



WILDLIFE RESTORATION GRANT PROJECT REPORT—INDIANA

Movement and Harvest of Local Mallards from Urban Environments of Indiana



Mallard hen being fitted with a leg band. (Photo by Renee Knight)

CURRENT STATUS

First year of a four-year project

FUNDING SOURCES AND PARTNERS

Wildlife Restoration Grant Program (W49R1)
Franklin College
Branigin Foundation

PROJECT PERSONNEL

Dr. Benjamin O’Neal, Franklin College
Seth Eckert, Franklin College
Andrew Kammerer, Franklin College
Hannah McIntosh, Franklin College
Wanda Gaines, Franklin College

BACKGROUND AND OBJECTIVES

Land cover analyses indicate that the area of water bodies in the developed regions of the Midwest has increased in recent decades. Collectively, these water

bodies provide a meaningful amount of habitat for generalist species such as mallards (*Anas platyrhynchos*). While aquatic habitats have been increasing in states like Indiana, the acreage of grass cover in the primary region for duck reproduction (i.e., the Prairie Pothole region of the northern plains) has decreased, particularly in recent years, as acreage enrolled in U.S. Department of Agriculture (USDA) farm bill conservation programs has plummeted. As such, the mallards produced in developed areas (hereafter “urban mallards”) may play an increasingly significant role, both ecologically and recreationally.

To begin to understand the ecological impact of this population segment, we have to determine the extent of its members’ seasonal movements outside their natal areas. At present, there is little information on whether urban mallards migrate and, if so, how far. The extent of these seasonal movements and the type of habitat occupied (e.g., urban vs. rural) can have signifi-



Dr. Ben O'Neal and his field technicians, Seth Eckert and Andrew Kammerer of Franklin College, collect morphometric data on urban mallards in Morgan County. (Photo by Renee Knight)

cant effects on: 1) the extent to which they consume resources in other regions; 2) their capacity to spread disease; and 3) their vulnerability to harvest. Regardless of whether mallards that hatch in developed areas migrate, they may still spend time in areas outside city limits. As such, they may at times be available for hunter harvest. If developed areas do produce meaningful numbers of mallards, and if these birds spend substantial amounts of time outside city limits, they may contribute a considerable amount to the overall harvest in a state like Indiana.

This project will provide data on the extent to which urban mallards are harvested within Indiana. More broadly, it could help inform population models used by the Upper Mississippi River Great Lakes Region Joint Venture, as well as harvest objectives set at various regulatory levels. Results from this study will be combined with results from a similar urban study in Illinois to increase sample size and corresponding scope of inference. This project will also support educational

development of undergraduate researchers at Franklin College.

The objectives of this project are to:

1. Examine the movements of mallards that breed or hatch in developed areas in central Indiana,
2. assess the extent to which urban mallards contribute to overall mallard harvest in Indiana, and
3. examine the spatial and environmental characteristics of the areas in which urban mallards are harvested relative to the area in which they were banded.

METHODS

We are using a leg-banding approach to gain information regarding the movement and harvest rates of mallards from developed settings. We seek to capture and band at least 2,000 mallards over a 3-year period. We are focusing our trapping and banding in central Indiana. To find locations with concentrations of mallards, we employ extensive scouting throughout spring and summer. We then deploy bait and surveillance cameras to further concentrate birds and habituate them to future trapping sites. If adequate birds gather over time, we deploy Y-confusion traps, which are walk-in live traps that encourage ducks to approach bait piles through one-way funnels that prevent their escape. A short time later, we retrieve birds and determine their sex and age class based on diagnostic plumage patterns.

Birds are aged as local (unflighted), hatch year (hatched in that year), or after hatch year (at least 1-year-old). We then record key measurements from each bird that serve as an index of general size and condition (head/culmen length, tarsus length, wing chord and mass). These variables allow us to compare urban mallards with other groups of mallards. After birds are fitted with a band, they are released. A portion of these birds (~10%) will later be harvested by hunters who are asked to report the unique band number they harvested, the time and date, and location harvested. That information is archived by the U.S. Geological Survey's Bird Banding Lab, which will send us ongoing reports regarding band-return data. We can then analyze the locations of any band returns to determine the extent to which mallards reared in developed contexts move outside of the habitats in which they were hatched. We will look for evidence of northward molt migration and/or southward fall/winter migration. We will also examine the spatial and environmental characteristics of the areas in which individual mallards are harvested to see if any patterns exist between the characteristics of their summer habitat (i.e., urban) and their fall/winter habitat.

This project actively involves undergraduate students in the development of methodologies, execution of the project, data collection and analysis, and interpretation and communication of results. This type of experience is intended to help train future biologists for effective service in the field.



Mallards interact with a Y-confusion trap in Hamilton County. (Photo by Ben O'Neal)

PROGRESS TO DATE

During summer 2016, we successfully banded 600 mallards. That sample included the following distribution of ages: 36 “local,” 140 “hatch year,” 412 “after hatch year,” and 12 “unknown.” It included 223 females and 377 males. We successfully trapped mallards at 30 different locations in seven different counties (Hamilton, Madison, Hendricks, Marion, Hancock, Morgan and Johnson). Morphometric analysis yielded the following means (SD): Tarsus: 57.6 cm (3.4); Wing chord: 26.2 cm (2.3); Head+culmen: 11.0 cm (0.6); Mass: 1,167 g (220.5). Having an extensive set of field sites enabled us to interact extensively with the public and communicate the importance of our work and of urban wildlife in general. We actively engaged four different undergraduate students through this project. All of these students are proceeding with studies and careers in wildlife biology.

COST: \$195,162 FOR THE COMPLETE FOUR-YEAR PROJECT



Hannah McIntosh of Franklin College bands a mallard in Johnson County. (Photo by Ben O'Neal)