Common Name: Atlantic salmon ***SGCN***
Scientific Name: *Salmo salar*
Taxon: Freshwater Fish

Federal Status: Endangered (GOM DPS)
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G5
New York: S3
Tracked: No

Synopsis:
In New York Atlantic salmon were native to the St. Lawrence River, Lake Champlain and Lake Ontario watersheds including the Finger Lakes. Parsons (1973) concluded that both anadromous and landlocked populations existed in New York. By the late 1800s, dams, pollution, overharvesting, nonnative species and other anthropogenic changes led to their extirpation (Miller and Ringler 1996, NatureServe 2012).

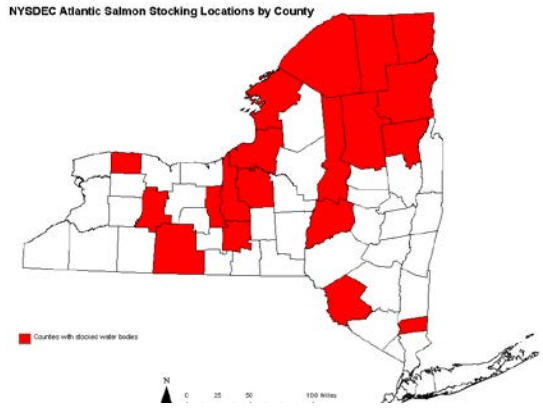
New York currently maintains landlocked populations by stocking at 48 locations throughout the state including Lake Ontario. Efforts to establish self-sustaining populations of Atlantic salmon are constrained mostly by reproductive impairment. Atlantic salmon experience thiamine deficiency and low reproductive success from eating alewife and rainbow smelt in Lake Ontario, Lake Champlain and the Finger Lakes. Some evidence of limited natural reproduction has been observed in tributaries of Lake Ontario. Atlantic salmon recovery is also constrained by available habitat (low quality habitat or barriers preventing access to high quality habitat), and non-native species (either through direct competition from other non-native salmon and trout, and indirectly through competing interest of anglers for other trout and salmon).

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Stable	Stable
6% to 10%		Common			
11% to 25%		Fairly common	X		
26% to 50%	X	Uncommon			
> 50%		Rare			

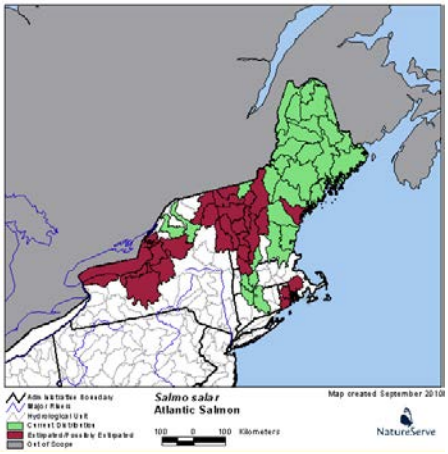
Habitat Discussion:
Atlantic salmon are found in a variety of aquatic habitats. In New York, landlocked populations occur in large deep lakes and ponds and their tributaries. In the spring, warmer temperatures and abundant food attract salmon to near shore waters and even into the lower portions of rivers. Once water temperatures reach the mid-50s, Atlantic salmon move offshore and into deeper portions of the lake. They are active predators throughout the summer, generally being found where water temperatures are 65˚F or less. Atlantic salmon feed on other fish, with rainbow smelt being their preferred food (NatureServe 2012). Other prey fish include alewife, cisco, or yellow perch. If prey fish are lacking, salmon will eat insects and large zooplankton. In the fall, sexually mature fish move back toward shore in search of their home stream or the site where they were stocked. Juvenile fish will remain in fast moving streams for 1-5 years (Hulbert et al. 1990).

Primary Habitat Type
Lake
Lake; Very Large Lake
Small River

Distribution:
Ongoing stocking programs have provided a fishery in coldwater lakes and streams (Lakes Ontario, Champlain, Cayuga, and Seneca) which would otherwise be gone due to a lack of natural reproduction (Hulbert et al. 1990, Miller and Ringler 1996).



NYSDEC (2013)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Natural System Modifications	Dams & Water Management/Use (dams)	P	V	H
2. Invasive & Other Problematic Species & Genes	Problematic Native Species (alewife (thiaminase) affecting salmon reproduction)	P	H	V
3. Climate Change & Severe Weather	Droughts	R	M	V
4. Climate Change & Severe Weather	Storms & Flooding	W	M	H
5. Invasive & Other Problematic Species & Genes	Competition with/predation by other salmonids	W	H	V
6. Invasive & Other Problematic Species & Genes	Sea lamprey	W	M	M

References Cited:

Hulbert, P.J. 1993 draft, unpublished. Atlantic salmon management in New York, draft. Bur. Fish. NYSDEC, Albany.

Miller, D.J. and N.H. Ringler. 1996. Atlantic salmon in NY. SUNY ESF. Available at: http://www.esf.edu/pubprog/brochure/salmon/salmon.htm (Accessed: February 1, 2013).

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application].Version7.1. NatureServe, Arlington, Virginia. Available at: http://www.natureserve.org/explorer. (Accessed: January 31, 2013).

Parsons, J.W. 1973. History of salmon in the Great Lakes, 1850-1970. Technical Papers of the Bureau of Sport Fisheries and Wildlife no. 68. U.S. Fish and Wildlife Service.

Common Name: Banded sunfish ***SGCN***
Scientific Name: *Enneacanthus obesus*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Threatened

Natural Heritage Program Rank:
Global: G5
New York: S1S2
Tracked: Yes

Synopsis:
The banded sunfish occurs in slow freshwater areas along the Atlantic Coast from northwestern to eastern areas of Florida, and northward along the coast to southern New Hampshire. Banded sunfish occur in ponds, bogs, and medium-sized streams with dense aquatic vegetation in the southeastern corner of New York where it is native in 2 of 18 watersheds. It appears to be extirpated from the Newark Bay watershed where it was known in only one confirmed pond and two unconfirmed areas. On Long Island, the range of banded sunfish is about half of what it was in 1938 but it remains common in about 30 ponds. Some of these ponds are considered vulnerable to dewatering for residential and urban development, and the species is classified as Threatened in New York. Banded sunfish is the more restricted of the two NY species of sunfish in the genus *Enneacanthus*, and the two might be confused if they had overlapping ranges, but they do not overlap any longer.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%	X	Abundant		Stable	Stable
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

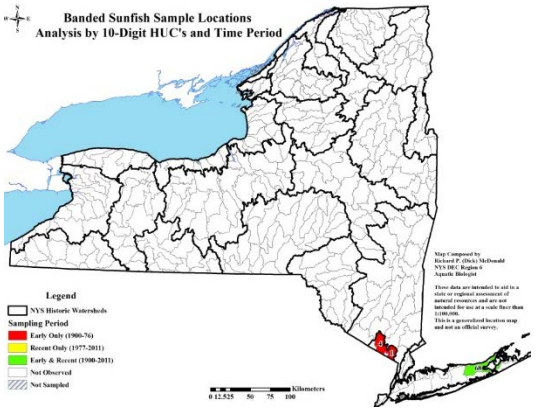
Habitat Discussion:
Banded sunfish inhabit darkly stained and sluggish waterbodies including ponds, lakes, backwaters of streams and rivers, and bogs with abundant vegetation and substrates consisting of sand and mud (Smith 1985, NatureServe 2012). Preferred areas are often shallow with vegetation over detritus-laden bottoms and bog water as acidic as 3.7 (pH) has been inhabited.

Primary Habitat Type
Coastal Plain Pond
Headwater/Creek
Lake; Pond; Eutrophic
Open Acidic Peatlands

Distribution:
The distribution of this species within one subbasin of the Long Island watershed has maintained occupancy and has not changed substantially. It has been collected from eastern Long Island in the Peconic River drainage near Riverhead where they inhabit about 30 ponds, as shown by extensive

sampling in 1994–99 and 2007–11. Other previous sampling found banded sunfish in 4 additional areas since 1985. Several more waters may still be inhabited since some of the historic sites were not sampled during this program. In 1938, there were two additional ponds containing this species, but the ponds no longer exist.

However, the other two HUC-10 units in Newark Bay watershed have remained unoccupied since catches of 1939. The sites in the Passaic drainage and Interstate Park appear to be no longer inhabited. There are 337 HUC-10 units across the entire state and only 20 HUC units (total for these two watersheds) where they have occurred (Carlson 2012).



Carlson (2012)

NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Natural System Modifications	Dams & Water Management/Use (dams)	N	L	M
2. Climate Change & Severe Weather	Drought	W	M	V
3. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (phragmites)	R	M	M
4. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (largemouth bass, bluegill)	W	M	H
5. Pollution	Household Sewage & Urban Waste Water (septic systems)	W	L	H
6. Pollution	Agricultural & Forestry Effluents (contaminants)	N	L	H
7. Natural System Modifications	Dams & Water Management/Use (water table withdrawal)	W	M	H

References Cited:

Carlson, D.M. 2001. Species accounts for the rare fishes of New York. N. Y. S. Dept. Env. Cons. Albany, NY.

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 10, 2012).

Smith, C.L. 1985. The inland fishes of New York State. New York State Dept. of Environmental Conservation. Albany, NY. 522 pp.

Common Name: Bigmouth shiner ***SGCN***
Scientific Name: *Notropis dorsalis*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G5
New York: S2
Tracked: Yes

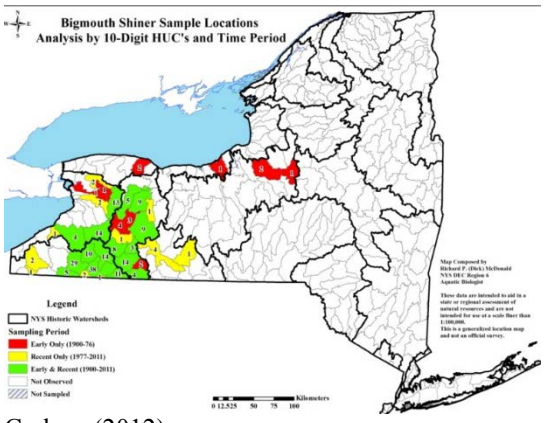
Synopsis:
Bigmouth shiner occurs in medium-sized streams with clean gravel and is native to 5 of 18 watersheds in the western half of the state. It has also become established as a non-native species in the Chemung watershed, with records only since 1981. This species still inhabits most of its range in the Genesee watershed, while there may be decreases in the Erie watershed. Bigmouth shiner appears to be gone from the Oswego and Ontario watersheds where it was thought to have been a relict. It can still be caught in about half of its former range, since 1977 (Carlson 2012).

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Moderate Decline	Stable
6% to 10%		Common			
11% to 25%	X	Fairly common	X		
26% to 50%		Uncommon			
> 50%		Rare			

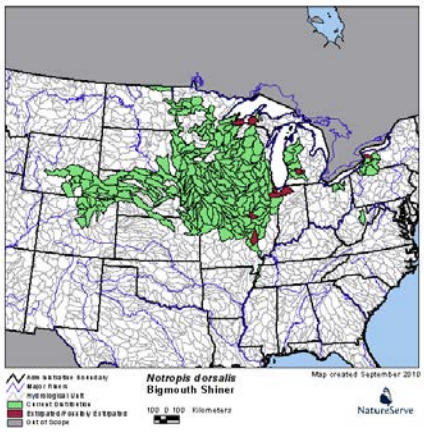
Habitat Discussion:
Bigmouth shiner is found in runs and pools of shallow open headwaters, creeks, and small to medium rivers with bottom predominantly sand, often overlain with silt; sometimes also in lakes. It spawns probably in mid-water, with eggs drifting downstream (NatureServe 2012). Habitat specializations were measured in the Allegheny basin (Morse et al. 2009).

Primary Habitat Type
Headwater/Creek; Low Gradient; Moderately Buffered, Neutral; Warm
Medium River; Low Gradient; Assume Moderately Buffered (Size 3+ rivers); Warm
Small River; Low Gradient; Moderately Buffered, Neutral; Warm

Distribution:
This species is still found in the Allegheny, Erie and Genesee watersheds. The species appears to be extirpated from Ontario and Oswego watersheds. The small, isolated area in Chemung watershed (likely an introduced population) was reported in 1981 and 2003 (Carlson 2012).



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Pollution	Agriculture & Forestry Effluents (siltation)	W	M	H
2. Invasive & Other Problematic Species & Genes	Non-Native Species (predation by brown trout)	R	M	H

References Cited:

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

Morse, R., B. Weatherwax and R. Daniels. 2009. Rare fishes of the Allegheny River and Oswayo Creek. Final report to NYS State Wildlife Grants- Grant T-5, Study 2. NYS Museum, Albany 30pp.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 5, 2012).

Common Name: Black bullhead ***SGCN***
Scientific Name: *Ameiurus melas*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G5
New York: S1
Tracked: Yes

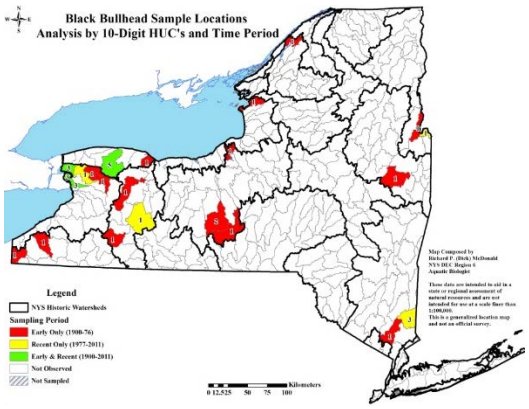
Synopsis:
Black bullhead inhabits muddy ditches, streams, and ponds of western and central New York and is native in 6 of the 18 watersheds. It is non-native in eastern New York or in 3 more of the 18 watersheds. It is extirpated in three watersheds but is found in about half of its historic range in the other three watersheds. Since 1993 there have been 7 verified records, all either from a Tonawanda Creek feeder ditch (native) or a tributary of the Champlain Canal (non-native) (Carlson 2012).

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Moderate Decline	Unknown
6% to 10%		Common			
11% to 25%	X	Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

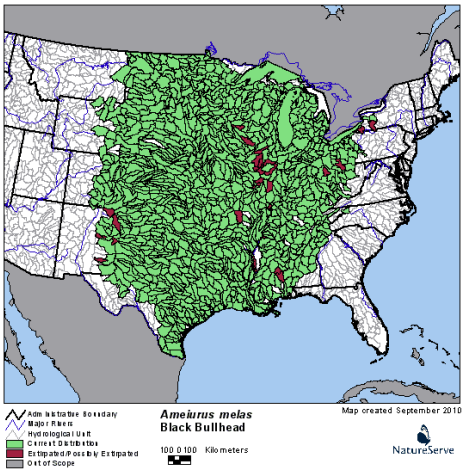
Habitat Discussion:
Black bullhead inhabit backwaters, oxbows, impoundments, ponds, lakes, and low-gradient streams, including pools of intermittent creeks. Largest populations occur in turbid waters with mud or silt substrates. It prefers warm and turbid water, with slow currents, and few other fish species. It is very tolerant of siltation, industrial and domestic pollution, and warm water (Trautman 1981, Becker 1983, Pflieger 1997). Adults tend to be inactive in schools in aquatic vegetation during daylight hours. Eggs are laid in shallow nests made by females on the bottom in mud or sand, in secluded areas such as under logs or mats of aquatic vegetation (NatureServe 2012). Records from Monroe County in the early 1920s were able to distinguish habitat differences between this species and brown bullhead, and Wright (2006) says that black bullhead is particularly mud-loving.

Primary Habitat Type
Ditch/Artificial Intermittent Stream
Small River; Low Gradient; Moderately Buffered, Neutral; Warm

Distribution:
The only recent confirmed records in its native range are from the feeder canal between Oak Orchard and Tonawanda Creeks (Erie/Ontario watersheds), Tonawanda Creek and a tributary of the Genesee River. There is another sustained population outside of its native range, in Mud Brook south of Lake Champlain (Carlson 2012).



Carlson (2012)



NatureServe (2012)

Threats

No threats were identified for this species.

References Cited:

Becker, G. C. 1983. The fishes of Wisconsin. Univ. of Wisconsin Press. Madison.

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 5, 2012).

Pflieger, W. L. 1997. The fishes of Missouri. MO Dept. of Cons., Jefferson City.

Trautman, M. B. 1981. The fishes of Ohio. Ohio State University Press. Columbus.

Wright, A.H. 2006. The fishes of the vicinity of Rochester, New York (from 1925). Guelph Ichth. Rev. 6:1-51.

Common Name: Black redhorse ***SGCN***
Scientific Name: *Moxostoma duquesnei*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Special Concern

Natural Heritage Program Rank:
Global: G5
New York: S2
Tracked: Yes

Synopsis:
The black redhorse occurs throughout the central part of the upper Mississippi basin, the southern Great Lakes basin and in southeastern Minnesota, Iowa, Missouri, Oklahoma, and Arkansas, as well as southern Ontario. Black redhorse live in larger-sized streams with clean gravel and are native to 3 of 18 watersheds in the western third of the state. In recent stream surveys of the Allegheny watershed, it was caught about seven times more frequently than during surveys from the 1930s (Carlson et al. 2009). It also is more frequently encountered in the Erie watershed but no longer found in the Genesee watershed.

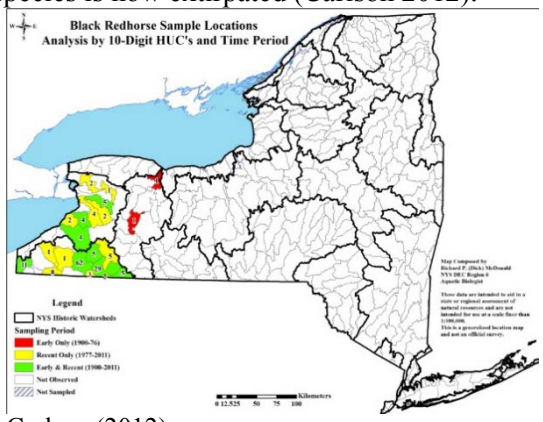
Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Moderate Decline	Stable
6% to 10%	X	Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

Habitat Discussion:
This species prefers clean, swift flowing creeks and rivers with gravel, rock or sand substrate and has a low tolerance for pollution, siltation or turbidity, as well as pools. It therefore serves as an indicator of clean water. The lower portions of tributaries to Lake Erie are important to this species, and there may be importance of connected habitats in Lake Erie. They are known to spawn in gravel and fine rubble runs and riffles in water about 0.2-0.6 m deep (NatureServe 2012).

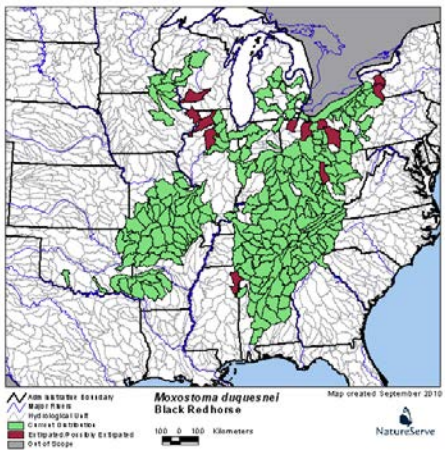
Primary Habitat Type
Headwater/Creek; Moderate-High Gradient
Medium River; Moderate-High Gradient
Small River; Moderate-High Gradient

Distribution:
The Allegheny River system, including French Creek, still contains black redhorse. They may even be the most common redhorse species in the Allegheny River (opinion of S. Eaton referenced by Daniels 1989), and sampling by Becker (1982) showed them to be among the dominant larger fish in the main river and tributaries (like Windfall Creek). Records by Daniels (1989) showed them also in Ischua Creek, Dodge Creek, Oswayo Creek, tributaries of Tunungwant Creek, and a tributary of Conewango Creek (Stillwater Creek). The French Creek population was judged as secure (Hansen and Gloss 1981). In the Erie watershed, this species was also in Buffalo Creek (in 1975, Smith 1985), Buffalo R. (in 2002-03),

Eighteenmile Creek (2003) and Cattaraugus Creek (2003). Populations in Lake Erie and Lake Ontario are uncertain, and the records for Lake Ontario may have actually been part of that in the Genesee, where this species is now extirpated (Carlson 2012).



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Pollution	Household sewage & Urban Wastewater	N	M	H
2. Pollution	Industrial & Military Effluents	N	M	H
3. Pollution	Agricultural & Forestry Effluents (siltation)	W	M	H

References Cited:

Becker, L.R. Jr. 1982. Fishes of the Allegheny River and its tributaries between Salamanca and Allegany, Cattaraugus County, New York. MS thesis, St. Bonaventure Univ., St. Bonaventure, NY.

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

Carlson, D. M., R. Morse, B. Weatherwax, and R. Daniels. 2009. State Wildlife Grant T-3, Job 2: Fish surveys of Conewango Creek sub-basin (PA-63). Annual Progress Report to USFWS. Albany, NY.

Daniels, R.A. 1989. Preliminary report, Allegheny River fish survey, 1989. New York State Museum, Albany

Hansen, M.J. and S.P. Gloss 1981. Preliminary status survey of fishes in French Creek, New York. Cornell Univ. Ithaca, NY.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 5, 2012).

Common Name: Blackchin shiner ***SGCN***
Scientific Name: *Notropis heterodon*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G5
New York: S1
Tracked: Yes

Synopsis:
Blackchin shiner occur across the northern region of the United States in Vermont and west across northern New York, across the Great Lakes basin including the northwestern tip of Pennsylvania, northern Ohio and Indiana, northeast Illinois, Michigan, eastern and northern Wisconsin, and Minnesota. In Canada the range extends from southern Quebec west to Manitoba. It lives in nearshore areas of lakes and streams with ample submerged aquatic vegetation and has been reported from 10 of 18 watersheds in New York. Populations seem secure in the St. Lawrence, Black, Champlain, Erie and Ontario watersheds but it has declined in headwater areas of the Susquehanna, Genesee, Oswego, Upper Hudson and Allegheny watersheds.

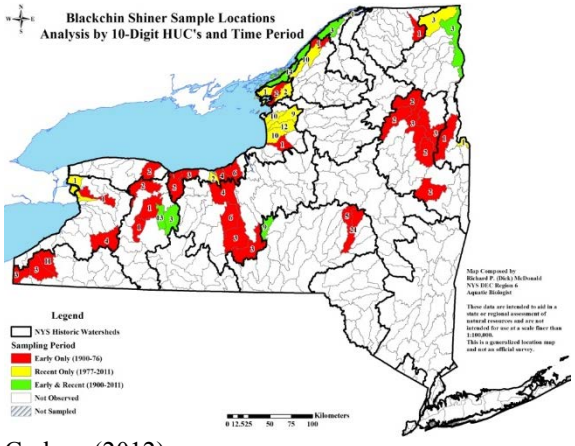
Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Moderate Decline	Moderate Decline
6% to 10%		Common			
11% to 25%		Fairly common	X		
26% to 50%	X	Uncommon			
> 50%		Rare			

Habitat Discussion:
The blackchin shiner prefers shallow parts of lakes, lake inlets and outlets, and quiet waters (pools and slow runs) of large streams. It usually occurs in clear-water, vegetated areas with sandy gravel or organic debris bottom types. Abundant vegetation is an important component of the habitat. In Wisconsin, it was found in lakes more of the time (67%) than in flowing waters (33%) (Fago 1992). Among all NY samples, blackchin shiners occur in lakes at just half of the occurrences. Blackchin shiners are often found in narrow (1–3 m wide) and wide (12–24m wide) streams (Becker 1983). Low oxygen conditions (<1 ppm) were tolerated in winter when other species were killed. Because blackchin shiners are sensitive to siltation, they are good indicators of environmental quality (Kart et al. 2005).

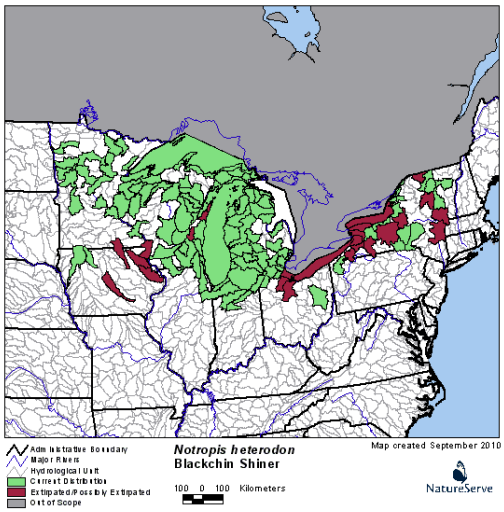
Primary Habitat Type
Lake; Medium Lake
Medium River; Low-Moderate Gradient; Assume Moderately Buffered (Size 3+ rivers); Warm

Distribution:
Blackchin shiner distribution today appears to be similar to their historic range in the Thousand Islands area of the St. Lawrence River, in bays of eastern Lake Ontario and lakes in or near Jefferson County.

Extensive sampling in 1993–95 documented individuals in 20 miles (12 sites) of the Thousand Island areas (Carlson 1997), in five bays of Lake Ontario north of Port Ontario (where 17 bays were sampled, 1996-97), and in three lakes of Jefferson County (where 17 lakes were sampled). In the last 10 years it has only been found in a single south shore Lake Ontario bay, Sodus Bay. Additional areas farther downstream in the St. Lawrence River at Massena were shown to contain individuals in 2007. Several previously inhabited lakes in other parts of New York have been sampled, and lakes without recent captures include Otsego, Rich, Cayuga, Fourth (near Warrensburg) and Canadarago lakes. Tully Lake (Susquehanna watershed near Cortland) and Highlands Forge Lake (Champlain watershed near Willsboro) were among the few that still contain blackchin shiner as recently as 1993. It was also recently caught in Lake Champlain (Rouses Point), Great Chazy River, Poultney River (on the VT Boundary in 1989), Conesus Lake (2003, Genesee watershed) and Hemlock Lake (2006, Genesee watershed) (Carlson 2012).



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Pollution	Household sewage & Urban Wastewater	N	M	H
2. Pollution	Industrial & Military Effluents	N	M	H
3. Pollution	Agricultural & Forestry Effluents (siltation)	W	M	H

References Cited:

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC. Watertown, NY.

Fago, D. 1992. Distribution and relative abundance of fishes in Wisconsin. Wis. Dept. Nat. Res., Tech. Bull. 175. 378 pp.

Kart, J., R. Regan, S.R. Darling, C. Alexander, K. Cox, M. Ferguson, S. Parren, K. Royar, and B. Popp. (eds). 2005. Vermont's Wildlife Action Plan. Vermont Fish & Wildlife Department. Waterbury, Vermont. www.vtfishandwildlife.com.

Common Name: Blacknose shiner ***SGCN***
Scientific Name: *Notropis heterolepis*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G4
New York: S2S3
Tracked: Yes

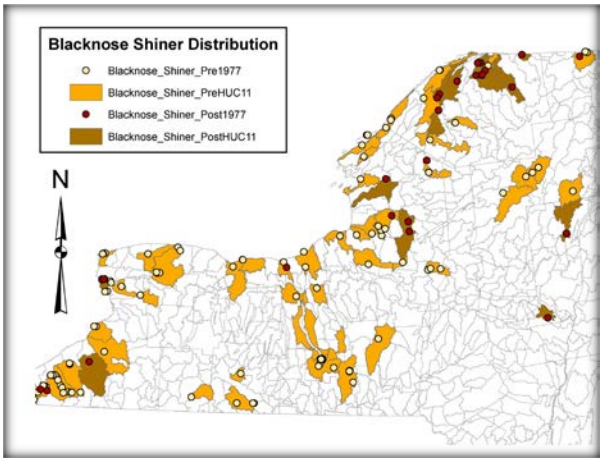
Synopsis:
Blacknose shiner occurs in streams with submerged aquatic vegetation and is sometimes scattered among other low gradient areas inhabited by trout. It is native to 14 of 18 watersheds. It seems to be secure in St. Lawrence, Black, Oswegatchie, Raquette, Champlain, Erie and Ontario watersheds but has declined in the Genesee, Oswego, Upper Hudson, Mohawk, Allegheny and headwater areas of the Susquehanna and Chemung watersheds.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Moderate Decline	Unknown
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%	X	Rare			

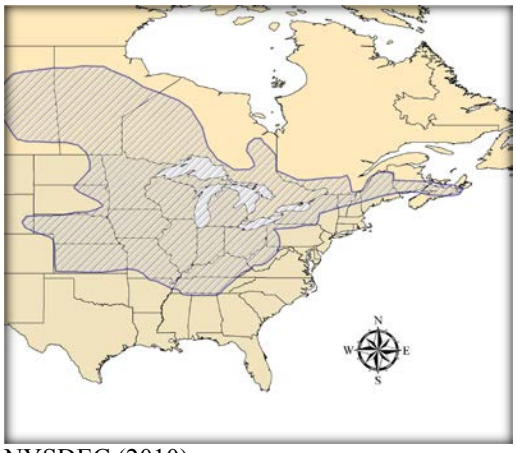
Habitat Discussion:
Blacknose shiner live in small creeks, medium-sized and large rivers and cool weedy shallows of lakes or impoundments, usually over sand, and are sometimes scattered among other low gradient areas inhabited by trout. One of the few places it can be consistently caught is the upper Niagara River. This species is tolerant of oxygen depletion in winterkill lakes and probably spawn over sandy places.

Primary Habitat Type
Large/Great River; Low-Moderate Gradient; Assume Moderately Buffered (Size 3+ rivers); Tran
Medium River; Low-Moderate Gradient; Assume Moderately Buffered (Size 3+ rivers); Transitio
Small River; Low-Moderate Gradient; Moderately Buffered, Neutral; Transitional Cool

Distribution:
Blacknose shiner has been found in northern, western and northeastern watersheds including the Allegheny River, Black River, Chemung River, Genesee River, Lake Champlain, Lake Erie, Lake Ontario, Mohawk River, Oswegatchie River, Oswego River, Raquette River, St. Lawrence River, Susquehanna River, and Upper Hudson River HUC-10 watersheds. Blacknose shiner is currently found in all historic HUC-10 watersheds except the Genesee River watershed (Carlson 2012).



NYSDEC (2010)



NYSDEC (2010)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Pollution	Agricultural & Forestry Effluents (siltation)	R	M	H
2. Natural Systems Modification	Dams & Water Management/Use (changes in hydrology due to agriculture)	R	M	H
3. Invasive & Other Problematic Species & Genes	Problematic Native Species (predation by brown trout)	R	M	H

References Cited:

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

NYSDEC. 2010. NYSDEC Rare Fishes Report. Albany, NY.

Common Name: Bridle shiner ***SGCN***
Scientific Name: *Notropis bifrenatus*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G3
New York: S2?
Tracked: Yes

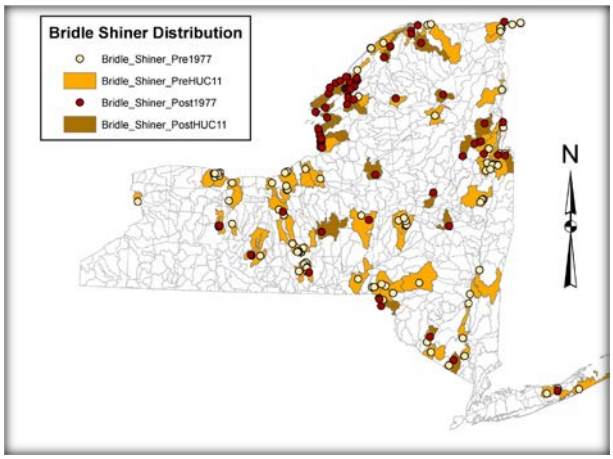
Synopsis:
Bridle shiner lives in nearshore areas of lakes and streams with submerged aquatic vegetation and is native to 16 of 18 watersheds. Its status in northern New York watersheds is relatively unchanged but it has declined in western and central watersheds and in the lower Hudson watershed.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Moderate Decline	Moderate Decline
6% to 10%		Common			
11% to 25%		Fairly common	X		
26% to 50%		Uncommon			
> 50%	X	Rare			

Habitat Discussion:
The bridle shiner prefers quiet waters of large streams and shallow parts of lakes although this species is closely associated with submerged aquatic vegetation and is often more common in lakes or ponds than in streams. It usually occurs in clear-water, moderately to abundantly vegetated areas in sluggish pools, in slow current near moderate flow in streams, or in slackwater side areas with sandy gravel or organic debris bottom types. Spawning areas are in still shallow water near shore where vegetation is present (NatureServe 2012).

Primary Habitat Type
Lake; Medium Lake
Large/Great River; Low-Moderate Gradient; Assume Moderately Buffered (Size 3+ rivers); Tran

Distribution:
Bridle shiner is still found in all historic HUC-10 watersheds except the Lake Erie watershed.



NYSDEC (2010)


NYSDEC (2010)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Pollution	Agricultural & Forestry Effluents (siltation)	R	M	H
2. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (milfoil, etc)	R	M	H
3.Invasive & Other Problematic Species & Genes	Problematic Native Species (predation by bass)	R	M	H

References Cited:

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 5, 2012).

NYSDEC. 2010. NYSDEC Rare Fishes Report. Albany, NY.

Common Name: Brook trout ***SGCN***
Scientific Name: *Salvelinus fontinalis*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G5
New York: S5
Tracked: No

Synopsis:
Wild brook trout reside in cold-water ponds and smaller and medium-sized streams with cold water and clean gravel. The taxonomic status of wild brook trout populations currently considered as strains of *Salvelinus fontinalis* is ambiguous. However, this assessment concerns itself with populations of brook trout that are wild, self-sustaining and genetically distinct and for which the best available genetic or historic information indicates minimal influence from the introduction of exogenous individuals.

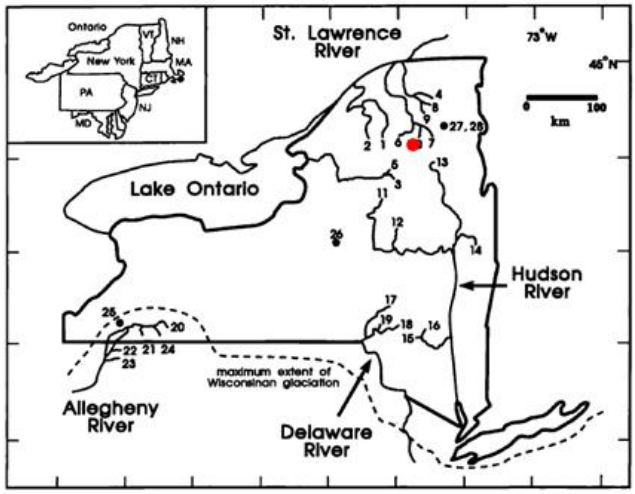
This species is endemic to the eastern United States, but dams, over-fishing, invasive fish species, logging, and acidifying waters have caused this native trout to disappear from a wide variety of lakes, rivers and streams. There are currently over 400 lakes and ponds managed by the NYSDEC for native and stocked brook trout, in which 100 or so contain naturally-reproducing brook trout. Thousands of miles of streams in the Adirondacks, Tug Hill Region, Catskill Mountains, western New York, east of the Hudson River, on Long Island and in the Upper Susquehanna watershed support self-sustaining populations of brook trout. However, only 5% of the watersheds in NY that historically contained stream populations are considered intact (meaning >90% of habitat occupied).

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Moderate Decline	Moderate Decline
6% to 10%		Common	X		
11% to 25%		Fairly common			
26% to 50%		Uncommon			
> 50%	X	Rare			

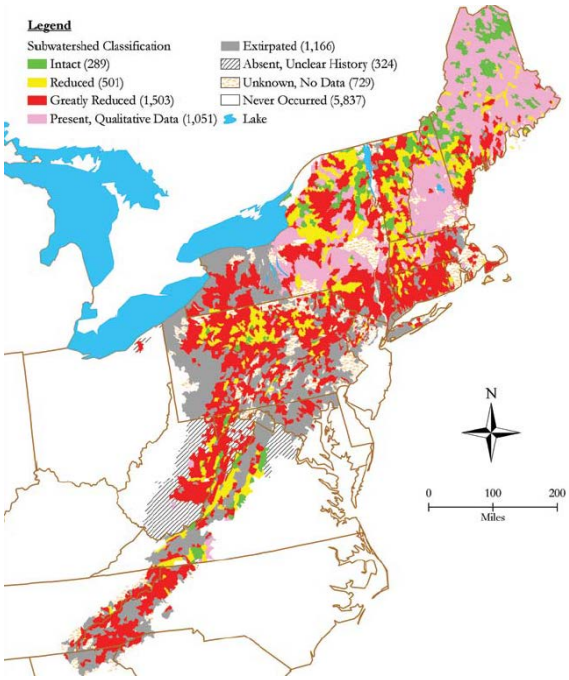
Habitat Discussion:
Brook trout prefer small to moderate sized streams, lakes and ponds, wherever cool (below 72˚F), clean water is available. Brook trout are an excellent sentinel of water quality due to their preference of clean waters of high purity, narrow pH range, and sensitivity to poor oxygenation, pollution and changes in pH cause by environmental effects (USFWS 2012).

Primary Habitat Type
Lake; Pond
Small River; Low Gradient; Moderately Buffered, Neutral; Transitional Cool

Distribution:
There are 85 known self-sustaining populations in the Adirondacks (Gordon et al. 2003).



Perkins et al. (1993)



EBTJV (2006)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Biological Resource Use	Logging & Wood Harvesting (siltation from logging)	R	M	M
2. Natural System Modifications	Dams & Water Management/Use (fragmentation from dams, culverts)	W	M	M
3. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (largemouth bass, round goby, etc)	P	H	V
4. Pollution	Agriculture & Forestry Effluents (nutrient runoff, pesticides)	W	L	M
5. Climate Change & Severe Weather	Temperature Extremes	P	M	V

6. Invasive & Other Problematic Species & Genes	Problematic Native Species (beavers)	P	M	M
7. Pollution	Industrial & Military Effluents (acid deposition)	R	L	M
8. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (trout stocking)	P	M	M
9. Climate Change & Severe Weather	Storms & Flooding (severe storms)	W	L	V
10. Natural System Modifications	Dams & Water Management/Use (water withdrawal – yogurt, golf courses)	R	L	M
11. Energy Production & Mining	Oil & Gas Drilling	R	L	M
12. Natural System Modifications	Other Ecosystem Modifications (roadside ditching)	W	L	M
13. Pollution	Household Sewage & Urban Waste Water (stormwater runoff)	N	L	M

References Cited:

EBTJV (Eastern Brook Trout Joint Venture). 2006. Eastern Brook Trout: Status and threats. Summary report of the Eastern Brook Trout Venture, Trout Unlimited, Arlington, Virginia. Available at www.easternbrooktrout.net/docs/brookiereportfinal.pdf

Gordon, W.H., P.J. Festa and D.C. Josephson 2003 (abstract). Status of wild brook trout in Adirondack ponds. Poster at 2003 AFS meeting, August, Quebec City.

USFWS (U.S. Fish and Wildlife Service). 2012. Strategic Plan FY2012. New York and Long Island Field Offices. 623p.

Common Name: Cisco ***SGCN***
Scientific Name: *Coregonus artedi*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G5
New York: S3
Tracked: No

Synopsis:
Cisco, also known as lake herring and tullibee, inhabits cold lakes and remains in deeper areas during the summer. It is native to ten watersheds in Great Lakes drainage, the Finger Lakes, lower elevations of the Adirondacks, and Chautauqua Lake. Abundance has declined in the westernmost watersheds and lower elevation lakes, including Lake Erie. Specifically it is extirpated from Chautauqua Lake, and has declined below detection in New York portions of Lake Erie (Carlson and Daniels, in prep.).

It is not native in six other watersheds mostly on the southern tier and many waters were stocked in the late 1800s and early 1900s.

Ciscoes occur in pelagic, cold-water Great Lakes and inland lake environments. During the winter months, they move into shallow coastal waters to spawn, but then return to deeper waters in the spring. Ciscoes are rarely found in waters above 17 to 18ºC. They can live in lakes with surface areas ranging from 20 to 19,000 acres, but are mostly found in lakes with an average surface area of 100 acres and depths of at least 10 m. Cisco-rich lakes tend to be oligotrophic (Joel 2014).

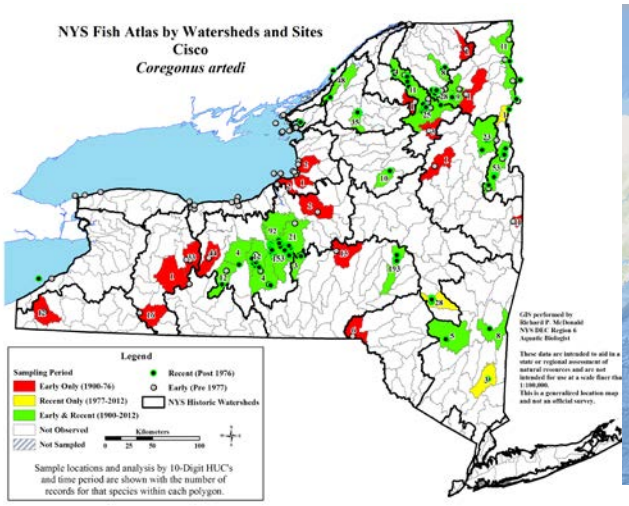
Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Declining	Unknown
6% to 10%		Common			
11% to 25%	X	Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

Habitat Discussion:
Cisco are a pelagic, cold-water, lake species. They often form large schools at depths of 9- 91 m, and are most commonly found at depths ranging from 27-46 m (Wells 1968). They typically move into shallow waters in the winter to spawn and then move back to deeper waters, below the thermocline in spring (Scott and Crossman 1998). Of all the ciscos, *artedi* are most often found around inshore shoals and shallow water (Becker 1983). As young, their upper lethal water temperature is 26° C. In inland lakes they rarely occur in waters with temperatures above 17-18° C.

Primary Habitat Type
Lake; Coldwater

Distribution:
Cisco are rarely seen in Lake Erie, and mainly only in commercial netting in Ontario waters; only about 36 have been observed in the last 20 years (J. Markham personal communication, April 2015). This species has not been caught in the St. Lawrence River since 1989. It is still present in tributaries of the St. Lawrence River, Otsego Lake, and in various lakes in the Adirondacks including Lake Champlain. It is also present in the Finger Lakes area and Oneida Lake (Kraft et al. 2006). It was introduced by stocking to many waters in the late 1800s and early 1900s, both within and outside its native range. Many of the populations lost in the 20th century are likely failed introductions (Carlson and Daniels, in prep.).

Severe over-exploitation of ciscoes from 1930 to 1960 and competition with invasive rainbow smelt resulted in dramatic population declines; alewife is another competitor. However, rainbow smelt populations declined in Lake Erie during the 1970s and since that time, ciscoes have increased in some places. Since overfishing is no longer a problem, it is thought that competition with rainbow smelt and alewives has kept some cisco populations low. One of the motivations for restoring cisco populations is to control alewife populations. Alewives predate on the fry of fish like the economically important lake trout, and it is thought that more abundant cisco populations will help combat this (Joel 2014).



Carlson (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Biological Resource Use	Fishing & Harvesting Aquatic Resources	N	L	L
2. Invasive & Other Problematic Species & Genes	Problematic Native Species	W	M	H
3. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species	W	M	V
4. Pollution	Agricultural & Forestry Effluents	N	L	H
5. Pollution	Household Sewage & Urban Waste Water	N	M	H
6. Climate Change & Severe Weather	Temperature Extremes	N	L	V

References Cited:

Becker, G.C. 1983. Fishes of Wisconsin. The University of Wisconsin Press, Madison, WI. 1052pp.

Carlson, D.M. and R.A. Daniels, in prep. Atlas of Inland Fishes of New York. New York State Museum.

Joel, L. 2014. "*Coregonus artedi*" (On-line), Animal Diversity Web. <http://animaldiversity.org/accounts/Coregonus_artedi/>. Accessed 24 March 2014.

Kraft, C.E., D.M. Carlson, and M. Carlson. 2006. Inland Fishes of New York (Online), Version 4.0. Department of Natural Resources, Cornell University, and the New York State Department of Environmental Conservation.

Scott, W.B. and E.J. Crossman. 1998. Freshwater fishes of Canada. Bulletin 184, Fisheries Research Board of Canada, Ottawa, 966p.

Wells, L. 1968. Seasonal depth distribution of fish in southeastern Lake Michigan. U.S. Fish and Wildlife Service Fish. Bull. 67(1): 1-15.

Common Name: Deepwater sculpin ***SGCN***
Scientific Name: *Myoxocephalus thompsonii*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Endangered

Natural Heritage Program Rank:
Global: G5
New York: S1
Tracked: Yes

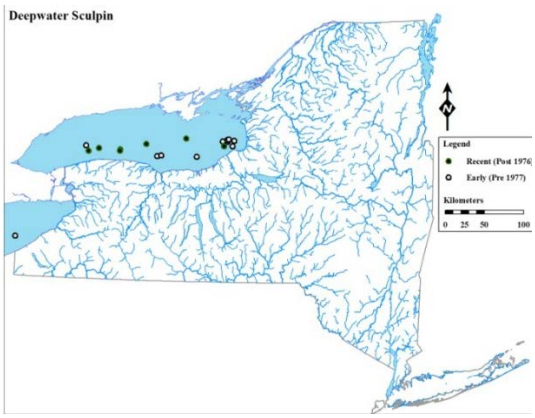
Synopsis:
Deepwater sculpin occur in deep, cool waters of mainland lakes in northern North America, from the Great Bear Lake in Canada to the Great Lakes. This species lives off-shore in deep, bottom areas of Lake Ontario and may have existed in Lake Erie. It remains in its former range in Lake Ontario but it is not known whether this species currently exists as an established population in Lake Erie.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%	X	Abundant		Stable	Increasing
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon			
> 50%		Rare	X		

Habitat Discussion:
Other than the fact that it is found in cold water (40˚F or less) at depth of 25–366 m, very little is known about its habitat requirements. Adults and juveniles are benthic and spawning occurs in deep water. Larvae are pelagic and likely occur in the meta- and hypolimnion (NatureServe 2012, J. Lantry, pers. comm.).

Primary Habitat Type
Lake; Very Large Lake

Distribution:
Juvenile and adults of this species were present in Lake Ontario 1996–2012. During 1998–2012 there were 275 records obtained in Lake Ontario trawl surveys (Weidel et al. 2013). If one included the suspected ‘drifter’ from Lake Huron into Lake Erie, presence could be considered in two water bodies.



Carlson (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (Dreissenid mussels, round goby, disease)	P	M	V
2. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (alewife, rainbow smelt)	P	H	V
3. Pollution	Household Sewage & Urban Waste Water (eutrophication)	P	L	H
4. Climate Change & Severe Weather	Temperature Extremes	W	L	V

References Cited:

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 5, 2012).

Lantry, Jana. Personal communication. NYSDEC. Cape Vincent, NY.

Weidel, B.C., M.G. Walsh, M.J. Connerton. 2012. Sculpin and Round Goby Assessment in the U.S. waters of Lake Ontario, 2011. Section 21 pp. 12–20 in NYSDEC 2011 Annual Report, Bureau of Fisheries, Lake Ontario Unit and St. Lawrence River Unit to the Great Lakes Fishery Commission's Lake Ontario Committee.

Common Name: Eastern sand darter ***SGCN***
Scientific Name: *Ammocrypta pellucida*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Threatened

Natural Heritage Program Rank:
Global: G4
New York: S2
Tracked: Yes

Synopsis:
Eastern sand darter occurs east of the Mississippi River in the rivers and streams of western Illinois, Indiana, Ohio, northern Kentucky, western West Virginia, western Pennsylvania, and in the shallow shores of Lake St. Clair, the southern end of Lake Huron, and the southern shore of Lake Erie from Ohio to New York. There is a disjunct population in northern New York and southern Quebec in the Lake Champlain drainage and along the New York and Vermont border in the St. Lawrence River drainage. It inhabits medium-sized streams and larger rivers with clean sand and low gradient. Early reports placed this species in the Erie watershed and in the Salmon River of the Saint Lawrence watershed. The Salmon River population is secure but the population in the Erie watershed has apparently declined. Its presence in the Oswegatchie, Champlain, Allegheny and St. Lawrence tributaries dates back to 1979, which suggests an increase in abundance or possibly a range expansion. A new record from the Bouquet River in 2013 extends the range of this species northward significantly (D. Carlson, personal communication).

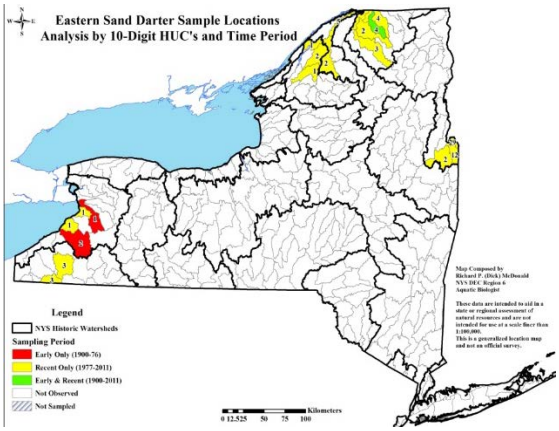
Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Increasing	Stable
6% to 10%	X	Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

Habitat Discussion:
This species inhabits Lake Erie and low gradient streams, usually occurring over sand substrate where currents are sufficient to prevent siltation but retain sand. In streams, these darters are typically found on the depositional side of the channel immediately downstream of a bend. Habitat preferences were described by Daniels (1993). The agricultural land-uses of the Poultney River riparian areas may be causing erosion and habitat degradation. These conditions are not currently present in the far northern corridor where three of the other streams are found, but may be present in lower Conewango Creek. The recent discovery of their presence there may be a sign of habitat improvement rather than the often assumed degradation. The Lake Erie population uses much different habitats than those in streams of the St. Lawrence and Lake Champlain watersheds, but details are not available. Degradation of habitats in Lake Erie was substantial in previous decades, and improvements in water quality may account for their recent resurgence. Sand bars of the Upper Niagara River might be expected to attract or sustain sand darters but none have been caught. These areas are now infested with round goby.

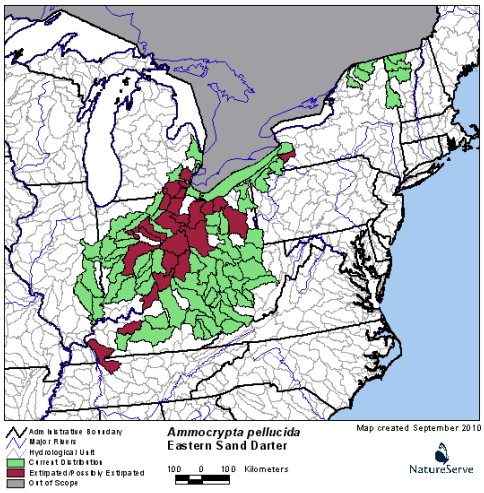
Essential habitat trend appears stable, but specifics are unknown. Habitat degradation studies have been underway in the Poultney River (Facey and O'Brien 2003).

Primary Habitat Type
Large/Great River; Low-Moderate Gradient; Assume Moderately Buffered (Size 3+ rivers); Warm

Distribution:



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Pollution	Agricultural & Forestry Effluents (siltation)	R	H	M
2. Natural System Modifications	Dams & Water Management/Use	W	L	H
3. Natural System Modifications	Other Ecosystem Modifications (stream channelization)	R	M	H
4. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (round goby)	N	M	V
5. Biological Resource Use	Fishing & Harvesting Aquatic Resources (lampricide)	N	L	L

References Cited:

Carlson, Douglas. Personal communication. NYSDEC. Watertown, NY.

Daniels, R.A. 1993. Habitat of the eastern sand darter, *Ammocrypta pellucida*. Journal of Freshwater Ecology 8(4):287-295.

Facey, D.E. and S.M. O'Brien 2003. Influence of substrate composition on distribution of eastern sand darter (*Ammocrypta pellucida*) in the Poultney River. Contract study for The Nature Conservancy.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 4, 2012).

Common Name: Iowa darter ***SGCN***
Scientific Name: *Etheostoma exile*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G5
New York: S2
Tracked: Yes

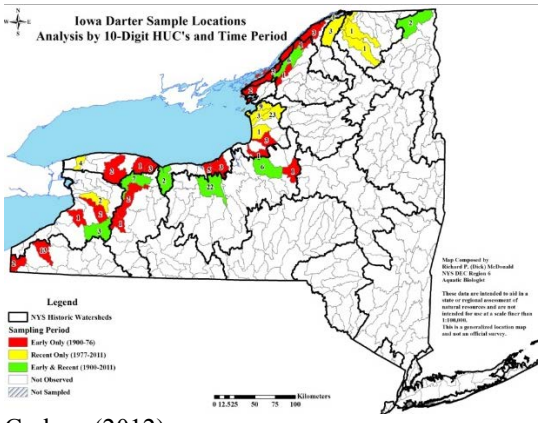
Synopsis:
The range of the Iowa darter extends from the Great Lakes drainage in both the United States and Canada, through the northern Midwest, as far south as Colorado, and throughout the prairie provinces of Canada, occurring father west and north than any other darter. It is currently found in about 17 waters scattered throughout the St. Lawrence, Lake Ontario, and Lake Erie watersheds in New York, occurring in lakes, low gradient streams, and larger rivers with submerged aquatic vegetation and gravel. Populations have declined to levels below detection in the Allegheny; in other watersheds there are no clear trends. Most records are from Lake Ontario bays and inland waters.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Moderate Decline	Unknown
6% to 10%		Common			
11% to 25%	X	Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

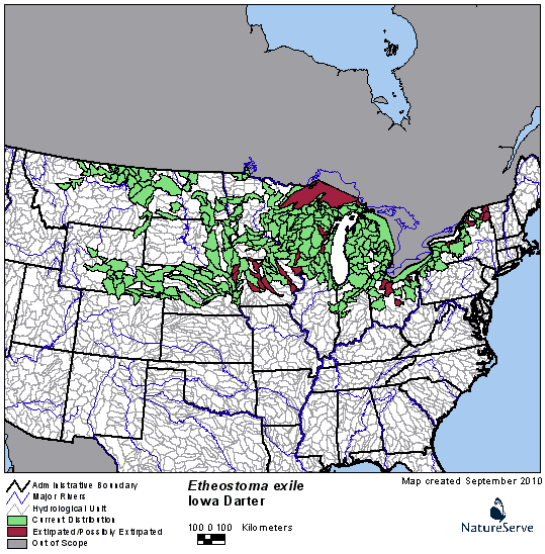
Habitat Discussion:
The Iowa darter occurs in quiet, shallow and weedy parts of lakes and rivers, but it also uses gravel and perhaps deeper areas. It usually occurs in clear-water, vegetated areas with sandy gravel or flocculent, and organic debris bottom types. Spawning occurs in shallow water of lake margins and quiet areas of streams; eggs are laid on submerged roots or debris, occasionally on gravel and sand.

Primary Habitat Type
Lake; Medium Lake
Small River; Low Gradient; Moderately Buffered, Neutral; Transitional Cool

Distribution:



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Pollution	Agricultural & Forestry Effluents (siltation)	N	L	H
2. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (round goby, introduced darters)	R	M	H
3. Agriculture & Aquaculture	Annual & Perennial Non-Timber Crops (ditching in agricultural areas)	N	M	H
4. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (milfoil)	R	M	H

References Cited:

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 4, 2012).

Common Name: Ironcolor shiner ***SGCN***
Scientific Name: *Notropis chalybaeus*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Special Concern

Natural Heritage Program Rank:
Global: G4
New York: S1
Tracked: Yes

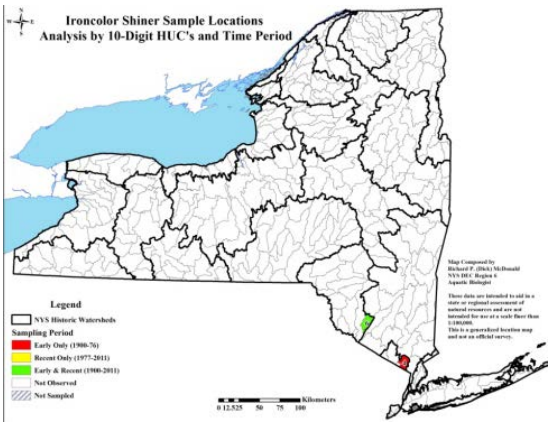
Synopsis:
Ironcolor shiner occupies a large range that includes the lowlands in central United States and the Atlantic Coast from southern New York to southern Florida and across the Gulf Slope. Populations occur in Texas, Illinois, Iowa, Wisconsin, Indiana and Michigan. There are many disjunct populations, especially in the Midwest, where declines and extirpations have occurred as a result of stream siltation and water pollution, and New York is located on the periphery of its range. It is native to 2 of 18 watersheds in New York: Delaware and Newark Bay. It is now extirpated from Newark Bay, but seems secure in the Neversink portion of the Delaware watershed. It prefers medium-sized streams with submerged aquatic vegetation.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%	X	Abundant		Stable	Stable
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

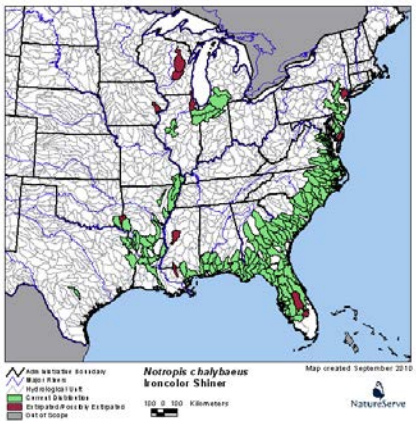
Habitat Discussion:
The ironcolor shiner has been observed in deep pool areas of creeks and small rivers; it has also been observed in water bodies where a moderate current exists. Sand seems to be important for spawning. It prefers clear, well-vegetated water. Aquatic plants found in areas that this species inhabits include bladderwort, pondweed and Elodea. A downstream section of the Delaware River in Pennsylvania contained ironcolor shiner in 1996, and there may be similar areas in New York.

Primary Habitat Type
Small River; Low Gradient; Moderately Buffered, Neutral; Transitional Cool

Distribution:



Carlson (2012)



NatureServe (2012)

Threats
No threats were identified.

References Cited:
Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 4, 2012).

Common Name: Lake chub ***SGCN***
Scientific Name: *Couesius plumbeus*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G5
New York: S2S3
Tracked: Yes

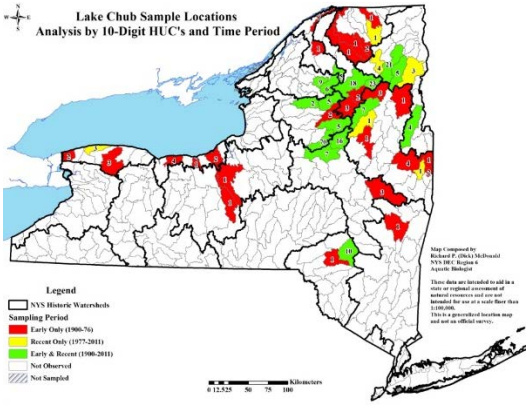
Synopsis:
Lake chub inhabits cold-water lakes and streams with clean gravel and is native to 11 of 18 watersheds in New York. Its distribution in the Adirondacks has undergone little change but there has been a substantial decline in 6 of the 11 watersheds where it occurs. Lake chub has declined to levels below detection in the Ontario, Oswego, and Lower Hudson watersheds. Its abundance in the Delaware, St. Lawrence, and Raquette watersheds has declined. These declines occurred in peripheral and lower-elevation areas where water temperature may be a factor.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Severe Decline	Severe Decline
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%	X	Uncommon	X		
> 50%		Rare			

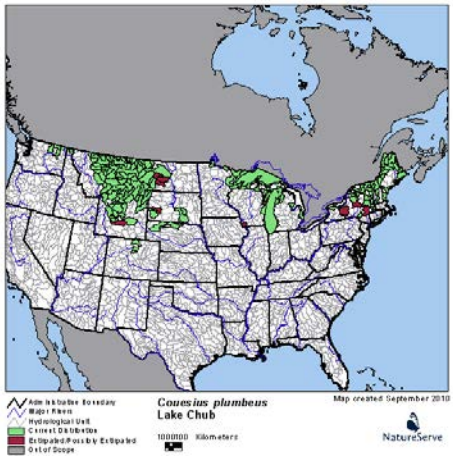
Habitat Discussion:
Lake chub live in small creeks and weedy shallows of lakes or impoundments. This species occurs in varied habitats, including standing or flowing water, and large or small bodies of water; it is most common in gravel-bottomed pools and runs of streams and along rocky lake margins (Page and Burr 1991). It is more common in lakes in the southern part of the range, mostly in rivers in the north (but in lakes if available). Often it occurs in shallows but may move into deeper parts of lakes in summer. Spawning occurs in river shallows, along rocky shores, in shoals of lakes.

Primary Habitat Type
Headwater/Creek; Low Gradient; Moderately Buffered, Neutral; Transitional Cool
Lake; Very Large Lake

Distribution:
Lake chub are distributed through the northern and northeastern parts of New York and along the southern shore tributaries of Lake Ontario as well as occasionally caught in deeper parts of lakes.



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Pollution	Agricultural & Forestry Effluents (siltation)	R	M	H
2. Climate Change & Severe Weather	Habitat Shifting & Alteration	W	M	V
3. Invasive & Other Problematic Species & Genes	Non-native species (largemouth bass, rock bass, etc)	R	M	H

References Cited:

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 4, 2012).

Page, L.M. and B.M. Burr. 1991. A field guide of freshwater fishes, North America north of Mexico. Houghton Mifflin Co. Boston. 432 pp.

Common Name: Lake sturgeon ***SGCN***
Scientific Name: *Acipenser fulvescens*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Threatened

Natural Heritage Program Rank:
Global: G3G4
New York: S1S2
Tracked: Yes

Synopsis:
The lake sturgeon occurs in lowland rivers and large lakes and is currently present in 9 of 18 watersheds in New York. Its range seems secure in the St. Lawrence drainage watersheds where it is found in the main channel, Lake Champlain and downstream of the lowest barrier in tributaries, but its abundance has not recovered from 19th century declines. Lower reaches of the Oswegatchie, Grass, Raquette, and Oswego rivers provide spawning habitat. Stocking since 1995 has rebuilt a population in the Oswego watershed and juveniles have entered the upper Mohawk watershed, where this species is not native. The Lower Niagara River/Lake Ontario population remains stable, and the Genesee River/Lake Ontario population is recovering with the assistance of stocking.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Increasing	Increasing
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%	X	Uncommon	X		
> 50%		Rare			

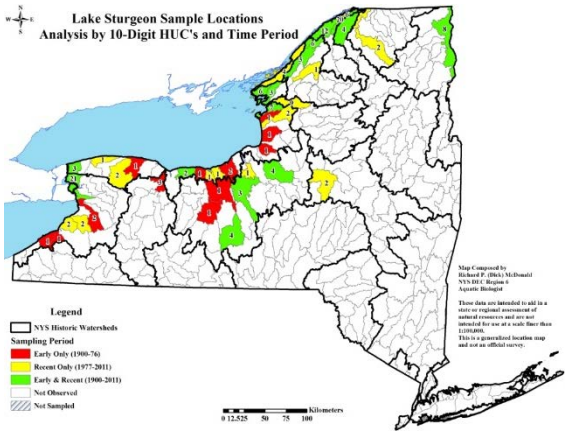
Habitat Discussion:
Lake sturgeon are found in lakes and large rivers with mud, sand, and gravel substrate. A preference for lakes has been demonstrated within some genetic stocks, while others show a preference for rivers. In the Great Lakes, this sturgeon lives primarily in shoal water. Individuals are most often found at depths of 5-10 meters, but larger fish have occasionally been taken at depths up to 43 meters (Scott and Crossman 1973, COSEWIC 2006). In rivers, the preferred habitat is deep mid-river areas and pools, where water depths vary between 4 and 9 meters and food is abundant (Harkness and Dymond 1961, Priegel and Wirth 1971).

Several reports describe spawning habitat and habitat-use by young sturgeon in rivers (Carlson 1995). In rivers, spawning occurs in water generally 0.3-4.7 meters deep, typically in areas of swift currents, rapids, or waterfalls that prevent upstream migration (Scott and Crossman 1973). Spawning substrate varies from hard-pan clay to gravel to boulders, including riprap that has been placed along river edges (LaHaye et al. 1992, COSEWIC 2006). In lakes, spawning occurs over rocky ledges or shoals where wave action produces sufficient oxygen levels for the eggs.

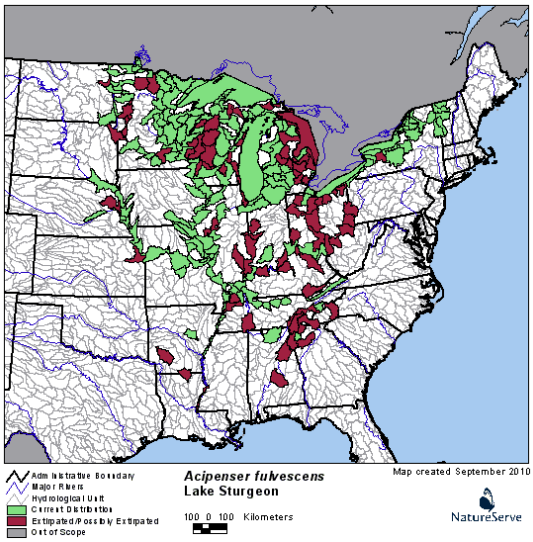
Young sturgeon travel in large schools over gravel areas and sand bars during the fall months of their first year. After the first year, the young inhabit the same areas as older fish, as described above (NatureServe 2012).

Primary Habitat Type
Large/Great River; Low-Moderate Gradient; Assume Moderately Buffered (Size 3+ rivers); Warm
Medium River; Low-Moderate Gradient; Assume Moderately Buffered (Size 3+ rivers); Warm

Distribution:
Spawning populations in the lower Genesee and lower Oswego, below the first impassable barriers, have been lost. Stocking programs to the lower Genesee, Oneida Lake, Cayuga Lake, Oswegatchie River, St. Lawrence River, St. Regis River and Black Lake are accountable for increased catches. In other waters, increased record keeping since the 1990s has accounted for much of the recent increase of individuals.



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Natural System Modifications	Dams & Water Management/Use (dams)	P	H	H
2. Biological Resource Use	Fishing & Harvesting Aquatic Resources	N	L	L
3. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (round goby, quagga mussel, sea lamprey)	P	M	V
4. Pollution	Agricultural & Forestry Effluents (siltation)	P	M	H
5. Invasive & Other Problematic Species & Genes	Problematic Native Species (botulism, other diseases)	W	L	V
6. Pollution	Industrial & Military Effluents (PCBs, mercury)	W	L	H

References Cited:

Carlson, D.M. 1995. Lake sturgeon waters and fisheries in New York State. J. Great Lakes Res. 21:35-41.

COSEWIC [Dick, T. A., R. R. Campbell, N. E. Mandrak, B. Cudmore, J. D. Reist, J. Rice, P. Bentzen, and P. Dumont]. 2006. COSEWIC assessment and update status report on the lake sturgeon Acipenser flavescens in Canada. Committee on the Status of Endangered Wildlife in Canada, Ottawa. xi + 107 pp

Harkness, W. J. K. and J.R. Dymond. 1961. The lake sturgeon. The history of its fishery and problems of conservation. Ont. Dept. Lands and Forests, Fish and Wildl. Br. 121 pp.

Lahaye, M., A. Branchaud, M. Gendron, R. Verdon, and R. Fortin. 1992. Reproduction, early life history, and characteristics of the spawning grounds of the lake sturgeon (Acipenser fulvescens) in Des Prairies and l'Assomption rivers, near Montreal, Quebec. Canadian Journal of Zoology 70:1681–1689.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 10, 2012).

Priegel, G. R. and T. L. Wirth. 1971. The lake sturgeon, its life history, ecology, and management. Wis. Dep. Nat. Resour. Publ. 240-270. 19 pp.

Scott, W. B., and E. J. Crossman. 1973. Freshwater fishes of Canada. Fisheries Research Board of Canada, Bulletin 184. 966 pp.

Common Name: Lake trout ***SGCN***
Scientific Name: *Salvelinus namaycush*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G5
New York: S5
Tracked: No

Synopsis:
Lake trout (*Salvelinus namaycush*) is the largest of the chars and is distinguished from the other by having more than 100 pyloric caeca. Its range is restricted to North America and it occurs in cold, oligotrophic lakes of Alaska, Canada, and the northern United States (Redick 1967), where it is often stocked for sport fishing. Lake trout is found as native in 11 watersheds in New York and has been regularly stocked in four others, outside its native range. Many of the native lake trout populations once supported commercial fisheries. Lake trout were once the dominant, offshore-benthic predator in Lakes Ontario and Erie, but severely declined due to overfishing and invasive fishes (NYSDEC 2015).

The natural range of lake trout includes much of Canada and portions of Alaska, and extends southward into the northern border states of eastern and mid-western United States (Lindsey 1964). Present knowledge suggests that the post glacial, southerly distribution of lake trout may have terminated in Lake Erie and certain inland lakes of central New York. Native lake trout populations inhabited Lake Erie, Lake Ontario, Lake Champlain, an indeterminate number of Adirondack lakes, Lake George, Otsego Lake and some Finger Lakes (Greeley 1930, 1934, 1936; Greeley and Greene 1931, Greeley and Bishop 1933, Trautman 1957, Webster et al. 1959). Many southern, central, and northern New York waters received experimental lake trout stockings during the late 1800s and early 1900s, but there is no evidence that its range within the state was measurably enlarged by these efforts. Historical data concerning the former abundance of lake trout in New York lacks sufficient detail to draw meaningful conclusions. However, since settlement of its natural range in New York, there has been general reduction in abundance within individual lakes and extirpation of the species in some lakes. Concern over diminishing lake trout populations and poor lake trout fishing was expressed as early as the 1870's (New York Comm. of Fisheries 1875, Halnon 1963).

New York holds importance in the continental US, as the only unexploited lake trout lakes in the Northeast are found in the Adirondacks. Also noteworthy, the Adirondacks may hold the greatest number of wild, self-sustaining lake trout populations that have never been stocked, although this has not been confirmed through genetic testing.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Declining/Stable*	Increasing
6% to 10%		Common			
11% to 25%	X	Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

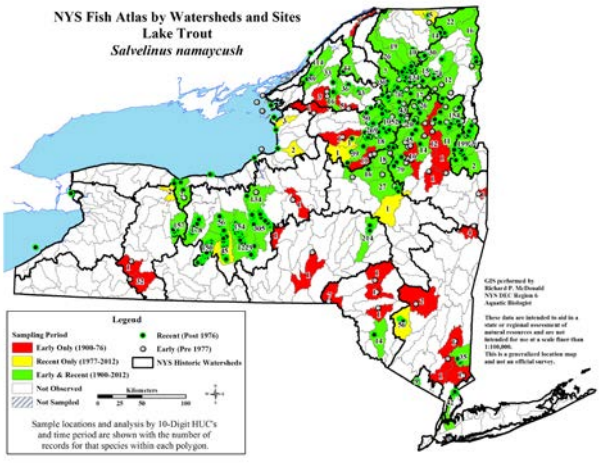
*Today there is increasing abundance in Lake Erie and Lake Ontario due to stocking by New York and others. In Lake Ontario lake trout are naturally reproducing at a very low but detectable level. Populations are stable in the Finger Lakes, declining in Otsego Lake, and as stated above, there is some decline in Adirondack lakes, but they are generally stable.

Habitat Discussion:
Lake trout inhabit deep, cold, well-oxygenated lakes. A very specific temperature/oxygen combination is required for suitable habitat. The water must be very cold (<55°F) and highly oxygenated (5+ milligrams per liter, or at least 50 percent saturated). Generally, the southern limit of the species range is 43° latitude, which is the southern boundary of the Adirondacks. Therefore, during the summer, Adirondack lake trout can only survive in the coldest water at the bottom of the deepest (30+ feet) lakes. The species name, namaycush, is believed to be an Algonquin term for "dweller of the deep" (Thill 2014).

Primary Habitat Type
Lake; coldwater lake

Distribution:

After 1977, lake trout were found to inhabit many Adirondack ponds and populations were maintained by natural reproduction in over 80% of these ponds (Gallagher and Baker 1990). The Nature Conservancy (Thill 2014) reports lake trout now inhabit an estimated 102 cold, deep, rocky Adirondack lakes, and native populations are self-sustaining in only half of those. The remaining ones are supported by stocking. Beyond the Adirondacks, lake trout are still found in Lake Champlain, Lake George, Otsego Lake, Lake Ontario, Lake Erie, and the Finger Lakes, with self-sustaining populations in Keuka Lake. Introduced populations in Kensico and Rondout reservoirs have self-sustaining introduced populations.



Carlson (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Natural System Modifications	Dams & Water Management/Use (water level manipulation in lakes)	R	M	H
2. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (sea lamprey, round goby, dreissenid mussels, VHSv)	W	M	H
3. Invasive & Other Problematic Species & Genes	Problematic Native Species (alewife, rainbow smelt, yellow perch, black bass, northern pike)	W	L	H
4. Pollution	Air-Borne Pollutants (acid rain in ADK lakes)	R	L	H
5. Pollution	Household Sewage & Urban Waste Water (sewage effluent)	R	L	M
6. Pollution	Household Sewage & Urban Waste Water (Run-off, sedimentation of spawning habitat)	W	L	M
7. Pollution	Agricultural & Forestry Effluents (sedimentation of spawning habitat)	W	L	M
8. Climate Change & Severe Weather	Temperature Extremes (warming lakes)	R	L	V

References Cited:

New York State Department of Environmental Conservation (NYSDEC). 2015. The Trout of New York. Available http://www.dec.ny.gov/animals/7016.html. Accessed 12 March 2015.

NYSERDA (New York State Energy Research and Development Authority). 2011. Responding to Climate Change in New York State, Albany, NY.

Redick, R.R. 1967. A review of literature on lake trout life history with notes on Alaskan management. State of Alaska Department of Fish and Game, Homer, Alaska.

Thill, Mary. 2014. The Nature Conservancy. Lake trout and climate change in the Adirondacks: status and long-term viability. Available http://www.nature.org/. Accessed 12 March 2015.

Common Name: Longnose sucker ***SGCN***
Scientific Name: *Catostomus catostomus*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G5
New York: S3
Tracked: No

Synopsis:
Longnose sucker is native to 3 of 18 watersheds in New York. It is found in cooler streams and lakes with clean gravel. Populations have declined in the Ontario, Susquehanna and Raquette watersheds; it appears most stable in eastern and northern watersheds. Longnose sucker remains in about half of the areas where it was known historically.

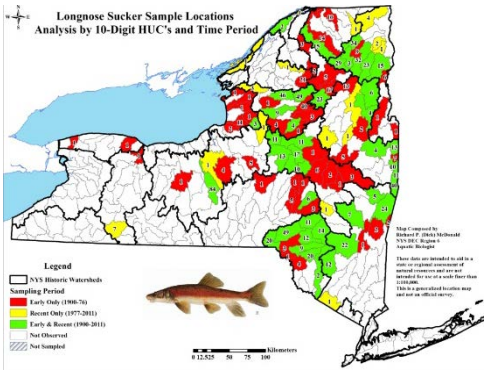
Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Moderate Decline	Moderate Decline
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%	X	Rare			

Habitat Discussion:
Longnose suckers are restricted in respect to their habitat (Scott and Crossman 1973), generally occurring only in lake bottoms and tributary streams. "Stunted" populations have been reported from New York (Smith 1985) and other areas (Gilbert and Lee 1980), but this feature has not received any study since Greeley's efforts in the 1930s. Spawning conditions were described in the Oswegatchie River near Cranberry Lake (Kendall and Dence 1929) and elsewhere by Rawson and Elsey (1950), Bailey (1969), Green et al. (1966), and Harris (1962). Riffles with gravel substrate, and lake shoals are apparently important spawning habitat. In some cases, juveniles remained in the tributaries, but in others they drifted downstream into the lakes.

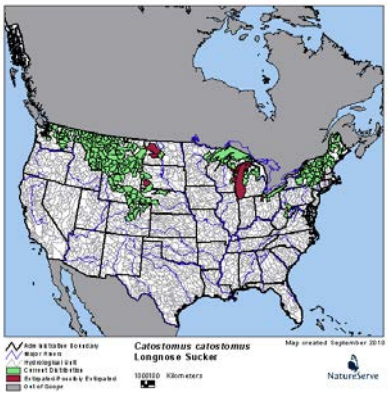
Habitat of this bottom dweller usually is cold, clear, deep water of lakes and tributary streams, to depths of 600 feet in the Great Lakes. Spawning occurs often in flowing shallow stream water over gravel, otherwise in lakes. Eggs sink and stick to the bottom. Young stay in gravel 1-2 weeks before emerging (NatureServe 2012).

Primary Habitat Type
Headwater/Creek; Low Gradient; Moderately Buffered, Neutral; Transitional Cool

Distribution:
Longnose sucker is currently found in all historic HUC-10 watersheds with the exception of the Oswegatchie.



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (smelt, walleye?)	N	M	V
2. Pollution	Agricultural & Forestry Effluents (siltation)	N	M	H
3. Climate Change & Severe Weather	Habitat Shifting & Alteration	P	L	V
4. Pollution	Industrial & Military Effluents (acid precipitation)	W	M	M

References Cited:

Bailey, M. M. 1969. Age, growth, and maturity of the longnose sucker *Catostomus catostomus*, of western Lake Superior. J. Fish. Res. Bd. Canada 26: 1289-1299.

Gilbert, C. R. and D. S. Lee. 1980. *Catostomus catostomus* (Forster), Longnose sucker. pp. 372 in D. S. Lee et al. Atlas of North American freshwater fishes. N. C. State Mus. Nat. Hist., Raleigh, 854 pp.

Green, G. H., T. G. Northcote, G. F. Hartman, and C. C. Lindsey. 1966. Life histories of two species of Catostomid fishes in Sixteenmile Lake, British Columbia, with particular reference to inlet stream spawning. J. Fish. Res. Board Canada, 23(11): 1761-1788.

Harris, R. H. D. 1962. Growth and reproduction of the longnose sucker, *Catostomus catostomus* (Forster) in Great Slave Lake. J. Fish. Re. Board Canada, 19(1): 113- 126.

Kendall, W.C. and W.A. Dence 1929. The fishes of the Cranberry Lake region. Roos. Wildl. Bull. 5(2):219-309.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 10, 2012).

Rawson, D. S. and C. A. Elsey. 1950. Reduction in the longnose sucker population of Pyramid Lake, Alberta, in an attempt to improve angling. Trans. Am. Fish. Soc., 78(1948): 13-31.

Scott, W. B. & E. J. Crossman. 1973. Freshwater fishes of Canada. J. Fish. Res. Board Canada. Ottawa. 966 pp.

Smith, C.L. 1985. The inland fishes of New York State. NYS Dept. Env. Conserv., Albany. 522pp.

Common Name: Mountain brook lamprey ***SGCN***
Scientific Name: *Ichthyomyzon greeleyi*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Special Concern

Natural Heritage Program Rank:
Global: G4
New York: S1
Tracked: Yes

Synopsis:
The mountain brook lamprey has a fragmented range in the Mississippi basin with populations occurring in New York, Pennsylvania, and adjacent areas of Ohio. It is also found in the Cumberland and Tennessee Rivers in Tennessee, northern Alabama, Kentucky, and Viriginia. Mountain brook lamprey occurs in medium-sized and smaller streams with clean sand. In New York, it lives in the French Creek, and other northern and central parts of the Allegheny basin. In the last 30 years mountain brook lamprey increased in range and abundance and although populations are restricted it seems secure.

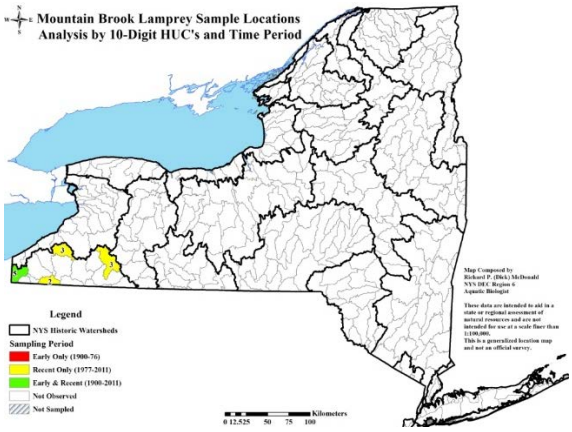
Genetics studies are controversial, but contend that the two species of this genus (including Ohio lamprey) might be morphs of one species (Docker 2009, Docker et al. 2012).

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%	X	Abundant		Unknown	Unknown
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon			
> 50%		Rare	X		

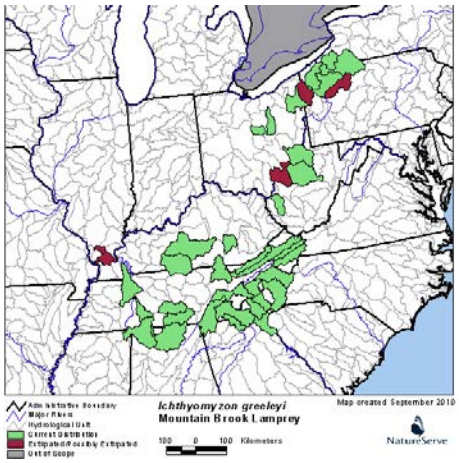
Habitat Discussion:
This species is found in gravel riffles and sandy runs of clean, clear streams and in the pebbles, sand, mud and debris in pools and backwaters. It spends it life in creeks without moving to larger rivers (Smith 1985). Stream temperatures are usually marginal, or warmer than what is suitable for trout. Adults occur in riffles or runs, under overhanging banks, or occasionally they attach to stones in the current; larvae burrow into beds of mixed sand, mud, and organic debris in pools and backwaters (Burr and Warren 1986, Page and Burr 2011). In Pennsylvania, spawning occurred just above swift riffles and throughout slow to moderate riffles (Raney 1939). In West Virginia, spawning occurred in the middle and lower portions of riffles (Schwartz 1959). In Virginia, Jenkins and Burkhead (1994) observed a spawning group in a gentle, shallow run of mostly small, loose gravel in a stream 2-4 meters wide.

Primary Habitat Type
Headwater/Creek; Low-Moderate Gradient; Moderately Buffered, Neutral; Transitional Cool

Distribution:



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Pollution	Agricultural & Forestry Effluents (siltation, pesticides)	P	L	M
2. Pollution	Household Sewage & Urban Wastewater	P	M	M
3. Energy Production & Mining	Oil and gas extraction	P	M	M

References Cited:

Burr, B.M. and M.L. Warren, Jr. 1986. Distributional atlas of Kentucky fishes. Kentucky Nature Preserves Commission, Frankfort, Kentucky.

Docker, M.F. 2009. A review of the evolution of nonparasitism in lampreys and an update of the paired species concept. Amer. Fish. Soc. Symp. 72:71-114.

Docker, M.F., N. E. Mandrak and D.D. Heath. 2012. Contemporary gene flow between "paired" silver (*Ichtyhmyzon unicuspis*) and northern brook (*I. fossor*) lampreys: implications for conservation. Conservation Genetics 13:823–35.

Jenkins, R.E. and N.M. Burkhead. 1994. Freshwater fishes of Virginia. American Fisheries Society, Bethesda, Maryland.

Page, L.M. and B.M. Burr. 2011. Peterson field guide to freshwater fishes of North America north of Mexico. Houghton Mifflin Harcourt, Boston, Massachusetts.

Raney, E.C. 1939. The breeding habits of *Ichthyomyzon greeleyi* Hubbs and Trautman. Copeia 1939(2):111-112.

Schwartz, F.J. 1959. Records of the Allegheny brook lamprey *Ichthyomyzon greeleyi* Hubbs and Trautman, from West Virginia, with comments on its occurrence with *Lampetra aeptypera* (Abbott). Ohio Journal of Science 59(4): 217-220.

Smith, C.L. 1985. The inland fishes of New York State. New York State Dept. of Environmental Conservation. Albany, NY. 522 pp.

Common Name: Muskellunge ***SGCN***
Scientific Name: *Esox masquinongy*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G5
New York: S4
Tracked: No

Synopsis:
The muskellunge is the largest member of the pike family, *Esocidae*. Its native range was restricted to waters in the eastern part of the continent, including the Great Lakes, St. Lawrence River, upper Mississippi River, and southern Hudson Bay drainages, and Appalachian rivers southward to Alabama and Georgia. It is typically associated with abundant aquatic vegetation in medium to large rivers with moderate current, and cool lakes.

In New York State, two separate muskellunge strains occur. The Great Lakes strain is found in the Lake Erie, Lake Ontario, and the St. Lawrence River drainages. The Ohio strain occurs in Chautauqua Lake, the Allegheny River, and their major tributaries, and is also stocked into some northern tributaries of Lake Champlain, including the Great Chazy and Missisquoi rivers. The Pennsylvania Fish and Boat Commission stocks Ohio strain muskellunge into the PA portion of the Susquehanna River, and these fish have made their way into NY sections of the watershed. The populations in the Great Lakes, Niagara River, and St. Lawrence River and tributaries are self-sustaining. There is also recent evidence that the Susquehanna River watershed population is self-sustaining. Populations in the Allegheny River watershed are maintained through stocking.

Muskellunge are susceptible viral hemorrhagic septicemia and recent outbreaks of this disease have resulted in a decline in the population of the upper St. Lawrence River. Populations in the upper Niagara River and St. Lawrence River are also at risk by loss of spawning and nursery habitat.

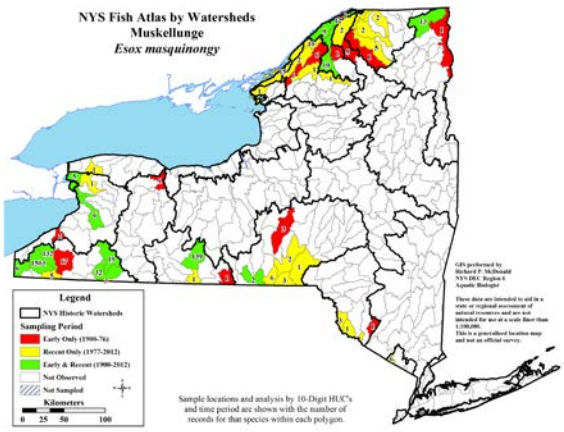
Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Stable	Moderate Decline
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%	X	Uncommon	X		
> 50%		Rare			

Habitat Discussion:
Muskellunge are found in coolwater lakes and medium to large rivers with mud, sand, and gravel substrate. Adult muskellunge are associated with submergent aquatic vegetation, whereas juveniles prefer emergents (Dombeck 1986). Large woody debris is an important habitat component.

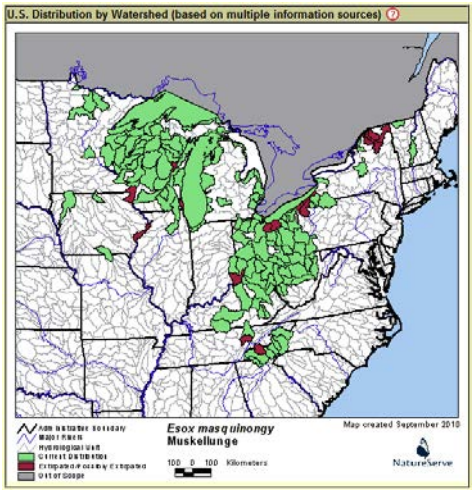
Primary Habitat Type
Large/Great River; Low-Moderate Gradient; Assume Moderately Buffered (Size 3+ rivers); Warm
Medium River; Low-Moderate Gradient; Assume Moderately Buffered (Size 3+ rivers); Warm

Distribution:

There are 32 waters in New York State with muskellunge populations. These waters are primarily in the Allegheny River, Susquehanna River, Lake Champlain, Great Lakes, and St. Lawrence River watersheds. Muskellunge are also found in the Delaware River and Greenwood Lake, in the southeastern part of the state.



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Natural System Modifications	Dams & Other Water Management/ Use- (spawning habitat loss due to water level control / changes in natural disturbance regime)	W	H	H
2. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (change in composition of aquatic vegetation due to invasive plants)	W	M	V
3. Residential & Commercial Development	Housing & Urban Areas (habitat loss to development: sea walls, road development)	W	M	V
4. Invasive & Other Problematic Species & Genes	Problematic Native Species (competition with native species, i.e., northern pike)	R	M	M
5. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (disease, esp. VHS)	W	H	M
6. Human Intrusions & Disturbance	Recreational Activities (jet skis through spawning areas, rafting in boats, bays)	N	L	L

References Cited:

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

Dombeck, M. P. 1986. Muskellunge habitat with guidelines for habitat management. Am. Fish Soc. Spec. Publ. 15: 208-215.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application].Version7.1. NatureServe, Arlington, Virginia. Available at: http://www.natureserve.org/explorer. (Accessed: January 31, 2013).

Common Name: Ohio lamprey ***SGCN***
Scientific Name: *Ichthyomyzon bdellium*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G3G4
New York: S1
Tracked: Yes

Synopsis:
The Ohio lamprey is found and is widely distributed through the Ohio River basin from southwestern New York, to northern Indiana, to eastern Illinois and southward to Kentucky, Tennessee, northern Alabama and in West Virginia. It is native to the Allegheny watershed in New York and occurs in medium-sized and larger streams with clean sand. Increases in range and abundance in the last 30 years suggest that populations are secure.

Genetics studies are controversial, but contend that the two species of this genus (including Ohio lamprey) might be morphs of one species (Docker 2009, Docker et al. 2012).

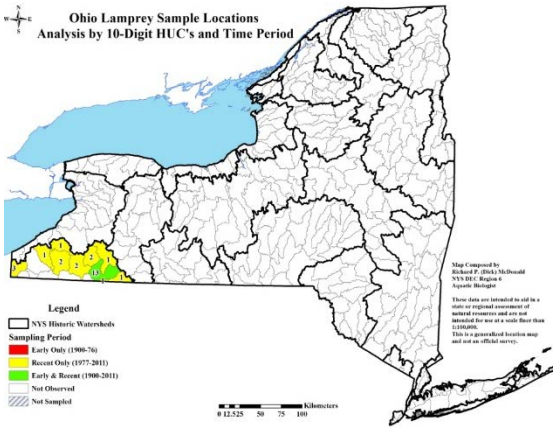
Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%	X	Abundant		Stable	Stable
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

Habitat Discussion:
Adult Ohio lampreys are found in moderate to large-sized creeks and rivers, and the ammocoetes inhabit the detritus of pools and quiet backwaters (Morse et al. 2009). Transformed lampreys live in runs and riffles of clean gravel with rubble. Spawning may occur in that area or in smaller tributaries.

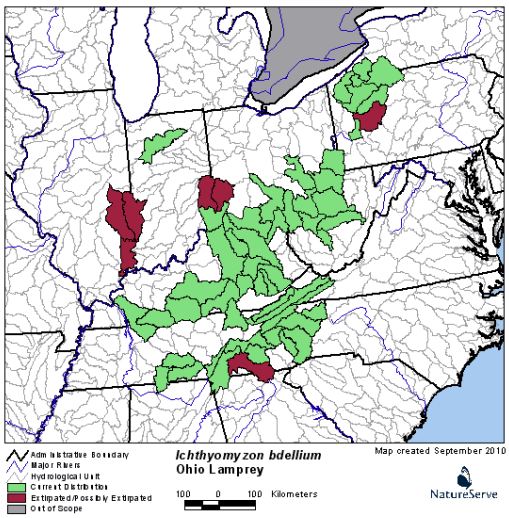
Primary Habitat Type
Medium River; Low-Moderate Gradient; Assume Moderately Buffered (Size 3+ rivers); Transitio

Distribution:
The Ohio lamprey is still found in at least seven waters of New York, including the Allegheny River (Smith 1985), Great Valley Creek (1992, DEC), Olean Creek (Eaton et al. 1979), Ischua Creek (DEC, 2004) Oswayo Creek (Daniels 1989), Mill Creek of Cassadaga (1992, DEC), Conewango and Mill creeks (2001, DEC), French Creek (Smith 1985, Hansen and Ramm 1994, Bowers et al. 1992, Carlson et al. 1999) and a tributary of French Ck, Crosscut Creek (DEC 1992). This species was more widespread in Pennsylvania (Argent et al. 1998), and it is not uncommon to catch it in these areas of New York. Unconfirmed collections of ammocoetes in 1998 also put this species in five tributaries of Conewango Creek, Cassadaga Creek and Allegheny River (M. Bain, Cornell U.). Continued sampling by DEC in some of these (Ischua Creek at Machias, W. Br. Conewango Creek at Skunk Corners) plus Stillwater

Creek at Route 62 in 2000-04 confirmed the genus as either Ohio lamprey or mountain brook lamprey, but was unable to confirm this species because of uncertain identity at early life stages.



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Natural System Modifications	Dams & Water Management/Use	P	L	V
2. Pollution	Agricultural & Forestry Effluents (siltation, runoff from dairy)	P	L	M
3. Pollution	Household Sewage & Urban Wastewater	P	L	H
4. Energy Production & Mining	Oil and gas extraction	P	L	M
5. Pollution	Industrial & Military Effluents (toxic spills)	W	L	M

References Cited:

Argent, D. G., R. F. Carline and J. R. Stauffer. 1998. Application of geographical system technology to fish conservation in Pennsylvania, phase I. Final report to Pennsylvania Wild Resource Conservation Board, Harrisburg, PA.

Daniels, R.A. 1989. Preliminary report, Allegheny River fish survey, 1989. New York State Museum, Albany.

Docker, M. F. 2009. A review of the evolution of nonparasitism in lampreys and an update of the paired species concept. Amer. Fish. Soc. Symp. 72:71-114.

Docker, M. F., N. E. Mandrak, and D.D. Heath. 2012. Contemporary gene flow between "paired" silver (*Ichtyhmyzon unicuspis*) and northern brook (*I. fossor*) lampreys: implications for conservation. Conservation Genetics 13:823–35.

Eaton, S.W., M.M. Kozubowski and R.J. Nemecek. 1979 unpublished. Fishes of the Allegheny River above the Kinzua Dam (with an annotated list of fishes). Dept. Biol., St. Bonaventure Univ., St. Bonaventure, NY.

Hansen, M. J. and C.W. Ramm. 1994. Persistence and stability of fish community structure in a southwest New York stream. Am. Midl. Nat. 132(1):52-67.

Smith, C.L. 1985. The inland fishes of New York State. New York State Dept. of Environmental Conservation. Albany, NY. 522 pp.

Common Name: Pugnose shiner ***SGCN***
Scientific Name: *Notropis anogenus*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Endangered

Natural Heritage Program Rank:
Global: G3
New York: S1
Tracked: Yes

Synopsis:
The original range of pugnose shiner extended from western New York and eastern Ontario west to southeastern North Dakota, south to northern Iowa, Illinois, Wisconsin, Michigan, northern Indiana, and northern Ohio. In New York, the pugnose shiner's native range is in near-shore areas of Cayuga Lake, Lake Ontario bays and the St. Lawrence River where submerged aquatic vegetation dominates. It has been reported in 3 of 18 watersheds, but has been extirpated from Cayuga Lake and the Oswego watershed. In Lake Ontario, two of the three historic populations have declined. There are more populations now than were reported historically in bays in the St. Lawrence watershed. It is sensitive to change in these specialized habitats dominated by aquatic vegetation.

Studies on genetics were initiated in 2009 by McCusker at the University of Toronto, and unique characteristics were described to distinguish those from Sodus Bay, the Thousand Islands Area and Lake St. Clair farther west.

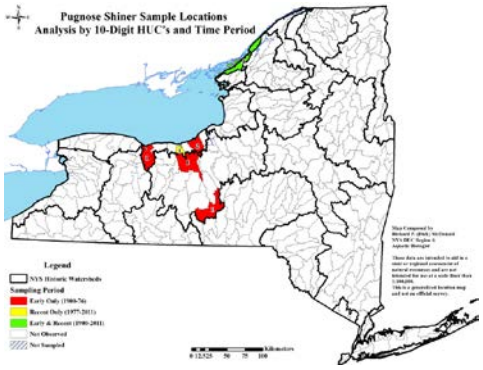
Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Stable	Unknown
6% to 10%	X	Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

Habitat Discussion:
The pugnose shiner prefers clear, weedy lakes and slow water areas of large streams with clean sand or marl bottoms. Aquatic plants providing shelter in locations it has been caught include pondweed, *Elodea*, coontail, water milfoil and *Chara* (Doeringsfeld 1993). Pugnose shiners were typically collected together with blackchin shiner during seining. The species is difficult to catch, and it is likely found in more habitats away from shore where seining has not been conducted.

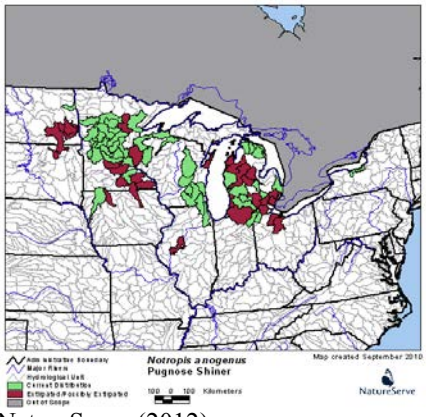
Primary Habitat Type
Large/Great River; Low-Moderate Gradient; Assume Moderately Buffered (Size 3+ rivers); Warm

Distribution:
In the St. Lawrence River, 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 pugnose shiner, but sampling directed at this species in 25 bays in 1996-97 caught them in only Sodus Bay. Similar efforts to catch this species in Cayuga Lake (mouth of Fall Creek) were unsuccessful in 1997, and current habitat conditions do not look favorable there or in Montezuma Marsh.



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Pollution	Agricultural & Forestry Effluents (siltation)	W	M	H
2.Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (invasive plants, i.e., milfoil)	W	M	H
3. Pollution	Industrial & Military Effluents (wastewater treatment plants)	R	M	H
4. Pollution	Agricultural & Forestry Effluents (nutrient runoff)	R	L	H

References Cited:

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

Doeringsfeld, M.R. 1993 unpublished. Notes on the life history of the pugnose shiner (*Notropis anogenus*) and current status in Minnesota. Gustavus Adolphus College, St. Peter, Mn., Abstract in J. Minn. Acad. Sci. 57(2):32.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 9, 2012).

Common Name: Redfin shiner ***SGCN***
Scientific Name: *Lythrurus umbratilis*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Special Concern

Natural Heritage Program Rank:
Global: G5
New York: S2
Tracked: Yes

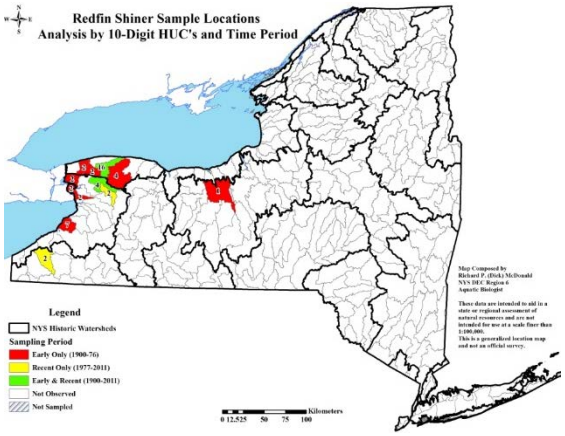
Synopsis:
The redfin shiner occurs in the Great Lakes and Mississippi River Basin, western New York to Minnesota, and south to Louisiana and Gulf drainages west to Texas. Several tributaries on the north shore of Lake Erie contained this species, and it has been classified as rare in Ontario (Noltie 1989). It lives in small to medium low-gradient streams with clean gravel and some submerged aquatic vegetation. It is native to 4 of 18 watersheds in western and central New York but has declined to levels below detection in the Oswego watershed and there are also major declines in tributaries in the Ontario watershed. Its distribution mimics that of northern sunfish because both species use the same nesting sites. Despite declines, it retains a limited distribution in the Ontario, Erie, and Allegheny watersheds.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Stable	Stable
6% to 10%	X	Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

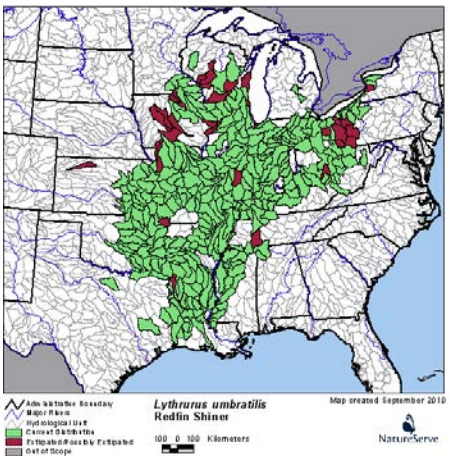
Habitat Discussion:
Redfin shiner lives in small to medium-sized streams in a variety of ecological settings, from a slow-flowing bay to high-gradient upland reaches. It is typically found in pools, but also prefers moderate or low-gradient streams with sand and gravel bottoms with some vegetation.

Primary Habitat Type
Small River; Low-Moderate Gradient; Moderately Buffered, Neutral; Warm

Distribution:
The only catches since the 1970s were in Tonawanda Creek near Millersport (2003), Murder Creek (1999 and 2003), Johnson Creek (1999 and 2003), Cassadaga Creek (2005) the Niagara River (1975) and Hadley's report from Twelvemile Creek (1975). The earliest Allegheny watershed record was 2005 and it is assumed they were there earlier but were below detection levels.



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Pollution	Agricultural & Forestry Effluents (siltation)	P	H	H
2. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (green sunfish)	P	L	V
3. Agriculture & Aquaculture	Annual & Perennial Non-Timber Crops (changes in hydrology due to agriculture)	W	M	H
4. Residential & Commercial Development	Housing & Urban Areas (changes in hydrology due to development)	W	M	H

References Cited:

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC, Watertown, NY.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 9, 2012).

Noltie, D.B. 1989. Status of the redfin shiner, *Notropis umbratilis*, in Canada. Can. Field-Nat. 103:201-215.

Common Name: Round whitefish ***SGCN***
Scientific Name: *Prosopium cylindraceum*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Endangered

Natural Heritage Program Rank:
Global: G5
New York: S1S2
Tracked: Yes

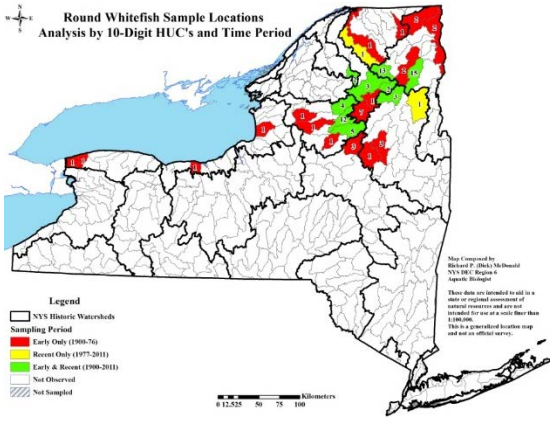
Synopsis:
The round whitefish occurs from Alaska in the northwest to Labrador and New England in the east. With the exception of Lake Erie, its distribution includes the Great Lakes. Round whitefish lives in lakes with a well oxygenated deep zone and is native to 7 of 18 watersheds in the Adirondack Mountains. It has also been known as non-native to the Oswegatchie watershed (previously stocked) with no records since 1955. Its distribution within its historic range has shrunk to 8 sites. A stocking program has established two more populations within its former range. It is extirpated from the Upper Hudson watershed.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Moderate Decline	Stable
6% to 10%		Common			
11% to 25%	X	Fairly common	X		
26% to 50%		Uncommon			
> 50%		Rare			

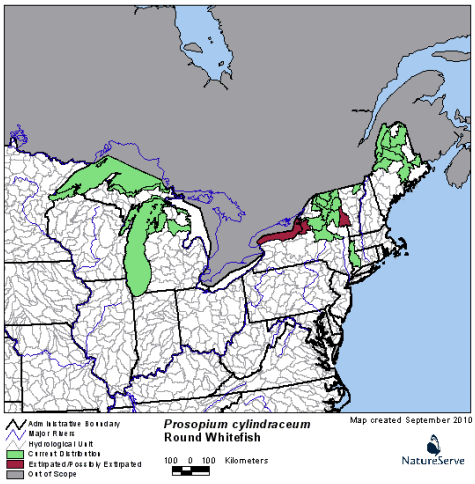
Habitat Discussion:
Round whitefish are usually found in deep, cold water lakes. They spawn in late fall in shallow water areas over gravel and boulders. Habitat specifics, vulnerability, and trends through time have not been studied. The habitat trends are unknown aside from invasive species and acidification patterns of lakes in general.

Primary Habitat Type
Lake; Medium Lake

Distribution:
There is an intact reproducing population of round whitefish currently in Little Moose Lake, Herkimer County (D. Josephson, personal communication).



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species	P	H	H
2. Pollution	Industrial & Military Effluents (acid precipitation)	R	L	M
3. Pollution	Household Sewage & Urban Waste Water (road salt)	N	M	M
4. Climate Change & Severe Weather	Temperature extremes	R	M	V

References Cited:

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

Josephson, D. 2013. An e-mail regarding round whitefish populations and control measures in New York. Personal communication.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 9, 2012).

Common Name: Swamp darter ***SGCN***
Scientific Name: *Etheostoma fusiforme*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Threatened

Natural Heritage Program Rank:
Global: G5
New York: S1S2
Tracked: Yes

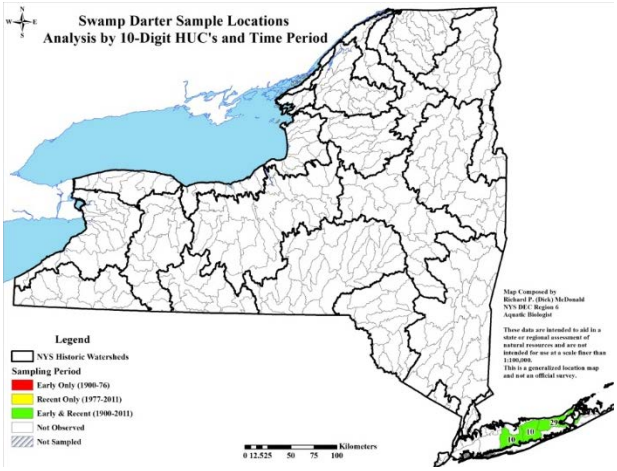
Synopsis:
Swamp darter inhabits ponds and medium-sized streams with aquatic vegetation. In New York it is found only on Long Island. It is present throughout its historic range and although its range is restricted, populations seem secure. It is vulnerable to habitat loss from wetland degradation and dewatering for residential and urban development.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%	X	Abundant		Moderate Decline	Stable
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

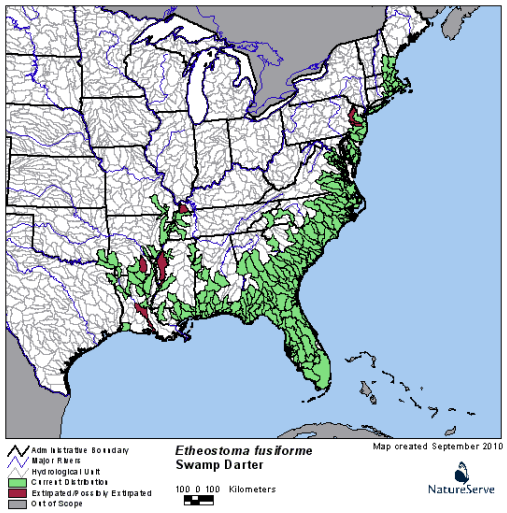
Habitat Discussion:
The swamp darter is found in quiet water areas and/or slow-moving water of swamps, ponds, lakes, and streams with detritus bottoms and aquatic vegetation, sometimes over sand or gravel. They tolerate a wide range of pH values (5.7–7.2), water temperatures, murky water and low oxygen levels (down to 2.1 mg/l) (Jenkins and Burkhead 1994). Spawning occurs among aquatic plants; eggs are deposited on leaves (NatureServe 2012).

Primary Habitat Type
Lake; Medium Lake

Distribution:
No new locations have been documented as having the swamp darter present. Historically, the swamp darter has only been reported from the drainages of Lake Ronkonkoma, the Carmans River and the Peconic River, all on Long Island.



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Natural System Modifications	Dams & Water Management/Use (dams)	N	L	M
2. Climate Change & Severe Weather	Drought	W	L	V
3. Pollution	Household Sewage & Urban Waste Water (septic systems, storm water runoff)	W	L	H
4. Pollution	Agricultural & Forestry Effluents (contaminants)	R	L	H
5. Natural System Modifications	Dams & Water Management/Use (water table withdrawal)	R	L	H

References Cited:

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

Jenkins, R.E. and N.M. Burkhead. 1994. Freshwater fishes of Virginia. Am. Fish. Soc. Bethesda, MD.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 5, 2012).

Common Name: Tonguetied minnow ***SGCN***
Scientific Name: *Exoglossum laurae*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G4
New York: S2
Tracked: Yes

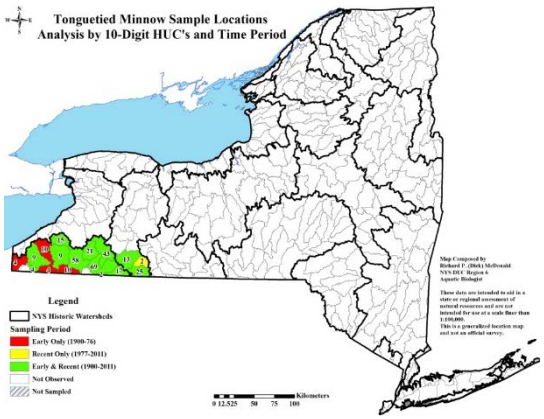
Synopsis:
Tonguetied minnow is found in small to medium-sized streams with clean gravel and is native to 2 of 18 watersheds. Losses of range have occurred in parts of the Allegheny watershed and there has been a dramatic decline in frequency occurrence from comprehensive stream surveys between the 1930s and the 2000s. Although never abundant, decline is not obvious in the Genesee watershed, where it is present at up-river sites.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Unknown	Unknown
6% to 10%	X	Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

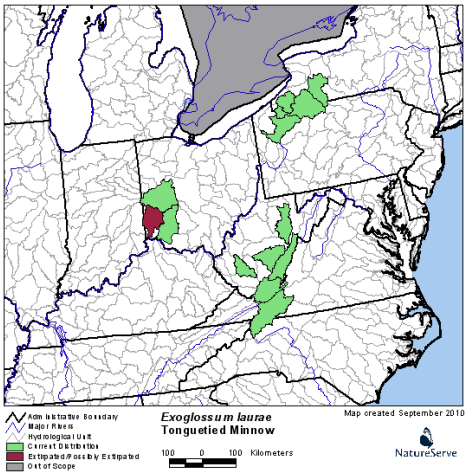
Habitat Discussion:
This species is found in rocky pools and runs of cool to warm, usually clear, small to medium-sized streams, of moderate gradient, with clean gravel substrate. They are often at deeper edges of pools near vegetation or other cover. Spawning occurs in mounded pebble nests made by males in slow to moderate current (NatureServe 2012).

Primary Habitat Type
Medium River; Moderate-High Gradient; Assume Moderately Buffered (Size 3+ rivers); Transiti

Distribution:
In sampling by DEC from 1987 to 2006 tonguetied minnow was caught in Olean/Ischua Creek and the Allegheny River at 2 and 1% respectively. In recent times, it has been caught in the Genesee River a similar and small percentage of catches (1%).



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Natural System Modifications	Dams & Water Management/Use (dams)	N	L	H
2. Pollution	Agricultural & Forestry Effluents (siltation)	R	M	M
3. Agriculture & Aquaculture	Habitat loss/alteration from agriculture	W	M	M
4. Residential & Commercial Development	Habitat loss/alteration from development	R	M	M
5. Natural System Modifications	Other Ecosystem Modifications (Channelization)	R	L	M

References Cited:

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 5, 2012).

Common Name: Western pirate perch ***SGCN***
Scientific Name: *Aphredoderus sayanus gibbosus*
Taxon: Freshwater Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G5T5
New York: S1
Tracked: Yes

Synopsis:
Pirate perch has a range extending from New York to Texas of the Great Lakes and Mississippi River basins. Isolated populations of the western subspecies (*gibbosus*) are in watersheds of Lake Ontario to the south. New York's position in this subspecies' range is disjunct and it is native in 2 of 18 watersheds in the state: the Erie watershed in western New York and the Ontario watershed in central New York. This fish resides in low-gradient streams with clay or sand and some heavy debris. Populations have declined to levels below detection in the Erie watershed but have increased in tributaries in the Ontario watershed.

This western subspecies (Boltz and Stauffer 1993) is distinctively different in New York from the eastern subspecies (*A. sayanus sayanus*), which occurs in several Long Island streams where there is no indication of decline. The western subspecies is thought to be a relict species that has survived postglacial time in a few isolated pockets of favorable environment (Smith 1985).

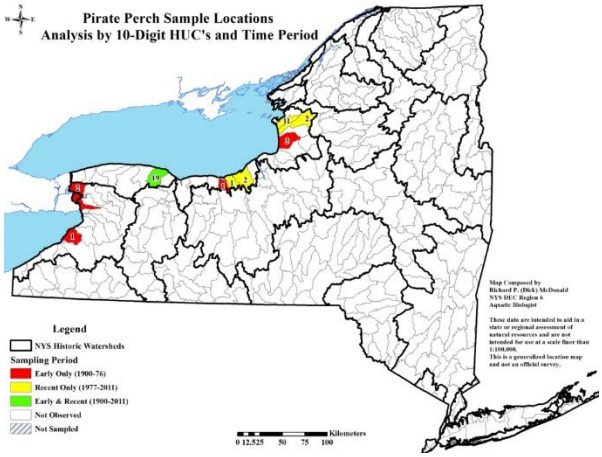
Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%	X	Abundant		Increasing	Stable
6% to 10%		Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon	X		
> 50%		Rare			

Habitat Discussion:
Pirate perch live in quiet water areas of creeks and rivers, backwaters, swamps and vegetated sloughs with soft bottoms and abundant aquatic plants, organic debris, and other cover. During the summer they are often found under logs or debris and in winter they partially bury themselves in sand. 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.

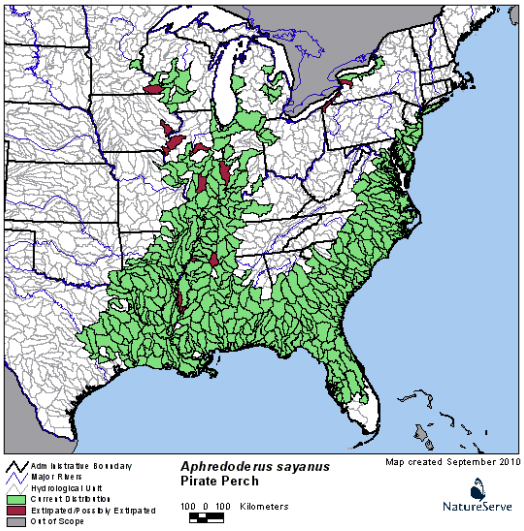
Primary Habitat Type
Small River; Low-Moderate Gradient; Moderately Buffered, Neutral; Transitional Cool

Distribution:
The recent collections of the western subspecies are from Buttonwood Creek, Sterling Creek (near Fair Haven, and only from 1997-99), Lakeview Pond (2004-07), Black Pond (2005-07), Stony Creek mouth (2004) and East Bay (2008). Sampling for this species has been attempted without success in the other

areas like Lake Ontario bays of Salmon Creek (Monroe Co., last caught in 1939) and South (Sandy) Pond (last caught here in 1962, Cornell Univ. collection) and Niagara River areas including Cayuga Creek. It can possibly be caught in other of these bays, but the present count of 6 locations compares favorably to 5 historic locations (assuming West, Salmon and Buttonwood creeks shared a common population). Unfortunately, one watershed (Erie Niagara) is no longer inhabited. These New York areas are distantly separated from the Midwest range.



Carlson (2012)



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Residential & Commercial Development	Housing & Urban Areas (habitat loss)	R	M	H
2. Natural System Modifications	Dams & Water Management/Use (dams as water temperature modifier)	R	M	H

References Cited:

Boltz, J.M. and J.R. Stauffer. 1993. Systematics of *Aphredoderus sayanus* (Teleostei: Aphrododeridae). Copeia 1993:81-98.

Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC Watertown, NY.

Haynes, J.M. 1987. Preliminary survey of fish communities of the Braddock Bay watershed. State Univ. New York at Brockport, Brockport.

Haynes, J.M. 1994. Survey of Buttonwood Creek, Monroe County, NY to determine habitat availability for and relative abundance of a species of special concern, the pirate perch (*Aphredoderus sayanus*) for Monroe County Department Transportation, Rochester, author at State Univ. New York at Brockport, Brockport, NY.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 9, 2012).

Smith, C.L. 1985. The inland fishes of New York State. New York State Dept. of Environ.Cons. Albany, NY. 522 pp.