

Threats to Terrestrial Species of Greatest Conservation Need

From Michigan's Wildlife Action Plan



Habitat Conversion: Industrial, residential & recreational development

Threat Susceptibility: 99

secretive locust	<i>Appalachia arcana</i>	
American burying beetle	<i>Nicrophorus americanus</i>	
northern hairstreak	<i>Fixsenia favonius ontario</i>	
three-horned moth	<i>Pachypolia atricornis</i>	likely lost habitat
marbled salamander	<i>Ambystoma opacum</i>	
Least Bittern	<i>Ixobrychus exilis</i>	
Great Blue Heron	<i>Ardea herodias</i>	because they fly low to the ground, collisions with vehicles, barbed wire fence construction of homes, boating, fishing, camping, and hunting in or near her development along shorelines
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	
Cooper's Hawk	<i>Accipiter cooperii</i>	
Merlin	<i>Falco columbarius</i>	habitat loss on wintering grounds (Central/South America)
Connecticut Warbler	<i>Oporornis agilis</i>	collisions with towers during migration
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	Habitat loss has been a problem, but uncertain on specific contributions; pr

Threat Susceptibility: 3

lambda snaggletooth	<i>Gastrocopta holzingeri</i>	
six-whorl vertigo	<i>Vertigo morsei</i>	road construction; other development
a land snail	<i>Vertigo paradoxa</i>	road construction, recreational development
pleistocene catinella	<i>Catinella exile</i>	road construction; development; road maintenance (e.g. salt)
a land snail	<i>Euconulus alderi</i>	road construction, residential development
a land snail	<i>Guppya sterkii</i>	residential development
spike-lip crater	<i>Appalachina sayana</i>	residential development
grey petaltail	<i>Tachopteryx thoreyi</i>	
Hine's emerald	<i>Somatochlora hineana</i>	
ebony boghaunter	<i>Williamsonia fletcheri</i>	
Lake Huron locust	<i>Trimerotropis huroniana</i>	
bog conehead	<i>Neoconocephalus lyristes</i>	
red-faced meadow katydid	<i>Orchelimum concinnum</i>	
delicate meadow katydid	<i>Orchelimum delicatum</i>	
tamarack tree cricket	<i>Oecanthus laricis</i>	
angular spittlebug	<i>Lepyronia angulifera</i>	
great plains spittlebug	<i>Lepyronia gibbosa</i>	
red-legged spittlebug	<i>Prosapia ignipectus</i>	
a leafhopper	<i>Flexamia delongi</i>	
Huron River leafhopper	<i>Flexamia huroni</i>	
a leafhopper	<i>Flexamia reflexus</i>	
a tiger beetle	<i>Cicindela hirticollis rhodensis</i>	
little white tiger beetle	<i>Cicindela lepida</i>	
a tiger beetle	<i>Cicindela macra</i>	
poweshiek skipperling	<i>Oarisma poweshiek</i>	
otloe skipper	<i>Hesperia otloe</i>	

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The comments included were drawn from scientific literature and communications with species experts.

Dukes' skipper	<i>Euphyes dukesi</i>	
dusted skipper	<i>Atrytonopsis hianna</i>	
early hairstreak	<i>Erora laeta</i>	
swamp metalmark	<i>Calephelis mutica</i>	
regal fritillary	<i>Speyeria idalia</i>	
tawny crescent	<i>Phyciodes batesii</i>	
Mitchell's satyr	<i>Neonympha mitchellii mitchellii</i>	
barrens buckmoth	<i>Hemileuca maia</i>	
Sprague's pygarcia	<i>Pygarcia spraguei</i>	
dune cutworm	<i>Euxoa aurulenta</i>	
Doll's merolonche	<i>Merolonche dolli</i>	
aweme borer	<i>Papaipema aweme</i>	
blazing star borer	<i>Papaipema beeriana</i>	
golden borer	<i>Papaipema cerina</i>	
maritime sunflower borer	<i>Papaipema maritima</i>	
Culvers root borer	<i>Papaipema sciata</i>	
silphium borer moth	<i>Papaipema silphii</i>	
regal fern borer	<i>Papaipema speciosissima</i>	
leadplant flower moth	<i>Schinia lucens</i>	
spotted salamander	<i>Ambystoma maculatum</i>	
smallmouth salamander	<i>Ambystoma texanum</i>	
eastern tiger salamander	<i>Ambystoma tigrinum tigrinum</i>	
four-toed salamander	<i>Hemidactylium scutatum</i>	
Fowler's toad	<i>Bufo fowleri</i>	
Blanchard's cricket frog	<i>Acris crepitans blanchardi</i>	
boreal chorus frog	<i>Pseudacris triseriata maculata</i>	
western chorus frog	<i>Pseudacris triseriata triseriata</i>	
pickerel frog	<i>Rana palustris</i>	
northern leopard frog	<i>Rana pipiens</i>	
Kirtland's snake	<i>Clonophis kirtlandii</i>	
blue racer	<i>Coluber constrictor foxii</i>	
northern ringneck snake	<i>Diadophis punctatus edwardsii</i>	
eastern fox snake	<i>Elaphe gloydi</i>	
black rat snake	<i>Elaphe obsoleta obsoleta</i>	
eastern hognose snake	<i>Heterodon platirhinos</i>	
smooth green snake	<i>Liochlorophis vernalis</i>	
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	residential development
queen snake	<i>Regina septemvittata</i>	
six-lined racerunner	<i>Apidoscelis sexlineatus</i>	
eastern massasauga	<i>Sistrurus catenatus catenatus</i>	
spotted turtle	<i>Clemmys guttata</i>	
Blanding's turtle	<i>Emydoidea blandingii</i>	
eastern box turtle	<i>Terrapene carolina carolina</i>	suburban development fragments habitats
Spruce Grouse	<i>Falcipennis canadensis</i>	recreational development in spruce-jack pine areas along lake shores
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	urban sprawl
Northern Bobwhite	<i>Colinus virginianus</i>	
Common Loon	<i>Gavia immer</i>	human development along shorelines
Bald Eagle	<i>Haliaeetus leucocephalus</i>	loss of shoreline due to development; motor vehicle collisions
American Woodcock	<i>Scolopax minor</i>	urbanization; collisions with communications towers
Common Tern	<i>Sterna hirundo</i>	shoreline and island development
Whip-poor-will	<i>Caprimulgus vociferus</i>	paving of rural roads results in increased speeds and higher likelihood of co
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	increased automobile traffic (collisions while feeding); development of habit

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Grasshopper Sparrow	<i>Ammodramus savannarum</i>	urbanization
silver-haired bat	<i>Lasionycteris noctivagans</i>	
red bat	<i>Lasiurus borealis</i>	collisions w/ towers, buildings, cars, etc.
hoary bat	<i>Lasiurus cinereus</i>	high collision from wind turbines
evening bat	<i>Nycticeius humeralis</i>	
gray wolf	<i>Canis lupus</i>	
lynx	<i>Lynx canadensis</i>	roadbuilding, etc.
moose	<i>Alces alces</i>	increased roads/traffic; recreational or home development along lakes;
woodland jumping mouse	<i>Napaeozapus insignis</i>	
southern red-backed vole	<i>Clethrionomys gapperi</i>	
southern bog lemming	<i>Synaptomys cooperi</i>	avoid roads

Threat Susceptibility: 2

persius duskywing	<i>Erynnis persius persius</i>	
grizzled skipper	<i>Pyrgus wyandot</i>	
Karner blue	<i>Lycaeides melissa samuelis</i>	given medium level because it is not as big a threat in Michigan
Henry's elfin	<i>Callophrys henrici</i>	
frosted elfin	<i>Callophrys irus</i>	
blue-spotted salamander	<i>Ambystoma laterale</i>	fairly tolerant as long as critical parts of habitat remain intact
Trumpeter Swan	<i>Cygnus buccinator</i>	powerline collisions are known to occur
Pied-billed Grebe	<i>Podilymbus podiceps</i>	
American Bittern	<i>Botaurus lentiginosus</i>	
Osprey	<i>Pandion haliaetus</i>	steel traps, impact/electrocution by high-tension wires, being caught and dr
Red-shouldered Hawk	<i>Buteo lineatus</i>	
King Rail	<i>Rallus elegans</i>	collisions with structures (towers, etc.) during migration, struck by vehicles d
Piping Plover	<i>Charadrius melodus</i>	human development along shorelines
Upland Sandpiper	<i>Bartramia longicauda</i>	
Forster's Tern	<i>Sterna forsteri</i>	development of nesting areas
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	urbanization; collisions with tv towers and other structures
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	
Barn Owl	<i>Tyto alba</i>	many killed in collisions with vehicles (may be attracted to roadside grassla
Long-eared Owl	<i>Asio otus</i>	loss of old fields to development
Short-eared Owl	<i>Asio flammeus</i>	
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	paving of rural roads results in increased speeds and higher likelihood of co
Migrant Loggerhead Shrike	<i>Lanius ludovicianus migrans</i>	urban development; changes in roadside mgmt practices (herbicide use, re
Sedge Wren	<i>Cistothorus platensis</i>	
Brown Thrasher	<i>Toxostoma rufum</i>	
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	urban/suburban development
Northern Parula	<i>Parula americana</i>	development of forest land; collisions with towers and other man-made stru
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	industrial and urban development
Prairie Warbler	<i>Dendroica discolor</i>	development in dunes and pine barrens
Cerulean Warbler	<i>Dendroica cerulea</i>	collisions with towers; construction of roads
Louisiana Waterthrush	<i>Seiurus motacilla</i>	development in riparian zones
Canada Warbler	<i>Wilsonia canadensis</i>	urban development; collisions with towers during migration
Yellow-breasted Chat	<i>Icteria virens</i>	residential development
Field Sparrow	<i>Spizella pusilla</i>	residential developments

Threat Susceptibility: 1

wood turtle	<i>Glyptemys insculpta</i>	
Green Heron	<i>Butorides virescens</i>	
Northern Harrier	<i>Circus cyaneus</i>	urban and industrial development
Peregrine Falcon	<i>Falco peregrinus</i>	
Yellow Rail	<i>Coturnicops noveboracensis</i>	collisions with tv towers during migration

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Black Tern	<i>Chlidonias niger</i>
Henslow's Sparrow	<i>Ammodramus henslowii</i>
eastern pipistrelle	<i>Pipistrellus subflavus</i>
American marten	<i>Martes americana</i>

Habitat Conversion: Wetland modifications

Threat Susceptibility: 99

Great Blue Heron	<i>Ardea herodias</i>	inland heronries prone to filling
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	
Virginia Rail	<i>Rallus limicola</i>	
Common Moorhen	<i>Gallinula chloropus</i>	
American Coot	<i>Fulica americana</i>	
Wilson's Phalarope	<i>Phalaropus tricolor</i>	
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	
northern bat or northern myotis	<i>Myotis septentrionalis</i>	
moose	<i>Alces alces</i>	

Threat Susceptibility: 3

widespread column	<i>Pupilla muscorum</i>	
delicate vertigo	<i>Vertigo bollesiana</i>	filling of upland sinks
grey petaltail	<i>Tachopteryx thoreyi</i>	
zigzag darner	<i>Aeshna sitchensis</i>	
muskeg darner	<i>Aeshna subarctica</i>	
Hine's emerald	<i>Somatochlora hineana</i>	
ebony boghaunter	<i>Williamsonia fletcheri</i>	
ringed boghaunter	<i>Williamsonia lintneri</i>	
Hoosier locust	<i>Paroxya hoosieri</i>	
bog conehead	<i>Neoconocephalus lyristes</i>	
red-faced meadow katydid	<i>Orchelimum concinnum</i>	
delicate meadow katydid	<i>Orchelimum delicatum</i>	
red-legged spittlebug	<i>Prosapia ignipectus</i>	
a leafhopper	<i>Flexamia delongi</i>	
Huron River leafhopper	<i>Flexamia huroni</i>	
a leafhopper	<i>Flexamia reflexus</i>	
poweshiek skipperling	<i>Oarisma poweshiek</i>	
Dukes' skipper	<i>Euphyes dukesi</i>	
swamp metalmark	<i>Calephelis mutica</i>	
Mitchell's satyr	<i>Neonympha mitchellii mitchellii</i>	
Doll's merolonche	<i>Merolonche dolli</i>	
golden borer	<i>Papaipema cerina</i>	
silphium borer moth	<i>Papaipema silphii</i>	
spotted salamander	<i>Ambystoma maculatum</i>	
marbled salamander	<i>Ambystoma opacum</i>	
smallmouth salamander	<i>Ambystoma texanum</i>	
eastern tiger salamander	<i>Ambystoma tigrinum tigrinum</i>	
four-toed salamander	<i>Hemidactylium scutatum</i>	
Blanchard's cricket frog	<i>Acris crepitans blanchardi</i>	
western chorus frog	<i>Pseudacris triseriata triseriata</i>	
pickereel frog	<i>Rana palustris</i>	
northern leopard frog	<i>Rana pipiens</i>	
Kirtland's snake	<i>Clonophis kirtlandii</i>	
eastern fox snake	<i>Elaphe gloydi</i>	

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copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>
eastern massasauga	<i>Sistrurus catenatus catenatus</i>
spotted turtle	<i>Clemmys guttata</i>
Blanding's turtle	<i>Emydoidea blandingii</i>
Blue-winged Teal	<i>Anas discors</i>
Pied-billed Grebe	<i>Podilymbus podiceps</i>
Least Bittern	<i>Ixobrychus exilis</i>
Green Heron	<i>Butorides virescens</i>
King Rail	<i>Rallus elegans</i>
Wilson's Snipe	<i>Gallinago delicata</i>
water shrew	<i>Sorex palustris</i>
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>

significant wetland loss
wetland destruction, siltation from erosion from farmlands

Threat Susceptibility: 2

sedge darner	<i>Aeshna juncea</i>
tamarack tree cricket	<i>Oecanthus laricis</i>
blue-spotted salamander	<i>Ambystoma laterale</i>
Fowler's toad	<i>Bufo fowleri</i>
American Bittern	<i>Botaurus lentiginosus</i>
Osprey	<i>Pandion haliaetus</i>
Northern Harrier	<i>Circus cyaneus</i>
Red-shouldered Hawk	<i>Buteo lineatus</i>
Yellow Rail	<i>Coturnicops noveboracensis</i>
Sora	<i>Porzana carolina</i>
Sedge Wren	<i>Cistothorus platensis</i>
Marsh Wren	<i>Cistothorus palustris</i>
Prothonotary Warbler	<i>Protonotaria citrea</i>
Louisiana Waterthrush	<i>Seiurus motacilla</i>
Le Conte's Sparrow	<i>Ammodramus leconteii</i>

Threat Susceptibility: 1

American Black Duck	<i>Anas rubripes</i>
Black Tern	<i>Chlidonias niger</i>
Barn Owl	<i>Tyto alba</i>
Short-eared Owl	<i>Asio flammeus</i>
Henslow's Sparrow	<i>Ammodramus henslowii</i>
eastern pipistrelle	<i>Pipistrellus subflavus</i>

Habitat Conversion: Conversion to agriculture

Threat Susceptibility: 99

American burying beetle	<i>Nicrophorus americanus</i>	
Merlin	<i>Falco columbarius</i>	habitat loss on wintering grounds (Central/South America)
Sora	<i>Porzana carolina</i>	agricultural development in the Thumb and southeast Michigan have eliminated
Northern Parula	<i>Parula americana</i>	loss of habitat on wintering grounds in the Yucatan
Connecticut Warbler	<i>Oporornis agilis</i>	
Canada Warbler	<i>Wilsonia canadensis</i>	
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	Habitat loss has been a problem, but uncertain on specific contributions

Threat Susceptibility: 3

widespread column	<i>Pupilla muscorum</i>
six-whorl vertigo	<i>Vertigo morsei</i>
pleistocene catinella	<i>Catinella exile</i>
a land snail	<i>Euconulus alderi</i>

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bog conehead	<i>Neoconocephalus lyristes</i>	
red-faced meadow katydid	<i>Orchelimum concinnum</i>	
delicate meadow katydid	<i>Orchelimum delicatum</i>	
tamarack tree cricket	<i>Oecanthus laricis</i>	
great plains spittlebug	<i>Lepyronia gibbosa</i>	
a leafhopper	<i>Dorydiella kansana</i>	
a leafhopper	<i>Flexamia delongi</i>	
Huron River leafhopper	<i>Flexamia huroni</i>	
a leafhopper	<i>Flexamia reflexus</i>	
wild indigo duskywing	<i>Erynnis baptisiae</i>	
persius duskywing	<i>Erynnis persius persius</i>	
poweshiek skipperling	<i>Oarisma poweshiek</i>	
ottoe skipper	<i>Hesperia ottoe</i>	
Dukes' skipper	<i>Euphyes dukesi</i>	
dusted skipper	<i>Atrytonopsis hianna</i>	
northern hairstreak	<i>Fixsenia favonius ontario</i>	
Karner blue	<i>Lycaeides melissa samuelis</i>	including plantations
frosted elfin	<i>Callophrys irus</i>	plantations
swamp metalmark	<i>Calephelis mutica</i>	
regal fritillary	<i>Speyeria idalia</i>	
tawny crescent	<i>Phyciodes batesii</i>	
Mitchell's satyr	<i>Neonympha mitchellii mitchellii</i>	
barrens buckmoth	<i>Hemileuca maia</i>	plantations
Sprague's pygarcia	<i>Pygarcia spraguei</i>	
three-staff underwing	<i>Catocala amestris</i>	
blazing star borer	<i>Papaipema beeriana</i>	
golden borer	<i>Papaipema cerina</i>	
maritime sunflower borer	<i>Papaipema maritima</i>	
Culvers root borer	<i>Papaipema sciata</i>	
silphium borer moth	<i>Papaipema silphii</i>	
regal fern borer	<i>Papaipema speciosissima</i>	
phlox moth	<i>Schinia indiana</i>	tree planting for plantations
leadplant flower moth	<i>Schinia lucens</i>	
spartina borer moth	<i>Spartiniphaga inops</i>	
spotted salamander	<i>Ambystoma maculatum</i>	
smallmouth salamander	<i>Ambystoma texanum</i>	
four-toed salamander	<i>Hemidactylium scutatum</i>	
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pickerel frog	<i>Rana palustris</i>	
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eastern box turtle	<i>Terrapene carolina carolina</i>
Northern Bobwhite	<i>Colinus virginianus</i>
Barn Owl	<i>Tyto alba</i>
Whip-poor-will	<i>Caprimulgus vociferus</i>
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>
Olive-sided Flycatcher	<i>Contopus cooperi</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
silver-haired bat	<i>Lasionycteris noctivagans</i>
northern bat or northern myotis	<i>Myotis septentrionalis</i>
evening bat	<i>Nycticeius humeralis</i>
cougar	<i>Puma concolor</i>
prairie vole	<i>Microtus ochrogaster</i>

changing land use including clean farming, single crop production, plantation decreases in hay and pasture and increases in row crops; reduction in crop

"clean farming" practices
loss of wintering habitat in South America
intensive farming on good soils

Threat Susceptibility: 2

Henry's elfin	<i>Callophrys henrici</i>
blue-spotted salamander	<i>Ambystoma laterale</i>
marbled salamander	<i>Ambystoma opacum</i>
Fowler's toad	<i>Bufo fowleri</i>
Blue-winged Teal	<i>Anas discors</i>
American Bittern	<i>Botaurus lentiginosus</i>
Northern Harrier	<i>Circus cyaneus</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Red-shouldered Hawk	<i>Buteo lineatus</i>
Upland Sandpiper	<i>Bartramia longicauda</i>
American Woodcock	<i>Scolopax minor</i>
Long-eared Owl	<i>Asio otus</i>
Short-eared Owl	<i>Asio flammeus</i>
Migrant Loggerhead Shrike	<i>Lanius ludovicianus migrans</i>
Sedge Wren	<i>Cistothorus platensis</i>
Golden-winged Warbler	<i>Vermivora chrysoptera</i>
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>
Cerulean Warbler	<i>Dendroica cerulea</i>
Yellow-breasted Chat	<i>Icteria virens</i>
Eastern Towhee	<i>Pipilo erythrophthalmus</i>
Vesper Sparrow	<i>Poocetes gramineus</i>
Henslow's Sparrow	<i>Ammodramus henslowii</i>
water shrew	<i>Sorex palustris</i>
southern red-backed vole	<i>Clethrionomys gapperi</i>

contributes to human disturbance

changes in farming practices

intensive farming

intensive agriculture

conversion of small fields with fencerows to larger intensive farms with fewer

intensive agriculture

susceptible on the wintering range

intensive farming using chemicals and large-scale tillage

don't use plantations

Threat Susceptibility: 1

eastern tiger salamander	<i>Ambystoma tigrinum tigrinum</i>
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>
Pied-billed Grebe	<i>Podilymbus podiceps</i>
Least Bittern	<i>Ixobrychus exilis</i>
Green Heron	<i>Butorides virescens</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Northern Goshawk	<i>Accipiter gentilis</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Black Tern	<i>Chlidonias niger</i>
Marsh Wren	<i>Cistothorus palustris</i>
red bat	<i>Lasiurus borealis</i>
eastern pipistrelle	<i>Pipistrellus subflavus</i>
American marten	<i>Martes americana</i>

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Habitat Conversion: Dams

Threat Susceptibility: 99

a tiger beetle	<i>Cicindela macra</i>	impoundments
Le Conte's Sparrow	<i>Ammodramus leconteii</i>	

Threat Susceptibility: 3

swamp metalmark	<i>Calephelis mutica</i>	impoundments can inundate habitat
blazing star borer	<i>Papaipema beeriana</i>	impoundment threat at Calhoun Co. EO
Blanding's turtle	<i>Emydoidea blandingii</i>	

Threat Susceptibility: 2

copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	
Red-shouldered Hawk	<i>Buteo lineatus</i>	destruction of forested wetlands
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	known sites have been inundated by impoundments in the past, probably a

Threat Susceptibility: 1

Pied-billed Grebe	<i>Podilymbus podiceps</i>
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>
Osprey	<i>Pandion haliaetus</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Forster's Tern	<i>Sterna forsteri</i>
Black Tern	<i>Chlidonias niger</i>

Habitat Conversion: Dredging & channelization

Threat Susceptibility: 99

melodious ground cricket	<i>Eunemobius melodius</i>	
a tiger beetle	<i>Cicindela limballis</i>	
a tiger beetle	<i>Cicindela macra</i>	
blue-spotted salamander	<i>Ambystoma laterale</i>	
queen snake	<i>Regina septemvittata</i>	
Blanding's turtle	<i>Emydoidea blandingii</i>	
Red-shouldered Hawk	<i>Buteo lineatus</i>	destruction of forested wetlands
Black Tern	<i>Chlidonias niger</i>	stream dredging degrades marshes used for breeding
Hooded Warbler	<i>Wilsonia citrina</i>	

Threat Susceptibility: 3

ebony boghaunter	<i>Williamsonia fletcheri</i>	
ringed boghaunter	<i>Williamsonia lintneri</i>	
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	
spotted turtle	<i>Clemmys guttata</i>	
water shrew	<i>Sorex palustris</i>	
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	reduction in riparian and stream area; reduced roost sites and lower prey pr
evening bat	<i>Nycticeius humeralis</i>	

Threat Susceptibility: 2

a land snail	<i>Vertigo paradoxa</i>
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Threat Susceptibility: 1

Least Bittern	<i>Ixobrychus exilis</i>
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>
Osprey	<i>Pandion haliaetus</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Spotted Sandpiper	<i>Actitis macularia</i>

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Habitat Conversion: Incompatible natural resource management

Threat Susceptibility: 99

secretive locust	<i>Appalachia arcana</i>	
pine katydid	<i>Scudderia fasciata</i>	
a leafhopper	<i>Flexamia delongi</i>	prescribed fire; other
a leafhopper	<i>Flexamia reflexus</i>	
persius duskywing	<i>Erynnis persius persius</i>	Prescribed burning
northern hairstreak	<i>Fixsenia favonius ontario</i>	
Henry's elfin	<i>Callophrys henrici</i>	
boreal fan moth	<i>Brachionycha borealis</i>	
magdalen underwing	<i>Catocala illecta</i>	
Doll's merolonche	<i>Merolonche dolli</i>	
blue-spotted salamander	<i>Ambystoma laterale</i>	
pickereel frog	<i>Rana palustris</i>	
American Black Duck	<i>Anas rubripes</i>	
Pied-billed Grebe	<i>Podilymbus podiceps</i>	
Barn Owl	<i>Tyto alba</i>	

Threat Susceptibility: 3

six-whorl vertigo	<i>Vertigo morsei</i>	forest management
pleistocene catinella	<i>Catinella exile</i>	forest management
a land snail	<i>Euconulus alderi</i>	forest management
spike-lip crater	<i>Appalachina sayana</i>	forest management
angular spittlebug	<i>Lepyronia angulifera</i>	excessive prescribed fire
red-legged spittlebug	<i>Prosapia ignipectus</i>	excessive prescribed burning
a leafhopper	<i>Dorydiella kansana</i>	
black lordithon rove beetle	<i>Lordithon niger</i>	loss of climax forest
six-banded longhorn beetle	<i>Dryobius sexnotatus</i>	
grizzled skipper	<i>Pyrgus wyandot</i>	excessive perscribed fire
ottoo skipper	<i>Hesperia ottoe</i>	fire suppression; excessive perscribed burning, tree planting
dusted skipper	<i>Atrytonopsis hianna</i>	
northern blue	<i>Lycaeides idas nabokovi</i>	excessive perscribed fire
Karner blue	<i>Lycaeides melissa samuelis</i>	non-management, tree plantings, game management, recreation, excessive
frosted elfin	<i>Callophrys irus</i>	excessive prescribed fire, tree planting, fire suppression
Mitchell's satyr	<i>Neonympha mitchellii mitchellii</i>	loss of beaver, fire suppression, excessive prescribed fire
barrens buckmoth	<i>Hemileuca maia</i>	tree planting
Sprague's pygarctia	<i>Pygarctia spraguei</i>	fire suppression, excessive prescribed burns
three-staff underwing	<i>Catocala amestris</i>	excessive prescribed fire
blazing star borer	<i>Papaipema beeriana</i>	excessive prescribed burns
Culvers root borer	<i>Papaipema sciata</i>	excessive prescribed burns
silphium borer moth	<i>Papaipema silphii</i>	improper fire management; right-of-way maintenance
phlox moth	<i>Schinia indiana</i>	untimely prescribed burns (or mowing)
leadplant flower moth	<i>Schinia lucens</i>	excessive burns, suppression, mechanical disturbance
spartina borer moth	<i>Spartiniphaga inops</i>	excessive prescribed fire
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	
six-lined racerunner	<i>Apidoscelis sexlineatus</i>	succession
eastern massasauga	<i>Sistrurus catenatus catenatus</i>	vegetation succession
spotted turtle	<i>Clemmys guttata</i>	
wood turtle	<i>Glyptemys insculpta</i>	
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	intensive forest plantings
Northern Bobwhite	<i>Colinus virginianus</i>	changing land use including clean farming, single crop production, plantatio

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Red-shouldered Hawk	<i>Buteo lineatus</i>	
American Woodcock	<i>Scolopax minor</i>	changes in forest mgmt practices and loss of aspen as forests mature
silver-haired bat	<i>Lasionycteris noctivagans</i>	lack of snag retention
red bat	<i>Lasiurus borealis</i>	
hoary bat	<i>Lasiurus cinereus</i>	forest management
northern bat or northern myotis	<i>Myotis septentrionalis</i>	forest management
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	forest and riparian management; removal of snags
evening bat	<i>Nycticeius humeralis</i>	
lynx	<i>Lynx canadensis</i>	
American marten	<i>Martes americana</i>	timber management
moose	<i>Alces alces</i>	configuration of timber management practices across a landscape
northern flying squirrel	<i>Glaucomys sabrinus</i>	forest management
southern red-backed vole	<i>Clethrionomys gapperi</i>	forest management
snowshoe hare	<i>Lepus americanus</i>	configuration of timber management units

Threat Susceptibility: 2

tamarack tree cricket	<i>Oecanthus laricis</i>	
great plains spittlebug	<i>Lepyronia gibbosa</i>	forest management, prescribed burn timing and extent
regal fritillary	<i>Speyeria idalia</i>	excessive prescribed burning
maritime sunflower borer	<i>Papaipema maritima</i>	
eastern box turtle	<i>Terrapene carolina carolina</i>	
Blue-winged Teal	<i>Anas discors</i>	
Spruce Grouse	<i>Falcipennis canadensis</i>	Tied to logging practices
Northern Harrier	<i>Circus cyaneus</i>	encroachment of woody vegetation into openings via succession
Cooper's Hawk	<i>Accipiter cooperii</i>	
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	
Black-backed Woodpecker	<i>Picoides arcticus</i>	conversion of mature forests to young stands
Acadian Flycatcher	<i>Empidonax vireescens</i>	
Wood Thrush	<i>Hylocichla mustelina</i>	
Blue-winged Warbler	<i>Vermivora pinus</i>	
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	encroachment of autumn olive
Prairie Warbler	<i>Dendroica discolor</i>	
eastern pipistrelle	<i>Pipistrellus subflavus</i>	

Threat Susceptibility: 1

blue-legged locust	<i>Melanoplus flavidus</i>	excessive prescribed burns; lower densities in recently burned areas, but re
Green Heron	<i>Butorides virescens</i>	
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	
Osprey	<i>Pandion haliaetus</i>	
Common Moorhen	<i>Gallinula chloropus</i>	
Common Nighthawk	<i>Chordeiles minor</i>	
Migrant Loggerhead Shrike	<i>Lanius ludovicianus migrans</i>	transportation departments should be encouraged to leave some shrubs alo
Red Crossbill	<i>Loxia curvirostra</i>	
White-winged Crossbill	<i>Loxia leucoptera</i>	

Consumptive Biological Resource Use: Removal of wildlife

Threat Susceptibility: 99

American burying beetle	<i>Nicrophorus americanus</i>	loss of passenger pigeon (ideal carrion size)
swamp metalmark	<i>Calephelis mutica</i>	overcollection
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	the limited harvest in the UP appears to be compensatory
Common Loon	<i>Gavia immer</i>	mortality from fishing nets and traps
Pied-billed Grebe	<i>Podilymbus podiceps</i>	shooting by duck hunters
American White Pelican	<i>Pelecanus erythrorhynchos</i>	shooting is a problem in some areas

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Osprey	<i>Pandion haliaetus</i>	accidental/purposeful shooting and capture in steel traps
Cooper's Hawk	<i>Accipiter cooperii</i>	collection by falconers
American Coot	<i>Fulica americana</i>	shooting during migration due to nuisance impacts
Long-eared Owl	<i>Asio otus</i>	shooting

Threat Susceptibility: 3

ringed boghaunter	<i>Williamsonia lintneri</i>	
three-staff underwing	<i>Catocala amestris</i>	collecting
leadplant flower moth	<i>Schinia lucens</i>	collection
northern leopard frog	<i>Rana pipiens</i>	biological supply and fish bait
Kirtland's snake	<i>Clonophis kirtlandii</i>	pet trade
western fox snake	<i>Elaphe vulpina</i>	
eastern massasauga	<i>Sistrurus catenatus catenatus</i>	
spotted turtle	<i>Clemmys guttata</i>	pet trade collecting
wood turtle	<i>Glyptemys insculpta</i>	pet trade
eastern box turtle	<i>Terrapene carolina carolina</i>	pet trade and collection
Caspian Tern	<i>Sterna caspia</i>	entanglement in fishing lines; shooting, trapping, and collecting
gray wolf	<i>Canis lupus</i>	
cougar	<i>Puma concolor</i>	
lynx	<i>Lynx canadensis</i>	
American marten	<i>Martes americana</i>	

Threat Susceptibility: 2

Mitchell's satyr	<i>Neonympha mitchellii mitchellii</i>	overcollecting
spotted salamander	<i>Ambystoma maculatum</i>	pet trade collection
eastern tiger salamander	<i>Ambystoma tigrinum tigrinum</i>	sometimes used for fish bait
eastern fox snake	<i>Elaphe gloydi</i>	collection for pet trade
black rat snake	<i>Elaphe obsoleta obsoleta</i>	collection by hobbyists
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	illegal collection
Blanding's turtle	<i>Emydoidea blandingii</i>	so far have attracted minimal attention from pet trade, however in past have
American Black Duck	<i>Anas rubripes</i>	hunting

Threat Susceptibility: 1

Karner blue	<i>Lycaeides melissa samuelis</i>	
blue-spotted salamander	<i>Ambystoma laterale</i>	
Trumpeter Swan	<i>Cygnus buccinator</i>	human-caused mortality or harassment (illegal shooting)
Spruce Grouse	<i>Falcipennis canadensis</i>	accidental harvest
Green Heron	<i>Butorides virescens</i>	
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	
Northern Goshawk	<i>Accipiter gentilis</i>	falconry
Red-shouldered Hawk	<i>Buteo lineatus</i>	historic incidence of shooting
Short-eared Owl	<i>Asio flammeus</i>	shooting

Consumptive Biological Resource Use: Forestry Practices

Threat Susceptibility: 99

secretive locust	<i>Appalachia arcana</i>	
northern blue	<i>Lycaeides idas nabokovi</i>	
hoary comma	<i>Polygonia gracilis</i>	
Macoun's arctic	<i>Oeneis macounii</i>	
pine imperial moth	<i>Eacles imperialis pini</i>	
Sprague's pygarcia	<i>Pygarctia spraguei</i>	
Doll's merolonche	<i>Merolonche dolli</i>	
Great Blue Heron	<i>Ardea herodias</i>	inland heronries prone to logging

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Yellow-throated Warbler	<i>Dendroica dominica</i>	cutting of floodplain forest
Louisiana Waterthrush	<i>Seiurus motacilla</i>	stream degradation due to siltation, erosion, transportation of sawlogs
Connecticut Warbler	<i>Oporornis agilis</i>	red pine conversion
Hooded Warbler	<i>Wilsonia citrina</i>	conversions of diverse forests to plantations

Threat Susceptibility: 3

a land snail	<i>Vallonia gracilicosta albula</i>	clearcutting
widespread column	<i>Pupilla muscorum</i>	
six-whorl vertigo	<i>Vertigo morsei</i>	removal of canopy warms and dries the soil
a land snail	<i>Vertigo paradoxa</i>	canopy removal warms and dries the leaf litter
pleistocene catinella	<i>Catinella exile</i>	
a land snail	<i>Euconulus alderi</i>	require cool, moist condition; canopy removal heats and dries the soil
a land snail	<i>Guppya sterkii</i>	canopy removal warms and dries the soil; require moist conditions
spike-lip crater	<i>Appalachina sayana</i>	canopy reduction warms and dries the soil
grey petaltail	<i>Tachopteryx thoreyi</i>	
ringed boghaunter	<i>Williamsonia lintneri</i>	
black lordithon rove beetle	<i>Lordithon niger</i>	
six-banded longhorn beetle	<i>Dryobius sexnotatus</i>	silviculture
early hairstreak	<i>Erora laeta</i>	
golden borer	<i>Papaipema cerina</i>	
phlox moth	<i>Schinia indiana</i>	generally historical
spotted salamander	<i>Ambystoma maculatum</i>	
marbled salamander	<i>Ambystoma opacum</i>	
four-toed salamander	<i>Hemidactylium scutatum</i>	
northern ringneck snake	<i>Diadophis punctatus edwardsii</i>	
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	
Spruce Grouse	<i>Falcipennis canadensis</i>	replacement of jack pine and spruce by pine plantations; clearcutting large t
Red-shouldered Hawk	<i>Buteo lineatus</i>	complete removal of forest cover and selective cutting of valuable hardwo
Kirtland's Warbler	<i>Dendroica kirtlandii</i>	replacement of jack pine with red pine or hardwoods
Red Crossbill	<i>Loxia curvirostra</i>	
red bat	<i>Lasiurus borealis</i>	
northern bat or northern myotis	<i>Myotis septentrionalis</i>	
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	removal of snags; much of riparian "logging" is small scale and agricultural
lynx	<i>Lynx canadensis</i>	clearcuts
American marten	<i>Martes americana</i>	
moose	<i>Alces alces</i>	
northern flying squirrel	<i>Glaucomys sabrinus</i>	
southern red-backed vole	<i>Clethrionomys gapperi</i>	
southern bog lemming	<i>Synaptomys cooperi</i>	

Threat Susceptibility: 2

sedge darner	<i>Aeshna juncea</i>	
otloe skipper	<i>Hesperia otloe</i>	
blue-spotted salamander	<i>Ambystoma laterale</i>	fairly tolerant as long as critical parts of habitat remain intact
smallmouth salamander	<i>Ambystoma texanum</i>	
black rat snake	<i>Elaphe obsoleta obsoleta</i>	
eastern massasauga	<i>Sistrurus catenatus catenatus</i>	
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	
Bald Eagle	<i>Haliaeetus leucocephalus</i>	
Cooper's Hawk	<i>Accipiter cooperii</i>	forest product harvest
Northern Goshawk	<i>Accipiter gentilis</i>	clearcutting of mature stands; creation of openings; shorter rotation cycles
Black-backed Woodpecker	<i>Picoides arcticus</i>	timber harvest in mature forest, salvage logging, cutting of snags, removal o
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	loss of wintering habitat due to deforestation

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Blackburnian Warbler	<i>Dendroica fusca</i>	accelerated timber harvest with increased emphasis on even-aged manage
Cerulean Warbler	<i>Dendroica cerulea</i>	even aged forest mgmt and shorter rotation cycles
White-winged Crossbill	<i>Loxia leucoptera</i>	
water shrew	<i>Sorex palustris</i>	
silver-haired bat	<i>Lasionycteris noctivagans</i>	
hoary bat	<i>Lasiurus cinereus</i>	
eastern pipistrelle	<i>Pipistrellus subflavus</i>	
snowshoe hare	<i>Lepus americanus</i>	

Threat Susceptibility: 1

frosted elfin	<i>Callophrys irus</i>	
wood turtle	<i>Glyptemys insculpta</i>	can withstand modest timber harvest
eastern box turtle	<i>Terrapene carolina carolina</i>	
Green Heron	<i>Butorides virescens</i>	
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	
Palm Warbler	<i>Dendroica palmarum</i>	
evening bat	<i>Nycticeius humeralis</i>	

Consumptive Biological Resource Use: Removal of non-timber flora

Threat Susceptibility: 99

black lordithon rove beetle	<i>Lordithon niger</i>	
Sora	<i>Porzana carolina</i>	disturbance and destruction due to harvest of wild and planted rice

Threat Susceptibility: 3

delicate vertigo	<i>Vertigo bollesiana</i>	
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Threat Susceptibility: 2

pipevine swallowtail	<i>Battus philenor</i>	
smallmouth salamander	<i>Ambystoma texanum</i>	
Northern Harrier	<i>Circus cyaneus</i>	

Threat Susceptibility: 1

silver-haired bat	<i>Lasionycteris noctivagans</i>	
red bat	<i>Lasiurus borealis</i>	
hoary bat	<i>Lasiurus cinereus</i>	
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	
evening bat	<i>Nycticeius humeralis</i>	
eastern pipistrelle	<i>Pipistrellus subflavus</i>	

Consumptive Biological Resource Use: Mining practices

Threat Susceptibility: 99

six-banded longhorn beetle	<i>Dryobius sexnotatus</i>	its listed, but the mechanism is unknown
Sprague's pygarcia	<i>Pygarcia spraguei</i>	sand mining
Connecticut Warbler	<i>Oporornis agilis</i>	peat mining
water shrew	<i>Sorex palustris</i>	
northern bat or northern myotis	<i>Myotis septentrionalis</i>	

Threat Susceptibility: 3

delicate vertigo	<i>Vertigo bollesiana</i>	
a land snail	<i>Vertigo paradoxa</i>	
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	

Threat Susceptibility: 1

frigga fritillary	<i>Boloria frigga</i>	peat mining
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Bald Eagle	<i>Haliaeetus leucocephalus</i>
Northern Harrier	<i>Circus cyaneus</i>
Peregrine Falcon	<i>Falco peregrinus</i>
eastern pipistrelle	<i>Pipistrellus subflavus</i>

Non-consumptive Biological Resource Use: Non-consumptive recreation

Threat Susceptibility: 99

Sprague's pygarcia	<i>Pygarcia spraguei</i>	ORVs
eastern box turtle	<i>Terrapene carolina carolina</i>	
Pied-billed Grebe	<i>Podilymbus podiceps</i>	human disturbance may affect nesting
American White Pelican	<i>Pelecanus erythrorhynchos</i>	low tolerance for disturbance
Great Blue Heron	<i>Ardea herodias</i>	boating, sport fishing, camping, hunting in or near heronries
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	
moose	<i>Alces alces</i>	

Threat Susceptibility: 3

delicate vertigo	<i>Vertigo bollesiana</i>	human traffic; rock climbing has caused at least one extirpation
six-whorl vertigo	<i>Vertigo morsei</i>	ORVs
a land snail	<i>Vertigo paradoxa</i>	ATVs, hiking, trail construction
Hoosier locust	<i>Paroxya hoosieri</i>	ORVs
great plains spittlebug	<i>Lepyronia gibbosa</i>	ORVs
red-legged spittlebug	<i>Prosapia ignipectus</i>	ORVs
a leafhopper	<i>Flexamia delongi</i>	ORVs, trampling
a tiger beetle	<i>Cicindela hirticollis rhodensis</i>	ORVs, trampling
little white tiger beetle	<i>Cicindela lepida</i>	ORVs
a tiger beetle	<i>Cicindela macra</i>	ORVs, trampling
ottoo skipper	<i>Hesperia ottoe</i>	
frosted elfin	<i>Callophrys irus</i>	ORVs
dune cutworm	<i>Euxoa aurulenta</i>	
Fowler's toad	<i>Bufo fowleri</i>	intensive recreational use of beaches and dunes
Trumpeter Swan	<i>Cygnus buccinator</i>	human disturbance from boats and jet skis; birdwatching, photography, boati
Common Loon	<i>Gavia immer</i>	disturbance by boaters and fishermen
Piping Plover	<i>Charadrius melodus</i>	disturbance of breeding pairs by people, pets, recreational vehicles
eastern pipistrelle	<i>Pipistrellus subflavus</i>	mine exploration; resolved by gating
southern bog lemming	<i>Synaptomys cooperi</i>	avoid trail areas

Threat Susceptibility: 2

Hine's emerald	<i>Somatochlora hineana</i>	
Lake Huron locust	<i>Trimerotropis huroniana</i>	off road vehicles
dusted skipper	<i>Atrytonopsis hianna</i>	
pipevine swallowtail	<i>Battus philenor</i>	
Karner blue	<i>Lycaeides melissa samuelis</i>	
pickerel frog	<i>Rana palustris</i>	
eastern hognose snake	<i>Heterodon platirhinos</i>	
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	males not tolerant of human presence during breeding
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	sensitive to disturbance during and before egg laying
Bald Eagle	<i>Haliaeetus leucocephalus</i>	highly sensitive to foot traffic
Red-shouldered Hawk	<i>Buteo lineatus</i>	human disturbance pushes individuals into forest interior
Common Tern	<i>Sterna hirundo</i>	
Forster's Tern	<i>Sterna forsteri</i>	recreational boating wakes appear to have a detrimental impact on aquatic
Black Tern	<i>Chlidonias niger</i>	disturbance due to recreational activities
northern bat or northern myotis	<i>Myotis septentrionalis</i>	hiking, exploring caves; not sure this is an issue in the UP

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Threat Susceptibility: 1

Huron River leafhopper	<i>Flexamia huroni</i>	
Mitchell's satyr	<i>Neonympha mitchellii mitchellii</i>	ORVs
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	
wood turtle	<i>Glyptemys insculpta</i>	
American Bittern	<i>Botaurus lentiginosus</i>	sensitive to human disturbance
Green Heron	<i>Butorides virescens</i>	
Osprey	<i>Pandion haliaetus</i>	
Northern Harrier	<i>Circus cyaneus</i>	ORV use
Northern Goshawk	<i>Accipiter gentilis</i>	
lynx	<i>Lynx canadensis</i>	ATVs, skiing

Non-consumptive Biological Resource Use: Scientific research

Threat Susceptibility: 99

copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>
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Threat Susceptibility: 2

Hine's emerald	<i>Somatochlora hineana</i>
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Threat Susceptibility: 1

Least Bittern	<i>Ixobrychus exilis</i>	
Green Heron	<i>Butorides virescens</i>	
Bald Eagle	<i>Haliaeetus leucocephalus</i>	human presence may disturb breeding birds
Black Tern	<i>Chlidonias niger</i>	

Non-consumptive Biological Resource Use: Military maneuvers

Threat Susceptibility: 99

dusted skipper	<i>Atrytonopsis hianna</i>
eastern massasauga	<i>Sistrurus catenatus catenatus</i>

Threat Susceptibility: 1

Osprey	<i>Pandion haliaetus</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Kirtland's Warbler	<i>Dendroica kirtlandii</i>

Pollution: Urban, municipal & industrial pollution

Threat Susceptibility: 99

a land snail	<i>Vertigo paradoxa</i>	acid rain
pleistocene catinella	<i>Catinella exile</i>	acid rain
a land snail	<i>Euconulus alderi</i>	acid rain
American burying beetle	<i>Nicrophorus americanus</i>	artificial lighting
spotted salamander	<i>Ambystoma maculatum</i>	
eastern tiger salamander	<i>Ambystoma tigrinum tigrinum</i>	
Blue-winged Teal	<i>Anas discors</i>	
Pied-billed Grebe	<i>Podilymbus podiceps</i>	degradation of habitat
Least Bittern	<i>Ixobrychus exilis</i>	unknown impact of heavy metals, PCBs, acid rain
American Woodcock	<i>Scolopax minor</i>	acid rain and impacts on soil pH and earthworms, lead contamination due t
Forster's Tern	<i>Sterna forsteri</i>	concern about impacts of toxic chemicals
Northern Parula	<i>Parula americana</i>	destruction of Usnea lichen by acid rain
Louisiana Waterthrush	<i>Seiurus motacilla</i>	acid rain

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Threat Susceptibility: 3

Hine's emerald	<i>Somatochlora hineana</i>	Ground Water
ebony boghaunter	<i>Williamsonia fletcheri</i>	
ringed boghaunter	<i>Williamsonia lintneri</i>	
boreal chorus frog	<i>Pseudacris triseriata maculata</i>	
western chorus frog	<i>Pseudacris triseriata triseriata</i>	
pickereel frog	<i>Rana palustris</i>	
northern leopard frog	<i>Rana pipiens</i>	acid rain
queen snake	<i>Regina septemvittata</i>	
spotted turtle	<i>Clemmys guttata</i>	
Common Loon	<i>Gavia immer</i>	lead and mercury poisoning, acid rain
Bald Eagle	<i>Haliaeetus leucocephalus</i>	heavy metals
Caspian Tern	<i>Sterna caspia</i>	PCB or mercury contamination may cause colony abandonment
water shrew	<i>Sorex palustris</i>	road building and others
silver-haired bat	<i>Lasionycteris noctivagans</i>	

Threat Susceptibility: 2

Trumpeter Swan	<i>Cygnus buccinator</i>	lead poisoning is known to occur
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	
Osprey	<i>Pandion haliaetus</i>	vulnerable to bioaccumulation of pollutants
Northern Harrier	<i>Circus cyaneus</i>	
Red-shouldered Hawk	<i>Buteo lineatus</i>	
Common Tern	<i>Sterna hirundo</i>	heavy metal pollution
Long-eared Owl	<i>Asio otus</i>	

Threat Susceptibility: 1

wood turtle	<i>Glyptemys insculpta</i>	
American Black Duck	<i>Anas rubripes</i>	possible effect of acid rain on production
Peregrine Falcon	<i>Falco peregrinus</i>	
Black Tern	<i>Chlidonias niger</i>	heavy metal pollution, acid rain
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	
hoary bat	<i>Lasiurus cinereus</i>	
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	
eastern pipistrelle	<i>Pipistrellus subflavus</i>	

Pollution: Pesticides & herbicides

Threat Susceptibility: 99

delicate vertigo	<i>Vertigo bollesiana</i>	
grey petaltail	<i>Tachopteryx thoreyi</i>	
Hine's emerald	<i>Somatochlora hineana</i>	
ebony boghaunter	<i>Williamsonia fletcheri</i>	
barrens locust	<i>Orphulella pelidna pelidna</i>	
a spur-throat grasshopper	<i>Melanoplus eurycercus</i>	
blue-legged locust	<i>Melanoplus flavidus</i>	
Hebard's green-legged locust	<i>Melanoplus viridipes</i>	
Hoosier locust	<i>Paroxya hoosieri</i>	
Atlantic-coast locust	<i>Psinidia fenestralis fenestralis</i>	
secretive locust	<i>Appalachia arcana</i>	
conehead grasshopper	<i>Neoconocephalus retusus</i>	
red-faced meadow katydid	<i>Orchelimum concinnum</i>	
delicate meadow katydid	<i>Orchelimum delicatum</i>	
pine katydid	<i>Scudderia fasciata</i>	

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tamarack tree cricket	<i>Oecanthus laricis</i>	
pine tree cricket	<i>Oecanthus pini</i>	
angular spittlebug	<i>Lepyronia angulifera</i>	
a leafhopper	<i>Dorydiella kansana</i>	
Huron River leafhopper	<i>Flexamia huroni</i>	
American burying beetle	<i>Nicrophorus americanus</i>	
six-banded longhorn beetle	<i>Dryobius sexnotatus</i>	Gypsy moth spraying
wild indigo duskywing	<i>Erynnis baptisiae</i>	
persius duskywing	<i>Erynnis persius persius</i>	DDT use coincident with a massive decline; gypsy moth spraying may also p
poweshiek skipperling	<i>Oarisma poweshiek</i>	
ottoe skipper	<i>Hesperia ottoe</i>	
dusted skipper	<i>Atrytonopsis hianna</i>	
pipevine swallowtail	<i>Battus philenor</i>	
northern hairstreak	<i>Fixsenia favonius ontario</i>	
early hairstreak	<i>Erora laeta</i>	
northern blue	<i>Lycaeides idas nabokovi</i>	
Henry's elfin	<i>Callophrys henrici</i>	
frosted elfin	<i>Callophrys irus</i>	gypsy moth spraying
swamp metalmark	<i>Calephelis mutica</i>	
gorgone checkerspot	<i>Chlosyne gorgone carlota</i>	
tawny crescent	<i>Phyciodes batesii</i>	gypsy moth spraying
hoary comma	<i>Polygonia gracilis</i>	
red-disked alpine	<i>Erebia discoidalis</i>	
Mitchell's satyr	<i>Neonympha mitchellii mitchellii</i>	mosquito spraying
pine imperial moth	<i>Eacles imperialis pini</i>	
barrens buckmoth	<i>Hemileuca maia</i>	
yellow-banded day-sphinx	<i>Proserpinus flavofasciata</i>	
Sprague's pygarcia	<i>Pygarcia spraguei</i>	
boreal fan moth	<i>Brachionycha borealis</i>	
quiet underwing	<i>Catocala dulciola</i>	
magdalen underwing	<i>Catocala illecta</i>	
dune cutworm	<i>Euxoa aurulenta</i>	
Doll's merolonche	<i>Merolonche dolli</i>	gypsy moth spraying
three-horned moth	<i>Pachypolia atricornis</i>	
blazing star borer	<i>Papaipema beeriana</i>	
golden borer	<i>Papaipema cerina</i>	
maritime sunflower borer	<i>Papaipema maritima</i>	
Culvers root borer	<i>Papaipema sciata</i>	
regal fern borer	<i>Papaipema speciosissima</i>	
phlox moth	<i>Schinia indiana</i>	
blue-spotted salamander	<i>Ambystoma laterale</i>	
smallmouth salamander	<i>Ambystoma texanum</i>	
eastern tiger salamander	<i>Ambystoma tigrinum tigrinum</i>	
four-toed salamander	<i>Hemidactylium scutatum</i>	
Blanchard's cricket frog	<i>Acris crepitans blanchardi</i>	
pickerel frog	<i>Rana palustris</i>	
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	
queen snake	<i>Regina septemvittata</i>	
spotted turtle	<i>Clemmys guttata</i>	
Blue-winged Teal	<i>Anas discors</i>	
Pied-billed Grebe	<i>Podilymbus podiceps</i>	possible mortality due to pesticide use
American Bittern	<i>Botaurus lentiginosus</i>	impacts of pesticides on prey base

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Least Bittern	<i>Ixobrychus exilis</i>	unknown impact of pesticides
Cooper's Hawk	<i>Accipiter cooperii</i>	DDT poisoning
Northern Goshawk	<i>Accipiter gentilis</i>	possible impact of pesticides
Merlin	<i>Falco columbarius</i>	biocide use on wintering grounds (Central/South America)
American Coot	<i>Fulica americana</i>	
Killdeer	<i>Charadrius vociferus</i>	
Common Tern	<i>Sterna hirundo</i>	possible impacts of organochlorines
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	reduction or elimination of prey base
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	reduction of prey base
Barn Owl	<i>Tyto alba</i>	secondary poisoning by rodenticides
Long-eared Owl	<i>Asio otus</i>	
Common Nighthawk	<i>Chordeiles minor</i>	insecticide use may result in reduction of prey base
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	insecticide use may result in reduction of prey base
Olive-sided Flycatcher	<i>Contopus cooperi</i>	
Eastern Meadowlark	<i>Sturnella magna</i>	mortality due to ingestion of poisoned grain (rodenticides/insecticides)
water shrew	<i>Sorex palustris</i>	
red bat	<i>Lasiurus borealis</i>	
hoary bat	<i>Lasiurus cinereus</i>	
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	
evening bat	<i>Nycticeius humeralis</i>	
eastern pipistrelle	<i>Pipistrellus subflavus</i>	
prairie vole	<i>Microtus ochrogaster</i>	

Threat Susceptibility: 3

ringed boghaunter	<i>Williamsonia lintneri</i>	
grizzled skipper	<i>Pyrgus wyandot</i>	rangewide decline correlated with gypsy moth spraying
Dukes' skipper	<i>Euphyes dukesi</i>	herbicide of host plants; mosquito spraying also a possible threat
Karner blue	<i>Lycaeides melissa samuelis</i>	spraying of lupine known threat, gypsy moth spraying perhaps also
regal fritillary	<i>Speyeria idalia</i>	
silphium borer moth	<i>Papaipema silphii</i>	herbicide of host
leadplant flower moth	<i>Schinia lucens</i>	host plant and insecticide
Fowler's toad	<i>Bufo fowleri</i>	
boreal chorus frog	<i>Pseudacris triseriata maculata</i>	
western chorus frog	<i>Pseudacris triseriata triseriata</i>	
northern leopard frog	<i>Rana pipiens</i>	
Kirtland's snake	<i>Clonophis kirtlandii</i>	due to reduction of prey (earthworms)
blue racer	<i>Coluber constrictor foxii</i>	
northern ringneck snake	<i>Diadophis punctatus edwardsii</i>	
smooth green snake	<i>Liochlorophis vernalis</i>	eliminates prey
six-lined racerunner	<i>Apidoscelis sexlineatus</i>	
Blanding's turtle	<i>Emydoidea blandingii</i>	
Common Loon	<i>Gavia immer</i>	possible impacts due to pesticide use
Bald Eagle	<i>Haliaeetus leucocephalus</i>	carbamate pesticides, organophosphorus
Dickcissel	<i>Spiza americana</i>	poisoning of roosting birds on the wintering grounds in Venezuela by pestici

Threat Susceptibility: 2

a land snail	<i>Vertigo paradoxa</i>	herbicide use
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	possible mortality due to insecticides and rodenticides (Compound 1080, M
Osprey	<i>Pandion haliaetus</i>	bioaccumulation of pollutants, historic
Red-shouldered Hawk	<i>Buteo lineatus</i>	contaminants may reduce prey base (amphibians)
King Rail	<i>Rallus elegans</i>	
Whip-poor-will	<i>Caprimulgus vociferus</i>	insecticide use may result in reduction of prey base; industrial pollution
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	reduction of prey base

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Vesper Sparrow *Pooecetes gramineus* agricultural chemicals

Threat Susceptibility: 1

Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	sensitive to DDT
Northern Harrier	<i>Circus cyaneus</i>	biocides may cause eggshell thinning and lowered productivity
Peregrine Falcon	<i>Falco peregrinus</i>	food chain contamination
Piping Plover	<i>Charadrius melodus</i>	
Eastern Kingbird	<i>Tyrannus tyrannus</i>	
Migrant Loggerhead Shrike	<i>Lanius ludovicianus migrans</i>	metabolization of pesticides and reductions to prey base
Kirtland's Warbler	<i>Dendroica kirtlandii</i>	
silver-haired bat	<i>Lasiorycteris noctivagans</i>	

Biological Interactions: Invasive plants & animals

Threat Susceptibility: 99

spatterdock darner	<i>Aeshna mutata</i>	
Dukes' skipper	<i>Euphyes dukesi</i>	
northern hairstreak	<i>Fixsenia favonius ontario</i>	
Henry's elfin	<i>Callophrys henrici</i>	
aweme borer	<i>Papaipema aweme</i>	
eastern tiger salamander	<i>Ambystoma tigrinum tigrinum</i>	
Blanchard's cricket frog	<i>Acris crepitans blanchardi</i>	
pickereel frog	<i>Rana palustris</i>	
Pied-billed Grebe	<i>Podilymbus podiceps</i>	
Least Bittern	<i>Ixobrychus exilis</i>	
Green Heron	<i>Butorides virescens</i>	
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	
Northern Harrier	<i>Circus cyaneus</i>	
Black Tern	<i>Chlidonias niger</i>	purple loosestrife
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	
Least Flycatcher	<i>Empidonax minimus</i>	cowbird nest parasitism
Purple Martin	<i>Progne subis</i>	competition with house sparrows and starlings for nest sites; destruction of
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	nest parasitism by cowbirds
Yellow-throated Warbler	<i>Dendroica dominica</i>	nest parasitism by cowbirds
Hooded Warbler	<i>Wilsonia citrina</i>	nest parasitism by cowbirds
Canada Warbler	<i>Wilsonia canadensis</i>	nest parasitism by cowbirds
Yellow-breasted Chat	<i>Icteria virens</i>	nest parasitism by cowbirds
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	nest parasitism by cowbirds
Savannah Sparrow	<i>Passerculus sandwichensis</i>	nest parasitism by cowbirds
Le Conte's Sparrow	<i>Ammodramus leconteii</i>	nest parasitism by cowbirds
Dickcissel	<i>Spiza americana</i>	nest parasitism by cowbirds
Eastern Meadowlark	<i>Sturnella magna</i>	predation by cats and dogs; nest parasitism by cowbirds
Western Meadowlark	<i>Sturnella neglecta</i>	nest parasitism by cowbirds
least shrew	<i>Cryptotis parva</i>	house cats
pygmy shrew	<i>Sorex hoyi</i>	house cats
least chipmunk	<i>Tamias minimus</i>	cats, dogs
northern flying squirrel	<i>Glaucomys sabrinus</i>	predation by house cats
woodland jumping mouse	<i>Napaeozapus insignis</i>	house cat predation
prairie vole	<i>Microtus ochrogaster</i>	house cats
woodland vole	<i>Microtus pinetorum</i>	house cat predation
southern bog lemming	<i>Synaptomys cooperi</i>	cats and dogs
deer mouse	<i>Peromyscus maniculatus gracilis</i>	cats, dogs

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Threat Susceptibility: 3

Lake Huron locust	<i>Trimerotropis huroniana</i>	
bog conehead	<i>Neoconocephalus lyristes</i>	
red-faced meadow katydid	<i>Orchelimum concinnum</i>	
melodious ground cricket	<i>Eunemobius melodius</i>	
tamarack tree cricket	<i>Oecanthus laricis</i>	
angular spittlebug	<i>Lepyronia angulifera</i>	
great plains spittlebug	<i>Lepyronia gibbosa</i>	
red-legged spittlebug	<i>Prosapia ignipectus</i>	
a leafhopper	<i>Flexamia delongi</i>	
Huron River leafhopper	<i>Flexamia huroni</i>	
a leafhopper	<i>Flexamia reflexus</i>	
little white tiger beetle	<i>Cicindela lepida</i>	
pipevine swallowtail	<i>Battus philenor</i>	
swamp metalmark	<i>Calephelis mutica</i>	
regal fritillary	<i>Speyeria idalia</i>	
tawny crescent	<i>Phyciodes batesii</i>	
Mitchell's satyr	<i>Neonympha mitchellii mitchellii</i>	
Sprague's pygarcia	<i>Pygarcia spraguei</i>	
three-staff underwing	<i>Catocala amestris</i>	e.g. autumn olive
dune cutworm	<i>Euxoa aurulenta</i>	
blazing star borer	<i>Papaipema beeriana</i>	
golden borer	<i>Papaipema cerina</i>	
maritime sunflower borer	<i>Papaipema maritima</i>	
Culvers root borer	<i>Papaipema sciata</i>	
silphium borer moth	<i>Papaipema silphii</i>	
regal fern borer	<i>Papaipema speciosissima</i>	
leadplant flower moth	<i>Schinia lucens</i>	
queen snake	<i>Regina septemvittata</i>	introduction of rusty crayfish hypothetically could cause decline in native pre
six-lined racerunner	<i>Apidoscelis sexlineatus</i>	
spotted turtle	<i>Clemmys guttata</i>	
Blanding's turtle	<i>Emydoidea blandingii</i>	
wood turtle	<i>Glyptemys insculpta</i>	
eastern box turtle	<i>Terrapene carolina carolina</i>	
Common Tern	<i>Sterna hirundo</i>	gulls
Wood Thrush	<i>Hylocichla mustelina</i>	nest parasitism by cowbirds
Kirtland's Warbler	<i>Dendroica kirtlandii</i>	nest parasitism by cowbirds
evening bat	<i>Nycticeius humeralis</i>	house cats

Threat Susceptibility: 2

Hine's emerald	<i>Somatochlora hineana</i>	
ebony boghaunter	<i>Williamsonia fletcheri</i>	
a tiger beetle	<i>Cicindela hirticollis rhodensis</i>	
otloe skipper	<i>Hesperia otloe</i>	
Karner blue	<i>Lycaeides melissa samuelis</i>	
frosted elfin	<i>Callophrys irus</i>	
spartina borer moth	<i>Spartiniphaga inops</i>	Phragmites invasion
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	
American Black Duck	<i>Anas rubripes</i>	competition and hybridization with Mallards
Blue-winged Teal	<i>Anas discors</i>	predation by cats & dogs
Northern Bobwhite	<i>Colinus virginianus</i>	predation by dogs and cats
Red-shouldered Hawk	<i>Buteo lineatus</i>	dispersal of competitors and predators (red-tailed hawk and great horned o

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Caspian Tern	<i>Sterna caspia</i>	gulls
Acadian Flycatcher	<i>Empidonax vireescens</i>	cowbird nest parasitism
White-eyed Vireo	<i>Vireo griseus</i>	nest parasitism by cowbirds
Blue-winged Warbler	<i>Vermivora pinus</i>	nest parasitism by cowbird
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	competition and hybridization with blue-winged warbler; nest parasitism by c
Prairie Warbler	<i>Dendroica discolor</i>	nest parasitism by cowbirds
Cerulean Warbler	<i>Dendroica cerulea</i>	nest parasitism by cowbird
Prothonotary Warbler	<i>Protonotaria citrea</i>	nest parasitism by cowbirds
Field Sparrow	<i>Spizella pusilla</i>	nest parasitism by cowbirds
least weasel	<i>Mustela nivalis</i>	cats

Threat Susceptibility: 1

wild indigo duskywing	<i>Erynnis baptisiae</i>	
persius duskywing	<i>Erynnis persius persius</i>	
Trumpeter Swan	<i>Cygnus buccinator</i>	possible competition from Mute Swans
Kentucky Warbler	<i>Oporornis formosus</i>	nest parasitism by cowbirds
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	nest parasitism by cowbirds
Bobolink	<i>Dolichonyx oryzivorus</i>	nest parasitism by cowbirds
southern red-backed vole	<i>Clethrionomys gapperi</i>	dogs and cats

Biological Interactions: Disease, pathogens & parasites

Threat Susceptibility: 99

American burying beetle	<i>Nicrophorus americanus</i>	possible explanation for massive decline
six-banded longhorn beetle	<i>Dryobius sexnotatus</i>	
early hairstreak	<i>Erora laeta</i>	
Karner blue	<i>Lycaeides melissa samuelis</i>	
regal fritillary	<i>Speyeria idalia</i>	
eastern box turtle	<i>Terrapene carolina carolina</i>	
Pied-billed Grebe	<i>Podilymbus podiceps</i>	
American Bittern	<i>Botaurus lentiginosus</i>	West Nile Virus
Least Bittern	<i>Ixobrychus exilis</i>	
Green Heron	<i>Butorides virescens</i>	
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	
Northern Harrier	<i>Circus cyaneus</i>	West Nile Virus; documented mortality from ingestion of mice contaminated
Cooper's Hawk	<i>Accipiter cooperii</i>	West Nile Virus
Northern Goshawk	<i>Accipiter gentilis</i>	West Nile Virus
Red-shouldered Hawk	<i>Buteo lineatus</i>	West Nile Virus
Yellow Rail	<i>Coturnicops noveboracensis</i>	West Nile Virus
King Rail	<i>Rallus elegans</i>	West Nile Virus
Piping Plover	<i>Charadrius melodus</i>	West Nile Virus
Common Tern	<i>Sterna hirundo</i>	West Nile Virus
Black Tern	<i>Chlidonias niger</i>	West Nile Virus
Short-eared Owl	<i>Asio flammeus</i>	West Nile Virus
Kirtland's Warbler	<i>Dendroica kirtlandii</i>	West Nile Virus
Prairie Warbler	<i>Dendroica discolor</i>	West Nile Virus
Cerulean Warbler	<i>Dendroica cerulea</i>	West Nile Virus; loss of tree species (oaks, sycamores, chestnut) to disease
moose	<i>Alces alces</i>	brainworm

Threat Susceptibility: 3

northern leopard frog	<i>Rana pipiens</i>	massive die-offs attributed to disease
eastern massasauga	<i>Sistrurus catenatus catenatus</i>	
Trumpeter Swan	<i>Cygnus buccinator</i>	lack of migratory behaviors causes birds to congregate in a few isolated are
Common Loon	<i>Gavia immer</i>	West Nile Virus, Type E botulism

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Threat Susceptibility: 2

pickereel frog *Rana palustris*

Threat Susceptibility: 1

Osprey *Pandion haliaetus*
Bald Eagle *Haliaeetus leucocephalus* West Nile Virus
Peregrine Falcon *Falco peregrinus*

Biological Interactions: Other biological interactions

Threat Susceptibility: 99

American burying beetle	<i>Nicrophorus americanus</i>	increased vertebrate competition (raccoons, rats, crow, coyotes, cats, fox, e
persius duskywing	<i>Erynnis persius persius</i>	deer browse of host plant
frigga fritillary	<i>Boloria frigga</i>	decline in larval host plant and nectar sources
freija fritillary	<i>Boloria freija</i>	decline in host plant populations (dwarf birch)
aweme borer	<i>Papaipema aweme</i>	alterations to habitat due to excessive deer browsing
Culvers root borer	<i>Papaipema sciata</i>	deer browse of host plant
blue-spotted salamander	<i>Ambystoma laterale</i>	Hybridization
spotted salamander	<i>Ambystoma maculatum</i>	Inbreeding
smallmouth salamander	<i>Ambystoma texanum</i>	Hybridization
eastern hognose snake	<i>Heterodon platirhinos</i>	
Pied-billed Grebe	<i>Podilymbus podiceps</i>	intraspecifically aggressive and territorial
American White Pelican	<i>Pelecanus erythrorhynchos</i>	susceptible to predation
Least Bittern	<i>Ixobrychus exilis</i>	predation by crows, mammals, snakes, snapping turtles, and bullfrogs
Northern Harrier	<i>Circus cyaneus</i>	mammal and bird nest predators, trampling of nests by deer
Cooper's Hawk	<i>Accipiter cooperii</i>	nest predation by raccoons and crows
Yellow Rail	<i>Coturnicops noveboracensis</i>	invasion of purple loosestrife; mammal, bird, and herp predators
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	fluctuations in population with tent caterpillar outbreaks
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	predation of adult and nests/young by raptors, other birds, snakes, and ma
Long-eared Owl	<i>Asio otus</i>	competition with great horned owl
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	competition with starlings for nest sites
Olive-sided Flycatcher	<i>Contopus cooperi</i>	beaver control may reduce available habitat
Migrant Loggerhead Shrike	<i>Lanius ludovicianus migrans</i>	competition on the wintering grounds
White-eyed Vireo	<i>Vireo griseus</i>	nest predation by birds, snakes, and mammals
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	overbrowsing by deer reduces understory habitat
Prairie Warbler	<i>Dendroica discolor</i>	nest predation by snakes
Canada Warbler	<i>Wilsonia canadensis</i>	overbrowsing by deer reduces understory habitat
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	habitat alterations due to overgrazing by deer
Henslow's Sparrow	<i>Ammodramus henslowii</i>	nest predation
Eastern Meadowlark	<i>Sturnella magna</i>	predation by mammals and snakes
Western Meadowlark	<i>Sturnella neglecta</i>	predation by raptors, crows, and mammals
evening bat	<i>Nycticeius humeralis</i>	declining in barns with the increase in big brown bats
northern flying squirrel	<i>Glaucomys sabrinus</i>	competition with southern flying squirrel
woodland vole	<i>Microtus pinetorum</i>	increase predation from higher densities of coyote, raccoon, fox, opossum,
southern bog lemming	<i>Synaptomys cooperi</i>	coyote predation; displacement by meadow voles if they are increasing
snowshoe hare	<i>Lepus americanus</i>	high densities of coyote and fox; high deer browse

Threat Susceptibility: 3

widespread column	<i>Pupilla muscorum</i>	habitat alterations due to excessive deer browsing
angular spittlebug	<i>Lepyronia angulifera</i>	decline in host plants, especially Eleocharis
Huron River leafhopper	<i>Flexamia huroni</i>	loss of host plant (<i>Muhlenbergia richardsonii</i>)
Dukes' skipper	<i>Euphyes dukesi</i>	decline of host plants - sedges
early hairstreak	<i>Erora laeta</i>	decline of nectar sources

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frosted elfin	<i>Callophrys irus</i>	loss of host plant; deer browse of host plant
tawny crescent	<i>Phyciodes batesii</i>	decline in host plant populations (<i>Aster undulatus</i>); habitat alterations due to
silphium borer moth	<i>Papaipema silphii</i>	decline in host plant
leadplant flower moth	<i>Schinia lucens</i>	decline in host plant (leadplant) populations
Northern Bobwhite	<i>Colinus virginianus</i>	predation; reduction of vegetative cover due to deer browsing
Common Loon	<i>Gavia immer</i>	intraspecific competition due to territoriality; predation by fish, birds, mamm
Piping Plover	<i>Charadrius melodus</i>	nest predation
Upland Sandpiper	<i>Bartramia longicauda</i>	predation
Caspian Tern	<i>Sterna caspia</i>	competition with gulls and cormorants for nest sites; predation by owls and
Common Tern	<i>Sterna hirundo</i>	competition with gulls for nest sites; predation by gulls, mammals, reptiles,

Threat Susceptibility: 2

poweshiek skipperling	<i>Oarisma poweshiek</i>	Loss of host plant - <i>Eleocharis</i> spp.
pipevine swallowtail	<i>Battus philenor</i>	loss of host plant - <i>Aristolochia</i> spp.
Karner blue	<i>Lycaeides melissa samuelis</i>	habitat alterations due to excessive deer browsing
Blue-winged Teal	<i>Anas discors</i>	predation by mammals including red foxes and raccoons
Spruce Grouse	<i>Falcipennis canadensis</i>	predation by birds and mammals
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	predation by birds and mammals
Barn Owl	<i>Tyto alba</i>	predation by great horned owl
Short-eared Owl	<i>Asio flammeus</i>	nest predation by mammals
Whip-poor-will	<i>Caprimulgus vociferus</i>	food competition with bats and small owls
Northern Flicker	<i>Colaptes auratus</i>	competition with starlings for nest sites
Purple Martin	<i>Progne subis</i>	Highly dependent on humans to provide secure, weather-tight cavities
Brown Thrasher	<i>Toxostoma rufum</i>	competition with catbirds and cardinals for nesting territories
Prothonotary Warbler	<i>Protonotaria citrea</i>	predation; competition with house wrens
Field Sparrow	<i>Spizella pusilla</i>	nest predation by snakes, mammals, and birds

Threat Susceptibility: 1

Northern Goshawk	<i>Accipiter gentilis</i>	great horned owl predation; mammal predation
Black Tern	<i>Chlidonias niger</i>	possible competition from mute swans; predation of nests and young

Modification of Natural Processes: Climate change

Threat Susceptibility: 99

Karner blue	<i>Lycaeides melissa samuelis</i>	
frigga fritillary	<i>Boloria frigga</i>	
red-disked alpine	<i>Erebia discaidalis</i>	
western chorus frog	<i>Pseudacris triseriata triseriata</i>	
pickerel frog	<i>Rana palustris</i>	
Pied-billed Grebe	<i>Podilymbus podiceps</i>	
Barn Owl	<i>Tyto alba</i>	
moose	<i>Alces alces</i>	
least chipmunk	<i>Tamias minimus</i>	potential increase in abundance of the Eastern chipmunk due to temperatur
northern flying squirrel	<i>Glaucomys sabrinus</i>	increase and range expansion of southern flying squirrel, due to warmer cli
deer mouse	<i>Peromyscus maniculatus gracilis</i>	increase and range expansion of white-footed mouse, likely due to warmer

Threat Susceptibility: 3

freija fritillary	<i>Boloria freija</i>	Boreal spp. Not sure how it will react to global warming
marbled salamander	<i>Ambystoma opacum</i>	
cougar	<i>Puma concolor</i>	

Threat Susceptibility: 1

great plains spittlebug	<i>Lepyronia gibbosa</i>	catastrophic disturbance
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Modification of Natural Processes: Grazing & mowing patterns

Threat Susceptibility: 99

delicate vertigo	<i>Vertigo bollesiana</i>	grazing
a tiger beetle	<i>Cicindela macra</i>	
swamp metalmark	<i>Calephelis mutica</i>	
Sprague's pygarcia	<i>Pygarcia spraguei</i>	
Blanchard's cricket frog	<i>Acris crepitans blanchardi</i>	
Upland Sandpiper	<i>Bartramia longicauda</i>	mowing makes hayfields unproductive as nesting areas; livestock may tram
American Woodcock	<i>Scolopax minor</i>	possible impacts of mowing on nests
Short-eared Owl	<i>Asio flammeus</i>	mid-April through mid-July mowing/burning may destroy nests and kill young
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	possible trampling of nests or reduction in insect populations
Migrant Loggerhead Shrike	<i>Lanius ludovicianus migrans</i>	loss of habitat due to succession
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	poorly timed mowing
Henslow's Sparrow	<i>Ammodramus henslowii</i>	annual mowing reduces attractiveness of hayfields; earlier and more frequent
Dickcissel	<i>Spiza americana</i>	loss of nests due to mowing
prairie vole	<i>Microtus ochrogaster</i>	

Threat Susceptibility: 3

a land snail	<i>Vertigo paradoxa</i>	
Dukes' skipper	<i>Euphyes dukesi</i>	
Karner blue	<i>Lycaeides melissa samuelis</i>	
golden borer	<i>Papaipema cerina</i>	
phlox moth	<i>Schinia indiana</i>	untimely mowing and grazing
spotted salamander	<i>Ambystoma maculatum</i>	
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	
eastern massasauga	<i>Sistrurus catenatus catenatus</i>	Hogs, mowing
spotted turtle	<i>Clemmys guttata</i>	
eastern box turtle	<i>Terrapene carolina carolina</i>	Hogs and farm machinery
Northern Bobwhite	<i>Colinus virginianus</i>	changing land use including clean farming, single crop production, plantation
Sedge Wren	<i>Cistothorus platensis</i>	livestock grazing
Bobolink	<i>Dolichonyx oryzivorus</i>	earlier and more frequent hay-cropping

Threat Susceptibility: 2

persius duskywing	<i>Erynnis persius persius</i>	succession
grizzled skipper	<i>Pyrgus wyandot</i>	Succession
blue racer	<i>Coluber constrictor foxii</i>	
Blue-winged Teal	<i>Anas discors</i>	nest disruption
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	intensive livestock overgrazing
Field Sparrow	<i>Spizella pusilla</i>	Secondary succession on farms
Vesper Sparrow	<i>Poocetes gramineus</i>	Secondary succession
Savannah Sparrow	<i>Passerculus sandwichensis</i>	Secondary succession of farms
Le Conte's Sparrow	<i>Ammodramus leconteii</i>	haying during the breeding season may destroy nests
Eastern Meadowlark	<i>Sturnella magna</i>	frequent mowing has adverse effects; mowing and grazing may destroy nests

Threat Susceptibility: 1

otter skipper	<i>Hesperia ottoe</i>	
Mitchell's satyr	<i>Neonympha mitchellii mitchellii</i>	
wood turtle	<i>Glyptemys insculpta</i>	can withstand light grazing and low-intensity agriculture
Northern Harrier	<i>Circus cyaneus</i>	nests may be trampled by cattle or be abandoned due to mowing
Marsh Wren	<i>Cistothorus palustris</i>	
White-winged Crossbill	<i>Loxia leucoptera</i>	

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Modification of Natural Processes: Altered fire regime

Threat Susceptibility: 99

deep-throat vertigo	<i>Vertigo nylanderi</i>	excessive fire
secretive locust	<i>Appalachia arcana</i>	
tamarack tree cricket	<i>Oecanthus laricis</i>	
Macoun's arctic	<i>Oeneis macounii</i>	
quiet underwing	<i>Catocala dulciola</i>	
Blanchard's cricket frog	<i>Acris crepitans blanchardi</i>	
Olive-sided Flycatcher	<i>Contopus cooperi</i>	
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	loss of habitat due to succession
Connecticut Warbler	<i>Oporornis agilis</i>	fire suppression in barrens
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	
prairie vole	<i>Microtus ochrogaster</i>	

Threat Susceptibility: 3

blue-legged locust	<i>Melanoplus flavidus</i>	fire suppression
Hoosier locust	<i>Paroxya hoosieri</i>	
bog conehead	<i>Neoconocephalus lyristes</i>	fire suppression
red-faced meadow katydid	<i>Orchelimum concinnum</i>	fire suppression
delicate meadow katydid	<i>Orchelimum delicatum</i>	
angular spittlebug	<i>Lepyronia angulifera</i>	
red-legged spittlebug	<i>Prosapia ignipectus</i>	
a leafhopper	<i>Flexamia delongi</i>	
Huron River leafhopper	<i>Flexamia huroni</i>	
a leafhopper	<i>Flexamia reflexus</i>	
wild indigo duskywing	<i>Erynnis baptisiae</i>	
persius duskywing	<i>Erynnis persius persius</i>	
grizzled skipper	<i>Pyrgus wyandot</i>	
poweshiek skipperling	<i>Oarisma poweshiek</i>	fire suppression
ottoe skipper	<i>Hesperia ottoe</i>	
dusted skipper	<i>Atrytonopsis hianna</i>	
northern blue	<i>Lycaeides idas nabokovi</i>	loss of fire to maintain habitat
Karner blue	<i>Lycaeides melissa samuelis</i>	
swamp metalmark	<i>Calephelis mutica</i>	
regal fritillary	<i>Speyeria idalia</i>	
tawny crescent	<i>Phyciodes batesii</i>	
Mitchell's satyr	<i>Neonympha mitchellii mitchellii</i>	
barrens buckmoth	<i>Hemileuca maia</i>	
yellow-banded day-sphinx	<i>Proserpinus flavofasciata</i>	
three-staff underwing	<i>Catocala amestris</i>	fire suppression
Doll's merolonche	<i>Merolonche dollii</i>	
blazing star borer	<i>Papaipema beeriana</i>	
maritime sunflower borer	<i>Papaipema maritima</i>	
Culvers root borer	<i>Papaipema sciata</i>	
silphium borer moth	<i>Papaipema silphii</i>	
regal fern borer	<i>Papaipema speciosissima</i>	
phlox moth	<i>Schinia indiana</i>	suppression
leadplant flower moth	<i>Schinia lucens</i>	suppression
spartina borer moth	<i>Spartiniphaga inops</i>	
eastern massasauga	<i>Sistrurus catenatus catenatus</i>	
spotted turtle	<i>Clemmys guttata</i>	

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Spruce Grouse	<i>Falcipecten canadensis</i>	in some areas, the problem is overmature forest structure (jack pine-spruce
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	fire suppression leading to habitat succession
Northern Bobwhite	<i>Colinus virginianus</i>	changing land use including clean farming, single crop production, plantatio
Upland Sandpiper	<i>Bartramia longicauda</i>	reforestation/succession of pastures and fields can be a threat
Black-backed Woodpecker	<i>Picoides arcticus</i>	significant temporary increases in numbers after burns in response to prese
Migrant Loggerhead Shrike	<i>Lanius ludovicianus migrans</i>	loss of habitat due to succession
Kirtland's Warbler	<i>Dendroica kirtlandii</i>	habitat change due to succession/forest maturation
Prairie Warbler	<i>Dendroica discolor</i>	lack of disturbance resulting in succession
Palm Warbler	<i>Dendroica palmarum</i>	
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	habitat loss due to succession
Bobolink	<i>Dolichonyx oryzivorus</i>	loss of habitat due to succession
lynx	<i>Lynx canadensis</i>	fire suppression resulting in large devastating fires

Threat Susceptibility: 2

a land snail	<i>Vertigo paradoxa</i>	
great plains spittlebug	<i>Lepyronia gibbosa</i>	
Henry's elfin	<i>Callophrys henrici</i>	
frosted elfin	<i>Callophrys irus</i>	succession
Sprague's pygarcia	<i>Pygarcia spraguei</i>	succession
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	
Yellow Rail	<i>Coturnicops noveboracensis</i>	encroachment of woody vegetation on breeding sites
American Woodcock	<i>Scolopax minor</i>	loss of habitat due to succession
Barn Owl	<i>Tyto alba</i>	succession of grasslands to brushland
Short-eared Owl	<i>Asio flammeus</i>	successional changes to habitat
Common Nighthawk	<i>Chordeiles minor</i>	successional changes to habitat
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	loss of snags
Sedge Wren	<i>Cistothorus platensis</i>	loss of wetlands to natural succession
Brown Thrasher	<i>Toxostoma rufum</i>	loss of habitat due to succession
Canada Warbler	<i>Wilsonia canadensis</i>	lack of disturbance prevents creation of forest openings and growth of thick
Yellow-breasted Chat	<i>Icteria virens</i>	habitat loss due to succession
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	loss of habitat due to succession
Henslow's Sparrow	<i>Ammodramus henslowii</i>	loss of habitat due to succession
Le Conte's Sparrow	<i>Ammodramus leconteii</i>	habitat loss due to succession; undesirable ground litter density due to burn
Eastern Meadowlark	<i>Sturnella magna</i>	loss of habitat due to succession
American marten	<i>Martes americana</i>	Fire suppression w/ resulting severe fires

Threat Susceptibility: 1

Northern Harrier	<i>Circus cyaneus</i>	
Field Sparrow	<i>Spizella pusilla</i>	
Red Crossbill	<i>Loxia curvirostra</i>	
silver-haired bat	<i>Lasionycteris noctivagans</i>	
red bat	<i>Lasiurus borealis</i>	
evening bat	<i>Nycticeius humeralis</i>	
eastern pipistrelle	<i>Pipistrellus subflavus</i>	
northern flying squirrel	<i>Glaucomys sabrinus</i>	fire suppression

Modification of Natural Processes: Altered hydrologic regimes

Threat Susceptibility: 99

a leafhopper	<i>Flexamia delongi</i>	
a tiger beetle	<i>Cicindela macra</i>	
smallmouth salamander	<i>Ambystoma texanum</i>	
Common Loon	<i>Gavia immer</i>	fluctuating water levels at nest sites
Least Bittern	<i>Ixobrychus exilis</i>	along the Great Lakes, nesting sites were destroyed by high water levels in

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King Rail	<i>Rallus elegans</i>
Common Tern	<i>Sterna hirundo</i>
Le Conte's Sparrow	<i>Ammodramus leconteii</i>
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>
water shrew	<i>Sorex palustris</i>

during times of rising lake levels, coastal wetland communities may be abse
 rising water levels inundate colony sites
 flooding can cause large numbers of nest losses
 habitat loss due to succession toward closed marsh communities
 prefer high flow; uncertain of the importance of alteration though

Threat Susceptibility: 3

six-whorl vertigo	<i>Vertigo morsei</i>
pleistocene catinella	<i>Catinella exile</i>
grey petaltail	<i>Tachopteryx thoreyi</i>
zigzag darner	<i>Aeshna sitchensis</i>
arrowhead spiketail	<i>Cordulegaster obliqua</i>
Hine's emerald	<i>Somatochlora hineana</i>
incurvate emerald	<i>Somatochlora incurvata</i>
ebony boghaunter	<i>Williamsonia fletcheri</i>
ringed boghaunter	<i>Williamsonia lintneri</i>
Hoosier locust	<i>Paroxya hoosieri</i>
delicate meadow katydid	<i>Orchelimum delicatum</i>
melodious ground cricket	<i>Eunemobius melodius</i>
tamarack tree cricket	<i>Oecanthus laricis</i>
red-legged spittlebug	<i>Prosapia ignipectus</i>
Huron River leafhopper	<i>Flexamia huroni</i>
a leafhopper	<i>Flexamia reflexus</i>
Dukes' skipper	<i>Euphyes dukesi</i>
swamp metalmark	<i>Calephelis mutica</i>
tawny crescent	<i>Phyciodes batesii</i>
Mitchell's satyr	<i>Neonympha mitchellii mitchellii</i>
Doll's merolonche	<i>Merolonche dolli</i>
blazing star borer	<i>Papaipema beeriana</i>
maritime sunflower borer	<i>Papaipema maritima</i>
Culvers root borer	<i>Papaipema sciata</i>
regal fern borer	<i>Papaipema speciosissima</i>
marbled salamander	<i>Ambystoma opacum</i>
four-toed salamander	<i>Hemidactylium scutatum</i>
Blanchard's cricket frog	<i>Acris crepitans blanchardi</i>
western chorus frog	<i>Pseudacris triseriata triseriata</i>
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>
eastern massasauga	<i>Sistrurus catenatus catenatus</i>
Blanding's turtle	<i>Emydoidea blandingii</i>
arctic shrew	<i>Sorex arcticus</i>

Threat Susceptibility: 2

poweshiek skipperling	<i>Oarisma poweshiek</i>
blue-spotted salamander	<i>Ambystoma laterale</i>
eastern tiger salamander	<i>Ambystoma tigrinum tigrinum</i>
Fowler's toad	<i>Bufo fowleri</i>
Blue-winged Teal	<i>Anas discors</i>
Pied-billed Grebe	<i>Podilymbus podiceps</i>
American Bittern	<i>Botaurus lentiginosus</i>
Green Heron	<i>Butorides virescens</i>
Osprey	<i>Pandion haliaetus</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Yellow Rail	<i>Coturnicops noveboracensis</i>

encroachment of woody vegetation into herbaceous wetlands

encroachment of woody vegetation on breeding sites

Threat Susceptibility Definitions:

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The comments included were drawn from scientific literature and communications with species experts.

Piping Plover	<i>Charadrius melodus</i>	high Great Lakes water levels reduce breeding habitat due to flooding
Marsh Wren	<i>Cistothorus palustris</i>	

Threat Susceptibility: 1

pickerel frog	<i>Rana palustris</i>	
American Black Duck	<i>Anas rubripes</i>	
Northern Harrier	<i>Circus cyaneus</i>	
Red-shouldered Hawk	<i>Buteo lineatus</i>	
Spotted Sandpiper	<i>Actitis macularia</i>	
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	
Short-eared Owl	<i>Asio flammeus</i>	
Sedge Wren	<i>Cistothorus palustris</i>	loss of wetlands to natural succession

Modification of Natural Processes: Fragmentation

Threat Susceptibility: 99

Lake Huron locust	<i>Trimerotropis huroniana</i>	
secretive locust	<i>Appalachia arcana</i>	
tamarack tree cricket	<i>Oecanthus laricis</i>	
a tiger beetle	<i>Cicindela macra</i>	
northern blue	<i>Lycaeides idas nabokovi</i>	
Upland Sandpiper	<i>Bartramia longicauda</i>	
Worm-eating Warbler	<i>Helmitheros vermivorus</i>	
Kentucky Warbler	<i>Oporornis formosus</i>	
water shrew	<i>Sorex palustris</i>	naturally fragmented populations
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	

Threat Susceptibility: 3

Hine's emerald	<i>Somatochlora hineana</i>	
great plains spittlebug	<i>Lepyronia gibbosa</i>	
wild indigo duskywing	<i>Erynnis baptisiae</i>	
persius duskywing	<i>Erynnis persius persius</i>	
poweshiek skipperling	<i>Oarisma poweshiek</i>	
dusted skipper	<i>Atrytonopsis hianna</i>	
Karner blue	<i>Lycaeides melissa samuelis</i>	
Henry's elfin	<i>Callophrys henrici</i>	
frosted elfin	<i>Callophrys irus</i>	
swamp metalmark	<i>Calephelis mutica</i>	
regal fritillary	<i>Speyeria idalia</i>	
Mitchell's satyr	<i>Neonympha mitchellii mitchellii</i>	
three-staff underwing	<i>Catocala amestris</i>	
blazing star borer	<i>Papaipema beeriana</i>	
golden borer	<i>Papaipema cerina</i>	poor fliers
Culvers root borer	<i>Papaipema sciata</i>	
silphium borer moth	<i>Papaipema silphii</i>	
phlox moth	<i>Schinia indiana</i>	poor dispersal ability
leadplant flower moth	<i>Schinia lucens</i>	
spartina borer moth	<i>Spartiniphaga inops</i>	
blue-spotted salamander	<i>Ambystoma laterale</i>	roads are issues
spotted salamander	<i>Ambystoma maculatum</i>	road mortality major issue
smallmouth salamander	<i>Ambystoma texanum</i>	road mortality
eastern tiger salamander	<i>Ambystoma tigrinum tigrinum</i>	road mortalities- major issue
Fowler's toad	<i>Bufo fowleri</i>	
western chorus frog	<i>Pseudacris triseriata triseriata</i>	

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northern leopard frog	<i>Rana pipiens</i>	
Kirtland's snake	<i>Clonophis kirtlandii</i>	
blue racer	<i>Coluber constrictor foxii</i>	road mortality, farm machinery, needs large areas of habitat
northern ringneck snake	<i>Diadophis punctatus edwardsii</i>	road mortality
black rat snake	<i>Elaphe obsoleta obsoleta</i>	road mortality
western fox snake	<i>Elaphe vulpina</i>	road mortality
eastern hognose snake	<i>Heterodon platirhinos</i>	road mortality
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	road mortality
eastern massasauga	<i>Sistrurus catenatus catenatus</i>	
spotted turtle	<i>Clemmys guttata</i>	road mortality
Blanding's turtle	<i>Emydoidea blandingii</i>	road mortality
wood turtle	<i>Glyptemys insculpta</i>	roads big issue
eastern box turtle	<i>Terrapene carolina carolina</i>	bulldozers and car worst enemies
American Black Duck	<i>Anas rubripes</i>	
Spruce Grouse	<i>Falcapennis canadensis</i>	
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	
Northern Goshawk	<i>Accipiter gentilis</i>	creation of openings favor competitors (red-tailed hawks, great horned owls)
Red-shouldered Hawk	<i>Buteo lineatus</i>	
Barn Owl	<i>Tyto alba</i>	needs large herbacious landscapes
Short-eared Owl	<i>Asio flammeus</i>	Secondary succession
Acadian Flycatcher	<i>Empidonax virescens</i>	area sensitive species which is much less common in woodlots below the 9
Wood Thrush	<i>Hylocichla mustelina</i>	
Hooded Warbler	<i>Wilsonia citrina</i>	
Canada Warbler	<i>Wilsonia canadensis</i>	
gray wolf	<i>Canis lupus</i>	
cougar	<i>Puma concolor</i>	
lynx	<i>Lynx canadensis</i>	
American marten	<i>Martes americana</i>	
moose	<i>Alces alces</i>	
northern flying squirrel	<i>Glaucomys sabrinus</i>	weak dispersal ability
southern red-backed vole	<i>Clethrionomys gapperi</i>	

Threat Susceptibility: 2

a leafhopper	<i>Flexamia delongi</i>	
otloe skipper	<i>Hesperia otloe</i>	
Dukes' skipper	<i>Euphyes dukesi</i>	
frigga fritillary	<i>Boloria frigga</i>	
marbled salamander	<i>Ambystoma opacum</i>	
pickerel frog	<i>Rana palustris</i>	
eastern fox snake	<i>Elaphe gloydi</i>	
Blue-winged Teal	<i>Anas discors</i>	
Northern Harrier	<i>Circus cyaneus</i>	
Cooper's Hawk	<i>Accipiter cooperii</i>	
Piping Plover	<i>Charadrius melodus</i>	
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	fragmentation of riparian habitat
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	
Kirtland's Warbler	<i>Dendroica kirtlandii</i>	
Louisiana Waterthrush	<i>Seiurus motacilla</i>	
Henslow's Sparrow	<i>Ammodramus henslowii</i>	
woodland vole	<i>Microtus pinetorum</i>	

Threat Susceptibility: 1

Green Heron	<i>Butorides virescens</i>
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Bald Eagle	<i>Haliaeetus leucocephalus</i>
Sedge Wren	<i>Cistothorus platensis</i>
Cerulean Warbler	<i>Dendroica cerulea</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Eastern Meadowlark	<i>Sturnella magna</i>
Western Meadowlark	<i>Sturnella neglecta</i>
eastern pipistrelle	<i>Pipistrellus subflavus</i>

Education: Lack of scientific knowledge

Threat Susceptibility: 99

muskeg damer	<i>Aeshna subarctica</i>	
russet-tipped clubtail	<i>Stylurus plagiatus</i>	
arrowhead spiketail	<i>Cordulegaster obliqua</i>	
subarctic bluet	<i>Coenagrion interrogatum</i>	
Whip-poor-will	<i>Caprimulgus vociferus</i>	
Migrant Loggerhead Shrike	<i>Lanius ludovicianus migrans</i>	
Connecticut Warbler	<i>Oporornis agilis</i>	distribution and abundance are not fully known

Threat Susceptibility: 3

eastern flat-whorl	<i>Planogyra asteriscus</i>	no information available on threats
a land snail	<i>Vallonia gracilicosta albula</i>	No information available
lambda snaggletooth	<i>Gastrocopta holzingeri</i>	
widespread column	<i>Pupilla muscorum</i>	Little information on threats available
a land snail	<i>Vertigo cristata</i>	
tapered vertigo	<i>Vertigo elatior</i>	
Hubricht's vertigo	<i>Vertigo hubrichti</i>	
cross vertigo	<i>Vertigo modesta</i>	
a land snail	<i>Vertigo modesta parietalis</i>	
deep-throat vertigo	<i>Vertigo nylanderi</i>	very little information available
crested vertigo	<i>Vertigo pygmaea</i>	
pale mantleslug	<i>Pallifera dorsalis</i>	
Foster mantleslug	<i>Pallifera fosteri</i>	
redfoot mantleslug	<i>Pallifera ohioensis</i>	
Carolina mantleslug	<i>Philomyces carolinianus</i>	
banded globe	<i>Anguispira kochi</i>	
domed disc	<i>Discus patulus</i>	
spike-lip crater	<i>Appalachina sayana</i>	
proud globe	<i>Mesodon elevatus</i>	
velvet wedge	<i>Xolotrema denotatum</i>	No information available
copper button	<i>Mesomphix cupreus</i>	No information available
ebony boghaunter	<i>Williamsonia fletcheri</i>	
barrens locust	<i>Orphulella pelidna pelidna</i>	No information available on threats
a spur-throat grasshopper	<i>Melanoplus eurycercus</i>	No information available on threats
blue-legged locust	<i>Melanoplus flavidus</i>	very little information available
Hebard's green-legged locust	<i>Melanoplus viridipes</i>	No information available on threats
Hoosier locust	<i>Paroxya hoosieri</i>	Little information available on threats
Atlantic-coast locust	<i>Psinidia fenestralis fenestralis</i>	No information available on threats
secretive locust	<i>Appalachia arcana</i>	
post-oak grasshopper	<i>Dendrotettix quercus</i>	no information on threats available
woodland camel cricket	<i>Ceuthophilus silvestris</i>	No information available on threats
woodland camel cricket	<i>Ceuthophilus uhleri</i>	no information available on threats
woodland meadow katydid	<i>Conocephalus nemoralis</i>	No information available on threats

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bog conehead	<i>Neoconocephalus lyristes</i>	little information available on threats
conehead grasshopper	<i>Neoconocephalus retusus</i>	No information available on threats
red-faced meadow katydid	<i>Orchelimum concinnum</i>	little information available on threats
delicate meadow katydid	<i>Orchelimum delicatum</i>	Little information is available on threats
pine katydid	<i>Scudderia fasciata</i>	No information available on threats
Davis's shield-bearer	<i>Atlantiscus davisii</i>	No information available on threats
melodious ground cricket	<i>Eunemobius melodius</i>	Little information available on threats
pine tree cricket	<i>Oecanthus pini</i>	No information available on threats
angular spittlebug	<i>Lepyronia angulifera</i>	little info on this species
great plains spittlebug	<i>Lepyronia gibbosa</i>	
a spittlebug	<i>Philaenarcys killa</i>	No information available
red-legged spittlebug	<i>Prosapia ignipectus</i>	
a leafhopper	<i>Dorydiella kansana</i>	no information available
a leafhopper	<i>Flexamia delongi</i>	very little threat information available
Huron River leafhopper	<i>Flexamia huroni</i>	Very little info available
a leafhopper	<i>Flexamia reflexus</i>	very little information available on threats
a tiger beetle	<i>Cicindela limbalis</i>	
American burying beetle	<i>Nicrophorus americanus</i>	
black lordithon rove beetle	<i>Lordithon niger</i>	
wild indigo duskywing	<i>Erynnis baptisiae</i>	found no info on threats
grizzled skipper	<i>Pyrgus wyandot</i>	very little species specific information
pipevine swallowtail	<i>Battus philenor</i>	
large marble	<i>Euchloe ausonides</i>	no information available on threats
northern hairstreak	<i>Fixsenia favonius ontario</i>	no information available
early hairstreak	<i>Erora laeta</i>	very little species specific information
northern blue	<i>Lycaeides idas nabokovi</i>	
Henry's elfin	<i>Callophrys henrici</i>	very little species specific information
swamp metalmark	<i>Calephelis mutica</i>	
regal fritillary	<i>Speyeria idalia</i>	
frigga fritillary	<i>Boloria frigga</i>	
freiija fritillary	<i>Boloria freiija</i>	
gorgone checkerspot	<i>Chlosyne gorgone carlota</i>	
hoary comma	<i>Polygonia gracilis</i>	
red-disked alpine	<i>Erebia discoidalis</i>	
Macoun's arctic	<i>Oeneis macounii</i>	
pine imperial moth	<i>Eacles imperialis pini</i>	
barrens buckmoth	<i>Hemileuca maia</i>	surveys needed
yellow-banded day-sphinx	<i>Proserpinus flavofasciata</i>	
Sprague's pygarcia	<i>Pygarcia spraguei</i>	very little info on the species
corylus dagger moth	<i>Acronicta falcula</i>	no information available
gold moth	<i>Basilodes pepita</i>	No information available on threats
boreal fan moth	<i>Brachionycha borealis</i>	no information available
three-staff underwing	<i>Catocala amestris</i>	very little species specific information
quiet underwing	<i>Catocala dulciola</i>	
magdalen underwing	<i>Catocala illecta</i>	
Robinson's underwing	<i>Catocala robinsoni</i>	
dune cutworm	<i>Euxoa aurulenta</i>	very little species specific information
Doll's merolonche	<i>Merolonche dollii</i>	
Newman's brocade	<i>Meropleon ambifusca</i>	Very little information on this species
3-striped oncocnemis	<i>Oncocnemis piffardi</i>	very little available information
three-horned moth	<i>Pachypolia atricornis</i>	very little information available
aweme borer	<i>Papaipema aweme</i>	

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blazing star borer	<i>Papaipema beeriana</i>	very little species specific information
golden borer	<i>Papaipema cerina</i>	very little species specific information
maritime sunflower borer	<i>Papaipema maritima</i>	very little species specific information
Culvers root borer	<i>Papaipema sciata</i>	very little species specific information
silphium borer moth	<i>Papaipema silphii</i>	
regal fern borer	<i>Papaipema speciosissima</i>	very little species-specific information
phlox moth	<i>Schinia indiana</i>	
spartina borer moth	<i>Spartiniphaga inops</i>	
riley's lappet moth	<i>Heteropacha rileyana</i>	No information available
small heterocampa	<i>Heterocampa subrotata</i>	
marbled salamander	<i>Ambystoma opacum</i>	
Kirtland's snake	<i>Clonophis kirtlandii</i>	
queen snake	<i>Regina septemvittata</i>	
least shrew	<i>Cryptotis parva</i>	no information in literature except that house cats prey upon them
arctic shrew	<i>Sorex arcticus</i>	little information out there
smoky shrew	<i>Sorex fumeus</i>	
pygmy shrew	<i>Sorex hoyi</i>	little information exists on threats
northern bat or northern myotis	<i>Myotis septentrionalis</i>	
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	
evening bat	<i>Nycticeius humeralis</i>	
eastern pipistrelle	<i>Pipistrellus subflavus</i>	
least weasel	<i>Mustela nivalis</i>	
least chipmunk	<i>Tamias minimus</i>	threats are geneally unknown
woodland jumping mouse	<i>Napaeozapus insignis</i>	very little information available on threats
deer mouse	<i>Peromyscus maniculatus gracilis</i>	threats are geneally unknown

Threat Susceptibility: 2

persius duskywing	<i>Erynnis persius persius</i>	
poweshiek skipperling	<i>Oarisma poweshiek</i>	
Mitchell's satyr	<i>Neonympha mitchellii mitchellii</i>	where does larve overwinter
blue-spotted salamander	<i>Ambystoma laterale</i>	
spotted salamander	<i>Ambystoma maculatum</i>	
smallmouth salamander	<i>Ambystoma texanum</i>	
four-toed salamander	<i>Hemidactylium scutatum</i>	
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	
six-lined racerunner	<i>Apidoscelis sexlineatus</i>	
eastern massasauga	<i>Sistrurus catenatus catenatus</i>	
Least Bittern	<i>Ixobrychus exilis</i>	
Le Conte's Sparrow	<i>Ammodramus leconteii</i>	

Threat Susceptibility: 1

Virginia Rail	<i>Rallus limicola</i>
Sora	<i>Porzana carolina</i>
Common Moorhen	<i>Gallinula chloropus</i>
red bat	<i>Lasiurus borealis</i>
hoary bat	<i>Lasiurus cinereus</i>

Education: Social attitudes

Threat Susceptibility: 99

Common Loon	<i>Gavia immer</i>	illegal shooting by anglers/commercial fishermen
Least Bittern	<i>Ixobrychus exilis</i>	
Cooper's Hawk	<i>Accipiter cooperii</i>	persecution by hunters and irate farmers
American Coot	<i>Fulica americana</i>	shooting during migration due to nuisance impacts (congregating and defec

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woodland vole *Microtus pinetorum* poisoning by humans

Threat Susceptibility: 3

a land snail	<i>Guppya sterkii</i>	landowners are throwing yard debris over slope
Kirtland's snake	<i>Clonophis kirtlandii</i>	persecution
blue racer	<i>Coluber constrictor foxii</i>	persecution
eastern fox snake	<i>Elaphe gloydi</i>	fear killing
black rat snake	<i>Elaphe obsoleta obsoleta</i>	
western fox snake	<i>Elaphe vulpina</i>	
eastern hognose snake	<i>Heterodon platirhinos</i>	
copperbelly watersnake	<i>Nerodia erythrogaster neglecta</i>	persecution / fear killing
queen snake	<i>Regina septemvittata</i>	fear killing
eastern massasauga	<i>Sistrurus catenatus catenatus</i>	fear killing
spotted turtle	<i>Clemmys guttata</i>	vandalistic shooting
Blanding's turtle	<i>Emydoidea blandingii</i>	used for target practice
wood turtle	<i>Glyptemys insculpta</i>	
silver-haired bat	<i>Lasionycteris noctivagans</i>	persecution
red bat	<i>Lasiurus borealis</i>	
hoary bat	<i>Lasiurus cinereus</i>	
northern bat or northern myotis	<i>Myotis septentrionalis</i>	
Indiana bat or Indiana myotis	<i>Myotis sodalis</i>	
evening bat	<i>Nycticeius humeralis</i>	
eastern pipistrelle	<i>Pipistrellus subflavus</i>	
gray wolf	<i>Canis lupus</i>	
cougar	<i>Puma concolor</i>	persecution

Threat Susceptibility: 2

Trumpeter Swan *Cygnus buccinator* feeding by humans leading to acclimation

Threat Susceptibility: 1

Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>
Pied-billed Grebe	<i>Podilymbus podiceps</i>
Whip-poor-will	<i>Caprimulgus vociferus</i>

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