 3.0 | 31 | 2.9 | | | | |
| Northwest | 73 | 58 | 63 | 34 | 2.8 | 19 | 1.7 | | | | |
| Northeast | 54 | 54 | 43 | 21 | 3.2 | 12 | 4.7 | | | | |
| Central | 273 | 63 | 56 | 110 | 4.9 | 102 | 4.4 | | | | |
| West-central | 114 | 82 | 71 | 56 | 6.2 | 38 | 10.2 | | | | |
| East-central | 159 | 50 | 45 | 54 | 3.5 | 64 | 0.9 | | | | |
| South | 246 | 62 | 44 | 97 | 10.8 | 88 | 4.2 | | | | |
| Southwest | 106 | 86 | 71 | 47 | 18.8 | 39 | 8.4 | | | | |
| South-central | 87 | 48 | 24 | 35 | 3.1 | 35 | 1.0 | | | | |
| Southeast | 53 | 38 | 23 | 15 | 3.4 | 14 | 0.7 | | | | |
| Statewide | 646 | 61 | 51 | 262 | 6.6 | 221 | 4.1 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 69 | 17 | 29 | 9 |
| Probable | 252 | 63 | 227 | 69 |
| Possible | 76 | 19 | 74 | 22 |
| Sum | 397 | | 330 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 6 | | 0 | |
| Probable | 28 | | 8 | |
| Possible | 11 | | 5 | |
| Sum | 45 | | 13 | |
| Observed | 0 | | - | |

Dickcissel

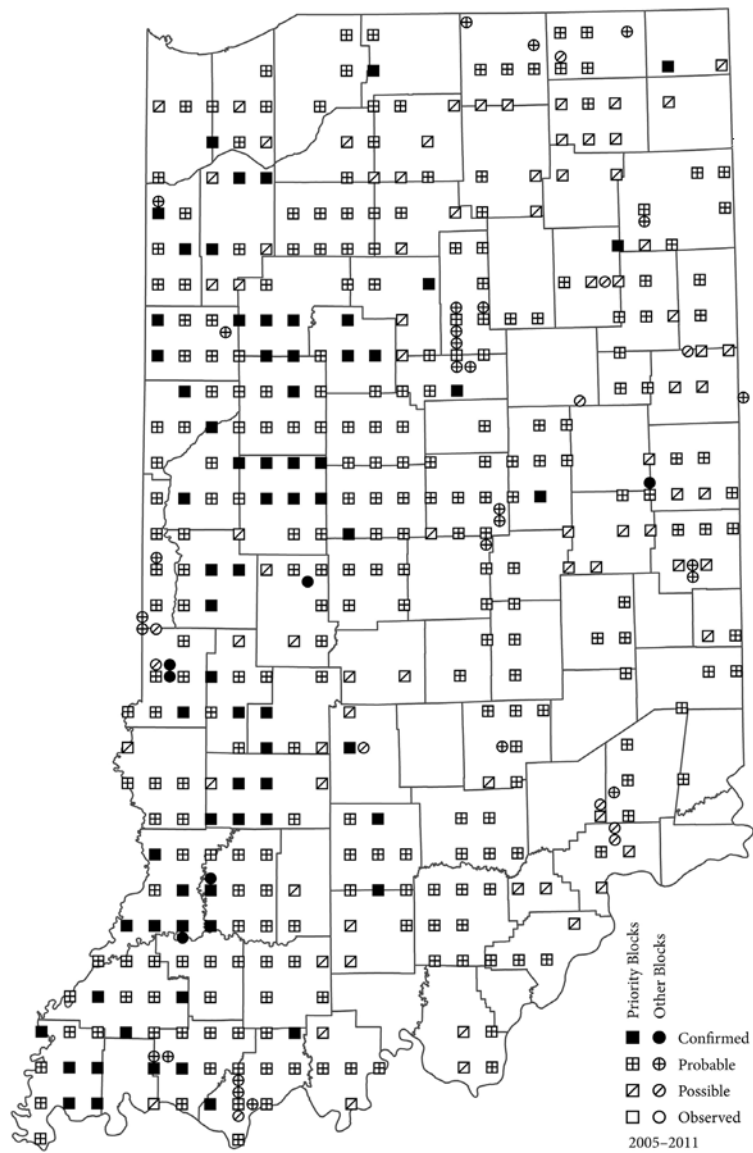


Figure 333. Map of the occurrences of the Dickcissel in IBBA blocks during 2005-2011.

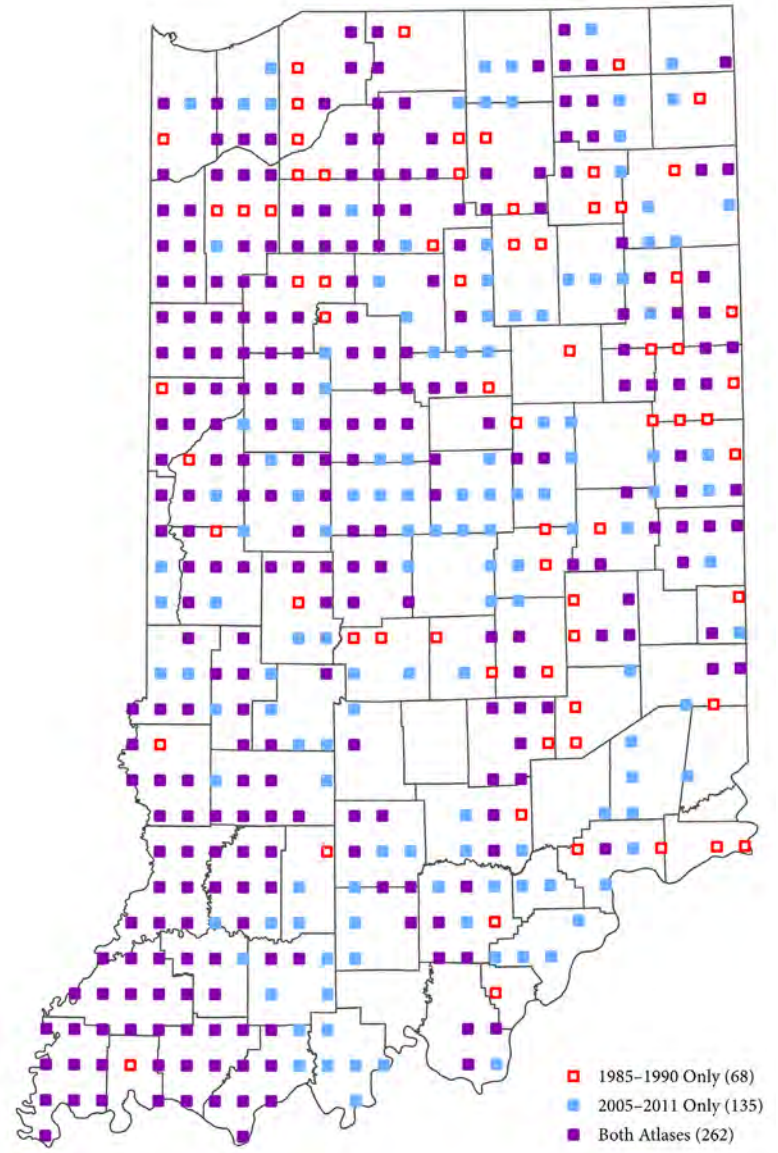


Figure 334. Map of the occurrences of the Dickcissel in IBBA priority blocks during both atlas periods.

Blackbirds, Meadowlarks, and Orioles (Icteridae)

Tables 199–208, Fig. 335–353

TEN MEMBERS OF this diverse bird family breed in Indiana, including two meadowlarks, two orioles, three blackbirds, a grackle, a bobolink, and a cowbird.

As a grassland obligate, the Bobolink is most often found in larger hayfields as well as in prairies, pastures, meadows, weedy fields, and wetland edges (Martin and Gavin 1995). The cup nests are located on the ground and composed of grasses and other plant materials. Insects and other arthropods dominate the summer diet, but seeds of grasses and forbs become more important in late summer and other seasons. Bobolinks migrate to South America to winter. The Bobolink has a decidedly northern distribution in Indiana and was detected most often in atlas blocks in northeastern Indiana. Relative densities on Breeding Bird Surveys show a similar pattern of abundance. Although Bobolinks were detected in more priority blocks in south-central Indiana during the recent atlas, occurrences were fewer in all central and northern regions. Densities on Breeding Bird Surveys also declined, especially in central Indiana. The negative BBS trend was statistically significant for the Bobolink. Bobolinks were found more frequently in atlas blocks in Michigan and Ohio compared to Indiana. Occurrence rates tended to be greater in northern Ohio and the Lower Peninsula of Michigan. All three states exhibited moderate to large declines in numbers between atlas periods.

The Red-winged Blackbird and Common Grackle are two of the most abundant breeding birds in Indiana and were found in nearly all Indiana atlas blocks. Differences in the rate of occurrence between atlas periods were not statistically significant. These blackbirds occur in a variety of rural and urban habitats, with Red-winged Blackbirds preferring marshes, grasslands, crop fields, and roadsides (Yasukawa and Searcy 1995). Common Grackles are found in open habitats containing trees and shrubs, including residential areas, parks, orchards, cemeteries, open forests, riparian woodlands, conifer plantings, farmsteads, and wetlands (Peer and Bollinger 1997). Densities of Red-winged Blackbird were greatest on Breeding Bird Surveys in northeastern and southwestern regions and least common in

south-central and southeastern Indiana. Overall frequencies of occurrence in atlas blocks declined significantly from the previous atlas. Relative abundance of Common Grackle was highest in central areas and lowest in south-central and northeastern Indiana. Red-winged Blackbird numbers declined on Breeding Bird Surveys in nearly all regions from the previous atlas and the overall population trend for the 1985–2011 period was statistically significant. Regional differences in BBS values between atlas periods were inconsistent for the Common Grackle and the slight overall decline was not statistically significant. Red-winged Blackbirds and Common Grackles were found in nearly all atlas blocks in Indiana and Ohio, as well as in a majority of blocks in Michigan. Rates of occurrence were similar between atlas periods in Indiana and Ohio, while moderate declines are indicated in Michigan.

Red-winged Blackbirds build a cupped nest of grasses, weed stalks, rootlets, and other plant material. Nests are often located in loose colonies over or near water in cattails and weed stalks, as well as in shrubs and low trees. The bulky nests of Common Grackles are composed of grasses and forbs, incorporated with mud, and are placed in deciduous and coniferous trees, in shrubs, and sometimes on ledges. Common Grackles tend to nest in small colonies. Seeds of grasses and forbs as well as waste grain predominate in the diets of both of these species, although insects and other invertebrates are important foods during the summer. Common Grackles also feed on bird eggs and small vertebrates. Red-winged Blackbirds and Common Grackles are short-distance migrants and form large flocks outside of the breeding season. They winter in southern Indiana and other southern portions of their nesting range.

The primary breeding ranges for Yellow-headed Blackbird and Brewer's Blackbird are in the western United States and Canada. These species rarely nest in Indiana. There was only one confirmed breeding record for the Yellow-headed Blackbird in northwestern Indiana and a handful for the Brewer's Blackbird in northern Indiana during the recent atlas. Neither was detect-

ed on Breeding Bird Surveys. One confirmed record of Yellow-headed Blackbird was included in the previous atlas, while a few Brewer's Blackbirds were observed, but no evidence of nesting was reported. Yellow-headed Blackbirds were also confirmed breeding in Ohio and Michigan, although records were few and mostly concentrated in coastal wetlands of Saginaw Bay on Lake Huron and in Sandusky Bay in western Lake Erie. Brewer's Blackbirds were absent on the Ohio atlas, but this species breeds in moderate numbers primarily in the Upper Peninsula and Northern Lower Peninsula of Michigan. The Rusty Blackbird occurred in Michigan with two confirmed records on the first atlas and a single instance of nesting on the second atlas.

Yellow-headed Blackbirds breed in extensive emergent marshes. They build large, bulky nests placed in cattails and other marsh vegetation over water (Twedt and Crawford 1995). Brewer's Blackbirds are found in a variety of open habitats including farmlands, towns, riparian areas, and wetlands, building nests on the ground and in trees or shrubs (Martin 2002). Diets consist of insects and other invertebrates, while waste grain and seeds of grasses and forbs are also important. These two species form flocks with other blackbirds outside the breeding season and are short-distance migrants, withdrawing from northern portions of their summer range.

Of the two meadowlark species that occur in Indiana, the Eastern Meadowlark is by far the most common and widely distributed with occurrences in over 90% of blocks throughout Indiana. Western Meadowlark was reported in fewer than 5% of priority blocks, mostly in northern Indiana with a handful in western sections of central and southern Indiana. Relative densities on Breeding Bird Surveys were rather uniform throughout the state for Eastern Meadowlark. The greatest numbers of Western Meadowlark were recorded in west-central and northwestern Indiana; the species was absent in southern areas. Rates of occurrence were not statistically different for the Western Meadowlark between atlas periods, but Eastern Meadowlarks displayed a small but statistically significant reduction in atlas registrations. Breeding Bird Survey densities were consistently lower for Eastern Meadowlark in all regions with minor changes for Western Meadowlark. Population trends were negative and statistically significant for the BBS

for the 1985–2011 period. Eastern Meadowlarks were found in the vast majority of atlas blocks in Indiana and Ohio as well as in the Lower Peninsula of Michigan. Small declines in the frequency of occurrence were shown between atlas periods in Indiana and Ohio, with a more pronounced decrease observed in Michigan. Western Meadowlarks were observed infrequently, mostly in northern portions of Indiana and Ohio, and widely scattered throughout Michigan. Rates of occurrence were greatest on the Indiana atlas with a higher number reported on the most recent atlas. The frequency of reports declined in Michigan and Ohio.

Meadowlarks are grassland birds (Lanyon 1994, 1995) found in a wide variety of habitats dominated by nonwoody vegetation including prairie, pastures, hayfields, meadows, airports, and reclaimed mine lands. Nests are domed structures placed on the ground and composed of grass. Summer diets consist of a variety of insects, especially grasshoppers and crickets, taken on the ground or from low vegetation. During the winter, waste grain and seeds of grasses and forbs compose about half of the diet. Eastern Meadowlarks winter in small numbers in southern Indiana, but most withdraw from northern areas of their eastern breeding range. Few Western Meadowlarks have been reported in Indiana during the winter.

The Brown-headed Cowbird is a nest parasite, laying its eggs in a wide variety of open nests of woodland, shrubland, wetland, and grassland birds (Lowther 1993). Open areas are used for foraging and Brown-headed Cowbirds feed on the ground seeking the seeds of grasses, weeds, and agricultural crops as well as insects and other arthropods. Flocks of Brown-headed Cowbirds are encountered outside the breeding season and northern populations migrate southward. The Brown-headed Cowbird was found in nearly every priority block during both Indiana atlases and the slight increase in rates of detection was statistically significant. Relative densities on Breeding Bird Surveys were somewhat higher in central Indiana with greatest numbers in the west-central region. All but one region showed higher abundance values on the recent atlas period. The increasing population trend on the BBS was statistically significant for the 1985–2011 period. Brown-headed Cowbird was found in virtually every block in Indiana and Ohio, as well as in most

blocks in the Southern Lower Peninsula of Michigan. Differences between occurrences were similar between atlas periods for Indiana and Ohio, but occurrences decreased moderately in Michigan.

Indiana's two oriole species are birds of successional forests, woodland edges, parks, roadsides, and fencerows with trees (Scharf and Kren 1996, Rising and Flood 1998). Orchard Oriole tends to inhabit more brushy habitats, while Baltimore Oriole is typically found in areas with tall, scattered trees, often near human activity. The pendant nests are made of grass and fine materials and concealed in the branches of trees. These two orioles feed primarily on caterpillars, other insects and spiders, and some fruit. They winter in Central America and northern regions of South America. Of the two species of orioles found in Indiana, the Baltimore Oriole has a wider distribution and was found in most blocks throughout the state. Orchard Oriole is also a common bird in Indiana, although more likely to be found in southern regions of the state. Breeding Bird Survey numbers suggest that Baltimore Oriole becomes more abundant as one travels north in the state, while Orchard Oriole is more abundant in southern Indiana.

Baltimore Orioles were found in slightly more priority blocks in the latest atlas period, although the difference was not statistically significant. Relative densities on Breeding Bird Surveys were also a bit higher. Overall rates of occurrences for Orchard Oriole were statistically greater between atlas periods with increases most pronounced in central and northern Indiana. However, densities on Breeding Bird Surveys were similar between atlas periods in central and northern regions and declined somewhat in southern Indiana. Population trends on BBS routes were not statistically significant for either oriole species. The Baltimore Oriole was more frequently recorded than the Orchard Oriole on atlases in Indiana, Michigan, and Ohio. Baltimore Orioles are found statewide in all three states, but rates of occurrence were lower in the Upper Peninsula of Michigan. Differences between atlas periods were small in Indiana and Ohio, with a moderate decline suggested in Michigan. Orchard Orioles were found statewide in Indiana and Ohio, but in Michigan this species is much less common and restricted mostly to the southern part of the state. Frequencies increased moderately between atlas periods in all three states.

Bobolink



A female/non-breeding male Bobolink fluffs up its feathers while standing on a green plant. *Photo by Ryan Sanderson.*

Table 199. Regional occurrence and abundance information for the Bobolink.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 44 | 57 | 55 | 1.4 | 31 | 1.6 | | | | |
| Northwest | 73 | 29 | 47 | 34 | 0.4 | 19 | 0.6 | | | | |
| Northeast | 54 | 65 | 70 | 21 | 3.1 | 12 | 3.3 | | | | |
| Central | 273 | 27 | 45 | 110 | 0.9 | 102 | 3.1 | | | | |
| West-central | 114 | 25 | 52 | 56 | 0.8 | 38 | 3.7 | | | | |
| East-central | 159 | 30 | 40 | 54 | 0.9 | 64 | 2.7 | | | | |
| South | 246 | 5 | 3 | 97 | 0.1 | 88 | <0.1 | | | | |
| Southwest | 106 | 5 | 3 | 47 | 0.0 | 39 | 0.2 | | | | |
| South-central | 87 | 8 | 5 | 35 | 0.3 | 35 | 0.0 | | | | |
| Southeast | 53 | 2 | 2 | 15 | 0.1 | 14 | 0.0 | | | | |
| Statewide | 646 | 22 | 31 | 262 | 0.7 | 221 | 1.7 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 18 | 13 | 20 | 10 |
| Probable | 88 | 61 | 113 | 56 |
| Possible | 38 | 26 | 69 | 34 |
| Sum | 144 | | 202 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 3 | | 1 | |
| Probable | 10 | | 3 | |
| Possible | 4 | | 1 | |
| Sum | 17 | | 5 | |
| Observed | 0 | | - | |

Bobolink

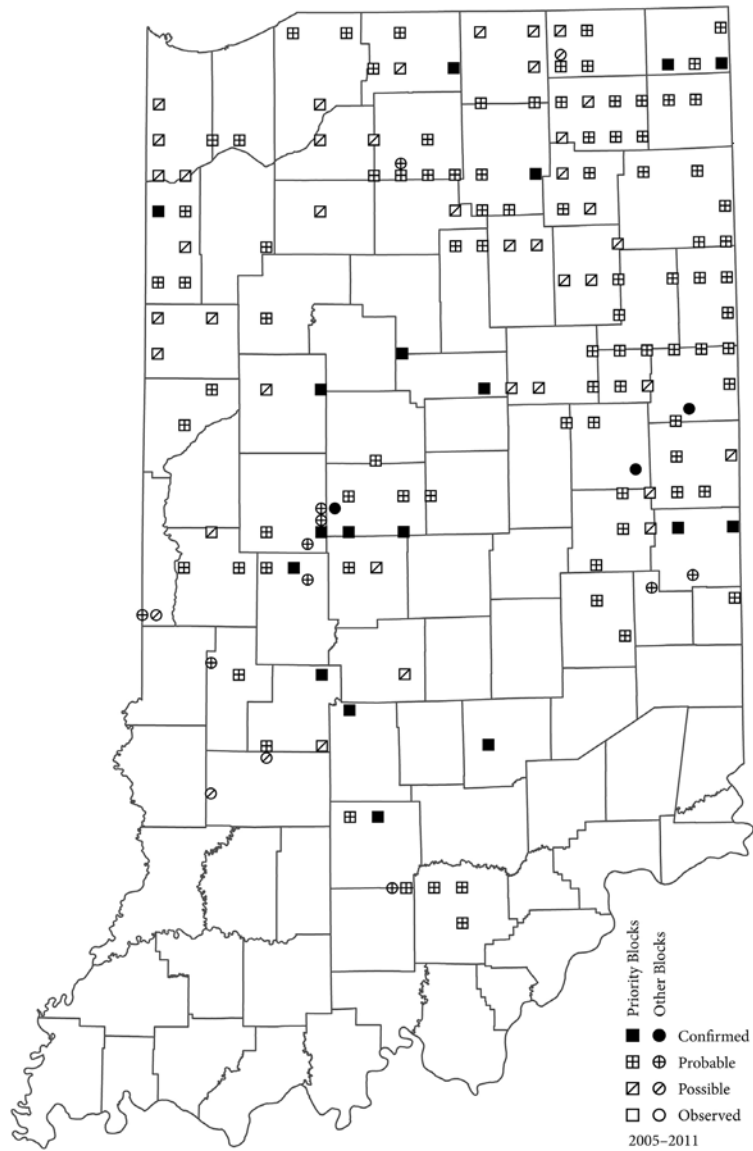


Figure 335. Map of the occurrences of the Bobolink in IBBA blocks during 2005–2011.

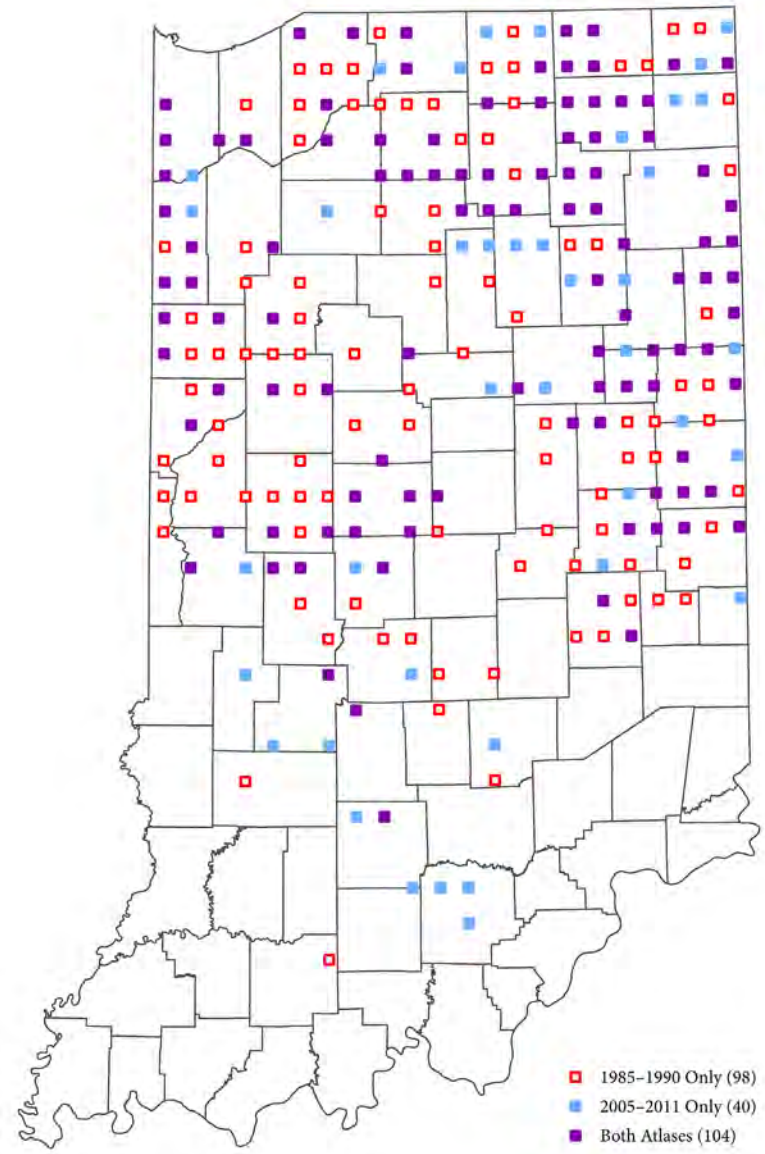


Figure 336. Map of the occurrences of the Bobolink in IBBA priority blocks during both atlas periods.

Red-winged Blackbird



An adult female Red-winged Blackbird clings to a dead cattail flower and holds something in her beak.
Photo by Ryan Sanderson.

Table 200. Regional occurrence and abundance information for the Red-winged Blackbird.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|------------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 99 | 99 | 55 | 122 | 31 | 132 | | | | |
| Northwest | 73 | 99 | 99 | 34 | 95 | 19 | 87 | | | | |
| Northeast | 54 | 100 | 100 | 21 | 166 | 12 | 203 | | | | |
| Central | 273 | 99 | 100 | 110 | 100 | 102 | 118 | | | | |
| West-central | 114 | 99 | 100 | 56 | 103 | 38 | 125 | | | | |
| East-central | 159 | 99 | 99 | 54 | 97 | 64 | 114 | | | | |
| South | 246 | 99 | 100 | 97 | 82 | 88 | 92 | | | | |
| Southwest | 106 | 100 | 100 | 47 | 116 | 39 | 125 | | | | |
| South-central | 87 | 99 | 100 | 35 | 44 | 35 | 62 | | | | |
| Southeast | 53 | 96 | 100 | 15 | 67 | 14 | 73 | | | | |
| Statewide | 646 | 99 | 100 | 262 | 98 | 221 | 110 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 481 | 75 | 442 | 69 |
| Probable | 156 | 24 | 196 | 30 |
| Possible | 3 | 0 | 6 | 1 |
| Sum | 640 | | 644 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 20 | | 15 | |
| Probable | 23 | | 9 | |
| Possible | 9 | | 2 | |
| Sum | 52 | | 26 | |
| Observed | 0 | | - | |

Red-winged Blackbird



Figure 337. Map of the occurrences of the Red-winged Blackbird in IBBA blocks during 2005–2011.

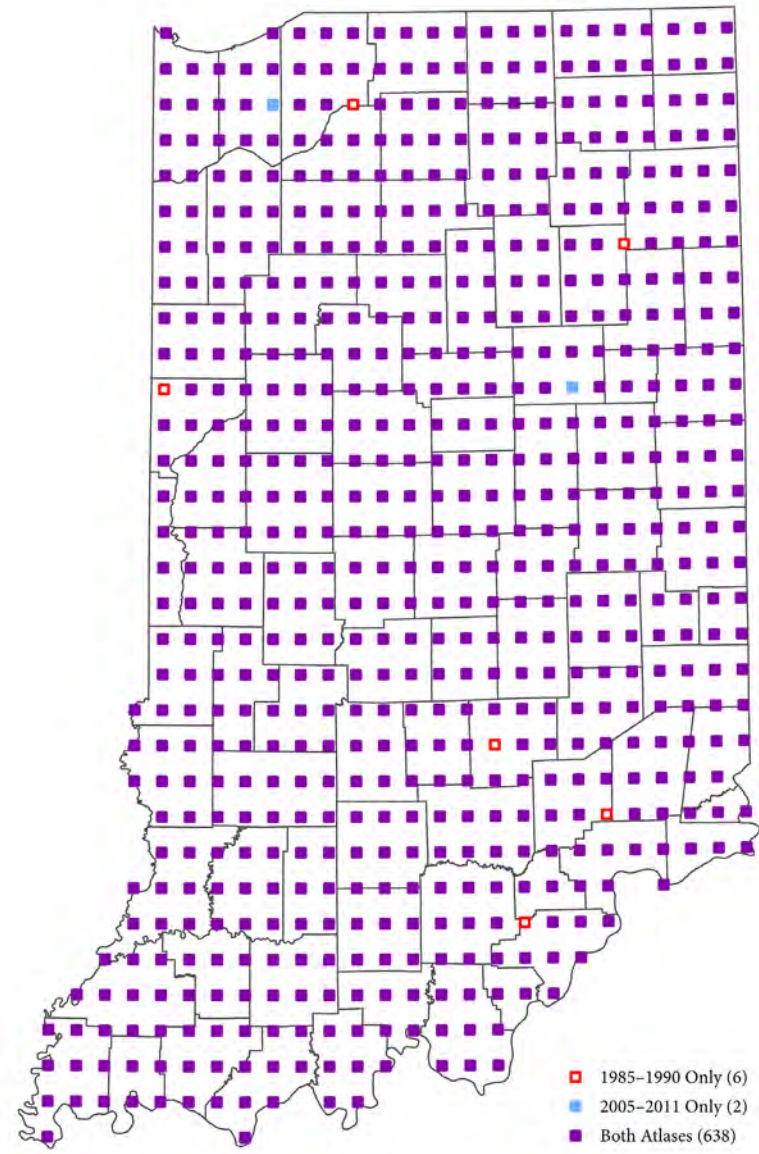


Figure 338. Map of the occurrences of the Red-winged Blackbird in IBBA priority blocks during both atlas periods.

Eastern Meadowlark



An Eastern Meadowlark in flight. *Photo by Joe Bailey.*

Table 201. Regional occurrence and abundance information for the Eastern Meadowlark.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 89 | 91 | 55 | 12 | 31 | 16 | | | | |
| Northwest | 73 | 85 | 92 | 34 | 8 | 19 | 17 | | | | |
| Northeast | 54 | 94 | 91 | 21 | 19 | 12 | 15 | | | | |
| Central | 273 | 96 | 99 | 110 | 17 | 102 | 20 | | | | |
| West-central | 114 | 95 | 99 | 56 | 19 | 38 | 29 | | | | |
| East-central | 159 | 96 | 99 | 54 | 14 | 64 | 15 | | | | |
| South | 246 | 96 | 99 | 97 | 16 | 88 | 23 | | | | |
| Southwest | 106 | 95 | 98 | 47 | 17 | 39 | 27 | | | | |
| South-central | 87 | 94 | 99 | 35 | 16 | 35 | 21 | | | | |
| Southeast | 53 | 98 | 100 | 15 | 13 | 14 | 17 | | | | |
| Statewide | 646 | 94 | 97 | 262 | 15 | 221 | 21 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 164 | 27 | 184 | 29 |
| Probable | 391 | 64 | 406 | 65 |
| Possible | 54 | 9 | 39 | 6 |
| Sum | 609 | | 629 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 6 | | 3 | |
| Probable | 19 | | 10 | |
| Possible | 8 | | 2 | |
| Sum | 33 | | 15 | |
| Observed | 0 | | - | |

Eastern Meadowlark

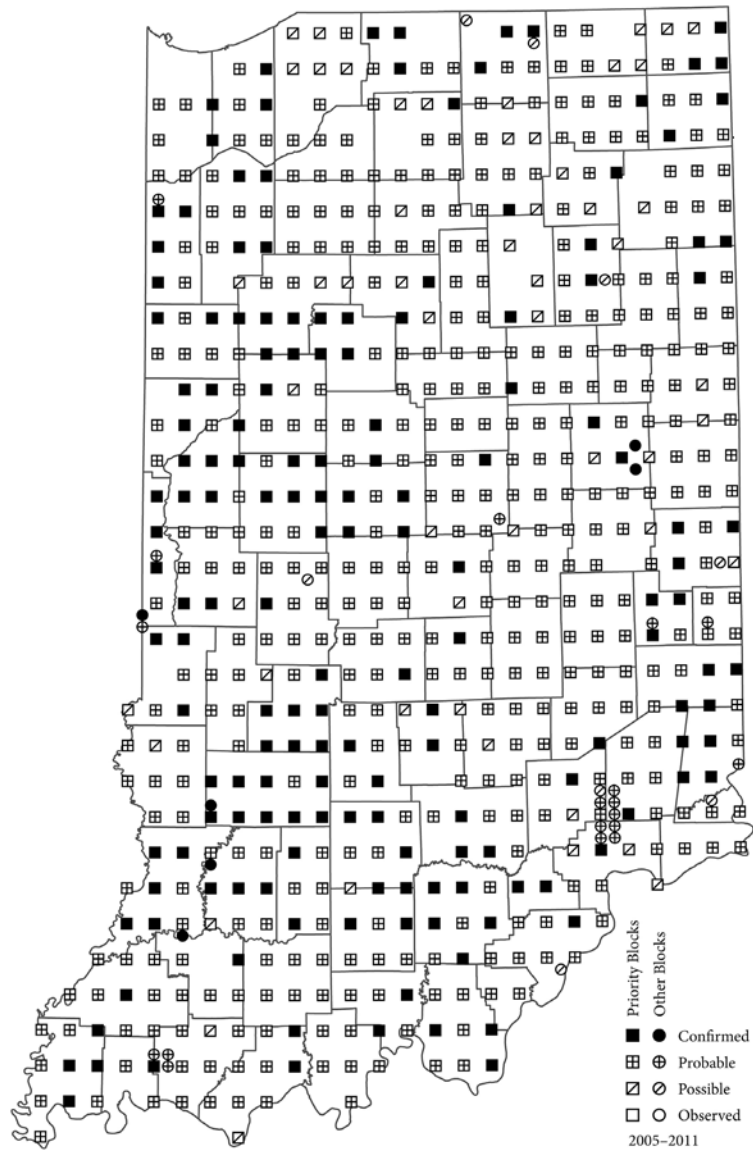


Figure 339. Map of the occurrences of the Eastern Meadowlark in IBBA blocks during 2005–2011.

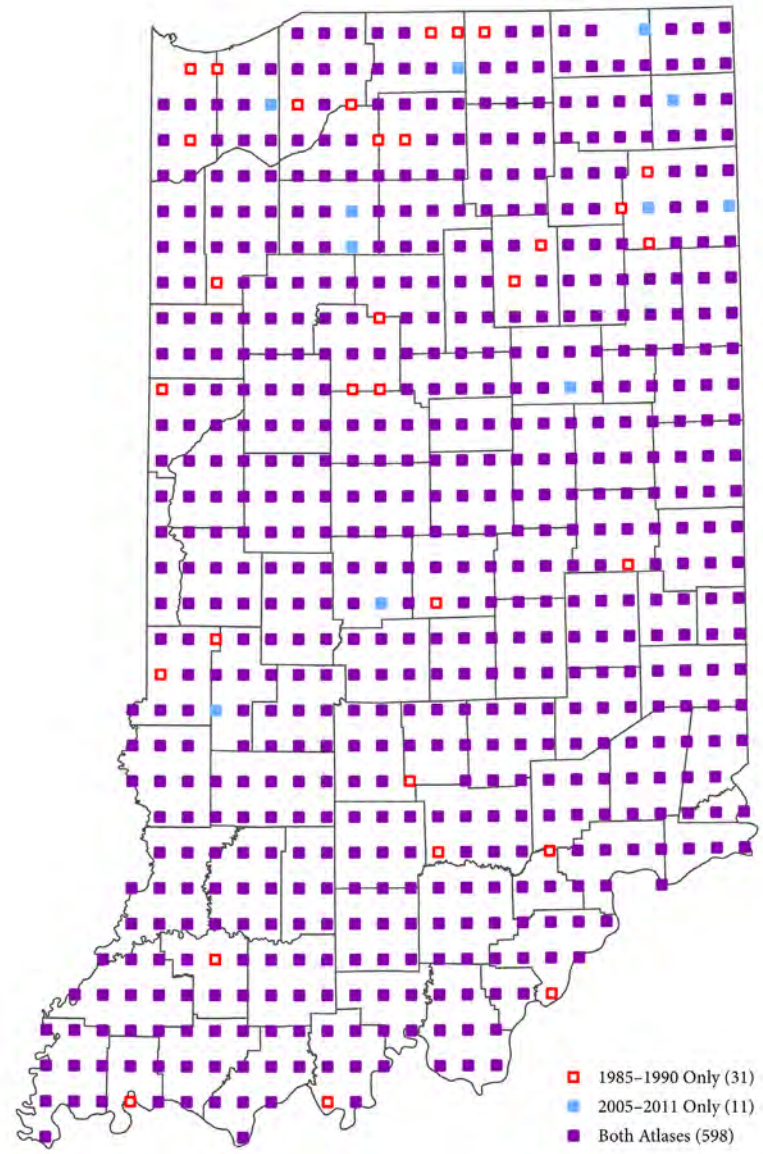


Figure 340. Map of the occurrences of the Eastern Meadowlark in IBBA priority blocks during both atlas periods.

Western Meadowlark



A breeding adult Western Meadowlark in flight. *Photo by Ryan Sanderson.*

Table 202. Regional occurrence and abundance information for the Western Meadowlark.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 6 | 6 | 55 | 0.11 | 31 | 0.23 | | | | |
| Northwest | 73 | 5 | 7 | 34 | 0.18 | 19 | 0.16 | | | | |
| Northeast | 54 | 7 | 6 | 21 | 0.00 | 12 | 0.33 | | | | |
| Central | 273 | 5 | 4 | 110 | 0.18 | 102 | 0.13 | | | | |
| West-central | 114 | 12 | 8 | 56 | 0.25 | 38 | 0.26 | | | | |
| East-central | 159 | 0 | 2 | 54 | 0.11 | 64 | 0.05 | | | | |
| South | 246 | <1 | 0 | 97 | 0.00 | 88 | 0.00 | | | | |
| Southwest | 106 | <1 | 0 | 47 | 0.00 | 39 | 0.00 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0.00 | 35 | 0.00 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0.00 | 14 | 0.00 | | | | |
| Statewide | 646 | 4 | 3 | 262 | 0.10 | 221 | 0.09 | | | | |

| | No. | % | No. | % |
|------------------------|-----------|----|-----------|----|
| Priority Blocks | | | | |
| Confirmed | 1 | 4 | 1 | 5 |
| Probable | 13 | 57 | 9 | 45 |
| Possible | 9 | 39 | 10 | 50 |
| Sum | 23 | | 20 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 3 | |
| Probable | 3 | | 9 | |
| Possible | 6 | | 3 | |
| Sum | 9 | | 15 | |
| Observed | 0 | | - | |

Western Meadowlark

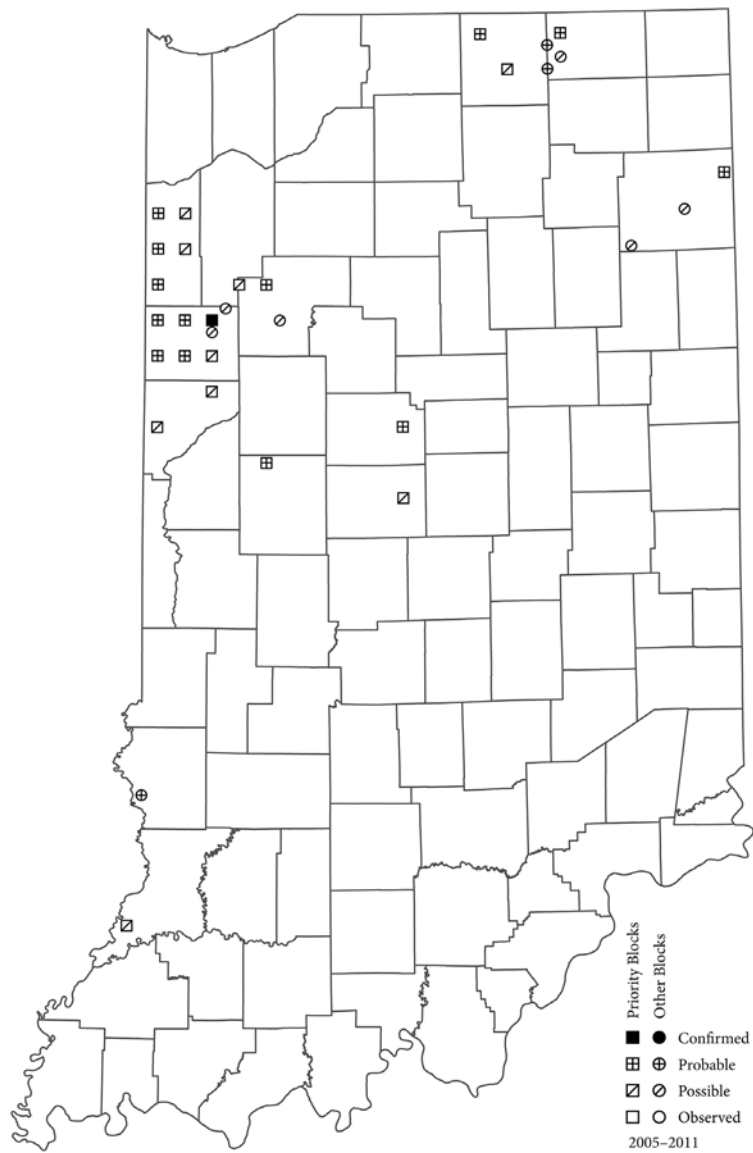


Figure 341. Map of the occurrences of the Western Meadowlark in IBBA blocks during 2005–2011.

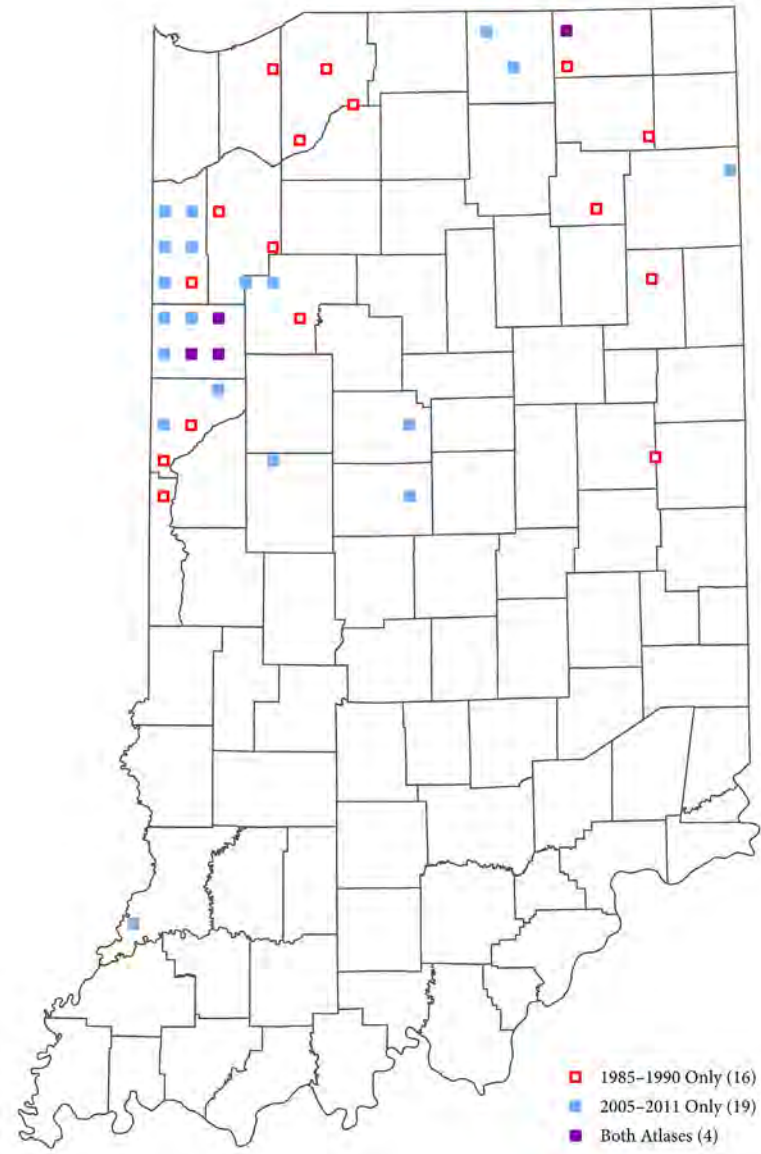


Figure 342. Map of the occurrences of the Western Meadowlark in IBBA priority blocks during both atlas periods.

Yellow-headed Blackbird



An immature male Yellow-headed Blackbird stands in grass. *Photo by Shari McCollough.*

Table 203. Regional occurrence and abundance information for the Yellow-headed Blackbird.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|------------------------|---|-----------|---|-----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | <1 | <1 | 55 | 0 | 31 | 0 | Priority Blocks | | | | |
| Northwest | 73 | 1 | 1 | 34 | 0 | 19 | 0 | Confirmed | 1 | 100 | 0 | 0 |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | Probable | 0 | 0 | 0 | 0 |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | Possible | 0 | 0 | 1 | 100 |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | Sum | 1 | | 1 | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | Observed | 0 | | - | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | Other blocks | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | Confirmed | 0 | | 1 | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | Probable | 0 | | 1 | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | Possible | 0 | | 1 | |
| Statewide | 646 | <1 | <1 | 262 | 0 | 221 | 0 | Sum | 0 | | 3 | |
| | | | | | | | | Observed | 6 | | - | |

Yellow-headed Blackbird



Figure 343. Map of the occurrences of the Yellow-headed Blackbird in IBBA blocks during 2005–2011.



Figure 344. Map of the occurrences of the Yellow-headed Blackbird in IBBA priority blocks during both atlas periods.

Brewer's Blackbird



A Brewer's Blackbird stands on top of a wooden post. *Photo by Stephen Bell.*

Table 204. Regional occurrence and abundance information for the Brewer's Blackbird.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 2 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 4 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 2 | 100 | 0 | 0 |
| Probable | 0 | 0 | 0 | 0 |
| Possible | 0 | 0 | 0 | 0 |
| Sum | 2 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 2 | | 0 | |
| Probable | 1 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 3 | | 0 | |
| Observed | 0 | | - | |

Brewer's Blackbird



Figure 345. Map of the occurrences of the Brewer's Blackbird in IBBA blocks during 2005-2011.

Common Grackle



A male Common Grackle perches on a branch and turns his head to look behind him. *Photo by Shari McCollough.*

Table 205. Regional occurrence and abundance information for the Common Grackle.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----------|------------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 98 | 98 | 55 | 67 | 31 | 84 | Priority Blocks | | | | |
| Northwest | 73 | 97 | 97 | 34 | 79 | 19 | 76 | Confirmed | 474 | 75 | 457 | 73 |
| Northeast | 54 | 98 | 98 | 21 | 48 | 12 | 98 | Probable | 141 | 22 | 133 | 21 |
| Central | 273 | 99 | 95 | 110 | 111 | 102 | 72 | Possible | 16 | 3 | 33 | 5 |
| West-central | 114 | 99 | 93 | 56 | 112 | 38 | 75 | Sum | 631 | | 623 | |
| East-central | 159 | 99 | 97 | 54 | 109 | 64 | 71 | Observed | 0 | | - | |
| South | 246 | 96 | 97 | 97 | 71 | 88 | 136 | Other blocks | | | | |
| Southwest | 106 | 97 | 98 | 47 | 80 | 39 | 212 | Confirmed | 17 | | 13 | |
| South-central | 87 | 94 | 99 | 35 | 38 | 35 | 66 | Probable | 10 | | 4 | |
| Southeast | 53 | 96 | 92 | 15 | 119 | 14 | 96 | Possible | 16 | | 3 | |
| Statewide | 646 | 98 | 96 | 262 | 87 | 221 | 99 | Sum | 43 | | 20 | |
| | | | | | | | | Observed | 0 | | - | |

Common Grackle

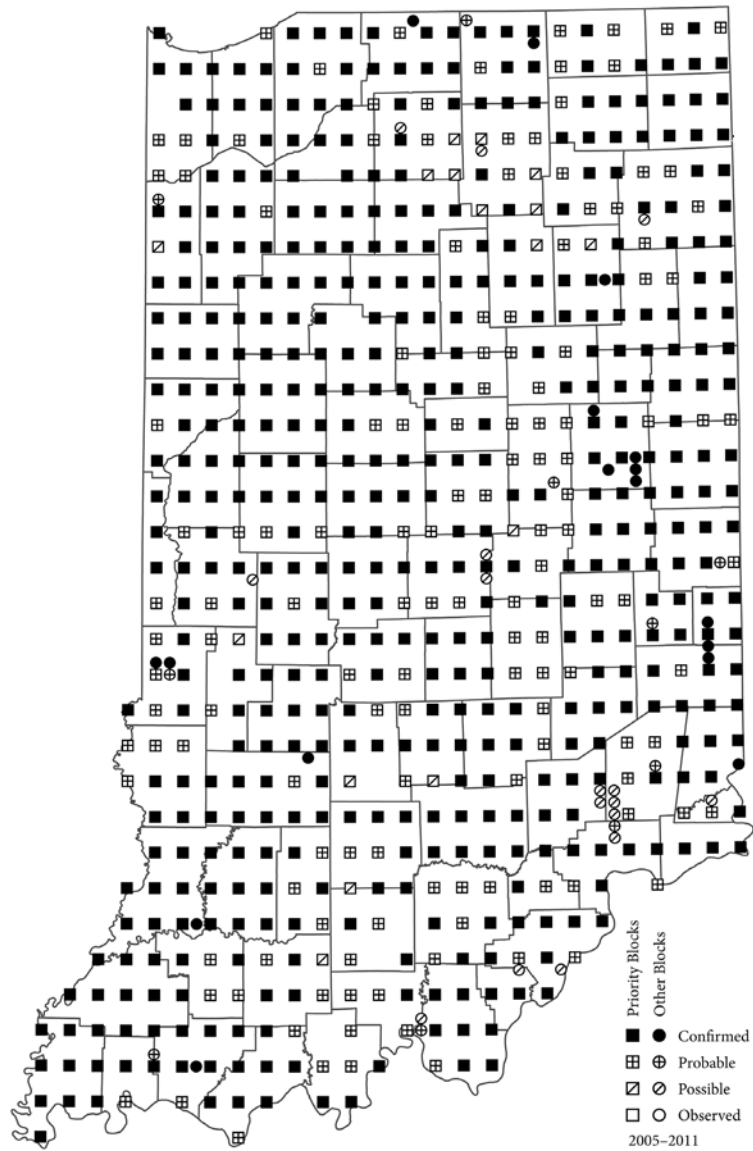


Figure 346. Map of the occurrences of the Common Grackle in IBBA blocks during 2005–2011.

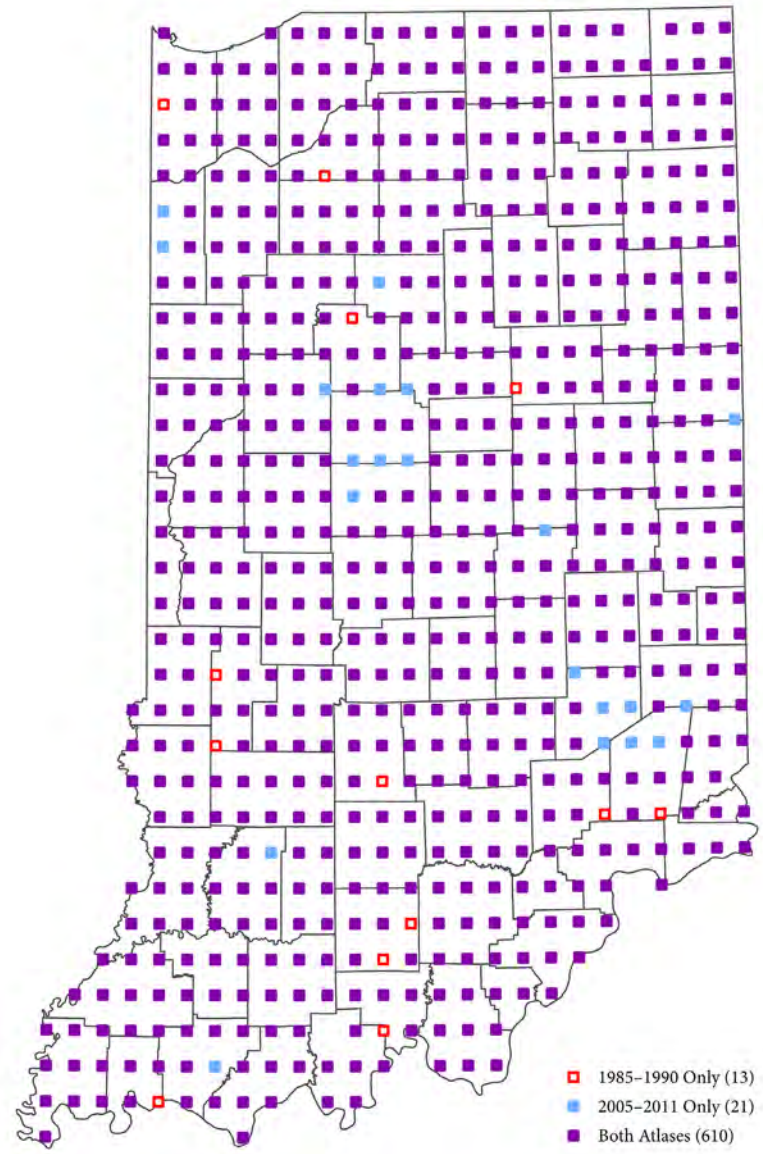


Figure 347. Map of the occurrences of the Common Grackle in IBBA priority blocks during both atlas periods.

Brown-headed Cowbird



A female Brown-headed Cowbird perches on a lichen covered branch. *Photo by Ryan Sanderson.*

Table 206. Regional occurrence and abundance information for the Brown-headed Cowbird.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 98 | 94 | 55 | 22 | 31 | 15 | | | | |
| Northwest | 73 | 100 | 95 | 34 | 29 | 19 | 16 | | | | |
| Northeast | 54 | 96 | 94 | 21 | 12 | 12 | 15 | | | | |
| Central | 273 | 98 | 97 | 110 | 26 | 102 | 13 | | | | |
| West-central | 114 | 96 | 98 | 56 | 34 | 38 | 22 | | | | |
| East-central | 159 | 99 | 97 | 54 | 17 | 64 | 7 | | | | |
| South | 246 | 99 | 97 | 97 | 15 | 88 | 13 | | | | |
| Southwest | 106 | 98 | 95 | 47 | 12 | 39 | 9 | | | | |
| South-central | 87 | 100 | 98 | 35 | 17 | 35 | 18 | | | | |
| Southeast | 53 | 100 | 100 | 15 | 21 | 14 | 14 | | | | |
| Statewide | 646 | 98 | 97 | 262 | 21 | 221 | 13 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 229 | 36 | 193 | 31 |
| Probable | 376 | 59 | 378 | 60 |
| Possible | 31 | 5 | 54 | 9 |
| Sum | 636 | | 625 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 21 | | 2 | |
| Probable | 27 | | 7 | |
| Possible | 10 | | 11 | |
| Sum | 58 | | 20 | |
| Observed | 0 | | - | |

Brown-headed Cowbird

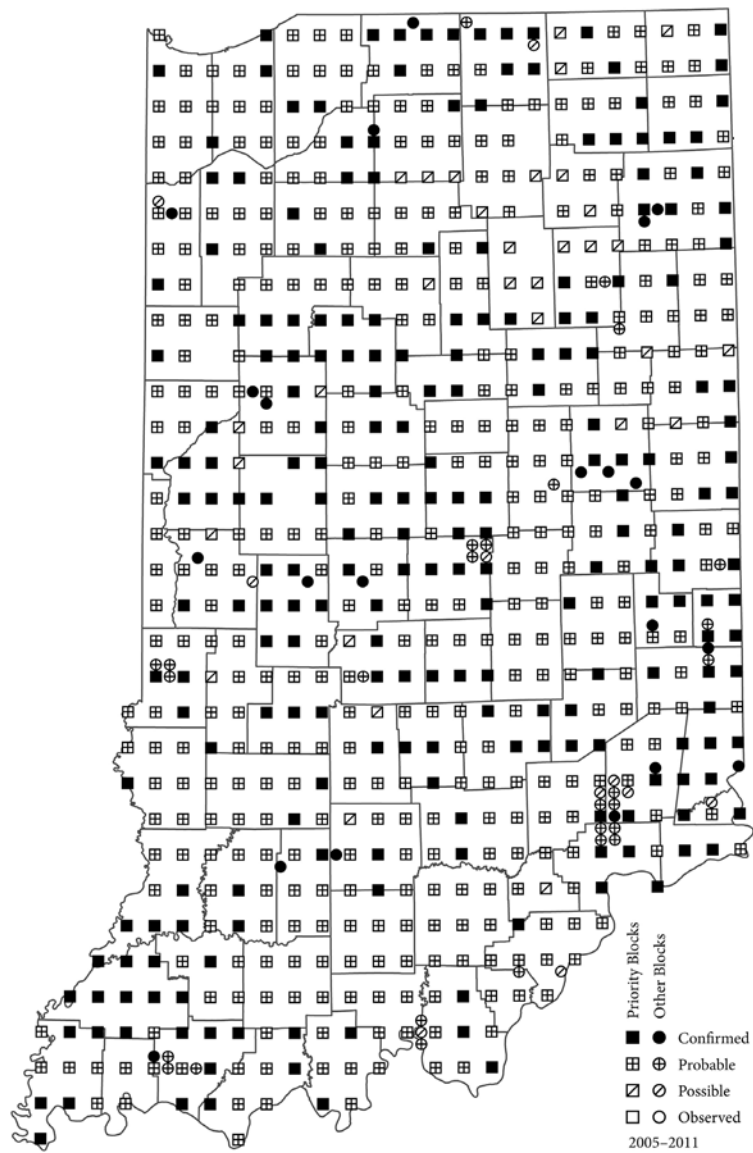


Figure 348. Map of the occurrences of the Brown-headed Cowbird in IBBA blocks during 2005–2011.

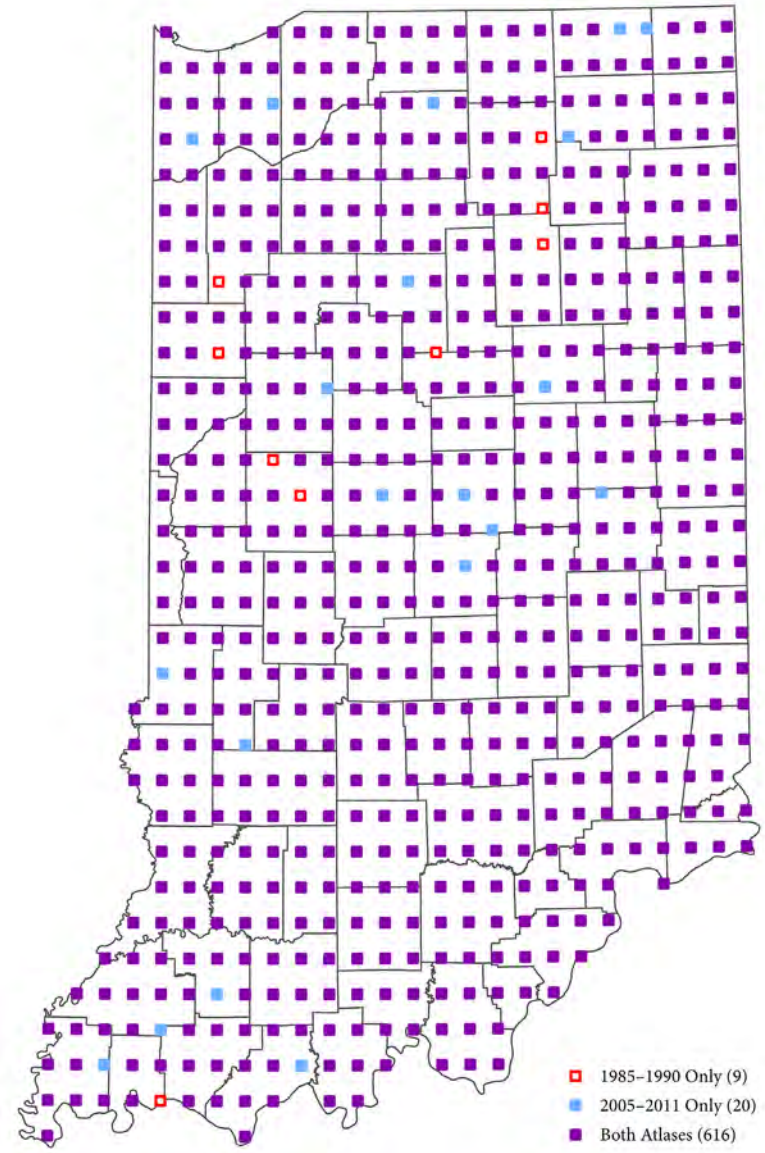


Figure 349. Map of the occurrences of the Brown-headed Cowbird in IBBA priority blocks during both atlas periods.

Orchard Oriole



A male Orchard Oriole crouches down while perching on a bare branch. *Photo by Jim Hully.*

Table 207. Regional occurrence and abundance information for the Orchard Oriole.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----------|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | 1985–1990 | % |
| North | 127 | 43 | 30 | 55 | 0.6 | 31 | 0.6 | | | | |
| Northwest | 73 | 38 | 30 | 34 | 0.7 | 19 | 0.7 | | | | |
| Northeast | 54 | 48 | 30 | 21 | 0.5 | 12 | 0.4 | | | | |
| Central | 273 | 70 | 59 | 110 | 0.7 | 102 | 0.8 | | | | |
| West-central | 114 | 72 | 60 | 56 | 0.9 | 38 | 1.3 | | | | |
| East-central | 159 | 68 | 58 | 54 | 0.5 | 64 | 0.5 | | | | |
| South | 246 | 88 | 87 | 97 | 4.2 | 88 | 4.6 | | | | |
| Southwest | 106 | 87 | 86 | 47 | 3.5 | 39 | 4.2 | | | | |
| South-central | 87 | 90 | 87 | 35 | 5.1 | 35 | 5.7 | | | | |
| Southeast | 53 | 87 | 87 | 15 | 4.7 | 14 | 3.4 | | | | |
| Statewide | 646 | 71 | 64 | 262 | 2.0 | 221 | 2.3 | | | | |

| | 2005–2011 | | 1985–1990 | |
|------------------------|------------|----|------------|----|
| | No. | % | No. | % |
| Priority Blocks | | | | |
| Confirmed | 124 | 27 | 110 | 27 |
| Probable | 222 | 48 | 190 | 46 |
| Possible | 114 | 25 | 112 | 27 |
| Sum | 460 | | 412 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 13 | | 0 | |
| Probable | 19 | | 6 | |
| Possible | 11 | | 2 | |
| Sum | 43 | | 8 | |
| Observed | 0 | | - | |

Orchard Oriole

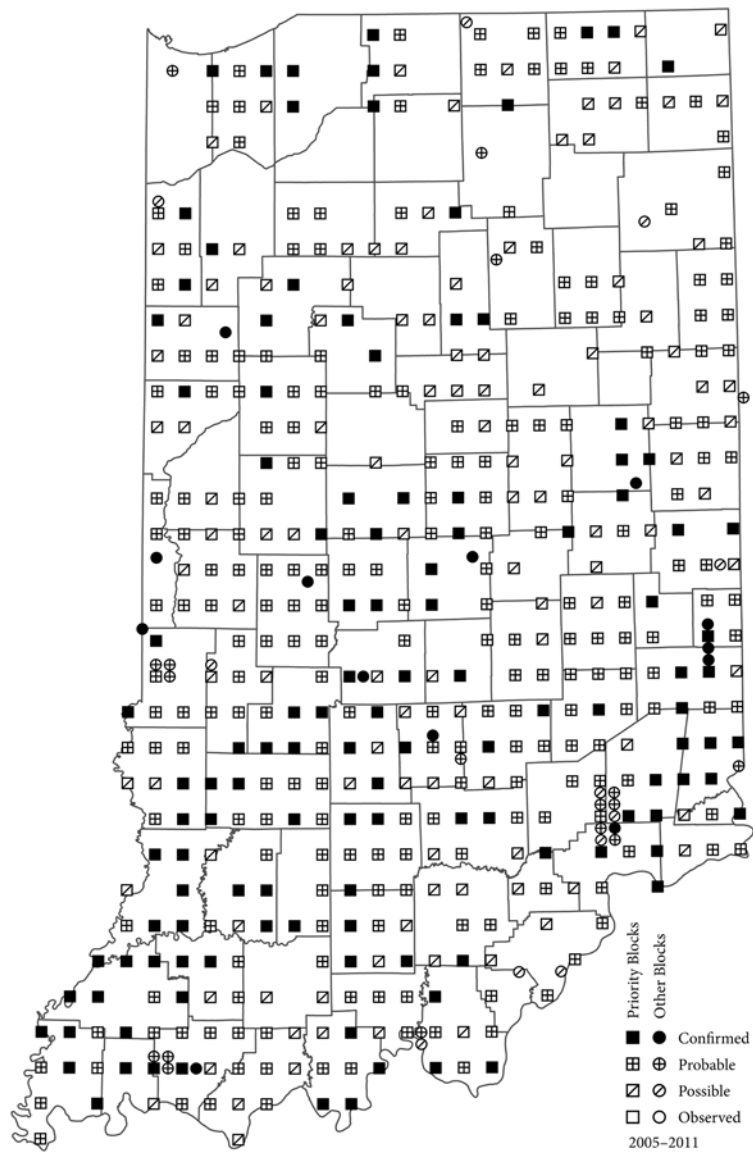


Figure 350. Map of the occurrences of the Orchard Oriole in IBBA blocks during 2005–2011.

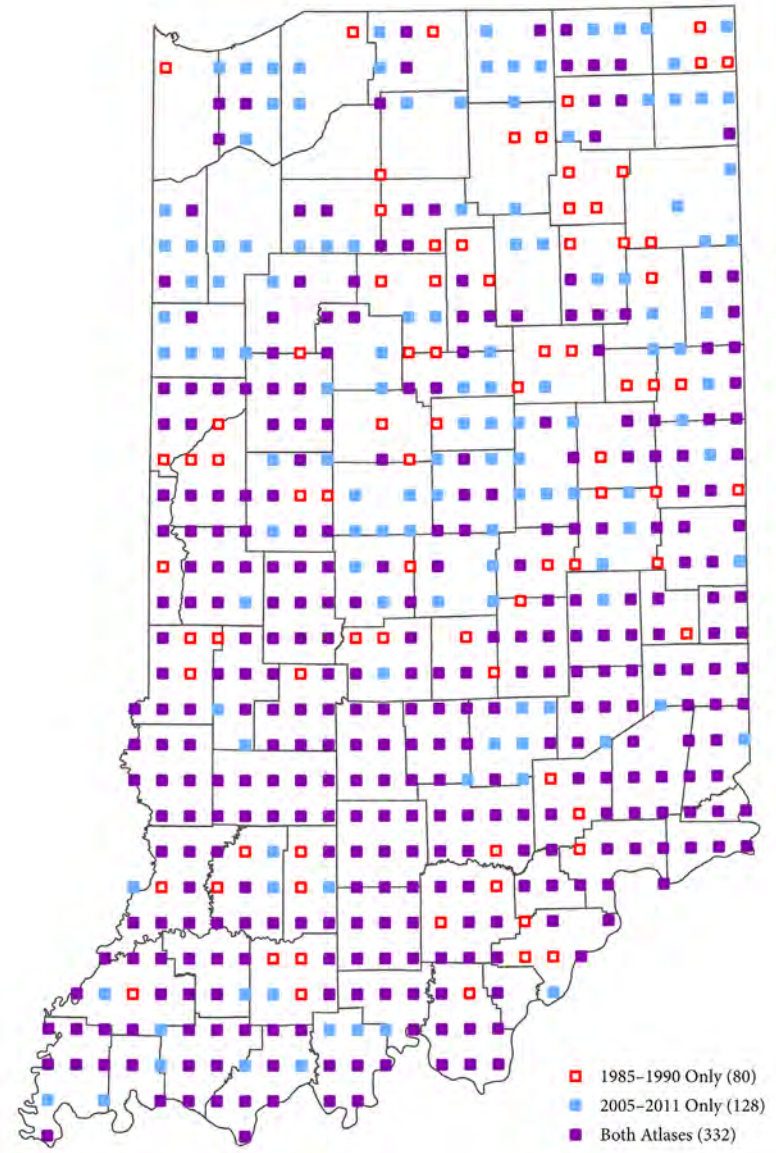


Figure 351. Map of the occurrences of the Orchard Oriole in IBBA priority blocks during both atlas periods.

Baltimore Oriole



A male Baltimore Oriole perches on a willow branch and looks below him. *Photo by Shari McCollough.*

Table 208. Regional occurrence and abundance information for the Baltimore Oriole.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----|------------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 97 | 91 | 55 | 4.7 | 31 | 4.2 | Priority Blocks | | | | |
| Northwest | 73 | 95 | 90 | 34 | 3.8 | 19 | 5.1 | Confirmed | 265 | 44 | 246 | 41 |
| Northeast | 54 | 100 | 93 | 21 | 6.2 | 12 | 2.7 | Probable | 255 | 42 | 261 | 44 |
| Central | 273 | 93 | 91 | 110 | 3.2 | 102 | 3.2 | Possible | 89 | 15 | 88 | 15 |
| West-central | 114 | 88 | 90 | 56 | 3.3 | 38 | 5.4 | Sum | 609 | | 595 | |
| East-central | 159 | 96 | 91 | 54 | 3.1 | 64 | 1.9 | Observed | 0 | | - | |
| South | 246 | 95 | 94 | 97 | 2.9 | 88 | 2.6 | Other blocks | | | | |
| Southwest | 106 | 94 | 98 | 47 | 2.6 | 39 | 2.8 | Confirmed | 15 | | 6 | |
| South-central | 87 | 94 | 91 | 35 | 3.7 | 35 | 2.4 | Probable | 11 | | 8 | |
| Southeast | 53 | 96 | 91 | 15 | 1.9 | 14 | 2.2 | Possible | 13 | | 7 | |
| Statewide | 646 | 94 | 92 | 262 | 3.4 | 221 | 3.1 | Sum | 39 | | 21 | |
| | | | | | | | | Observed | 0 | | - | |

Baltimore Oriole

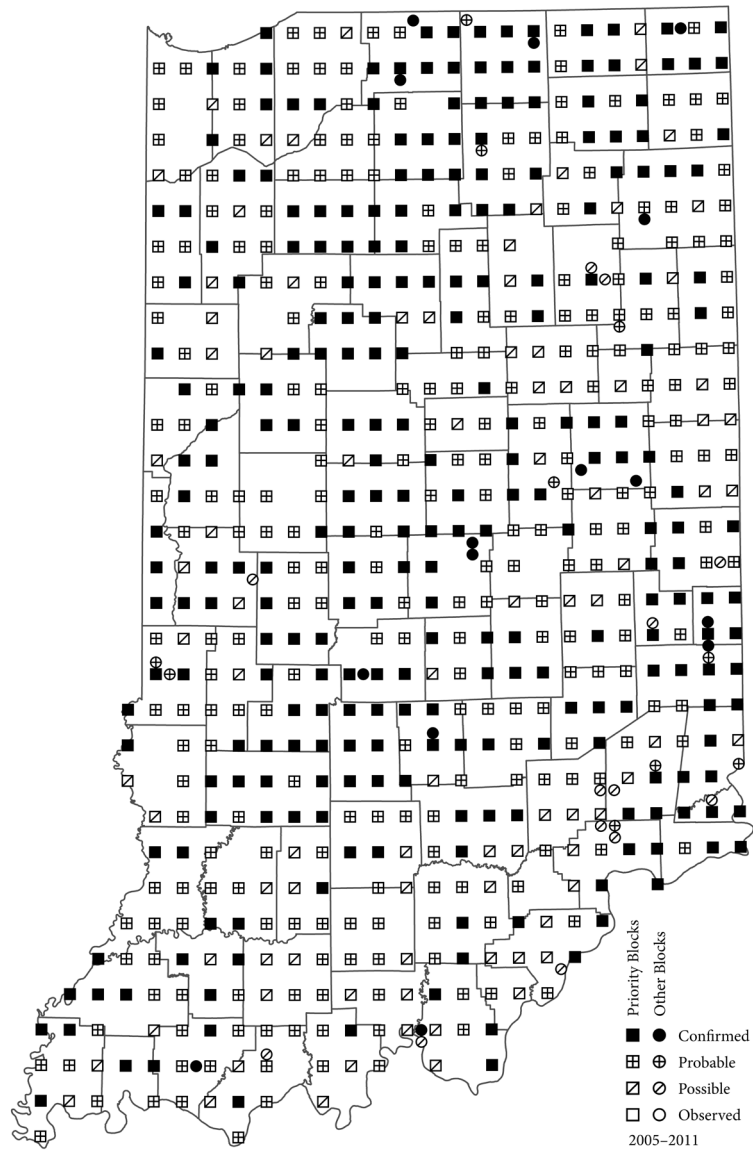


Figure 352. Map of the occurrences of the Baltimore Oriole in IBBA blocks during 2005–2011.

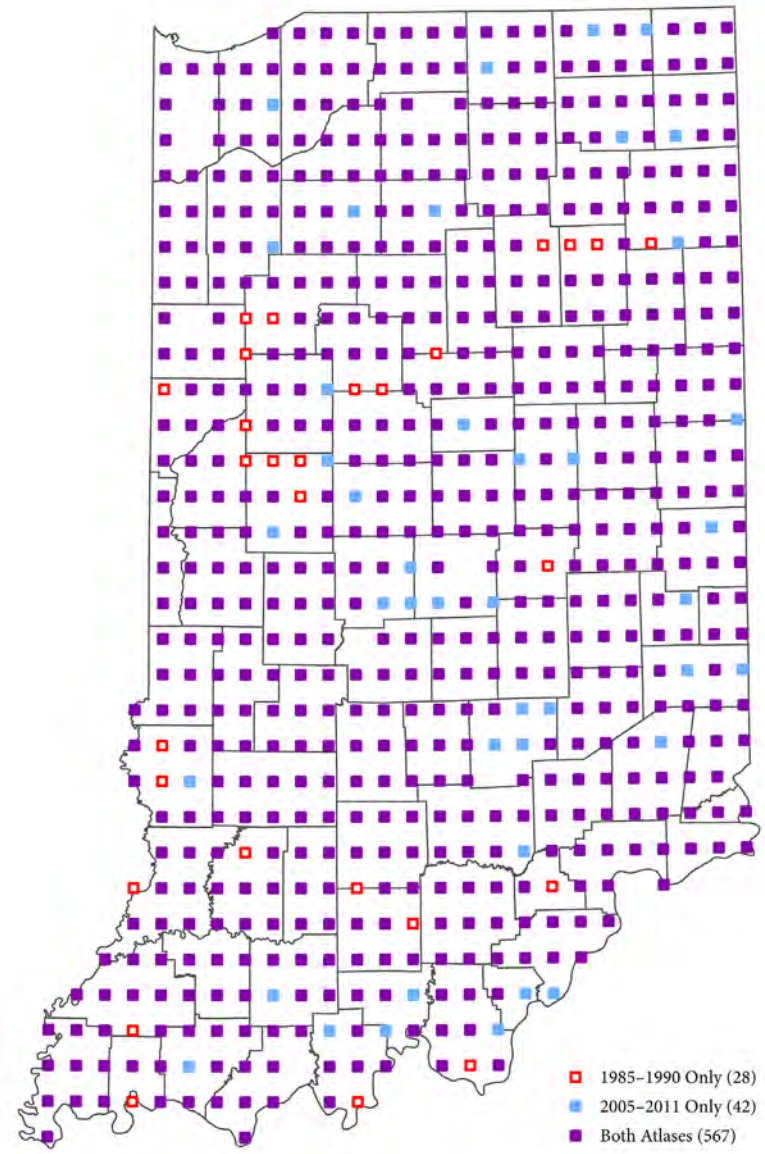


Figure 353. Map of the occurrences of the Baltimore Oriole in IBBA priority blocks during both atlas periods.

Finches (Fringillidae)

Tables 209–212, Fig. 354–360

FOUR SPECIES OF finches are commonly found in Indiana, but only two (House Finch, American Goldfinch) regularly nest in the state. Purple Finch and Pine Siskin occur in Indiana primarily as migrants and winter visitors from northern coniferous forests and their abundance is greatly impacted by cone production in their breeding ranges (Wootten 1996, Dawson 1997). A few sometimes linger into the summer in Indiana. No breeding records of Purple Finch are known for Indiana, but Pine Siskin has nested sporadically in the state. A single record of Purple Finch and two occurrences of Pine Siskin were included in the current atlas, but none with confirmed breeding evidence.

The House Finch is a bird of the western United States that has colonized the East after releases in New York during the 1970s (Hill 1993). During the first atlas period, the House Finch range was still expanding in Indiana. Since that time, populations have filled habitats throughout the state, but numbers have declined somewhat due to outbreaks of conjunctivitis. House Finches were recorded in most atlas blocks throughout Indiana, with somewhat fewer frequencies in northwestern and southeastern regions. Atlas records increased in all areas of the state between atlas periods and the overall difference was statistically significant. Densities on Breeding Bird Surveys were fairly uniform throughout Indiana with greatest numbers in the east-central region and lowest in southeastern Indiana. The positive BBS population trend was statistically significant and relative densities increased in all regions between atlas periods. Like the House Sparrow, the House Finch is most often associated with human habitations, is most common in urban areas and small towns, and readily visits bird feeders. Nests are built in coniferous trees and shrubs, in hanging flower baskets, or on ledges or crevices of buildings. House Finches feed mostly on seeds throughout the year. They supplement their diet with insects, other invertebrates, fruit, and nectar, especially during the summer. They are year-round residents in their eastern breeding range.

The American Goldfinch is a common year-round resident in Indiana and the eastern United States and is

found in weedy fields and other open habitats (Middleton 1993). They nest late in the summer, a season corresponding with the fruiting of thistles and other composites that produce plant down. The sturdy cup nests are lined with this down and built in the fork of a shrub or small tree. The diet of the American Goldfinch overwhelmingly consists of plant seeds, and again thistles and other composites are highly sought. This bird is a common visitor to feeders where it favors niger and oil sunflower seeds. American Goldfinches were reported in nearly all atlas blocks throughout the state during both survey periods and the slight differences were not significant. Breeding Bird Survey values indicate a rather uniform pattern of abundance throughout Indiana with values somewhat lower in southern Indiana. Although BBS values were moderately lower in most regions between atlas periods, the overall population trend was slight and not statistically significant.

On atlas projects in Indiana, Ohio, and Michigan, the American Goldfinch and House Finch were by far the most encountered species in this group. The American Goldfinch was found in nearly all atlas blocks in all three states during both atlas periods. Differences were small between atlas periods for all three states. House Finch populations continued to expand in the Midwest between atlas periods and were detected in a large majority of blocks in Indiana and Ohio during the second atlases. In Michigan they are prevalent in the Southern Lower Peninsula and less common northward, especially in the Upper Peninsula. Five other species (Purple Finch, Pine Siskin, Evening Grosbeak, White-winged Crossbill, Red Crossbill) nest regularly in northern Michigan, especially in the Upper Peninsula. A handful of Pine Grosbeak records were included on the Michigan atlases, but none were in the confirmed breeding category. Pine Siskins were confirmed breeding infrequently in widely scattered blocks on both Ohio atlases, but were not known to have nested on the second Indiana atlas. Purple Finches do not nest in Indiana, but do so regularly in northeastern Ohio, although there were fewer records on the second atlas.

House Finch



A female/immature House Finch grasps onto a small branch. *Photo by Shari McCollough.*

Table 209. Regional occurrence and abundance information for the House Finch.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|------------------------|------------|-----------|------------|----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | | 1985–1990 | | 2005–2011 | | 1985–1990 | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | 77 | 64 | 55 | 4.6 | 31 | 3.8 | | | | | |
| Northwest | 73 | 68 | 60 | 34 | 4.6 | 19 | 4.3 | | | | | |
| Northeast | 54 | 89 | 69 | 21 | 4.6 | 12 | 3.1 | | | | | |
| Central | 273 | 91 | 74 | 110 | 5.3 | 102 | 2.4 | | | | | |
| West-central | 114 | 87 | 59 | 56 | 4.3 | 38 | 2.5 | | | | | |
| East-central | 159 | 94 | 84 | 54 | 6.2 | 64 | 2.3 | | | | | |
| South | 246 | 81 | 49 | 97 | 4.2 | 88 | 0.8 | | | | | |
| Southwest | 106 | 77 | 47 | 47 | 5.5 | 39 | 1.0 | | | | | |
| South-central | 87 | 89 | 45 | 35 | 3.1 | 35 | 0.6 | | | | | |
| Southeast | 53 | 75 | 60 | 15 | 2.4 | 14 | 0.5 | | | | | |
| Statewide | 646 | 85 | 62 | 262 | 4.7 | 221 | 2.0 | | | | | |
| | | | | | | | | Priority Blocks | | | | |
| | | | | | | | | Confirmed | 183 | 34 | 112 | 28 |
| | | | | | | | | Probable | 301 | 55 | 207 | 51 |
| | | | | | | | | Possible | 62 | 11 | 84 | 21 |
| | | | | | | | | Sum | 546 | | 403 | |
| | | | | | | | | Observed | 0 | | - | |
| | | | | | | | | Other blocks | | | | |
| | | | | | | | | Confirmed | 3 | | 8 | |
| | | | | | | | | Probable | 7 | | 7 | |
| | | | | | | | | Possible | 7 | | 0 | |
| | | | | | | | | Sum | 17 | | 15 | |
| | | | | | | | | Observed | 0 | | - | |

House Finch

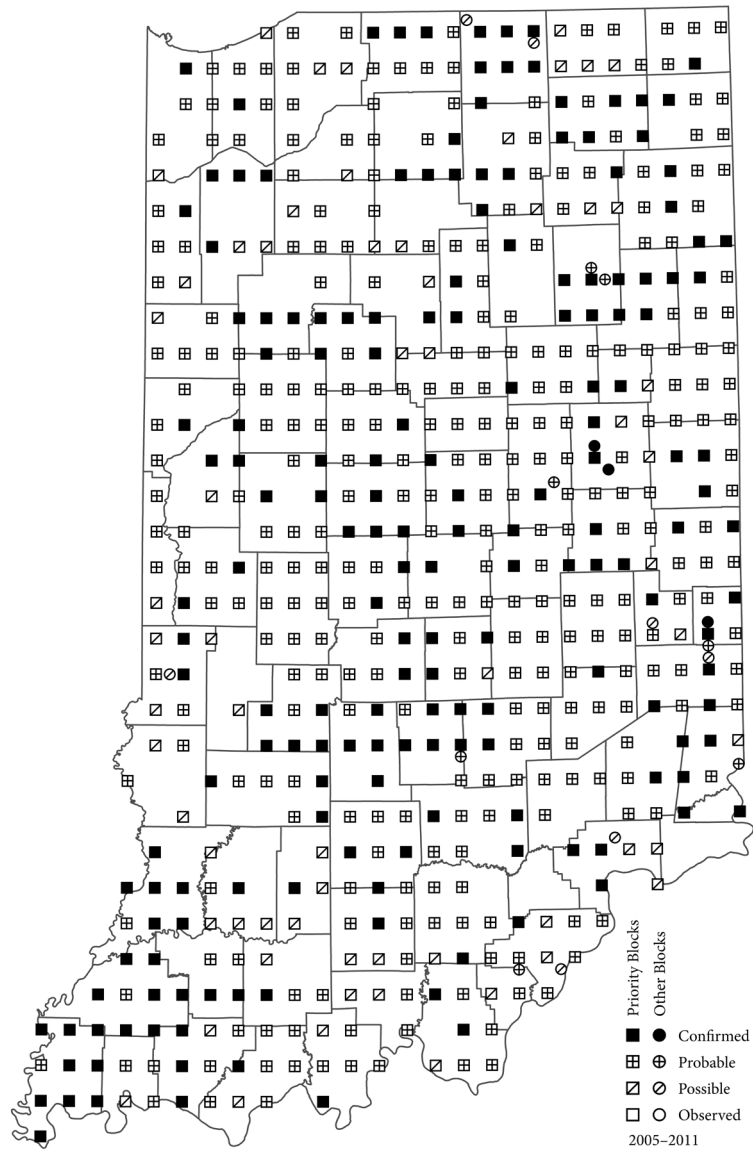


Figure 354. Map of the occurrences of the House Finch in IBBA blocks during 2005–2011.

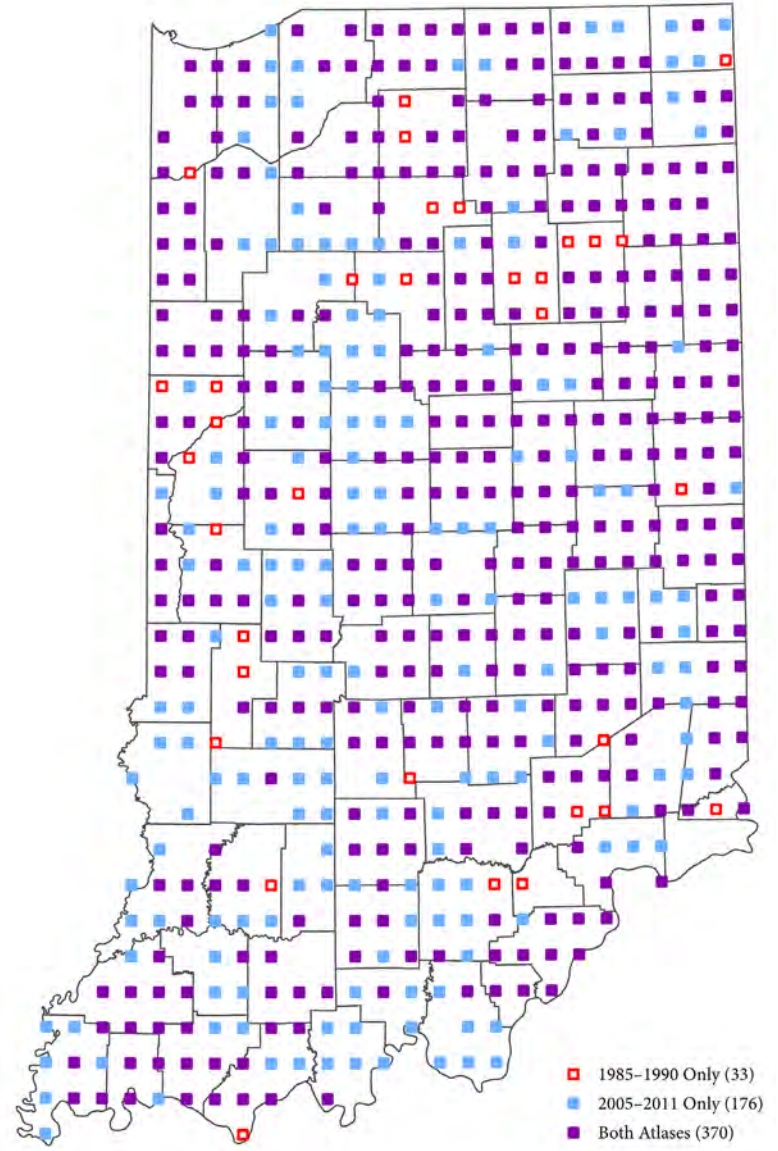


Figure 355. Map of the occurrences of the House Finch in IBBA priority blocks during both atlas periods.

Purple Finch



A male Purple Finch perches on a branch. *Photo by Ryan Sanderson.*

Table 210. Regional occurrence and abundance information for the Purple Finch.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|--------------|----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 0 | 0 | 55 | 0 | 31 | 0 | | | | |
| Northwest | 73 | 0 | 0 | 34 | 0 | 19 | 0 | | | | |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | | | | |
| Central | 273 | 0 | 0 | 110 | 0 | 102 | 0 | | | | |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | | | | |
| East-central | 159 | 0 | 0 | 54 | 0 | 64 | 0 | | | | |
| South | 246 | <1 | 0 | 97 | 0 | 88 | 0 | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | | | | |
| South-central | 87 | <1 | 0 | 35 | 0 | 35 | 0 | | | | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | | | | |
| Statewide | 646 | <1 | 0 | 262 | 0 | 221 | 0 | | | | |

| | No. | % | No. | % |
|------------------------|----------|-----|----------|---|
| Priority Blocks | | | | |
| Confirmed | 0 | 0 | 0 | |
| Probable | 1 | 100 | 0 | |
| Possible | 0 | 0 | 0 | |
| Sum | 1 | | 0 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 0 | | 0 | |
| Probable | 0 | | 0 | |
| Possible | 0 | | 0 | |
| Sum | 0 | | 0 | |
| Observed | 0 | | - | |

Purple Finch



Figure 356. Map of the occurrences of the Purple Finch in IBBA blocks during 2005–2011.

Pine Siskin



A Pine Siskin perches on a branch. *Photo by Ryan Sanderson.*

Table 211. Regional occurrence and abundance information for the Pine Siskin.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | | |
|------------------|---------------------|-----------|----------|----------------------|--------------|-------------|---------------|------------------------|-----------|-----|---|-----|
| | 2005–2011 | 1985–1990 | | 2005–2011 | 1985–1990 | | | 2005–2011 | 1985–1990 | | | |
| | Total blocks | % blocks | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | No. | % | No. | % | |
| North | 127 | <1 | 0 | 55 | 0 | 31 | 0 | Priority Blocks | | | | |
| Northwest | 73 | 1 | 0 | 34 | 0 | 19 | 0 | Confirmed | 0 | 0 | 0 | 0 |
| Northeast | 54 | 0 | 0 | 21 | 0 | 12 | 0 | Probable | 1 | 100 | 0 | 0 |
| Central | 273 | 0 | <1 | 110 | 0 | 102 | 0 | Possible | 0 | 0 | 1 | 100 |
| West-central | 114 | 0 | 0 | 56 | 0 | 38 | 0 | Sum | 1 | | 1 | |
| East-central | 159 | 0 | <1 | 54 | 0 | 64 | 0 | Observed | 1 | | - | |
| South | 246 | 0 | 0 | 97 | 0 | 88 | 0 | Other blocks | | | | |
| Southwest | 106 | 0 | 0 | 47 | 0 | 39 | 0 | Confirmed | 0 | | 1 | |
| South-central | 87 | 0 | 0 | 35 | 0 | 35 | 0 | Probable | 0 | | 0 | |
| Southeast | 53 | 0 | 0 | 15 | 0 | 14 | 0 | Possible | 1 | | 0 | |
| Statewide | 646 | <1 | <1 | 262 | 0 | 221 | 0 | Sum | 1 | | 1 | |
| | | | | | | | | Observed | 1 | | - | |

Pine Siskin



Figure 357. Map of the occurrences of the Pine Siskin in IBBA blocks during 2005–2011.



Figure 358. Map of the occurrences of the Pine Siskin in IBBA priority blocks during both atlas periods.

American Goldfinch



A female/immature American Goldfinch grasps onto the top of a bare stalk. *Photo by Shari McCollough.*

Table 212. Regional occurrence and abundance information for the American Goldfinch.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 97 | 97 | 55 | 14 | 31 | 21 | | | | |
| Northwest | 73 | 97 | 95 | 34 | 13 | 19 | 19 | | | | |
| Northeast | 54 | 96 | 100 | 21 | 17 | 12 | 25 | | | | |
| Central | 273 | 100 | 99 | 110 | 15 | 102 | 15 | | | | |
| West-central | 114 | 100 | 96 | 56 | 15 | 38 | 19 | | | | |
| East-central | 159 | 100 | 100 | 54 | 16 | 64 | 12 | | | | |
| South | 246 | 98 | 98 | 97 | 11 | 88 | 9 | | | | |
| Southwest | 106 | 98 | 97 | 47 | 10 | 39 | 8 | | | | |
| South-central | 87 | 98 | 99 | 35 | 14 | 35 | 10 | | | | |
| Southeast | 53 | 98 | 100 | 15 | 9 | 14 | 12 | | | | |
| Statewide | 646 | 99 | 98 | 262 | 14 | 221 | 13 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 162 | 25 | 105 | 17 |
| Probable | 458 | 72 | 487 | 77 |
| Possible | 17 | 3 | 42 | 7 |
| Sum | 637 | | 634 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 7 | | 6 | |
| Probable | 25 | | 13 | |
| Possible | 13 | | 4 | |
| Sum | 45 | | 23 | |
| Observed | 0 | | - | |

American Goldfinch

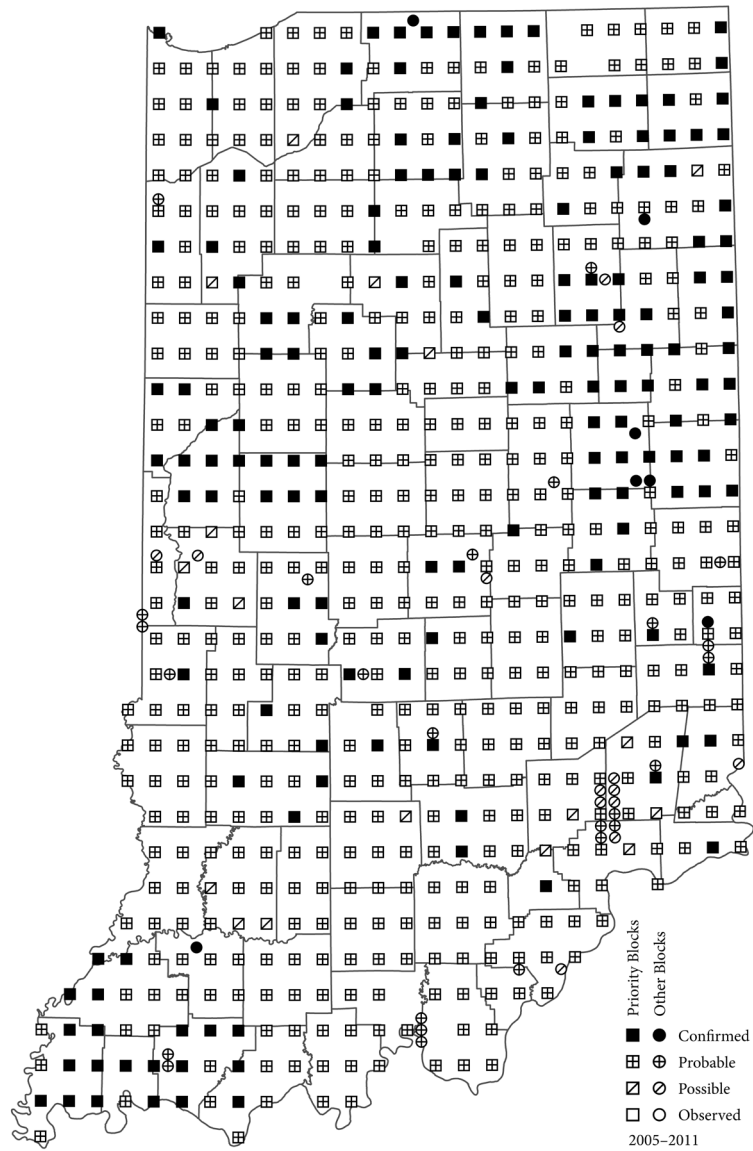


Figure 359. Map of the occurrences of the American Goldfinch in IBBA blocks during 2005–2011.

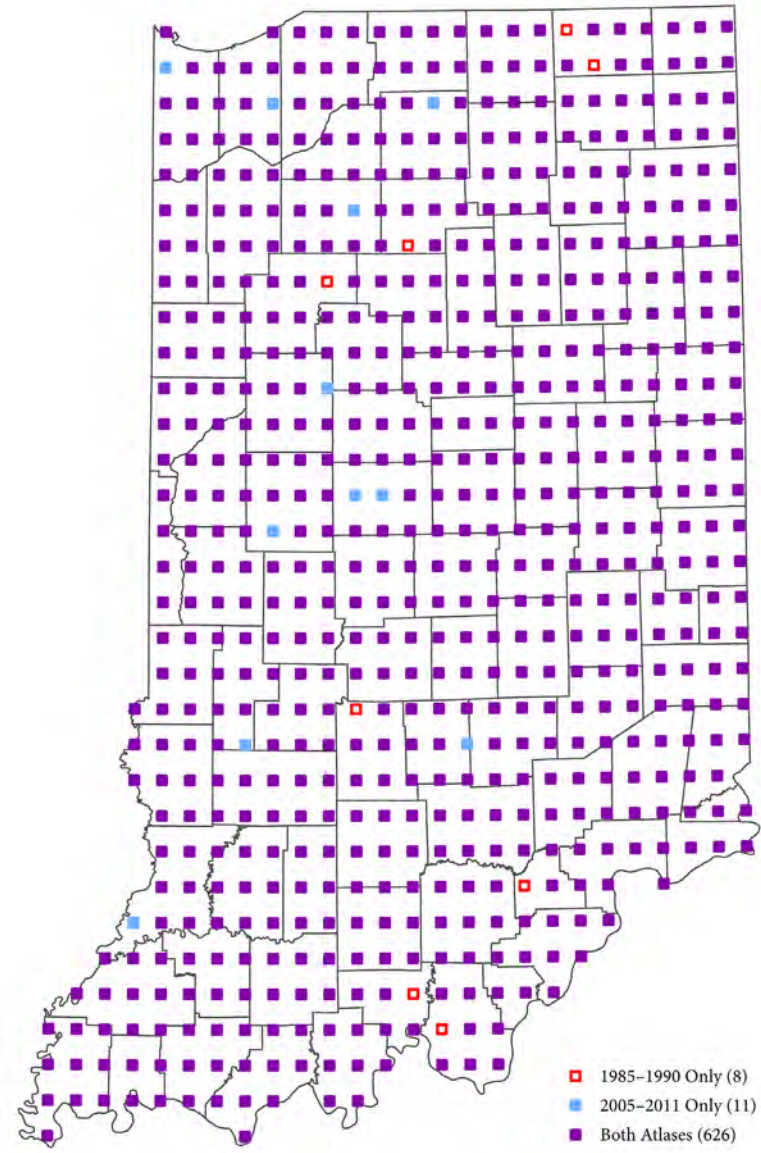


Figure 360. Map of the occurrences of the American Goldfinch in IBBA priority blocks during both atlas periods.

Old World Sparrows (Passeridae)

Table 213, Fig. 361–362

THE HOUSE SPARROW has been a part of Indiana's avifauna since 1867 and is a common bird year-round in cities, towns, rural homesteads, and agricultural areas throughout Indiana. It is almost always associated with human structures and seldom seen away from houses or barns (Lowther and Cink 1992). Unkempt nests made of grasses, feathers, string, cloth, and other materials can be quite large. Nests are constructed in small trees or shrubs, but are most often found in gutters, downspouts, posts, light fixtures; behind signs; and in buildings and nest boxes. Diets are diverse, but consist primarily of waste grain, seeds, animal feed, insects, fruit, and food scraps.

House Sparrows occurred in virtually every atlas block, with most misses in southern Indiana. The slight reduction in rates of occurrence was statistically significant between atlas periods. Relative densities on Breeding Bird Surveys were greatest in east-central and

northeastern Indiana and least common in south-central Indiana. Numbers on BBS routes decreased quite dramatically between atlas periods in all regions and the statewide population decline was statistically significant for the 1985–2011 period, a pattern seen over much of North America.

House Sparrows occurred in virtually every block on atlases in Indiana and Ohio and in most blocks in the Southern Lower Peninsula of Michigan, with decreasing frequency northward. The number of blocks with this species declined between atlas periods in all three states, although the differences were small in Indiana and Ohio and were more moderate in Michigan. There were a handful of records on the second Michigan atlas for the nonnative Eurasian Tree Sparrow with one confirmed observation and breeding record of hybrid chicks.

House Sparrow



A female/immature House Sparrow perches on an eastern hemlock tree branch. *Photo by Michael Brown.*

Table 213. Regional occurrence and abundance information for the House Sparrow.

| Region | Breeding Bird Atlas | | | Breeding Bird Survey | | | | Breeding Bird Atlas | | | |
|------------------|---------------------|-----------|-----------|----------------------|--------------|-------------|---------------|---------------------|---|-----|---|
| | 2005–2011 | 1985–1990 | % blocks | No. surveys | Birds/survey | No. surveys | Birds/surveys | 2005–2011 | % | No. | % |
| North | 127 | 100 | 97 | 55 | 63 | 31 | 165 | | | | |
| Northwest | 73 | 100 | 96 | 34 | 38 | 19 | 145 | | | | |
| Northeast | 54 | 100 | 98 | 21 | 102 | 12 | 197 | | | | |
| Central | 273 | 99 | 100 | 110 | 82 | 102 | 184 | | | | |
| West-central | 114 | 100 | 100 | 56 | 54 | 38 | 164 | | | | |
| East-central | 159 | 98 | 100 | 54 | 111 | 64 | 196 | | | | |
| South | 246 | 94 | 99 | 97 | 33 | 88 | 101 | | | | |
| Southwest | 106 | 95 | 99 | 47 | 46 | 39 | 137 | | | | |
| South-central | 87 | 95 | 99 | 35 | 12 | 35 | 66 | | | | |
| Southeast | 53 | 91 | 100 | 15 | 41 | 14 | 87 | | | | |
| Statewide | 646 | 97 | 99 | 262 | 60 | 221 | 148 | | | | |

| | No. | % | No. | % |
|------------------------|------------|----|------------|----|
| Priority Blocks | | | | |
| Confirmed | 535 | 85 | 533 | 83 |
| Probable | 75 | 12 | 92 | 14 |
| Possible | 19 | 3 | 15 | 2 |
| Sum | 629 | | 640 | |
| Observed | 0 | | - | |
| Other blocks | | | | |
| Confirmed | 12 | | 13 | |
| Probable | 7 | | 7 | |
| Possible | 7 | | 2 | |
| Sum | 26 | | 22 | |
| Observed | 0 | | - | |

House Sparrow

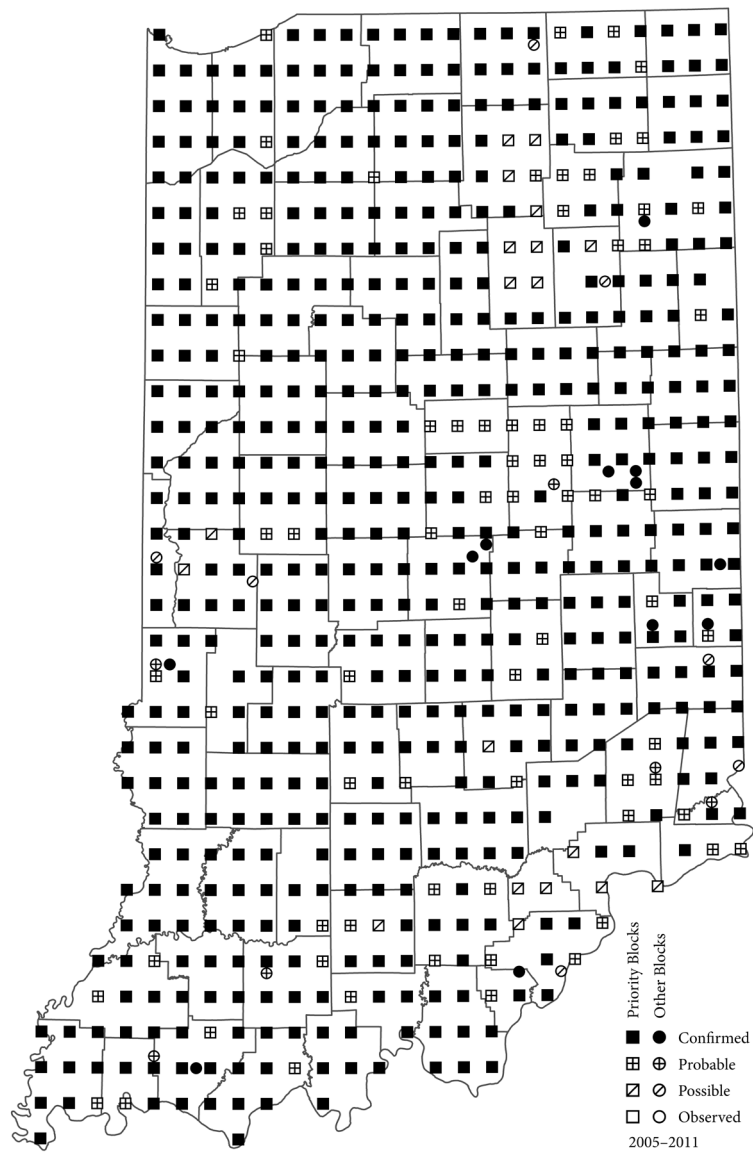


Figure 361. Map of the occurrences of the House Sparrow in IBBA blocks during 2005–2011.

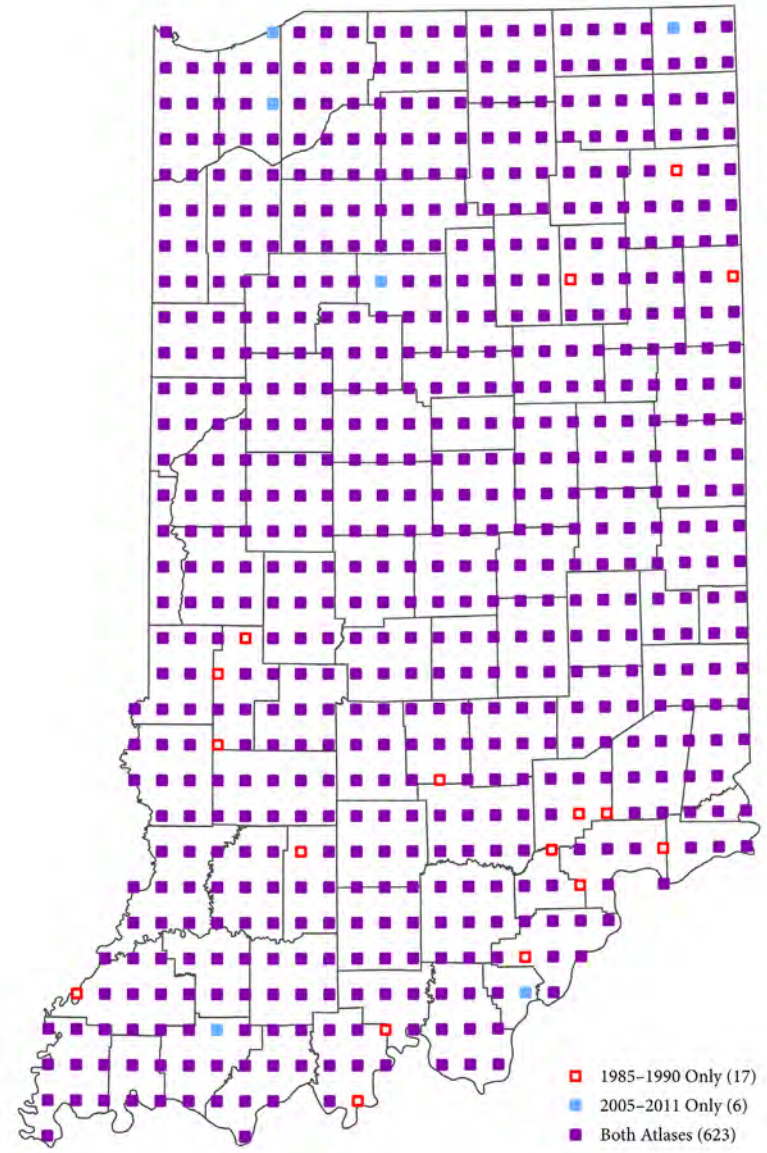


Figure 362. Map of the occurrences of the House Sparrow in IBBA priority blocks during both atlas periods.

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APPENDIX A *Species common and scientific names*

BIRDS

| Common Name | Scientific Name |
|---------------------------|--------------------------------------|
| Bittern, American | <i>Botaurus lentiginosus</i> |
| Least | <i>Ixobrychus exilis</i> |
| Blackbird, Brewer's | <i>Euphagus cyanocephalus</i> |
| Red-winged | <i>Agelaius phoeniceus</i> |
| Rusty | <i>Euphagus carolinus</i> |
| Yellow-headed | <i>Xanthocephalus xanthocephalus</i> |
| Bluebird, Eastern | <i>Sialia sialis</i> |
| Bobolink | <i>Dolichonyx oryzivorus</i> |
| Bobwhite, Northern | <i>Colinus virginianus</i> |
| Bufflehead | <i>Bucephala albeola</i> |
| Bunting, Indigo | <i>Passerina cyanea</i> |
| Canvasback | <i>Aythya valisineria</i> |
| Cardinal, Northern | <i>Cardinalis cardinalis</i> |
| Catbird, Gray | <i>Dumetella carolinensis</i> |
| Chat, Yellow-breasted | <i>Icteria virens</i> |
| Chickadee, Black-capped | <i>Poecile atricapillus</i> |
| Boreal | <i>Poecile hudsonicus</i> |
| Carolina | <i>Poecile carolinensis</i> |
| Chukar | <i>Alectoris chukar</i> |
| Chuck-will's-widow | <i>Antrostomus carolinensis</i> |
| Collared-Dove, Eurasian | <i>Streptopelia decaocto</i> |
| Coot, American | <i>Fulica americana</i> |
| Cormorant, Double-crested | <i>Nannopterum auritum</i> |
| Cowbird, Brown-headed | <i>Molothrus ater</i> |
| Crane, Sandhill | <i>Antigone canadensis</i> |
| Whooping | <i>Grus americana</i> |
| Creeper, Brown | <i>Certhia americana</i> |
| Crossbill, Red | <i>Loxia curvirostra</i> |
| White-winged | <i>Loxia leucoptera</i> |
| Crow, American | <i>Corvus brachyrhynchos</i> |
| Fish | <i>Corvus ossifragus</i> |
| Cuckoo, Black-billed | <i>Coccyzus erythrophthalmus</i> |
| Yellow-billed | <i>Coccyzus americanus</i> |
| Dickcissel | <i>Spiza americana</i> |
| Dove, Mourning | <i>Zenaidura macroura</i> |
| Duck, American Black | <i>Anas rubripes</i> |
| Ring-necked | <i>Aythya collaris</i> |
| Ruddy | <i>Oxyura jamaicensis</i> |
| Wood | <i>Aix sponsa</i> |

| Common Name | Scientific Name |
|------------------------|-----------------------------------|
| Eagle, Bald | <i>Haliaeetus leucocephalus</i> |
| Egret, Cattle | <i>Bubulcus ibis</i> |
| Great | <i>Ardea alba</i> |
| Snowy | <i>Egretta thula</i> |
| Falcon, Peregrine | <i>Falco peregrinus</i> |
| Finch, House | <i>Haemorhous mexicanus</i> |
| Purple | <i>Haemorhous purpureus</i> |
| Flicker, Northern | <i>Colaptes auratus</i> |
| Flycatcher, Acadian | <i>Empidonax virens</i> |
| Alder | <i>Empidonax alnorum</i> |
| Great Crested | <i>Myiarchus crinitus</i> |
| Least | <i>Empidonax minimus</i> |
| Olive-sided | <i>Contopus cooperi</i> |
| Scissor-tailed | <i>Tyrannus forficatus</i> |
| Willow | <i>Empidonax traillii</i> |
| Yellow-bellied | <i>Empidonax flaviventris</i> |
| Gadwall | <i>Mareca strepera</i> |
| Gallinule, Common | <i>Gallinula galeata</i> |
| Purple | <i>Porphyrio martinica</i> |
| Goldeneye, Common | <i>Bucephala clangula</i> |
| Goldfinch, American | <i>Spinus tristis</i> |
| Goose, Canada | <i>Branta canadensis</i> |
| Goshawk, Northern | <i>Accipiter gentilis</i> |
| Gnatcatcher, Blue-gray | <i>Poliophtila caerulea</i> |
| Grackle, Common | <i>Quiscalus quiscula</i> |
| Grebe, Eared | <i>Podiceps nigricollis</i> |
| Pied-billed | <i>Podilymbus podiceps</i> |
| Red-necked | <i>Podiceps grisegena</i> |
| Grosbeak, Blue | <i>Passerina caerulea</i> |
| Evening | <i>Coccythraustes vespertinus</i> |
| Pine | <i>Pinicola enucleator</i> |
| Rose-breasted | <i>Pheucticus ludovicianus</i> |
| Grouse, Ruffed | <i>Bonasa umbellus</i> |
| Sharp-tailed | <i>Tympanuchus phasianellus</i> |
| Spruce | <i>Canachites canadensis</i> |
| Gull, Herring | <i>Larus argentatus</i> |
| Laughing | <i>Leucophaeus atricilla</i> |
| Ring-billed | <i>Larus delawarensis</i> |
| Harrier, Northern | <i>Circus hudsonius</i> |

BIRDS

| Common Name | Scientific Name |
|----------------------------|---------------------------------|
| Hawk, Broad-winged | <i>Buteo platypterus</i> |
| Cooper's | <i>Accipiter cooperii</i> |
| Red-shouldered | <i>Buteo lineatus</i> |
| Red-tailed | <i>Buteo jamaicensis</i> |
| Sharp-shinned | <i>Accipiter striatus</i> |
| Heron, Great Blue | <i>Ardea herodias</i> |
| Green | <i>Butorides virescens</i> |
| Little Blue | <i>Egretta caerulea</i> |
| Tricolored | <i>Egretta tricolor</i> |
| Hummingbird, Ruby-throated | <i>Archilochus colubris</i> |
| Jay, Blue | <i>Cyanocitta cristata</i> |
| Canada | <i>Perisoreus canadensis</i> |
| Junco, Dark-eyed | <i>Junco hyemalis</i> |
| Kestrel, American | <i>Falco sparverius</i> |
| Killdeer | <i>Charadrius vociferus</i> |
| Kingbird, Eastern | <i>Tyrannus tyrannus</i> |
| Western | <i>Tyrannus verticalis</i> |
| Kingfisher, Belted | <i>Megaceryle alcyon</i> |
| Kinglet, Golden-crowned | <i>Regulus satrapa</i> |
| Ruby-crowned | <i>Corthylio calendula</i> |
| Kite, Mississippi | <i>Ictinia mississippiensis</i> |
| Lark, Horned | <i>Eremophila alpestris</i> |
| Loon, Common | <i>Gavia immer</i> |
| Mallard | <i>Anas platyrhynchos</i> |
| Martin, Purple | <i>Progne subis</i> |
| Meadowlark, Eastern | <i>Sturnella magna</i> |
| Western | <i>Sturnella neglecta</i> |
| Merganser, Common | <i>Mergus merganser</i> |
| Hooded | <i>Lophodytes cucullatus</i> |
| Red-breasted | <i>Mergus serrator</i> |
| Merlin | <i>Falco columbarius</i> |
| Mockingbird, Northern | <i>Mimus polyglottos</i> |
| Nighthawk, Common | <i>Chordeiles minor</i> |
| Night-Heron, Black-crowned | <i>Nycticorax nycticorax</i> |
| Yellow-crowned | <i>Nyctanassa violacea</i> |
| Nuthatch, Red-breasted | <i>Sitta canadensis</i> |
| White-breasted | <i>Sitta carolinensis</i> |
| Oriole, Baltimore | <i>Icterus galbula</i> |
| Orchard | <i>Icterus spurius</i> |
| Osprey | <i>Pandion haliaetus</i> |

| Common Name | Scientific Name |
|---------------------------|-----------------------------------|
| Ovenbird | <i>Seiurus aurocapilla</i> |
| Owl, Barn | <i>Tyto alba</i> |
| Barred | <i>Strix varia</i> |
| Great Gray | <i>Strix nebulosa</i> |
| Great Horned | <i>Bubo virginianus</i> |
| Long-eared | <i>Asio otus</i> |
| Northern Saw-whet | <i>Aegolius acadicus</i> |
| Short-eared | <i>Asio flammeus</i> |
| Parakeet, Monk | <i>Myiopsitta monachus</i> |
| Partridge, Gray | <i>Perdix perdix</i> |
| Parula, Northern | <i>Setophaga americana</i> |
| Pelican, American White | <i>Pelecanus erythrorhynchos</i> |
| Phalarope, Wilson's | <i>Phalaropus tricolor</i> |
| Pheasant, Ring-necked | <i>Phasianus colchicus</i> |
| Phoebe, Eastern | <i>Sayornis phoebe</i> |
| Pigeon, Rock | <i>Columba livia</i> |
| Pintail, Northern | <i>Anas acuta</i> |
| Plover, Piping | <i>Charadrius melodus</i> |
| Prairie-Chicken, Greater | <i>Tympanuchus cupido</i> |
| Rail, Black | <i>Laterallus jamaicensis</i> |
| King | <i>Rallus elegans</i> |
| Virginia | <i>Rallus limicola</i> |
| Yellow | <i>Coturnicops noveboracensis</i> |
| Raven, Common | <i>Corvus corax</i> |
| Redhead | <i>Aythya americana</i> |
| Redstart, American | <i>Setophaga ruticilla</i> |
| Robin, American | <i>Turdus migratorius</i> |
| Sandpiper, Spotted | <i>Actitis macularius</i> |
| Upland | <i>Bartramia longicauda</i> |
| Sapsucker, Yellow-bellied | <i>Sphyrapicus varius</i> |
| Scaup, Greater | <i>Aythya marila</i> |
| Lesser | <i>Aythya affinis</i> |
| Screech-Owl, Eastern | <i>Megascops asio</i> |
| Shoveler, Northern | <i>Spatula clypeata</i> |
| Shrike, Loggerhead | <i>Lanius ludovicianus</i> |
| Northern | <i>Lanius borealis</i> |
| Siskin, Pine | <i>Spinus pinus</i> |
| Snipe, Wilson's | <i>Gallinago delicata</i> |
| Sora | <i>Porzana carolina</i> |

BIRDS

| Common Name | Scientific Name |
|-----------------------|-----------------------------------|
| Sparrow, Bachman's | <i>Peucaea aestivalis</i> |
| Chipping | <i>Spizella passerina</i> |
| Clay-colored | <i>Spizella pallida</i> |
| Eurasian Tree | <i>Passer montanus</i> |
| Field | <i>Spizella pusilla</i> |
| Grasshopper | <i>Ammodramus savannarum</i> |
| Henslow's | <i>Centronyx henslowii</i> |
| House | <i>Passer domesticus</i> |
| Lark | <i>Chondestes grammacus</i> |
| LeConte's | <i>Ammospiza leconteii</i> |
| Lincoln's | <i>Melospiza lincolni</i> |
| Savannah | <i>Passerculus sandwichensis</i> |
| Song | <i>Melospiza melodia</i> |
| Swamp | <i>Melospiza georgiana</i> |
| Vesper | <i>Poocetes gramineus</i> |
| White-throated | <i>Zonotrichia albicollis</i> |
| Starling, European | <i>Sturnus vulgaris</i> |
| Stilt, Black-necked | <i>Himantopus mexicanus</i> |
| Swallow, Bank | <i>Riparia riparia</i> |
| Barn | <i>Hirundo rustica</i> |
| Cliff | <i>Petrochelidon pyrrhonota</i> |
| Northern Rough-winged | <i>Stelgidopteryx serripennis</i> |
| Tree | <i>Tachycineta bicolor</i> |
| Swan, Mute | <i>Cygnus olor</i> |
| Trumpeter | <i>Cygnus buccinator</i> |
| Swift, Chimney | <i>Chaetura pelagica</i> |
| Tanager, Scarlet | <i>Piranga olivacea</i> |
| Summer | <i>Piranga rubra</i> |
| Teal, Blue-winged | <i>Spatula discors</i> |
| Green-winged | <i>Anas crecca</i> |
| Tern, Black | <i>Chlidonias niger</i> |
| Caspian | <i>Hydroprogne caspia</i> |
| Common | <i>Sterna hirundo</i> |
| Forster's | <i>Sterna forsteri</i> |
| Least | <i>Sternula antillarum</i> |
| Thrasher, Brown | <i>Toxostoma rufum</i> |
| Thrush, Hermit | <i>Catharus guttatus</i> |
| Swainson's | <i>Catharus ustulatus</i> |
| Wood | <i>Hylocichla mustelina</i> |
| Titmouse, Tufted | <i>Baeolophus bicolor</i> |
| Towhee, Eastern | <i>Pipilo erythrophthalmus</i> |
| Turkey, Wild | <i>Meleagris gallopavo</i> |

| Common Name | Scientific Name |
|------------------------|--------------------------------|
| Veery | <i>Catharus fuscescens</i> |
| Vireo, Bell's | <i>Vireo bellii</i> |
| Blue-headed | <i>Vireo solitarius</i> |
| Philadelphia | <i>Vireo philadelphicus</i> |
| Red-eyed | <i>Vireo olivaceus</i> |
| Warbling | <i>Vireo gilvus</i> |
| White-eyed | <i>Vireo griseus</i> |
| Yellow-throated | <i>Vireo flavifrons</i> |
| Vulture, Black | <i>Coragyps atratus</i> |
| Turkey | <i>Cathartes aura</i> |
| Warbler, Bay-breasted | <i>Setophaga castanea</i> |
| Black-and-white | <i>Mniotilta varia</i> |
| Blackburnian | <i>Setophaga fusca</i> |
| Black-throated Blue | <i>Setophaga caerulescens</i> |
| Black-throated Green | <i>Setophaga virens</i> |
| Blue-winged | <i>Vermivora cyanoptera</i> |
| Canada | <i>Cardellina canadensis</i> |
| Cape May | <i>Setophaga tigrina</i> |
| Cerulean | <i>Setophaga cerulea</i> |
| Chestnut-sided | <i>Setophaga pensylvanica</i> |
| Connecticut | <i>Oporornis agilis</i> |
| Golden-winged | <i>Vermivora chrysoptera</i> |
| Hooded | <i>Setophaga citrina</i> |
| Kentucky | <i>Geothlypis formosa</i> |
| Kirtland's | <i>Setophaga kirtlandii</i> |
| Magnolia | <i>Setophaga magnolia</i> |
| Mourning | <i>Geothlypis philadelphia</i> |
| Nashville | <i>Leiothlypis ruficapilla</i> |
| Palm | <i>Setophaga palmarum</i> |
| Pine | <i>Setophaga pinus</i> |
| Prairie | <i>Setophaga discolor</i> |
| Prothonotary | <i>Protonotaria citrea</i> |
| Tennessee | <i>Leiothlypis peregrina</i> |
| Worm-eating | <i>Helmitheros vermivorum</i> |
| Wilson's | <i>Cardellina pusilla</i> |
| Yellow | <i>Setophaga petechia</i> |
| Yellow-rumped | <i>Setophaga coronata</i> |
| Yellow-throated | <i>Setophaga dominica</i> |
| Waterthrush, Louisiana | <i>Parkesia motacilla</i> |
| Northern | <i>Parkesia noveboracensis</i> |
| Waxwing, Bohemian | <i>Bombycilla garrulus</i> |
| Cedar | <i>Bombycilla cedrorum</i> |

BIRDS

| Common Name | Scientific Name |
|---------------------------------|-----------------------------------|
| Whip-poor-will, Eastern | <i>Antrostomus vociferus</i> |
| Whistling-Duck, Black-necked | <i>Dendrocygnus autumnalis</i> |
| Fulvous | <i>Dendrocygna bicolor</i> |
| Wigeon, American | <i>Mareca americana</i> |
| Woodcock, American | <i>Scolopax minor</i> |
| Woodpecker, American Three-toed | <i>Picoides dorsalis</i> |
| Black-backed | <i>Picoides arcticus</i> |
| Downy | <i>Dryobates pubescens</i> |
| Hairy | <i>Dryobates villosus</i> |
| Pileated | <i>Dryocopus pileatus</i> |
| Red-bellied | <i>Melanerpes carolinus</i> |
| Red-headed | <i>Melanerpes erythrocephalus</i> |
| Wood-Pewee, Eastern | <i>Contopus virens</i> |
| Western | <i>Contopus sordidulus</i> |
| Wren, Bewick's | <i>Thryomanes bewickii</i> |
| Carolina | <i>Thryothorus ludovicianus</i> |
| House | <i>Troglodytes aedon</i> |
| Marsh | <i>Cistothorus palustris</i> |
| Sedge | <i>Cistothorus stellaris</i> |
| Winter | <i>Troglodytes hiemalis</i> |
| Yellowlegs, Lesser | <i>Tringa melanoleuca</i> |
| Yellowthroat, Common | <i>Geothlypis trichas</i> |

OTHER ANIMALS

| Common Name | Scientific Name |
|--------------------|-------------------------------|
| ant | Formicidae |
| beetle | Coleoptera |
| caterpillar, hairy | Lepidoptera |
| caterpillar, tent | Lasiocampidea |
| crayfish | <i>Cambarus</i> spp. |
| crustacean | Crustacea |
| deer mice | <i>Peromyscus maniculatus</i> |
| deer, white-tailed | <i>Odocoileus virginianus</i> |
| earthworm | Annelida |
| fly | Diptera |
| goby, round | <i>Neogobius melanostomus</i> |
| grasshopper | Orthoptera |
| millipede | Myriopoda |
| moths | Lepidoptera |
| mullosk | Molloska |
| rabbit | Leporidae |
| raccoon | <i>Procyon lotor</i> |
| shad, gizzard | <i>Dorosoma cepedianum</i> |
| shrew | Soricidae |
| skunk, striped | <i>Mephitis mephitis</i> |
| snail | Gastropoda |
| snake | Serpentes |
| spider | Araneae |
| squirrel | Sciuridae |
| vole | <i>Microtus</i> spp. |
| worm | Annelida |

PLANTS

| Common Name | Scientific Name |
|-----------------------|------------------------------|
| algae | Chlorophyta |
| cattail | <i>Typha</i> spp. |
| corn | <i>Zea</i> spp. |
| coyote brush | <i>Baccharis pilularis</i> |
| dandelion | <i>Taraxacum</i> spp. |
| grape vine | <i>Vitis</i> spp. |
| grass | Poaceae |
| lichen | Mycophyta |
| lily pads | Nymphaeaceae |
| moss | Bryophyta |
| mullein | <i>Verbascum</i> spp. |
| multiflora rose | <i>Rosa multiflora</i> |
| pokeweed | <i>Phytolacca americana</i> |
| wild raspberry | <i>Rubus</i> spp. |
| soapwort | <i>Saponaria</i> spp. |
| soybean | <i>Glycine</i> spp. |
| sunflower | <i>Helianthus</i> spp. |
| thistle | Asteraceae |
| elm, American | <i>Ulmus americana</i> |
| sycamore, American | <i>Platanus occidentalis</i> |
| cypress, bald | <i>Taxodium distichum</i> |
| walnut, eastern black | <i>Juglans nigra</i> |
| elder, box | <i>Acer negundo</i> |
| dogwood | <i>Cornus</i> spp. |
| hemlock, eastern | <i>Tsuga canadensis</i> |
| cedar, eastern red | <i>Juniperus virginiana</i> |
| redbud, eastern | <i>Cercis canadensis</i> |
| pine | <i>Pinus</i> spp. |
| spruce | <i>Picea</i> spp. |
| tulip tree | <i>Liriodendron</i> spp. |
| willow | <i>Salix</i> spp. |

A Breeding Bird Atlas is a massive feat of birder will and skill where surveyors inventory all bird species that breed in a state or province. It takes years to complete, as surveyors are required to visit pre-selected sampling areas, called blocks, that are spread across the entire state or province to fully document and map the distributions of breeding birds. This publication provides a brief history of Breeding Bird Atlases, goals specific to Indiana's Atlases, methods, a summary of results by species, and a discussion. Tables detailing regional atlas frequencies and their relative abundances from the federal Breeding Bird Survey and photos taken by Indiana birders are presented for 201 birds with 198 maps displaying species distributions.

The second Indiana Breeding Bird Atlas is an invaluable resource that provides a deep understanding of how breeding bird distributions change over time. It documents the changes in how birds interact with the environment, identifies unusual habitats and locations supporting rare species, and measures shifts in land use over time, as birds are excellent indicators of environmental change. Accordingly, it is an important resource for any conservationist in Indiana.