



Appendix A3:

Comprehensive Wildlife Conservation Strategy Species Group Reports for Freshwater fish

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: Freshwater fish
Species Group: Banded sunfish

Threats:

Because the only remaining New York populations of the banded sunfish are located in eastern Long Island, it is considered to be vulnerable to environmental catastrophes. Fortunately, several of the ponds are isolated and without surface water connections to the Peconic system. The ground water pumping that continues to lower the water level, could also threaten these waters during drought conditions.

Trends:

Historically found in about 30 (still in 19) waters and their range is not declining (or gone or dangerously sparse) in 1 of the 2 watersheds. Both habitat and abundance appears to be stable on Long Island, except for years when the water table goes down and ponds dry up.

SEQR - No Action Alternative:

Because the only remaining population of the banded sunfish is located in eastern Long Island, thus making it vulnerable to environmental changes and drops in the water table, a lack of management including monitoring their status in the Peconic system could jeopardize the New York population.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Banded sunfish (<i>Enneacanthus obesus</i>)		X	S1S2	G5	T	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Banded sunfish (<i>Enneacanthus obesus</i>)	Lower Hudson - Long Island Bays		Lower Hudson - Long Island Bays	Unknown

Species Distribution - Ecoregion				
Species	Historical		Current	Stability
Banded sunfish (<i>Enneacanthus obesus</i>)	North Atlantic Coast		North Atlantic Coast	Unknown

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Banded sunfish (Enneacanthus obesus)	all	Lacustrine	warm water shallow	mud bottom
	all	Lacustrine	warm water shallow	sand/gravel

Goal and Objectives for Banded sunfish

Goal: The existence of the banded sunfish in New York, at levels that enable the species to maintain self sustaining populations throughout it's historic range in the Lower Hudson-Long Island watersheds.

Objective 1 : Perpetuation of self sustaining populations in other waters in the Lower Hudson-Long Hudson Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 2 : Perpetuation of self sustaining populations in water bodies or subbasins in the Lower Hudson-Long Island Watershed.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat monitoring:

- * Complete surveys on submerged aquatic vegetation and floating woody mats in areas still inhabited by this species and monitor water level depths on dry years.

Habitat research:

- * Define preferred habitat in order to guide future restoration efforts and focus habitat protection efforts.

Population monitoring:

- * Continued monitoring of the Long Island populations.

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Taxa Group: Freshwater fish
Species Group: Bigeye chub

Threats:

Trautman (1981) has noted that populations of the bigeye chub declined in prairie streams of west central Ohio as a result of increased siltation of stream bottoms. Undoubtedly this has occurred in New York waters as well, but no studies to assess this or other problems, threats, limiting factors or overall vulnerability of this species or its essential habitat have been conducted.

Trends:

Historically found in over 19 waters (still in 6) and declining in their range (or gone or dangerously sparse) in all 4 watersheds. Abundance has declined in the Ontario, Allegheny and Oswego watersheds. Daniels (1989 and 1998) called for watchfulness of their declines in the Allegheny Watershed. Their status in the lower Buffalo River System appears more favorable. Habitat trends are currently unknown. This trend causes imminent concern.

SEQR - No Action Alternative:

Because both the range and abundance of the Bigeye chub appear to be declining, lack of management actions including population monitoring could put existing New York populations at risk.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Bigeye chub (<i>Hybopsis amblops</i>)			S2	G5	U	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Bigeye chub (<i>Hybopsis amblops</i>)	Lake Erie		Lake Erie	Stable
	SW Lake Ontario		Allegheny	Decreasing
	Allegheny			

Species Distribution - Ecoregion				
Species	Historical		Current	Stability

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Bigeye chub (Hybopsis amblops)	Great Lakes	Great Lakes	Decreasing
	High Allegheny Plateau	High Allegheny Plateau	Decreasing
	Western Allegheny Plateau		

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Bigeye chub (Hybopsis amblops)	all	Riverine	warm water shallow	sand/gravel

Goal and Objectives for Bigeye chub

Goal: Maintain the existence of the bigeye chub in New York, at levels that enable the species to maintain self sustaining populations throughout its historic range in the Lake Erie, Southwestern Lake Ontario and Allegheny watersheds.

Objective 1 : Establish an inventory of waters within the Allegheny watershed that are recognized as the historic range for the bigeye chub.

Measure: *Number of waters inventoried.*

Objective 2 : Establish an inventory of waters within the Lake Erie watershed that are recognized as the historic range for the bigeye chub.

Measure: *Number of waters inventoried.*

Objective 3 : Establish an inventory of waters within the Southwestern Lake Ontario watershed that are recognized as the historic range for the bigeye chub.

Measure: *Number of waters inventoried.*

Objective 4 : Perpetuation of self sustaining populations in other waters the Allegheny Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 5 : Perpetuation of self sustaining populations in other waters the Lake Erie Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 6 : Perpetuation of self sustaining populations in the Allegheny watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 7 : Perpetuation of self sustaining populations in the Lake Erie watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat research:

- * Inventory and assess losses of habitat and this species in tributaries of western Lake Ontario. Follow up with remediation efforts.

Population monitoring:

- * More sampling is needed in these basins, like Olean/Ischua Creeks and Buffalo River system.

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Taxa Group: Freshwater fish
Species Group: Black redhorse

Threats:

Pollution, siltation or turbidity may be limiting some population densities.

Trends:

Historically found in 12 waters (now in 10) and their range is declining (or gone or dangerously sparse) in only 1 of the 3 watersheds. This species is abundant in the Allegheny watershed, is still present in all previously known tributaries of Lake Erie, but is extirpated from the Genesee.

SEQR - No Action Alternative:

With environmental factors possibly limiting some population densities, a lack of management such as population monitoring could jeopardize the self-sustaining populations.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Black redhorse (<i>Moxostoma duquesnei</i>)			S2	G5	U SC	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Black redhorse (<i>Moxostoma duquesnei</i>)	SW Lake Ontario	Lake Erie	Stable
	Lake Erie	Allegheny	Stable
	Allegheny		

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Black redhorse (<i>Moxostoma duquesnei</i>)	Western Allegheny Plateau	Western Allegheny Plateau	Stable
	High Allegheny Plateau	High Allegheny Plateau	Decreasing
	Great Lakes	Great Lakes	Stable

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Black redhorse (<i>Moxostoma duquesnei</i>)	all	Riverine	warmwater stream	sand/gravel

Goal and Objectives for Black redhorse

Goal: The existence of the black redhorse in New York, at levels that enable the species to maintain self sustaining populations throughout it's historic range in the Allegheny, Lake Erie and Southeastern Lake Ontario watersheds.

Objective 1 : Perpetuation of self sustaining populations in the Allegheny Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 2 : Perpetuation of self sustaining populations in the Allegheny Watershed.

Measure: *Number of populations maintained.*

Objective 3 : Perpetuation of self sustaining populations in the Lake Erie Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 4 : Perpetuation of self sustaining populations in the Lake Erie Watershed.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat research:

- * Inventory and assess losses of habitat and this species in the Genesee basin. This would be followed by considering remediation efforts.

Population monitoring:

- * Surveys should be done in the Buffalo River system and the Genesee River.

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Taxa Group: Freshwater fish

Species Group: Blackchin shiner

Threats:

Dramatic changes in abundance over different sampling periods have been noted and later associated with water levels (in Minnesota). It changed from abundant, to rare, to abundant again (Becker 1983). Little is known about the ecological requirements of blackchin shiner.

Trends:

Historically found in 98 (still in at least 20) waters and their range is possibly declining (or gone or dangerously sparse) in 4 of the 10 watersheds. Their range has declined in downstream areas of the St. Lawrence River, bays on the south shore of Lake Ontario and in other inland lakes in New York State. In the St. Lawrence downstream of the Thousand Island region, only one has been collected (in 1999), while they were more widespread there in the 1930's. They still occur farther downstream in Ontario and Quebec (Bergeron and Brousseau 1983). Only one bay on the south shore of Lake Ontario from Rochester to Port Ontario was sampled with this species, Sodus Bay. Seven other bays were sampled in 1997 (field notes of D. Carlson, 1997), among which four of these contained blackchin shiner in the 1930's.

Previously inhabited lakes in the remaining parts of New York have been sampled less thoroughly (Regional DEC sampling efforts and six lake samples by D. Carlson in 1997), and only 13 lakes have included them since the 1930's and only four lakes since the 1960's. The lakes without recent captures, like Otsego, Brant and Rich lakes apparently show species declines. Cayuga, Fourth (near Warrensburg) and Canadarago lakes had samples with this species as recently as 1961, 1972 and 1976 (respectively, Cornell Univ Museum; NYS Fisheries Data Base; McBride and Sanford 1997). The two other lakes, Tully (near Cortland) and Highlands Forge (near Willsboro) lakes, had blackchin shiner in samples in 1993. They were also caught in Lake Champlain (Rouses Point) and the Great Chazy River in 1998, and yet-to-be-confirmed records for the Susquehanna drainage in Owego Creek and Catatonk Creek are as recent as 1992 and 1996 (Carlson 1999 draft). Another recent record (2003) included Conesus Lake of the Genesee watershed. Previously inhabited areas of the Allegheny drainage and French Creek (not collected since the 1930's) apparently no longer have appropriate habitat (Daniels 1989). Captures from Chautauqua Lake and Niagara River have not been repeated and confirmed since the 1930's, and their continued presences there seem unlikely. Sampling is needed. The Poultney River (on the Vt. boundary) had blackchin shiner in 1989 (Facey and LaBar 1989). Other streams like Black Creek near Batavia had historic records and need to be sampled.

This species may be subject to a decline in some areas, as said to be a trend in lakes of the Northeast U.S. (Whittier et al. 1997; Chapleau and Findlay 1997). It was found in ten of New York's 13 watersheds in the 1930's (about 55 waters), and it is now possibly secure in only six watersheds (24 waters). This species is still abundant in some areas (Jefferson Co.), but it has declined in others. Once the species becomes scarce, it is difficult to sample under these conditions. It may be "secure" even though sampling efforts were thorough, while it was not able to be collected. From all available records, it has been known in 98 waters, and only 16 have records as recent as 1989 (Carlson 1999, draft). More of these waters should be surveyed.

The population has disappeared in western tributaries of Lake Ontario, the Niagara River and the Allegheny watershed but appears stable elsewhere.

SEQR - No Action Alternative:

Because of the need for information on the ecological requirements of the Blackchin shiner and fluctuations in abundance levels during sampling, lack of management actions such as population monitoring, could jeopardize current populations.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Blackchin shiner (<i>Notropis heterodon</i>)			S1	G5	U	Resident

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Blackchin shiner (<i>Notropis heterodon</i>)	Allegheny	NE Lake Ontario - St. Lawrence	Stable
	Lake Champlain	SE Lake Ontario	Unknown
	Lake Erie	Susquehanna	Unknown
	NE Lake Ontario - St. Lawrence	Upper Hudson	Unknown
	SE Lake Ontario	Lake Champlain	Unknown
	Susquehanna		
	SW Lake Ontario		
	Upper Hudson		

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Blackchin shiner (<i>Notropis heterodon</i>)	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Unknown
	High Allegheny Plateau	High Allegheny Plateau	Unknown
	Western Allegheny Plateau	Northern Appalachian/Boreal Forest	Unknown
	Great Lakes		
	Northern Appalachian/Boreal Forest		
	Lower New England Piedmont		

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Blackchin shiner (<i>Notropis heterodon</i>)				

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Blackchin shiner (Notropis heterodon)	all	Lacustrine	warm water shallow	sand/gravel bottom
	all	Riverine	warmwater stream	sand/gravel bottom

Goal and Objectives for Blackchin shiner

Goal: The existence of self sustaining populations of blackchin shiner in NY throughout its historic range in the Allegheny, Susquehanna, L. Erie, SE L. Ontario, SW L. Ontario, NE L. Ontario-St. Lawrence, L. Champlain, and Upper Hudson watersheds.

Objective 1 : Perpetuation of self sustaining populations in 80 % of the historic waters of the Allegheny Watershed.

Measure: *Number of populations maintained.*

Objective 2 : Perpetuation of self sustaining populations in 80 % of the historic waters of the Lake Champlain Watershed.

Measure: *Number of populations maintained.*

Objective 3 : Perpetuation of self sustaining populations in 80 % of the historic waters of the Lake Erie Watershed.

Measure: *Number of populations maintained.*

Objective 4 : Perpetuation of self sustaining populations in 80 % of the historic waters of the Northeastern Lake Ontario-St. Lawrence Watershed.

Measure: *Number of populations maintained.*

Objective 5 : Perpetuation of self sustaining populations in 80 % of the historic waters of the Southeastern Lake Ontario Watershed.

Measure: *Number of populations maintained.*

Objective 6 : Perpetuation of self sustaining populations in 80 % of the historic waters of the Southwestern Lake Ontario Watershed.

Measure: *Number of populations maintained.*

Objective 7 : Perpetuation of self sustaining populations in 80 % of the historic waters of the Susquehanna Watershed.

Measure: *Number of populations maintained.*

Objective 8 : Perpetuation of self sustaining populations in 80 % of the historic waters of the Upper Hudson Watershed.

Measure: *Number of populations maintained.*

Objective 9 : Perpetuation of self sustaining populations in other waters in the Allegheny Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 10 : Perpetuation of self sustaining populations in other waters in the Lake Champlain Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 11 : Perpetuation of self sustaining populations in other waters in the Lake Erie Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 12 : Perpetuation of self sustaining populations in other waters in the Northeastern Lake Ontario-St. Lawrence Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 13 : Perpetuation of self sustaining populations in other waters in the Southeastern Lake Ontario Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 14 : Perpetuation of self sustaining populations in other waters in the Southwestern Lake Ontario Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 15 : Perpetuation of self sustaining populations in other waters in the Susquehanna Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 16 : Perpetuation of self sustaining populations in other waters the Upper Hudson Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat research:

- * Inventory and assess losses of habitat and this species in the Allegheny and Erie watersheds. This would be followed by considering remediation efforts.

Population monitoring:

- * The status of this species in New York needs to be determined in more inland lakes, and the records in the Susquehanna drainage near Pennsylvania needs further study to understand if this represents a range expansion.

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Taxa Group: Freshwater fish

Species Group: Bluebreast darter

Threats:

The Kinzua Dam in Pennsylvania prohibits upstream migrations of the bluebreast darter from the lower section of the Allegheny River. As well, pollution remains as a threat to existing, disparate populations of the species in New York waters of the Allegheny. This is a single river reach with New York's only population (plus the records for Oswayo Creek), and it's abundance was sparse. The prospect of a fish kill, as have occurred earlier (Brezner and Pulaski 1972), could be a serious threat. This species does not tolerate even moderate degrees of siltation (Jenkins and Burkhead 1994).

Trends:

Even though the population is limited, its habitat, reproduction and general health appear stable. However, the bluebreast darter continues to be threatened throughout its range and only exists in locations in New York State. This trend causes imminent concern.

SEQR - No Action Alternative:

Due to pollution (notably siltation) continuing to pose a threat to the existing disparate populations of the Bluebreast darter in New York waters of the Allegheny, a lack of management actions including rigorous sampling, could jeopardize the population.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Bluebreast darter (<i>Etheostoma camurum</i>)		X	S1	G4	E	Resident

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Bluebreast darter (<i>Etheostoma camurum</i>)	Unknown	Allegheny	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Bluebreast darter (<i>Etheostoma camurum</i>)	Unknown	High Allegheny Plateau	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Bluebreast darter (Etheostoma camurum)	all	Riverine	warmwater stream	sand/gravel

Goal and Objectives for Bluebreast darter

Goal: Maintain the existence of the bluebreast darter in New York, at levels that enable the species to maintain self sustaining populations throughout it's historic range in the Allegheny Watershed.

Objective 1 : Establish an inventory of waters with naturally occurring bluebreast darter populations within the Allegheny watershed.

Measure: *Creation of inventory*

Objective 2 : Perpetuation of self sustaining populations in the Allegheny River and tributaries, and additional waters in the Allegheny Watershed.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat research:

- * Inventory the habitat requirements of this species and its co inhabitants in the Allegheny and outside New York State, part of the same State Wildlife Grants project.

Habitat restoration:

- * Habitat losses and restoration are part of a State Wildlife Grants project from 2003 that is directed at the Allegheny watershed.

Population monitoring:

- * Extensive sampling will be part of a State Wildlife Grants project in 2004 on the Allegheny River near Weston Mills and in lower Oswayo Creek.

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Taxa Group: Freshwater fish

Species Group: Brook trout, Heritage strains

Threats:

Primary threats to heritage strain brook trout are diminished water quality resulting from acid precipitation, competition, predation from introduced species, and inadvertent stocking of other Brook trout strains in heritage systems. Loss of groundwater quantity and quality, and the loss of spawning and nursery habitats (Gordon et. al., 2003) are other threats.

Trends:

The current number of wild, self-sustaining brook trout ponds in New York State is very low relative to historic conditions. Kretser et. al. (1989) found that less than 4% of the lakes and ponds in New York are thought to contain unstocked, wild populations of brook trout. Primarily as the result of management actions, the number of known wild populations has recently increased. Gordon et. al. (2003) reported 85 known, self-sustaining populations in the Adirondacks compared to the 39 populations reported by Pfeiffer in 1979. Management actions have included the liming of acidified brook trout waters, chemical removal of competitor and predator fishes, and restocking. As an example of the success of these methods, Gordon et. al. (2003) reported that 25 years of pond reclamation had resulted in self-sustaining brook trout populations in 10 of 50 reclaimed ponds.

Keller (1979) listed eleven "heritage" brook trout strains still extant in their natal waters. Those included Dix Pond, Honnedaga Lake, Horn Lake, Little Tupper Lake, Nate Pond, Stink Lake, Tamarack Pond and Windfall Ponds in Franklin and Herkimer Counties in the Adirondacks. Keller also listed two Catskill waters, Balsam Lake and Tunis Lake. Recent data (June, 2004) from fisheries managers and an academician indicate that all strains may still be present in their natal waters except the Tamarack Pond strain. Brook trout stocking data indicate that Horn Lake strain fish have been stocked in Tamarack Pond since 1996. There are no recent fisheries survey data available for Stink Lake.

Genetic work performed by Perkins et. al. (1993) confirmed the unique genetic character of most of these populations. Furthermore, Perkins et. al. (1993) found significant genetic differences among river basins, among drainages within basins, and even among samples within minor drainages, and suggested that individual heritage populations should be the primary ecological units on which management strategies should be based. At a minimum, Perkins et. al. suggested that two populations be selected for preservation within each major drainage. Candidate populations could be selected based on their capability to contribute large sample sizes to restoration efforts, and on their degree of genetic uniqueness.

Wild brook trout strains have been shown to live longer and have better survival than domesticated strains (Webster and Flick 1981). Heritage brook trout populations are important for the adaptive ability and long-term survival of the species, and represent an irreplaceable part of the brook trout resource in New York State. Thousands of generations of natural selection have resulted in genetically discrete, ecologically specialized populations specifically adapted to conditions in New York State.

SEQR - No Action Alternative:

If no action is taken it is anticipated that at least some heritage strains will be lost to acid precipitation, non-native species introductions, and/or other habitat impacts.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status

Brook trout, Heritage strains (*Salvelinus fontinalis*) S5 G5 P Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Brook trout, Heritage strains (<i>Salvelinus fontinalis</i>)	Allegheny	Allegheny	Stable
	Delaware	Delaware	Stable
	Lake Champlain	Lake Champlain	Stable
	Lake Erie	Lake Erie	Stable
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Stable
	NE Lake Ontario - St. Lawrence	NE Lake Ontario - St. Lawrence	Stable
	SE Lake Ontario	SE Lake Ontario	Stable
	Susquehanna	Susquehanna	Stable
	SW Lake Ontario	SW Lake Ontario	Stable
	Upper Hudson	Upper Hudson	Stable

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Brook trout, Heritage strains (<i>Salvelinus fontinalis</i>)	Great Lakes	Great Lakes	Stable
	High Allegheny Plateau	High Allegheny Plateau	Stable
	Lower New England Piedmont	Lower New England Piedmont	Stable
	North Atlantic Coast	North Atlantic Coast	Stable
	Northern Appalachian/Boreal Forest	Northern Appalachian/Boreal Forest	Stable
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Stable
	Western Allegheny Plateau	Western Allegheny Plateau	Stable

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Brook trout, Heritage strains (Salvelinus fontinalis)	all	Lacustrine	cold water deep	sand/gravel bottom
	all	Lacustrine	cold water shallow	sand/gravel bottom
	all	Riverine	coastal plain stream	sand/gravel bottom
	all	Riverine	coldwater stream	sand/gravel bottom

Goal and Objectives for Brook trout, Heritage strains

Goal: Maintain viable populations of heritage strain brook trout that collectively represent the full range of genetic diversity found in New York State.

Objective 1 : Maintain viable populations of all known heritage strain brook trout known to occur in lakes and ponds.

Measure: *Number of lakes and ponds supporting heritage strain brook trout; Number of strains protected.*

Objective 2 : Maintain, primarily through habitat protection, known or likely populations of stream and coastal populations of brook trout.

Measure: *Miles of wild brook trout stream.*

Recommended Actions

Captive breeding:

- * Selected strains of heritage strain brook trout have been propagated in fish hatcheries and used to create naturally sustained wild populations. This work needs to continue, and be refined pending an updating of the management plan.

Habitat management:

- * Select 2 stream populations for each watershed (major drainage) to designate as heritage riverine stocks - to protect from stocking and habitat loss.
- * Construct and maintain fish barriers to prevent undesirable fish from populating reclaimed ponds, or ponds that are naturally recovering from acid precipitation.

Habitat restoration:

- * Liming of selected ponds, followed by restocking with heritage strain brook trout, should continue. Target ponds and strains should be identified in the updated management plan.

Recommended Actions

Invasive species control:

- * Reclamation of selected ponds to remove non-native and native but widely introduced fish species, followed by restocking with heritage strain brook trout, should continue. Target ponds and strains should be identified in the updated management plan.

Population monitoring:

- * Complete an inventory of known stream and coastal populations of "never stocked" brook trout.

Statewide management plan:

- * Keller's 1979 plan "Management of wild and hybrid brook trout in New York lakes, ponds and coastal streams" needs to be updated to include current status of known heritage strains, and updated conservation plans and research needs. Potential new research includes the characterization of additional heritage strains, and the broad-scale identification of lakes that may be suitable for the restoration of self-sustaining heritage brook trout populations (e.g., lakes likely to have suitable groundwater springs or coldwater inlets).

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Taxa Group: Freshwater fish
Species Group: Comely shiner

Threats:

Argent et al. (1998) felt that it was among the Pennsylvania species with most reduced distribution. Its ability to withstand turbidity make it seem more tolerant than some minnows. There have been no studies to assess its problems, threats, limiting factors or overall vulnerability.

Trends:

Historically found in over 50 waters and their range is declining (or gone or dangerously sparse) in at least 4 of the 5 watersheds where native. In the 1930s, this species occurred in 20%(112) of the samples in the Susquehanna, 8% (21) in Chemung, 5%(25) in the Delaware and 2% (18) in the lower Hudson in the 1935-37. It still occurs in these watersheds plus the southernmost part of the Oswego watershed by Seneca Lake, but it appears to be less common than earlier (Smith 1985). Smith collected them in 5% (3/63) of his sites in the Susquehanna and Chemung watersheds, 8% (3/38) in the Delaware and 4% (5/126) in the lower Hudson.

There are only 23 records or sites still inhabited by this species since 1975, compared to 241 sites from earlier years. Most of the recent records, since 1990, are from the Lower Hudson (8) and the Susquehanna (2) and there are none from the Chemung, Delaware or Newark Bay. The population appears stable in the Lower Hudson, has disappeared from many streams of the Susquehanna, Chemung and Delaware watersheds and is extirpated from the Newark Bay watershed. This trend causes imminent concern.

SEQR - No Action Alternative:

With the comely shiner having disappeared from many streams in two watersheds in New York, lack of monitoring and surveying could be detrimental to the perpetuation of existing populations.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Comely shiner (<i>Notropis amoenus</i>)			S3	G5	U	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Comely shiner (<i>Notropis amoenus</i>)	Susquehanna		Susquehanna	Unknown
	Delaware		Delaware	Unknown
	Upper Hudson		SE Lake Ontario	Stable
	Lower Hudson - Long Island Bays		Upper Hudson	Stable

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Comely shiner (Notropis amoenus)	High Allegheny Plateau	High Allegheny Plateau	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Stable

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Comely shiner (Notropis amoenus)	all	Riverine	warmwater stream	sand/gravel bottom

Goal and Objectives for Comely shiner

Goal: The existence of the comely shiner in New York, at levels that enable the species to maintain self sustaining populations throughout its historic range in the Susquehanna, Delaware, Upper Hudson watersheds.

Objective 1 : Establish an inventory of waters within the Delaware watershed that are recognized as historic habitat for comely shiner.

Measure: *Number of waters inventoried.*

Objective 2 : Establish an inventory of waters within the Susquehanna watershed that are recognized as historic habitat for comely shiner.

Measure: *Number of waters inventoried.*

Objective 3 : Establish an inventory of waters within the Upper Hudson watershed that are recognized as historic habitat for comely shiner.

Measure: *Number of waters inventoried.*

Objective 4 : Perpetuation of self sustaining populations in other waters in the Delaware Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 5 : Perpetuation of self sustaining populations in other waters in the Susquehanna Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 6 : Perpetuation of self sustaining populations in other waters in the Upper Hudson Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat research:

- * Inventory the habitat in streams currently and formerly occupied by the species.

Habitat restoration:

- * Habitat losses and restoration are part of a State Wildlife Grants project from 2003 directed at the Susquehanna watershed.

Population monitoring:

- * More sampling is needed in these watersheds.

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Taxa Group: Freshwater fish

Species Group: Deepwater sculpin

Threats:

Reasons for the decline are unknown, but interactions with alewife and rainbow smelt are implicated. As recent as 1950, they were still abundant in Lake Ontario (Christie 1973). The decline of another sculpin, slimy sculpin, in Lake Ontario has been linked to the introduced animals in the lake, like zebra mussels and round goby (Owens et al. 1999). It is possible that the recovery of deepwater sculpin will be affected by these lake changes, particularly because of reduction of their food, an amphipod (Diporeia). This is a likely result of zebra mussels.

Trends:

Historically found in 2 waters and their range is declining (or gone or dangerously sparse) in 1 of the 2 watersheds. Population levels are unknown because levels are so low. It was thought to have been extirpated prior to its reoccurrence in 1996-2000.

SEQR - No Action Alternative:

Due to very low population numbers and little being known about its habitat requirements, a lack of attention and monitoring could jeopardize the remaining few populations. The Deepwater sculpin was thought to be extirpated prior to its re-occurrence in 1996-2000.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Deepwater sculpin (<i>Myoxocephalus thompsoni</i>)		X	S1	G5	E	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Deepwater sculpin (<i>Myoxocephalus thompsoni</i>)	SE Lake Ontario		SE Lake Ontario	Decreasing
	SW Lake Ontario			
	Lake Erie			

Species Distribution - Ecoregion				
Species	Historical		Current	Stability
Deepwater sculpin (<i>Myoxocephalus thompsoni</i>)	Great Lakes		Great Lakes	Decreasing

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Deepwater sculpin (Myoxocephalus thompsoni)	all	Lacustrine	cold water deep	unknown

Goal and Objectives for Deepwater sculpin

Goal: The existence of the deepwater sculpin in New York, at levels that enable the species to maintain self sustaining populations throughout it's historic range in the Southeastern Lake Ontario, Southwestern Lake Ontario and Lake Erie watersheds.

Objective 1 : Perpetuation of self sustaining populations in other waters in the Southeastern Lake Ontario Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 2 : Perpetuation of self sustaining populations in other waters in the Southwestern Lake Ontario Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 3 : Perpetuation of self sustaining populations in the waters in the Southeastern Lake Ontario Watershed.

Measure: *Number of populations maintained.*

Objective 4 : Perpetuation of self sustaining populations in the waters in the Southwestern Lake Ontario Watershed.

Measure: *Number of populations maintained.*

Recommended Actions

Population monitoring:

- * Continue sampling in Lake Ontario.

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Taxa Group: Freshwater fish
Species Group: Eastern sand darter

Threats:

The major cause of declines in eastern sand darter populations is loss of clean sandy substrate due to siltation. On some streams the construction of dams led to fragmentation of sand darter populations. In addition, impoundments created with the construction of these dams also act as settling basins which aggravate siltation problems. Stream pollution and stream channelization have also caused loss of eastern sand darter habitat. Problems in New York's populations are not evident, even though habitat protection was needed to control stream bank alterations in important areas. "Sea lamprey control practices were raised as a concern for eastern sand darters in the Poultney River. As a precaution for sand darters and certain other species, two lamprey treatments in the Poultney were conducted at lower than normal TFM concentrations. However, in-stream tests, and laboratory bioassays, indicate that treatments at normal concentrations would be appropriate."

Trends:

Historically found in 12 waters (still in 10) and their range is declining (or gone or dangerously sparse) in 2 of the Lake Erie subbasins, while it still occurs in all 4 watersheds. Abundance appears stable in northern New York and it is unknown in western New York. The early records show losses of this species from Cattaraugus and Cazenovia creeks, and this reduced the number of waters from 4 to 2. However there was a gain of 5 new waters in the last 20 years, and this puts the present number at 7 separate waters. Abundance was estimated (as catch per unit effort) over 4 years in four northern streams, and the numbers showed modest fluctuations (Bouton 1991). The population in Lake Erie may be affected by the recent invasion of round goby. Statewide, the number of number of times this species has been reported in the last 25 years exceeds 400, compared to only 4 reports prior to 1975. This shows an increase across all of the watersheds.

Essential habitat trend: appears stable, but specifics are unknown. Habitat degradation studies have been underway in the Poultney River (Facey and O'Brien 2003). The NYS recovery plan (Bouton 1988) said that five disjunct populations were needed, and the count is now seven, when including the ones in the St. Regis-Deer River, Grasse River and Conewango Creek (Allegheny).

SEQR - No Action Alternative:

Because their range is declining and in some cases the construction of dams has led to fragmentation of sand darter populations, a lack of management actions could jeopardize the future of Eastern Sand Darter populations 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 sand darter (<i>Ammocrypta pellucidum</i>)		X	S2	G3	T	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Eastern sand darter (<i>Ammocrypta pellucidum</i>)	NE Lake Ontario - St. Lawrence	Lake Erie	Decreasing
	Lake Champlain	NE Lake Ontario - St. Lawrence	Increasing
		Lake Champlain	Increasing
		Allegheny	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Eastern sand darter (<i>Ammocrypta pellucidum</i>)	Great Lakes	Great Lakes	Increasing
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Increasing
	Lower New England Piedmont	Lower New England Piedmont	Increasing
		Western Allegheny Plateau	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Eastern sand darter (<i>Ammocrypta pellucidum</i>)	all	Lacustrine	cold water deep	sand/gravel
	all	Riverine	cold water deep	sand/gravel

Goal and Objectives for Eastern sand darter

Goal: The existence of the Eastern sand darter in NY, at levels that enable the species to maintain self sustaining populations throughout it's historic range in the Lake Erie, Northeastern Lake Ontario-St. Lawrence and Lake Champlain watersheds.

Objective 1 : Perpetuation of self sustaining populations in other waters within the Allegheny Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 2 : Perpetuation of self sustaining populations in other waters within the Lake Champlain Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 3 : Perpetuation of self sustaining populations in other waters within the Lake Erie Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 4 : Perpetuation of self sustaining populations in other waters within the Northeastern Lake Ontario-St. Lawrence Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 5 : Perpetuation of self sustaining populations in water bodies in the Allegheny Watershed.

Measure: *Number of populations maintained.*

Objective 6 : Perpetuation of self sustaining populations in water bodies in the Lake Champlain Watershed.

Measure: *Number of populations maintained.*

Objective 7 : Perpetuation of self sustaining populations in water bodies in the Lake Erie Watershed.

Measure: *Number of populations maintained.*

Objective 8 : Perpetuation of self sustaining populations in water bodies in the Northeastern Lake Ontario-St Lawrence watershed.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat restoration:

- * Habitat losses and recommendations for restoration in the Poultney River, as studied in Vermont, will be applied as appropriate.

Relocation/reintroduction:

- * Examine possibilities for reintroducing to Cattaraugus Creek and for introducing to other St. Lawrence tributaries.

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Taxa Group: Freshwater fish
Species Group: Extirpated Fishes

Threats:

Several natural and human factors are believed to have caused the extirpation of these fish species including climatic variations, exotic species and watershed succession, as well as human perturbation which altered habitats. The continuance of these conditions and environment are thus a threat to re-establishment.

Trends:

The best current information available indicates that none of these species are still present in NY. For example, while Atlantic salmon are present in NY as a result of stocking of non-native strains, there is no known source of the native genetic Atlantic salmon resource. The same is true of paddlefish.

SEQR - No Action Alternative:

These species, believed to be extirpated from their historic waters in New York, will not return without active management, specifically habitat evaluation, monitoring and reintroduction by stocking.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Spoonhead sculpin (<i>Cottus ricei</i>)		X	SH	G5	E	Resident
Gilt darter (<i>Percina evides</i>)		X	SH	G4	E	Resident
Mud sunfish (<i>Acantharchus pomotis</i>)		X	SH	G5	T	Resident
Lake chubsucker (<i>Erimyzon sucetta</i>)		X	SH	G5	T	Resident
Silver chub (<i>Macrhybopsis storeriana</i>)		X	SH	G5	E	Resident
Shortjaw cisco (<i>Coregonus zenithicus</i>)			SX	G3	U	Resident
Shortnose cisco (<i>Coregonus reighardi</i>)			SX	G1	U	Resident
Kiyi (<i>Coregonus kiyi</i>)			SX	G3	U	Migratory
Paddlefish (<i>Polyodon spathula</i>)			SX	G4	EP	Migratory
Bloater (<i>Coregonus hoyi</i>)			SX	G4	U	Resident
Atlantic salmon (<i>Salmo salar</i>)					P	Migratory

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Atlantic salmon (<i>Salmo salar</i>)	SE Lake Ontario	Unknown	Unknown
	NE Lake Ontario - St. Lawrence		
	Lake Champlain		
Bloater (<i>Coregonus hoyi</i>)	SW Lake Ontario	Unknown	Unknown
	SE Lake Ontario		
Paddlefish (<i>Polyodon spathula</i>)	Allegheny	Unknown	Unknown
Kiyi (<i>Coregonus kiyi</i>)	SE Lake Ontario	Unknown	Unknown
Shortnose cisco (<i>Coregonus reighardi</i>)	SE Lake Ontario	Unknown	Unknown
Shortjaw cisco (<i>Coregonus zenithicus</i>)	Lake Erie	Unknown	Unknown
Silver chub (<i>Macrhybopsis storeriana</i>)	Lake Erie	Unknown	Unknown
	SE Lake Ontario		
Lake chubsucker (<i>Erimyzon sucetta</i>)	Lake Erie	Unknown	Unknown
	SW Lake Ontario		
Mud sunfish (<i>Acantharchus pomotis</i>)	Lower Hudson - Long Island Bays	Unknown	Unknown
Gilt darter (<i>Percina evides</i>)	Allegheny	Unknown	Unknown
Spoonhead sculpin (<i>Cottus ricei</i>)	Lake Erie	Unknown	Unknown
	SE Lake Ontario		

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Atlantic salmon (<i>Salmo salar</i>)	Great Lakes	Unknown	Unknown
	St. Lawrence-Lake Champlain Valley		

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Bloater (<i>Coregonus hoyi</i>)	Great Lakes	Unknown	Unknown
Paddlefish (<i>Polyodon spathula</i>)	High Allegheny Plateau Western Allegheny Plateau	Unknown	Unknown
Kiyi (<i>Coregonus kiyi</i>)	Great Lakes	Unknown	Unknown
Shortnose cisco (<i>Coregonus reighardi</i>)	Great Lakes	Unknown	Unknown
Shortjaw cisco (<i>Coregonus zenithicus</i>)	Great Lakes	Unknown	Unknown
Silver chub (<i>Macrhybopsis storeriana</i>)	Great Lakes	Unknown	Unknown
Lake chubsucker (<i>Erimyzon sucetta</i>)	Great Lakes	Unknown	Unknown
Mud sunfish (<i>Acantharchus pomotis</i>)	Lower New England Piedmont	Unknown	Unknown
Gilt darter (<i>Percina evides</i>)	Western Allegheny Plateau High Allegheny Plateau	Unknown	Unknown
Spoonhead sculpin (<i>Cottus ricei</i>)	Great Lakes	Unknown	Unknown

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Atlantic salmon (<i>Salmo salar</i>)	all	Lacustrine	cold water deep	sand/gravel bottom
	all	Lacustrine	cold water shallow	sand/gravel bottom
	Breeding	Riverine	coldwater stream	sand/gravel bottom
	Nursery/Juvenile	Riverine	coldwater stream	sand/gravel bottom
Bloater (<i>Coregonus hoyi</i>)	all	Lacustrine	cold water deep	mud bottom

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Bloater (Coregonus hoyi)	all	Lacustrine	cold water deep	sand/gravel bottom
Paddlefish (Polyodon spathula)	all	Lacustrine	unknown	unknown
	Breeding	Riverine	coldwater stream	sand/gravel bottom
	Feeding	Riverine	deepwater river	structure
Kiyi (Coregonus kiyi)	all	Lacustrine	cold water deep	mud bottom
	all	Lacustrine	cold water deep	sand/gravel bottom
	Feeding	Estuarine	deep subtidal	pelagic
	Feeding	Estuarine	shallow subtidal	pelagic
	Feeding	Marine	shallow subtidal	pelagic
	Nursery/Juvenile	Estuarine	intertidal	sand/gravel
	Nursery/Juvenile	Estuarine	shallow subtidal	pelagic
	Nursery/Juvenile	Estuarine	shallow subtidal	sand/gravel
Shortnose cisco (Coregonus reighardi)	all	Lacustrine	cold water deep	mud bottom
	all	Lacustrine	cold water deep	sand/gravel bottom
	all	Lacustrine	cold water shallow	mud bottom
	all	Lacustrine	cold water shallow	sand/gravel bottom
Shortjaw cisco (Coregonus zenithicus)	all	Lacustrine	cold water deep	mud bottom
	all	Lacustrine	cold water deep	sand/gravel bottom
Silver chub (Macrhybopsis storeriana)	Breeding	Lacustrine	unknown	unknown
	Breeding	Riverine	coldwater stream	mud bottom
	Breeding	Riverine	coldwater stream	sand/gravel bottom
	Feeding	Riverine	coldwater stream	mud bottom
	Feeding	Riverine	coldwater stream	sand/gravel bottom
Lake chubsucker (Erimyzon sucetta)	Breeding	Riverine	coldwater stream	sand/gravel bottom
	Feeding	Lacustrine	unknown	unknown
	Feeding	Riverine	coldwater stream	sand/gravel bottom
	Feeding	Riverine	coldwater stream	SAV
	Nursery/Juvenile	Riverine	coldwater stream	marsh
Mud sunfish (Acantharchus pomotis)	all	Palustrine	peatlands	bog/fen
	all	Riverine	coldwater stream	marsh

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Mud sunfish (<i>Acantharchus pomotis</i>)	all	Riverine	coldwater stream	mud bottom
Gilt darter (<i>Percina evides</i>)	all	Riverine	coldwater stream	sand/gravel bottom
Spoonhead sculpin (<i>Cottus ricei</i>)	all	Lacustrine	cold water deep	sand/gravel bottom

Goal and Objectives for Extirpated Fishes

Goal: The existence of rare fish species (now extirpated) in their native habitats, where present day conditions allow for their restoration.

Objective 1 : Complete an inventory of New York State waters that are recognized as the historic range for extirpated fish species.

Measure: *Completed inventory.*

Objective 2 : Re-establish, if feasible, populations of those endangered fish species now believed to be extirpated from New York.

Measure: *Number of lakes or rivers stocked.*

Recommended Actions

Habitat monitoring:

- * Inventories will be completed in all areas where restoration might be practical.

Relocation/reintroduction:

- * Paddlefish and Atlantic salmon populations will continue to be restored with hatchery stocking as described in management plans.

References

New York State Department of Environmental Conservation. 1994. Strategies and Near Term Operational Plan for the Management of Endangered, Threatened and Special Concern Fishes of New York. Division of Fish, Wildlife, and Marine Resources.

New York State Department of Environmental Conservation. 2001. Species Accounts for the Rare Fishes of New York. Division of Fish, Wildlife, and Marine Resources.

Smith, Lavett C., 1985. The Inland Fishes of New York State. New York State Department of Environmental Conservation.

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Taxa Group: Freshwater fish
Species Group: Gravel chub

Threats:

The increase in siltation is the reason for the extensive decimation of this species in Illinois (Smith 1979).

Trends:

Historically found in 2 waters and their range appears to be declining (or gone or dangerously sparse) in the 1 watershed. There appears to be a decline in abundance in the last 30 years and habitat is largely unknown. This trend causes imminent concern.

SEQR - No Action Alternative:

Because the Gravel chub’s range appears to be declining and with its abundance appearing to be declining over the last 30 years, lack of management actions including population monitoring could put existing New York populations at risk.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Gravel chub (Erimystax x-punctatus)		X	S1	G4	T	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Gravel chub (Erimystax x-punctatus)	Allegheny	Allegheny	Unknown

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Gravel chub (Erimystax x-punctatus)	High Allegheny Plateau	High Allegheny Plateau	Unknown

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Gravel chub (Erimystax x-punctatus)	all	Riverine	warmwater stream	sand/gravel

Goal and Objectives for Gravel chub

Goal: The existence of the gravel chub in New York, at levels that enable the species to maintain self sustaining populations throughout its historic range in the Allegheny watershed.

Objective 1 : Perpetuation of self sustaining populations in other waters in the Allegheny watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 2 : Perpetuation of self sustaining populations in the Allegheny River.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat research:

- * Inventory the habitat requirements of this species and its coinhabitants in the Allegheny and outside New York State, part of the same State Wildlife Grants project.

Habitat restoration:

- * Habitat losses and restoration are part of a State Wildlife Grants project from 2003 that are directed at the Allegheny watershed.

Population monitoring:

- * Additional survey in the Allegheny River and Tunungwant Creek is warranted as part of a State Wildlife Grants project in 2004.

References

- Becker, G.C. 1983. Fishes of Wisconsin. Univ. Wisconsin Press, Madison. 1052 pp.
- Becker, L.R. Jr. 1982. Fishes of the Allegheny River and its tributaries between Salamanca and Alleghany, Cattaraugus County, New York. MS thesis, St. Bonaventure Univ. St. Bonaventure, NY.
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- Smith, C.L. 1985. The inland fishes of New York State. New York State Dept. of Environmental Conservation. Albany, NY. 522 pp.
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Taxa Group: Freshwater fish
Species Group: Iowa darter

Threats:

Little is known; including the ecological requirements of this species.

Trends:

Unknown because thorough lake sampling has rarely been completed. This species has apparently declined in watersheds where extirpated, but thorough sampling has is not available from these few lakes. Historically found in over 36 waters (now in 15) and declining (or gone dangerously sparse) in 2 of the 10 watersheds. Little is also known about their status in tributaries of western Lake Ontario There were about 100 different site records from all sources examined, and only 13 of these records are since 1975. Most recent and historic records were from the Ontario, Oswego and Niagara watersheds. Species has been extirpated from Champlain and Allegheny watersheds.

SEQR - No Action Alternative:

Because little is known about the ecological requirements of this species and thorough lake sampling for the Iowa darter has rarely been completed, lack of management actions including surveying and sampling could put existing populations at risk.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Iowa darter (Etheostoma exile)		X	S2	G5	U	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Iowa darter (Etheostoma exile)	NE Lake Ontario - St. Lawrence	NE Lake Ontario - St. Lawrence	Unknown
	Allegheny	Lake Erie	Unknown
	SW Lake Ontario	SE Lake Ontario	Unknown
	SE Lake Ontario	SW Lake Ontario	Unknown
	Lake Champlain		

Species Distribution - Ecoregion			
Species	Historical	Current	Stability

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Iowa darter (Etheostoma exile)	Great Lakes	Great Lakes	Unknown
	Western Allegheny Plateau	St. Lawrence-Lake Champlain Valley	Unknown
	St. Lawrence-Lake Champlain Valley		

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Iowa darter (Etheostoma exile)	all	Lacustrine	warm water shallow	sand/gravel bottom
	all	Lacustrine	warm water shallow	SAV

Goal and Objectives for Iowa darter

Goal: The existence of the Iowa darter in NY, at levels that enable the species to maintain self sustaining populations throughout it's historic range in the Allegheny, SW L. Ontario, SE L. Ontario, L. Champlain & NE L Ontario- St. Lawrence watersheds.

Objective 1 : Establish an inventory of waters within the Allegheny Watershed, that are recognized as the current and historic range for the Iowa darter.

Measure: *Number of waters inventoried.*

Objective 2 : Establish an inventory of waters within the Lake Champlain Watershed, that are recognized as the current and historic range for the Iowa darter.

Measure: *Number of waters inventoried.*

Objective 3 : Establish an inventory of waters within the Northeastern Lake Ontario -St. Lawrence Watershed, that are recognized as the current and historic range for the Iowa darter.

Measure: *Number of waters inventoried.*

Objective 4 : Establish an inventory of waters within the Southeastern Lake Ontario Watershed, that are recognized as the current and historic range for the Iowa darter.

Measure: *Number of waters inventoried.*

Objective 5 : Establish an inventory of waters within the Southwestern Lake Ontario Watershed, that are recognized as the current and historic range for the Iowa darter.

Measure: *Number of waters inventoried.*

Objective 6 : Perpetuation of self sustaining populations in other waters in the Allegheny Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 7 : Perpetuation of self sustaining populations in other waters in the Lake Champlain Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 8 : Perpetuation of self sustaining populations in other waters in the Northeastern Lake Ontario-St. Lawrence Watershed where surveys show adequate population numbers

Measure: *Number of populations maintained.*

Objective 9 : Perpetuation of self sustaining populations in other waters in the Southeastern Lake Ontario Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 10 : Perpetuation of self sustaining populations in other waters in the Southwestern Lake Ontario Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 11 : Perpetuation of self sustaining populations in water bodies in the Allegheny Watershed.

Measure: *Number of populations maintained.*

Objective 12 : Perpetuation of self sustaining populations in water bodies in the Lake Champlain Watershed.

Measure: *Number of populations maintained.*

Objective 13 : Perpetuation of self sustaining populations in water bodies in the Northeastern Lake Ontario- St. Lawrence Watershed.

Measure: *Number of populations maintained.*

Objective 14 : Perpetuation of self sustaining populations in water bodies in the Southeastern Lake Ontario watershed.

Measure: *Number of populations maintained.*

Objective 15 : Perpetuation of self sustaining populations in water bodies in the Southwestern Lake Ontario watershed.

Measure: *Number of populations maintained.*

Recommended Actions

Fact sheet:

- * Develop fact sheet for DEC website

Habitat research:

- * Determine ecological requirements of this species

Population monitoring:

- * Monitor for presence and ecological requirements of this species

References

- Copes, Frederick A. 2004. The Iowa darter *Etheostoma exile* Girard, The North American Native Fishes Association, www.nanfa.org
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- Lee, D.S., et al. 1980. Atlas of North American freshwater fishes. North Carolina State Mus. of Nat. His. 867 pp.

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Taxa Group: Freshwater fish
Species Group: Ironcolor shiner

Threats:

Only a single population of ironcolor shiner is found in New York (the Basher Kill Wetlands). Hence it is vulnerable to extirpation in this State, should a catastrophic event occur. Fish kills have occurred in midwinter and late summer from oxygen depletion, as early as 1961 (Hermes, undated).

The large marsh complex, is owned and managed by NYSDEC as a wildlife management area (Hermes undated). Water levels in the marsh are controlled by a large sand/gravel accumulation (and to a lesser degree a short concrete structure) at the lower end of the wetland, and major changes in this could be detrimental to the ironcolor shiner. The management plan recognizes this threat to the entire wetland system and discusses preventive measures.

Trends:

Historically found in 2 waters and their range is declining (or gone or dangerously sparse) in 1 of 2 watersheds. Abundance appears to be stable, but the critical parts of its habitat and its trend over time in the Basher Kill has never been studied.

SEQR - No Action Alternative:

With only a single population of the Ironcolor shiner in New York and a vulnerability to extirpation, lack of management action (surveying and monitoring) could jeopardize the existing Ironcolor shiner population in New York State.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Ironcolor shiner (<i>Notropis chalybaeus</i>)			S1	G4	U SC	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Ironcolor shiner (<i>Notropis chalybaeus</i>)	Lower Hudson - Long Island Bays Delaware		Delaware	Stable

Species Distribution - Ecoregion			
Species	Historical	Current	Stability

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Ironcolor shiner (Notropis chalybaeus)	North Atlantic Coast High Allegheny Plateau	High Allegheny Plateau	Stable

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Ironcolor shiner (Notropis chalybaeus)	all	Riverine	deepwater river	sand/gravel

Goal and Objectives for Ironcolor shiner

Goal: The existence of the ironcolor shiner in New York, at levels that enable the species to maintain self sustaining populations throughout its historic range in the Lower Hudson-Long Island watersheds.

Objective 1 : Perpetuation of self sustaining populations in other waters in the Lower Hudson- Long Island watershed where surveys show adequate population numbers (e.g.. Delaware River).

Measure: *Number of populations maintained.*

Objective 2 : Perpetuation of self sustaining populations in the Basher Kill.

Measure: *Number of populations maintained.*

Recommended Actions

Population monitoring:

- * Surveys of the Delaware River and lower section of the Basher Kill should be completed.

References

- Becker, G.C. 1983. Fishes of Wisconsin. Univ. Wisconsin Press, Madison. 1052 pp.
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- Smith, C.L. 1985. The inland fishes of New York State. New York State Dept. of Environmental Conservation. Albany, NY. 522 pp.
- Smith, P.W. 1979. The Fishes of Illinois. Univ. Illinois Press, Urbana. 314 pp.

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Taxa Group: Freshwater fish
Species Group: Lake Sturgeon

Threats:

Although it is difficult to determine the specific causes of lake sturgeon population declines, several factors have been blamed including over-exploitation of stocks due to high demand for their eggs (caviar) and smoked fish; construction of dams that cut off spawning and nursery areas; and possibly by-products of urban and rural development such as pollution and channelization that caused degradation of habitat. Recent die-offs in Lakes Erie and Ontario are due to Botulism from eating gobies and zebra mussels.

Trends:

Historically found in 8 waters and its range is declining (or gone or dangerously sparse) in 6 of the 9 watersheds. Abundance is low but perhaps stable in the St. Lawrence and Grasse rivers. There may be increases in abundance in the lower Niagara but they are still low. Recovery appears to be underway in these stocked waters although it is not known if stocked fish will successfully reproduce and re-establish robust populations. Habitat appears to be stable.

SEQR - No Action Alternative:

Because the range of the Lake sturgeon is declining, believed to be the result of several factors, lack of active management would jeopardize current populations.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Lake sturgeon (<i>Acipenser fulvescens</i>)		X	S1S2	G3G4	T	Migratory

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Lake sturgeon (<i>Acipenser fulvescens</i>)	Lake Erie		Lake Erie	Unknown
	SE Lake Ontario		SE Lake Ontario	Increasing
	NE Lake Ontario - St. Lawrence		NE Lake Ontario - St. Lawrence	Increasing
	Lake Champlain		Lake Champlain	Increasing

Species Distribution - Ecoregion			
Species	Historical	Current	Stability

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Lake sturgeon (Acipenser fulvescens)	Great Lakes	Great Lakes	Increasing
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Increasing

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Lake sturgeon (Acipenser fulvescens)	all	Lacustrine	warm water deep	sand/gravel
	all	Riverine	warm water deep	sand/gravel
	Breeding	Riverine	warmwater stream	rocky bottom

Goal and Objectives for Lake Sturgeon

Goal: The existence of the lake sturgeon in New York, at levels that enable the species to maintain self sustaining populations throughout it's historic range in the Lake Erie, SE Lake Ontario, NE Lake Ontario-St. Lawrence and Lake Champlain watersheds.

Objective 1 : Perpetuation of self-sustaining populations in a select group of waters in the Lake Champlain Watershed.

Measure: *Number of populations maintained.*

Objective 2 : Perpetuation of self-sustaining populations in a select group of waters in the Lake Erie Watershed.

Measure: *Number of populations maintained.*

Objective 3 : Perpetuation of self-sustaining populations in a select group of waters in the Northeastern Lake Ontario - St. Lawrence Watershed.

Measure: *Number of populations maintained.*

Objective 4 : Perpetuation of self-sustaining populations in a select group of waters in the Southeastern Lake Ontario Watershed.

Measure: *Number of populations maintained.*

Objective 5 : Re-establish self-sustaining populations in Black Lake, Oswegatchie and St. Regis Rivers & other waters in the NE L. Ont./ St. Law. Watershed where surveys determine the species to be absent, or of sufficient abundance, & where restoration is feasible.

Measure: *Number of populations maintained.*

Objective 6 : Re-establish self-sustaining populations in Cayuga and Oneida Lakes, Genesee River and in other waters in the SE Lake Ontario Watershed where surveys determine the species to be absent, or of sufficient abundance, and where restoration is feasible.

Measure: *Number of populations maintained.*

Objective 7 : Re-establish self-sustaining populations in the Lake Champlain Watershed where surveys determine the species to be absent, or of sufficient abundance, and where restoration is feasible.

Measure: *Number of populations maintained.*

Objective 8 : Re-establish self-sustaining populations in the Lake Erie Watershed where surveys determine the species to be absent, or of sufficient abundance, and where restoration is feasible.

Measure: *Number of populations maintained.*

Recommended Actions

Captive breeding:

- * Pyatskowitz (1998) recommended that restoration programs with hatchery stocking include a genetic evaluation. Some preliminary comparisons of lake sturgeon genetics in the St. Lawrence R. are reported by McQuown et al.(1999 oral). Additional studies are needed to determine if there are differences between these and stocks in Lakes Erie and Champlain.

Habitat restoration:

- * The relicensing of the Niagara Mohawk project at Niagara Falls provides an opportunity to improve the habitats and flow conditions for sturgeon that have been impaired in this area, so habitat should be restored.
- * Stocking: evaluations of hatchery rearing and experimental plantings should be conducted in the Oswegatchie, St. Regis and Genesee Rivers and Black, Oneida and Cayuga Lakes.
- * Spawning habitat should be restored in the St. Lawrence River.

Statewide management plan:

- * Develop and implement a plan that continues efforts to return this species back to its full range and abundance. Target waters would be tributary bays of Lake Champlain, and tributaries of Lakes Ontario and Erie and the St. Lawrence River.

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Taxa Group: Freshwater fish

Species Group: Longear sunfish

Threats:

In New York, several populations appear to have disappeared. Biologists attribute the decline in this sunfish's numbers to several causes including: siltation, water quality deterioration and hybridization with the pumpkinseed. This opinion on hybridization is based on Smith (1985) and on 1988 sampling of Bouton. However, hybridization is not commonly reported elsewhere in the species range, with a few exceptions described in northern Wisc. by Ehlinger (see Lyons et al. 2000) and in Oklahoma with green sunfish and bluegill and in Great Lakes drainage with pumpkinseed (Childers 1967). Perhaps an introduced or spreading species, the green sunfish, is responsible, as they were not caught here in 1975 but were abundant in 1998 collections. Hybrids have been caught recently in one of the remaining two areas for longear sunfish in NYS, at a catch frequency almost as high as the frequency of longear sunfish (that are not hybrids). Several specimens from other parts of the state were re-examined by Smith and were misidentified.

Trends:

Historically found in 6 waters (still in 2) and their range is declining (or gone or dangerously sparse) in 2 of the 3 watersheds. Population levels are largely unknown in two very small sections of two streams, and habitat trends are unknown. There are a total of 13 authenticated catches since 1974, with 12 in Tonawanda Creek, and one in Johnson Creek (since 2003). This trend causes imminent concern.

SEQR - No Action Alternative:

Because several of their populations appear to have disappeared and with concerns over their vulnerability to water quality deterioration and hybridization with other sunfish, a lack of management action especially surveying and monitoring, could endanger existing populations.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Longear sunfish (<i>Lepomis megalotis</i>)			S1	G5	T	Resident

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Longear sunfish (<i>Lepomis megalotis</i>)	Lake Erie	Lake Erie	Unknown
	SW Lake Ontario	SW Lake Ontario	Unknown
	SE Lake Ontario		

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Longear sunfish (<i>Lepomis megalotis</i>)	Great Lakes	Great Lakes	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Longear sunfish (<i>Lepomis megalotis</i>)	all	Riverine	warmwater stream	sand/gravel bottom

Goal and Objectives for Longear sunfish

Goal: The existence of the longear sunfish in New York, at levels that enable the species to maintain self sustaining populations throughout it's historic range in the Southeastern Lake Ontario, Southwestern Lake Ontario and Lake Erie watersheds.

Objective 1 : Establish an inventory of waters within the Lake Erie Watershed, that are recognized as the current and historic range for the longear sunfish.

Measure: *Number of waters inventoried.*

Objective 2 : Establish an inventory of waters within the Southeastern Lake Ontario Watershed, that are recognized as the historic range for the longear sunfish.

Measure: *Number of waters inventoried.*

Objective 3 : Establish an inventory of waters within the Southwestern Lake Ontario Watershed, that are recognized as the historic range for the longear sunfish.

Measure: *Number of waters inventoried.*

Objective 4 : Perpetuation of self sustaining populations in the Lake Erie Watershed.

Measure: *Number of populations maintained.*

Objective 5 : Perpetuation of self sustaining populations in the waters in the Southeastern Lake Ontario watershed.

Measure: *Number of populations maintained.*

Objective 6 : Perpetuation of self sustaining populations in Tonawanda Creek and at least one tributary of Southwestern Lake Ontario Watershed.

Measure: *Number of populations maintained.*

Recommended Actions

Population monitoring:

- * Continue surveys to understand its current distribution of the species.

Statewide management plan:

- * A State Wildlife Grants funded project from 2004, by SUNY Brockport is designed to provide habitat and population assessment as well as to develop a recovery plan.

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Taxa Group: Freshwater fish
Species Group: Longhead darter

Threats:

Declines in the populations in other areas have been caused by pollution, siltation and collection by hobbyists (Jenkins and Burkhead 1994).

Trends:

Historically found in 5 waters and their range is not declining (or gone or dangerously sparse) in the 1 watershed. The population appears to be stable in the eastern subbasin of the Allegheny but unknown in French Creek. In New York it has been in 10 collections before 1940, in 13 collections between 1972 and 1992, and in 20 samples from 1998-2000. This can not be characterized as a decrease even though the French Creek population is uncertain.

SEQR - No Action Alternative:

With uncertainty of the status of the French Creek population and due to its potential vulnerability (declines in other areas have been documented) lack of management actions including population monitoring could put existing New York state populations at risk.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Longhead darter (<i>Percina macrocephala</i>)		X	S1	G3	T	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Longhead darter (<i>Percina macrocephala</i>)	Allegheny	Allegheny	Unknown

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Longhead darter (<i>Percina macrocephala</i>)	High Allegheny Plateau	High Allegheny Plateau	Unknown
	Western Allegheny Plateau	Western Allegheny Plateau	Unknown

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Longhead darter (Percina macrocephala)	all	Riverine	warmwater stream	sand/gravel

Goal and Objectives for Longhead darter

Goal: The existence of the longhead darter in New York, at levels that enable the species to maintain self sustaining populations throughout its historic range in the Allegheny Watershed.

Objective 1 : Establish an inventory of waters within the Allegheny Watershed, that are recognized as the current and historic range for the longhead darter.

Measure: *Number of waters inventoried.*

Objective 2 : Perpetuation of self sustaining populations in other waters in the Allegheny Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 3 : Perpetuation of self sustaining populations in water bodies in the Allegheny Watershed.

Measure: *Number of populations maintained.*

Recommended Actions

Population monitoring:

- * This species has not been caught in recent years in French Creek, and occasional sampling should continue for updating records in both this and the central part of the Allegheny basin.

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Taxa Group: Freshwater fish
Species Group: Mooneye

Threats:

While the exact causes of population declines are not known, it is due in part to increased siltation occurring in clear water areas where mooneye normally occur.

Trends:

Historically found in 8 waters and their range is not declining (or gone dangerously sparse) in 3 of the 6 watersheds. Abundance seems to be increasing in Black Lake, the section of the Oswegatchie River near Heuvelton and eastern Lake Erie; abundance may be stable in Lake Champlain; and there will be no recovery in the Allegheny River without reintroduction from a distant source. Habitat in the smaller historic waters is probably still suitable.

SEQR - No Action Alternative:

With populations showing declines, due in part to increased siltation, lack of active management such as population monitoring and habitat restoration would negatively impact maintaining self-sustaining populations.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Mooneye (<i>Hiodon tergisus</i>)		X	S1	G5	T	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Mooneye (<i>Hiodon tergisus</i>)	NE Lake Ontario - St. Lawrence		NE Lake Ontario - St. Lawrence	Unknown
	Allegheny		Lake Champlain	Unknown
	Lake Erie		Lake Erie	Unknown
	Lake Champlain			

Species Distribution - Ecoregion			
Species	Historical	Current	Stability

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Mooneye (<i>Hiodon tergisus</i>)	High Allegheny Plateau	St. Lawrence-Lake Champlain Valley	Unknown
	Great Lakes	Great Lakes	Unknown
	St. Lawrence-Lake Champlain Valley	Northern Appalachian/Boreal Forest	Unknown
	Northern Appalachian/Boreal Forest		

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Mooneye (<i>Hiodon tergisus</i>)	all	Lacustrine	warm water shallow	sand/gravel
	all	Palustrine	warmwater stream	sand/gravel

Goal and Objectives for Mooneye

Goal: The existence of the mooneye, at levels that enable the species to maintain self sustaining populations throughout it's historic range in the Northeastern Lake Ontario-St. Lawrence, Lake Erie, Allegheny and Lake Champlain.

Objective 1 : Perpetuation of self sustaining populations in a select group of waters in the Lake Champlain Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 2 : Perpetuation of self sustaining populations in a select group of waters in the Allegheny Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 3 : Perpetuation of self sustaining populations in a select group of waters in the Lake Erie Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 4 : Perpetuation of self sustaining populations in a select group of waters in the Northeastern Lake Ontario-St. Lawrence Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 5 : Re-establish self sustaining populations in other waters where surveys determine the species to be absent, or of insufficient abundance, and where restoration is feasible (possible candidate being the mouth of the Oswegatchie River).

Measure: *Number of populations maintained.*

Objective 6 : Re-establish self sustaining populations in other waters where surveys determine the species to be absent, or of insufficient abundance, and where restoration is feasible (possible candidate being Tonawanda Creek).

Measure: *Number of populations maintained.*

Objective 7 : Re-establish self sustaining populations in the Allegheny River.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat restoration:

- * Restoration of spawning areas may be accomplished with cobble and rubble placed in streams like that done for walleye spawning. Examples near Black Lake include the Oswegatchie River at Ogdensburg and Fish Creek at Pope Mills.

Population monitoring:

- * The status of the Black Lake and the Lake Erie populations need to be evaluated, and critical habitats need to be identified.

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Taxa Group: Freshwater fish
Species Group: Mountain brook lamprey

Threats:

According to The Nature Conservancy (1994), a number of potential threats to French Creek's water quality and aquatic fauna have been identified:

- Siltation from: overgrazing, row cropping, road construction, and land clearing.
- Elevated nutrients from: dairy animals wastes, sewage plant failure and fertilizer spills.
- Pesticide threats from: catastrophic events and agricultural applications.

Mountain brook lamprey has a general history of depletion, localization and extirpation in other areas (Trautman 1981). Vladykov (1973) summarized reasons for protecting non-parasitic lampreys.

Trends:

Historically found in 2 (or possibly 5) waters and their range is not declining in the one watershed. Little is known about abundance in New York and there is no knowledge of decline.

SEQR - No Action Alternative:

With New York populations being limited to just a few waters and because the Mountain brook lamprey is very sensitive to pollution threats and its present population levels are unknown, lack of management action (sampling, monitoring and evaluation) could jeopardize existing populations.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Mountain brook lamprey (<i>Ichthyomyzon greeleyi</i>)		X	S1	G3G4	U SC	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Mountain brook lamprey (<i>Ichthyomyzon greeleyi</i>)	Allegheny		Allegheny	Unknown

Species Distribution - Ecoregion				
Species	Historical		Current	Stability
Mountain brook lamprey (<i>Ichthyomyzon greeleyi</i>)	Western Allegheny Plateau		Western Allegheny Plateau	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Mountain brook lamprey (Ichthyomyzon greeleyi)	all	Riverine	coldwater stream	sand/gravel

Goal and Objectives for Mountain brook lamprey

Goal: The existence of the Mountain brook lamprey in New York, at levels that enable the species to maintain self sustaining populations throughout its historic range in the Allegheny Watershed.

Objective 1 : Establish an inventory of waters within the Allegheny Watershed, that are recognized as the historic range for the Mountain Brook Lamprey.

Measure: *Number of waters inventoried.*

Objective 2 : Perpetuation of self sustaining populations in French Creek and in other waters of the Allegheny watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat research:

- * Inventory the habitat requirements of this species and protect critical areas, as is part of the State Wildlife Grants project in 2003 focusing on the Allegheny watershed. These efforts will be coordinated with similar programs in place by The Nature Conservancy.

Life history research:

- * Also specific information of its life history in the French and Olean Creek systems is needed. Studies in Pennsylvania on the native lamprey species (J. Stauffer, Penn. State Univ.) were to be completed in 1998, and this will provide valuable insight. Sampling in the Allegheny tributaries in 2000 by the author has extended the known range of the genus Ichthyomyzon, but there is yet a limited basis to confirm which species (I. greeleyi or I. bdellium). More sampling is needed to obtain adults which can be identified to species.

Population monitoring:

- * More information is needed for this lamprey regarding the significance of its occurrence in French Creek.

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Taxa Group: Freshwater fish

Species Group: Ninespine stickleback - inland

Threats:

Unknown

Trends:

Historically found in two of the Finger Lakes plus Lake Ontario. It is uncertain whether its range is declining or extirpated. There are two other dubious reports of occurrence in streams. There have been no inland collections of ninespine stickleback since 1975. All recent collections have been in the Marine District.

SEQR - No Action Alternative:

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
N. American ninespine stickleback (<i>Pungitius pungitius</i>)					U	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
N. American ninespine stickleback (<i>Pungitius pungitius</i>)	SW Lake Ontario		SW Lake Ontario	Unknown
	SE Lake Ontario		SE Lake Ontario	Unknown
	NE Lake Ontario - St. Lawrence		NE Lake Ontario - St. Lawrence	Unknown

Species Distribution - Ecoregion				
Species	Historical		Current	Stability
N. American ninespine stickleback (<i>Pungitius pungitius</i>)	Great Lakes		Great Lakes	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

N. American ninespine stickleback (*Pungitius pungitius occidentalis*)

all Lacustrine warm water deep pelagic

Goal and Objectives for Ninespine stickleback - inland

Goal: Maintain the existence of ninespine stickleback in New York at self-sustaining population levels throughout its historic range in SW L. Ontario, SE L. Ontario, and NE L. Ontario-St. Lawrence watersheds.

Objective 1 : Establish an inventory of ninespine stickleback in the inland waters of New York.

Measure: *Creation of inventory*

Objective 2 : Maintain self-sustaining population of ninespine stickleback in at least one historic inland water.

Measure: *Number of self-sustaining populations*

Recommended Actions

Population monitoring:

- * Sampling in the two lakes where ninespine stickleback has been reported and in Lake Ontario.

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Taxa Group: Freshwater fish
Species Group: Ohio lamprey

Threats:

Populations of Ohio lamprey in New York are confirmed known only in French, Conewango, Olean and Oswayo Creeks and the Allegheny River. The Kinzua Dam in Pennsylvania impounds the Allegheny River into New York, and it likely prohibits effective interaction between the isolated New York (and downstream in Pennsylvania) groups of the Ohio lamprey from its larger below-dam core population. This could limit the potential genetic diversity in the future.

An additional threat to both lamprey populations and to their essential habitat is pollution, primarily agricultural in French Creek and industrial and domestic in the Allegheny River.

Trends:

Historically found in 5 waters and its range is not declining (or gone or dangerously sparse) in the one watershed. Abundance trends are unknown except there is no knowledge of decline, and habitat trends are unknown.

SEQR - No Action Alternative:

With abundance trends largely unknown and the number of identified populations limited to a few waters, lack of management actions (sampling, monitoring and protection) could endanger the perpetuation of the Ohio lamprey in New York.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Ohio lamprey (<i>Ichthyomyzon bdellium</i>)		X	S1	G3G4	U	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Ohio lamprey (<i>Ichthyomyzon bdellium</i>)	Allegheny		Allegheny	Stable

Species Distribution - Ecoregion				
Species	Historical		Current	Stability
Ohio lamprey (<i>Ichthyomyzon bdellium</i>)	Western Allegheny Plateau		Western Allegheny Plateau	Stable
	High Allegheny Plateau		High Allegheny Plateau	Stable

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Ohio lamprey (<i>Ichthyomyzon bdellium</i>)	Breeding	Riverine	coldwater stream	sand/gravel bottom
	Feeding	Riverine	coldwater stream	sand/gravel bottom
	Nursery/Juvenile	Riverine	coldwater stream	other

Goal and Objectives for Ohio lamprey

Goal: The existence of the Ohio lamprey in New York, at levels that enable the species to maintain self sustaining populations throughout its historic range in the Allegheny Watershed.

Objective 1 : Perpetuation of self sustaining populations in Allegheny River, Olean Creek, Oswayo Creek, Conewango Creek and French Creek, and in other waters where surveys show adequate population numbers.

Measure: *Number of populations maintained over 10 years.*

Recommended Actions

Life history research:

- * Also specific information of its life history in the French Creek system is needed. Studies in Pennsylvania on the native lamprey species (J. Stauffer, Penn State University) were to be completed in 1998, and this will provide valuable insight. Sampling in the Allegheny tributaries in 2000 by the author has extended the known range of the genus *Ichthyomyzon*, but there is yet no basis to confirm which species (*I. greeleyi* or *I. Bdellium*).

Population monitoring:

- * More sampling in other tributaries of the Allegheny system (with lamprey sampling gear) may show them more widely distributed than presently thought.

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Taxa Group: Freshwater fish
Species Group: Pugnose shiner

Threats:

This species is extremely sensitive to turbidity, and this explains why its range has been reduced. In one Wisconsin lake, it disappeared after eutrophication and invasion of Eurasian milfoil (Lyons 1989).

Trends:

Historically found in 6 waters (still in 4) and otherwise their range is not declining (or gone or dangerously sparse) in the 2 watersheds. Their abundance appears to be stable in the St. Lawrence, but the species is apparently gone from the areas near Cayuga Lake and Irondequoit Bay. IN Sodus Bay, both the habitat and population are vulnerable to change and are poorly understood. Sampling in the 1990s documented pugnose shiner in a 20 mile reach of the Thousand Islands area (Picton Island, Deer Island and Oak Island). It was also caught in the nearby Eel Bay of Wellesley Island in 1976. Bays along the south and east shores of Lake Ontario may also contain them, but sampling directed at this species in 25 bays in 1996-97 caught them only in Sodus Bay. Similar efforts to catch them in Cayuga Lake (mouth of Fall Creek) were unsuccessful in 1997, and current habitat conditions do not look favorable there or in Montezuma Marsh.

SEQR - No Action Alternative:

Because of the Pugnose shiner’s sensitivity to habitat impairment and with very little known about where they live, lack of management action, notably conducting life history studies and improving sampling techniques could put existing populations in jeopardy.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Pugnose shiner (<i>Notropis anogenus</i>)			S1	G3	E	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Pugnose shiner (<i>Notropis anogenus</i>)	SE Lake Ontario		SE Lake Ontario	Stable
	NE Lake Ontario - St. Lawrence		NE Lake Ontario - St. Lawrence	Stable

Species Distribution - Ecoregion				
Species	Historical		Current	Stability

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Pugnose shiner (<i>Notropis anogenus</i>)	Great Lakes	Great Lakes	Stable
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Stable

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Pugnose shiner (<i>Notropis anogenus</i>)	all	Lacustrine	warm water shallow	sand/gravel
	all	Riverine	warm water shallow	sand/gravel

Goal and Objectives for Pugnose shiner

Goal: The existence of the pugnose shiner in New York, at levels that enable the species to maintain self sustaining populations throughout its historic range in the Southeastern Lake Ontario and Northeastern Lake Ontario-St. Lawrence watersheds.

Objective 1 : Perpetuation of self sustaining populations in bay (s) in Lake Ontario.

Measure: *Number of populations maintained.*

Objective 2 : Perpetuation of self sustaining populations in other waters in the Northeastern Lake Ontario-St. Lawrence watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 3 : Perpetuation of self sustaining populations in other waters in the Southeastern Lake Ontario Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 4 : Perpetuation of self sustaining populations in the St. Lawrence River.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat research:

- * Inventory the habitat requirement requirements of this species and note the influence of the invasive milfoil.

Life history research:

- * Life history studies need to be done, and sampling techniques must be improved in order to carry out surveys. We know very little about where they live in large water bodies.

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Taxa Group: Freshwater fish
Species Group: Redfin shiner

Threats:

The species is not highly sensitive to environmental change in other parts of its range, but it is included on the “watch list” in Wisconsin (Becker 1983). In Iowa it has been used as a bait minnow (Scott and Crossman 1973), and in central Missouri, it is the most common minnow (Pflieger 1997).

Trends:

Historically found in 11 waters (now in 3) and declining (or gone or dangerously sparse) in all 3 of the watersheds. The population appears stable in very small areas of three streams, and the status in other areas like the Niagara River and Twelvemile Creek is unknown. Smith says it is locally common at only a few sites. This trend causes imminent concern.

SEQR - No Action Alternative:

Due to a lack of knowledge of the status of the redfin shiner in New York, a lack of management, including population monitoring, could jeopardize the future of self-sustaining populations.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Redfin shiner (<i>Lythrurus umbratilis</i>)			S2	G5	U SC	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Redfin shiner (<i>Lythrurus umbratilis</i>)	SW Lake Ontario		SW Lake Ontario	Decreasing
	Lake Erie		Lake Erie	Decreasing

Species Distribution - Ecoregion				
Species	Historical		Current	Stability
Redfin shiner (<i>Lythrurus umbratilis</i>)	Great Lakes		Great Lakes	Decreasing

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Redfin shiner (Lythrurus umbratilis)	all	Riverine	warmwater stream	sand/gravel

Goal and Objectives for Redfin shiner

Goal: The existence of the redfin shiner in New York, at levels that enable the species to maintain self sustaining populations throughout its historic range in the Lake Erie and Southwestern Lake Ontario watersheds.

Objective 1 : Establish an inventory of waters within the Lake Erie watershed that are recognized as the historic range for the redfin shiner.

Measure: *Number of waters inventoried.*

Objective 2 : Perpetuation of self sustaining populations (in the Lake Erie Watershed) in other waters where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 3 : Perpetuation of self sustaining populations (in the Southwestern Lake Ontario Watershed) in other waters where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 4 : Perpetuation of self sustaining populations in Eighteen Mile Creek .

Measure: *Number of populations maintained.*

Objective 5 : Perpetuation of self sustaining populations in Johnson Creek

Measure: *Number of populations maintained.*

Objective 6 : Perpetuation of self sustaining populations in Twelvemile creek

Measure: *Number of populations maintained.*

Objective 7 : Perpetuation of self sustaining populations in the Barge Canal near Lockport.

Measure: *Number of populations maintained.*

Objective 8 : Perpetuation of self sustaining populations in the Carlton Lake.

Measure: Number of populations maintained.

Recommended Actions

Habitat research:

- * Inventory and assess losses of habitat and of this species in tributaries of Western Lake Ontario. This would be followed by considering remediation efforts.

Population monitoring:

- * Its status in New York needs to be determined. The circumstance of one of the recent records for both the redfin shiner and the longear sunfish being from the same locations, Tonawanda Creek near Millersport and Johnson Creek near Kuckville, deserves further study. Sampling at several sites in Tonawanda Creek and the Niagara River in 1998-2000 did not confirm of its presence there.

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Taxa Group: Freshwater fish
Species Group: River redhorse

Threats:

Jenkins and Burkhead (1994) feel this species is one of the largest and least numerous species. Also it is and trophically and behaviorally the most divergent of the redhorse species. It has fared poorly over the last 100 years, because of impoundments, siltation and pollution. Parker (1988) felt it has the most restrictive habitat requirements of the redhorse species. Identification requires very thorough examinations.

Trends:

Historically found in 4 waters and their range is not declining (or gone or dangerously sparse) in the 1 watershed. The population has been recognized here for 20 years and is poorly understood.

SEQR - No Action Alternative:

With the river redhorse's restrictive habitats and difficulty to be clearly identified lack of management actions, particularly monitoring, could jeopardize current populations.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
River redhorse (<i>Moxostoma carinatum</i>)		X	S2?	G4	U	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
River redhorse (<i>Moxostoma carinatum</i>)	Unknown	Allegheny	Unknown

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
River redhorse (<i>Moxostoma carinatum</i>)	Unknown	High Allegheny Plateau	Unknown

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
River redhorse (<i>Moxostoma carinatum</i>)	all	Riverine	warmwater stream	sand/gravel

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
River redhorse (<i>Moxostoma carinatum</i>)				

Goal and Objectives for River redhorse

Goal: The existence of the river redhorse in New York, at levels that enable the species to maintain self sustaining populations throughout its historic range in the Allegheny Watershed.

Objective 1 : Establish an inventory of waters within the Allegheny watershed that are recognized as the historic range for the river redhorse.

Measure: *Number of waters inventoried.*

Objective 2 : Perpetuation of self sustaining populations in the Allegheny Watershed where surveys show adequate population numbers

Measure: *Number of populations maintained.*

Recommended Actions

Habitat research:

- * Inventory the habitat requirements of this species and compare it to what's available in the literature, as part of the State Wildlife Grants project of 2004.

Habitat restoration:

- * Habitat losses and restoration are part of a State Wildlife Grants project from 2003 that are directed at the Allegheny watershed.

Population monitoring:

- * Surveys of the Allegheny River and Allegheny Reservoir during the time of spawning should be completed, and representative samples of all redhorse should be closely examined or preserved.

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Taxa Group: Freshwater fish

Species Group: Round whitefish

Threats:

This species has diminished from, and may be vulnerable to several factors including, competition and predation from introduced fish species (yellow perch, smallmouth bass and lake whitefish). An additional factor could be acid rain. Intensive netting has collapsed and eliminated round whitefish from some lakes (D. Josephson, Cornell Univ. Ithaca). Angler catches are probably not a threat to their survival, even though some angling was reported by (Pfeiffer 1979).

Trends:

Historically found in 68 waters (now in 8) and their range has declined (or gone or dangerously sparse) in one (St. Lawrence) of the 9 watersheds. There appears to be no continuing loss of waters they inhabit in the last 20 years, and hatchery efforts have added waters where reproduction may occur. Because the habitat trends are unknown, concern remains to be high. This trend causes imminent concern.

SEQR - No Action Alternative:

Due to the Round whitefish's vulnerability to other introduced fish species, and perhaps acid rain, lack of active management will likely prevent the establishment of self-sustaining populations in historic waters.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Round whitefish (<i>Prosopium cylindraceum</i>)		X	S1S2	G5	E	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Round whitefish (<i>Prosopium cylindraceum</i>)	NE Lake Ontario - St. Lawrence		NE Lake Ontario - St. Lawrence	Decreasing
	Lake Champlain		Lake Champlain	Decreasing
	Upper Hudson		Upper Hudson	Decreasing

Species Distribution - Ecoregion				
Species	Historical		Current	Stability

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Round whitefish (<i>Prosopium cylindraceum</i>)	Great Lakes	Great Lakes	Decreasing
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Decreasing

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Round whitefish (<i>Prosopium cylindraceum</i>)	all	Lacustrine	cold water deep	sand/gravel bottom

Goal and Objectives for Round whitefish

Goal: Maintain the existence of the round whitefish in New York at levels that enable self sustaining populations throughout it's historic range in the NE Lake Ontario -St. Lawrence, Lake Champlain and Upper Hudson watersheds.

Objective 1 : Perpetuation of self sustaining populations in targeted waters in the Lake Champlain Watershed.

Measure: *Number of populations maintained.*

Objective 2 : Perpetuation of self sustaining populations in targeted waters in the NE Lake Ontario - St. Lawrence Watershed.

Measure: *Number of populations maintained.*

Objective 3 : Perpetuation of self sustaining populations in targeted waters in the Upper Hudson Watershed.

Measure: *Number of populations maintained.*

Objective 4 : Restore self sustaining populations in the Lake Champlain Watershed, in waters where surveys determine the species to be absent, or of insufficient abundance, and where restoration is feasible.

Measure: *Number of populations maintained.*

Objective 5 : Restore self sustaining populations in the NE Lake Ontario - St. Lawrence Watershed, in waters where surveys determine the species to be absent, or of insufficient abundance, and where restoration is feasible.

Measure: *Number of populations maintained.*

Objective 6 : Restore self sustaining populations in the Upper Hudson Watershed, in waters where surveys determine the species to be absent, or of insufficient abundance, and where restoration is feasible.

Measure: *Number of populations maintained.*

Recommended Actions

Population monitoring:

- * Studies are being conducted to determine the causes of population declines and losses within the Adirondack region, especially the impact of acid rain and invasive species.

Relocation/reintroduction:

- * Establish populations.

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Taxa Group: Freshwater fish
Species Group: Sauger

Threats:

Decrease in lake turbidity, hybridization with walleye. Also the development of a salmonid fishery may have increased the predator abundance sufficient to reduce walleye, sauger and smelt.

Trends:

This species has declined in the Lake Erie, SE Lake Ontario, SW Lake Ontario and NE Lake Ontario-St. Lawrence drainage basins. This species has apparently declined in watersheds where extirpated (Erie, Ontario, Oswego and St. Lawrence watersheds), and there was a surprising catch of one by an angler in the lower Niagara River in 1990. The population in South Bay of Lake Champlain was studied in 1984, 1983 and in the 1960s. There is suspicion of declines in Lake Champlain, based on generalized fish monitoring by Vermont and New York in the last 10 years. This state-wide trend causes imminent concern.

SEQR - No Action Alternative:

Sauger will likely remain extirpated in Lake Erie and NE Lake Ontario-St. Lawrence drainage basins.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Sauger (<i>Stizostedion canadense</i>)			S1	G5	U	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Sauger (<i>Stizostedion canadense</i>)	Lake Champlain	Lake Champlain	Decreasing
	Lake Erie	SW Lake Ontario	Decreasing
	NE Lake Ontario - St. Lawrence		
	SW Lake Ontario		
	SE Lake Ontario		

Species Distribution - Ecoregion			
Species	Historical	Current	Stability

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Sauger (Stizostedion canadense)	St. Lawrence-Lake Champlain Valley	Great Lakes	Decreasing
	Great Lakes	St. Lawrence-Lake Champlain Valley	Decreasing
	High Allegheny Plateau		

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Sauger (Stizostedion canadense)	all	Lacustrine	cold water shallow	sand/gravel bottom
	all	Lacustrine	warm water deep	sand/gravel bottom
	all	Lacustrine	warm water shallow	sand/gravel bottom
	all	Riverine	coldwater stream	sand/gravel bottom
	all	Riverine	deepwater river	rocky bottom
	all	Riverine	warmwater stream	sand/gravel bottom
	Breeding	Lacustrine	warm water shallow	sand/gravel bottom
	Breeding	Riverine	coldwater stream	sand/gravel bottom

Goal and Objectives for Sauger

Goal: The existence of the sauger, at levels that enable the species to maintain self sustaining populations throughout it's historic range in the Northeastern Lake Ontario-St. Lawrence, Lake Champlain, Lake Erie and Southeastern Lake Ontario watersheds.

Objective 1 : Determine status of species in Lake Champlain watershed.

Measure: Presence/absence of sauger populations in Lake Champlain watershed.

Objective 2 : Perpetuation of self sustaining populations in other waters in the Lake Champlain Watershed where surveys show adequate population numbers

Measure: Number of populations maintained.

Objective 3 : Perpetuation of self sustaining populations in other waters in the Lake Erie Watershed where surveys show adequate population numbers

Measure: Number of populations maintained.

Objective 4 : Perpetuation of self sustaining populations in other waters in the Northeastern Lake Ontario - St. Lawrence Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 5 : Perpetuation of self sustaining populations in other waters in the Southeastern Lake Ontario Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 6 : Perpetuation of self sustaining populations in other waters in the Southwestern Lake Ontario Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 7 : Perpetuation of self sustaining populations in waters in the Lake Erie Watershed.

Measure: *Number of populations maintained.*

Objective 8 : Perpetuation of self sustaining populations in waters in the Northeastern Lake Ontario-St. Lawrence Watershed.

Measure: *Number of populations maintained.*

Objective 9 : Perpetuation of self sustaining populations in waters in the SE Lake Ontario Watershed.

Measure: *Number of populations maintained.*

Objective 10 : Perpetuation of self sustaining populations in waters in the Southwestern Lake Ontario Watershed.

Measure: *Number of populations maintained.*

Recommended Actions

Fact sheet:

- * Develop fact sheet on Sauger

Habitat monitoring:

- * Monitor habitat for changes in turbidity

Recommended Actions

Habitat research:

- * Research habitat requirements for sauger in New York.

Life history research:

- * Research biology of sauger as it relates to hybridization with walleye.

Population monitoring:

- * Monitor for presence in Lake Champlain watershed to determine whether or not species is declining in this watershed.
- * Monitor existing sauger populations in Lake Champlain and the Poultney River.

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Taxa Group: Freshwater fish
Species Group: Spotted darter

Threats:

According to The Nature Conservancy (1994), a number of potential threats to French Creek's water quality and aquatic fauna have been identified:

- Siltation from: overgrazing, row cropping, road construction, and land clearing.
- Elevated nutrients from: dairy animals wastes, sewage plant failure and fertilizer spills.
- Pesticide threats from: catastrophic events and agricultural applications.

Trends:

Historically found in 1 water and their range is not declining (or gone or dangerously sparse) in the 1 watershed. Populations are low and habitats are poorly understood. This trend causes imminent concern.

SEQR - No Action Alternative:

Because the Spotted darter's population is low and limited to French Creek, a lack of management action, including population monitoring and life history research could jeopardize its existence in New York.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Spotted darter (<i>Etheostoma maculatum</i>)		X	S1	G2	T	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Spotted darter (<i>Etheostoma maculatum</i>)	Allegheny		Allegheny	Unknown

Species Distribution - Ecoregion				
Species	Historical		Current	Stability
Spotted darter (<i>Etheostoma maculatum</i>)	Western Allegheny Plateau		Western Allegheny Plateau	Unknown

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Spotted darter (Etheostoma maculatum)	all	Riverine	warmwater stream	sand/gravel

Goal and Objectives for Spotted darter

Goal: The existence of the spotted darter in New York, at levels that enable the species to maintain self sustaining populations throughout it's historic range in the Allegheny Watershed.

Objective 1 : Perpetuation of self sustaining populations in French Creek and in other waters of the Allegheny Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat research:

- * Inventory the habitat requirements of this species and protect critical areas, as in part of the State Wildlife Grants project in 2003 focusing on the Allegheny watershed. These efforts will be coordinated with similar programs in place by The Nature Conservancy.

Life history research:

- * Data is needed on fish species interactions. Some of these interactions are described by Hansen (1983). Initial progress toward efforts at laboratory rearing was reported by Stauffer (1995).

Population monitoring:

- * Data are needed on long term population trends.

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Taxa Group: Freshwater fish
Species Group: Streamline chub

Threats:

The Allegheny River has been impounded by the Kinzua Dam (which was completed in 1967, upstream of Warren, Pennsylvania), and the dam eliminated habitat and effectively isolated the population of the streamline chub in New York. This could have a negative affect on the population since immigration of specimens from farther downstream is prevented.

Water quality in the New York section of the upper Allegheny is degraded because of industrial and domestic pollution and agricultural runoff.

Trends:

Historically found in 5 waters and their range is not declining (or gone or dangerously sparse) in the 1 watershed. They were abundant in the central sub-basin of the Allegheny Watershed in 1998-99, and there were no apparent declines. The habitats seem secure, but are poorly understood.

SEQR - No Action Alternative:

With past impoundments of the Allegheny River potentially having a negative effect on the River’s population and with concerns over water quality in waters currently inhabited by streamline chub, lack of management action especially monitoring and surveying, could jeopardize current populations.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Streamline chub (<i>Erimystax dissimilis</i>)			S1	G4	U SC	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Streamline chub (<i>Erimystax dissimilis</i>)	Allegheny		Allegheny	Stable

Species Distribution - Ecoregion				
Species	Historical		Current	Stability
Streamline chub (<i>Erimystax dissimilis</i>)	High Allegheny Plateau		High Allegheny Plateau	Stable

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Streamline chub (<i>Erimystax dissimilis</i>)	all	Riverine	warmwater stream	sand/gravel

Goal and Objectives for Streamline chub

Goal: Continue the existence of the streamline chub in New York, at levels that enable the species to maintain self sustaining populations throughout its historic range in the Allegheny watershed.

Objective 1 : Perpetuation of self sustaining populations in the Allegheny River and [insert names of the tributaries that apply] and in other waters where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat restoration:

- * Habitat losses and restoration are part of a State Wildlife Grants project from 2003 that is directed at the Allegheny watershed.

Population monitoring:

- * Surveys of the Allegheny River and tributaries should occur at 10-20 year intervals to evaluate species trends.

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- Trautman, M.B. 1981. The fishes of Ohio. Ohio State Univ. Press, Columbus. 728 pp.

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Taxa Group: Freshwater fish

Species Group: Swallowtail shiner

Threats:

Argent et al. 1998 felt that it was among the PA species with most reduced distribution. Its ability to withstand turbidity make it seem more tolerant than some minnows. There have been no studies to assess its problems, threats, limiting factors or overall vulnerability.

Trends:

Historically found in over 50 (still in at least 20) waters and their range is possibly declining (or gone or dangerously sparse) in 1 of the 3 watersheds. Their abundance has declined in many streams of the Chemung watershed, their population may be stable in the Susquehanna and the trend is unknown in the Delaware. It was caught at 7% of the samples in the Susquehanna, 6% in Chemung and 1% in the Delaware in the 1935-37. The number of records statewide in the 1930's was 79, 1940-74 had 77 records and 1975-present had 21 records. The effort was not consistent between these periods and records were primarily from DEC.

Swallowtail shiner still occurs in the Delaware, Susquehanna and Chemung watersheds, but they appear to be less common in the Chemung. The most recent records in the Susquehanna/Chemung basin were the four by Smith (6% of his samples here, 1977-81), two by Cornell Univ., two stored at the NYS Muss. and eight others since 2001. The records since 2001 include Mud Creek of Canisteo R., Chemung River, Susquehanna R. (3 sites), Geneganslet (1), Cheningo (1) and Unadilla R. (1 site by S. Coglin, ESF). The most recent record in the Delaware basin were at Fishs Eddy in E. Br. Delaware R. (by DEC in 1995, 2001 and 2003) and from a tributary of the Delaware R. (NYS Mus in 2001).

SEQR - No Action Alternative:

Due to declining occurrences in some areas and because of the need for additional information, a lack of management action, including population monitoring, could jeopardize the future of current self-sustaining populations.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Swallowtail shiner (<i>Notropis procne</i>)			S2	G5	U	Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Swallowtail shiner (<i>Notropis procne</i>)	Susquehanna		Susquehanna	Unknown
	Delaware		Delaware	Unknown
	SE Lake Ontario			

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Swallowtail shiner (Notropis proceus)	High Allegheny Plateau Great Lakes	High Allegheny Plateau	Unknown

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Swallowtail shiner (Notropis proceus)	all	Riverine	warmwater stream	sand/gravel

Goal and Objectives for Swallowtail shiner

Goal: The existence of the swallowtail shiner in New York, at levels that enable the species to maintain self sustaining populations throughout it's historic range in the Susquehanna, Delaware and Southeastern Lake Ontario watershed.

Objective 1 : Establish an inventory of waters within the Delaware Watershed that are recognized as the historic range for the swallowtail shiner.

Measure: *Number of waters inventoried.*

Objective 2 : Establish an inventory of waters within the Susquehanna Watershed that are recognized as the historic range for the swallowtail shiner.

Measure: *Number of waters inventoried.*

Objective 3 : Perpetuation of self sustaining populations in the Delaware Watershed in other waters where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 4 : Perpetuation of self sustaining populations in the Susquehanna Watershed in other waters where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat restoration:

- * Habitat losses and restoration are part of a State Wildlife Grants project from 2003 that are directed at the Susquehanna watershed.

Population monitoring:

- * More sampling is needed in the Susquehanna and Delaware Basins.

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Taxa Group: Freshwater fish
Species Group: Swamp darter

Threats:

The populations are little studied, the range is restricted to only a few ponds in the Peconic River system in New York and they may be vulnerable. They are not particularly environmentally sensitive, and their protection is mostly a function of protecting the lakes, streams and wetlands from being dewatered in eastern Long Island.

Trends:

Historically found in 16 (still in 8) waters and is not declining (or gone or dangerously sparse) in the 1 watershed. The population appears to be stable.

SEQR - No Action Alternative:

With their range in New York restricted to only a few ponds and because the population are little studied, lack of management action including monitoring could jeopardize the New York population.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Swamp darter (Etheostoma fusiforme)			S1S2	G5	T	Resident

Species Distribution - Watershed Basin			
Species	Historical	Current	Stability
Swamp darter (Etheostoma fusiforme)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown

Species Distribution - Ecoregion			
Species	Historical	Current	Stability
Swamp darter (Etheostoma fusiforme)	North Atlantic Coast	North Atlantic Coast	Unknown

Critical Habitats for Species in the Group				
Species	Life Stage or Use	System	SubSystem	Habitat
Swamp darter (Etheostoma fusiforme)	all	Lacustrine	cold water shallow	SAV

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Swamp darter (Etheostoma fusiforme)	all	Lacustrine	warm water shallow	SAV
	all	Riverine	coldwater stream	SAV
	all	Riverine	warmwater stream	SAV

Goal and Objectives for Swamp darter

Goal: Continue the existence of the swamp darter in New York at levels that enable the species to maintain self sustaining populations throughout it's historic range in the Lower Hudson- Long Island Bays Watershed.

Objective 1 : Perpetuation of self sustaining populations in the Peconic River, Lake Ronkonkoma, Little River, Merritts Pond and Lower Lake Yaphank, and in other waters of Lower Hudson-Long Island Bays Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat monitoring:

- * Complete surveys on submerged aquatic vegetation and floating woody mats in areas still inhabited by this species and monitor water levels or depths on dry years.

Habitat research:

- * Define preferred habitat in order to guide future restoration efforts and focus habitat protection efforts.

Population monitoring:

- * Continued monitoring of the Long Island populations.

Relocation/reintroduction:

- * Establish populations after dewatering of streams and lakes due to groundwater withdrawals. Zeeks Pond suffered this in 2002 and restorative measures are needed.

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Originator

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Taxa Group: Freshwater fish
Species Group: Western pirate perch

Threats:

Concerns for this species relate only to the western form, *A. sayanus gibbosus*. The habitat of Buttonwood Creek is described briefly in Haynes (1987, 1994). An environmental impact statement was prepared in 1994 to assure their protection during bridge rebuilding.

Trends:

Historically found in 10 (still in 3) waters and their range is declining (or gone or dangerously sparse) in both of the 2 watersheds. Population trends show decline, but this species is stable in one tributary of Lake Ontario, infrequently collected in other tributaries and absent from tributaries of Lake Erie/Niagara. It is very difficult to assess at low abundance levels and much remains mysterious about its appearances. Habitat trends appear to be stable. This trend causes imminent concern.

SEQR - No Action Alternative:

With the range and population both in decline and with low abundance levels, a lack of management action (s) including population monitoring could jeopardize the ability to retain self-sustaining populations in the watersheds where the Western pirate perch are currently found.

Species in the Group and their Management Status						
Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Western pirate perch (<i>Aphredoderus sayanus gibb</i>			N/A	N/A		Resident

Species Distribution - Watershed Basin				
Species	Historical		Current	Stability
Western pirate perch (<i>Aphredoderus sayanus gibbosus</i>)	SE Lake Ontario		SE Lake Ontario	Decreasing
	SW Lake Ontario		SW Lake Ontario	Decreasing
	Lake Erie		NE Lake Ontario - St. Lawrence	Unknown

Species Distribution - Ecoregion				
Species	Historical		Current	Stability

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Western pirate perch (<i>Aphredoderus sayanus gibbosus</i>)	Great Lakes	Great Lakes	Decreasing
	North Atlantic Coast	Lower New England Piedmont	Decreasing
	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
Western pirate perch (<i>Aphredoderus sayanus gibbosus</i>)	all	Estuarine	shallow subtidal	SAV
	all	Lacustrine	warm water deep	SAV
	all	Lacustrine	warm water shallow	SAV
	all	Riverine	warmwater stream	SAV
	Breeding	Lacustrine	warm water shallow	SAV

Goal and Objectives for Western pirate perch

Goal: The existence of the pirate perch in NY, at levels that enable the species to maintain self sustaining populations throughout it's historic range in the L. Erie, Southeastern L. Ontario, and Southwestern Lake Ontario watersheds.

Objective 1 : Perpetuation of self sustaining populations in waters in the Lake Erie Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 2 : Perpetuation of self sustaining populations in waters in the SE Lake Ontario Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Objective 3 : Perpetuation of self sustaining populations in waters in the SW Lake Ontario Watershed where surveys show adequate population numbers.

Measure: *Number of populations maintained.*

Recommended Actions

Habitat research:

- * Research habitat requirements for this subspecies in tributaries of Lake Ontario.

Population monitoring:

- * There should be more surveys on bays of Lake Ontario and the nearby streams for this species.

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