Appendix I: Informational Materials—Fact Sheet

DNR FACTSheet

INDIANA COMPREHENSIVE WILDLIFE STRATEGY

We're Planning to Keep Indiana's Wildlife

DNR Embarks on Historic Effort to Keep Indiana Wildlife from Becoming Endangered

- The Indiana Department of Natural Resources is developing a comprehensive wildlife strategy—an unprecedented "blueprint" for keeping all wildlife populations healthy by focusing on the habitats they need to thrive.
- The ultimate goal is to keep species off the threatened and endangered list and keep Indiana's common species common.
- This is a rigorous, science-based process to determine priorities for declining wildlife and habitat.
- This is part of a national effort – Congress has required every state and U.S. territory to develop a comprehensive wildlife strategy by October 2005.
- The Director of the U.S. Fish and Wildlife Service must approve the strategy in order for Indiana to continue receiving federal funds for wildlife conservation—continued federal funding will allow DNR and its conservation partners to work together to conserve habitats and provide a balanced management program.
- This is an historic opportunity: this kind of comprehensive effort that involves all fifty states has never been done before in the United States.
- The task of conserving declining wildlife is challenging, but DNR knows success is possible from wildlife conservation success stories like the peregrine falcon, wild turkey and white-tailed deer.
- This effort asks (and begins to answer) the questions: What are the Indiana species and habitats in trouble? Why are they in trouble? Most importantly, what are we going to do about it?
- The DNR is working with a broad cross section of partner organizations in our state to get this done – from wildlife experts to land trusts, to other conservationists, hunters and anglers, wildlife viewers and farmers.
- This effort has emerged through the work of a broad national bipartisan wildlife conservation coalition called *Teaming with Wildlife*. This coalition includes more than 3,000 organizations nationwide.
- Research suggests that habitat quality and quantity are the primary factors affecting the conservation of wildlife throughout the state.
- To find out more visit http://www.djcase.com/incws.

Appendix I: Informational Materials—News Release

DNR NEWS

INDIANA COMPREHENSIVE WILDLIFE STRATEGY

We're Planning to Keep Indiana's Wildlife

Indiana Department of Natural Resources
402 W. Washington St. W255 B
Indianapolis, IN 46204-2748

DNR Embarks on Historic Effort to Keep Indiana Wildlife from Becoming Endangered

FOR IMMEDIATE RELEASE

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Indianapolis, IN – The Indiana Department of Natural Resources (DNR) is developing a comprehensive wildlife strategy—an unprecedented "blueprint" for keeping all wildlife populations healthy by focusing on the habitats they need to thrive.

The ultimate goal is to keep species off the threatened and endangered species list and keep our common species common. Working with technical experts and partners throughout the state, DNR is pursuing a science-based approach to identify how to best protect Indiana wildlife at a landscape scale.

In an effort to encourage a more integrated approach to wildlife conservation, Congress has required all states and territories to develop comprehensive wildlife strategies by October 2005. The Director of the U.S. Fish and Wildlife Service must approve these strategies in order for states to be eligible for potentially significant federal funds for wildlife conservation. Continued federal funding will allow DNR and other conservation partners to work together to provide more "on the ground" habitat projects.

"Only about 3% of Indiana's land area is in public ownership, so the vast majority of wildlife species are located on private land," stated Katie Smith, Chief of the DNR Wildlife Diversity Section. "It is clear that wildlife conservation will be best accomplished in Indiana through partnerships with private landowners and conservation organizations."

According to Smith, habitat quality and quantity are the primary factors affecting wildlife populations in the United States and this process will help conserve all wildlife species in Indiana.

"This is an historic effort that has never been done before," said Glen Salmon, Director of the DNR Division of Fish and Wildlife. "Having all fifty states and U.S. territories simultaneously developing these strategies presents a tremendous opportunity for conservation at a landscape scale."

DNR welcomes input on this historic effort from all Hoosiers. Feedback will help DNR and its partners provide an accurate representation of statewide wildlife and habitat needs. To find out more about this process visit www.djcase.com/incws.

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Indiana DNR Comprehensive Wildlife Strategy
Short Article (492 words)
www.djcase.com/incws

State Begins Historic Effort to Keep Wildlife from Becoming Endangered

The Indiana Department of Natural Resources (DNR) is striving to keep species off the threatened and endangered species lists and keep our common species common. Working with technical experts and partners throughout the state, DNR is pursuing a science-based approach to protect Indiana wildlife at a landscape scale.

DNR is developing a comprehensive wildlife strategy—an unprecedented "blueprint" to keep wildlife populations healthy by focusing on habitats they need to thrive.

"This historic effort has never been done before," said Glen Salmon, director of the DNR Division of Fish and Wildlife. "All fifty states and U.S. territories are simultaneously developing these strategies. It's a chance to pursue wildlife conservation from a different perspective – at a landscape scale. The strategy provides a common framework to integrate DNR's efforts with our partners and with other states to have more impact."

To encourage a more integrated approach to wildlife conservation nationwide, Congress has required all states and territories to develop comprehensive wildlife strategies by October 2005. The U.S. Fish and Wildlife Service must approve these strategies for states to be eligible for federal funds for wildlife conservation. Continued federal funding could allow DNR and its partners to work together to conserve habitats and provide balanced management programs.

Instead of focusing on individual species after they become threatened or endangered, this strategy encourages conservation of habitats that species need to survive. The strategy will emphasize species that are in greatest need of conservation efforts, but the habitat approach will benefit many other fish and wildlife species as well.

"The biggest threat to wildlife diversity across the country is loss of habitat," said Katie Smith, chief of the DNR Wildlife Diversity Section. This strategy will identify the status of major Indiana habitat types, threats to habitats, and trends of associated wildlife populations. More importantly, the strategy will recognize current conservation efforts (public and private), gaps in these efforts, and ways that private landowners and other stakeholders can work with the DNR to conserve resources.

"Only about 3 percent of Indiana's land area is in public ownership, so the majority of wildlife species live on private land," Smith added. "It is clear that forging partnerships with private landowners and conservation organizations is the best way to conserve Indiana's wildlife. This strategy will be a great tool to build and enhance partnerships."

(**more**)

The DNR Wildlife Diversity Section is charged with leading the strategy's development. The goal is to guide conservation efforts through all sectors of the DNR, as well as its private conservation organization partners. Many states and partners also plan to coordinate efforts across state borders, since wildlife don't recognize political boundaries.

A broad cross-section of Hoosiers currently are helping DNR develop this strategy, including scientists, academics, conservation organizations, farmers, hunters and anglers. To find out more about this process and/or or provide input to DNR, visit www.djcase.com/incws.

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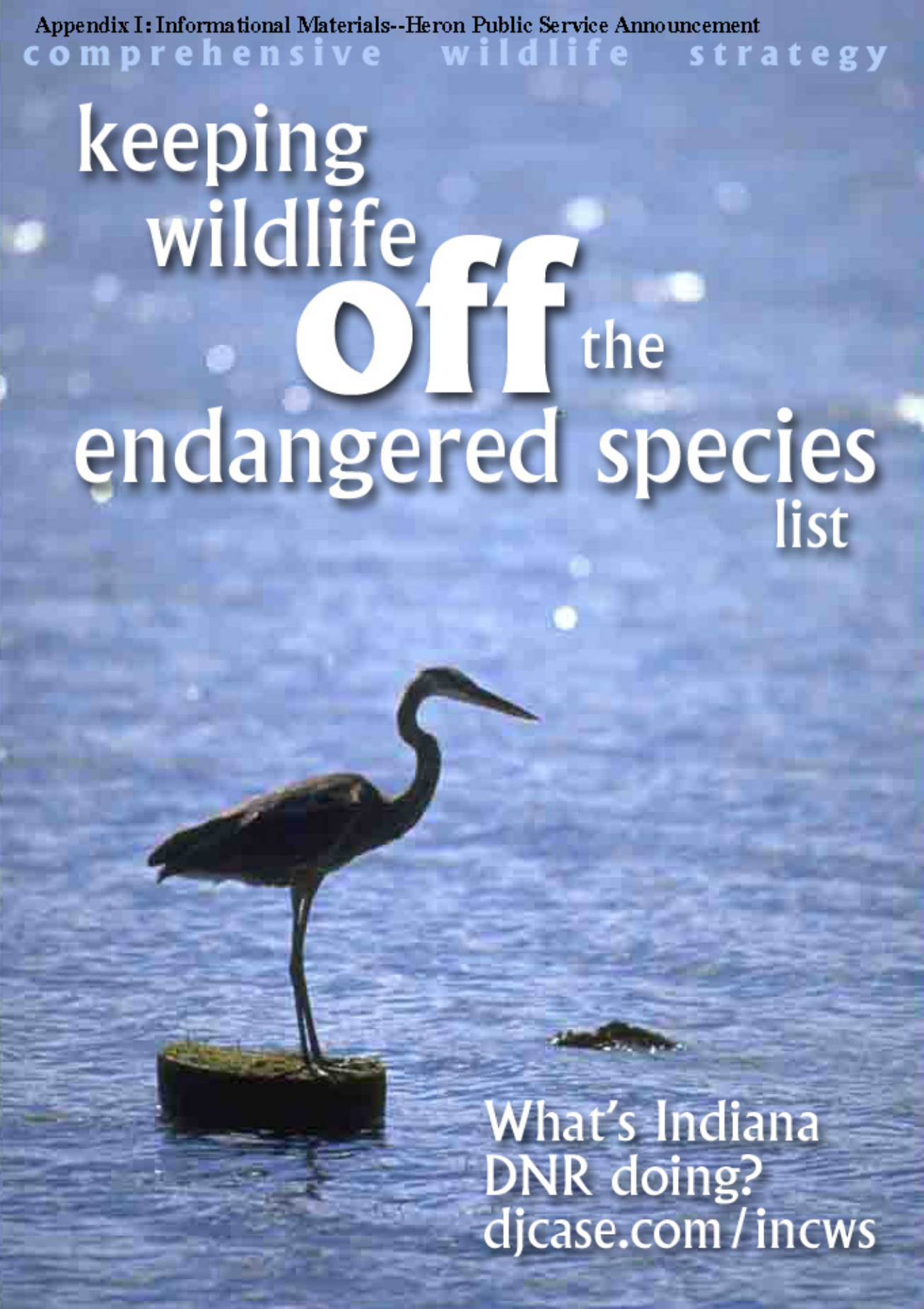
comprehensive wildlife strategy

keeping wildlife **off** the endangered species list

What's Indiana DNR doing?
djcase.com/incws

comprehensive wildlife strategy

keeping wildlife off the endangered species list



What's Indiana DNR doing?
djcase.com/incws

Appendix J. Species of Greatest Conservation Need in Indiana and Associated Habitat Types.

Range (within state):
Statewide (I), North (N), South (S), West (W), East (E), Central (C) and various combinations.

Relative abundance (within state):
Abundant (A), Common (C), Occasional (O), Rare (R)

Status
Extirpated (Ex), Exotic- accidentally or deliberately released species (X)

(Federal)
Federally Endangered (FE) , Federally Threatened (FT), candidates for federal listing (FC)

(State)
State Endangered (SE), State Threatened (ST), Special Concern in need of further study (SC), WL = Watch list

Seasonal Occurrence (for birds):
Summer resident (S), winter resident (W), year-round resident (R), migrant (M), accidental (A), hypothetical (H), and breeder (*), former breeders [*].

Species bold - indicates Representative Species

Habitat type	*Scientific name*	Common Name	Range	Relative Abundance	Season	Status
Agriculture	*Tyto alba*	Barn Owl	I	R	R*	SE
Agriculture	*Rana areolata*	Crawfish Frog	W	O		SE
Agriculture	*Scaphiopus holbrookii*	Eastern Spadefoot Toad	S	O		SC
Agriculture	*Rana pipiens*	Northern Leopard Frog	N, E	C		SC
Agriculture	*Terrapene ornata*	Ornate Box Turtle	NW, SW	O		SE
Agriculture	*Rana blairi*	Plains Leopard Frog	W	R		SC
Agriculture	*Grus canadensis*	Sandhill Crane	I	O	M*	SC
Aquatic Systems	*Emydoidea blandingii*	Blanding's Turtle	N	O		SE
Aquatic Systems	*Ambystoma laterale*	Blue-Spotted Salamander	N	O		SC
Aquatic Systems	***Necturus maculosus***	**Common Mudpuppy**	**I**	**O**		**SC**
Aquatic Systems	*Nerodia erythrogaster neglecta*	Copperbelly Water Snake	SW, NE, SC	O		SE, FC
Aquatic Systems	*Agkistrodon piscivorus*	Cottonmouth	S	R		SE
Aquatic Systems	*Kinosternon subrubrum*	Eastern Mud Turtle	NW, SW	R		SE
Aquatic Systems	*Hemidactylium scutatum*	Four-Toed Salamander	N, C	R		SE
Aquatic Systems	*Rana blairi*	Plains Leopard Frog	W	R		SC
Aquatic Systems	***Lontra canadensis***	**River Otter**	**I**	**R**		**SC**
Aquatic Systems	*Clemmys guttata*	Spotted Turtle	N	O		SE

Aquatic Systems Dunes and Shorelines	*Sterna antillarum*	Least Tern	I	R	S*	SE, FE
Aquatic Systems Dunes and Shorelines	*Charadrius melodus*	Piping Plover	I	R	A(*)	SE, FE
Aquatic Systems Impoundments	*Haliaeetus leucocephalus*	Bald Eagle	I	R	R*	SE, FT
Aquatic Systems Impoundments	*Chlidonias niger*	Black Tern	I	O	S*	SE
Aquatic Systems Impoundments	***Pandion haliaetus***	**Osprey**	**I**	**R**	**S***	**SE**
Aquatic Systems Impoundments	*Falco peregrinus*	Peregrine Falcon	I	R	R*	SE
Aquatic Systems Impoundments	*Cygnus buccinator*	Trumpeter Swan	I	R	W(*)	SE
Aquatic Systems Kettle Lakes	***Rana blairi***	**Plains Leopard Frog**	**W**	**R**		**SC**
Aquatic Systems Lake Michigan	*Coregonus clupeaformis*	Lake Whitefish	NW	C		SC
Aquatic Systems Lake Michigan	*Rhinichthys cataractae*	Longnose Dace	N	O		SC
Aquatic Systems Lake Michigan	*Catostomus catostomus*	Longnose Sucker	NW	R		SC
Aquatic Systems Lake Michigan	*Falco peregrinus*	Peregrine Falcon	I	R	R*	SE
Aquatic Systems Lake Michigan	*Cottus cognatus*	Slimy Sculpin	NW	R		SC
Aquatic Systems Lake Michigan	*Percopsis omiscomaycus*	Trout-Perch	NW, S	R		SC
Aquatic Systems Natural Lakes	***Coregonus artedi***	**Cisco**	**NW**	**R**		**SC**
Aquatic Systems Natural Lakes	*Notropis anogenus*	Pugnose Shiner	NE	1945		SC
Aquatic Systems Oxbows/Backwaters/Sloughs/Embayments	*Elassoma zonatum*	Banded Pygmy Sunfish	SW	R		SC
Aquatic Systems Oxbows/Backwaters/Sloughs/Embayments	*Lepomis symmetricus*	Bantam Sunfish	W	R		SE
Aquatic Systems Oxbows/Backwaters/Sloughs/Embayments	*Etheostoma proeliare*	Cypress Darter	SW	R		SC
Aquatic Systems Rivers and Streams	*Haliaeetus leucocephalus*	Bald Eagle	I	R	R*	SE, FT
Aquatic Systems Rivers and Streams	*Sterna antillarum*	Least Tern	I	R	S*	SE, FE
Aquatic Systems Rivers and Streams	*Pandion haliaetus*	Osprey	I	R	S*	SE
Aquatic Systems Rivers and Streams Great Lakes Drainage Great River	***Venustaconcha ellipsiformis***	**Ellipse**				SC
Aquatic Systems Rivers and Streams Great Lakes Drainage Great River	***Moxostoma valenciennesi***	**Greater Redhorse**	**N**	**R**		**SE**
Aquatic Systems Rivers and Streams Great Lakes Drainage Headwater	***Ichthyomyzon fossor***	**Northern Brook Lamprey**	**NE**	**R**		**SE**
Aquatic Systems Rivers and Streams Great Lakes Drainage Wadeable/ Large River	*Campeloma decisum*	Pointed Campeloma				SC

Aquatic Systems Rivers and Streams Kankakee River (Illinois River) Drainage Wadeable/ Large River	*Notropis dorsalis*	Bigmouth Shiner	NW	R		SC
Aquatic Systems Rivers and Streams Kankakee River (Illinois River) DrainageWadeable/Large River	*Lymnaea stagnalis*	Swamp Lymnaea				SC
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Headwater	*Clinostomus elongatus*	Redside Dace	E	R		SE
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	***Pleurobema clava***	**Clubshell**				**SE, FE**
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Percina evides*	Gilt Darter	C	O		SE
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	***Cryptobranchus alleganiensis***	**Hellbender**	**S**	**R**		**SE**
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Ptychobranchus fasciolaris*	Kidneyshell				SC
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Villosa lienosa*	Little Spectaclecase				SC
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Epioblasma torulosa rangiana*	Northern Riffleshell				SE, FE
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Esox masquinongy ohioensis*	Ohio River Muskellunge	S	R		SC
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Toxolasma lividus*	Purple Lilliput				SC
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Quadrula cylindrica cylindrica*	Rabbitsfoot				SE
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Villosa fabalis*	Rayed Bean				SC, FC
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Obovaria subrotunda*	Round Hickorynut				SC

Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Simpsonaias ambigua*	Salamander Mussel				SC
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Plethobasus cyphyus*	Sheepnose				SE, FC
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Epioblasma triquetra*	Snuffbox				SE
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Etheostoma maculatum*	Spotted Darter	C	R		SC
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Etheostoma variatum*	Variegate Darter	SE	R		SE
Aquatic Systems Rivers and Streams Ohio River Drainage Eastern Corn Belt/Interior Plateau Ecoregions Wadeable/Large River	*Lampsilis fasciola*	Waveyrayed Lampmussel				SC
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Percina copelandi*	Channel Darter	C	R		SE
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	***Cyprogenia stegaria***	**Eastern Fanshell**				**SE, FE**
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Potamilus capax*	Fat Pocketbook				SE, FE
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Acipenser fulvescens*	Lake Sturgeon	W, S	R		SE
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Fusconaia subrotunda*	Longsolid				SE
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Noturus stigmosus*	Northern Madtom	W, C	R		SC
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Pleurobema cordatum*	Ohio Pigtoe				SC
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Plethobasus cooperianus*	Orangefoot Pimpleback				SE, FE
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Lampsilis abrupta*	Pink Mucket				SE, FE
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Pleurobema rubrum*	Pyramid Pigtoe				SE
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Pleurobema plenum*	Rough Pigtoe				SE, FE
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Etheostoma tippecanoe*	Tippecanoe Darter	C	R		SC
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Epioblasma torulosa torulosa*	Tubercled Blossom				SE, FE
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Ammocrypta clara*	Western Sand Darter	NW, S	O		SC
Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Epioblasma obliquata perobliqua*	White Catspaw				SE, FE

Aquatic Systems Rivers and Streams Ohio River Drainage Great River	*Plethobasus cicatricosus*	White Wartyback				SE, FE
Aquatic Systems Rivers and Streams Ohio River Drainage Interior River Lowland Wadeable/Large River	***Macrochelys temmincki***	**Alligator Snapping Turtle**	**SW**	**R**		**SE**
Aquatic Systems Rivers and Streams Ohio River Drainage Interior River Lowland Wadeable/Large River	***Pseudemys concinna***	**Hieroglyphic River Cooter**	**SW**	**1950**		**SE**
Aquatic Systems Rivers and Streams Ohio River Drainage Interior River Lowland Wadeable/Large River	*Hybopsis amnis*	Pallid Shiner	W	R		SE
Barren Lands	*Rana areolata*	Crawfish Frog	W	O		SE
Barren Lands	*Rana blairi*	Plains Leopard Frog	W	R		SC
Barren Lands Bare Dunes	***Charadrius melodus***	**Piping Plover**	**I**	**R**	**A(*)**	**SE, FE**
Barren Lands Cliffs	***Neotoma magister***	**Allegheny Woodrat**	**SC**	**R**		**SE**
Barren Lands Cliffs	***Aneides aeneus***	**Green Salamander**	**SE**	**R**		**SE**
Developed Lands	*Chordeiles minor*	Common Nighthawk	I	O	S*	SC
Developed Lands	*Scaphiopus holbrookii*	Eastern Spadefoot Toad	S	O		SC
Developed Lands	***Clonophis kirtlandii***	**Kirtland's Snake**	N, C, SE	O		SE
Developed Lands	***Liochlorophis vernalis***	**Smooth Green Snake**	NW	R		SE
Developed Lands Industrial Lands	*Chordeiles minor*	Common Nighthawk	I	O	S*	SC
Developed Lands Industrial Lands	***Falco peregrinus***	**Peregrine Falcon**	**I**	**R**	**R***	**SE**
Forests	*Tyto alba*	Barn Owl	I	R	R*	SE
Forests	*Mniotilta varia*	Black-And-White Warbler	I	O	S*	SC
Forests	*Ambystoma laterale*	Blue-Spotted Salamander	N	O		SC
Forests	***Lynx rufus***	**Bobcat**	**I**	**R**		**SC**
Forests	*Buteo platypterus*	Broad-Winged Hawk	I	O	S*	SC
Forests	*Nerodia erythrogaster neglecta*	Copperbelly Water Snake	SW, NE, SC	O		SE, FC
Forests	*Pipistrellus subflavus*	Eastern Pipistrelle	S	C		SC
Forests	***Lasiurus borealis***	**Eastern Red Bat**	**I**	**A**		**SC**
Forests	*Nycticeius humeralis*	Evening Bat	SC	O		SE

Forests	*Hemidactylium scutatum*	Four-Toed Salamander	N, C	R		SE
Forests	*Lasiurus cinereus*	Hoary Bat	I	O		SC
Forests	*Wilsonia citrina*	Hooded Warbler	I	R	S*	SC
Forests	*Myotis sodalist*	Indiana Myotis	I	O		SE, FE
Forests	*Clonophis kirtlandii*	Kirtland's Snake	N, C, SE	O		SE
Forests	*Mustela nivalis*	Least Weasel	N	R		SC
Forests	*Myotis lucifugus*	Little Brown Myotis	I	C		SC
Forests	*Ictinia mississippiensis*	Mississippi Kite	I	R	A*	SC
Forests	*Myotis septentrionalis*	Northern Myotis	I	C		SC
Forests	*Sorex hoyi*	Pygmy Shrew	SC	O		SC
Forests	*Corynorhinus rafinesquii*	Rafinesque's Big-Eared Bat	SC	R		SC
Forests	*Pseudotriton rubber*	Red Salamander	SC	R		SE
Forests	*Opheodrys aestivus*	Rough Green Snake	S	O		SC
Forests	*Cemophora coccinea*	Scarlet Snake	S	R		SE
Forests	*Lasionycteris noctivagans*	Silver-Haired Bat	I	O		SC
Forests	*Sorex fumeus*	Smoky Shrew	SC	O		SC
Forests	*Liochlorophis vernalis*	Smooth Green Snake	NW	R		SE
Forests	*Myotis austroriparius*	Southeastern Myotis	SC	R		SE
Forests Early Forest Stage	*Vermivora chrysoptera*	Golden-Winged Warbler	I	R	S*	SE
Forests Early Forest Stage	***Caprimulgus vociferus***	**Whip-Poor-Will**	**I**	**C**	**S***	**SC**
Forests Evergreen	*Dendroica kirtlandii*	Kirtland's Warbler	I	R	M	SE, FE
Forests Evergreen	***Accipiter striatus***	**Sharp-Shinned Hawk**	**I**	**O**	**R***	**SC**
Forests Floodplain Forests	***Dendroica cerulea***	**Cerulean Warbler**	**I**	**O**	**S***	**SC**
Forests Forested Wetlands	***Dendroica cerulea***	**Cerulean Warbler**	**I**	**O**	**S***	**SC**
Forests Mature or High Canopy Stage	***Neotoma magister***	**Allegheny Woodrat**	SC	R		SE
Forests Mature or High Canopy Stage	***Dendroica cerulea***	**Cerulean Warbler**	**I**	**O**	**S***	**SC**
Forests Mature or High Canopy Stage	***Crotalus horridua***	**Timber Rattlesnake**	**S**	**R**		**SE**
Forests Old Forest Stage	*Neotoma magister*	Allegheny Woodrat	SC	R		SE
Forests Old Forest Stage	***Dendroica cerulea***	**Cerulean Warbler**	**I**	**O**	**S***	**SC**

Forests Riparian Wooded Corridors/Streams	*Haliaeetus leucocephalus*	Bald Eagle	I	R	R*	SE, FT
Forests Riparian Wooded Corridors/Streams	*Nycticorax nycticorax*	Black-Crowned Night-Heron.	I	R	S*	SE
Forests Riparian Wooded Corridors/Streams	***Dendroica cerulea***	**Cerulean Warbler**	**I**	**O**	**S***	**SC**
Forests Riparian Wooded Corridors/Streams	*Myotis grisescens*	Gray Myotis	SC	R		SE, FE
Forests Riparian Wooded Corridors/Streams	*Ardea alba*	Great Egret	I	O	S*	SC
Forests Riparian Wooded Corridors/Streams	*Pandion haliaetus*	Osprey	I	R	S*	SE
Forests Riparian Wooded Corridors/Streams	***Buteo lineatus***	**Red-Shouldered Hawk**	**I**	**O**	**R***	**SC**
Forests Riparian Wooded Corridors/Streams	*Nyctanassa violacea*	Yellow-Crowned Night-Heron	SW	R	S*	SE
Forests Upland	*Neotoma magister*	Allegheny Woodrat	**SC**	**R**		**SE**
Forests Upland	*Chordeiles minor*	Common Nighthawk	I	O	S*	SC
Forests Upland	*Aneides aeneus*	Green Salamander	SE	R		SE
Forests Upland	***Tantilla coronata***	**Southeastern Crowned Snake**	**S**	**R**		**SE**
Forests Upland	*Helmitheros vermivorum*	Worm-Eating Warbler	I	R	S*	SC
Grasslands	*Botaurus lentiginosus*	American Bittern	I	R	S*	SE
Grasslands	***Taxidea taxus***	**Badger**	**I**	**R**		**SC**
Grasslands	*Tyto alba*	Barn Owl	I	R	R*	SE
Grasslands	*Emydoidea blandingii*	Blanding's Turtle	N	O		SE
Grasslands	*Ambystoma laterale*	Blue-Spotted Salamander	N	O		SC
Grasslands	*Lynx rufus*	Bobcat	I	R		SC
Grasslands	*Thamnophis butleri*	Butler's Garter Snake	NE, C	R		SE
Grasslands	***Rana areolata***	**Crawfish Frog**	**W**	**O**		**SE**
Grasslands	***Scaphiopus holbrookii***	**Eastern Spadefoot Toad**	**S**	**O**		**SC**
Grasslands	***Spermophilus franklinii***	**Franklin's Ground Squirrel**	**NW**	**R**		**SE**
Grasslands	*Ammodramus henslowii*	Henslow’s Sparrow	I	R	S*	SE
Grasslands	*Clonophis kirtlandii*	Kirtland's Snake	**N, C, SE**	**O**		**SE**
Grasslands	*Mustela nivalis*	Least Weasel	N	R		SC
Grasslands	*Lanius ludovicianus*	Loggerhead Shrike	I	R	R*	SE

Grasslands	***Circus cyaneus***	**Northern Harrier**	**I**	**O**	**R***	**SE**
Grasslands	*Rana pipiens*	Northern Leopard Frog	N, E	C		SC
Grasslands	*Rana blairi*	Plains Leopard Frog	W	R		SC
Grasslands	*Geomys bursarius*	Plains Pocket Gopher	NW	C		SC
Grasslands	*Cistothorus platensis*	Sedge Wren	I	R	S*	SE
Grasslands	*Asio flammeus*	Short-Eared Owl	I	R	R*	SE
Grasslands	*Liochlorophis vernalis*	Smooth Green Snake	NW	R		SE
Grasslands	*Clemmys guttata*	Spotted Turtle	N	O		SE
Grasslands	*Bartramia longicauda*	Upland Sandpiper	I	R	S*	SE
Grasslands	*Sturnella neglecta*	Western Meadowlark	N	R	R*	SC
Grasslands	*Thamnophis proximus*	Western Ribbon Snake	NW, SW	O		SC
Grasslands Early Successional Areas	***Spermophilus franklinii***	**Franklin's Ground Squirrel**	**NW**	**R**		**SE**
Grasslands Farm Bill Programs	***Ammodramus henslowii***	**Henslow's Sparrow**	**I**	**R**	**S***	**SE**
Grasslands Prairies	*Spermophilus franklinii*	Franklin's Ground Squirrel	NW	R		SE
Grasslands Vegetated Dunes and Swales	***Terrapene ornata***	**Ornate Box Turtle**	**NW, SW**	**O**		**SE**
Subterranean Systems Cave Entrances	***Hemidactylium scutatum***	**Four-Toed Salamander**	**N, C**	**R**		**SE**
Subterranean Systems Cave Entrances	***Aneides aeneus***	**Green Salamander**	**SE**	**R**		**SE**
Subterranean Systems Caves	***Pipistrellus subflavus***	**Eastern Pipistrelle**	**S**	**C**		**SC**
Subterranean Systems Caves	*Myotis grisescens*	Gray Myotis	SC	R		SE, FE
Subterranean Systems Caves	***Myotis sodalis***	**Indiana Myotis**	**I**	**O**		SE, FE
Subterranean Systems Caves	*Myotis lucifugus*	Little Brown Myotis	I	C		SC
Subterranean Systems Caves	***Amblyopsis spelaea***	**Northern Cavefish**	**S**	**R**		**SE**
Subterranean Systems Caves	*Myotis septentrionalis*	Northern Myotis	I	C		SC
Subterranean Systems Caves	*Corynorhinus rafinesquii*	Rafinesque's Big-Eared Bat	SC	R		SC
Subterranean Systems Caves	*Myotis austroriparius*	Southeastern Myotis	SC	R		SE
Wetlands Emergent	*Botaurus lentiginosus*	American Bittern	I	R	S*	SE
Wetlands Emergent	*Laterallus jamaicensis*	Black Rail	I	R	A*	SE
Wetlands Emergent	*Chlidonias niger*	Black Tern	I	O	S*	SE

Wetlands Emergent	*Nycticorax nycticorax*	Black-Crowned Night-Heron.	I	R	S*	SE
Wetlands Emergent	*Gallinula chloropus*	Common Moorhen	I	R	S*	SE
Wetlands Emergent	*Ardea alba*	Great Egret	I	O	S*	SC
Wetlands Emergent	*Rallus elegans*	King Rail	I	R	S*	SE
Wetlands Emergent	*Ixobrychus exilis*	Least Bittern	I	R	S*	SE
Wetlands Emergent	*Cistothorus palustris*	Marsh Wren	I	R	S*	SE
Wetlands Emergent	*Grus canadensis*	Sandhill Crane	I	O	M*	SC
Wetlands Emergent	*Cistothorus platensis*	Sedge Wren	I	R	S*	SE
Wetlands Emergent	*Cygnus buccinator*	Trumpeter Swan	I	R	W(*)	SE
Wetlands Emergent	*Rallus limicola*	Virginia Rail	I	R	R*	SE
Wetlands Emergent	*Grus americana*	Whooping Crane	N		M	SE, FE
Wetlands Emergent	*Nyctanassa violacea*	Yellow-Crowned Night-Heron	SW	R	S*	SE
Wetlands Emergent	*Xanthocephalus xanthocephalus*	Yellow-Headed Blackbird	W, S	R	S*	SE
Wetlands Emphemeral	*Ambystoma laterale*	Blue-Spotted Salamander	N	O		SC
Wetlands Emphemeral	*Lynx rufus*	Bobcat	I	R		SC
Wetlands Emphemeral	*Rana areolata*	Crawfish Frog	W	O		SE
Wetlands Emphemeral	*Scaphiopus holbrookii*	Eastern Spadefoot Toad	S	O		SC
Wetlands Emphemeral	*Hemidactylium scutatum*	Four-Toed Salamander	N, C	R		SE
Wetlands Emphemeral	*Rana pipiens*	Northern Leopard Frog	N, E	C		SC
Wetlands Emphemeral	***Rana blairi***	**Plains Leopard Frog**	W	R		SC
Wetlands Emphemeral	*Condylura cristata*	Star-Nosed Mole	NE	R		SC
Wetlands Herbaceous Marsh	*Emydoidea blandingii*	Blanding's Turtle	N	O		SE
Wetlands Herbaceous Marsh	*Thamnophis butleri*	Butler's Garter Snake	NE, C	R		SE
Wetlands Herbaceous Marsh	*Nerodia erythrogaster neglecta*	Copperbelly Water Snake	SW, NE, SC	O		SE, FC
Wetlands Herbaceous Marsh	*Agkistrodon piscivorus*	Cottonmouth	S	R		SE
Wetlands Herbaceous Marsh	*Rana areolata*	Crawfish Frog	W	O		SE
Wetlands Herbaceous Marsh	*Scaphiopus holbrookii*	Eastern Spadefoot Toad	S	O		SC
Wetlands Herbaceous Marsh	***Sistrurus catenatus***	**Massasauga**	**N**	**R**		**SE**
Wetlands Herbaceous Marsh	*Rana pipiens*	Northern Leopard Frog	N, E	C		SC
Wetlands Herbaceous Marsh	***Rana blairi***	**Plains Leopard Frog**	W	R		SC
Wetlands Herbaceous Marsh	*Lutra canadensis*	River Otter	I	R		SC

Wetlands Herbaceous Marsh	***Clemmys guttata***	**Spotted Turtle**	**N**	**O**		**SE**
Wetlands Herbaceous Marsh	*Condylura cristata*	Star-Nosed Mole	NE	R		SC
Wetlands Herbaceous Marsh	*Farancia abacura*	Western Mud Snake				SE
Wetlands Herbaceous Marsh	*Thamnophis proximus*	Western Ribbon Snake	NW, SW	O		SC
Wetlands Permanent	***Emydoidea blandingii***	**Blanding's Turtle**	**N**	**O**		**SE**
Wetlands Permanent	*Lynx rufus*	Bobcat	I	R		SC
Wetlands Permanent	***Nerodia erythrogaster neglecta***	**Copperbelly Water Snake**	***SW, NE, SC***	***O***		**SE, FC**
Wetlands Permanent	*Agkistrodon piscivorus*	Cottonmouth	S	R		SE
Wetlands Permanent	*Scaphiopus holbrookii*	Eastern Spadefoot Toad	S	O		SC
Wetlands Permanent	***Hemidactylium scutatum***	**Four-Toed Salamander**	**N, C**	**R**		**SE**
Wetlands Permanent	*Sistrurus catenatus*	Massasauga	N	R		SE
Wetlands Permanent	*Rana pipiens*	Northern Leopard Frog	N, E	C		SC
Wetlands Permanent	*Rana blairi*	Plains Leopard Frog	W	R		SC
Wetlands Permanent	*Lutra canadensis*	River Otter	I	R		SC
Wetlands Permanent	***Condylura cristata***	**Star-Nosed Mole**	**NE**	**R**		**SC**
Wetlands Permanent	*Sylvilagus aquaticus*	Swamp Rabbit	SW	R		SE
Wetlands Permanent	*Farancia abacura*	Western Mud Snake				SE
Wetlands Shrub/ Scrub	***Vermivora chrysoptera***	**Golden-Winged Warbler**	I	R	S*	SE

Appendix K: Taxonomic group references

Castrale, John S., Edward M. Hopkins, and Charles E. Keller. 1998**.** Atlas of breeding birds of Indiana. Indiana Department of Natural Resources, Division of Fish and Wildlife, Nongame and Endangered Wildlife Program. Indianapolis, Indiana. 388 p.

Cummings, K.S. and C.A. Mayer. 1992. Field guide to freshwater mussels of the Midwest. Illinois Natural History Survey: Champaign, IL. 194 pp.

Gerking, S.D. 1945. Distribution of fishes of Indiana. Indiana Lakes and Streams 3(1): 1-137.

Minton, S. 2001, 2nd ed. Amphibians and reptiles of Indiana. Indiana Academy of Science: Indianapolis, IN. 404 pp.

Mumford, R.E. and J.O. Whitaker, Jr. 1982. The mammals of Indiana. Indiana UP: Bloomington, IN. 537 pp.

Mumford, R.E. and C.E. Keller. 1984. The birds of Indiana. Indiana UP: Bloomington, IN. 394 pp.

Whitaker, J. O. Jr. and J. R. Gammon. 1988 Endangered and threatened vertebrate animals of Indiana their distribution and abundance. Indiana Academy of Sciences. Monograph No.5. 122pp.

Program	Administered by	Contact Information	Funds available	A. Implementation Constraints for DNR				
				Out of state travel	State match	Lack of staff	Funding issues	Other
Programs for All Habitats								
2002 IPL Golden Eagle Environment Grant	Indianapolis Power and Light	http://www.ipalco.com/ABOUTIPALCO/Environment/Golden_Eagle/Golden_Eagle_Application.html	Yes	--	--	--	--	--
Classified Wildlife Habitat Program	Indiana DNR - Division of Fish and Wildlife	(317) 232-4080 http://www.biodiversitypartners.org/state/in/incentives.shtml http://www.state.in.us/dnr	Yes	--	--	--	X	--
Ecoregional planning	The Nature Conservancy	(317) 951-8818 http://nature.org/wherewework/northamerica/states/indiana/	Yes	--	--	--	--	X
Game Bird Habitat Program	Indiana DNR - Division of Fish and Wildlife	(317) 232-4080 http://www.biodiversitypartners.org/state/in/incentives.shtml http://www.state.in.us/dnr	Yes	--	--	--	X	--
General Challenge Grant	National Fish and Wildlife Foundation	http://www.nfwf.org/programs/grant_apply.htm http://www.nfwf.org/contact.htm#cntr	Yes	--	X	?	?	?

Appendix L: Conservation Programs and Resources

Program	Administered by	Contact Information	Funds available	A. Implementation Constraints for DNR				
				Out of state travel	State match	Lack of staff	Funding issues	Other
Indiana Biodiversity Initiative	Coalition of organizations and agencies	http://www.biodiversitypartners.org/state/in/bioplanning.shtml	Yes	--	--	--	X	--
Indiana Heritage Trust	Indiana Department of Natural Resources	(317) 233-1002 http://www.in.gov/dnr/heritage/	Yes	--	--	--	--	--
Land trusts in Indiana	Land Trust Alliance	http://www.lta.org/findlandtrust/IN.htm http://www.lta.org/regionallta/midwest.htm	Yes	--	?	?	?	?
NiSource Environmental Challenge Fund	NiSource	http://www.nisource.com/enviro/ecf.asp	Yes	--	--	--	X	--
Nongame Tax Check-off	Indiana DNR - Division of Fish and Wildlife	(317) 232-4080 http://www.in.gov/dnr/fishwild/endangered/history.htm	Yes	--	--	--	X	--
North American Bird Conservation Initiative (NABCI)	Coalition of organizations and agencies	http://www.nabci-us.org/main2.html	???	X	--	X	--	--
Partners In Flight	U.S. Fish and Wildlife Service	http://www.partnersinflight.org/	No	--	--	--	--	--
State wildlife agency management strategic plans	Indiana DNR - Division of Fish and Wildlife	(317) 232-4080	Yes	--	--	--	X	--

Appendix L: Conservation Programs and Resources

Program	Administered by	Contact Information	Funds available	A. Implementation Constraints for DNR				
				Out of state travel	State match	Lack of staff	Funding issues	Other
Tipmont REMC Envirowatts Trust	Tipmont REMC (Linden, IN)	800-726-3953 http://www.tipmont.org/Services/envirowatts.htm	Yes	--	?	?	X	X
Various grants	National Fish and Wildlife Foundation	http://www.nfwf.org/programs/grant_apply.htm http://www.nfwf.org/contact.htm#cntr	Yes	--	?	?	?	?
Wildlife Habitat Cost Share Program	Indiana DNR - Division of Fish and Wildlife	(317) 232-4080 http://www.biodiversitypartners.org/state/in/incentives.shtml http://www.state.in.us/dnr	Yes	--	--	--	X	--
Programs for Agricultural Habitats								
Conservation Reserve Enhancement Program	Farm Service Agency Natural Resources Conservation Service	http://www.in.nrcs.usda.gov/	Yes	--	X	--	--	X
Conservation Reserve Program	Farm Service Agency Natural Resources Conservation Service	http://www.in.nrcs.usda.gov/	Yes	--	--	--	--	X

Appendix L: Conservation Programs and Resources

Program	Administered by	Contact Information	Funds available	A. Implementation Constraints for DNR				
				Out of state travel	State match	Lack of staff	Funding issues	Other
Core 4 Alliance Grants	Conservation Technology Information Center	(765) 494-9555 http://www.ctic.purdue.edu/Tammy/Application.pdf	Yes	--	--	--	--	X
Game Bird Habitat Program	Indiana DNR - Division of Fish and Wildlife	(317) 232-4080 http://www.biodiversitypartners.org/state/in/incentives.shtml http://www.state.in.us/dnr	Yes	--	--	--	X	--
Indiana Environmental Quality Incentives Program	Natural Resources Conservation Service	http://www.in.nrcs.usda.gov/	Yes	--	--	--	--	X
Sustainable Agriculture Research and Education (SARE) Producer Grant Program	U.S. Department of Agriculture	http://sare.org	Yes	--	--	--	--	X
Wetland Reserve Program	Natural Resources Conservation Service	http://www.nrcs.usda.gov/programs/wrp/states/in.html	No	--	--	--	X	--

Appendix L: Conservation Programs and Resources

Program	Administered by	Contact Information	Funds available	A. Implementation Constraints for DNR				
				Out of state travel	State match	Lack of staff	Funding issues	Other
Wildlife Habitat Cost Share Program	Indiana DNR - Division of Fish and Wildlife	(317) 232-4080 http://www.biodiversitypartners.org/state/in/incentives.shtml http://www.state.in.us/dnr	Yes	--	--	--	X	--
Wildlife Habitat Incentives Program	Natural Resources Conservation Service	http://www.in.nrcs.usda.gov/	Yes	--	?	?	?	X
Programs for Aquatic Habitats								
Aquatic Ecosystems Restoration	U.S. Army Corps of Engineers	http://www.mvp.usace.army.mil/environment/default.asp?pageid=113	Yes	--	X	--	--	--
Bring Back the Natives	National Fish and Wildlife Foundation	http://www.nfwf.org http://www.epa.gov/owow/watershed/wacademy/fund/natives.html	Yes	?	?	?	?	?
Clean Water Act Non Point Source Grants (Section 319)	U.S. Environmental Protection Agency Department of Environmental Management	http://www.in.gov/idem/water/programs/	Yes	--	X	--	X	X
Clean Water Act Planning Grants (Section 205(j))	U.S. Environmental Protection Agency Department of Environmental Management	http://www.in.gov/idem/water/programs/	Yes	--	--	--	--	--

Appendix L: Conservation Programs and Resources

Program	Administered by	Contact Information	Funds available	A. Implementation Constraints for DNR				
				Out of state travel	State match	Lack of staff	Funding issues	Other
Clean Water Act Stormwater Grants (Section 104(b) (3))	U.S. Environmental Protection Agency Department of Environmental Management	http://www.in.gov/idem/water/programs/	Yes	--	X	--	X	X
Great Lakes Aquatic Habitat Network & Fund	Tip of the Mitt Watershed Council (Petoskey, MI)	(231) 347-1181 http://www.glhabitat.org/Eligibility.html	Yes	?	?	?	X	?
Great Lakes Basin Program for Soil Erosion and Sediment Control	Great Lakes Commission/ Natural Resources Conservation Service	http://www.glc.org/basin/RFP.html http://www.glc.org/about/about.html	Yes	?	?	?	X	?
Great Lakes Regional Collaboration	U.S. Environmental Protection Agency	http://www.glrc.us/	??	X	--	--	--	--
Hoosier Riverwatch Water Quality Monitoring	Department of Natural Resources Hoosier Riverwatch	http://www.in.gov/dnr/riverwatch/vsm/grant.html	Yes	--	--	--	--	X
Lake and River Enhancement Program	Department of Natural Resources – Division of Fish and Wildlife	http://www.in.gov/dnr/soilcons/pdfs/lare.pdf http://www.in.gov/dnr/soilcons	Yes	--	--	--	X	X

Appendix L: Conservation Programs and Resources

Program	Administered by	Contact Information	Funds available	A. Implementation Constraints for DNR				
				Out of state travel	State match	Lack of staff	Funding issues	Other
Lake Michigan Coastal Program	Department of Natural Resources – Division of Nature Preserves Coastal Advisory Board National Oceanic and Atmospheric Administration	http://www.in.gov/dnr/lakemich/program/index.html	Yes	--	?	?	?	X
Mississippi Interstate Cooperative Resource Association (MICRA)	Interstate commission representing 28 states, several tribes and federal government	http://wwwaux.cerc.cr.usgs.gov/MICRA/	?	X	--	--	--	--
National Fish Habitat Initiative	U.S. Fish & Wildlife Service International Association of Fish and Wildlife Agencies	http://www.fishhabitat.org	TBD	TBD	TBD	TBD	TBD	TBD
Ohio River Valley Water Sanitation Commission (ORSANCO)	Interstate commission representing eight states (IL, IN, KY, NY, OH, PA, VA, WV) and federal government	http://orsanco.org/	?	X	--	--	--	--
Partners for Fish and Wildlife	U.S. Fish and Wildlife Service	http://partners.fws.gov/pdfs/partnersfs.pdf	Yes	?	?	?	X	?

Appendix L: Conservation Programs and Resources

Program	Administered by	Contact Information	Funds available	A. Implementation Constraints for DNR				
				Out of state travel	State match	Lack of staff	Funding issues	Other
Project Modifications for Improvement of the Environment (Section 1135 (b))	U.S. Army Corps of Engineers	http://www.usace.army.mil/	Yes	--	X	--	--	--
Re-Grants	CS Mott Foundation River Network	http://www.rivernetwork.org/howwecanhelp/howregrant.cfm	Yes	?	?	?	X	?
Research grants	Illinois-Indiana Sea Grant	http://www.iisgcp.org/research/	Yes	--	?	?	?	?
Science Program	Great Lakes Fishery Commission	http://www.glfc.org/	Yes	X	--	--	--	--
State Revolving Fund Program	U.S. Environmental Protection Agency Department of Environmental Management	http://www.in.gov/idem/water/fasb/srflp.html	Yes	--	--	--	X	--
Watershed assistance grants	U.S. Environmental Protection Agency River Network	http://www.rivernetwork.org/howwecanhelp/index.cfm?doc_id=92	Yes	?	?	?	X	?
Programs for Developed Lands Habitats								

Appendix L: Conservation Programs and Resources

Program	Administered by	Contact Information	Funds available	A. Implementation Constraints for DNR				
				Out of state travel	State match	Lack of staff	Funding issues	Other
Brownfields Cleanup Revolving Loan Fund	Department of Environmental Management U.S. Environmental Protection Agency	http://www.state.in.us/idem/land/brownfields/services/finecon.html	Yes	--	--	--	--	X
Clean Water Act Stormwater Grants (Section 104(b) (3))	U.S. Environmental Protection Agency Department of Environmental Management	http://www.in.gov/idem/water/programs/	Yes	--	X	--	X	X
Hometown Indiana Grant Program	Department of Natural Resources – Division of Outdoor Recreation	http://www.in.gov/dnr/outdoor/grants/hometown.html	Yes	--	--	--	X	X
State Revolving Fund Program	U.S. Environmental Protection Agency Department of Environmental Management	http://www.in.gov/idem/water/fasb/srflp.html	Yes	--	--	--	X	--
Urban Forest Conservation Grants	Department of Natural Resources – Division of Outdoor Recreation	http://www.state.in.us./dnr/outdoor/planning/scorp/dnrresourcemanual.pdf	Yes	?	?	?	X	?
Programs for Forest Lands Habitat								

Appendix L: Conservation Programs and Resources

Program	Administered by	Contact Information	Funds available	A. Implementation Constraints for DNR				
				Out of state travel	State match	Lack of staff	Funding issues	Other
Classified Forest Program	Department of Natural Resources – Division of Forestry	(317) 232-4105 http://www.state.in.us/dnr/forestry/privateland/clasfor.htm	Yes	?	?	?	X	?
Forest Legacy Program	USDA Forest Service	http://www.fs.fed.us/spf/coop/programs/loa/flp.shtml	Yes	?	?	?	X	?
Hometown Indiana Grant Program	Department of Natural Resources – Division of Outdoor Recreation	http://www.in.gov/dnr/outdoor/grants/hometown.html	Yes	--	--	--	X	X
National forest planning rules	USDA Forest Service	TBD	No	--	--	--	--	X
Urban Forest Conservation Grants	Department of Natural Resources – Division of Outdoor Recreation	http://www.state.in.us./dnr/outdoor/planning/scorp/dnrresourcemanual.pdf	Yes	?	?	?	X	?
Wildlife Habitat Cost Share Program	Indiana DNR - Division of Fish and Wildlife	(317) 232-4080 http://www.biodiversitypartners.org/state/in/incentives.shtml http://www.state.in.us/dnr	Yes	--	--	--	X	--
Programs for Subterranean Systems Habitats								
Conservation Fund	North American Bat Conservation Partnership Bat Conservation International	http://www.batcon.org/nabcp/newsite/index.html	Yes	?	?	?	?	?

Appendix L: Conservation Programs and Resources

Program	Administered by	Contact Information	Funds available	A. Implementation Constraints for DNR				
				Out of state travel	State match	Lack of staff	Funding issues	Other
Conservation grants	National Speleological Society	http://www.acave.us/cd/b_grants/cons_grants.htm	Yes	?	?	?	?	?
Fellowship	Cave Conservancy Foundation	http://members.aol.com/cavecfinc/	Yes	?	?	?	X	?
Indiana Environmental Quality Incentives Program	Natural Resources Conservation Service	http://www.in.nrcs.usda.gov/	Yes	--	--	--	--	X
Programs for Wetlands Habitats								
Conservation Reserve Enhancement Program	Farm Service Agency Natural Resources Conservation Service	http://www.in.nrcs.usda.gov/	Yes	--	X	--	--	X
Conservation Reserve Program	Farm Service Agency Natural Resources Conservation Service	http://www.in.nrcs.usda.gov/	Yes	--	--	--	--	X
Lake and River Enhancement Program	Department of Natural Resources – Division of Fish and Wildlife	http://www.in.gov/dnr/soilcons/pdfs/lare.pdf http://www.in.gov/dnr/soilcons	Yes	--	--	--	X	X

Appendix L: Conservation Programs and Resources

Program	Administered by	Contact Information	Funds available	A. Implementation Constraints for DNR				
				Out of state travel	State match	Lack of staff	Funding issues	Other
North American Wetlands Conservation Act Grants	U.S Fish and Wildlife Service	http://www.fws.gov/birdhabitat/NAWCA/USstandgrants.html	Yes	?	X	?	?	?
Wetland Reserve Program	Natural Resources Conservation Service	http://www.nrcs.usda.gov/programs/wrp/states/in.html	No	--	--	--	X	--
Wetlands Protection Development Grants Program	U.S. Environmental Protection Agency	http://www.epa.gov/owow/wetlands/initiative/#financial	Yes	?	?	?	?	?
Wildlife Habitat Incentives Program	Natural Resources Conservation Service	http://www.in.nrcs.usda.gov/	Yes	--	?	?	?	X
More Funding Sources								
Catalog of Federal Funding Sources for Watershed Protection	EPA Office of Water (EPA841-B-97-008) September 1997	http://www.nal.usda.gov/wqic/funding.html	Yes	TBD	TBD	TBD	TBD	TBD
GrantsWeb		http://www.srainternational.org/newweb/grantsweb/index.cfm	Yes	TBD	TBD	TBD	TBD	TBD
The Foundation Center		http://fdncenter.org/	Yes	TBD	TBD	TBD	TBD	TBD

Appendix M: Suggested Wildlife Monitoring

Suggested Wildlife Monitoring Needs					
Species Group	**Species**	**Schedule**	**Area**	**Justification/Need details**	**Associated database needs**
Amphibians	Salamanders	Annual	Statewide	A regionally or nationally standardized methodology for the collection of location and abundance data for salamanders is needed. A volunteer based, survey methodology would facilitate statewide implementation. New survey techniques, especially safe and effective marking techniques, are needed. A standardized database structure for reporting and analysis of survey results should also be developed. Survey data could be complied into an Indiana specific salamander or amphibian atlas.	Yes
Birds	Migratory stopover sites	Annual	Selected migratory stopover sites	Could contribute to the national monitoring effort and provide insight into characteristics and importance of migratory stopover habitat.	Yes
	Nesting habitat searches	Annually	Selected habitats	Selected forest, grassland, wetland etc. habitats could be censused for nesting birds to help determine if the habitat patch is a source or a sink.	Yes – part of Statewide Bird DB
	Owls and Nightjars	Annually	Statewide in suitable habitat	Techniques for efficient nocturnal surveys are needed.	Yes – part of Statewide Bird DB
	Rails, bitterns, and shorebirds	Annually	Statewide in appropriate wetlands habitat on a regular cycle	Rail, bittern and shorebird surveys could benefit from a national or regional protocol that would facilitate regional or national population analysis.	Yes – part of Statewide Bird DB

Appendix M: Suggested Wildlife Monitoring

Cave Invertebrates	Cave invertebrates	Continuous	Selected cave systems on a regular cycle	Cave invertebrates have limited dispersal power and can be sensitive to acute and chronic environmental disturbances. Regular inventory would help define the status of cave dependent species, their habitat and the level of threat.	Yes
Fish and Mussels	Freshwater mussels	Annually	A subset of Indiana's small steams on a 5-10 year rotation	This survey would complement the commercial mussel survey (every ten years in selected big river reaches) to give a complete picture of the status of Indiana's mussel fauna.	Yes
Insects	General insect survey	Continuous	Selected rare habitats on a regular cycle	Much of Indiana has been modified. Rare insect species are suspected to occur in rare habitat. Yet, even the rare habitats have been inadequately inventoried. This effort is a necessary first step.	Yes
Mammals	Bats (summer)	Annual	Portions of the state on a regular cycle	Analysis of separate and limited studies indicates a general decline in bats. Summer bats are a heterogeneous group and a multifaceted approach is needed to accurately determine the status of this group.	Yes
	Bats (winter)	Annual	Known or suspected bat caves on a schedule. (except *Myotis sodalist* caves)	Surveys for cave dwelling bats species, besides Indiana bats is need to adequately protect wintering bat populations. Caves, abandon mines and quarries are individually unique features, a standardized protocol that provides for statistically valid repetition of the same sites is desirable	Yes
	Small mammals (shrews, mice and voles)	Annual -	Statewide - representative habitats, by county on a regular cycle	Would provide important baseline information for these important prey species and an indicator of habitat structure changes and quality.	Yes

	Trapper survey (otter , bobcat, and badger)	Annual	Statewide	Although these three species are protected nongame they are encountered during normal trapping season. The location, frequency of non-target captures and age and sex ratio's of specimens encountered can be useful indicators of regional population status	Yes
Reptiles	Lizards	Annual	Statewide or by county on a regular cycle	A regionally or nationally standardized methodology for the collection of location and abundance data for lizards is needed. A volunteer-based methodology would facilitate statewide implementation. New techniques, especially safe and effective marking techniques, are needed. A standardized database structure for reporting and analysis of survey results should also be developed. Survey data could be complied into an Indiana specific lizard or reptile atlas.	Yes – part of statewide reptile DB
	Snakes	Annual	Statewide or by county on a regular cycle	A regionally or nationally standardized methodology for the collection of location and abundance data for snakes is needed. A volunteer-based methodology would facilitate statewide implementation New survey techniques, especially safe and effective marking techniques, are needed. A standardized database structure for reporting and analysis of survey results should also be developed. Survey data could be complied into an Indiana specific snake or reptile atlas.	Yes – part of statewide reptile DB

Appendix M: Suggested Wildlife Monitoring

	Turtles	Annual	Statewide or by county on a regular cycle	A regionally or nationally standardized methodology for the collection of location and abundance data for turtles is needed. A volunteer-based methodology would facilitate statewide implementation New survey techniques, especially safe and effective marking techniques, are needed. A standardized database structure for reporting and analysis of survey results should also be developed. Survey data could be complied into an Indiana specific turtle or reptile atlas	Yes – part of statewide reptile DB
General surveys	Surveys of species most in need of conservation, especially in certain habitats.	Annually	Statewide in appropriate habitats on a regular cycle	Land treatment programs such as, but not necessarily limited to the Wetland Reserve Program (WRP), Conservation Reserve Program (CRP), mine land reclamation and silviculture practices can provide specific habitat features and the response of wildlife to these features needs to be recorded and evaluated.	Yes – part of the Heritage Database (HD)
	General prey inventories,- insect, small mammals, amphibians, etc.	As needed	Specific study sites	An index of prey abundance would be an important component of population models for specific species in specific habitats.	No – include in study report
State Land Surveys	General Nongame survey - All nongame wildlife and insects	Annually	DNR properties	Department of Natural Resources Properties are considered to be repositories of Indiana's biological Diversity. Survey and monitoring efforts to determine the distribution and abundance of wildlife on these properties is appropriate.	Yes – could be part of each area's database and the HD
Additional Database needs	Bird sighting database	Continuous	Statewide	Bird sightings are reported on internet sites, but this massive amount of information is not organized, summarized in a standard way or readily accessible. Population trends and location data could be extracted from these records.	Yes – could be part of a statewide bird database

	(Pit tag database			Many researchers use Passive Integrated Transponder tags to mark research subjects for individual identification. Tagged individual may be recovered by other researchers, law enforcement agents and the public. Valuable information is lost if the origin of these tags can not be quickly ascertained.	Yes
	Bat Band Database			The movements and habits of bats are poorly understood. The USFWS provides the data management service for bird bands that ensures the origin and history of recovered bands is available. A similar service does not exist for bat bands and valuable data is being lost. The establishment of a comparable bat banding laboratory is needed.	Yes
	Road kill database (all vertebrate species)	Annually	Statewide (selected roadways on an established cycle	Information on road killed animals can serve as an index of abundance, delineate occupied range and help locate features that attract wildlife to roads and the design and optimal placement of collision avoidance measures.	Yes
	Wildlife disease	Continuous	Statewide	Wildlife species are necropsied each year, but results are not centralized or summarized. Trends and locations of wildlife diseases could be monitored in a more timely basis if such a database existed.	Yes
	Wildlife rehabilitation	Annual	Statewide	Summary of wild species handled by licensed rehabilitators with sources of injury could be helpful in identification of threats.	Yes
	Window, cell tower and windmill bird and bat kill database	Annual	Statewide	Information on the date, species, environmental conditions and location of birds killed by flying into structures could provide an index to migratory timing and routes and characteristics of obstacles. The data could be used to aid in avoidance and minimization recommendations.	Yes – could be part of a statewide bird database

Appendix N: Suggest Habitat Monitoring

Habitat Monitoring Needs				
Habitat Feature	**Schedule**	**Area**	**Justification/Need details**	**Associated database needed**
Agricultural statistics	Annual	Statewide	Acreages devoted to various crops in digital format that can be used in a GIS.	Yes
Aquatic systems - bottom substrate and contour	Continuous	Statewide	The distribution or many aquatic organisms is best explained by water body's bottom substrate and contour. Currently there is no systematic, statewide inventory of bottom substrate and contour for Indiana lakes, steams and reservoirs.	
Cave locations, cave recharge areas, and general karst feature inventory	Continuous	Southern Indiana	The karst region of Indiana is dynamic. Surface accesses to underground chambers changes and new information about cave features are documented on an irregular basis.	Yes
Environmental contaminants in waterways	Some streams should be monitored annually others on a rotating schedule	Statewide	Toxic chemical levels in a GIS format.	Yes
Forest statistics	As available, large public landholding should be monitored annually	Statewide	Forest inventory data in a digital format that can be used in GIS applications	Yes
Invasive animals and plants	Continuous	Statewide	Distribution of major problem exotics.	Yes – including treatment information and results
Land cover/land use	As available	Statewide	Satellite (LANDSAT?) imagery at a fine scale with appropriate categorization and ground-	Yes

			truthing updated at least every 5-10 years.	
Rock outcrops	Continuous	Statewide	Rock outcrops are difficult to identify with spectral analysis. However, this rare and often widely dispersed habitat supports a number of species-most-in-need of conservation. Currently an adequate inventory of this habitat feature does not exist.	Yes
Soil maps	Continuous	Statewide	A statewide database on soil hydrology, soil type, fertility, and proximity to water that could be correlated to vegetative cover would be useful in the management of all species, especially burrow dwelling species.	Yes
Wetland	Continuous	Statewide	Detailed wetland information in a GIS format. Should include restored wetlands, especially those enrolled in WRP	Yes

Partner Comments

Comment 1

Location Table #9

Comment Funding is available for the Wetlands Reserve Program on an annual allocation basis. Therefore Funding Available should say "yes".

Reply 1: The Table was modified based on the comment

Comment 2

Location Table 10

Comment For USDA Natural Resources Conservation Service, there should also be an "X" under subterranean.

Reply 2: The Table was modified based on the comment

Comment 3

Location figure 4

Page # 34

line # 1

Comment typo - barren lands comprise 0.19 percent, not 19 percent.

Reply 3: The Figure was modified based on the comment

Comment 4

Location Table 10

Page # 62-66

line # 10

Comment Some of the rows do not add up to 100% (Four Rivers RC&DA, Hoosier Conservation Alliance, Indiana Association of Cities and Towns, Indiana Beaglers Alliance, Indiana Environmental Institute, IPL, Little River Wetlands, Newport Chemical Depot, NE Trout Assoc., NIPSCO, NW Indiana Regional Planning Commision, Sycamore Land Trust, Tippecanoe Audubon Society, others?). The "average time spent" at the bottom of the table sums to 151%, which is a meaningless figure (should add to 100). Doesn't make much sense.

Reply 4: The Table was modified based on the comment

Comment 5

Location XII

Page # 67

line # line 10, 12

Comment couple of grammatical errors:

line 10 - "receive" should be "received"

line 12 - "has" should be "have"

Reply 5: The Text was modified based on the comment

Comment 6

Location Matrix of Conservation Partners

Page # 62

line # Table 10

Comment It appears that an individual other than the Indiana Regional Biologist provided comments. In an attempt to reduce confusion, please only include Ducks Unlimited, Inc. in Table 10. Thanks.
Reply 6: The Table was modified based on the comment

Comment 7
Location Section VIII. Key Habitats and Communities for Species of Greatest Conservation Need
Page # 29-31, 36
line # figure 6 forest lands
Comment Comparing with USDA Forest Service Forest Inventory & Analysis (FIA) data, it appears that habitat features were identified based on satellite imagery data, which only allows for analysis of land cover. FIA uses a definition based on land use. The report states that 23 percent of IN is forested (more than 5.5 million acres), while FIA data shows 4.5 million acres. As an example, was the developed lands layer taken out? Looking at the Indianapolis area in the Forest Lands Map (figure 6), it appears that there is forestland located here. FIA would preclude these acres due to the land-use definition; however, using satellite imagery as the basis for forestland, there could be canopy coverage in urban areas such as this. Another probable source of differences would be such things as pastured woodlots. FIA's land-use definition would again throw out these acres from forestland, while analysis of satellite imagery would say this ground if forest (cover). The definition of forestland used is somewhat vague--what are the size limitations?, what pixel size was used in the analysis?, etc.? I believe a million acres difference in forestland acreage for the state is quite a large number.
Reply 7: This issue is address in section VIII, page 34

Comment 8
Location General Comment on Entire Document
Page #
line #
Comment My expertise is in aquatic systems / freshwater mussels but my comment may apply to other areas. While the document lists certain conservation measures for mussels and other species, artificial propagation / supplementation of existing populations is notably missing from all sections. I spent the last 2 years on an extensive survey of Indiana's premier mussel streams (East fork White R., Wabash R., and Tippecanoe R.). Almost all showed signs of low or limited reproduction. Without a captive propagation program (where mussels are captively raised in aquaculture and released to supplement existing populations or in historic habitats) it is almost certain Indiana's mussels will continue to decline, particularly the rare and endangered species. In fact, 10 years from now when the next mussel monitoring event is scheduled will likely be too late and only document the drastic decline. Ohio, Kentucky, and other states have a cooperative effort between facilities in KY, OH, WV and others. It is my understanding that Indiana was unwilling to participate (Dr. Tom Watters, OSU museum of biological diversity, pers. comm.). The strategy should include a goal for captive propagation of native mussels, gastropods, and perhaps native fishes. Because other states such as Ohio and KY already have advanced programs it would be relatively little

effort to have these facilities raise mussels for Indiana until IN develops its own program.
Reply 8: This issue is addressed in Table 8, page 64, conservation actions 4 and 5 for all habitats combined.

Comment 9
Location Section VII. Species of Greatest Conservation Need
Page # 24
line # Table 1
Comment I just happened to glance at the Species of Greatest Conservation Need document during lunch today. As nearly as I can tell, you have some species in there that are simply at the edge of their range (green salamander, e.g.). I don't see anything in this document to separate out the "edge of range" species from those in real trouble. I know the herp TAC group has discussed this issue from time to time. There's no "great conservation need" for these species, and how to list them is problematical. I don't know what you did with these species once you had the list together, but am hoping that some distinction or additional detail was added to separate the species that have true, major conservation needs from those that are just at the edge of their range.
Reply 9: This issue is addressed in section VII page 25.

Comment 10
Location Problems affecting species and habitat
Page #
line #
Comment I did not see mercury referenced even though most of our waterways are impaired and Indiana is ranked 4th in the US for mercury pollution. Is it in the Bioaccumulation of Contaminants section?
Reply 10: This issue is addressed in Section VIII, page 50.

Comment 11
Location general question
Page #
line #
Comment Who looks at cross state habitat consistent strategy such as Illinois plans for Kankakee vs. Indiana’s plans for Kankakee?
Reply 11: This issue is addressed in Section VI, page 24.

Comment 12
Location Monitoring Progress into the future
Page # 4
line # 38-39
Comment We fully agree with the need to monitor for amphibians. We modeled habitat needs for spotted salamander in our recent Forest Plan revision efforts. The same for Mussels. We need to know where they are located to provide the greatest protection for the species and its habitat.
Reply 12: This issue is addressed in Section XII, page 79, Table 79

Comment 13
Location Species of Greatest Conservation Needs
Page # 25 - 28
line # Table 1
Comment I am surprised to see that the Ruffed Grouse and American Woodcock did not make the list of Species of Greatest Conservation need. During recent Forest plan revision modeling through the use of LANDIS showed that the habitat requirements for these species were not adequate to maintain a viable populations in to the future.
Reply 13: See Section IV, page 15 for a description of the model and Section VII for selection of SGCN.

Comment 14
Location Key habitat and communities for species of greatest conservation need
page # 30
line # 12-13
Comment The definition of forestland only covers late-successional forest habitat. This eliminates those species that might be dependent on early successional type habitat that is comprised of trees and shrubs 0 to 9 years of age. This is the preferred habitat for species such as Ruffed grouse and American Woodcock. It also reduces the amount of habitat for late-successional species that may prefer early successional habitat for some part of their life cycle, such as foraging.
Reply 14: See Appendix A for a complete list of habitats definitions

Comment 15
Location Threats to Habitats
Page # 45
line # 12-14
Comment This paragraph could be worded more strongly. The threat for habitat loss from invasive species is a serious consideration. The need for chemical treatments for use on all lands needs to be addressed. When cities decide to be less aggressive in their treatment methods than the state and federal entities it undermines the ability to use all available tools to control these species. State and Federal land mangers need to take the lead and become the authority in this area.
Reply 15: this issue is included in Section IX Pages 56 & 57, Tables 4 & 5.

Comment 16
Location Threats to habitat
Page # 45
line # 22-34
Comment The mapping needs to include age class and habitat type in their classifications. Otherwise the loss or early successional habitat cannot be adequately addressed.
Reply 16: See Appendix A for a complete list of Sub-habitats and their definitions. See Appendices E33 through E46 for results of technical expert results on all forest sub-habitats.

Comment 17
Location VIII key Habitats and Communities
Page # 29-30
line #
Comment We are concerned that savannas are not listed as a habitat or discussed in this document. Oak savannas of various types (e.g. black oak savannas on dry sand dunes, red and white oak savannas on somewhat better soils, bur oak savannas on silt loam soils) are important habitats in Northwest Indiana. They should at least be mentioned and it should be indicated if they are being counted among Forests or Grasslands if it is too difficult to distinguish them in the spectral identification and mapping.
Reply 17: See Appendix E59 for the results of technical expert results on this sub-habitat.

Comment 18
Location Figure 4. Barren Lands
Page # 34
line #
Comment Obviously 19 percent is incorrect. According to Table 2 it should be 0.19 percent.
Reply 18: Text was corrected.

Comment 19
Location Table 10. Matrix of conservation partners
page # 62-66
Comment Our organization, LaPorte County Conservation Trust, Inc., is not listed as a partner and was not contacted about this Comprehensive Wildlife Strategy. We are a land trust in LaPorte County and own several parcels, including the 23 acre Wintergreen Woods State Nature Preserve and 60 acre Ridgway Wetlands. We are listed in the Division of Nature Preserves list of Indiana land trusts, so don't know how we were missed. You can contact us through my email or at 405 Maple Avenue, LaPorte, IN 46350 because our Web Site is not yet on line.
Reply 19: This organization was added to table 11 (formerly table 10)

Comment 20
Location XI, A-2: Habitats Conservation Actions
Page # 53
line # 22
Comment We need to keep all of our tools in place for working with private landowners, including the Classified Wildlife Habitat program.
Reply 20: This issue is addressed in Section XI, Page 63.

Comment 21

We applaud the effort required to generate this document and hope to see it lead to the implementation of actual conservation specifics - so long as they are done on a science-based rather than political basis.
Reply 21: Conservation funding is often politically influenced.

Comment 22
First of all, a question (or series of related questions) – how will this document be used? Will the state be required to develop conservation initiatives to protect the threatened species and habitats? Who will actually use it and how? How will they know it exists? How will its use in formulating public policy and regulation be tracked? Will the final version have any legal standing?
Reply 22: This document will be implemented by conservation partners and the Indiana DNR. Please see table 11, Page 72 for a complete list of organizations.

Comment 23
Page 54, table 7 ("Conservation action needed…") lists "Regulation of Collecting" in a tie for first place with " Habitat Protection" under Subterranean Systems – we disagree that these items are of the same magnitude. Our organization sees only an occasional request for a permit to collect in any of the subterranean aspects of the properties we manage and, to the best of our ability, we monitor activities within the underground portions of our preserves through a combination of gates, supervision, and electronic logging devices and thus have confidence that there is only minimal undocumented use. We are acquainted with many of the researchers who would be making such requests and while they agree that it could become a problem if for some reason the field became "hot", no one is aware of it currently being a big problem. This is not to say that there shouldn't be increased regulatory controls to preclude such collecting for scientific or other purposes from becoming a threat, only that the threat due to habitat degradation is much larger and more immediate. Looking at Appendix E60, the responding experts ranked unregulated collecting pressure as: 14% "Somewhat of a threat", 29% "Slight", 43% "No", and 14% "Unknown".
Reply 23: The results presented are the results of technical experts input. Through adaptive management the CWS will be modified as appropriate.

Comment 24
The focus of the subterranean portion seems to be the Indiana Bat (*myotis Sodalis*). This is likely due to the visibility of the species resulting from its designation as a federally endangered species and to the amount of research (and researchers) available. Focusing on this one species, which has very specific needs, such as a hibernaculum chamber temperature between 3 and 7°C, as representing the biological health of a cave would lead to some rather demanding management prescriptions (refrigeration?). Of the approximately 2,900 caves in Indiana (typical temperatures of 11 to 13°C), less than thirty appear to be viable hibernacula for the species. Monitoring the success of a hibernating colony of Indiana Bats would allow conclusions to be drawn about the chamber temperature, summer breeding success and lack of disturbance but would say little about the remaining 2,870 caves where the health of the resident salamanders, crayfish, cavefish, copepods etc. depends upon a largely different set of factors such as

energy input through detritus, moisture, warmer temperatures and an ecosystem that likely includes complicated inter-relationships of insects, microbes, fungus and so on. Caves, subterranean water conduits, and springs have a direct bearing on the local water quality. Monitoring the Indiana Bat is likely to offer few clues regarding water quality whereas monitoring, say, the population of crayfish might. We note that there are no references to the work done by Dr. Julian J. Lewis of Lewis Bioconsulting regarding his biological surveys in the caves of Indiana for The Nature Conservancy and the Hoosier National Forest. This would seem to be a major omission as his are probably the most recent and comprehensive studies done. Dr. Lewis was recently featured in the Autumn 2005 edition of Nature Conservancy where his work in various caves in Tennessee was spotlighted.
Reply 24: Please see section IV, page 15 for a description of the model and Section V for representative species selection.

Comment 25
We are concerned that initiatives coming out of this program might make information regarding the locations of various caves and other karst features on private, state and federal properties available to the general public. After the publication, in 1961, of the *Caves of Indiana* – which included 398 detailed topographical locations (mostly on private land) – by the Indiana Geological Survey, untold damage due to vandalism, overuse and ignorance resulted in most of the caves listed. Several bat hibernacula were greatly impacted. Other private publications followed suit and aggravated the problem. Only those caves with vigilant owners escaped. Fortunately, these publications are now out of publication, though copies still exist in public libraries. In our work with the Hoosier National Forest, we have made cave locations available but only after signing a memorandum of understanding which gives us sole ownership of the location database, subjects them to our conditions and denies them the right to publish entrance locations without our concurrence. Similar arrangements do not exist with the State of Indiana and so the locations that exist in various forms in State Agencies are vulnerable to release. Incorporation of an "Entrance Layer" into a GIS database would make a powerful tool in the hands of any vandal or ignorant "spelunker" should it (inevitably) escape to the world of the Internet. The implications are even greater because so many of these locations would be on private property, encouraging trespassing and further degrading landowner relations.
Reply 25: This issue is addressed in Section IV, page 15.

Comment 26
In Table 8 on page 55, "Habitat Protection Incentives (financial)" is listed as seventh rank (tie) for subterranean systems, we would rank it much higher. Other habitats generally rank it higher; some place it first. From our perspective, finding funding for acquisition of critical habitat is essential, it is really a now or never situation. Urban sprawl is enveloping wildlife habitat at a dramatic and accelerating rate. As farms and forests are broken up into residential developments, wildlife habitat is generally irretrievably lost. Having financial incentives, be they tax relief, restoration grants or acquisition grants (such as from the Indiana Heritage Trust) is critical to preserving at least some of the wildlife value of the property. We rely on donations from our members, other

organizations, corporations and the State to purchase our preserves. Where possible, we acquire as much of the surface surrounding the entrance and overlying the cave passages as possible. This reduces the likelihood of contamination of the subterranean system by spills of contaminants, malfunctioning septic systems or sedimentation due to inappropriate surface management. With property prices rising rapidly this means that significant funding is required. Opportunities for acquisition greatly exceed funds available.
Reply 26: The results presented are the results of technical experts input. Through adaptive management the CWS will be modified as appropriate.

Comment 27
On the organization of the electronic form of the document – it would improve access if the table of contents could be made "live" that is, if the chapter titles were linked to the document so that clicking on them would jump the user directly to the page in question. This should be possible with Adobe Acrobat™.
Reply 27: Thank you for the recommendation.

Comment 28
Page 5, line 67--That the…"DNR will conduct species and habitat assessment efforts *as resources allow"*…is a problematic statement on what should be considered essential to the well-being of Indiana citizens since a habitat unhealthy for wildlife is ultimately unhealthy for humans. We would prefer guaranteed minimum resources as the quality of the food we eat and air we breath and water we drink is predicated on healthy habitats. Resources will always be found for what government considers essential and almost never so for what is considered an afterthought (such as wetlands in a delta).
Reply 28: Thank you for the comment, we agree and hope that the development of this document will allow more reliable funding.

Comment 29
Page 14, Line 9—We accept DFW selection of a habitat-based approach rather than using a species-by-species approach. However, a habitat-based approach does not completely guarantee that individual species (particularly SGCN) do not suffer as a habitat could be altered over the long term to favor, for example, shrub/early successional species such as game birds to the detriment of closed-canopy species such as neotropical warblers.
Reply 28: Please see section IV, page 15 for a description of the model and Section V for representative species selection.

Comment 30
Page 15, Line 6—"The process also identifies gaps in___". The sentence is incomplete; Line 7 is blank.
Reply 30: This section was corrected based on the comment.

Comment 31
Page 17, Line 26—Step1: Assemble a guild of species for each habitat type.
Page 17, Line 45—Step 2: Select a species to represent each guild.

It is not clear that a completely unbiased approach has been established in selecting representative species. What prevents outside pressure or simply personal preference in favoring game species to the exclusion of non-game species to represent a guild? Also, if the guild of species for each habitat type is too small, you may, for example, have Baltimore Orioles (which nest and forage in large hardwoods on the edges) representing Forest Lands, which might lead to a forest management plan favoring the oriole by creating numerous small clear-cut patches. However, assessing habitat only for the Baltimore Oriole would lead to erroneous conclusions on managing Forest Lands, to the detriment of the Northern Parula Warbler (which nests in the interior of large, structurally complex hardwood forests) which has been harmed by forest fragmentation in some parts of its range.
Reply 30: Please see section IV, page 15 for a description of the model and Section V for representative species selection.

Comment 32
Page 33, Figure3: Aquatic System—It should be clarified that the 2.36% does not reflect the free-flowing streams and groundwater that are present in Subterranean habitats and, therefore, does not represent the total Aquatic resources in Indiana.
Reply 32: The results presented are the results of technical experts input. Through adaptive management the CWS will be modified as appropriate.

Comment 33
Page 34, Figure 4: Barren Lands—"Indiana's barren lands comprise *19 percent* of Indiana." Decimal point appears to be missing; should this not be 0.19 percent?
Reply 33: This section was corrected based on the comment.

Comment 34
Page 35, Figure 5: Developed Lands—"Indiana's developed lands constitute 3.69% of Indiana…" This percentage seems low. Does this include all industry not associated with agriculture (*active* mine lands, gravel pits, quarries, oil and gas infrastructure, etc.)? Is suburban sprawl adequately represented in this?
Reply 34: See Appendix A for a complete list of habitats definitions

Comment 35
Page 54, Line 1--Table 7. Conservation action needed for species in each of the habitats. Ranking of conservation action needed for Subterranean Systems has "habitat protection" and "regulation of collecting" tied for first place. Theoretically, collecting may be an issue but, practically speaking, "threats reduction" and "limiting contact with pollutants/ contaminants" are more pressing issues. Subterranean species, specifically bats, have been and are being targeted by humans using fire, smoke, firearms and other means to kill them. Dumping chemicals or trash into sinkholes is a common occurrence that can contaminate well water and springs used by both people and livestock. Water moves very rapidly once it enters the underlying limestone passages and is filtered very little; thus, any pollutant that enters a sinkhole may move a great distance in a relatively short time to resurface at a spring. In Indiana's karst regions non-point source pollution can easily seep through the soil and into the groundwater below.

Reply 35: The results presented are the results of technical experts input. Through adaptive management the CWS will be modified as appropriate.

Comment 36
Thank you for the opportunity to comment on Indiana's Comprehensive Wildlife Conservation Plan. We found the document easy to follow. It clearly synthesizes a significant volume of information about Indiana's wildlife and we believe it will be a very useful starting point for future conservation efforts. We have organized our comments into three categories: Assessment (i.e. species, habitat and threat assessments), Strategy (i.e. prioritized conservations actions) and Implementation (i.e. next steps for moving the plan forward and monitoring through an adaptive management process).
Reply 36: Thank you for the comment, the results presented are the results of technical experts input. Through adaptive management the CWS will be modified as appropriate.

Comment 37

A. I. Assessment

We were very happy to see the draft document centered on habitat conservation, "conservation of wildlife must start with a focus on habitat" pg. 4. Many other states have taken a habitat approach, but Indiana's plan has the clearest articulation we have seen of why a habitat approach makes sense both biologically and practically on page 14. We were also pleased to see the statements about a landscape approach to conservation mentioned on page 16 which suggests decisions will be made more strategically and in a landscape context. We are very encouraged by these steps forward in Indiana's approach to conservation.

To complement this habitat approach we recommend the Indiana plan ultimately contain habitat goals. Although not required by Congress, Defenders believes that having clear, measurable goals helps focus the plan, instigate implementation, and assists with concrete monitoring efforts. South Dakota has proposed maintaining at least 10% of the historic acreage for each habitat type as a goal for their plan. Nebraska also calculated a goal for the number of protected patches for each habitat type. These kinds of specific numerical goals can be difficult to determine initially, but act as a guide and a measure for monitoring purposes. Many other states, specifically North Carolina and Hawaii, have included more wide ranging, general goals that could serve as good models.

We were pleased to see that Indiana included numerous maps showing the distribution of habitat types across the state. Defenders of Wildlife believe that the identification of priority conservation areas is critical for a successful plan. Identifying priority areas ensures that conservation efforts are more coordinated and efficient, thereby maximizing the use of limited conservation dollars. Massachusetts, Illinois, and Florida, as well as many other states, have all included excellent spatial analysis of priority conservation areas in their plans. We recommend including such a map as an explicit work product under the spatial analysis planned for statewide monitoring on pg. 74.

Indiana's statewide threats discussion highlights the most prevalent issues for species and habitats which correctly center on habitat loss, connectivity and quality. The accompanying Tables 3 and 4 are a nice summary of statewide issues. We were pleased data gaps were not listed as a threat to wildlife as other states have done, but rather dealt with in Section X on additional research and survey efforts. We agree that there is need to study habitat at specific sites for better restoration and management, but there is also a need for statewide assessment of habitat condition so that priority habitat conservation areas can be chosen as mentioned above. We suggest this analysis is equally important to the more site specific habitat studies and the two should inform each other.
Comment 37: This issue is addressed in Section IV, page 15.

Comment 38

B. II. Strategy

Generally, the conservation actions are well organized. Early statements make it clear this is not an operational plan. However, we would like to see more detail regarding some of the actions outlined in the plan. For example, private land conservation is discussed along with the challenge resulting from dividing parcels into smaller acreages with more owners (pg. 53). Land use planning however is only mentioned briefly.

Given the importance of development pressure affecting wildlife habitat described in Section IX, a discussion of actions to address this threat could be expanded to indicate the kind of tools available and the need for outreach and working with local land use planners. Defenders developed a section of our Biodiversity Partners website to discuss the issue of habitat and sprawl (www.biodiversitypartners.org/habconser/sprawl.shtml). It describes the issue and lists a number of tools employed by planners to protect habitat. In the same vein, actions to inform the design, maintenance and retrofit of the transportation network to minimize their impact on wildlife habitat could also be included. Some suggested language could be, "Work with land use and transportation planners to incorporate areas of important biodiversity into residential and commercial development, roads and other infrastructure to minimize the impacts of city planning on sensitive habitat areas."

Including such planning and policy connections to address land use and transportation planning issues has also been critical for many other States. States like Maine have developed programs that include working with planners as a priority conservation action and we recommend that you highlight and work to strengthen your involvement with these planning agencies. Involving wildlife issues in land use and transportation planning early on will avoid unnecessary conflicts and delays over development and should be an excellent example of a proactive way to use information from the wildlife strategy.

It was encouraging to see reference to using incentive programs and working with private landowners in Section B on Partnering Agencies and Organizations (pg. 56). Table 9 is a very good list of the programs available in the state and a good starting point. The discussion of the barriers to using these programs effectively to conserve wildlife habitat

is informative. We recommend that the appendix M list be accompanied by short descriptions of the how the programs work.

We would also like to see some ideas on how the state intends to better make use of these programs using information from the CWS. For example, the wildlife plan might recommend that the criteria for determining where some of these program dollars are spent could be informed by the habitat priorities or specific places on the landscape the state feels are the best opportunities for conservation. Some programs have been better aligned with conservation plans in this way by other states (e.g. Florida, Utah, etc.).

Defenders of Wildlife developed a report that describes many of the different incentive programs that can be used to encourage private landowners to manage their lands compatibly with wildlife. You may find the descriptions and discussion useful for the Indiana plan. Here is the link to the full report: (http://www.biodiversitypartners.org/bioplanning/tools/index.shtml).
Comment 38: This issue is addressed in Section IV, page 15 and Table 10 page 68.

Comment 39
III. Implementation

There are a few elements that we believe are crucial in order to smoothly transition from planning to implementation. These include clearly defined leadership roles, some discussion of funding, and a complete monitoring plan.

Leadership can be presented in the strategic plans in a number of ways. Many States have created tables of threats and actions and listed the agency or organization best suited to implement those actions. In addition, partners can be included in particular actions such as watershed assessments or mapping projects. Other indications of clear leadership are hiring staff dedicated to implementation and coordinating an implementation work group. North Carolina is a good example of a State that has clearly presented leadership roles. The Indiana plan lists many conservation partners and discusses the idea of bringing them together in early 2006 to discuss implementation activities. This is a positive step. We recommend you consider creating an implementation committee or working group as other states are doing to maintain momentum into implementation and provide direction.

Lack of funding is identified as a major barrier to conservation in Indiana. A clear presentation of available funds or potentially available funds will help clarify what actions will be feasible to implement. It is also important to identify creative additional funding sources such as the Farm bill, transportation mitigation dollars, ballot initiatives, and Federal invasive species control grants (http://invasivespecies.gov/toolkit/grants.shtml). Indiana lists various existing programs in Appendix M and indicates whether funds are available, but does not include dollar figures and other programs that can be used for habitat conservation (e.g. transportation, Pittman-Robertson, etc.). Iowa included an excellent description of existing and needed future funds in their plan. We recommend using it as a model.

The description of monitoring is very good with a description of habitat monitoring and plans to establish a spatial base line and regular monitoring of habitat condition and other variables (pg. 74). This is very much in line with recommendations we made in a report Defenders produced related to habitat monitoring. Here again, having clear goals will make monitoring actions much easier and more meaningful. One of the other ideas developed is that of a conservation registry to track conservation actions spatially (including land protection through acquisitions, easements and other agricultural incentive programs). Here are some of the highlighted recommendations from that report:

- Track and map actions of multiple groups in a registry of conservation actions
- Track long term land use changes relative to habitat priorities at a statewide and/or ecoregional scale
- Form a statewide, interagency and private sector monitoring group to facilitate coordinated monitoring
- Involve citizens in some elements of monitoring programs for practical and educational purposes

Here's a link to the full report:
http://www.biodiversitypartners.org/infomanage/monitoring/01.shtml
Comment 39: This issue is addressed in Section IV, page 15

Comment 40
IV. Concluding Remarks

Page 77 describes the creation of an action plan in early 2006 to accompany the strategy. Certainly more detailed planning will be necessary for site specific actions, but we believe this document could go farther in providing statewide and landscape direction for action if it went a little deeper by identifying the best opportunities for habitat conservation and fleshed out more of the planning and policy connections.

Overall, we believe that Indiana has put together a solid wildlife conservation assessment that will be useful for the coming years. We especially look forward to seeing progress on mapping habitats and priority areas. We hope that these suggestions are useful to you. Please contact us if you have any questions regarding our comments. Thank you again for making the document available for public review.
Comment 40: Thank you for your comment.

Comment 41
Pg. 14. Habitat loss or degradation is considered the biggest threat, and rightfully so. However, can you document this for Indiana?, ie, how many acres are lost annually in Indiana to development? I think its about 101,000 acres.
How much natural land lost?
How much farm land lost?
How much natural land is regained?

Methods
Step 1. Assemble a guild of species for each habitat type – This is what ISU is doing.
Step 2. Select a species to represent each guild.
Reply 41: This issue is addressed in Section VII, page 34.

Comment 42
Pg. 19 Comment: The questionnaires were very difficult to use and very time consuming. They could have been greatly modified to do a much better job – i. e., a simple questionnaire would have gotten much more response. This is especially true for wildlife professionals.
Reply 42: Through adaptive management the CWS will be modified as appropriate.

Comment 43
Pg. 25 List of Species – I suggest a major rearrangement of this list to make it more usable. Professionals usually use scientific names rather than common names, but I realize why common names would be emphasized here. However, I would reorganize the list on pp. 25-28 to make it much more usable and user friendly. It is currently awful to use. (What list did you use for common names? Simon et. al., 2002?)
First, I would divide the table up into:
Mammals
Birds
Reptiles
Amphibians
Fish

Then, I would divide by status
FE, FT, SE (There is no longer any State Threatened
or perhaps –
Endangered (Federal or State)
Threatened
SC
Exotic

This would allow the list to be used much more easily – and you could tell how many Endangered forms there were – by group, or totally.
Reply 43: Thank you for the recommendation.

Comment 44
VIII. Pg. 29 Habitats – more than 60 specific habitats
acreage
distribution
(patch size?)
native vs non-native
plant diversity
relative abundance

(ownership)
relative condition
1800
1900
2000

Too many comments of yours are included such as– This is the first attempt…etc.
Reply 44: This issue is addressed in Section VII, page 34.

Comment 45
Pg. 42. Fig. 10 – Some of the shadings are difficult to separate,
(Quercus – Carya versus Wetlands
Fagus Acer versus Fagus- Quercus – Acer – Carya)
Reply 45: Through adaptive management the CWS will be modified as appropriate.

Comment 46
Pg. 43 Last par. – See my question #1 again. I see no attempt to determine the land loss, nor even to let people know what a huge factor this is. Last par. – Suggests that different evolutionary pressures are involved in shaping the species in these habitats – and that these populations are small and isolated – I am not sure that there are these small isolated populations in those habitats (barren, developed lands) i. e., most species occur on contiguous habitats. What species are we talking about that have these small and isolated populations in barren or developed lands? Remove this or provide evidence that such populations exist. I suspect that the whole paragraph should be deleted, beyond the first phrase…Habitat loss…in most habitats (period).
Reply 46: Through adaptive management the CWS will be modified as appropriate.

Comment 47
Threats. Pg. 46.
Habitat loss – data?? I would suggest a list of habitats – and how they have faired.
1800, 1900, 2000 - and perhaps, by ten year periods from 1900 to present.
Why is this listed twice?
This whole table seems based on peoples opinions – rather than on data.
And what does this all mean? For example – there is a #1 under Agriculture, pg. 46.
Does this mean there is a threat to the wildlife there?
Or, that the Agricultural land is disappearing?
If there is a threat to wildlife on agricultural lands – What species are threatened?
On down the list – 3rd threat – Migration routes – What species are threatened?
Also, what species are threatened by:
#4 – irregular resources,
#5 – pollution
#6 – Predators – especially
#7 – Contaminants
#8 – Viable reproductive population size
#9 – Invasive species
#10 – Disease/Parasites etc.

What species are threatened by all of these and in what habitats? I have the same sorts of questions regarding the threats to habitats in Table 4. We need details, not so much the generalities.
Reply 47: Thank you for the comment, the results presented are the results of technical experts input. Through adaptive management the CWS will be modified as appropriate

Comment 48
Pg. 48. Research needs – the greatest was to identify the threats – including predators, competition etc.
Limiting factors need to be studied.
Most of these need study on a case by case basis by Species, as you indicate with your Indiana bat example.
Also – interactions are stressed. The report, as you recognized – does not give many specific research needs. Probably a species rather than a habitat approach would give more of this – especially when applied to the endangered, threatened and SC species.
Perhaps the suggestion for research to come out of this is to recommend that each of the target species be studied to attempt to determine specific threats. Then indicate what habitats those threats occur in. Conservation needs then should become clearer.

What Endangered/Threatened/Special Concern species are present in all of the habitats? But especially – 1) Agriculture 2) Developed 3) Barren lands

If none, or very few – we can pretty much forget those habitats and concentrate on the more natural habitats.
Reply 48: Thank you for the comment, the results presented are the results of technical experts input. Through adaptive management the CWS will be modified as appropriate

Comment 49
Pg. 50 - If we consider threats to habitats – the greatest has to be development – certainly to Agriculture and Grasslands.
Some examples of conservation actions are listed on pp 51 – They could be pulled out and emphasized more.
Reply 49: Thank you for the comment

Comment 50
Pg. 52. line 20 – Protection of migration routes – Do we really mean migration – movement one way – then back later – Or, do we mean dispersal route?
I believe I would sort out the research and also the conservation plans – specifically and for, individual species that need it – there are a number of thoughts on this in your report– pp. 48------ and they could be emphasized.
This would be my thoughts on what a strategy should do – point out specifics – rather than generalize so much.
Comment 50: This issue is addressed in Section IV, page 15.

Comment 51
Pg. 54 – Table 7. Again, habitat protection is the #1 priority for Agricultural lands – and again, I ask – what does this mean?
a) That we need to protect agricultural lands because they are disappearing (will we have to eat our subdivisions later – I always ask).
b) Do we need to protect species by protecting agricultural land – again, I ask – What species?
Again – I think that the case needs to be made – giving acreages – as to what is happening to our land – by habitats.
a) Agricultural
b) Aquatic
c) Barren ,,,perhaps give them by ten year periods…
d) Developed
e) .etc., but especially for the more natural habitats.
How long can these trends continue?
I note Tables 7,8 – Pollutants are not even mentioned under agriculture –
However – a major research question is:What are the pesticides and fertilizers doing to us and to our wildlife? That would be a major question that could lead to conservation needs if the answer to the research is not acceptable or to our liking.
Reply 51: Thank you for the comment, the results presented are the results of technical experts input. Through adaptive management the CWS will be modified as appropriate

Comment 52
Pg. 57 – Travel constraints, matching fund constraints etc., are pointed out as impediments in you reports. This is good.
These can be big constraints on a project at worst, and can be an unnecessary paperwork hassle at best. Various funding agencies should simplify rather than complicate the process, and you could make a strong plea for that in this document.
Reply 52: Thank you for the comment

Comment 53
Another thing you could do here in outlining your strategy could be to greatly elaborate on Table 9 – Conservation (and research?) Programs and Resources. You could provide a section in the "strategy" that would provide more information on how and where to get these funds, what they can be used for, and also restraints, and at the same time, make recommendations that the restraints be reduced.

Perhaps there is more information on this and on other items in the appendices, which I do not have.
Reply 52: Through adaptive management the CWS will be modified as appropriate.

Comment 54
Other specific recommendations that could be incorporated in your strategy are that:
a) Biological surveys be supported and carried out on all State and Federal Natural Lands. This has been a push by the Indiana Academy of Science, Biological Survey Committee for some time.

b) Specific consistent survey techniques be developed (research) and carried out (management) for various species or groups of species such as bats, certain fish, crayfish, certain birds, and many others.
c) Survey work has declined in recent years because there has been lack of emphasis on taxonomic and survey work by Colleges and Universities and by funding organizations. This has led to critical shortages of taxonomists and ecologists who can carry out such work. Increases in basic support for those efforts and also for museums, which also support those efforts, That should help greatly in conserving our natural resources.
-Some of this you stated or implied but the more specific the better.-
Reply 54: Thank you for the comment, the results presented are the results of technical experts input. Through adaptive management the CWS will be modified as appropriate.

Comment 55
Pg. 74 Habitat monitoring – I discussed this above.
I think you could take out much of the discussion in places – or at least deemphasize them – and put greater emphasis on specific recommendations. The more specific recommendations you can come up with, the more that the state, universities, conservation organizations, etc., can make use of them.
Comment 55: This issue is addressed in Section IV, page 15.

Comment 56
Location XI, A-1
Page # 50
line # 43
Comment Members of pro-hunting groups might be utilized as manpower for species population management.
Reply 55: Please see Table 10, page 73 for a complete list of conservation partners.