Appendix O. Full Species Survey Results

Indiana Department of Natural Resources

Section I.

Questions 1-3 excluded from this report

Section II. Information on SGCN and their habitats in Indiana

4. In which of the following taxonomic groups do you consider yourself knowledgeable to provide relevant species and habitat information for SGCN? (Check all that apply)

Taxa	Number (N)
Mammals	44
Birds	53
Fish	46
Amphibians	23
Reptiles	20
Mollusks	18

5. Select the species from the following SGCN list for which you consider yourself knowledgeable to provide relevant species population and habitat information. For each individual species you select, you will be asked to respond to 23 related questions. (Check all that apply)

Taxa	Group	Scientific Name	Common Name	Federal Status	State Status	Number
Mammals	Bats	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	NA	SC	5
		Lasionycteris noctivagans	Silver-haired Bat	NA	SC	5
		Lasiurus borealis	Red Bat	NA	SC	11
		Lasiurus cinereus	Hoary Bat	NA	SC	7
		Myotis austroriparius	Southeastern Myotis	NA	SC	4
		Myotis grisescens	Gray Myotis	FE	SE	5
		Myotis leibii	Eastern Small-footed Myotis	NA	SC	5
		Myotis lucifugus	Little Brown Myotis	NA	SC	16
		Myotis septentrionalis	Northern Long-eared Myotis	NA	SC	14
		Myotis sodalis	Indiana Myotis	FE	SE	23

Taxa	Group	Scientific Name	Common Name	Federal Status	State Status	Number
		Nycticeius humeralis	Evening Bat	NA	SE	5
		Perimyotis subflavus	Tri-colored Bat	NA	SC	11
	Mustelids	*Mustela nivalis*	Least Weasel	NA	SC	7
		Taxidea taxus	Badger	NA	SC	6
	Rabbits	*Sylvilagus aquaticus*	Swamp Rabbit	NA	SE	9
	Rodents	*Geomys bursarius*	Plains Pocket Gopher	NA	SC	9
		Neotoma magister	Allegheny Woodrat	NA	SE	11
		Spermophilus franklinii	Franklin's Ground Squirrel	NA	SE	10
	Shrews & Moles	*Condylura cristata*	Star-nosed Mole	NA	SC	4
		Sorex fumeus	Smoky Shrew	NA	SC	4
		Sorex hoyi	Pygmy Shrew	NA	SC	5
Birds	Cranes	*Grus americana*	Whooping Crane	FE	SE	10
		Grus canadensis	Sandhill Crane	NA	SC	17
	Herons, Egrets, & Bitterns	*Ardea alba*	Great Egret	NA	SC	9
		Botaurus lentiginosus	American Bittern	NA	SE	5
		Ixobrychus exilis	Least Bittern	NA	SE	7
		Nyctanassa violacea	Yellow-crowned Night-heron	NA	SE	5
		Nycticorax	Black-crowned Night-heron	NA	SE	6
	Nightjars	*Caprimulgus vociferus*	Eastern Whip-poor-will	NA	SC	7
		Chordeiles minor	Common Nighthawk	NA	SC	8
	Rails	*Gallinula chloropus*	Common Moorhen	NA	SE	3
		Laterallus jamaicensis	Black Rail	NA	SE	3
		Rallus elegans	King Rail	NA	SE	6
		Rallus limicola	Virginia Rail	NA	SE	5
	Raptors	*Accipiter striatus*	Sharp-shinned Hawk	NA	SC	5
		Asio flammeus	Short-eared Owl	NA	SE	5
		Buteo lineatus	Red-shouldered Hawk	NA	SC	11
		Buteo platypterus	Broad-winged Hawk	NA	SC	7
		Circus cyaneus	Northern Harrier	NA	SE	5
		Falco peregrinus	Peregrine Falcon	NA	SC	7
		Haliaeetus leucocephalus	Bald Eagle	NA	SC	10
		Ictinia mississippiensis	Mississippi Kite	NA	SC	3
		Pandion haliaetus	Osprey	NA	SE	5

Taxa	Group	Scientific Name	Common Name	Federal Status	State Status	Number
		Tyto alba	Barn Owl	NA	SE	4
	Shorebirds	*Arenaria interpres*	Ruddy Turnstone	NA	SC	1
		Bartramia longicauda	Upland Sandpiper	NA	SE	4
		Charadrius melodus	Piping Plover	FE	SE	4
		Limnodromus griseus	Short-billed Dowitcher	NA	SC	4
		Phalaropus tricolor	Wilson's Phalarope	NA	SC	3
		Pluvialis dominica	American Golden-plover	NA	SC	8
		Tringa melanoleuca	Greater Yellowlegs	NA	SC	5
		Tringa solitaria	Solitary Sandpiper	NA	SC	6
		Tryngites subruficollis	Buff-breasted Sandpiper	NA	SC	3
		Ammodramus henslowii	Henslow's Sparrow	NA	SE	16
		Cistothorus palustris	Marsh Wren	NA	SE	6
		Cistothorus platensis	Sedge Wren	NA	SE	7
		Dendroica cerulea	Cerulean Warbler	NA	SE	10
		Dendroica kirtlandii	Kirtland's Warbler	FE	SE	3
		Helmitheros vermivorum	Worm-eating Warbler	NA	SC	4
		Lanius ludovicianus	Loggerhead Shrike	NA	SE	6
		Mniotilta varia	Black-and-white Warbler	NA	SC	4
		Sturnella neglecta	Western Meadowlark	NA	SC	1
		Vermivora chrysoptera	Golden-winged Warbler	NA	SE	3
		Wilsonia citrina	Hooded Warbler	NA	SC	8
		Xanthocephalus xanthocephalus	Yellow-headed Blackbird	NA	SE	2
	Terns	*Chlidonias niger*	Black Tern	NA	SE	4
		Sternula antillarum	Least Tern	FE	SE	9
	Waterfowl	*Cygnus buccinator*	Trumpeter Swan	NA	SE	5
Fish	Catfish	*Noturus stigmosus*	Northern Madtom	NA	SC	4
	Cavefish	*Amblyopsis spelaea*	Northern Cavefish	NA	SE	4
	Cyprinids	*Clinostomus elongatus*	Redside Dace	NA	SE	9
		Hybopsis amnis	Pallid Shiner	NA	SE	1
		Notropis anogenus	Pugnose Shiner	NA	SC	1
		Notropis dorsalis	Bigmouth Shiner	NA	SC	1
		Rhinichthys cataractae	Longnose Dace	NA	SC	4
	Darters	*Ammocrypta clara*	Western Sand Darter	NA	SC	3
		Etheostoma maculatum	Spotted Darter	NA	SC	5

Taxa	Group	Scientific Name	Common Name	Federal Status	State Status	Number
		Etheostoma proeliare	Cypress Darter	NA	SC	3
		Etheostoma tippecanoe	Tippecanoe Darter	NA	SC	4
		Etheostoma variatum	Variegate Darter	NA	SE	4
		Percina copelandi	Channel Darter	NA	SE	4
		Percina evides	Gilt Darter	NA	SE	3
	Lampreys	*Ichthyomyzon fossor*	Northern Brook Lamprey	NA	SE	4
	Pikes	*Esox masquinongy ohioensis*	Ohio River Muskellunge	NA	SC	4
	Salmonids	*Coregonus artedi*	Cisco	NA	SC	13
		Coregonus clupeaformis	Lake Whitefish	NA	SC	3
	Sculpins	*Cottus cognatus*	Slimy Sculpin	NA	SC	6
	Sturgeons	*Acipenser fulvescens*	Lake Sturgeon	NA	SE	11
	Suckers	*Catostomus catostomus*	Longnose Sucker	NA	SC	2
		Moxostoma valenciennesi	Greater Redhorse	NA	SE	8
	Pygmy Sunfish	*Elassoma zonatum*	Banded Pygmy Sunfish	NA	SC	3
	Sunfish	*Lepomis symmetricus*	Bantam Sunfish	NA	SE	3
	Trout-perches	*Percopsis omiscomaycus*	Trout-perch	NA	SC	4
Amphibians	Aquatic Salamanders	*Cryptobranchus alleganiensis*	Hellbender	NA	SE	5
		Necturus maculosus	Common Mudpuppy	NA	SC	3
	Frogs	*Acris crepitans*	Northern Cricket Frog	NA	SC	7
		Lithobates areolatus	Crawfish Frog	NA	SE	8
		Lithobates blairi	Plains Leopard Frog	NA	SE	7
		Lithobates pipiens	Northern Leopard Frog	NA	SC	7
	Salamanders	*Ambystoma barbouri*	Streamside Salamander	NA	SC	3
		Ambystoma laterale	Blue-spotted Salamander	NA	SC	8
		Ambystoma talpoideum	Mole Salamander	NA	SE	3
		Aneides aeneus	Green Salamander	NA	SE	4
		Hemidactylium scutatum	Four-toed Salamander	NA	SC	6
		Pseudotriton ruber	Red Salamander	NA	SE	2
Reptiles	Snakes	*Agkistrodon piscivorus*	Cottonmouth	NA	SE	5
		Cemophora coccinea	Scarletsnake	NA	SE	2

Taxa	Group	Scientific Name	Common Name	Federal Status	State Status	Number
		Clonophis kirtlandii	Kirtland's Snake	NA	SE	5
		Crotalus horridus	Timber Rattlesnake	NA	SE	4
		Farancia abacura	Red-bellied Mudsnake	NA	SC	2
		Nerodia erythrogaster neglecta	Copper-bellied Watersnake	FT	SE	5
		Opheodrys aestivus	Rough Greensnake	NA	SC	3
		Opheodrys vernalis	Smooth Greensnake	NA	SE	3
		Sistrurus catenatus	Massasauga	FC	SE	5
		Tantilla coronata	Southeastern Crowned Snake	NA	SE	3
		Thamnophis butleri	Butler's Gartersnake	NA	SE	0
		Thamnophis proximus	Western Ribbonsnake	NA	SC	2
	Turtles	*Clemmys guttata*	Spotted Turtle	NA	SE	5
		Emydoidea blandingii	Blanding's Turtle	NA	SE	7
		Kinosternon subrubrum	Eastern Mud Turtle	NA	SE	2
		Macrochelys temminckii	Alligator Snapping Turtle	NA	SE	2
		Pseudemys concinna	River Cooter	NA	SE	1
		Terrapene carolina	Eastern Box Turtle	NA	SC	9
		Terrapene ornata	Ornate Box Turtle	NA	SE	7
Mollusks	Snails	*Campeloma decisum*	Pointed Campeloma	NA	SC	1
		Lymnaea stagnalis	Swamp Lymnaea	NA	SC	1
	Mussels	*Cyprogenia stegaria*	Fanshell	FE	SE	3
		Epioblasma obliquata perobliqua	White Catspaw	FE	SE	2
		Epioblasma torulosa rangiana	Northern Riffleshell	FE	SE	3
		Epioblasma torulosa torulosa	Tubercled Blossom	FE	SE	1
		Epioblasma triquetra	Snuffbox	FE	SE	5
		Fusconaia subrotunda	Longsolid	NA	SE	1
		Lampsilis abrupta	Pink Mucket	FE	SE	1
		Lampsilis fasciola	Wavyrayed Lampmussel	NA	SC	6
		Obovaria subrotunda	Round Hickorynut	NA	SE	2
		Plethobasus cicatricosus	White Wartyback	FE	SE	0
		Plethobasus cooperianus	Orangefoot Pimpleback	FE	SE	0
		Plethobasus cyphyus	Sheepnose	FE	SE	3

Taxa	Group	Scientific Name	Common Name	Federal Status	State Status	Number
		Pleurobema clava	Clubshell	FE	SE	5
		Pleurobema cordatum	Ohio Pigtoe	NA	SC	0
		Pleurobema plenum	Rough Pigtoe	FE	SE	0
		Pleurobema rubrum	Pyramid Pigtoe	NA	SE	0
		Potamilus capax	Fat Pocketbook	FE	SE	4
		Ptychobranchus fasciolaris	Kidneyshell	NA	SC	2
		Quadrula cylindrica cylindrica	Rabbitsfoot	FT	SE	5
		Simpsonaias ambigua	Salamander Mussel	NA	SC	2
		Toxolasma lividus	Purple Lilliput	NA	SC	1
		Venustaconcha ellipsiformis	Ellipse	NA	SC	3
		Villosa fabalis	Rayed Bean	FE	SE	1
		Villosa lienosa	Little Spectaclecase	NA	SC	0

6. Identify species that you would suggest be removed from or added to the State Endangered or Special Concern categories in Indiana and briefly explain your reasoning. (Check all that apply) (Note: State Endangered fish and wildlife species are listed through a formal process that includes statutory requirements and administrative rule procedures. Species must meet criteria under IC 14-22-34. Information on population, distribution, habitat needs, limiting factors, and other biological and ecological data for species for possible listing as Endangered or Special Concern are reviewed by Technical Advisory Committees (TACs) periodically. The TACs make recommendations for listings, which then go through the administrative rule process. Suggested additions/removals with sufficient reasoning will be forwarded onto the TACs.)

I would suggest removing the following species and my reasoning and the data I use to support my suggestion are: (N=12)	
Badgers	The species is marginal in Indiana but stable throughout its core range. As such there is no real value in protecting and managing the species.
Badger	The species is primarily a prarie/Plains species which reaches its range limits in Indiana. The sporadic occurances encountered in Indiana appear to be the result of dispersal of individuals from the core range. The species is not restricted to a very rare habitat, which would warrant state-level protections
Bald Eagle	There are over 200 nesting pairs according to data provided by DNR. It has been removed from Federal Endangered list and is considered a nuisance in some states.
Bald Eagle, Osprey	Nesting is becoming a regular occurrence in east central Indiana.
Cypress Darter, Western Sand Darter, Variegate Darter, Northern Cavefish,	Species on the list should not include those species on the periphery of their range, but rather focus on species that are declining. Stable populations that are limited in number should be considered as threatened. The list should also be reviewed with respect to recent information. Limited funding and lack of Non-game grants has virtually ended research in the state and the investigation of these types of questions.

Bigmouth Shiner, Tippecanoe Darter	
Evening Bats	Evening bats are extremely common throughout the south east. They are not listed in any other state. Indiana is the periphery of its range and Indiana simply doesn't have high populations because Indiana doesn't have the ideal habitat. Throughout the S it is one of the most common species encountered. We should not expect populations to be high along the periphery of the range, as such there is no reason to list the species when populations are exactly where we expect them to be. If the species was i decline or had threats in other portions of their range then the Indiana populations would have greater ecological importance and may warrant listing, but that is not the case and there are no substantial threats for the species now or on the horizon. Evening bats may actually be the one eastern bat species that is not facing specific and direct ecological challenges. They are not affected by WNS and are not likely to based on ecology and range. They are also not impacted by wind energy. I sincerely think that listing this otherwise very common species in Indiana makes Indiana look silly. At best they should be a species of Special Concern - They are certainly more common range wide than Raf bats or SE bats which are listed as Special Concern.
Lithobates Pipiens, Northern Leopard Frog	I've only been in Indiana for a couple of years but this species is one of the most common species that I have encountered. Most of my research is conducted around West Lafayette and focused on larvae. In the ponds that I have investigated and that are uitable for leopard frog reproduction, I have seen healthy populations.
Myotis austroripariaus	At what point does a species that has not been recorded in the state begin to be considered accidental? I believe the last record of austro was in 1977.
Northern Harrier	Although they do not commonly nest in Indiana, they are quite common in other seasons, and are common nesters in other states
Peregrine Falcon	This species has exceeded recovery goals in the Midwest by a considerable number of pairs. The current population may be almost double what the historical population was in the Midwest. As a top predator this species is supposed to be rare and as long a its population is secure, there is nothing wrong with being rare. Recovery folks need to accept the current population and quit placing new nest boxes up in every power plant and grain elevator along the Great lakes and major rivers as is being done in Wisconsin and other Midwest states. The prey items of Peregrines breeding just northeast of Indiana is sobering to bird conservationists and included many woodcock, cuckoos, and other species of conservation concern. Enough is enough. The species is secure and should be delisted.
Sandhill Cranes	We have a consistently stable or increasing population. Cranes are highly adaptable. The majority of the population does not breed or over-winter in IN. Their congregation during migration is not limited to J-P FWA but also includes Muscatatuck NWR and many privately owned agricultural areas adjacent to riparian areas. I support evaluating the possibility of a hunting season for this species.
Scarletsnake	Their presence in the state hasn't been documented in Indiana since 1957 according to the Natural Heritage Database to my knowledge. Tantilla coronata could be removed from occurring in Indiana too since it hasn't been sighted since 1988. However, given he secretive nature of the species, I suppose it is possible they may still occur in Indiana given the discovery of mole salamanders in 2004. I understand including them on the list may be deemed harmless by some and provides some level of protection. However, I think it confuses people and gives them a false sense of snake diversity in the state. By definition, these both are better classified as extirpated.

I would suggest adding the following species and my reasoning and the data I use to support my suggestion are: (N=13)

Cave bats	Based on the seemingly unstoppable progression of WNS and based on the hibernacula results reported by Scott Johnson, I believe that all the cave bats should be added to the endangered list. There is a CLEAR trend that the populations of these species are declining at an amazing rate and that is the very definition of endangered. I think that Myotis septentrionalis, M. lucifugus, M. leibii, and Perimyotis subflavus all be added to endangered list. I really don't think this needs further argument, the data shows a clear and disturbing trend.
Cisco	Due to water quality and possibly global warming, the number of lakes capable of supporting cisco has declined over the decades.
Lepidopterans	Current Indiana law does not protect these animals, but there are ever increasing risks to native butterflies that are not being addressed
Little Brown Bat, Eastern Pipistrelle, and Northern Long-eared Bat	All are currently listed as species of concern. However, since the last TAC meeting additional evidence has become available which indicates these species are rapidly declining as a result of White-Nose Syndrome (WNS).
Little Brown, Northern Long-eared, and Eastern Pipistrelle Abts	These species are all listed as species of concern at present. All have suffered dramatic declines in surrounding states due to White-Nose Syndrome (WNS) and we now have evidence of similar, catastrophic declines in hibernacula of Indiana and adjacent sates.
Myotis leibii, Myotis lucifugus, Myotis septentrionalis	If these species' populations continue to decline as a result of WNS, then they may merit listing as state endangered. We have some capture and observation data to suggest that summer populations of MYSE are still stable in Indiana. However, we have little or no data on MYLU and MYLE summer populations. For MYLU, it may be easier to make a decision based on changes in wintering populations.
Northern Bobwhite; American Woodcock; Ruffed Grouse	Each of these species, though currently hunted, deserve "special concern" status. Their populations are declining and their early-successional habitats are shrinking. The Northern Bobwhite, based on the Annual Whistle Count Index, has an annual decline of5.03% over the last 10 years and 3.78% over the last 20 years. The American Woodcock, based on the Annual Singing Ground Survey, has an annual decline of 3.99% over the last 10 years, and 4.13% over the long-term study (1968-2014). The annual long-term decline in Indiana is the most severe of all the Central region states in the survey. No ruffed grouse were heard in 2013 on the annual survey and populations are projected to loose viability in the next couple years, and if trend continues, extirpation is likely. I believe listing these species is important in raising their monitoring priority and making their habitat needs a priority as well.
Paddlefish	Increase of Silver & Bighead Carp in Ohio River main stem and tribs will adversely affect the already fragile populations.
River Chub	Although, I cannot speak for other basins outside of the St. Joe River (Lake Michigan) drainage, river chub (Nocomis micropogon) are not common in the St. Joseph River basin in Indiana. Our program collects them in one tributary to the St. Joseph River Christiana Creek), but none others.
Ruffed Grouse	Decline and local extirpation have been well documented in Indiana...e.g., Backs, S.E. and J.S. Castrale. 2010. The distribution and conservation status of ruffed grouse in Indiana: 25 years of decline. Proceedings of the Indiana Academy of Science, 119():101-104.
Ruffed Grouse	The long term population trend for ruffed grouse in Indiana has reached a point where dramatic actions are needed to maintain viable populations of the species within the state. Ruffed grouse surveys conducted in 2014 by Steven Backs from the Indiana Diision of Fish and Wildlife found no drumming male ruffed grouse along 14 roadside survey routes (15 stops/route) for the second consecutive year. The 5-year (2010-2014) mean drumming index for the control routes is 0.002 drummers per stop (~1 drummer hear every 500 stops) compared to 1.16 drummers per stop during the peak years of

	1979-8, or nearly a 600 fold decrease. Currently, ruffed grouse are thought to exist in about 15 of the 43 county distribution reported in 1983. Prospects for population recvery are dismal given the continual advancement of forest succession on both public and private lands. Ruffed grouse population levels have likely dropped below “minimal viable population levels” within most of the current range in Indiana and the spcies appears destined for extirpation unless some intervention (e.g., immediate and extensive timber harvests of sufficient intensity) or sizable natural disturbances occur across the forested landscape to create early successional forest habitats. Data from the Indiana Breeding Bird Atlas (2005–2010) indicate ruffed grouse occurred in less than 1% of the priority blocks surveyed compared to 10% for the same blocks during the 1985–1990 assessment. Ruffed grouse appear to be extirpated from 15 count is where they previously occurred. This information is especially concerning considering that ruffed grouse are considered a Representative Species for Early Forest Stage Habitat Type in Indiana's State Wildlife Action Plan. Early successional habitat is required by ruffed grouse and 19 other species that are listed in the Indiana State Wildlife Action Plan. Immediate restoration of this habitat across swaths of the forested landscape in Indiana is vital
Ruffed Grouse (specifically Appalachian sub species)	35 years of population monitoring, species facing extirpation from state, is already considered extirpated from more than half of it's 1983 distribution in Indiana
Valvatidae: Valvata bicarinata (Lea 1841), Valvata lewisi (Currier 1868), Valvata tricarinata (Say 1817), Valvata sincera (Say 1824); Viviparidae: Viviparus georgianus (Lea 1824), Viviparus subpurpureus (Say 1829); Hydrobiidae: Birgella subglobosus (Say 125), Cincinnatia integra (Say 1821), Pyrgulopsis lustrica (Pilsbry 1890), Amnicola limosus (Say 1817); Pomatiopsidae: Pomatiopsis cincinnatiensis (I. Lea 1850); Pleuroceridae: Pleurocera canaliculata (Say 1821), Leptoxis praerosa (Say	These listed species were described in a recent paper by Pyron et al. (Pyron, M., J. Beugly, E. Martin, and M. Spielmann. 2008. Conservation of the freshwater gastropods of Indiana: Historic and current distributions. American Malacological Bulletin 26: 17-151. Available at http://mpyron.iweb.bsu.edu/Publications/GastropodsIndiana.pdf) as either vulnerable, imperiled, critically imperiled or possibly extinct in Indiana based on historical records and their surveys conducted at 123 sites in Indiana. However, Pyron et al. also described the global distribution of the 39 snail species known from Indiana as globally secure (G4 and G5 rankings).

1821), Lithasia obovta (Say 1829), Lymnaea stagnalis (Linnaeus 1758), Stagnicola catascopium (Say 1867), Stagnicola caperata (Say 1829), Stagnicola exilis (I. Lea 1838); Physidae: Aplexa elongata; Planorbidae: Gyralus circumstriatus (Tyron 1866), Gyralus deflectus (Say 1824) Helisoma anceps (Menke 1830), Planorbella campanulata (Say 1821), Planorbula armigera (Say 1821), Promenetus exacuous (Say 1821); Ancylidae: Ferrissia fragilis (Tyron 1863), Ferrissia paralellus (Haldeman 1841), Laevapex fuscus (C.B. Adams 1841)	

Directions:
You will be asked to respond to 23 questions for each SGCN you selected and considered yourself knowledgeable to provide relevant species population and habitat information.

Please answer the following questions for **SPECIES**.

Habitat

7. Based on your current knowledge and professional opinion, are there populations of SPECIES currently persisting in habitat in Indiana that are **not suitable** to sustain its populations over the next 10 years? (Check only one)

	Yes		No		Information is unknown		Total Responses
	%	N	%	N	%	N	
Amphibians	35.9	19	35.9	19	28.3	15	53
Birds	18.6	26	52.9	74	28.6	40	140

Fish	26.2	16	45.9	28	27.9	17	61
Mammals	28.6	36	42.9	54	28.6	36	126
Mollusks	28.6	8	39.3	11	32.1	9	28
Reptiles	52.4	33	17.5	11	30.2	19	63
Total	29.3	138	41.8	197	28.9	136	471

8. Based on your current knowledge and professional opinion, is there habitat in Indiana that is **suitable to sustain populations** of SPECIES but is **not currently occupied** by SPECIES? (Check only one)

	Yes		**No**		**Information is unknown**		**Total Responses**
	%	**N**	**%**	**N**	**%**	**N**	
Amphibians	58.5	31	15.1	8	26.4	14	53
Birds	55.3	78	16.3	23	28.4	40	141
Fish	48.3	29	21.7	13	30.0	18	60
Mammals	39.7	50	28.6	36	31.7	40	126
Mollusks	82.8	24	3.4	1	13.8	4	29
Reptiles	49.2	31	14.3	9	36.5	23	63
Total	51.5	243	19.1	90	29.4	139	472

9. How would you describe the **total amount of habitat** in Indiana available to SPECIES? (Check only one)

	Very limited (1)		**Limited (2)**		**About right (3)**		**Abundant (4)**		**Very Abundant (5)**		**Mean**	**Total Responses**
	%	N	%	N	%	N	%	N	%	N		
Amphibians	29.4	15	39.2	20	13.7	7	15.7	8	2.0	1	2.22	51
Birds	25.2	36	50.3	72	11.9	17	12.6	18	0.0	0	2.12	143
Fish	23.3	14	51.7	31	25.0	15	0.0	0	0.0	0	2.02	60
Mammals	16.3	20	34.1	42	29.3	36	17.1	21	3.3	4	2.57	123
Mollusks	15.4	4	26.9	7	46.2	12	11.5	3	0.0	0	2.54	26
Reptiles	41.9	26	48.4	30	3.2	2	6.5	4	0.0	0	1.74	62
Total	24.7	115	43.4	202	19.1	89	11.6	54	1.1	5	2.21	465

10. How would you describe the **overall quality of habitat** in Indiana where SPECIES currently occurs? (Check only one)

	Very poor (1)		**Poor (2)**		**Satisfactory (3)**		**Good (4)**		**Very Good (5)**		**Mean**	**Total Responses**
	%	N	%	N	%	N	%	N	%	N		
Amphibians	1.9	1	28.8	15	48.1	25	19.2	10	1.9	1	2.90	52
Birds	4.9	7	24.6	35	50.0	71	19.7	28	0.7	1	2.87	142
Fish	10.0	6	28.3	17	50.0	30	8.3	5	3.3	2	2.67	60
Mammals	0.0	0	23.6	29	56.1	69	16.3	20	4.1	5	3.01	123
Mollusks	7.7	2	19.2	5	57.7	15	15.4	4	0.0	0	2.81	26

Reptiles	14.5	9	37.1	23	41.9	26	6.5	4	0.0	0	2.40	62
Total	5.4	25	26.7	124	50.8	236	15.3	71	1.9	9	2.82	465

11. Based on your current knowledge and professional opinion, how would you describe the **total amount and overall quality of habitat** for SPECIES in Indiana since 2005? (Check one for each line item)

Total amount of habitat

	Increase		**About the same**		**Decrease**		**I don't know**		**Total Responses**
	%	**N**	**%**	**N**	**%**	**N**	**%**	**N**	
Amphibians	2.0	1	66.7	34	17.6	9	13.7	7	51
Birds	18.3	26	38.7	55	21.8	31	21.1	30	142
Fish	0.0	0	65.0	39	21.7	13	13.3	8	60
Mammals	5.7	7	56.9	70	22.8	28	14.6	18	123
Mollusks	0.0	0	82.1	23	3.6	1	14.3	4	28
Reptiles	3.2	2	49.2	31	44.4	28	3.2	2	63
Total	7.7	36	54.0	252	23.6	110	14.8	69	467

Overall quality of habitat

	Increase		**About the same**		**Decrease**		**I don't know**		**Total Responses**
	%	**N**	**%**	**N**	**%**	**N**	**%**	**N**	
Amphibians	0.0	0	65.3	32	22.4	11	12.2	6	49
Birds	17.1	24	37.1	52	20.7	29	25.0	35	140
Fish	1.7	1	52.5	31	33.9	20	11.9	7	59
Mammals	6.5	8	52.8	65	26.0	32	14.6	18	123
Mollusks	0.0	0	75.0	21	10.7	3	14.3	4	28
Reptiles	1.6	1	52.5	32	39.3	24	6.6	4	61
Total	7.4	34	50.7	233	25.9	119	16.1	74	460

12. Based on your current knowledge and professional opinion, how would you predict about the **total amount and overall quality of habitat** for SPECIES in Indiana over the next 10 years? (Check one for each line item)

Total amount of habitat

	Increase		**About the same**		**Decrease**		**I don't know**		**Total Responses**
	%	**N**	**%**	**N**	**%**	**N**	**%**	**N**	
Amphibians	5.8	3	61.5	32	25.0	13	7.7	4	52
Birds	12.8	18	43.3	61	27.0	38	17.0	24	141
Fish	1.7	1	58.3	35	33.3	20	6.7	4	60
Mammals	4.9	6	56.1	69	30.9	38	8.1	10	123
Mollusks	0.0	0	78.6	22	7.1	2	14.3	4	28
Reptiles	4.8	3	38.1	24	50.8	32	6.3	4	63
Total	6.6	31	52.0	243	30.6	143	10.7	50	467

Overall quality of habitat

	Increase		About the same		Decrease		I don't know		Total Responses
	%	N	%	N	%	N	%	N	
Amphibians	7.8	4	56.9	29	27.5	14	7.8	4	51
Birds	10.6	15	41.1	58	25.5	36	22.7	32	141
Fish	1.7	1	46.7	28	45.0	27	6.7	4	60
Mammals	4.9	6	52.8	65	33.3	41	8.9	11	123
Mollusks	0.0	0	75.0	21	10.7	3	14.3	4	28
Reptiles	4.9	3	42.6	26	41.0	25	11.5	7	61
Total	6.3	29	48.9	227	31.5	146	13.4	62	464

13. Are you aware of any current **habitat inventory and assessment** (i.e., monitoring of habitat quality or suitability) effort with respect to SPECIES in Indiana? (Check only one)

	Yes		No		Total Responses
	%	N	%	N	
Amphibians	37.7	20	62.3	33	53
Birds	14.2	20	85.8	121	141
Fish	35.0	21	65.0	39	60
Mammals	30.9	38	69.1	85	123
Mollusks	7.1	2	92.9	26	28
Reptiles	3.2	2	96.8	60	62
Total	22.1	103	77.9	364	467

14. Are you aware of any current **species monitoring** (i.e., sequential assessment of species population size or status) effort with respect to SPECIES in Indiana? (Check only one)

	Yes		No		Total Responses
	%	N	%	N	
Amphibians	38.5	20	61.5	32	52
Birds	46.1	65	53.9	76	141
Fish	51.7	31	48.3	29	60
Mammals	62.3	76	37.7	46	122
Mollusks	63.0	17	37.0	10	27
Reptiles	12.9	8	87.1	54	62
Total	46.8	217	53.2	247	464

Habitat inventory and assessment

15. Have **habitat inventory and assessment** efforts with respect to SPECIES in Indiana changed since 2005?

	Yes		No		I don't know		Total Responses
	%	N	%	N	%	N	
Amphibians	65.0	13	25.0	5	10.0	2	20
Birds	30.0	6	30.0	6	40.0	8	20
Fish	52.4	11	14.3	3	33.3	7	21
Mammals	71.1	27	7.9	3	21.1	8	38
Mollusks	0.0	0	0.0	0	100.0	2	2
Reptiles	50.0	1	0.0	0	50.0	1	2
Total	56.3	58	16.5	17	27.2	28	103

16. Indicate the **techniques** and the **frequency** of the techniques that are being used to conduct **habitat inventory and assessment** with respect to SPECIES in Indiana. (Check all that apply)

Total	Is this technique being used?									Frequency of technique												
	Yes		No		I don't know		Not applicable		Total Responses	Year-round		Once a year		< once a year, but still regularly scheduled		< once a year and not regularly scheduled		I don't know		Not applicable		Total Responses
	%	N	%	N	%	N	%	N		%	N	%	N	%	N	%	N	%	N	%	N	
GIS mapping	53.7	44	11.0	9	32.9	27	2.4	2	82	8.3	5	3.3	2	5.0	3	26.7	16	45.0	27	11.7	7	60
Remote sensing	32.0	24	16.0	12	45.3	34	6.7	5	75	7.7	4	1.9	1	13.5	7	0.0	0	48.1	25	28.8	15	52
Modeling (e.g., habitat suitability index model)	44.4	36	13.6	11	37.0	30	4.9	4	81	3.5	2	0.0	0	1.8	1	26.3	15	52.6	30	15.8	9	57
Vegetative sampling	42.5	34	18.8	15	31.3	25	7.5	6	80	5.3	3	8.8	5	3.5	2	14.0	8	43.9	25	24.6	14	57
Water quality sampling	42.0	34	18.5	15	25.9	21	13.6	11	81	6.6	4	4.9	3	6.6	4	11.5	7	44.3	27	26.2	16	61
Systematic sampling	65.8	52	6.3	5	24.1	19	3.8	3	79	13.1	8	27.9	17	9.8	6	13.1	8	29.5	18	6.6	4	61
Inventory of unique habitat features (e.g., cavities for cavity nesters)	54.3	44	17.3	14	23.5	19	4.9	4	81	10.0	6	20.0	12	5.0	3	10.0	6	40.0	24	15.0	9	60
Voluntary landowner reporting	26.6	21	27.8	22	34.2	27	11.4	9	79	32.1	17	1.9	1	0.0	0	1.9	1	32.1	17	32.1	17	53

Property tax estimates	1.3	1	43.6	34	21.8	17	33.3	26	78	0.0	0	0.0	0	0.0	0	0.0	0	19.2	10	80.8	42	52
State revenue data	0.0	0	43.4	33	22.4	17	34.2	26	76	0.0	0	0.0	0	0.0	0	0.0	0	17.6	9	82.4	42	51
Regulatory information	20.8	16	26.0	20	27.3	21	26.0	20	77	13.5	7	17.3	9	0.0	0	0.0	0	17.3	9	51.9	27	52
Participation in land use and conservation programs	32.9	26	17.7	14	35.4	28	13.9	11	79	30.2	16	1.9	1	0.0	0	7.5	4	34.0	18	26.4	14	53

Amphibians	**Is this technique being used?**									**Frequency of technique**												
	Yes		**No**		**I don't know**		**Not applicable**		**Total Responses**	**Year-round**		**Once a year**		**< once a year, but still regularly scheduled**		**< once a year and not regularly scheduled**		**I don't know**		**Not applicable**		**Total Responses**
	%	**N**	**%**	**N**	**%**	**N**	**%**	**N**		**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	
GIS mapping	57.1	8	28.6	4	14.3	2	0.0	0	14	40.0	4	10.0	1	0.0	0	0.0	0	20.0	2	30.0	3	10
Remote sensing	27.3	3	36.4	4	36.4	4	0.0	0	11	16.7	1	0.0	0	0.0	0	0.0	0	16.7	1	66.7	4	6
Modeling (e.g., habitat suitability index model)	50.0	7	14.3	2	35.7	5	0.0	0	14	12.5	1	0.0	0	12.5	1	12.5	1	37.5	3	25.0	2	8
Vegetative sampling	35.7	5	21.4	3	35.7	5	7.1	1	14	33.3	3	22.2	2	0.0	0	0.0	0	22.2	2	22.2	2	9
Water quality sampling	35.7	5	35.7	5	21.4	3	7.1	1	14	22.2	2	11.1	1	11.1	1	0.0	0	22.2	2	33.3	3	9
Systematic sampling	78.6	11	14.3	2	7.1	1	0.0	0	14	44.4	4	33.3	3	0.0	0	0.0	0	11.1	1	11.1	1	9
Inventory of unique habitat features (e.g., cavities for cavity nesters)	64.3	9	21.4	3	14.3	2	0.0	0	14	44.4	4	22.2	2	0.0	0	0.0	0	11.1	1	22.2	2	9
Voluntary landowner reporting	28.6	4	42.9	6	28.6	4	0.0	0	14	25.0	2	0.0	0	0.0	0	12.5	1	25.0	2	37.5	3	8
Property tax estimates	0.0	0	50.0	7	35.7	5	14.3	2	14	0.0	0	0.0	0	0.0	0	0.0	0	16.7	1	83.3	5	6
State revenue data	0.0	0	50.0	7	35.7	5	14.3	2	14	0.0	0	0.0	0	0.0	0	0.0	0	16.7	1	83.3	5	6
Regulatory information	0.0	0	50.0	7	35.7	5	14.3	2	14	0.0	0	0.0	0	0.0	0	0.0	0	16.7	1	83.3	5	6
Participation in land use	28.6	4	35.7	5	35.7	5	0.0	0	14	12.5	1	0.0	0	0.0	0	12.5	1	25.0	2	50.0	4	8

and conservation programs																					

Birds	**Is this technique being used?**									**Frequency of technique**											
	Yes		**No**		**I don't know**		**Not applicable**		**Total Responses**	**Year-round**		**Once a year**		**< once a year, but still regularly scheduled**		**< once a year and not regularly scheduled**		**I don't know**		**Not applicable**		**Total Responses**
	%	**N**	**%**	**N**	**%**	**N**	**%**	**N**		**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	
GIS mapping	38.5	5	7.7	1	53.8	7	0.0	0	13	0.0	0	14.3	1	0.0	0	42.9	3	42.9	3	0.0	0	7
Remote sensing	18.2	2	9.1	1	72.7	8	0.0	0	11	0.0	0	0.0	0	16.7	1	0.0	0	83.3	5	0.0	0	6
Modeling (e.g., habitat suitability index model)	16.7	2	16.7	2	66.7	8	0.0	0	12	14.3	1	0.0	0	0.0	0	14.3	1	71.4	5	0.0	0	7
Vegetative sampling	41.7	5	8.3	1	41.7	5	8.3	1	12	0.0	0	16.7	1	0.0	0	16.7	1	66.7	4	0.0	0	6
Water quality sampling	8.3	1	25.0	3	66.7	8	0.0	0	12	16.7	1	0.0	0	0.0	0	0.0	0	66.7	4	16.7	1	6
Systematic sampling	41.7	5	8.3	1	50.0	6	0.0	0	12	0.0	0	40.0	2	0.0	0	0.0	0	60.0	3	0.0	0	5
Inventory of unique habitat features (e.g., cavities for cavity nesters)	33.3	4	8.3	1	58.3	7	0.0	0	12	14.3	1	0.0	0	0.0	0	14.3	1	71.4	5	0.0	0	7
Voluntary landowner reporting	9.1	1	18.2	2	72.7	8	0.0	0	11	0.0	0	0.0	0	0.0	0	0.0	0	100.0	5	0.0	0	5
Property tax estimates	0.0	0	9.1	1	45.5	5	45.5	5	11	0.0	0	0.0	0	0.0	0	0.0	0	40.0	2	60.0	3	5
State revenue data	0.0	0	9.1	1	45.5	5	45.5	5	11	0.0	0	0.0	0	0.0	0	0.0	0	40.0	2	60.0	3	5
Regulatory information	9.1	1	9.1	1	36.4	4	45.5	5	11	0.0	0	0.0	0	0.0	0	0.0	0	40.0	2	60.0	3	5
Participation in land use and conservation programs	18.2	2	9.1	1	63.6	7	9.1	1	11	20.0	1	0.0	0	0.0	0	0.0	0	80.0	4	0.0	0	5

Fish	Is this technique being used?									Frequency of technique											
	Yes		No		I don't know		Not applicable		Total Responses	Year-round		Once a year		< once a year, but still regularly scheduled		< once a year and not regularly scheduled		I don't know		Not applicable		Total Responses
	%	N	%	N	%	N	%	N		%	N	%	N	%	N	%	N	%	N	%	N	
GIS mapping	23.5	4	11.8	2	52.9	9	11.8	2	17	0.0	0	0.0	0	20.0	2	10.0	1	50.0	5	20.0	2	10
Remote sensing	5.6	1	27.8	5	50.0	9	16.7	3	18	9.1	1	0.0	0	0.0	0	0.0	0	36.4	4	54.5	6	11
Modeling (e.g., habitat suitability index model)	23.5	4	11.8	2	47.1	8	17.6	3	17	0.0	0	0.0	0	0.0	0	25.0	3	50.0	6	25.0	3	12
Vegetative sampling	25.0	4	31.3	5	31.3	5	12.5	2	16	0.0	0	0.0	0	18.2	2	18.2	2	9.1	1	54.5	6	11
Water quality sampling	88.2	15	5.9	1	5.9	1	0.0	0	17	5.9	1	11.8	2	17.6	3	41.2	7	17.6	3	5.9	1	17
Systematic sampling	81.3	13	0.0	0	18.8	3	0.0	0	16	0.0	0	0.0	0	25.0	4	25.0	4	50.0	8	0.0	0	16
Inventory of unique habitat features (e.g., cavities for cavity nesters)	52.9	9	5.9	1	23.5	4	17.6	3	17	7.1	1	7.1	1	7.1	1	21.4	3	42.9	6	14.3	2	14
Voluntary landowner reporting	0.0	0	47.1	8	11.8	2	41.2	7	17	0.0	0	0.0	0	0.0	0	0.0	0	18.2	2	81.8	9	11
Property tax estimates	0.0	0	43.8	7	0.0	0	56.3	9	16	0.0	0	0.0	0	0.0	0	0.0	0	9.1	1	90.9	10	11
State revenue data	0.0	0	43.8	7	0.0	0	56.3	9	16	0.0	0	0.0	0	0.0	0	0.0	0	9.1	1	90.9	10	11
Regulatory information	5.9	1	35.3	6	23.5	4	35.3	6	17	0.0	0	9.1	1	0.0	0	0.0	0	18.2	2	72.7	8	11
Participation in land use and conservation programs	11.8	2	23.5	4	23.5	4	41.2	7	17	10.0	1	0.0	0	0.0	0	20.0	2	30.0	3	40.0	4	10

Mammals	Is this technique being used?									Frequency of technique												
	Yes		No		I don't know		Not applicable		Total Responses	Year-round		Once a year		< once a year, but still regularly scheduled		< once a year and not regularly scheduled		I don't know		Not applicable		Total Responses
	%	N	%	N	%	N	%	N		%	N	%	N	%	N	%	N	%	N	%	N	
GIS mapping	76.5	26	5.9	2	17.6	6	0.0	0	34	0.0	0	0.0	0	3.3	1	40.0	12	50.0	15	6.7	2	30
Remote sensing	58.1	18	6.5	2	29.0	9	6.5	2	31	7.7	2	3.8	1	23.1	6	0.0	0	50.0	13	15.4	4	26
Modeling (e.g., habitat suitability index model)	61.8	21	14.7	5	20.6	7	2.9	1	34	0.0	0	0.0	0	0.0	0	37.0	10	48.1	13	14.8	4	27
Vegetative sampling	55.9	19	17.6	6	20.6	7	5.9	2	34	0.0	0	7.1	2	0.0	0	17.9	5	53.6	15	21.4	6	28
Water quality sampling	35.3	12	17.6	6	23.5	8	23.5	8	34	0.0	0	0.0	0	0.0	0	0.0	0	65.4	17	34.6	9	26
Systematic sampling	63.6	21	6.1	2	21.2	7	9.1	3	33	10.7	3	42.9	12	7.1	2	14.3	4	14.3	4	10.7	3	28
Inventory of unique habitat features (e.g., cavities for cavity nesters)	58.8	20	23.5	8	14.7	5	2.9	1	34	0.0	0	33.3	9	7.4	2	7.4	2	37.0	10	14.8	4	27
Voluntary landowner reporting	45.5	15	12.1	4	36.4	12	6.1	2	33	53.8	14	3.8	1	0.0	0	0.0	0	30.8	8	11.5	3	26
Property tax estimates	3.0	1	54.5	18	18.2	6	24.2	8	33	0.0	0	0.0	0	0.0	0	0.0	0	22.2	6	77.8	21	27
State revenue data	0.0	0	56.3	18	18.8	6	25.0	8	32	0.0	0	0.0	0	0.0	0	0.0	0	19.2	5	80.8	21	26
Regulatory information	45.2	14	16.1	5	22.6	7	16.1	5	31	25.9	7	29.6	8	0.0	0	0.0	0	14.8	4	29.6	8	27
Participation in land use and conservation programs	54.5	18	9.1	3	27.3	9	9.1	3	33	48.1	13	3.7	1	0.0	0	3.7	1	29.6	8	14.8	4	27

Mollusks	Is this technique being used?									Frequency of technique											
	Yes		No		I don't know		Not applicable		Total Responses	Year-round		Once a year		< once a year, but still regularly scheduled		< once a year and not regularly scheduled		I don't know		Not applicable		Total Responses
	%	N	%	N	%	N	%	N		%	N	%	N	%	N	%	N	%	N	%	N	
GIS mapping	0.0	0	0.0	0	100.0	2	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	100.0	1	0.0	0	1
Remote sensing	0.0	0	0.0	0	100.0	2	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	100.0	1	0.0	0	1
Modeling (e.g., habitat suitability index model)	0.0	0	0.0	0	100.0	2	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	100.0	1	0.0	0	1
Vegetative sampling	0.0	0	0.0	0	100.0	2	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	100.0	1	0.0	0	1
Water quality sampling	50.0	1	0.0	0	50.0	1	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	100.0	1	0.0	0	1
Systematic sampling	0.0	0	0.0	0	100.0	2	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	100.0	1	0.0	0	1
Inventory of unique habitat features (e.g., cavities for cavity nesters)	50.0	1	0.0	0	50.0	1	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	100.0	1	0.0	0	1
Voluntary landowner reporting	0.0	0	50.0	1	50.0	1	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	1	1
Property tax estimates	0.0	0	50.0	1	50.0	1	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	1	1
State revenue data	0.0	0	0.0	0	100.0	1	0.0	0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	1	1
Regulatory information	0.0	0	50.0	1	50.0	1	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	1	1
Participation in land use and conservation programs	0.0	0	0.0	0	100.0	2	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	1	1

Reptiles	Is this technique being used?									Frequency of technique											
	Yes		No		I don't know		Not applicable		Total Responses	Year-round		Once a year		< once a year, but still regularly scheduled		< once a year and not regularly scheduled		I don't know		Not applicable		Total Responses
	%	N	%	N	%	N	%	N		%	N	%	N	%	N	%	N	%	N	%	N	
GIS mapping	50.0	1	0.0	0	50.0	1	0.0	0	2	50.0	1	0.0	0	0.0	0	0.0	0	50.0	1	0.0	0	2
Remote sensing	0.0	0	0.0	0	100.0	2	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	50.0	1	50.0	1	2
Modeling (e.g., habitat suitability index model)	100.0	2	0.0	0	0.0	0	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	0.0	0	2
Vegetative sampling	50.0	1	0.0	0	50.0	1	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	0.0	0	2
Water quality sampling	0.0	0	0.0	0	0.0	0	100.0	2	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	2
Systematic sampling	100.0	2	0.0	0	0.0	0	0.0	0	2	50.0	1	0.0	0	0.0	0	0.0	0	50.0	1	0.0	0	2
Inventory of unique habitat features (e.g., cavities for cavity nesters)	50.0	1	50.0	1	0.0	0	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	50.0	1	50.0	1	2
Voluntary landowner reporting	50.0	1	50.0	1	0.0	0	0.0	0	2	50.0	1	0.0	0	0.0	0	0.0	0	0.0	0	50.0	1	2
Property tax estimates	0.0	0	0.0	0	0.0	0	100.0	2	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	2
State revenue data	0.0	0	0.0	0	0.0	0	100.0	2	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	2
Regulatory information	0.0	0	0.0	0	0.0	0	100.0	2	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	2
Participation in land use and conservation programs	0.0	0	50.0	1	50.0	1	0.0	0	2	0.0	0	0.0	0	0.0	0	0.0	0	50.0	1	50.0	1	2

Other methodology listed by respondents for Q16:

Taxa	Species	Other Text	Is this technique used?	Frequency
Amphibians	Crawfish Frog	Use of piezometers	Yes	Year-round
Amphibians	Hellbender	Purdue Research	Yes	
Amphibians	Northern Cricket Frog	Personal surveys of historic and new sites in northern Indiana.	Yes	
Bird	Eastern Whip-poor-will	US Nightjar Survey	Yes	Once a year
Fish	Cisco	E-DNA sampling	Yes	< once a year and not regularly scheduled
Mammal	Allegheny Woodrat	See PhD work of Tim Smyser at Purdue	Yes	Year-round
Mammal	Little Brown Myotis	WNS Monitoring	Yes	Once a year
Mammal	Rafinesque's Big-eared Bat	Cave surveys (including acoustics)	Yes	Once a year

17. Which of the following agencies/organizations conduct **habitat inventory and assessment** with respect to SPECIES in Indiana? (Check all that apply)

	Federal agencies (e.g., USDA Forest Service)		State agencies (e.g., Indiana Department of Natural Resources)		Local agencies (e.g., County Parks & Recreation Department)		Non-profit organizations		For-profit entities		Research entities (e.g., universities)		I don't know		To R po
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	
Amphibians	20.0	3	80.0	12	6.7	1	20.0	3	0.0	0	73.3	11	0.0	0	1
Birds	57.1	8	64.3	9	0.0	0	35.7	5	0.0	0	14.3	2	7.1	1	1
Fish	5.6	1	94.4	17	0.0	0	5.6	1	0.0	0	55.6	10	0.0	0	1
Mammals	54.3	19	91.4	32	20.0	7	48.6	17	31.4	11	80.0	28	0.0	0	3
Mollusks	0.0	0	50.0	1	0.0	0	0.0	0	0.0	0	100.0	2	0.0	0	
Reptiles	0.0	0	100.0	2	50.0	1	0.0	0	0.0	0	100.0	2	0.0	0	
Total	36.0	31	84.9	73	10.5	9	30.2	26	12.8	11	64.0	55	1.2	1	8

Other agencies/organizations listed by respondents:

Taxa	Species	Other Text
Amphibians	Northern Cricket Frog	My personal surveys
Bird	Four-toed Salamander	Private investigators

18. To what extent are **habitat inventory and assessment data** with respects to SPECIES in Indiana accessible to your agency/organization? (Check only one)

	Extremely accessible		Moderately accessible		Somewhat accessible		Not accessible		I don't know		Total Responses
	%	N	%	N	%	N	%	N	%	N	
Amphibians	33.3	5	26.7	4	40.0	6	0.0	0	0.0	0	15
Birds	14.3	2	35.7	5	35.7	5	7.1	1	7.1	1	14
Fish	33.3	6	44.4	8	16.7	3	5.6	1	0.0	0	18
Mammals	24.2	8	45.5	15	18.2	6	3.0	1	9.1	3	33
Mollusks	0.0	0	0.0	0	50.0	1	0.0	0	50.0	1	2
Reptiles	50.0	1	0.0	0	50.0	1	0.0	0	0.0	0	2
Total	26.2	22	38.1	32	26.2	22	3.6	3	6.0	5	84

Species population monitoring

19. Have **species monitoring** efforts with respect to SPECIES in Indiana changed since 2005?

	Yes		No		I don't know		Total Responses
	%	N	%	N	%	N	
Amphibians	75.0	15	15.0	3	10.0	2	20
Birds	28.1	18	48.4	31	23.4	15	64
Fish	48.4	15	29.0	9	22.6	7	31
Mammals	80.0	60	12.0	9	8.0	6	75
Mollusks	70.6	12	5.9	1	23.5	4	17
Reptiles	37.5	3	12.5	1	50.0	4	8
Total	57.2	123	25.1	54	17.7	38	215

20. Indicate the **techniques** and the **frequency** of the techniques that are being used to **monitor SPECIES** in Indiana. (Check all that apply)

Total	Is this technique being used?									Frequency of technique											
	Yes		No		I don't know		Not applicable		Total Responses	Year-round		Once a year		< once a year, but still regularly scheduled		< once a year and not regularly scheduled		I don't know		Not applicable		Total Responses
	%	N	%	N	%	N	%	N		%	N	%	N	%	N	%	N	%	N	%	N	
Mark-recapture/mark-resight	29.3	44	30.0	45	31.3	47	9.3	14	150	9.9	8	12.3	10	1.2	1	6.2	5	35.8	29	34.6	28	81
Radio telemetry/tracking	32.2	49	32.9	50	28.3	43	6.6	10	152	13.1	11	7.1	6	2.4	2	14.3	12	32.1	27	31.0	26	84
Modelling/geospatial information	31.5	47	22.8	34	42.3	63	3.4	5	149	6.3	5	1.3	1	3.8	3	24.1	19	48.1	38	16.5	13	79
Molecular/genetic investigations	27.3	41	25.3	38	44.7	67	2.7	4	150	6.0	5	2.4	2	0.0	0	12.0	10	56.6	47	22.9	19	83
Indices (e.g., scat counts, vocalization surveys, etc)	53.0	79	20.8	31	14.1	21	12.1	18	149	3.6	3	43.4	36	2.4	2	10.8	9	16.9	14	22.9	19	83
Reporting from harvest, depredation, or unintentional take (e.g., road kill, by-catch)	30.2	45	30.9	46	21.5	32	17.4	26	149	18.1	15	12.0	10	0.0	0	4.8	4	31.3	26	33.7	28	83
Coverboard routes	0.7	1	38.5	57	19.6	29	41.2	61	148	1.4	1	0.0	0	0.0	0	0.0	0	19.4	14	79.2	57	72
Spot mapping	20.9	31	27.7	41	34.5	51	16.9	25	148	8.1	6	4.1	3	1.4	1	5.4	4	45.9	34	35.1	26	74
Driving a survey route	44.6	66	22.3	33	19.6	29	13.5	20	148	1.2	1	50.0	43	2.3	2	1.2	1	16.3	14	29.1	25	86
Professional survey/census	75.3	116	6.5	10	16.9	26	1.3	2	154	9.3	10	33.3	36	9.3	10	13.9	15	25.9	28	8.3	9	108
Volunteer survey/census	33.3	50	28.7	43	31.3	47	6.7	10	150	6.4	5	23.1	18	2.6	2	5.1	4	33.3	26	29.5	23	78
Trapping by any technique	51.7	76	21.8	32	22.4	33	4.1	6	147	9.0	8	25.8	23	9.0	8	12.4	11	31.5	28	12.4	11	89
Representative sites	39.9	59	18.9	28	37.2	55	4.1	6	148	3.7	3	25.9	21	8.6	7	4.9	4	40.7	33	16.0	13	81
Probabilistic sites	26.4	39	20.9	31	48.6	72	4.1	6	148	3.8	3	11.5	9	7.7	6	10.3	8	47.4	6	25.0	15	78

Amphibians	Is this technique being used?									Frequency of technique											
	Yes		No		I don't know		Not applicable		Total Responses	Year-round		Once a year		< once a year, but still regularly scheduled		< once a year and not regularly scheduled		I don't know		Not applicable		Total Responses
	%	N	%	N	%	N	%	N		%	N	%	N	%	N	%	N	%	N	%	N	
Mark-recapture/mark-resight	62.5	10	31.3	5	0.0	0	6.3	1	16	30.0	3	30.0	3	0.0	0	0.0	0	10.0	1	30.0	3	10
Radio telemetry/tracking	43.8	7	37.5	6	12.5	2	6.3	1	16	30.0	3	0.0	0	0.0	0	0.0	0	30.0	3	40.0	4	10
Modelling/geospatial information	60.0	9	13.3	2	26.7	4	0.0	0	15	12.5	1	12.5	1	25.0	2	0.0	0	25.0	2	25.0	2	8
Molecular/genetic investigations	62.5	10	25.0	4	12.5	2	0.0	0	16	18.2	2	0.0	0	0.0	0	9.1	1	45.5	5	27.3	3	11
Indices (e.g., scat counts, vocalization surveys, etc)	40.0	6	13.3	2	26.7	4	20.0	3	15	0.0	0	44.4	4	0.0	0	0.0	0	11.1	1	44.4	4	9
Reporting from harvest, depredation, or unintentional take (e.g., road kill, by-catch)	37.5	6	37.5	6	12.5	2	12.5	2	16	20.0	2	10.0	1	0.0	0	0.0	0	20.0	2	50.0	5	10
Coverboard routes	0.0	0	33.3	5	6.7	1	60.0	9	15	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	7	7
Spot mapping	43.8	7	25.0	4	25.0	4	6.3	1	16	0.0	0	12.5	1	0.0	0	25.0	2	25.0	2	37.5	3	8
Driving a survey route	50.0	8	12.5	2	12.5	2	25.0	4	16	0.0	0	44.4	4	11.1	1	0.0	0	0.0	0	44.4	4	9
Professional survey/census	88.2	15	11.8	2	0.0	0	0.0	0	17	18.2	2	45.5	5	0.0	0	0.0	0	9.1	1	27.3	3	11
Volunteer survey/census	62.5	10	25.0	4	12.5	2	0.0	0	16	0.0	0	40.0	4	10.0	1	0.0	0	20.0	2	30.0	3	10
Trapping by any technique	68.8	11	18.8	3	6.3	1	6.3	1	16	9.1	1	54.5	6	0.0	0	0.0	0	18.2	2	18.2	2	11
Representative sites	73.3	11	6.7	1	20.0	3	0.0	0	15	12.5	1	50.0	4	12.5	1	0.0	0	12.5	1	12.5	1	8

Probabilistic sites	62.5	10	6.3	1	31.3	5	0.0	0	16	11.1	1	33.3	3	11.1	1	0.0	0	33.3	0	0.0	1	9

Birds	Is this technique being used?									Frequency of technique											
	Yes		No		I don't know		Not applicable		Total Responses	Year-round		Once a year		< once a year, but still regularly scheduled		< once a year and not regularly scheduled		I don't know		Not applicable		Total Responses
	%	N	%	N	%	N	%	N		%	N	%	N	%	N	%	N	%	N	%	N	
Mark-recapture/mark-resight	20.0	6	23.3	7	46.7	14	10.0	3	30	0.0	0	0.0	0	0.0	0	20.0	2	50.0	5	30.0	3	10
Radio telemetry/tracking	16.1	5	25.8	8	48.4	15	9.7	3	31	20.0	2	0.0	0	0.0	0	10.0	1	50.0	5	20.0	2	10
Modelling/geospatial information	6.5	2	25.8	8	58.1	18	9.7	3	31	10.0	1	0.0	0	0.0	0	10.0	1	60.0	6	20.0	2	10
Molecular/genetic investigations	6.5	2	22.6	7	61.3	19	9.7	3	31	10.0	1	0.0	0	0.0	0	10.0	1	60.0	6	20.0	2	10
Indices (e.g., scat counts, vocalization surveys, etc)	48.4	15	22.6	7	22.6	7	6.5	2	31	27.3	3	45.5	5	0.0	0	0.0	0	27.3	3	0.0	0	11
Reporting from harvest, depredation, or unintentional take (e.g., road kill, by-catch)	20.0	6	26.7	8	40.0	12	13.3	4	30	25.0	2	0.0	0	0.0	0	0.0	0	62.5	5	12.5	1	8
Coverboard routes	0.0	0	29.0	9	38.7	12	32.3	10	31	0.0	0	0.0	0	0.0	0	0.0	0	62.5	5	37.5	3	8
Spot mapping	16.1	5	25.8	8	48.4	15	9.7	3	31	10.0	1	0.0	0	0.0	0	0.0	0	70.0	7	20.0	2	10
Driving a survey route	29.0	9	22.6	7	41.9	13	6.5	2	31	7.1	1	42.9	6	0.0	0	0.0	0	35.7	5	14.3	2	14
Professional survey/census	65.6	21	12.5	4	21.9	7	0.0	0	32	23.1	3	46.2	6	0.0	0	0.0	0	30.8	4	0.0	0	13
Volunteer survey/census	50.0	16	9.4	3	34.4	11	6.3	2	32	27.3	3	18.2	2	0.0	0	9.1	1	45.5	5	0.0	0	11
Trapping by any technique	12.9	4	25.8	8	51.6	16	9.7	3	31	0.0	0	0.0	0	0.0	0	20.0	2	60.0	6	20.0	2	10
Representative sites	19.4	6	16.1	5	54.8	17	9.7	3	31	0.0	0	20.0	2	0.0	0	0.0	0	60.0	6	20.0	2	10
Probabilistic sites	6.5	2	25.	8	58.	18	9.7	3	31	0.	0	0.0	0	0.0	0	0.0	0	75.	0	0.0	2	8

			8		1					0								0				

Fish	Is this technique being used?									Frequency of technique											
	Yes		No		I don't know		Not applicable		Total Responses	Year-round		Once a year		< once a year, but still regularly scheduled		< once a year and not regularly scheduled		I don't know		Not applicable		Total Responses
	%	N	%	N	%	N	%	N		%	N	%	N	%	N	%	N	%	N	%	N	
Mark-recapture/mark-resight	28.6	6	33.3	7	19.0	4	19.0	4	21	9.1	1	9.1	1	0.0	0	0.0	0	27.3	3	54.5	6	11
Radio telemetry/tracking	13.6	3	40.9	9	27.3	6	18.2	4	22	25.0	3	0.0	0	0.0	0	0.0	0	16.7	2	58.3	7	12
Modelling/geospatial information	28.6	6	23.8	5	38.1	8	9.5	2	21	9.1	1	0.0	0	9.1	1	27.3	3	36.4	4	18.2	2	11
Molecular/genetic investigations	42.9	9	23.8	5	28.6	6	4.8	1	21	8.3	1	8.3	1	0.0	0	25.0	3	41.7	5	16.7	2	12
Indices (e.g., scat counts, vocalization surveys, etc)	42.9	9	28.6	6	9.5	2	19.0	4	21	0.0	0	0.0	0	6.7	1	33.3	5	26.7	4	33.3	5	15
Reporting from harvest, depredation, or unintentional take (e.g., road kill, by-catch)	33.3	7	33.3	7	9.5	2	23.8	5	21	0.0	0	0.0	0	0.0	0	25.0	4	37.5	6	37.5	6	16
Coverboard routes	0.0	0	40.0	8	25.0	5	35.0	7	20	0.0	0	0.0	0	0.0	0	0.0	0	40.0	4	60.0	6	10
Spot mapping	10.0	2	30.0	6	30.0	6	30.0	6	20	0.0	0	10.0	1	10.0	1	0.0	0	30.0	3	50.0	5	10
Driving a survey route	0.0	0	40.0	8	20.0	4	40.0	8	20	0.0	0	0.0	0	0.0	0	0.0	0	20.0	2	80.0	8	10
Professional survey/census	81.0	17	4.8	1	4.8	1	9.5	2	21	5.3	1	10.5	2	21.1	4	15.8	3	36.8	7	10.5	2	19
Volunteer survey/census	0.0	0	45.0	9	30.0	6	25.0	5	20	0.0	0	0.0	0	0.0	0	0.0	0	30.0	3	70.0	7	10
Trapping by any technique	55.0	11	35.0	7	10.0	2	0.0	0	20	6.7	1	0.0	0	20.0	3	13.3	2	46.7	7	13.3	2	15
Representative sites	50.0	10	30.0	6	15.0	3	5.0	1	20	6.3	1	0.0	0	18.8	3	6.3	1	50.0	8	18.8	3	16
Probabilistic sites	40.0	8	35.0	7	20.0	4	5.0	1	20	0.0	0	0.0	0	21.4	3	35.7	5	21.4	0	0.0	3	14

Mammals	Is this technique being used?									Frequency of technique											
	Yes		No		I don't know		Not applicable		Total Responses	Year-round		Once a year		< once a year, but still regularly scheduled		< once a year and not regularly scheduled		I don't know		Not applicable		Total Responses
	%	N	%	N	%	N	%	N		%	N	%	N	%	N	%	N	%	N	%	N	
Mark-recapture/mark-resight	26.2	16	23.0	14	44.3	27	6.6	4	61	2.4	1	14.6	6	2.4	1	7.3	3	41.5	17	31.7	13	41
Radio telemetry/tracking	47.5	29	24.6	15	27.9	17	0.0	0	61	0.0	0	14.0	6	4.7	2	25.6	11	32.6	14	23.3	10	43
Modelling/geospatial information	41.7	25	13.3	8	45.0	27	0.0	0	60	2.4	1	0.0	0	0.0	0	34.1	14	46.3	19	17.1	7	41
Molecular/genetic investigations	26.7	16	18.3	11	55.0	33	0.0	0	60	2.4	1	2.4	1	0.0	0	12.2	5	58.5	24	24.4	10	41
Indices (e.g., scat counts, vocalization surveys, etc)	81.7	49	8.3	5	3.3	2	6.7	4	60	0.0	0	65.9	27	2.4	1	9.8	4	9.8	4	12.2	5	41
Reporting from harvest, depredation, or unintentional take (e.g., road kill, by-catch)	40.0	24	21.7	13	18.3	11	20.0	12	60	22.0	9	22.0	9	0.0	0	0.0	0	26.8	11	29.3	12	41
Coverboard routes	0.0	0	40.0	24	8.3	5	51.7	31	60	0.0	0	0.0	0	0.0	0	0.0	0	7.5	3	92.5	37	40
Spot mapping	27.1	16	20.3	12	30.5	18	22.0	13	59	10.3	4	2.6	1	0.0	0	5.1	2	48.7	19	33.3	13	39
Driving a survey route	83.1	49	6.8	4	6.8	4	3.4	2	59	0.0	0	71.7	33	2.2	1	2.2	1	10.9	5	13.0	6	46
Professional survey/census	75.4	46	4.9	3	19.7	12	0.0	0	61	4.3	2	50.0	23	13.0	6	0.0	0	23.9	11	8.7	4	46
Volunteer survey/census	40.0	24	25.0	15	35.0	21	0.0	0	60	5.0	2	30.0	12	2.5	1	7.5	3	32.5	13	22.5	9	40
Trapping by any technique	86.2	50	1.7	1	12.1	7	0.0	0	58	13.0	6	37.0	17	10.9	5	15.2	7	21.7	10	2.2	1	46
Representative sites	48.3	29	6.7	4	43.3	26	1.7	1	60	0.0	0	37.5	15	7.5	3	7.5	3	35.0	14	12.5	5	40
Probabilistic sites	26.7	16	8.3	5	61.7	37	3.3	2	60	0.0	0	15.0	6	5.0	2	7.5	3	50.0	0	0.0	9	40

Mollusks	Is this technique being used?									Frequency of technique												
	Yes		No		I don't know		Not applicable		Total Responses	Year-round		Once a year		< once a year, but still regularly scheduled		< once a year and not regularly scheduled		I don't know		Not applicable		Total Responses
	%	N	%	N	%	N	%	N		%	N	%	N	%	N	%	N	%	N	%	N	
Mark-recapture/mark-resight	0.0	0	73.3	11	13.3	2	13.3	2	15	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	2
Radio telemetry/tracking	0.0	0	73.3	11	13.3	2	13.3	2	15	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	2
Modelling/geospatial information	0.0	0	73.3	11	26.7	4	0.0	0	15	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	0.0	0	2
Molecular/genetic investigations	6.7	1	66.7	10	26.7	4	0.0	0	15	0.0	0	0.0	0	0.0	0	0.0	0	66.7	2	33.3	1	3
Indices (e.g., scat counts, vocalization surveys, etc)	0.0	0	73.3	11	13.3	2	13.3	2	15	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	2
Reporting from harvest, depredation, or unintentional take (e.g., road kill, by-catch)	0.0	0	73.3	11	13.3	2	13.3	2	15	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	2
Coverboard routes	0.0	0	73.3	11	13.3	2	13.3	2	15	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	2
Spot mapping	0.0	0	73.3	11	13.3	2	13.3	2	15	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	2
Driving a survey route	0.0	0	73.3	11	13.3	2	13.3	2	15	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	2
Professional survey/census	81.3	13	0.0	0	18.8	3	0.0	0	16	0.0	0	0.0	0	0.0	0	85.7	12	14.3	2	0.0	0	14
Volunteer survey/census	0.0	0	73.3	11	13.3	2	13.3	2	15	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100.0	2	2
Trapping by any technique	0.0	0	73.3	11	20.0	3	6.7	1	15	0.0	0	0.0	0	0.0	0	0.0	0	50.0	1	50.0	1	2
Representative sites	6.7	1	73.3	11	13.3	2	6.7	1	15	0.0	0	0.0	0	0.0	0	0.0	0	50.0	1	50.0	1	2
Probabilistic sites	0.0	0	71.	10	28.	4	0.0	0	14	0.	0	0.0	0	0.0	0	0.0	0	10	0	0.0	0	2

			4		6					0								0.0				

Reptiles	Is this technique being used?									Frequency of technique											
	Yes		No		I don't know		Not applicable		Total Responses	Year-round		Once a year		< once a year, but still regularly scheduled		< once a year and not regularly scheduled		I don't know		Not applicable		Total Responses
	%	N	%	N	%	N	%	N		%	N	%	N	%	N	%	N	%	N	%	N	
Mark-recapture/mark-resight	85.7	6	14.3	1	0.0	0	0.0	0	7	42.9	3	0.0	0	0.0	0	0.0	0	42.9	3	14.3	1	7
Radio telemetry/tracking	71.4	5	14.3	1	14.3	1	03.0	0	7	42.9	3	0.0	0	0.0	0	0.0	0	42.9	3	14.3	1	7
Modelling/geospatial information	71.4	5	0.0	0	28.6	2	0.0	0	7	14.3	1	0.0	0	0.0	0	14.3	1	71.4	5	0.0	0	7
Molecular/genetic investigations	42.9	3	14.3	1	42.9	3	0.0	0	7	0.0	0	0.0	0	0.0	0	0.0	0	83.3	5	16.7	1	6
Indices (e.g., scat counts, vocalization surveys, etc)	0.0	0	0.0	0	57.1	4	42.9	3	7	0.0	0	0.0	0	0.0	0	0.0	0	40.0	2	60.0	3	5
Reporting from harvest, depredation, or unintentional take (e.g., road kill, by-catch)	28.6	2	14.3	1	42.9	3	14.3	1	7	33.3	2	0.0	0	0.0	0	0.0	0	33.3	2	33.3	2	6
Coverboard routes	14.3	1	0.0	0	57.1	4	28.6	2	7	20.0	1	0.0	0	0.0	0	0.0	0	40.0	2	40.0	2	5
Spot mapping	14.3	1	0.0	0	85.7	6	0.0	0	7	20.0	1	0.0	0	0.0	0	0.0	0	60.0	3	20.0	1	5
Driving a survey route	0.0	0	14.3	1	57.1	4	28.6	2	7	0.0	0	0.0	0	0.0	0	0.0	0	40.0	2	60.0	3	5
Professional survey/census	57.1	4	0.0	0	42.9	3	0.0	0	7	40.0	2	0.0	0	0.0	0	0.0	0	60.0	3	0.0	0	5
Volunteer survey/census	0.0	0	14.3	1	71.4	5	14.3	1	7	0.0	0	0.0	0	0.0	0	0.0	0	60.0	3	40.0	2	5
Trapping by any technique	0.0	0	28.6	2	57.1	4	14.3	1	7	0.0	0	0.0	0	0.0	0	0.0	0	40.0	2	60.0	3	5
Representative sites	28.6	2	14.3	1	57.1	4	0.0	0	7	20.0	1	0.0	0	0.0	0	0.0	0	60.0	3	20.0	1	5

Probabilistic sites	42.9	3	0.0	0	57.1	4	0.0	0	7	40.0	2	0.0	0	0.0	0	0.0	0	60.0	0	200.0	0	5

Other methodology listed by respondents for Q20:

Taxa	Species	Other Text	Is this technique used?	Frequency
Amphibians	Four-toed Salamander	8 year statewide survey completed, published in 2011	Yes	Not applicable
Amphibians	Green Salamander	Burlap bands	< once a year and not regularly scheduled	
Birds	Peregrine Falcon	monitoring of nest sites by DNR		
Birds	Sandhill Crane	What ever DNR does to count them	Yes	Once a year
Mammals	Hoary Bat	acoustic monitoring and carcass monitoring at wind-energy facilities	Yes	< once a year, but still regularly scheduled
Mammals	Little Brown Myotis	Acoustic monitoring and carcass surveys at wind projects		
Mammals	Northern Myotis (Northern Long-eared Myotis)	Acoustic surveys and carcass monitoring at wind-energy facilities	< once a year, but still regularly scheduled	
Mammals	Allegheny Woodrat	See work by Smyser et al	Yes	Year-round
Mammals	Swamp Rabbit	See work from Zollner lab	Yes	I don't know
Mammals	Eastern Red Bat	Surveys using acoustic detectors, as well as carcass monitoring at wind projects	Yes	< once a year, but still regularly scheduled
Mollusks	Wavyrayed Lampmussel	snorkle surveys (live and shells)	Yes	

21. Which of the following agencies/organizations **monitor SPECIES** in Indiana? (Check all that apply)

	Federal agencies (e.g., USDA Forest Service)		State agencies (e.g., Indiana Department of Natural Resources)		Local agencies (e.g., County Parks & Recreation Department)		Non-profit organizations		For-profit entities		Research entities (e.g., universities)		I don't know		Total Responses
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	
Amphibians	29.4	5	82.4	14	0.0	0	5.9	1	0.0	0	70.6	12	0.0	0	17
Birds	53.1	17	84.4	27	3.1	1	28.1	9	3.1	1	18.8	6	0.0	0	32
Fish	4.5	1	90.9	20	4.5	1	0.0	0	0.0	0	36.4	8	0.0	0	22
Mammals	51.5	34	98.5	65	13.6	9	27.3	18	42.4	28	86.4	57	0.0	0	66
Mollusks	0.0	0	81.3	13	6.3	1	0.0	0	0.0	0	12.5	2	12.5	2	16
Reptiles	14.3	1	100.0	7	14.3	1	0.0	0	0.0	0	71.4	5	0.0	0	7
Total	36.3	58	91.3	146	8.1	13	17.5	28	18.1	29	56.3	90	1.3	2	160

Other agencies/organizations listed by respondents for Q21:

Taxa	Species	Other Text
Amphibians	Northern Cricket Frog	NAAMP, perhaps FROGWATCH
Birds	Black Rail	Goose Pond volunteer monitors
Birds	Sandhill Crane	The surveys indicated above occur weekly, Sept - Jan, each year.

22. To what extent are **SPECIES monitoring data** in Indiana accessible to your agency/organization? (Check only one)

	Extremely accessible		Moderately accessible		Somewhat accessible		Not accessible		I don't know		Total Responses
	%	N	%	N	%	N	%	N	%	N	
Amphibians	41.2	7	23.5	4	35.3	6	0.0	0	0.0	0	17
Birds	39.4	13	21.2	7	30.3	10	3.0	1	6.1	2	33
Fish	40.9	9	31.8	7	22.7	5	4.5	1	0.0	0	22
Mammals	25.8	17	50.0	33	10.6	7	6.1	4	7.6	5	66
Mollusks	75.0	12	6.3	1	6.3	1	0.0	0	12.5	2	16
Reptiles	28.6	2	28.6	2	14.3	1	14.3	1	14.3	1	7
Total	37.3	60	33.5	54	18.6	30	4.3	7	6.2	10	161

Abundance

23. Based on your current knowledge and professional opinion, provide an estimate for the **change in abundance** of SPECIES in Indiana since 2005. (Check only one)

	Decline by >75		Decline by 50-75		Decline by 25-50		Decline by 5-25		Remain relatively constant		Increase by 5-25		Increase by 25-50		Increase by 50-75		Increase by >75		I don't know		Total Responses
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	
Amphibians	0.0	0	3.8	2	3.8	2	18.9	10	37.7	20	0.0	0	0.0	0	0.0	0	1.9	1	19.20	18	53
Birds	1.4	2	0.0	0	.7	1	18.0	25	18.7	26	20.1	28	5.0	7	.7	1	2.9	4	19.70	45	139
Fish	1.7	1	0.0	0	5.0	3	21.7	13	43.3	26	3.3	2	3.3	2	0.0	0	3.3	2	8.30	11	60
Mammals	5.0	6	5.9	7	11.8	14	15.1	18	24.4	29	4.2	5	0.0	0	0.0	0	2.5	3	16.30	37	119
Mollusks	0.0	0	3.6	1	7.1	2	21.4	6	42.9	12	0.0	0	0.0	0	0.0	0	0.0	0	15.40	7	28
Reptiles	1.6	1	3.2	2	1.6	1	47.6	30	20.6	13	0.0	0	0.0	0	0.0	0	0.0	0	6.50	16	63
Total	2.2	10	2.6	12	5.0	23	22.1	102	27.3	126	7.6	35	1.9	9	.2	1	2.2	10	14.80	134	462

24. Based on your current knowledge and professional opinion, provide a prediction of **change in abundance** of SPECIES in Indiana over the next 10 years if current conditions and practices prevail. (Check only one)

	Will decline by >75		Will decline by 50-75		Will decline by 25-50		Will decline by 5-25		Will remain relatively constant		Will increase by 5-25		Will increase by 25-50		Will increase by 50-75		Will increase by >75		I don't know		Total Responses
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	
Amphibians	1.9	1	0.0	0	9.4	5	20.8	11	45.3	24	1.9	1	0.0	0	0.0	0	0.0	0	20.8	11	53
Birds	0.7	1	0.0	0	2.1	3	17.9	25	23.6	33	21.4	30	2.1	3	0.7	1	0.7	1	30.7	43	140
Fish	1.7	1	0.0	0	6.7	4	20.0	12	45.0	27	6.7	4	0.0	0	0.0	0	0.0	0	20.0	12	60
Mammals	14.3	17	15.1	18	9.2	11	18.5	22	20.2	24	3.4	4	0.0	0	0.0	0	0.0	0	19.3	23	119
Mollusks	0.0	0	0.0	0	3.6	1	28.6	8	32.1	9	7.1	2	0.0	0	0.0	0	0.0	0	28.6	8	28
Reptiles	1.6	1	3.2	2	3.2	2	52.4	33	12.7	8	1.6	1	0.0	0	0.0	0	0.0	0	25.4	16	63
Total	4.5	21	4.3	20	5.6	26	24.0	111	27.0	125	9.1	42	0.6	3	0.2	1	0.2	1	24.4	113	463

Section III: Threats to SGCN and their Habitats

25. To what extent do you think the following general categories of threats apply to SPECIES and its habitats in Indiana over the next 10 years? (Check one for each line item)

26. Within each general category of threats you selected above, please indicate which of the following are specific threats to SPECIES in Indiana. The list of specific threats presented below was compiled through focus groups with wildlife conservation professionals. You may add additional threats that you think are important using the "Other, please specify" option. (Check one for each line item)

Total

	Significant threat (1)		Moderate threat (2)		Minor threat (3)		Not a threat (4)		Mean	Total Responses
	%	N	%	N	%	N	%	N		
Residential and commercial development	15.3	70	33.8	155	39.7	182	11.3	52	2.47	459

Agriculture and aquaculture	28.4	130	31.7	145	23.6	108	16.4	75	2.28	458
Energy production and mining	10.1	46	17.8	81	43.0	196	29.2	133	2.91	456
Transportation and service corridors	7.2	33	14.3	65	53.5	244	25.0	114	2.96	456
Biological resource use	6.6	30	9.8	45	41.7	191	41.9	192	3.19	458
Human intrusion and disturbance	15.4	70	26.2	119	41.0	186	17.4	79	2.60	454
Natural systems modifications	22.0	101	34.6	159	28.7	132	14.8	68	2.36	460
Invasives and other problematic species and genes	17.9	82	20.0	92	35.3	162	26.8	123	2.71	459
Pollution	8.8	40	24.4	111	41.4	188	25.3	115	2.83	454
Climate change and severe weather	9.6	44	28.5	130	36.2	165	25.7	117	2.78	456
Other stressors	9.4	27	12.5	36	24.3	70	53.8	155	3.23	288

	Significant Threat (1)		**Moderate Threat (2)**		**Minor Threat (3)**		**Not a threat (4)**		**I don't know**		**Mean**	**Total Responses**
	%	N	%	N	%	N	%	N	%	N		
Residential and Commercial Development												
Housing and urban areas	25.56	57	60.99	136	11.21	25	0.90	2	1.35	3	1.87	223
Commercial and industrial areas	20.72	46	52.70	117	21.62	48	1.80	4	3.15	7	2.05	222
Tourism and recreation areas	8.56	19	25.23	56	49.10	109	14.41	32	2.70	6	2.71	222
Agriculture and Aquaculture												
Annual and perennial non-timber crops	37.17	100	37.92	102	14.50	39	6.32	17	4.09	11	1.90	269
Wood and pulp plantations	5.30	14	14.39	38	29.55	78	43.18	114	7.58	20	3.20	264
Livestock farming and ranching	15.53	41	29.92	79	26.89	71	24.24	64	3.41	9	2.62	264
Aquaculture	2.28	6	6.46	17	14.07	37	58.94	155	18.25	48	3.59	263
Conversion of habitat to annual crops	42.05	111	37.12	98	10.61	28	7.20	19	3.03	8	1.82	264
Energy Production and Mining												
Oil and gas drilling	12.10	15	24.19	30	37.10	46	16.94	21	9.68	12	2.65	124
Mining and quarrying	21.43	27	33.33	42	26.19	33	15.87	20	3.17	4	2.38	126
Renewable energy	20.1	25	18.5	23	30.6	38	21.7	27	8.87	11	2.5	124

production	6		5		5		7				9	
Fossil fuel energy production	12.80	16	38.40	48	29.60	37	13.60	17	5.60	7	2.47	125
Transportation and Service Corridors												
Roads and railroads	40.21	39	35.05	34	19.59	19	4.12	4	1.03	1	1.88	97
Utility and service lines	8.42	8	27.37	26	34.74	33	25.26	24	4.21	4	2.80	95
Flight paths	2.11	2	1.05	1	11.58	11	82.11	78	3.16	3	3.79	95
Shipping lanes	6.38	6	4.26	4	9.57	9	75.53	71	4.26	4	3.61	94
Biological Resource Use												
Overuse and harvesting species	24.00	24	17.00	17	8.00	8	42.00	42	9.00	9	2.75	100
Forestry practices	2.06	2	22.68	22	34.02	33	37.11	36	4.12	4	3.11	97
Accidental mortality or bycatch	14.85	15	17.82	18	25.74	26	34.65	35	6.93	7	2.86	101
Human Intrusion and Disturbance												
Recreation activities	11.24	20	30.34	54	37.64	67	19.66	35	1.12	2	2.66	178
Natural Systems Modification												
Dams and water management/use	18.90	48	31.10	79	20.47	52	27.56	70	1.97	5	2.58	254
Fire and fire suppression	10.71	27	17.86	45	21.43	54	46.43	117	3.57	9	3.07	252
Log jam removal	1.58	4	10.67	27	28.06	71	54.94	139	4.74	12	3.43	253
Over-mowing of natural areas	11.11	28	19.05	48	30.56	77	36.51	92	2.78	7	2.95	252
Natural habitat conversion	42.58	109	45.70	117	5.86	15	5.08	13	0.78	2	1.73	256
Invasive and other problematic species and genes												
Invasive/alien species	46.11	77	34.13	57	12.57	21	6.59	11	0.60	1	1.80	167
Problematic native species	17.96	30	19.76	33	26.95	45	20.96	35	14.37	24	2.59	167
Diseases from domestic populations and unknown sources	21.43	36	11.31	19	15.48	26	25.60	43	26.19	44	2.61	168
Introduced genetic material	1.19	2	7.74	13	14.88	25	47.02	79	29.17	49	3.52	168
Pollution												
Run-off from roads/service corridors	7.43	11	46.62	69	31.08	46	7.43	11	7.43	11	2.42	148
Chemical spills	12.24	18	42.86	63	35.37	52	4.08	6	5.44	8	2.33	147
Point source pollution	11.64	17	55.48	81	26.71	39	2.05	3	4.11	6	2.20	146
Air pollution	2.03	3	14.86	22	32.43	48	37.84	56	12.84	19	3.22	148

Household sewage	12.75	19	38.26	57	32.21	48	7.38	11	9.40	14	2.38	149
Agriculture, residential, and forestry effluents	29.05	43	42.57	63	14.86	22	7.43	11	6.08	9	2.01	148
Garbage and solid waste	2.08	3	33.33	48	34.72	50	18.75	27	11.11	16	2.79	144
Excess energy	2.70	4	15.54	23	38.51	57	29.05	43	14.19	21	3.09	148
Climate Change and Other Severe Weather												
Changing frequency, duration, and intensity of drought	34.71	59	44.71	76	9.41	16	5.29	9	5.88	10	1.84	170
Changing frequency and duration of floods	18.82	32	48.82	83	18.24	31	9.41	16	4.71	8	2.19	170
Shifting and alteration of habitats	39.64	67	45.56	77	8.28	14	5.33	9	1.18	2	1.79	169
Temperature extremes	23.39	40	50.29	86	15.20	26	7.02	12	4.09	7	2.06	171
Shifting seasons/phenology	19.64	33	38.69	65	28.57	48	8.93	15	4.17	7	2.28	168
Other stressors												
Low genetic diversity	38.98	23	22.03	13	8.47	5	10.17	6	20.34	12	1.87	59
Diseases	59.09	26	22.73	10	2.27	1	4.55	2	11.36	5	1.46	44

Other responses listed underneath appropriate taxa.

Amphibians

	Significant threat (1)		**Moderate threat (2)**		**Minor threat (3)**		**Not a threat (4)**		**Mean**	**Total Responses**
	%	N	%	N	%	N	%	N		
Residential and commercial development	13.5	7	51.9	27	26.9	14	7.7	4	2.29	52
Agriculture and aquaculture	30.8	16	42.3	20	15.4	8	11.5	6	2.08	52
Energy production and mining	11.5	6	26.9	14	32.7	17	28.8	15	2.79	52
Transportation and service corridors	5.8	3	21.2	11	63.5	33	9.6	5	2.77	52
Biological resource use	5.8	3	7.7	4	57.7	30	28.8	30	3.10	52
Human intrusion and disturbance	15.4	8	36.5	19	32.7	17	15.4	8	2.48	52
Natural systems modifications	38.5	20	38.5	20	15.4	8	7.7	4	1.92	52
Invasives and other problematic species and genes	9.6	5	25.0	13	51.9	27	13.5	7	2.69	52
Pollution	13.5	7	36.5	19	44.2	23	5.8	3	2.42	52
Climate change and	15.4	8	34.6	18	40.4	21	9.6	5	2.44	52

severe weather										
Other stressors	10.3	4	28.2	11	25.6	10	35.9	14	2.87	39

	Significant Threat (1)		**Moderate Threat (2)**		**Minor Threat (3)**		**Not a threat (4)**		**I don't know**		**Mean**	**Total Responses**
	%	N	%	N	%	N	%	N	%	N		
Residential and Commercial Development												
Housing and urban areas	14.71	5	76.47	26	8.82	3	0.00	0	0.00	0	1.94	34
Commercial and industrial areas	20.59	7	64.71	22	14.71	5	0.00	0	0.00	0	1.94	34
Tourism and recreation areas	8.82	3	26.47	9	47.06	16	17.65	6	0.00	0	2.74	34
Agriculture and Aquaculture												
Annual and perrenial nontimber crops	35.14	13	51.35	19	10.81	4	0.00	0	2.70	1	1.75	37
Wood and pulp plantations	13.89	5	19.44	7	36.11	13	25.00	9	5.56	2	2.76	36
Livestock farming and ranching	10.81	4	35.14	13	32.43	12	18.92	7	2.70	1	2.61	37
Aquaculture	13.89	5	25.00	9	11.11	4	19.44	7	30.56	11	2.52	36
Conversion of habitat to annual crops	59.46	22	24.32	9	5.41	2	10.81	4	0.00	0	1.68	37
Energy Production and Mining												
Oil and gas drilling	15.79	3	47.37	9	31.58	6	5.26	1	0.00	0	2.26	19
Mining and quarrying	30.00	6	45.00	9	15.00	3	10.00	2	0.00	0	2.05	20
Renewable energy production	5.26	1	21.05	4	57.89	11	10.53	2	5.26	1	2.78	19
Fossil fuel energy production	15.00	3	35.00	7	45.00	9	5.00	1	0.00	0	2.40	20
Transportation and Service Corridors												
Roads and railroads	28.57	4	42.86	6	28.57	4	0.00	0	0.00	0	2.00	14
Utility and service lines	7.14	1	21.43	3	64.29	9	7.14	1	0.00	0	2.71	14
Flight paths	0.00	0	0.00	0	28.57	4	71.43	10	0.00	0	3.71	14
Shipping lanes	15.38	2	7.69	1	23.08	3	53.85	7	0.00	0	3.15	13
Biological Resource Use												
Overuse and harvesting species	14.29	1	0.00	0	42.86	3	42.86	3	0.00	0	3.14	7
Forestry practices	0.00	0	14.29	1	71.43	5	14.29	1	0.00	0	3.00	7
Accidental mortality	57.1	4	14.2	1	14.29	1	14.2	1	0.00	0	1.8	7

or bycatch	4		9				9				6	
Human Intrusion and Disturbance												
Recreation activities	11.11	3	22.22	6	59.26	16	7.41	2	0.00	0	2.63	27
Natural Systems Modification												
Dams and water management/use	23.08	9	30.77	12	30.77	12	15.38	6	0.00	0	2.38	39
Fire and fire suppression	7.69	3	35.90	14	38.46	15	15.38	6	2.56	1	2.63	39
Log jam removal	5.13	2	12.82	5	25.64	10	53.85	21	2.56	1	3.32	39
Over-mowing of natural areas	12.82	5	23.08	9	35.90	14	28.21	11	0.00	0	2.79	39
Natural habitat conversion	67.50	27	27.50	11	2.50	1	2.50	1	0.00	0	1.40	40
Invasive and other problematic species and genes												
Invasive/alien species	17.65	3	58.82	10	5.88	1	17.65	3	0.00	0	2.24	17
Problematic native species	16.67	3	27.78	5	22.22	4	27.78	5	5.56	1	2.65	18
Diseases from domestic populations and unknown sources	27.78	5	33.33	6	27.78	5	5.56	1	5.56	1	2.12	18
Introduced genetic material	5.56	1	16.67	3	27.78	5	33.33	6	16.67	3	3.07	18
Pollution												
Run-off from roads/service corridors	11.54	3	53.85	14	30.77	8	3.85	1	0.00	0	2.27	26
Chemical spills	26.92	7	26.92	7	34.62	9	7.69	2	3.85	1	2.24	26
Point source pollution	30.77	8	30.77	8	34.62	9	0.00	0	3.85	1	2.04	26
Air pollution	7.69	2	19.23	5	53.85	14	15.38	4	3.85	1	2.80	26
Household sewage	15.38	4	30.77	8	42.31	11	7.69	2	3.85	1	2.44	26
Agriculture, residential, and forestry effluents	38.46	10	46.15	12	11.54	3	3.85	1	0.00	0	1.81	26
Garbage and solid waste	4.00	1	32.00	8	52.00	13	8.00	2	4.00	1	2.67	25
Excess energy	0.00	0	19.23	5	50.00	13	23.08	6	7.69	2	3.04	26
Climate Change and Other Severe Weather												
Changing frequency, duration, and intensity of drought	53.85	14	38.46	10	7.69	2	0.00	0	0.00	0	1.54	26
Changing frequency and duration of floods	7.69	2	50.00	13	34.62	9	7.69	2	0.00	0	2.42	26
Shifting and alteration of habitats	46.15	12	38.46	10	11.54	3	3.85	1	0.00	0	1.73	26
Temperature extremes	28.00	7	52.00	13	20.00	5	0.00	0	0.00	0	1.92	25
Shifting	20.0	5	44.0	11	36.00	9	0.00	0	0.00	0	2.1	25

seasons/phenology	0		0								6	
Other stressors												
Low genetic diversity	28.57	4	42.86	6	14.29	2	0.00	0	14.29	2	1.83	14
Diseases	55.56	5	44.44	4	0.00	0	0.00	0	0.00	0	1.44	9