



Appendix A4:

Comprehensive Wildlife Conservation Strategy Species Group Reports for Herpetofauna

Prepared by New York State Department of Environmental Conservation staff in cooperation with Cazenovia College and the Riverhead Foundation for Marine Research in support of the Comprehensive Wildlife Conservation Strategy prepared for New York as required by the United States Fish and Wildlife Service's State Wildlife Grants Program

27-Sep-05

Taxa Group: Herpetofauna
Species Group: Box Turtle

Threats:

- Habitat loss/alteration
- Habitat fragmentation
- Road mortality
- Illegal collection of specimens
- Translocation of captured specimens
- Subsidized predators
- Pathogenic organisms

Trends:

All evidence indicates a negative trend for this species. However, most available information is fragmentary and anecdotal, as this species is not subject to comprehensive survey in New York or elsewhere in the range. Managers lack baseline information which might enable documentation of trends through time.

In New York the species occurs in areas (Long Island and the Hudson River Valley) which are subject to intense development. The resulting habitat loss is driving a negative trend for the species. Furthermore, even in areas where suitable habitat remains, the loss of adult breeder animals to road kill and to specimen collection is particularly worrisome, as the reproductive strategy of these turtles is predicated upon the assumption that adults will remain productive for decades. Field biologists note that juvenile turtles are seldom encountered during surveys, suggesting that population recruitment may be feeble or absent in many local populations.

SEQR - No Action Alternative:

Available evidence indicates a negative trend for this species in New York and range wide. In the absence of management intervention, we must expect further deterioration and eventual extirpation of demes and populations.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Eastern box turtle (<i>Terrapene carolina</i>)		X	S3	G5	G SC	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Eastern box turtle (<i>Terrapene carolina</i>)	Lower Hudson - Long Island Bays		Lower Hudson - Long Island Bays	Decreasing
	Upper Hudson		Upper Hudson	Decreasing

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Eastern box turtle (<i>Terrapene carolina</i>)	Lower New England Piedmont	North Atlantic Coast	Decreasing
	North Atlantic Coast	Lower New England Piedmont	Decreasing
	High Allegheny Plateau	High Allegheny Plateau	Decreasing

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Eastern box turtle (<i>Terrapene carolina</i>)	all	Terrestrial	barrens/woodlands	northern deciduous

Goal and Objectives for Box Turtle

Goal: Maintain self-sustaining populations of box turtles and sufficient good quality habitat to support the species throughout its historic range in New York.

Objective 1 : Assure long-term protection of habitat necessary for species survival.

Measure: *Number of sites adequately protected by acquisition, transfer of development rights, or conservation easement.*

Objective 2 : Coordinate statewide management and protection actions with involved landowners, non-governmental organizations, public regulatory agencies and environmental consultants.

Measure: *Number of protection and management sections coordinated.*

Objective 3 : Determine distribution, population status and habitat suitability for populations of box turtles in New York.

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 4 : Develop a management plan for box turtles in New York.

Measure: *Completion of a management plan for box turtles in New York.*

Objective 5 : Increase public awareness in support of conservation objectives for the species.

Measure: *Number of public outreach efforts undertaken.*

Objective 6 : Restore depleted or extirpated populations.

Measure: *Number of sites at which restoration or population enhancement has been carried out.*

Recommended Actions

Easement acquisition:

- * Secure habitats critical to species survival by acquisition of easements, or by other land protection mechanisms.

Habitat management:

- * Manage vegetative succession and invasive plant species by means of prescribed burns, herbicide applications and/or by mechanical removal, and evaluate the effectiveness of such measures in enhancing habitat suitability for the species. Develop and implement mitigation strategies to manage adverse effects of habitat fragmentation.

Habitat research:

- * Develop standardized habitat survey protocols, and implement survey protocols at all known and potentially suitable sites to document the character, quality and extent of occupied habitat.

Life history research:

- * Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and wetland/upland habitat requirements. .

Other action:

- * Enhance law enforcement and public education to limit collection/translocation of specimens, and to prevent (illegal) sale of specimens in the pet trade.

State land unit management plan:

- * Incorporate box turtle conservation into state land management planning.

References

- Tyning, T.F. & Tyning, L.Q. (eds.), 1990 A Guide to Reptiles and Amphibians Little, Brown and Company, Boston, MA.
- Adler, K. 1970. The influence of prehistoric man on the distribution of the box turtle. Ann. Carnegie Mus. 41:263-280.
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Taxa Group: Herpetofauna
Species Group: Diamond-backed Terrapin

Threats:

- Shoreline development
- Subsidized predators
- Waterborne pollutants
- Road mortality
- Drowning in crab traps
- Incidental capture in fisheries/angling gear
- Marsh habitat losses
- Dredging

Trends:

Trends are difficult to determine. Historically the species was considered common in suitable habitats in New York. Late 19th century and early 20th century over harvesting of terrapins for the food trade led to severe reductions of populations. New York terrapin populations have been in slow recovery ever since, although more recent threats (pollutants, egg predation, habitat degradation) have certainly limited that recovery trend.

SEQR - No Action Alternative:

Because trends are not clearly discernable at this point, it is difficult to predict eventual status of these populations in the absence of any management action. Nevertheless, there is concern that population recruitment for this species may be inadequate to maintain stability of New York's resident terrapin populations without efforts to manage threats that are recognized at this time.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Northern diamondback terrapin (<i>Malaclemys terra</i>		X			P G	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Northern diamondback terrapin (<i>Malaclemys terrapin</i> ter	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown

Species Distribution - Ecoregion			
Species	Historical	Current	Stability

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Northern diamondback terrapin (Malaclemys terrapin terr	North Atlantic Coast	North Atlantic Coast	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Northern diamondback terrapin (Malaclemys terrapin terrapin)	all Breeding	Estuarine Terrestrial	shallow subtidal coastal	sand/gravel beach/shoreline

Goal and Objectives for Diamond-backed Terrapin

Goal: Make diamondback terrapin populations stable statewide by 2020

Objective 1 : Assure long-term protection of habitat necessary for species survival.

Measure: *Number of sites adequately protected by acquisition, transfer of development rights, or conservation easement.*

Objective 2 : Determine distribution, population status and habitat suitability for populations of diamondback terrapins in New York.

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 3 : Develop a management plan for diamondback terrapins in New York.

Measure: *Completion of a management plan for diamondback terrapins in New York.*

Objective 4 : Restore depleted or extirpated populations.

Measure: *Number of sites at which restoration or population enhancement has been carried out.*

Objective 5 : Undertake habitat management actions to improve habitat quality at selected sites.

Measure: *Number of acres of habitat managed.*

Recommended Actions

Easement acquisition:

- * Secure upland habitats critical to species reproduction by acquisition of easements, or by other land protection mechanisms.

Habitat management:

- * Maintain water quality in brackish-water bays where terrapins reside. Manage beach areas where terrapins nest to maintain habitat security and optimal substrate conditions and to reduce impact of egg predators.

Habitat research:

- * Develop standardized habitat survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

Life history research:

- * Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and wetland/upland habitat requirements.

Modify regulation:

- * Adopt into New York's Environmental Conservation Law provisions which designate this species as a protected small game species.

Other action:

- * Limit incidental bycatch of terrapins in crab traps, trawls and other fisheries gear.

Population enhancement:

- * Employ restoration techniques at selected sites as needed, including head starting, nest protection, and repatriation/relocation strategies.

Population monitoring:

- * Discern population trends through periodic resurvey.

Statewide baseline survey:

- * Acquire 'baseline' understanding of distribution and status of terrapin sub-populations, in order to recognize trends.

References

Ditmars, R.L. 1905. The reptiles of the vicinity of New York City. *J. Am. Mus. Nat. Hist.* 5:93-140.

Harding, J.H. 1997. *Amphibians and Reptiles of the Great Lakes region.* The University of Michigan Press. Ann Arbor. Michigan.

Ernst, C.H., Lovich, Jeffrey E. & Barbour, R.W. 1994. *Turtles of the United States and Canada*. Smithsonian Institution Press. Washington D.C.

Carr, A. 1978. *Handbook of Turtles*. Cornell University Press. Ithaca, NY.

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Taxa Group: Herpetofauna

Species Group: Eastern Spadefoot Toad

Threats:

- Vernal pond losses
- Upland habitat loss/fragmentation
- Road mortality
- Contaminants (pesticides, heavy metals, hydrocarbon compounds, salts, acid rain)
- Parasites/pathogens

Trends:

Absence of reliable 'baseline' information precludes clear estimate of trends for this species. Habitat loss to development (especially loss of vernal pool habitats) is probably driving a negative trend for the species

SEQR - No Action Alternative:

Unless management action is employed to limit loss of vernal pool habitat, it is likely that this species will continue to decline toward a threatened status.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Eastern spadefoot (<i>Scaphiopus holbrookii</i>)		X	S3	G5	G	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Eastern spadefoot (<i>Scaphiopus holbrookii</i>)	Lower Hudson - Long Island Bays		Lower Hudson - Long Island Bays	Unknown
	Upper Hudson		Upper Hudson	Unknown

Species Distribution - Ecoregion				
Species	Historical		Current	Stability
Eastern spadefoot (<i>Scaphiopus holbrookii</i>)	North Atlantic Coast		North Atlantic Coast	Unknown
	Lower New England Piedmont		Lower New England Piedmont	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Eastern spadefoot (Scaphiopus holbrookii)	all	Palustrine	mineral soil wetland	vernal pool

Goal and Objectives for Eastern Spadefoot Toad

Goal: Make spadefoot toad populations stable statewide by 2020.

Objective 1 : Assure long-term protection of habitat necessary for species survival.

Measure: *Number of sites adequately protected by acquisition, transfer of development rights, or conservation easement.*

Objective 2 : Determine distribution, population status and habitat suitability for populations of eastern spadefoot toad in New York

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 3 : Develop a management plan for eastern spadefoot toad in New York.

Measure: *Completion of a management plan for eastern spadefoot toad in New York.*

Objective 4 : Restore depleted or extirpated populations.

Measure: *Number of sites at which population restoration or population enhancement has been carried out.*

Objective 5 : Undertake habitat management actions to improve habitat quality at selected sites.

Measure: *Number of acres of habitat managed for the benefit of the species.*

Recommended Actions

Habitat management:

- * Provide for stability/security of vernal pool habitats which support the species.

Invasive species control:

- * Manage exotic competitors, predators and pathogens which might undermine the integrity of spadefoot toad populations.

Recommended Actions

Modify regulation:

- * Adopt into New York's Environmental Conservation Law provisions which designate spadefoot toad as a protected small game species.

Population monitoring:

- * Conduct periodic monitoring of populations in order to detect population trends.

Statewide baseline survey:

- * Develop population survey protocols, and implement protocols at known and potentially suitable sites to determine present distribution and status of this species in New York.

Statewide management plan:

- * Incorporate eastern spadefoot toad conservation objectives into state land management planning.

References

- Tyning, T.F. & Tyning, L.Q. (eds.), 1990. *A Guide to Reptiles and Amphibians*. Little, Brown and Company, Boston, MA.
- Semlitsch, R. D. 2000. Principles for management of aquatic breeding amphibians. *Journal of Wildlife Management*. 64:615-631.
- Hulse, A. C., C. J. McCoy, and E. Censky. 2001. *Amphibians and Reptiles of Pennsylvania and the Northeast*. Comstock Publishing Associates, Ithaca. 419 pp.
- Behler, J.L. and F. W. King. 1997. *National Audubon Society Field Guide to North American Amphibians and Reptiles*. Alfred A. Knopf, New York, New York.

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Taxa Group: Herpetofauna
Species Group: Freshwater wetland amphibians

Threats:

- Wetland losses
- Loss of wetland-adjacent uplands
- Water quality reductions (siltation, turbidity, low oxygen)
- Release of live bait into wetlands
- Introduced competitors
- Parasites/pathogens
- Contaminants (pesticides, heavy metals, hydrocarbon compounds, salts, acid rain)
- Invasive aquatic plant species
- Natural succession
- Road mortality

Trends:

Trends for this group are not clearly understood. Northern cricket frogs, the only species in this group which has been monitored with any frequency in recent years in New York, has shown loss of a number of known populations.

SEQR - No Action Alternative:

In the absence of management effort, we may anticipate that the many threats to this group will continue to undermine populations.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Southern leopard frog (<i>Rana sphenoccephala</i>)			S2S3	G5	G SC	Resident
Western chorus frog (<i>Pseudacris triseriata</i>)			S4	G5	G	Resident
Fowler's toad (<i>Bufo fowleri</i>)			S4	G5	G	Resident
Northern cricket frog (<i>Acris crepitans</i>)			S1	G5	E	Resident
Four-toed salamander (<i>Hemidactylium scutatum</i>)			S5	G5	U	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Four-toed salamander (<i>Hemidactylium scutatum</i>)	Allegheny	Allegheny	Unknown
	Delaware	Delaware	Unknown
	Lake Champlain	Lake Champlain	Unknown
	Lake Erie	Lake Erie	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	NE Lake Ontario - St. Lawrence	Upper Hudson	Unknown
	SE Lake Ontario	SW Lake Ontario	Unknown
	Susquehanna	Susquehanna	Unknown
	SW Lake Ontario	SE Lake Ontario	Unknown
	Upper Hudson	NE Lake Ontario - St. Lawrence	Unknown
Northern cricket frog (<i>Acris crepitans</i>)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Decreasing
	Upper Hudson	Upper Hudson	Decreasing
Fowler's toad (<i>Bufo fowleri</i>)	Lake Erie	Lake Erie	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	Upper Hudson	Upper Hudson	Decreasing
Western chorus frog (<i>Pseudacris triseriata</i>)	Allegheny	Allegheny	Decreasing
	Lake Champlain	Lake Champlain	Decreasing
	Lake Erie	Lake Erie	Decreasing
	NE Lake Ontario - St. Lawrence	NE Lake Ontario - St. Lawrence	Unknown
	SE Lake Ontario	SE Lake Ontario	Unknown
	SW Lake Ontario	SW Lake Ontario	Unknown
Southern leopard frog (<i>Rana sphenoccephala</i>)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Decreasing

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Four-toed salamander (<i>Hemidactylium scutatum</i>)	Great Lakes	Great Lakes	Unknown
	High Allegheny Plateau	High Allegheny Plateau	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown
	Northern Appalachian/Boreal Forest	Northern Appalachian/Boreal Forest	Unknown
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Unknown
	Western Allegheny Plateau	Western Allegheny Plateau	Unknown
Northern cricket frog (<i>Acris crepitans</i>)	Lower New England Piedmont	Lower New England Piedmont	Decreasing
	North Atlantic Coast		
Fowler's toad (<i>Bufo fowleri</i>)	Great Lakes	Great Lakes	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Decreasing
	North Atlantic Coast	North Atlantic Coast	Unknown
Western chorus frog (<i>Pseudacris triseriata</i>)	Great Lakes	Great Lakes	Unknown
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Decreasing
	Western Allegheny Plateau	Western Allegheny Plateau	Decreasing
Southern leopard frog (<i>Rana sphenoccephala</i>)	North Atlantic Coast	North Atlantic Coast	Decreasing

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Four-toed salamander (<i>Hemidactylium scutatum</i>)	all	Palustrine	peatlands	bog/fen
	Hibernating/Overwintering	Terrestrial	forested	mixed deciduous/coniferous
Northern cricket frog (<i>Acris crepitans</i>)	all	Palustrine	mineral soil wetland	emergent marsh

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Northern cricket frog (<i>Acris crepitans</i>)	Hibernating/Overwintering	Terrestrial	forested	mixed deciduous/coniferous
Fowler's toad (<i>Bufo fowleri</i>)	all	Terrestrial	barrens/woodlands	southern coniferous
	all	Terrestrial	forested	southern coniferous
	all	Terrestrial	open upland	dunes
	all	Terrestrial	open upland	grasslands
	Nursery/Juvenile	Palustrine	mineral soil wetland	vernal pool
Western chorus frog (<i>Pseudacris triseriata</i>)	all	Palustrine	mineral soil wetland	shrub swamp
	all	Terrestrial	forested	pond/lake shore
	all	Terrestrial	open upland	meadow
Southern leopard frog (<i>Rana sphenoccephala</i>)	all	Palustrine	mineral soil wetland	emergent marsh
	all	Palustrine	mineral soil wetland	shrub swamp
	all	Terrestrial	forested	pond/lake shore
	all	Terrestrial	open upland	meadow

Goal and Objectives for Freshwater wetland amphibians

Goal: Maintain self-sustaining populations of freshwater wetland amphibians and sufficient good quality habitat to support those species throughout their historic ranges in New York.

Objective 1 : Assure long-term protection of habitat necessary for species survival.

Measure: *Number of sites adequately protected by acquisition, transfer of development rights, or conservation easement.*

Objective 2 : Coordinate statewide management and protection actions with involved landowners, non-governmental organizations, public regulatory agencies and environmental consultants.

Measure: *Number of protection and management actions coordinated.*

Objective 3 : Determine distribution, population status and habitat suitability for populations of freshwater wetland amphibian populations in New York.

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 4 : Develop recovery plan for the cricket frog and management plans for the other freshwater wetland amphibian species in New York.

Measure: *Completion of recovery/plans for individual freshwater wetland amphibian species in New York.*

Objective 5 : Increase public awareness in support of conservation objectives for these species.

Measure: *Number of public outreach efforts undertaken.*

Objective 6 : Provide NYSDEC with necessary additional authority to protect these species.

Measure: *Success in adopting needed changes in existing provisions of New York's Environmental Conservation Law (ECL).*

Objective 7 : Restore depleted or extirpated populations.

Measure: *Number of sites at which population restoration or population enhancement has been carried out.*

Objective 8 : Restore extirpated populations of cricket frogs to selected sites in DEC regions 1, 2 and 3.

Measure: *Number of sites at which restoration or population enhancement has been carried out.*

Objective 9 : Undertake management actions to improve habitat quality at selected sites.

Measure: *Number of acres of habitat managed.*

Recommended Actions

Easement acquisition:

- * Secure habitats critical to species survival by acquisition of conservation easements, or by other land protection mechanisms.

Habitat management:

- * Manage the variety of factors which might be limiting wetland habitat suitability for resident amphibian species, including management of exotic plant and animal species, management of adverse hydrological alterations, and management of anthropogenic inputs of sediments and toxicants.

Habitat research:

- * Develop standardized habitat survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

Recommended Actions

Life history research:

- * Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and wetland/upland habitat requirements.

Modify regulation:

- * Modify Freshwater Wetlands Act, in order to protect wetlands smaller than 12.4 acres where they support species of conservation concern, and in order to expand the protected upland buffer beyond the 100-foot limit where necessary.
- * Adopt provisions into New York's Environmental Conservation Law designating four-toed salamander and Fowler's toad as a protected small game species.

Other action:

- * Periodically evaluate status of the subject species to determine whether appropriate E/T/SC status listings are in effect.

Population enhancement:

- * Employ restoration techniques for the cricket frog at selected sites as needed, including captive breeding and repatriation/relocation strategies.

Population monitoring:

- * Conduct periodic surveys of known sites of species occurrence, in order to detect population trends.

Statewide baseline survey:

- * Develop standardized population survey protocols, and implement protocols at all known and potentially suitable sites to document the extent of occupied habitat.

References

- Conant, R. and J. T. Collins. 1998. A Field Guide to the Amphibians and Reptiles: Eastern and Central North America. Houghton Mifflin Company, New York, New York.
- Behler, J.L. and F. W. King. 1997. National Audubon Society Field Guide to North American Amphibians and Reptiles. Alfred A. Knopf, New York, New York.

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Taxa Group: Herpetofauna
Species Group: Hellbender

Threats:

- River/Stream channelization
- River/Stream silt loading
- Water pollutants
- Dams impeding dispersal
- Bridge construction/repairs
- Persecution (caught specimens killed by anglers)

Trends:

Historical records indicate that during the early part of the 20th century hellbenders were very much more commonly encountered in the New York portions of the Allegheny and Susquehanna rivers than is presently the case. Surveys commissioned by NYSDEC in the early 1990s still found hellbenders at a number of locations where subsequent resurvey has been unable to locate any specimens. All indications are that this species is in continuing long-term decline in New York. Hellbender eggs and juvenile specimens are very seldom encountered in New York, suggesting that population recruitment may not be occurring in many places. The USFWS (2003) completed a range wide status assessment of the hellbender which indicates that it is declining throughout a majority of its range and that it should be considered for federal listing.

SEQR - No Action Alternative:

In the absence of management intervention, we should expect further decline for this species in New York.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Hellbender (<i>Cryptobranchus alleganiensis</i>)		X	S2	G3G4	U SC	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Hellbender (<i>Cryptobranchus alleganiensis</i>)	Allegheny		Allegheny	Decreasing
	Susquehanna		Susquehanna	Decreasing

Species Distribution - Ecoregion				
Species	Historical		Current	Stability

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Hellbender (<i>Cryptobranchus alleganiensis</i>)	High Allegheny Plateau	High Allegheny Plateau	Decreasing

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Hellbender (<i>Cryptobranchus alleganiensis</i>)	all	Riverine	coldwater stream	rocky bottom

Goal and Objectives for Hellbender

Goal: Maintain self-sustaining populations of eastern hellbender and sufficient good quality habitat to support the species throughout its historic range in New York.

Objective 1 : Coordinate statewide management and protection actions with involved landowners, non-governmental organizations, public regulatory agencies, environmental consultants and the USFWS.

Measure: *Number of protection and management actions coordinated.*

Objective 2 : Determine distribution, population status and habitat suitability for populations of eastern hellbender in New York.

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 3 : Develop a recovery plan for eastern hellbender in New York.

Measure: *Completion of a recovery plan for eastern hellbender in New York.*

Objective 4 : Increase public awareness in support of conservation objectives for the species.

Measure: *Number of public outreach efforts undertaken.*

Objective 5 : Provide NYSDEC with necessary additional authority to protect the species.

Measure: *Success in adopting needed changes to existing provisions of New York's Environmental Conservation Law (ECL).*

Objective 6 : Restore depleted or extirpated populations.

Measure: *Number of sites at which population restoration or population enhancement has been carried out.*

Objective 7 : Undertake habitat management actions to improve habitat quality at selected sites.

Measure: *Number of miles of streambed and stream bank managed to maintain or improve habitat quality.*

Recommended Actions

Educational signs:

- * Educational outreach to fishermen in the Allegheny and Susquehanna drainages could encourage release of incidentally caught hellbenders, as well as enlisting fishermen to report captures to wildlife managers.

Habitat management:

- * Undertake management actions to control water pollutant inputs and sediment loading of streams in the Susquehanna and Allegany River watersheds. Manage land use practices in the upland vicinity of streams where such practices may be adversely impacting stream qualities which are critical to hellbender survival. Investigate whether removal of some dams blocking movement of the hellbender is feasible.

Habitat research:

- * Develop standardized habitat survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

Life history research:

- * Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and stream habitat requirements. Undertake research to document life history and habitat use by juvenile hellbenders in New York.

Modify regulation:

- * Adopt into New York's Environmental Conservation Law provisions which designate hellbender as a protected small game species.

Other action:

- * Periodically evaluate status of the species to determine whether the appropriate E/T/SC status listing is in effect.

Population enhancement:

- * Employ restoration techniques at selected sites as needed, including captive breeding, head starting, nest protection, and repatriation/relocation strategies.

Recommended Actions

Population monitoring:

- * Conduct periodic re-survey of known sites of species occurrence, in order to detect population trends.

Statewide baseline survey:

- * Develop population survey protocols and implement protocols at known and potentially suitable sites to determine the extent of occupied habitat in New York.

References

- Pfingsten, R.A. and F.L. Downs. 1989. Salamanders of Ohio. Bulletin of the Ohio Biological Survey 7(2).
- Conant, R. and J. T. Collins. 1998. A Field Guide to the Amphibians and Reptiles: Eastern and Central North America. Houghton Mifflin Company, New York, New York.
- Petranka, J. W. 1998. Salamanders of the United States and Canada. Smithsonian Institution Press, Washington, DC. 576 pp.
- Bishop, S. C. 1941. The Salamanders of New York. The New York State Museum Bulletin No. 324.

Originator

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Taxa Group: Herpetofauna
Species Group: Lake/river reptiles

Threats:

- Unregulated or illegal collecting
- Lake level drawdown
- Aquatic weed harvesting
- Subsidized predators
- Shoreline development
- Road mortality
- Dams
- Introduced competitors
- Dredging
- Upland habitat fragmentation/losses
- Stream channelization
- Recreational boating
- Invasive aquatic plants
- Waterborne contaminants
- Pathogenic organisms

Trends:

Expanding human development of landscapes and proliferating road networks in southern New York, have certainly impacted wood turtle populations in those areas. Shoreline development along bays in Lake Ontario has certainly impacted spiny soft-shell and map turtle populations in those areas. Yet, we do not yet have a clear understanding of the statewide trends for these species, or for any of the other lake/river reptiles in this group.

SEQR - No Action Alternative:

Because trends for the lake/river reptiles in this group are not currently defined, we cannot predict the consequences of a no action alternative.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Queen snake (<i>Regina septemvittata</i>)		X	S1	G5	E	Resident
Eastern ribbonsnake (<i>Thamnophis sauritus sauritu</i>)		X	S5	G5	U	Resident
Northern map turtle (<i>Graptemys geographica</i>)			S4	G5	U	Resident
Spiny softshell (<i>Trionyx spiniferus</i>)			S2S3	G5	U SC	Resident
Wood turtle (<i>Clemmys insculpta</i>)		X	S3	G4	G SC	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Wood turtle (<i>Clemmys insculpta</i>)	Allegheny	Allegheny	Unknown
	Delaware	Delaware	Unknown
	Lake Champlain	Lake Champlain	Unknown
	Lake Erie	Lake Erie	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Decreasing
	NE Lake Ontario - St. Lawrence	NE Lake Ontario - St. Lawrence	Unknown
	SE Lake Ontario	SE Lake Ontario	Unknown
	Susquehanna	Susquehanna	Unknown
	SW Lake Ontario	SW Lake Ontario	Unknown
	Upper Hudson	Upper Hudson	Unknown
Spiny softshell (<i>Trionyx spiniferus</i>)	Allegheny	NE Lake Ontario - St. Lawrence	Unknown
	NE Lake Ontario - St. Lawrence	Lake Champlain	Unknown
	Lake Champlain	SE Lake Ontario	Unknown
	SE Lake Ontario	SW Lake Ontario	Decreasing
	SW Lake Ontario	Upper Hudson	Unknown
	Upper Hudson		
Northern map turtle (<i>Graptemys geographica</i>)	Lake Champlain	Lake Champlain	Unknown
	Lake Erie	Lake Erie	Unknown
	NE Lake Ontario - St. Lawrence	NE Lake Ontario - St. Lawrence	Unknown
	SE Lake Ontario	SE Lake Ontario	Unknown
	Upper Hudson	Upper Hudson	Unknown

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Eastern ribbonsnake (<i>Thamnophis sauritus sauritus</i>)	Allegheny	Allegheny	Unknown
	Delaware	Delaware	Unknown
	Lake Champlain	Lake Champlain	Unknown
	Lake Erie	Lake Erie	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	NE Lake Ontario - St. Lawrence	NE Lake Ontario - St. Lawrence	Unknown
	Upper Hudson	Upper Hudson	Unknown
	SE Lake Ontario	SW Lake Ontario	Unknown
	Susquehanna	Susquehanna	Unknown
	SW Lake Ontario	SE Lake Ontario	Unknown
Queen snake (<i>Regina septemvittata</i>)	Upper Hudson		
	Lake Erie	Lake Erie	Decreasing
	Allegheny	SW Lake Ontario	Decreasing
	SW Lake Ontario		
	Lower Hudson - Long Island Bays		

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Wood turtle (<i>Clemmys insculpta</i>)	Great Lakes	Great Lakes	Unknown
	High Allegheny Plateau	High Allegheny Plateau	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Unknown
	Northern Appalachian/Boreal Forest	Northern Appalachian/Boreal Forest	Unknown
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Unknown
	Western Allegheny Plateau	Western Allegheny Plateau	Unknown

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Spiny softshell (<i>Trionyx spiniferus</i>)	Great Lakes	Great Lakes	Decreasing
	High Allegheny Plateau	High Allegheny Plateau	Decreasing
	Lower New England Piedmont	Lower New England Piedmont	Decreasing
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Unknown
	Western Allegheny Plateau	Western Allegheny Plateau	Unknown
Northern map turtle (<i>Graptemys geographica</i>)	Great Lakes	Great Lakes	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Unknown
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Unknown
Eastern ribbonsnake (<i>Thamnophis sauritus sauritus</i>)	Great Lakes	Great Lakes	Unknown
	High Allegheny Plateau	High Allegheny Plateau	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown
	Northern Appalachian/Boreal Forest	Northern Appalachian/Boreal Forest	Unknown
	St. Lawrence-Lake Champlain Valley	Northern Appalachian/Boreal Forest	Unknown
	Western Allegheny Plateau	Western Allegheny Plateau	Unknown
Queen snake (<i>Regina septemvittata</i>)	Great Lakes	Great Lakes	Decreasing
	High Allegheny Plateau	High Allegheny Plateau	Decreasing

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Wood turtle (<i>Clemmys insculpta</i>)	all	Riverine	coldwater stream	rocky bottom
	all	Riverine	coldwater stream	sand/gravel bottom
	all	Terrestrial	forested	northern deciduous
	all	Terrestrial	open upland	grasslands

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Wood turtle (<i>Clemmys insculpta</i>)				
Spiny softshell (<i>Trionyx spiniferus</i>)	all	Lacustrine	warm water shallow	sand/gravel bottom
	all	Riverine	deepwater river	sand/gravel bottom
	Breeding	Terrestrial	open upland	sand/gravel bar
Northern map turtle (<i>Graptemys geographica</i>)				
	all	Lacustrine	cold water deep	sand/gravel bottom
	all	Riverine	coldwater stream	sand/gravel bottom
	Breeding	Terrestrial	open upland	sand/gravel bar
Eastern ribbonsnake (<i>Thamnophis sauritus sauritus</i>)				
	all	Riverine	warmwater stream	other
	all	Terrestrial	barrens/woodlands	mixed deciduous/coniferous
	all	Terrestrial	forested	mixed deciduous/coniferous
	all	Terrestrial	open upland	grasslands
Queen snake (<i>Regina septemvittata</i>)				
	all	Palustrine	mineral soil wetland	coniferous forested
	all	Riverine	coldwater stream	rocky bottom
	all	Terrestrial	forested	mixed deciduous/coniferous
	all	Terrestrial	open upland	grasslands

Goal and Objectives for Lake/river reptiles

Goal: Maintain self-sustaining populations of lake/river reptile species and sufficient good quality habitat to support those species throughout their historic ranges in New York.

Objective 1 : Assure long-term protection of habitat necessary for species survival.

Measure: *Number of lakes/ rivers where waters, shorelines and adjacent uplands are adequately protected by conservation easements or other habitat protection mechanisms.*

Objective 2 : Coordinate statewide management and protection actions with involved landowners, non-governmental organizations, public regulatory agencies and environmental consultants.

Measure: *Number of protection and management actions coordinated.*

Objective 3 : Determine distribution, population status and habitat suitability for populations of lake/river reptile species in New York.

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 4 : Develop recovery plan for the queen snake and management plans for the other lake/river reptile species in New York.

Measure: *Completion of recovery plans for lake/river reptile species in New York.*

Objective 5 : Increase public awareness in support of conservation objectives for lake/river reptile species.

Measure: *Number of public outreach efforts undertaken.*

Objective 6 : Provide NYSDEC with necessary additional authority to protect species.

Measure: *Success in adopting needed changes to existing provisions of New York's Environmental Conservation Law (ECL).*

Objective 7 : Restore depleted or extirpated populations.

Measure: *Number of lake/river sites at which population restoration or population enhancement has been carried out.*

Objective 8 : Undertake habitat management actions to improve habitat quality at selected sites.

Measure: *Number of lake/river sites receiving habitat management activity.*

Recommended Actions

Habitat management:

- * Manage the variety of adverse influences which might reduce lake/river habitat suitability for the subject reptile species, including invasive aquatic plant species, water pollutants, lake level manipulations, aquatic weed control measures, excessive disturbance by watercraft, and fishing practices which incidentally take lake/river reptiles in significant numbers.
- * For lake/river turtles in this group, manage uplands adjacent to aquatic habitat in order to provide adequate and secure nesting habitat sites and to provide dispersal routes for migrating animals.

Habitat research:

- * Develop standardized habitat survey protocols for the subject species, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

Recommended Actions

Life history research:

- * Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and wetland/upland habitat requirements.

Modify regulation:

- * Adopt into New York's Environmental Conservation Law provisions which designate queen snake, eastern ribbonsnake, northern map turtle and spiny softshell as a protected small game species.

Other action:

- * Enhance law enforcement and public education to limit collection/translocation of wood turtles.

Population enhancement:

- * Employ restoration techniques for the spiny softshell and the queen snake at selected sites as needed, including captive breeding, head starting, nest protection, and repatriation/relocation strategies.

Population monitoring:

- * Conduct periodic re-survey of known sites of species occurrence, in order to detect population trends.

Statewide baseline survey:

- * Develop population survey protocols and implement protocols at known and potentially suitable sites to determine the extent of occupied habitat in New York

References

- Tyning, T.F. & Tyning, L.Q. (eds.), 1990. A Guide to Reptiles and Amphibians. Little, Brown and Company, Boston, MA.
- Behler, J.L. and F. W. King. 1997. National Audubon Society Field Guide to North American Amphibians and Reptiles. Alfred A. Knopf, New York, New York.
- Tennant, A. and Bartlett, R. D. 1999. Snakes of North America. Gulf Publishing Company. Houston, Texas.
- Ernst, C.H., Lovich, Jeffrey E. & Barbour, R.W. 1994. Turtles of the United States and Canada. Smithsonian Institution Press. Washington D.C.
- Carr, A. 1978. Handbook of Turtles. Cornell University Press. Ithaca, NY.

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Taxa Group: Herpetofauna
Species Group: Lizards

Threats:

- Unregulated collecting of specimens
- Subsidized predators
- Habitat loss/fragmentation
- Vegetative succession
- Environmental contaminants

Trends:

Anecdotal reports suggest that some historic sites of occurrence for New York native lizards have been depleted by factors unknown. Whether and to what extent these reports might indicate a trend is unknown.

SEQR - No Action Alternative:

To date there have been no conservation actions in New York specifically targeted toward this species group. Because we lack information on the present status and trends for the group, it is not possible to determine the effect of a (continued) no-action alternative.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Common five-lined skink (<i>Eumeces fasciatus</i>)			S3	G5	U	Resident
Coal skink (<i>Eumeces anthracinus</i>)		X	S2S3	G5	U	Resident
Fence lizard (<i>Sceloporus undulatus</i>)			S1	G5	T	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Fence lizard (<i>Sceloporus undulatus</i>)	Lower Hudson - Long Island Bays		Lower Hudson - Long Island Bays	Decreasing
Coal skink (<i>Eumeces anthracinus</i>)	Allegheny		Allegheny	Unknown
	Susquehanna		Susquehanna	Unknown
	SW Lake Ontario		SW Lake Ontario	Unknown
Common five-lined skink (<i>Eumeces fasciatus</i>)	Lake Champlain		Lake Champlain	Unknown
	Upper Hudson		Upper Hudson	Unknown

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Fence lizard (<i>Sceloporus undulatus</i>)	Lower New England Piedmont	Lower New England Piedmont	Decreasing
	North Atlantic Coast	North Atlantic Coast	Decreasing
Coal skink (<i>Eumeces anthracinus</i>)	Great Lakes	Great Lakes	Unknown
	High Allegheny Plateau	High Allegheny Plateau	Unknown
Common five-lined skink (<i>Eumeces fasciatus</i>)	Lower New England Piedmont	Lower New England Piedmont	Unknown
	Northern Appalachian/Boreal Forest	Northern Appalachian/Boreal Forest	Unknown
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Unknown

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Fence lizard (<i>Sceloporus undulatus</i>)	all	Terrestrial	forested	southern deciduous
	all	Terrestrial	open upland	cliffs & open talus
Coal skink (<i>Eumeces anthracinus</i>)	all	Palustrine	mineral soil wetland	shrub swamp
	all	Terrestrial	barrens/woodlands	mixed deciduous/coniferous
Common five-lined skink (<i>Eumeces fasciatus</i>)	all	Terrestrial	forested	mixed deciduous/coniferous
	all	Terrestrial	open upland	cliffs & open talus

Goal and Objectives for Lizards

Goal: Maintain self-supporting populations of New York resident lizard species and sufficient good quality habitat to support those species throughout their historic ranges in New York.

Objective 1 : Assure long-term protection of habitat necessary for species survival.

Measure: *Number of sites adequately protected by acquisition, transfer of development rights, or conservation easement.*

Objective 2 : Coordinate statewide management and protection actions with involved landowners, non-governmental organizations, public regulatory agencies, environmental consultants and the USFWS.

Measure: *Number of protection and management actions coordinated.*

Objective 3 : Determine distribution, population status and habitat suitability for populations of New York native lizard species in New York

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 4 : Develop recovery plan for the fence lizard and management plans for New York's native skink species.

Measure: *Completion of management/recovery plans for New York's native lizard species.*

Objective 5 : Increase public awareness in support of conservation objectives for the species.

Measure: *Number of public outreach efforts undertaken.*

Objective 6 : Provide NYSDEC with necessary additional authority to protect New York's native lizard species.

Measure: *Success in adopting needed changes to existing provisions of New York's Environmental Conservation Law (ECL).*

Objective 7 : Undertake habitat management actions to improve habitat quality at selected sites.

Measure: *Number of acres of habitat managed.*

Recommended Actions

Easement acquisition:

- * Secure habitats critical to species survival by acquisition of conservation easements, or by other land protection mechanisms.

Habitat management:

- * Manage vegetative succession or other factors which are determined to be detrimental to habitat suitability in areas occupied by New York's resident lizard species.

Recommended Actions

Habitat research:

- * Develop standardized habitat survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

Life history research:

- * Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and habitat requirements.

Modify regulation:

- * Adopt into New York's Environmental Conservation Law provisions which designate fence lizard, coal skink and common five-lined skink as protected small game species.

Other action:

- * Enhance law enforcement to limit specimen collection.
- * Enhance regulation and law enforcement to limit specimen collection.

Population monitoring:

- * Conduct periodic re-survey of known sites of species occurrence, in order to detect population trends.

Statewide baseline survey:

- * Develop population survey protocols and implement protocols at known and potentially suitable sites to determine the extent of occupied habitat in New York.

References

- Tyning, T.F. & Tyning, L.Q. (eds.), 1990. A Guide to Reptiles and Amphibians. Little, Brown and Company, Boston, MA.
- Hulse, A. C., C. J. McCoy, and E. Censky. 2001. Amphibians and Reptiles of Pennsylvania and the Northeast. Comstock Publishing Associates, Ithaca. 419 pp.
- Behler, J.L. and F. W. King. 1997. National Audubon Society Field Guide to North American Amphibians and Reptiles. Alfred A. Knopf, New York, New York.

Originator

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Taxa Group: Herpetofauna
Species Group: Massasauga

Threats:

- Vegetative succession
- Illegal collection of specimens
- Mosquito control pesticides
- Agricultural practices

Trends:

The species appears to have undergone gradual decline in recent decades.

SEQR - No Action Alternative:

In the absence of management intervention, we can anticipate further decline of Massasauga rattlesnakes in New York.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Eastern massasauga (<i>Sistrurus c. catenatus</i>)	C	X	S1	G3G4T3T4	E	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Eastern massasauga (<i>Sistrurus c. catenatus</i>)	SW Lake Ontario		SW Lake Ontario	Decreasing
	SE Lake Ontario		SE Lake Ontario	Decreasing

Species Distribution - Ecoregion				
Species	Historical		Current	Stability
Eastern massasauga (<i>Sistrurus c. catenatus</i>)	Great Lakes		Great Lakes	Decreasing

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Eastern massasauga (<i>Sistrurus c. catenatus</i>)	all	Palustrine	mineral soil wetland	shrub swamp

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Eastern massasauga (Sistrurus c. catenatus)	all	Palustrine	peatlands	bog/fen
	all	Terrestrial	open upland	grasslands

Goal and Objectives for Massasauga

Goal: Maintain self-sustaining populations of Massasauga rattlesnake and sufficient good quality habitat to support the species throughout its historic range in New York.

Objective 1 : Determine distribution, population status and habitat suitability for populations of massasauga rattlesnake in New York.

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 2 : Develop a recovery plan for massasauga rattlesnake in New York.

Measure: *Completion of recovery plan for massasauga rattlesnake in New York.*

Objective 3 : Increase public awareness in support of conservation objectives for the species.

Measure: *Number of public outreach efforts undertaken.*

Objective 4 : Provide NYSDEC with necessary additional authority and enhanced law enforcement effort to protect the species.

Measure: *Success in adopting needed changes to existing provisions of New York's Environmental Conservation Law (ECL), and provision of needed law enforcement activity.*

Objective 5 : Restore depleted or extirpated populations.

Measure: *Number of sites at which population restoration or population enhancement has been carried out.*

Objective 6 : Undertake habitat management actions to improve habitat quality at selected sites.

Measure: *Number of acres of habitat managed.*

Recommended Actions

Recommended Actions

Habitat management:

- * Manage vegetative succession and invasive plant species by means of prescribed burns, herbicide applications and/or by mechanical removal, and evaluate the effectiveness of such measures in enhancing habitat suitability for the species.

Life history research:

- * Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and wetland/upland habitat requirements.

Modify regulation:

- * Adopt into New York's Environmental Conservation Law provisions which designates Massasauga rattlesnake as a protected small game species.

Other action:

- * Enhance law enforcement to prevent collection of snake specimens.

Population enhancement:

- * Employ restoration techniques at selected sites as needed, including captive breeding, headstarting, and repatriation/relocation strategies.

Population monitoring:

- * Conduct periodic re-survey of known sites of species occurrence, in order to detect population trends.

References

- Ernst, Carl H. and E.M. Ernst, 2003. Snakes of the United States and Canada. Smithsonian Books. Washington, DC.
- Hulse, A.C., C. J. McCoy, and E. Censky. 2001. Amphibians and Reptiles of Pennsylvania and the Northeast. Comstock Publishing Associates, Ithaca. 419 pp.
- Harding, J.H. 1997. Amphibians and Reptiles of the Great Lakes region. The University of Michigan Press. Ann Arbor. Michigan.
- Conant, R. and J. T. Collins. 1998. A Field Guide to the Amphibians and Reptiles: Eastern and Central North America. Houghton Mifflin Company, New York, New York.

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Taxa Group: Herpetofauna
Species Group: Mudpuppy

Threats:

- Pathogenic organisms (type E botulism)
- Lampricide applications
- Water quality reductions (siltation, turbidity, low oxygen)
- Stream channelization
- Incidental bycatch by anglers
- Dredging
- Dams

Trends:

Trends appear to be negative in areas where botulism or lampricide applications are challenging resident mudpuppy populations.

SEQR - No Action Alternative:

Statewide status of the species is presently unclear. It is not currently known whether management actions would significantly improve stability of populations. Therefore, the effect of a no action alternative cannot be assessed at this time.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Common mudpuppy (<i>Necturus maculosus</i>)			S4	G5	U	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Common mudpuppy (<i>Necturus maculosus</i>)	Allegheny		Allegheny	Unknown
	Lake Champlain		Lake Champlain	Decreasing
	Lake Erie		Lake Erie	Decreasing
	NE Lake Ontario - St. Lawrence		NE Lake Ontario - St. Lawrence	Unknown
	SE Lake Ontario		SE Lake Ontario	Unknown
	SW Lake Ontario		SW Lake Ontario	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Common mudpuppy (Necturus maculosus)	Great Lakes	Great Lakes	Decreasing
	High Allegheny Plateau	High Allegheny Plateau	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Unknown
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Decreasing
	Western Allegheny Plateau	Western Allegheny Plateau	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Common mudpuppy (Necturus maculosus)	all	Lacustrine	cold water deep	rocky bottom
	all	Riverine	coldwater stream	rocky bottom
	all	Riverine	warmwater stream	rocky bottom

Goal and Objectives for Mudpuppy

Goal: Maintain self-sustaining populations of mudpuppy and sufficient good quality habitat to support the species throughout its historic range in New York.

Objective 1 : Coordinate statewide management and protection actions with involved landowners, non-governmental organizations, public regulatory agencies, and environmental consultants.

Measure: *Number of protection and management actions coordinated.*

Objective 2 : Determine distribution, population status and habitat suitability for populations of mudpuppy in New York.

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 3 : Develop a management plan for mudpuppy in New York.

Measure: *Completion of a management plan for mudpuppy in New York.*

Objective 4 : Increase public awareness in support of conservation objectives for the species.

Measure: *Number of public outreach efforts undertaken.*

Objective 5 : Provide NYSDEC with necessary additional authority to protect the species.

Measure: *Success in adopting needed changes to existing provisions of New York's Environmental Conservation Law (ECL).*

Objective 6 : Undertake habitat management actions to improve habitat quality at selected sites.

Measure: *Number of sites subjected to habitat management.*

Recommended Actions

Habitat research:

- * Develop standardized habitat survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

Life history research:

- * Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and habitat requirements.

Modify regulation:

- * Adopt into New York's Environmental Conservation Law provisions which designate mudpuppy as a protected small game species.

Other action:

- * Investigate the effects of lampricide applications upon mudpuppy populations which are resident in Lake Champlain and its tributary streams.
- * Investigate the significance of botulism-induced mortality in mudpuppy populations resident in Lake Erie.

Population monitoring:

- * Conduct periodic re-survey of known sites of species occurrence, in order to detect population trends.

Statewide baseline survey:

- * Develop standardized population survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the extent of occupied habitat.

References

- Petranka, J. W. 1998. Salamanders of the United States and Canada. Smithsonian Institution Press, Washington, DC. 576 pp.
- Bishop, S. C. 1941. The Salamanders of New York. The New York State Museum Bulletin No. 324.
- Conant, R. and J. T. Collins. 1998. A Field Guide to the Amphibians and Reptiles: Eastern and Central North America. Houghton Mifflin Company, New York, New York.
- Tyning, T.F. & Tyning, L.Q. (eds.), 1990 A Guide to Reptiles and Amphibians Little, Brown and Company, Boston, MA.

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Taxa Group: Herpetofauna
Species Group: Sea turtles

Threats:

Threats to the sea turtles are both human induced and natural such as, pollution, boat strikes, and entanglement, cold stunning and disease. Radio and satellite tags can be combined with aerial and shipboard survey work to study abundance, distribution, and movements of habitat usage coupled with seasonal changes. This information would be useful as means of protecting the species and the habitat in which they live as well as maintain their population at or above current levels.

Trends:

There is insufficient data to establish a trend for these species. The lack of data regarding habitat usage may lead to management decisions that may not be in the best interest of the animal. The little data that does exist is conflicting. According to Spotila, in the National Marine Fisheries Service Stock Assessment, the population is declining in the Pacific yet increasing or stable in the Atlantic (NMFS, 2001). In addition, the number of Ridley sea turtle nests are increasing (Turtle Expert Working Group,2000). Aerial and shipboard surveys in New York waters can assist in assessing these population status.

SEQR - No Action Alternative:

If no action is taken we will not be able to maintain the population at or above current levels. Without more surveys to better understand habitat usage we can not thoroughly assess movement and population levels. As a result, actions such as minimizing mortality from commercial fisheries, reducing marine pollution, and determining distribution and seasonal movements for all life stages (NMFS, 1991, 1992, 1993) will not be supported.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Leatherback (<i>Dermochelys coriacea</i>)	E		SNA	G2	E	Migratory
Kemp's or Atlantic ridley (<i>Lepidochelys kempii</i>)	E		S1N	G1	E	Migratory
Hawksbill (<i>Eretmochelys imbricata</i>)	E		SNA	G3	E	Migratory
Green turtle (<i>Chelonia mydas</i>)	T		S1N	G3	T	Migratory
Loggerhead (<i>Caretta caretta</i>)	T		S1N	G3	T	Migratory

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Loggerhead (<i>Caretta caretta</i>)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Green turtle (<i>Chelonia mydas</i>)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
Hawksbill (<i>Eretmochelys imbricata</i>)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
Kemp's or Atlantic ridley (<i>Lepidochelys kempii</i>)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
Leatherback (<i>Dermochelys coriacea</i>)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Loggerhead (<i>Caretta caretta</i>)	North Atlantic Coast	North Atlantic Coast	Decreasing
Green turtle (<i>Chelonia mydas</i>)	North Atlantic Coast	North Atlantic Coast	Decreasing
Hawksbill (<i>Eretmochelys imbricata</i>)	North Atlantic Coast	North Atlantic Coast	Unknown
Kemp's or Atlantic ridley (<i>Lepidochelys kempii</i>)	North Atlantic Coast	North Atlantic Coast	Decreasing
Leatherback (<i>Dermochelys coriacea</i>)	North Atlantic Coast	North Atlantic Coast	Decreasing

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Loggerhead (<i>Caretta caretta</i>)	Feeding	Marine	deep subtidal	pelagic
	Nursery/Juvenile	Marine	deep subtidal	pelagic

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Green turtle (<i>Chelonia mydas</i>)	Feeding	Marine	deep subtidal	pelagic
	Nursery/Juvenile	Marine	deep subtidal	pelagic
Hawksbill (<i>Eretmochelys imbricata</i>)	all	Marine	deep subtidal	pelagic
Kemp's or Atlantic ridley (<i>Lepidochelys kempii</i>)	Feeding	Marine	deep subtidal	pelagic
	Nursery/Juvenile	Marine	deep subtidal	pelagic
Leatherback (<i>Dermochelys coriacea</i>)	Feeding	Marine	deep subtidal	pelagic

Goal and Objectives for Sea turtles

Goal: Better understand abundance and habitat usage

Objective 1 : Habitat utilization and selection

Measure: *Radio and satellite tracking, diet analysis*

Objective 2 : To study abundance, distribution and habitat usage in all waters.

Measure: *Radio and satellite tracking, diet analysis*

Recommended Actions

Curriculum development:

- * To provide public outreach programs about local species and their environment within the Long Island Sound and the New York Bight. Partnering with agencies such as the New York State Marine Mammal and Sea Turtle Rescue Program, N.Y. DEC, NOAA, U.S. Coast Guard and local law enforcement, will allow the Riverhead Foundation to adhere to the actions listed in the sea turtle recovery plans more efficiently and effectively.

Fact sheet:

- * To provide literature for local communities, as well as law enforcement agencies, regarding sea turtles and their environment within the Long Island Sound and the New York Bight. The information distributed by the Riverhead Foundation to these people will provide a more effective response to strandings and sightings of animals.

Recommended Actions

Population monitoring:

- * Mark recapture studies will provide data on the diet composition of these animals between bodies of water. These results can be compared to historical studies to identify any shifts in prey species.
- * Determine sex composition of NY sea turtle populations. As the New York region is a critical developmental habitat for sea turtles it is important to understand if there is a sexual bias for this area. Historical studies were unable to obtain the sex of many live animals.
- * Radio and satellite tags can be combined with aerial and shipboard survey work to study abundance, distribution, and movements associated with seasonal changes.

Genetic studies should be conducted to identify stock structure and possibly understand broad scale movements.

Mark recapture studies will provide data on size class, and population structure. With these data comparisons can be made within years, between years and between bodies of water (e.g. Long Island Sound, Peconic Bay, Great South Bay, offshore waters) and also compared to stranded animals to understand how and if stranded animals can be used as a representative of the current population or a proxy for ecosystem health.

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Taxa Group: Herpetofauna
Species Group: Snapping Turtle

Threats:

- Persecution
- Road mortality
- Parasites/pathogens
- Subsidized predators (of turtle eggs)
- Waterborne contaminants (pesticides, heavy metals, chlorinated hydrocarbons, salts, acid rain)
- Water quality reductions (e.g.. low oxygen) affecting prey availability
- Unregulated collecting

Trends:

The current statewide trend for this species is not well understood. Although snapping turtle adults appear to be plentiful in most areas of the state, we do not have a clear enough understanding of trends to make a useful estimate of long term viability of these populations.

SEQR - No Action Alternative:

Too little is known about snapping turtle status and trends statewide to allow estimation of effect of a no action alternative.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Snapping turtle (<i>Chelydra serpentina</i>)					U	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Snapping turtle (Chelydra serpentina)	Allegheny	Upper Hudson	Unknown
	Delaware	SW Lake Ontario	Unknown
	Lake Champlain	Susquehanna	Unknown
	Lake Erie	SE Lake Ontario	Unknown
	Lower Hudson - Long Island Bays	NE Lake Ontario - St. Lawrence	Unknown
	NE Lake Ontario - St. Lawrence	Lower Hudson - Long Island Bays	Unknown
	Upper Hudson	Lake Erie	Unknown
	SW Lake Ontario	Lake Champlain	Unknown
	Susquehanna	Delaware	Unknown
	SE Lake Ontario	Allegheny	Unknown

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Snapping turtle (Chelydra serpentina)	Western Allegheny Plateau	Western Allegheny Plateau	Unknown
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Unknown
	Northern Appalachian/Boreal Forest	Northern Appalachian/Boreal Forest	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Unknown
	High Allegheny Plateau	High Allegheny Plateau	Unknown
	Great Lakes	Great Lakes	Unknown

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Snapping turtle (Chelydra serpentina)	all	Lacustrine	warm water shallow	mud bottom
	Breeding	Terrestrial	open upland	beach/shoreline

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Snapping turtle (<i>Chelydra serpentina</i>)	Breeding	Terrestrial	open upland	grasslands

Goal and Objectives for Snapping Turtle

Goal: Maintain self-sustaining populations of snapping turtle and sufficient good quality habitat to support the species throughout its historic range in New York.

Objective 1 : Coordinate statewide management and protection actions with involved landowners, non-governmental organizations, public regulatory agencies, and environmental consultants.

Measure: *Number of protection and management actions coordinated.*

Objective 2 : Determine distribution, population status and habitat suitability for populations of snapping turtle in New York.

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 3 : Develop a management plan for snapping turtle in New York.

Measure: *Completion of a management plan for snapping turtle in New York.*

Objective 4 : Increase public awareness in support of conservation objectives for the species.

Measure: *Number of public outreach efforts undertaken.*

Objective 5 : Provide NYSDEC with necessary additional regulatory authority to protect the species.

Measure: *Success in adopting needed changes to existing provisions of New York's Environmental Conservation Law (ECL).*

Recommended Actions

Life history research:

- * Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and wetland/upland habitat requirements.

Recommended Actions

Modify regulation:

- * Adopt into New York's Environmental Conservation Law provisions which designate snapping turtle as a protected small game species.

New regulation:

- * Regulate commercial take of specimens to the degree necessary for the maintenance of population stability.

Population monitoring:

- * Conduct periodic re-survey of known sites of species occurrence, in order to detect population trends, and monitor harvest of this species.
- * Conduct statewide assessment of contaminant levels in snapping turtles.

Statewide baseline survey:

- * Develop standardized population survey protocols, and implement survey protocols at known and potentially suitable sites, to document the extent of occupied habitat.

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Taxa Group: Herpetofauna
Species Group: Stream salamanders

Threats:

- Stream channelization
- Siltation of streams
- Waterborne contaminants
- Pathogenic organisms
- Unregulated collecting

Trends:

Trends for these species are not well understood. Wherever stream water quality has been significantly reduced, we can expect populations of these species to decline.

SEQR - No Action Alternative:

Regulatory programs which enhance and protect stream water quality are critical to maintenance of these salamander populations. In the absence of such regulatory protection we would expect reductions in stream-dependent species.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Longtail salamander (<i>Eurycea longicauda</i>)		X	S2S3	G5	U SC	Resident
Northern red salamander (<i>Pseudotriton ruber</i>)			S4	G5	U	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Northern red salamander (<i>Pseudotriton ruber</i>)	Allegheny		Delaware	Unknown
	Delaware		Lower Hudson - Long Island Bays	Decreasing
	Lower Hudson - Long Island Bays		Susquehanna	Unknown
	Susquehanna		Upper Hudson	Unknown
	Upper Hudson			

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Longtail salamander (<i>Eurycea longicauda</i>)	Allegheny	Allegheny	Decreasing
	Susquehanna	Susquehanna	Decreasing
	Upper Hudson	Upper Hudson	Decreasing
	Delaware	Delaware	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Northern red salamander (<i>Pseudotriton ruber</i>)	High Allegheny Plateau	High Allegheny Plateau	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Unknown
Longtail salamander (<i>Eurycea longicauda</i>)	High Allegheny Plateau	High Allegheny Plateau	Decreasing
	Lower New England Piedmont	Lower New England Piedmont	Decreasing

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Northern red salamander (<i>Pseudotriton ruber</i>)	all	Palustrine	mineral soil wetland	shrub swamp
	all	Riverine	coldwater stream	rocky bottom
	all	Terrestrial	forested	mixed deciduous/coniferous
Longtail salamander (<i>Eurycea longicauda</i>)	all	Riverine	coldwater stream	rocky bottom
	Feeding	Terrestrial	forested	northern deciduous
	Hibernating/Overwintering	Terrestrial	forested	northern deciduous

Goal and Objectives for Stream salamanders

Goal: Maintain self-sustaining populations of stream salamander species and sufficient good quality habitat to support those species throughout their historic ranges in New York.

Objective 1 : Assure long-term protection of habitat necessary for species survival.

Measure: *Miles of stream length, stream edge and adjacent uplands adequately protected by regulatory mechanisms.*

Objective 2 : Coordinate statewide management and protection actions with involved landowners, non-governmental organizations, public regulatory agencies, and environmental consultants.

Measure: *Number of protection and management actions coordinated.*

Objective 3 : Determine distribution, population status and habitat suitability for populations of stream salamanders in New York.

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 4 : Develop management plans for selected stream salamander species in New York.

Measure: *Completion of management plans for selected stream salamander species in New York.*

Objective 5 : Increase public awareness in support of conservation objectives for these species.

Measure: *Number of public outreach efforts undertaken.*

Objective 6 : Provide NYSDEC with necessary additional authority to protect these species.

Measure: *Success in adopting needed changes to existing provisions of New York's Environmental Conservation Law (ECL).*

Objective 7 : Restore depleted or extirpated populations.

Measure: *Number of stream sites at which population restoration or population enhancement has been carried out.*

Recommended Actions

Habitat management:

- * Undertake remedial actions as needed to restore habitat quality in degraded streams.

Habitat research:

- * Develop standardized habitat survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

Recommended Actions

Life history research:

- * Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and wetland/upland habitat requirements.

Modify regulation:

- * Adopt into New York's Environmental Conservation Law provisions which designate all species in this group of stream salamanders as a protected small game species.

Other action:

- * Periodically evaluate status of the species to determine whether the appropriate E/T/SC status listing is in effect.

Population monitoring:

- * Conduct periodic re-survey of known sites of species occurrence, in order to detect population trends.

Statewide baseline survey:

- * Develop standardized population survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the extent of occupied habitat.

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Taxa Group: Herpetofauna
Species Group: Uncommon turtles of wetlands

Threats:

- Wetland loss
- Wetland-adjacent upland loss
- Illegal and unregulated collection of specimens
- Road mortality
- Subsidized predators
- Invasive plant and animal species
- Hydrological changes (raising or lowering water levels)
- Water quality reductions
- Persecution
- Obstructions to dispersal
- Habitat fragmentation
- Natural succession
- Mosquito ditching

Trends:

New York populations of spotted, bog and Blanding's turtles have been in decline for many decades. All three species occur in areas of the state which are subject to intense development pressure, leading to habitat fragmentation, more frequent roadkill events and (frequently) compromised wetland quality.

Stinkpot populations are widely distributed in New York. The trend for this species is not clear.

Mud turtles currently occur in New York at only a few locations on eastern Long Island. All but one of these remaining populations are considered to be only marginally viable.

SEQR - No Action Alternative:

Except for the stinkpot, all of these turtles are presently managed to some significant degree (by regulation, habitat management and monitoring). In the absence of such management we would expect these populations to decline dramatically.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Stinkpot (<i>Sternotherus odoratus</i>)						Resident
Eastern mud turtle (<i>Kinosternon subrubrum</i>)			S1	G5	E	Resident
Blanding's turtle (<i>Emydoidea blandingii</i>)		X	S2S3	G4	T	Resident
Bog turtle (<i>Clemmys muhlenbergii</i>)	T		S2	G3	E	Resident
Spotted turtle (<i>Clemmys guttata</i>)		X	S3	G5	U SC	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Spotted turtle (<i>Clemmys guttata</i>)	Allegheny	Lake Champlain	Decreasing
	Lake Champlain	Lake Erie	Unknown
	Lake Erie	Lower Hudson - Long Island Bays	Decreasing
	Lower Hudson - Long Island Bays	NE Lake Ontario - St. Lawrence	Unknown
	NE Lake Ontario - St. Lawrence	SE Lake Ontario	Unknown
	SE Lake Ontario	Susquehanna	Unknown
	Susquehanna	SW Lake Ontario	Unknown
	SW Lake Ontario	Upper Hudson	Unknown
	Upper Hudson		
Bog turtle (<i>Clemmys muhlenbergii</i>)	Lake Champlain	Lower Hudson - Long Island Bays	Decreasing
	Lower Hudson - Long Island Bays	SE Lake Ontario	Decreasing
	SE Lake Ontario	Upper Hudson	Decreasing
	Susquehanna		
	SW Lake Ontario		
	Upper Hudson		
Blanding's turtle (<i>Emydoidea blandingii</i>)	Lake Erie	Lake Erie	Unknown
	NE Lake Ontario - St. Lawrence	NE Lake Ontario - St. Lawrence	Decreasing
	SE Lake Ontario	SE Lake Ontario	Unknown
	SW Lake Ontario	SW Lake Ontario	Unknown
	Upper Hudson	Upper Hudson	Decreasing
Eastern mud turtle (<i>Kinosternon subrubrum</i>)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Decreasing

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Stinkpot (<i>Sternotherus odoratus</i>)	Allegheny	Allegheny	Unknown
	Delaware	Delaware	Unknown
	Lake Champlain	Lake Champlain	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	NE Lake Ontario - St. Lawrence	NE Lake Ontario - St. Lawrence	Unknown
	SE Lake Ontario	SE Lake Ontario	Unknown
	Upper Hudson	Upper Hudson	Unknown

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Spotted turtle (<i>Clemmys guttata</i>)	Great Lakes	Great Lakes	Unknown
	High Allegheny Plateau	High Allegheny Plateau	Decreasing
	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Decreasing
	Northern Appalachian/Boreal Forest	Northern Appalachian/Boreal Forest	Decreasing
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	
Bog turtle (<i>Clemmys muhlenbergii</i>)	Great Lakes	Great Lakes	Decreasing
	High Allegheny Plateau	Lower New England Piedmont	Decreasing
	Lower New England Piedmont		
Blanding's turtle (<i>Emydoidea blandingii</i>)	Great Lakes	Great Lakes	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Decreasing
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Unknown

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Eastern mud turtle (Kinosternon subrubrum)	Lower New England Piedmont	North Atlantic Coast	Decreasing
	North Atlantic Coast		
Stinkpot (Sternotherus odoratus)	Great Lakes	Great Lakes	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown
	Northern Appalachian/Boreal Forest	Northern Appalachian/Boreal Forest	Unknown
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Unknown
	Western Allegheny Plateau	Western Allegheny Plateau	Unknown

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Spotted turtle (Clemmys guttata)	all	Palustrine	mineral soil wetland	vernal pool
	all	Palustrine	peatlands	bog/fen
	Breeding	Palustrine	mineral soil wetland	meadow
	Breeding	Terrestrial	open upland	grasslands
	Hibernating/Overwintering	Terrestrial	forested	mixed deciduous/coniferous
Bog turtle (Clemmys muhlenbergii)	all	Palustrine	mineral soil wetland	meadow
	all	Palustrine	mineral soil wetland	shrub swamp
	all	Palustrine	peatlands	bog/fen
Blanding's turtle (Emydoidea blandingii)	all	Palustrine	mineral soil wetland	emergent marsh
	all	Palustrine	mineral soil wetland	shrub swamp
	Breeding	Terrestrial	forested	northern deciduous
	Breeding	Terrestrial	open upland	grasslands
Eastern mud turtle (Kinosternon subrubrum)	all	Estuarine	intertidal	emergent marsh
	all	Palustrine	mineral soil wetland	emergent marsh
	all	Palustrine	mineral soil wetland	pond/lake shore
	all	Terrestrial	open upland	beach/shoreline

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Eastern mud turtle (Kinosternon subrubrum)	all	Terrestrial	open upland	grasslands
Stinkpot (Sternotherus odoratus)	all	Lacustrine	warm water shallow	mud bottom
	all	Terrestrial	open upland	grasslands

Goal and Objectives for Uncommon turtles of wetlands

Goal: Maintain self-sustaining populations of New York's 'uncommon turtles of wetlands' and maintain sufficient good quality habitat to support those species throughout their historic ranges in New York.

Objective 1 : Assure long-term protection of habitat necessary for species survival.

Measure: *Number of sites adequately protected by acquisition, transfer of development rights, or conservation easement.*

Objective 2 : Coordinate statewide management and protection actions with involved landowners, non-governmental organizations, public regulatory agencies, environmental consultants and the USFWS.

Measure: *Number of protection and management actions coordinated.*

Objective 3 : Determine distribution, population status and habitat suitability for populations of New York's 'uncommon turtles of wetlands'.

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 4 : Develop recovery plans for bog, mud and Blanding's turtles, and management plans for stinkpots and spotted turtles in New York.

Measure: *Completion of recovery plans or management plans for species in this group.*

Objective 5 : Increase public awareness in support of conservation objectives for these species.

Measure: *Number of public outreach efforts undertaken.*

Objective 6 : Provide NYSDEC with necessary additional authority to protect these species.

Measure: *Success in adopting needed changes to existing provisions of New York's Environmental Conservation Law (ECL).*

Objective 7 : Restore depleted or extirpated populations.

Measure: *Number of wetland sites at which population restoration or population enhancement has been carried out.*

Objective 8 : Undertake management actions to improve habitat quality at selected sites.

Measure: *Number of wetlands and adjacent upland habitat managed.*

Recommended Actions

Easement acquisition:

- * Secure habitats critical to species survival by acquisition of conservation easements for wetlands and adjacent uplands.

Habitat management:

- * Develop and implement mitigation strategies to manage adverse effects of habitat fragmentation.
- * Conduct a variety of habitat management activities where needed, including management of vegetation succession, management of invasive species, maintenance of hydrological regimes, curtailment of contaminant inputs, and management of human access, in order to preserve wetland suitability for these uncommon turtles of wetlands.

Habitat research:

- * Develop standardized habitat survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

Modify regulation:

- * Modify Freshwater Wetlands Act, in order to protect wetlands smaller than 12.4 acres where they support species of conservation concern, and in order to expand the protected upland buffer beyond the 100-foot limit where necessary.
- * Adopt into New York's Environmental Conservation Law provisions which designate stinkpot, eastern mud turtle, Blanding's turtle, and spotted turtle as protected small game species.

Other action:

- * Develop and implement mitigation measures to manage turtle population losses to egg predators and to vehicular roadkill.
- * Enhance law enforcement and public education in order to curtail collection/translocation of turtle specimens.
- * Determine significance of specific threats to populations of species in this group, and formulate management options to control significant threats.

Recommended Actions

Population enhancement:

- * Employ restoration techniques for bog turtle, Blanding's turtle and mud turtle at selected sites as needed, including captive breeding, headstarting, nest protection, and repatriation/relocation strategies.

Population monitoring:

- * Conduct periodic re-survey of known sites of species occurrence, in order to detect population trends.

Statewide baseline survey:

- * Develop standardized population survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the extent of occupied habitat.

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- Harding, J.H. 1997. Amphibians and Reptiles of the Great Lakes region. The University of Michigan Press. Ann Arbor. Michigan.
- Ernst, C.H., Lovich, Jeffrey E. & Barbour, R.W. 1994. Turtles of the United States and Canada. Smithsonian Institution Press. Washington D.C.
- Tyning, T.F. & Tyning, L.Q. (eds.), 1990. A Guide to Reptiles and Amphibians. Little, Brown and Company, Boston, MA.

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Taxa Group: Herpetofauna
Species Group: Vernal pool salamanders

Threats:

- Vernal pond losses
- Loss of pond-adjacent upland habitat
- Release of live bait into vernal ponds
- Subsidized predators
- Invasive aquatic plants
- Road mortality
- Water quality reductions
- Hydrological changes to vernal ponds
- Waterborne contaminants
- Off road vehicles
- Upland habitat fragmentation
- Obstructions to dispersal (curbs, window wells)
- Pathogenic organisms
- Unregulated or illegal collecting

Trends:

Trends for Jefferson and blue-spotted salamanders are not clear at this time. Trends for New York's resident marbled salamanders and tiger salamanders appear to be decidedly negative over the past several decades.

SEQR - No Action Alternative:

In the absence of management intervention, further declines may be anticipated for tiger salamanders and for marbled salamanders.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Tiger salamander (<i>Ambystoma tigrinum</i>)		X	S2S3	G5	E	Resident
Marbled salamander (<i>Ambystoma opacum</i>)			S3	G5	U SC	Resident
Blue-spotted salamander (<i>Ambystoma laterale</i>)		X	S3	G5	U SC	Resident
Jefferson salamander (<i>Ambystoma jeffersonianum</i>)		X	S3	G4	U SC	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Jefferson salamander (<i>Ambystoma jeffersonianum</i>)	Allegheny	Allegheny	Unknown
	Upper Hudson	Delaware	Unknown
	SW Lake Ontario	Lake Champlain	Unknown
	Susquehanna	Lake Erie	Unknown
	SE Lake Ontario	Lower Hudson - Long Island Bays	Unknown
	NE Lake Ontario - St. Lawrence	NE Lake Ontario - St. Lawrence	Unknown
	Lower Hudson - Long Island Bays	SE Lake Ontario	Unknown
	Lake Erie	Susquehanna	Unknown
	Lake Champlain	SW Lake Ontario	Unknown
	Delaware	Upper Hudson	Unknown
Blue-spotted salamander (<i>Ambystoma laterale</i>)	Allegheny	Allegheny	Unknown
	Upper Hudson	Delaware	Unknown
	SW Lake Ontario	Upper Hudson	Unknown
	Susquehanna	SW Lake Ontario	Unknown
	SE Lake Ontario	Susquehanna	Unknown
	NE Lake Ontario - St. Lawrence	SE Lake Ontario	Unknown
	Lower Hudson - Long Island Bays	NE Lake Ontario - St. Lawrence	Unknown
	Lake Erie	Lower Hudson - Long Island Bays	Unknown
	Lake Champlain	Lake Erie	Unknown
	Delaware	Lake Champlain	Unknown
Marbled salamander (<i>Ambystoma opacum</i>)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Decreasing
	Upper Hudson	Upper Hudson	Decreasing
	Delaware	Delaware	Unknown
Tiger salamander (<i>Ambystoma tigrinum</i>)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Decreasing
	Upper Hudson		

Species Distribution - Ecoregion				
Species	Historical	Current	Stability	
Jefferson salamander (<i>Ambystoma jeffersonianum</i>)	Great Lakes	Great Lakes	Unknown	
	High Allegheny Plateau	High Allegheny Plateau	Unknown	
	Lower New England Piedmont	Lower New England Piedmont	Unknown	
	Northern Appalachian/Boreal Forest	Northern Appalachian/Boreal Forest	Unknown	
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Unknown	
	Western Allegheny Plateau	Western Allegheny Plateau	Unknown	
Blue-spotted salamander (<i>Ambystoma laterale</i>)	Western Allegheny Plateau	Great Lakes	Unknown	
	St. Lawrence-Lake Champlain Valley	North Atlantic Coast	Decreasing	
	Northern Appalachian/Boreal Forest	High Allegheny Plateau	Unknown	
		Lower New England Piedmont	Unknown	
	North Atlantic Coast	Northern Appalachian/Boreal Forest	Unknown	
	Lower New England Piedmont	St. Lawrence-Lake Champlain Valley	Unknown	
	High Allegheny Plateau	St. Lawrence-Lake Champlain Valley	Unknown	
Great Lakes	Western Allegheny Plateau	Unknown		
Marbled salamander (<i>Ambystoma opacum</i>)	Lower New England Piedmont	Lower New England Piedmont	Decreasing	
	North Atlantic Coast	North Atlantic Coast	Decreasing	
	High Allegheny Plateau	High Allegheny Plateau	Unknown	
Tiger salamander (<i>Ambystoma tigrinum</i>)	Lower New England Piedmont	North Atlantic Coast	Decreasing	
	North Atlantic Coast			

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Jefferson salamander (<i>Ambystoma jeffersonianum</i>)	all	Terrestrial	barrens/woodlands	southern deciduous

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Jefferson salamander (<i>Ambystoma jeffersonianum</i>)	all	Terrestrial	forested	northern deciduous
	Nursery/Juvenile	Palustrine	mineral soil wetland	vernal pool
Blue-spotted salamander (<i>Ambystoma laterale</i>)	all	Terrestrial	barrens/woodlands	southern coniferous
	all	Terrestrial	barrens/woodlands	southern deciduous
	all	Terrestrial	forested	northern deciduous
	all	Terrestrial	forested	southern deciduous
	Nursery/Juvenile	Palustrine	mineral soil wetland	vernal pool
Marbled salamander (<i>Ambystoma opacum</i>)	all	Terrestrial	barrens/woodlands	southern deciduous
	all	Terrestrial	forested	southern deciduous
	Nursery/Juvenile	Palustrine	mineral soil wetland	vernal pool
Tiger salamander (<i>Ambystoma tigrinum</i>)	all	Terrestrial	barrens/woodlands	southern coniferous
	all	Terrestrial	barrens/woodlands	southern deciduous
	Nursery/Juvenile	Palustrine	mineral soil wetland	vernal pool

Goal and Objectives for Vernal pool salamanders

Goal: Maintain self-supporting populations of vernal pool salamanders and sufficient good quality habitat to support those species throughout their historic ranges in New York.

Objective 1 : Assure long-term protection of habitat necessary for species survival.

Measure: *Number of vernal pool habitats adequately protected by acquisition, transfer of development rights, or conservation easement.*

Objective 2 : Coordinate statewide management and protection actions with involved landowners, non-governmental organizations, public regulatory agencies, and environmental consultants.

Measure: *Number of protection and management actions coordinated.*

Objective 3 : Determine distribution, population status and habitat suitability for populations of vernal pool salamander in New York.

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 4 : Develop recovery plans for tiger salamander, and management plans for the other New York vernal pool salamander species.

Measure: *Completion of recovery plans/management plans for New York's vernal pool salamander species.*

Objective 5 : Increase public awareness in support of conservation objectives for these species.

Measure: *Number of public outreach efforts undertaken.*

Objective 6 : Provide NYSDEC with necessary additional authority to protect these species.

Measure: *Success in adopting needed changes to existing provisions of New York's Environmental Conservation Law (ECL).*

Objective 7 : Restore depleted or extirpated populations.

Measure: *Number of vernal pool sites at which population restoration or population enhancement has been carried out.*

Objective 8 : Undertake habitat management actions to improve habitat quality at selected sites.

Measure: *Number of vernal pool habitats managed.*

Recommended Actions

Easement acquisition:

- * Secure wetland and adjacent upland habitats critical to species survival by acquisition of conservation easements, or by other land protection mechanisms.

Habitat management:

- * Develop and implement measures to manage reductions of wetland habitat quality caused by invasive plants, by off-road vehicles, and by introductions of fish and other predatory species.

Habitat research:

- * Enable research to further document extent of upland habitat required by vernal pond breeding salamanders.
- * Develop standardized habitat survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

Recommended Actions

Life history research:

- * Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and wetland/upland habitat requirements.

Modify regulation:

- * Modify Freshwater Wetlands Act, in order to protect wetlands smaller than 12.4 acres where they support species of conservation concern, and in order to expand the protected upland buffer beyond the 100-foot limit where necessary.
- * Adopt into New York's Environmental Conservation Law provisions which designate tiger salamander, marbled salamander, Jefferson salamander and blue-spotted salamander as protected small game species.

Other action:

- * Determine significance of specific threats to populations of species in this group, and formulate management options to control significant threats.

Population enhancement:

- * Employ restoration techniques for tiger salamanders at selected sites as needed, including head starting, and repatriation/relocation strategies.

Population monitoring:

- * Conduct periodic re-survey of known sites of species occurrence, in order to detect population trends.

Statewide baseline survey:

- * Develop standardized population survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the extent of occupied habitat.
- * Develop standardized population survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the statewide distribution of species in this group.

References

- Semlitsch, R. D. 2000. Principles for management of aquatic breeding amphibians. *Journal of Wildlife Management*. 64:615-631.
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- Tyning, T.F. & Tyning, L.Q. (eds.), 1990 *A Guide to Reptiles and Amphibians* Little, Brown and Company, Boston, MA.

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Taxa Group: Herpetofauna
Species Group: Woodland/grassland snakes

Threats:

- Habitat loss
- Habitat fragmentation
- Road mortality
- Unregulated or illegal collecting
- Persecution
- Mining (hard rock, sand and gravel)
- Subsidized predators
- Pathogenic organisms

Trends:

Timber rattlesnake, the only species in this group which has been comprehensively monitored in recent years in New York, has been subjected to substantial reduction due to specimen collection and persecution during the past century. Remaining rattlesnake populations have been somewhat stabilized by management efforts which have been focused on habitat protection and public education. Nevertheless, the unremitting loss of habitat continues to undermine the prospects for the species. Population trends for the other snake species in this group are poorly understood.

SEQR - No Action Alternative:

Unless major threat factors, such as habitat loss, can be managed, we expect that populations of these woodland/grassland snakes will suffer reduction in the viability of their populations.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Timber rattlesnake (<i>Crotalus horridus</i>)		X	S3	G4	T	Resident
Smooth greensnake (<i>Opheodrys vernalis</i>)			S5	G5	U	Resident
Black ratsnake (<i>Elaphe obsoleta</i>)			S5	G5	U	Resident
Northern black racer (<i>Coluber constrictor</i>)			S5	G5	U	Resident
Northern copperhead (<i>Agkistrodon contortrix mok</i>)			S3	G5	U	Resident
Eastern hognose snake (<i>Heterodon platirhinos</i>)		X	S3S4	G5	U SC	Resident
Short-headed gartersnake (<i>Thamnophis brachysto</i>)			S3	G4	U	Resident
Worm snake (<i>Carphophis amoenus</i>)			S3S4	G5	U SC	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Worm snake (<i>Carphophis amoenus</i>)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Decreasing
	Upper Hudson	Upper Hudson	Decreasing
Short-headed gartersnake (<i>Thamnophis brachystoma</i>)	Allegheny	Allegheny	Decreasing
	Susquehanna	Susquehanna	Decreasing
Eastern hognose snake (<i>Heterodon platirhinos</i>)	Delaware	Delaware	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Decreasing
	Susquehanna	Susquehanna	Unknown
	Upper Hudson	Upper Hudson	Decreasing
Northern copperhead (<i>Agkistrodon contortrix mokasen</i>)	Lower Hudson - Long Island Bays	Delaware	Unknown
	Upper Hudson	Lower Hudson - Long Island Bays	Unknown
	Delaware	Upper Hudson	Unknown
Northern black racer (<i>Coluber constrictor</i>)	Lake Champlain	Lake Champlain	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	Susquehanna	SE Lake Ontario	Unknown
	SE Lake Ontario	Susquehanna	Unknown
	Upper Hudson	Upper Hudson	Decreasing
Black ratsnake (<i>Elaphe obsoleta</i>)	Delaware	Delaware	Decreasing
	Lake Champlain	Lake Champlain	Decreasing
	Lake Erie	Lake Erie	Decreasing
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Decreasing
	NE Lake Ontario - St. Lawrence	NE Lake Ontario - St. Lawrence	Decreasing
	SE Lake Ontario	SE Lake Ontario	Decreasing
	SW Lake Ontario	Susquehanna	Decreasing
	Upper Hudson	Upper Hudson	Decreasing

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Smooth greensnake (<i>Opheodrys vernalis</i>)	Allegheny	Allegheny	Unknown
	Delaware	Delaware	Unknown
	Lake Champlain	Lake Champlain	Unknown
	Lake Erie	Lake Erie	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Decreasing
	NE Lake Ontario - St. Lawrence	NE Lake Ontario - St. Lawrence	Unknown
	SE Lake Ontario	SE Lake Ontario	Unknown
	Susquehanna	Susquehanna	Unknown
	SW Lake Ontario	SW Lake Ontario	Unknown
	Upper Hudson	Upper Hudson	Decreasing
Timber rattlesnake (<i>Crotalus horridus</i>)	Allegheny	Allegheny	Decreasing
	Delaware	Delaware	Decreasing
	Lake Champlain	Lake Champlain	Decreasing
	Lake Erie	Lake Erie	Decreasing
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Decreasing
	SE Lake Ontario	SE Lake Ontario	Decreasing
	Susquehanna	Susquehanna	Decreasing
	SW Lake Ontario	SW Lake Ontario	Decreasing
	Upper Hudson	Upper Hudson	Decreasing

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Worm snake (<i>Carphophis amoenus</i>)	Lower New England Piedmont	Lower New England Piedmont	Decreasing
	North Atlantic Coast	North Atlantic Coast	Decreasing

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Short-headed gartersnake (<i>Thamnophis brachystoma</i>)	High Allegheny Plateau	High Allegheny Plateau	Decreasing
	Western Allegheny Plateau	Western Allegheny Plateau	Decreasing
Eastern hognose snake (<i>Heterodon platirhinos</i>)	High Allegheny Plateau	High Allegheny Plateau	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Decreasing
	North Atlantic Coast	North Atlantic Coast	Decreasing
Northern copperhead (<i>Agkistrodon contortrix mokasen</i>)	High Allegheny Plateau	High Allegheny Plateau	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Unknown
Northern black racer (<i>Coluber constrictor</i>)	Great Lakes	Great Lakes	Unknown
	High Allegheny Plateau	High Allegheny Plateau	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Decreasing
	North Atlantic Coast	North Atlantic Coast	Unknown
Black ratsnake (<i>Elaphe obsoleta</i>)	Great Lakes	Great Lakes	Decreasing
	High Allegheny Plateau	High Allegheny Plateau	Decreasing
	Lower New England Piedmont	Lower New England Piedmont	Decreasing
	Northern Appalachian/Boreal Forest	Northern Appalachian/Boreal Forest	Decreasing
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Decreasing

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Smooth greensnake (<i>Opheodrys vernalis</i>)	Great Lakes	Great Lakes	Unknown
	High Allegheny Plateau	High Allegheny Plateau	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Decreasing
	North Atlantic Coast	North Atlantic Coast	Decreasing
	Northern Appalachian/Boreal Forest	Northern Appalachian/Boreal Forest	Unknown
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Unknown
	Western Allegheny Plateau	Western Allegheny Plateau	Unknown
Timber rattlesnake (<i>Crotalus horridus</i>)	Great Lakes	Great Lakes	Decreasing
	High Allegheny Plateau	High Allegheny Plateau	Decreasing
	Lower New England Piedmont	Lower New England Piedmont	Decreasing
	North Atlantic Coast	Northern Appalachian/Boreal Forest	Decreasing
	Northern Appalachian/Boreal Forest	St. Lawrence-Lake Champlain Valley	Decreasing
	St. Lawrence-Lake Champlain Valley		

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Worm snake (<i>Carphophis amoenus</i>)	all	Terrestrial	barrens/woodlands	mixed deciduous/coniferous
	all	Terrestrial	barrens/woodlands	southern coniferous
Short-headed gartersnake (<i>Thamnophis brachystoma</i>)	all	Terrestrial	forested	mixed deciduous/coniferous
	all	Terrestrial	open upland	grasslands
Eastern hognose snake (<i>Heterodon platirhinos</i>)	all	Terrestrial	barrens/woodlands	southern coniferous
	all	Terrestrial	open upland	dunes
Northern copperhead (<i>Agkistrodon contortrix mokasen</i>)	all	Terrestrial	forested	mixed deciduous/coniferous

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Northern copperhead (Agkistrodon contortrix mokasen)	all	Terrestrial	forested	northern deciduous
	all	Terrestrial	forested	southern deciduous
Northern black racer (Coluber constrictor)	all	Terrestrial	forested	mixed deciduous/coniferous
	all	Terrestrial	forested	northern deciduous
	all	Terrestrial	forested	southern deciduous
	all	Terrestrial	open upland	grasslands
Black ratsnake (Elaphe obsoleta)	all	Terrestrial	forested	mixed deciduous/coniferous
	all	Terrestrial	forested	northern deciduous
	all	Terrestrial	forested	southern deciduous
	all	Terrestrial	open upland	grasslands
Smooth greensnake (Opheodrys vernalis)	all	Terrestrial	forested	mixed deciduous/coniferous
	all	Terrestrial	open upland	grasslands
Timber rattlesnake (Crotalus horridus)	all	Terrestrial	barrens/woodlands	mixed deciduous/coniferous
	all	Terrestrial	forested	mixed deciduous/coniferous
	all	Terrestrial	forested	northern deciduous
	all	Terrestrial	forested	southern deciduous
	all	Terrestrial	open upland	cliffs & open talus

Goal and Objectives for Woodland/grassland snakes

Goal: Maintain self-sustaining populations of New York's woodland/grassland snake species, and maintain sufficient good quality habitat to support those species throughout their historic ranges in New York.

Objective 1 : Assure long-term protection of habitat necessary for species survival.

Measure: *Number of sites adequately protected by acquisition, transfer of development rights, or conservation easement.*

Objective 2 : Coordinate statewide management and protection actions with involved landowners, non-governmental organizations, public regulatory agencies, and environmental consultants.

Measure: *Number of protection and management actions coordinated.*

Objective 3 : Determine distribution, population status and habitat suitability for populations of New York's woodland/grassland snake species.

Measure: *Number of sites of occurrence evaluated to determine population status and habitat suitability.*

Objective 4 : Develop recovery plan for timber rattlesnake, and management plans for other woodland/grassland snake species in New York.

Measure: *Completion of recovery plans/management plans for New York's woodland/grassland snake species.*

Objective 5 : Increase public awareness in support of conservation objectives for these species.

Measure: *Number of public outreach efforts undertaken.*

Objective 6 : Provide NYSDEC with necessary additional authority to protect these species.

Measure: *Success in adopting needed changes to existing provisions to New York's Environmental Conservation Law (ECL).*

Objective 7 : Restore depleted or extirpated populations.

Measure: *Number of sites at which population restoration or population enhancement has been carried out.*

Objective 8 : Undertake habitat management actions to improve habitat quality at selected sites.

Measure: *Number of acres of habitat managed.*

Recommended Actions

Easement acquisition:

- * Secure habitats critical to species survival by acquisition of conservation easements, or by other land protection mechanisms.

Habitat management:

- * Develop and implement mitigation measures to manage the adverse effects of habitat fragmentation.

Habitat research:

- * Develop standardized habitat survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

Recommended Actions

Life history research:

- * Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and habitat requirements.

Modify regulation:

- * Adopt into New York's Environmental Conservation Law provisions which designate timber rattlesnake, smooth greensnake, black ratsnake, northern black racer, northern copperhead, eastern hognose snake, short-headed garter snake and worm snake as protected small game species.

Other action:

- * Determine significance of specific threats to populations of species in this group, and formulate management options to control significant threats.
- * Enhance law enforcement and public education to limit specimen collection, killing and translocation of woodland/grassland snake species.
- * Educate the New York public to abandon misconceptions about the menace/value of woodland/grassland snakes.

Population enhancement:

- * Employ restoration techniques for timber rattlesnakes at selected sites as needed including head starting and repatriation/relocation strategies.

Population monitoring:

- * Conduct periodic re-survey of known sites of species occurrence, in order to detect population trends.

Statewide baseline survey:

- * Develop standardized population survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the extent of occupied habitat for each of the woodland/grassland snake species in New York.

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- Tyning, T.F. & Tyning, L.Q. (eds.), 1990. A Guide to Reptiles and Amphibians. Little, Brown and Company, Boston, MA.
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