Common Name: Alewife ***SGCN***
Scientific Name: *Alosa pseudoharengus*
Taxon: Marine Fish

Federal Status: Not Listed
New York Status: Not Listed

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

Synopsis:
The alewife is an anadromous species found in riverine, estuarine, and Atlantic coastal waters from Newfoundland to northern South Carolina (Bozeman and Van Den Avyle 1989, ASMFC 2012). The alewife can be found inland as an introduced, non-indigenous freshwater species in eighteen states including New York (Fuller et al. 2013). The anadromous populations have been in decline for the past two decades as a result of dams impeding migration to spawning waters, pollution, and/or overfishing; some stocks are stable at low levels (Schalit et al. 2003, Walters et al. 2009, ASMFC 2012). This assessment focuses on New York's anadromous marine populations.

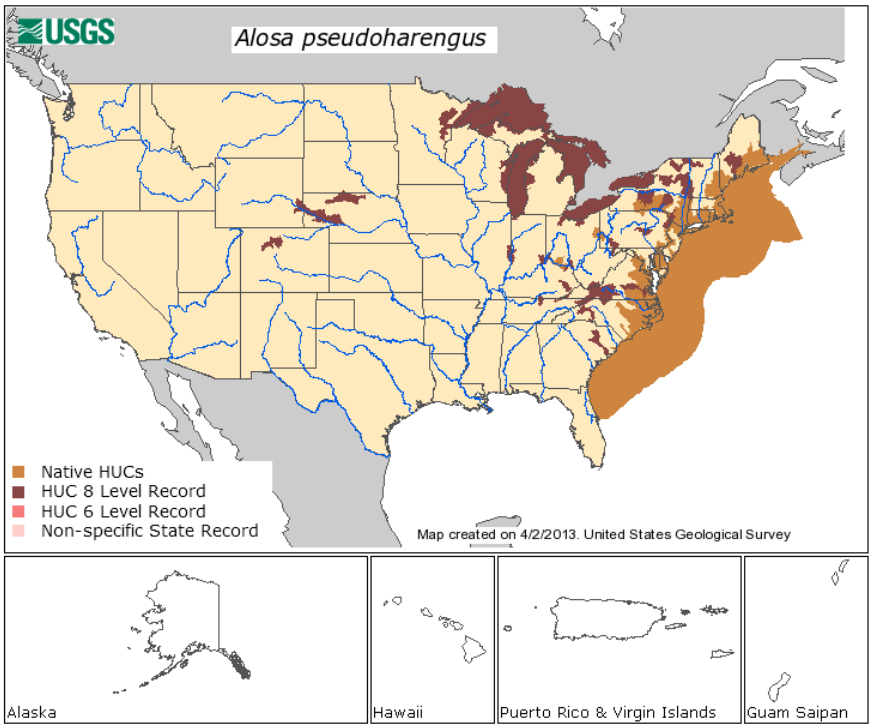
Alewives are an important component of the forage base for coastal marine fisheries, marine mammals, and marine birds as well as for land animals and shorebirds during the spawning run. The inland populations of this species are secure and are considered invasive in most locations (Fuller et al. 2013). Consumption of alewife by predatory salmonid species can cause a thiamine deficiency, affecting the viability of eggs and larvae (Fisher et al. 1996). Where they have been introduced alewife have altered the food web by out-competing many native fish species such as whitefish and ciscos (Fuller et al. 2013). Atlantic Coast anadromous populations are considered depleted compared to historic levels (ASMFC 2012), and require management for recovery. This species has been listed as a candidate species under the Endangered Species Act but a determination that listing is not warranted was made in August 2013 (NOAA 2013).

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%		Uncommon	X		
> 50%	X	Rare			

Habitat Discussion:
This species can be found in marine waters in spring (immigrating spawning adults) then in fall through winter (juveniles) (Smith 1985). Marine anadromous populations spawn in quiet portions of freshwater rivers, in small streams, or in lakes above influence of tide (Smith 1985, Schalit et al. 2003, MDMR 2008).

Primary Habitat Type
Lake
Large/Great River; Low Gradient; Assume Moderately Buffered (Size 3+ rivers); Warm
Small River; Low Gradient; Moderately Buffered, Neutral; Warm

Distribution:
Anadromous populations of this species are found in the Hudson River, lower Westchester County, some New York City counties as well as Nassau and Suffolk Counties on Long Island (Hattala et al. 2011).



Fuller et al. (2013)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Natural System Modifications	Dams & Water Management/Use (dams)	W	L	H
2. Natural System Modifications	Other Ecosystem Modifications (Channelization and Dredging)	N	L	M
3. Biological Resource Use	Fishing & Harvesting Aquatic Resources (overharvest for use as baitfish)	N	L	L
4. Pollution	Household Sewage & Urban Waste Water (urban runoff and sewage)	P	L	H
5. Pollution	Agricultural & Forestry Effluents (poor land use practices associated with farming/groundwater)	P	L	V
6. Pollution	Industrial & Military Effluents (thermal and toxic discharges)	N	L	H
7. Biological Resource Use	Fishing & Harvesting Aquatic Resources (Bycatch)	P	M	H
8. Climate Change & Severe Weather	Temperature Extremes (increasing water temperatures re spawning runs)	W	M	V
9. Climate Change & Severe Weather	Habitat Shifting & Alteration (increasing ocean temperatures)	N	L	V
10. Energy Production & Mining	Renewable Energy (hydropower turbines)	N	M	H

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Smith, L.C. 1985. The Inland Fishes of New York State. NYSDEC. Albany, NY.

Walters, A.W., Barnes, R.T., and D.M. Post. 2009. Anadromous alewives (*Alosa pseudoharengus*) contribute marine-derived nutrients to coastal stream food webs. Can. J. Fish. Aquat. Sci. 66: 439-448.

Common Name: Atlantic silverside ***SGCN***
Scientific Name: *Menidia menidia*
Taxon: Marine Fish

Federal Status: Not Listed
New York Status: Not Listed

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

Synopsis:
The Atlantic silverside is an important forage fish that can be found in brackish and salt water along the Atlantic Coast from northern Florida northward to Nova Scotia, Canada (Fay et al. 1983, Smith 1985, NYNHP 2013a). This species was historically found in the lower Hudson River and Long Island in marshes that are fresh, brackish and salt water (Smith 1985). They also inhabit tributaries of Long Island Sound though they are not found in areas of fresh water as often as the closely related inland silverside (*Menidia beryllina*) (Smith 1985). During the winter they migrate out to deeper water (Fay et al. 1983). Trends for this species cannot be determined due to a lack of data (NYSDEC 2005). Anecdotal information from the baitfish industry indicates that there may be a problem with local populations, though there does not seem to be any evidence to support this claim (NYSDEC 2005). The Atlantic silverside was classified as a species that could potentially increase as a result of predicted climate change in an assessment of vulnerability conducted by the New York Natural Heritage Program (Schlesinger et al. 2011).

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	X		
11% to 25%		Fairly common			
26% to 50%	X	Uncommon			
> 50%		Rare			

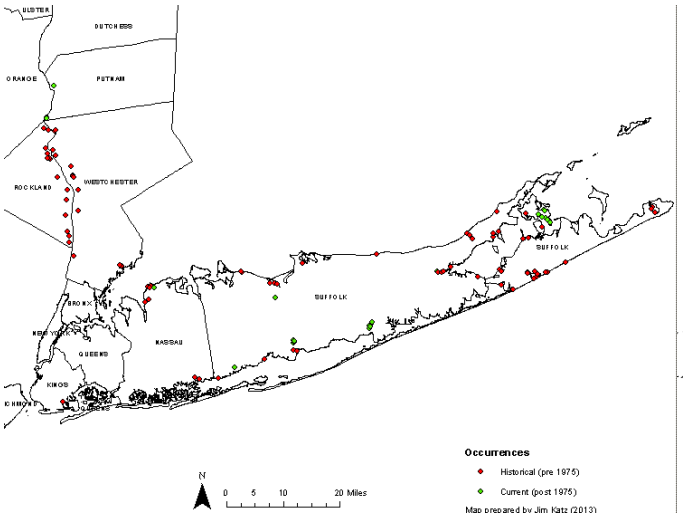
Habitat Discussion:
This species is found in brackish and salt water marshes from spring to fall (Smith 1985, NYNHP 2013a). During winter, fish will move to deeper water offshore, as far as 93 miles (Fay et al. 1983).

Primary Habitat Type
Estuarine; Brackish Intertidal; Tidal Wetland
Large/Great River; Low-Moderate Gradient; Assume Moderately Buffered (Size 3+ rivers); Warm
Marine; Deep Sub-tidal

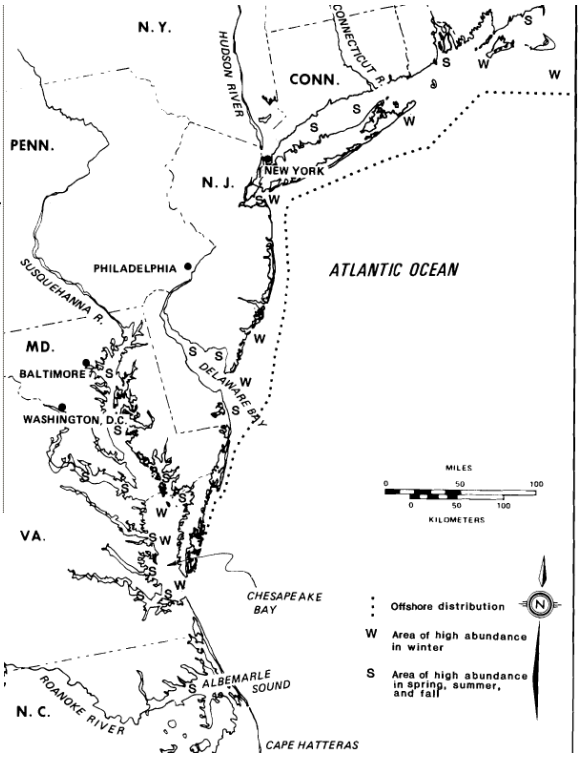
Distribution:
This species still occurs in the lower Hudson River, tributaries of Long Island Sound, and coastal waters off Long Island. Between 1990 and 2011 the Atlantic silverside has been recorded at multiple locations in Rockland, Nassau, Suffolk, Westchester, New York, Queens, and Kings Counties (D. Carlson, personal

communication). The Atlantic silverside compromised about 4% of total catch by number of finfish in Peconic Bay trawl surveys from 1987 through 1995 (Weber et al. 1998).

The distribution map below represents only data collected with coordinates and should be used only to illustrate the general distribution of this species in New York. The presence of more historical records does not represent a trend, but may only be due to a lack of recent monitoring compared to what was done pre-1975 as Briggs and Waldman (2002) specify this species as abundant in New York.



D. Carlson, personal communication; NYNHP (2013b)



Fay et al. (1983)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Biological Resource Use	Fishing & Harvesting Aquatic Resources (commercial and recreational harvest for bait)	W	M	L
2. Natural System Modifications	Dams & Water Management/Use (entrainment and impingement in power plants)	N	L	H
3. Pollution	Household Sewage & Urban Waste Water (poor water quality)	N	L	H
4. Pollution	Agricultural & Forestry Effluents (runoff and siltation)	N	L	H
5. Natural System Modifications	Other Ecosystem Modification (shoreline modification: docks, jetties, etc…)	N	L	H
6. Natural System Modifications	Other Ecosystem Modifications (loss of marsh due to ditching/continued effects of ditching)	W	L	H
7. Climate Change & Severe Weather	Habitat Shifting & Alteration (loss of marshes from sea level rise)	P	M	V
8. Natural System Modifications	Dams & Water Management/Use (Loss of connectivity: culverts, dams)	N	L	H

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Common Name: Bay anchovy ***SGCN***
Scientific Name: *Anchoa mitchilli*
Taxon: Marine Fish

Federal Status: Not Listed
New York Status: Not Listed

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

Synopsis:
The bay anchovy is a small and abundant schooling fish found throughout the mid-Atlantic region. This species is an important component of the food web for many fishes and sea birds (Derickson and Price 1973, Richards 1976, Morton 1989). The bay anchovy occurs from Yucatan, Mexico, northward to Cape Cod, Massachusetts with occasional individuals found in the Gulf of Maine (Smith 1985). In New York, this species occurs along the coast of Long Island and in the lower parts of the Hudson estuary (Smith 1985). Recent surveys in the Chesapeake Bay and Delaware Bay and estuary have shown a decline in bay anchovy populations since the mid-1990s (Durell and Weedon 2011, New Jersey Department of Environmental Protection 2011). In the Hudson River, juvenile populations have shown a decreasing trend since the late 1980s (Shultz et al. 2006).

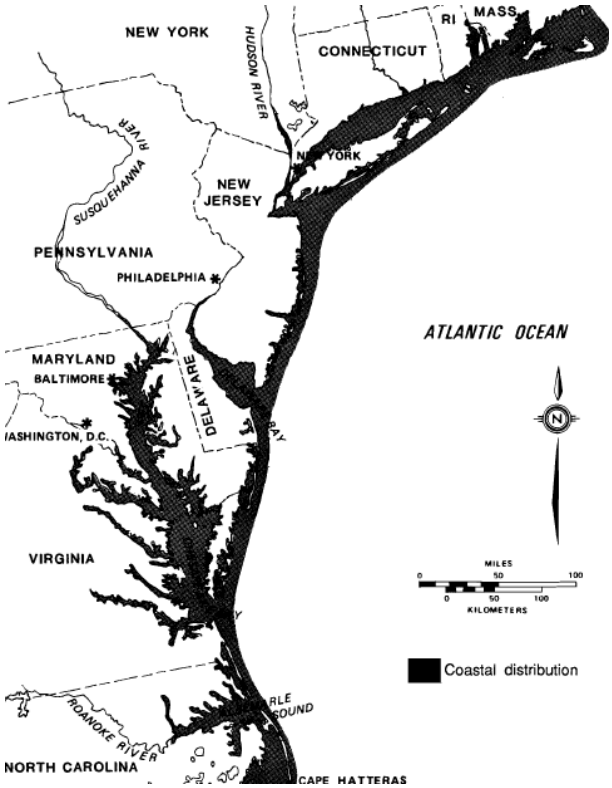
The bay anchovy is the most abundant forage fish in the Chesapeake Bay, serving an important role in aquatic food chains (McHugh 1967, Musick 1972). It is also an important component of nearshore ecosystems in New York's marine waters. Since the early 1990s, populations have recently begun to decline throughout its range (Durell and Weedon 2011, New Jersey Department of Environmental Protection 2011).

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

Habitat Discussion:
Bay anchovy is a widespread species and a good indicator of estuary pollution stress (Bechtel and Copeland 1970, Livingston 1975). This species is found in a wide range of habitats, including salt-marsh creeks, marsh tide pools, marsh lakes, eelgrass beds, the surf zone, and the open water of small to large estuaries (Shultz et al. 2006). It is tolerant of a wide range of salinities from 36 ppt to 1 ppt (Anderson et al. 1977, Van Dolah et al. 2003). Spawning occurs in estuarine and oceanic waters over various bottom types and water depths up to 30 m (Jones et al. 1978).

Primary Habitat Type
Estuarine; Brackish Deep
Marine; Deep Sub-tidal

Distribution:
The bay anchovy occurs in along the coast of Long Island and in the lower reaches of the Hudson Estuary (Shultz et al. 2006, M. Richardson, personal communication).



Morton (1989)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Natural System Modification	Dams & Water Management/Use (power plant entrainment and impingement)	R	M	H
2. Pollution	Household Sewage & Urban Waste Water (reduced oxygen from sewage treatment discharge)	R	L	H

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Common Name: Blueback herring ***SGCN***
Scientific Name: *Alosa aestivalis*
Taxon: Marine Fish

Federal Status: Candidate
New York Status: Not Listed

Natural Heritage Program Rank:
Global: G3G4
New York: S3
Tracked: No

Synopsis:
The blueback herring is a slender, anadromous, euryhaline, pelagic, schooling species. Spawning occurs in the Hudson River and its tributaries during late spring and early summer. This herring travels the farthest inland of any other river herring (Smith 1985). It ranges along the Atlantic Coast from Cape Breton, Nova Scotia to St. John's River, Florida (NOAA 2009). Non-indigenous populations colonized the Mohawk River upstream of Cohoes Falls in 1934, Lake Champlain in the 1970s, Oneida Lake in the early 1980s, the Oswego River in 1994 and Lake Ontario in 1995 (Fuller et al. 2013). Recent surveys of New York's blueback herring population have shown declines in young of the year and in average adult length and weight. Population trends are extremely variable (Hattala et al. 2011). Populations have been threatened by overfishing, dams, pollution and degradation of habitat (ASMFC 2009).

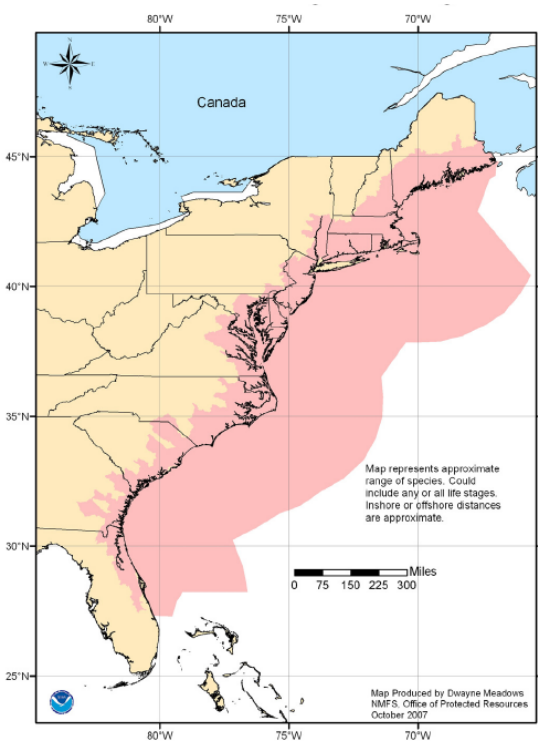
Atlantic Coast anadromous populations of blueback herring are considered depleted compared to historic levels (ASMFC 2012), and requires management for recovery. A petition to list blueback herring as threatened under the Federal Endangered Species Act was found to be warranted, and the species is now a candidate for listing (Federal Register, 02 November 2011). The pattern of occurrence of non-indigenous inland populations across New York suggests that blueback herring could become established in the Great Lakes. Should that happen it could impede recovery of depressed populations of cisco (*Coregonus artedi*) and lake trout (*Salvelinus namaycush*) (Owens et al. 1998).

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	X		
26% to 50%		Uncommon			
> 50%	X	Rare			

Habitat Discussion:
Immigrating adults can be found at the mouth of rivers in the spring, when water temperatures are 4-9oC (Smith 1985). Marine anadromous populations spawn in main stream flow of freshwater rivers and small streams (Smith 1985). A portion of the Hudson's blueback herring stock are known to move as far inland as Rome, NY (438 km inland) (Hattala et al. 2011). Juveniles in the Hudson River remained near their natal areas throughout the summer and did not reach downriver areas until September (Schmidt et al. 1988). Juveniles spend 3-9 months in their natal rivers and in late summer through early winter, when water temperatures start to decrease, they start their seaward migration (Loesh 1987, Kosa and Mather 2001).

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

Distribution:
Native populations of blueback herring continue to spawn in the Hudson River and its tributaries. Non-indigenous populations were found in the Oswego River in 1994 and in Lake Ontario in 1995 (Fuller et al. 2013).



NOAA (2009)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Natural System Modifications	Dams & Water Management/Use (dams)	W	L	H
2. Natural System Modifications	Other Ecosystem Modifications (channelization and dredging)	N	L	M
3. Biological Resource Use	Fishing & Harvesting Aquatic Resources (overharvest for use as baitfish)	N	L	L
4. Pollution	Household Sewage & Urban Waste Water (urban runoff and sewage)	P	L	H
5. Pollution	Agricultural & Forestry Effluents (poor land use practices associated with farming/groundwater)	P	L	V
6. Pollution	Industrial & Military Effluents (thermal and toxic discharges)	N	L	H
7. Biological Resource Use	Fishing & Harvesting Aquatic Resources (bycatch)	P	M	H
8. Climate Change & Severe Weather	Habitat Shifting & Alteration (increasing water temperatures/spawning runs)	W	M	V
9. Climate Change & Severe Weather	Habitat Shifting & Alteration (increasing ocean temperatures)	N	L	V
10. Energy Production & Mining	Renewable Energy (hydropower turbines)	N	M	H
11. Invasive & Other Problematic Species & Genes	Invasive Non-Native/Alien Species (zebra mussels)	N	M	H

12. Biological Resource Use	Fishing & Harvesting Aquatic Resources (illegal harvest)	P	L	M

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Smith, L.C. 1985. The Inland Fishes of New York State. NYSDEC. Albany, New York.

Common Name: Cunner ***SGCN***
Scientific Name: *Tautogolabrus adspersus*
Taxon: Marine Fish

Federal Status: Not Listed
New York Status: Not Listed

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

Synopsis:
The cunner, one of only two representatives of Labridae along the northeast coast of the U.S., occurs from Conception Bay, Newfoundland, through the southwestern Gulf of St. Lawrence, southward to the mouth of the Chesapeake Bay (Choat 2010). Cunners exhibit winter dormancy (becoming inactive and stopping feeding) when water temperatures fall below 5˚C. They are a prominent member of temperate reef communities, abundant in areas of bottom relief, natural or man-made, including rock outcroppings, piers, pilings, and docks (Olla et al. 1975). In New York waters, cunner may be found in the Long Island Sound and along the coast of the South Shore, most abundant in shallow waters at 20 m (Choat 2010). Since they reside year-round in inshore shallow waters and do not undertake migrations, they are a key indicator species of local stresses in coastal regions along their range (Auster 1989).

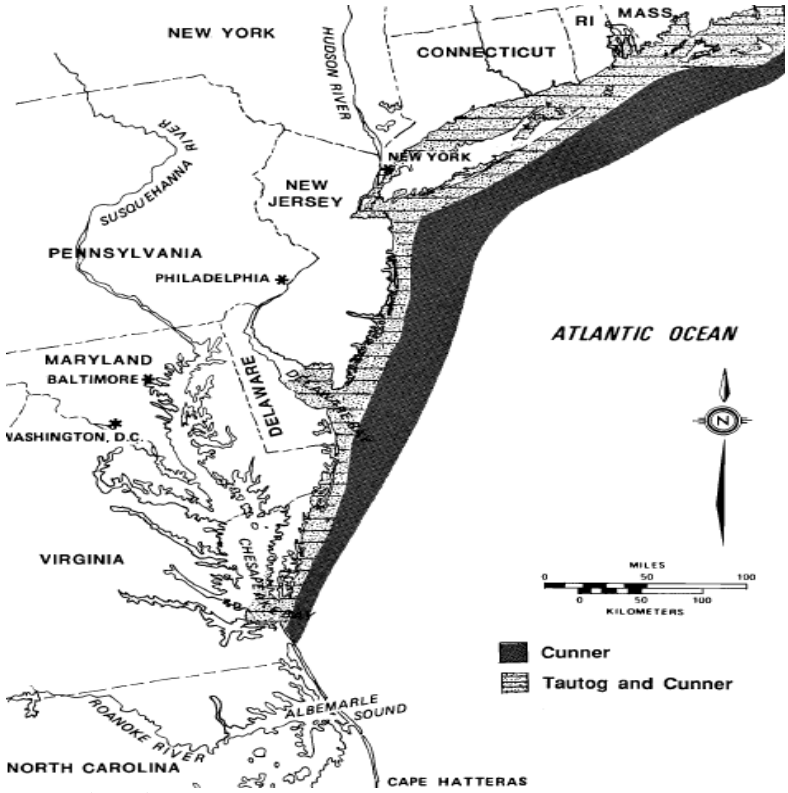
Although the cunner was exploited for food early in the 19th century, it is now mainly subject to recreational fishing and the fishery is not perceived as a major threat, hence the IUCN Least Concern listing. Cunner (>0.75 lbs) are harvested commercially in an opportunistic manner and are very valuable when sold in the live market. The sale of live market fish is often under-reported so the actual impact of commercial harvest on this species is unknown, but probably not insignificant.

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	X		
26% to 50%		Uncommon			
> 50%	X	Rare			

Habitat Discussion:
Cunner are reef associated species, inhabiting shallow inshore waters, living on or near the bottom and occurring around natural and artificial objects including wharves, wrecks, and submerged seaweed. Although they do not school, cunner can be found congregating in masses around preferred structures. During the night as well as during winter months, they become torpid and require inshore “reef” habitat to provide shelter during resting times (Olla et al. 1975). In New York they may be found at depths 10 to 128 m, but are most abundant in shallow waters around 20 m. Olla et al. (1975) observed that cunner are highly localized in their daily movements, remaining within 2 m of structures providing cover. They disperse to seasonal habitats during the summer consisting of eelgrass, beds of algae or mussels, and return to perennial habitat in the fall where they overwinter (Auster 1989).

Primary Habitat Type
Estuarine; Brackish Deep
Marine; Deep Sub-tidal

Distribution:
The cunner is currently found in the Long Island Sound and off the coast of the south shore of Long Island out to depths of 120m with abundance generally the highest from April through July.



Auster (1989)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Transportation & Service Corridors	Shipping Lanes (dredging for pipelines and power)	N	L	H
2. Biological Resource Use	Fishing & Harvesting Aquatic Resources (recreational and commercial harvest)	R	M	L
3. Human Intrusions & Disturbance	Work & Other Activities (degradation of reef habitat)	N	L	H
4. Pollution	Industrial & Military Effluents (contaminants including cadmium and petroleum)	N	L	H
5. Climate Change & Severe Weather	Habitat Shifting & Alteration (increased water temperatures)	R	H	V
6. Agriculture & Aquaculture	Marine & Freshwater Aquaculture (aquaculture)	N	L	L

References Cited:

Auster, P.J. 1989. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (North Atlantic and Mid-Atlantic) – tautog and cunner. U.S. Fish and Wildlife Service Biological Report. 82(11.105). U.S. Army Corps of Engineers, TR EL-82-4. 13p.

Choat, J.H. 2010. *Tautogolabrus adspersus*. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2.

Olla, B.L., A.J. Bejda, and A.D. Martin. 1975. Activity, movements, and feeding behavior of the cunner, *Tautogolabrus adspersus*, and comparison of food habits with young tautog, Tautoga onitis, off Long Island, New York. Fishery Bulletin 78(4): 895-900.

Common Name: Inland silverside ***SGCN***
Scientific Name: *Menidia beryllina*
Taxon: Marine Fish

Federal Status: Not Listed
New York Status: Not Listed

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

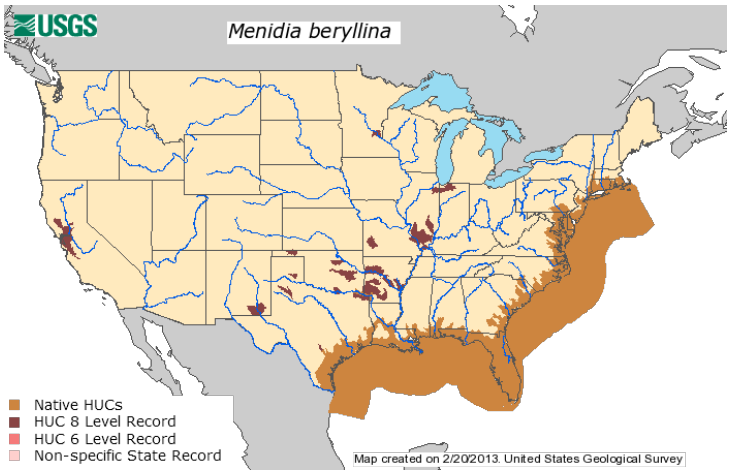
Synopsis:
Inland silversides are an important estuarine forage fish found in brackish and freshwaters from Cape Cod, Massachusetts to Veracruz, Mexico (Lee at al. 1980, Smith 1985). This species inhabits salt marshes and tributaries around Long Island (Smith 1985). Trends for this species are not known due to lack of information; however, anecdotal information from the baitfish industry indicates that there may be a problem with local populations (NYSDEC 2005).

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		

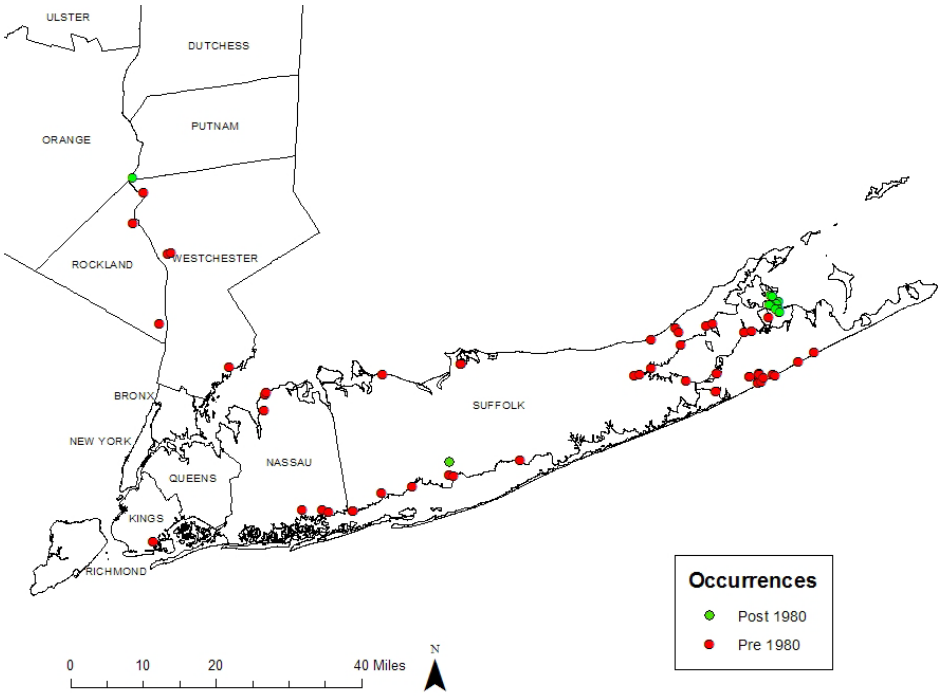
Habitat Discussion:
Inland silversides inhabit shallow estuarine areas, including tidal salt marshes, seagrass meadows, and shore zones (Weinstein 1986). This prefers waters with lower salinities and in freshwater systems (Weinstein 1979, Bengtson 1982). This species favors firm sandy substrates with low organics, usually in moderate to fast tidal currents or along sandy beaches and banks in lakes and streams (Weinstein 1979). Spawning habitat includes shallow fresh and brackish waters with dead leaves, tree roots, algal mats, or aquatic plants (Weinstein 1986).

Primary Habitat Type
High Marsh
Rooted Vascular
Tidal Creek

Distribution:
Inland silversides are currently known to be in the Hudson estuary, Hudson River and in tidal salt marshes around Long Island.



Fuller et al. (2013)



Occurrences of inland silverside in New York State (not including all known occurrences) (D. Carlson, personal communication, NYNHP 2013). Map created by Shawn Ferdinand, NYSDEC.

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Biological Resource Use	Fishing & Harvesting Aquatic Resources (commercial and recreational harvest for bait)	W	M	L
2. Natural System Modifications	Dams & Water Management/Use (entrainment and impingement in power plants)	N	L	H
3. Pollution	Household Sewage & Urban Waste Water (poor water quality)	N	L	H
4. Pollution	Agricultural & Forestry Effluents (runoff and siltation)	N	L	H
5. Natural System Modifications	Other Ecosystem Modifications (shoreline modification: docks, jetties, etc…)	N	L	H
6. Natural System Modifications	Dams & Water Management/Use (loss of marsh due to ditching/continued effects of ditching	W	L	H
7. Climate Change & Severe Weather	Habitat Shifting & Alteration (loss of marshes from sea level rise)	P	M	V
8. Natural System Modifications	Dams & Water Management/Use (loss of connectivity: culverts, dams)	N	L	H

References Cited:

Bengtson, D.A. 1982. Resource partitioning by *Menidia menidia* (L.) and *Menidia beryllina* (Cope) in two Rhode Island estuaries. Ph.D. Dissertation. University of Rhode Island, Kingston. 214 pp.

Lee, D.S., C.R. Gilber, C.H. Hocutt, R.E. Jenkins, D.E. McAllister, and J.R. Stauffer, Jr. 1980 et seq. Atlas of North American Freshwater Fishes. North Carolina State Museum of Natural History, Raleigh, North Carolina. 854 pp.

New York State Department of Environmental Conservation (NYSDEC). 2005. New York State Comprehensive Wildlife Conservation Strategy. http://www.dec.ny.gov/index.html.

Smith, C.L. 1985. The Inland Fishes of New York State. New York State Department of Environmental Conservation. Albany, NY. 522pp.

Weinstein, M.P. 1979. Shallow marsh habitats as primary nurseries for fishes and shellfish, Cape Fear River, North Carolina. U.S. National Marine Fisheries Service Fisheries Bulletin 77:339-357.

Weinstein, M. P. 1986. Habitat suitability index models: inland silverside. U. S. Fish and Wildlife Service Biological Report 82(10.120). 25 pp.

Common Name: Atlantic menhaden ***SGCN***
Scientific Name: *Brevoortia tyrannus*
Taxon: Marine Fish

Federal Status: Not Listed
New York Status: Not Listed

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

Synopsis:
The Atlantic menhaden is a small, oily, schooling fish occurring in temperate coastal waters from Nova Scotia, Canada, southward to Jupiter Inlet, Florida. It is a euryhaline species, meaning individuals can adapt to a wide range of salinities and commonly inhabit coastal and inland tidal waters. They are commonly found throughout the open coastal waters, bays and sounds of New York during late spring and summer. Menhaden play an important ecological role in marine ecosystems as a forage fish for many fish, sea birds, and marine mammals and they are a seasonally important component of estuarine and shelf fish assemblages (Rogers and Avyle 1989). Additionally, menhaden are one of the most important food fish for coastal nesting ospreys in New York, and declines in populations threaten osprey survivability (NYSDEC 2005). Recoveries of tagged fish indicate that Atlantic menhaden constitute a single population, migrating north in the spring and early summer and southward in the fall (Dryfoos et al. 1973). Menhaden have long played a role in the economy, supporting one of the most important and productive fisheries on the Atlantic Coast. Historically, New York supported a large and active Atlantic menhaden processing fishery. The importance of this fishery diminished during the early to mid–1900s. The last processing plant ceased operations in 1969. Legislation passed in 1998 reduced the area in which purse seine vessels can operate, which lowered participation in this fishery. Today, menhaden are harvested on a small scale in New York, generally for bait (NYSDEC 2013). Since 2005, Omega Protein in Reedville, Virginia is the only remaining industrial processor of Atlantic menhaden on the eastern coast with most of its fishing effort based in Virginia's ocean waters and its portion of the Chesapeake Bay. In the summer the fleet fishes from southern New Jersey to Cape Hatteras, North Carolina (ASMFC 2012). Due to their tendency to form large surface schools, menhaden are susceptible to purse seines which are the principal fishing gear used in commercial harvest. The ASMFC has determined that overfishing is occurring, but the stock is not overfished. Additionally, the Technical Committee warns of a potential mismatch between the current overfished and overfishing reference points (ASMFC 2012).

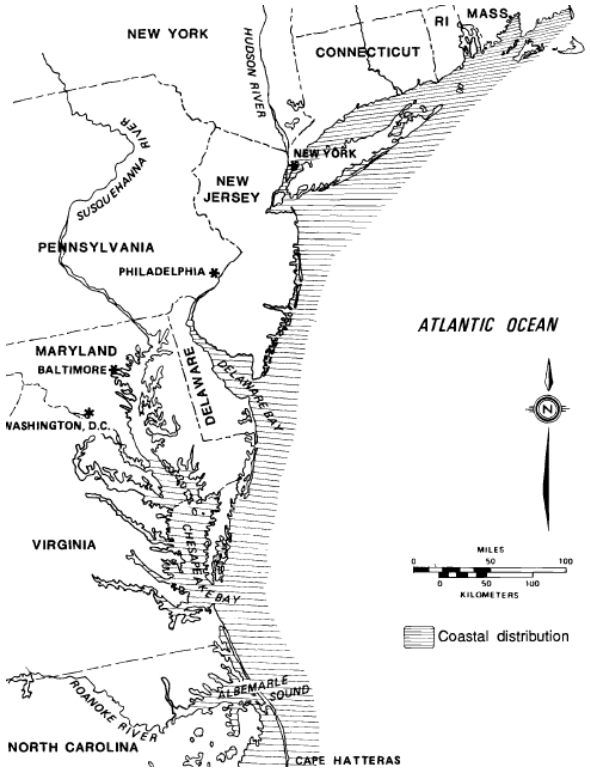
The Atlantic States Marine Fisheries Commission (ASMFC) manages Atlantic menhaden in state waters and has determined that overfishing is occurring but the stock is not overfished (ASMFC 2012). The technical committee warns that there is a technical mismatch between the current overfishing and overfished reference points. They recommend that an overfished definition be adopted using a Spawning Stock Biomass (SSB15%) to match the Fishing Mortality (F15%) overfishing definition (ASMFC 2012).

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	X		
11% to 25%		Fairly common			
26% to 50%		Uncommon			
> 50%	X	Rare			

Habitat Discussion:
Menhaden inhabit nearshore and inland tidal waters throughout their geographical range at depths of 0 to 10 meters. Dryfoos et al. (1973) reported that adult menhaden undergo extensive seasonal migrations, traveling northward in the spring and early summer and southward in the fall, migrating farther north as they grow older and larger. They found that fish tagged in Chesapeake Bay and the Florida coast contributed most to landings in other areas, with 83.2% of the tag recoveries in New York and New Jersey coming from fish tagged in Chesapeake Bay. Larvae and juveniles require the food-rich waters of estuarine and nearshore systems to survive and grow with most of their development taking place in estuarine water where salinity is usually <10ppt (ASMFC 2011). Juveniles prefer rocky coves, with a mixture of cobble, rock and sand bottoms in northern areas. Adults prefer waters temperatures near 18˚C and habitats ranging from a bottom composition of sand, mud, and organic material to marine sand and mud with increasing amounts of rocks in northern areas (ASMFC 2011). As pelagic feeders, they play an important role in water quality control by filter feeding phytoplankton and zooplankton.

Primary Habitat Type
Estuarine; Brackish Deep
Estuarine; Freshwater Deep Sub-tidal
Marine; Deep Sub-tidal

Distribution:
Menhaden have historically been found throughout New York State waters in all major estuarine systems and nearshore ocean waters. Menhaden are still found in the same locations throughout the waters of New York, though at lower abundance.



Rogers and Avyle (1989)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Biological Resource Use	Fishing & Harvesting Aquatic Resources (commercial overharvest)	W	H	M
2. Natural System Modifications	Other Ecosystem Modifications (coastal dredge and fill activities)	N	L	H
3. Pollution	Household Sewage & Urban Waste Water (nutrient and chemical overloading from pesticides/herbicides/fertilizer)	R	L	H
4. Climate Change	Habitat Shifting & Alteration (shifts in distribution and abundance from changing water temperature)	W	M	V
5. Biological Resource Use	Fishing & Harvesting Aquatic Resources (recreational harvest)	W	M	M

References Cited:

Atlantic States Marine Fisheries Commission (ASMFC). 2011a. Species profile: Atlantic menhaden, board explores new biological reference points for the short and long term. ASMFC Fisheries Focus 20(4): 4p.

Atlantic States Marine Fisheries Commission (ASMFC). 2012. 2012 Atlantic Menhaden Stock Assessment Update. Published July 2012. 228 pp.

Dryfoos, R.L., R.P. Cheek, and R.L. Kroger. 1973. Preliminary analysis of Atlantic menhaden, *Brevoortia tyrannus*, migrations, populations, structure, survival and exploitation rates, and availability as indicated from tag returns. Fishery Bulletin 71(3): 719-734.

New York State Department of Environmental Conservation (NYSDEC). 2013. New York 2012 Atlantic Menhaden Compliance Report. 12 pp.

New York State Department of Environmental Conservation (NYSDEC). 2005. New York State Comprehensive Wildlife Conservation Strategy. http://www.dec.ny.gov/index.html.

Rogers, S.G., and M.J. Van Den Avyle. 1989. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Mid-Atlantic)–Atlantic menhaden. U.S. Fish Wildl. Serv. Biol. Rep. 82(11.108). U.S. Army Corps of Engineers TR EL-82-4. 23p.

Common Name: Mummichog ***SGCN***
Scientific Name: *Fundulus heteroclitus*
Taxon: Marine Fish

Federal Status: Not Listed
New York Status: Not Listed

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

Synopsis:
The mummichog, a species of killifish, occurs in brackish and marine waters along the Atlantic Coast of North America, extending from the Gulf of St. Lawrence, Canada, to the gulf coast of Texas. Recent studies of mitochondrial DNA suggest there is a subspecies, macrolepidotus, which appears to intergrade with heteroclitus in northern New Jersey, Long Island, and in the Chesapeake and Delaware bays, splitting the genus into two geographically distinct populations (Able and Felley 1986). *F. heteroclitus* occurs from New Jersey southward to Florida and *F. macrolepidotus* from Newfoundland southward to Connecticut, and both forms have been taken on Long Island (Smith 1985). Mummichog are common in salt marsh flats, estuaries and tidal creeks, especially where there is abundant submergent and emergent vegetation present, occurring in the lower Hudson River, Long Island Bays, Bronx River, and Atlantic Bight (NatureServe 2013). Mummichog are of great importance to humans for various reasons. They eat mosquito larvae off the surface of waters and have been used as a natural method of mosquito control in marsh ponds and ditches. Because they are thought to be largely non-migratory and adapt well to laboratory conditions, the mummichog has increasingly been used for biological experimentation, education, and viewed as an indicator of environmental quality. Although they aren't valued as a commercial or sport fish, they are used as fish bait and are also an important food source for many commercially valuable large fish, wading birds and seabirds.

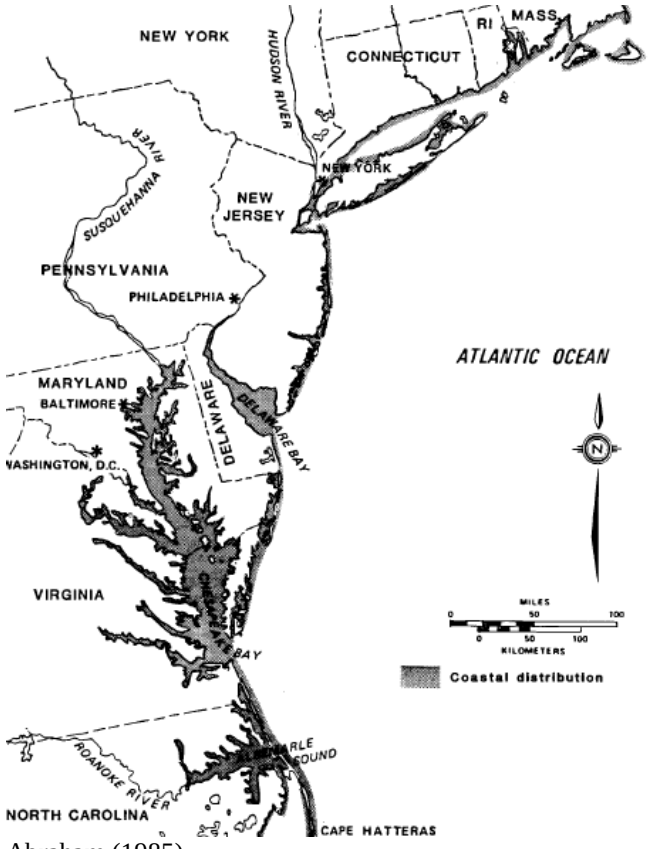
Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Stable	Unknown
6% to 10%		Common	X		
11% to 25%	X	Fairly common			
26% to 50%		Uncommon			
> 50%		Rare			

Habitat Discussion:
Mummichog are found in shallow waters such as saltwater marshes and tidal creeks up to depths of 110 meters, tolerating a wide range of water temperatures, oxygen levels and pollution. Mummichog can withstand temperature fluctuations of 6– 35˚C and salinities of 0–120ppt with a preference of 32ppt (Abraham 1985). Mummichog travel in schools numbering from a few fish to several hundred or more. Spawning will occur in shallow coastal areas of fresh, brackish, or saltwater at levels only reached by high spring tides (Abraham 1985). Breeding migrations do not occur and mummichog maintain a summer home range of 36–38 meters along one bank of a tidal creek, although some may move as much as 375 meters (Lotrich 1975). During winter, some mummichog move into upstream pools where they burrow 150–200 millimeters into the mud at a density of 0.5 fish per square meter and remain throughout the season (Raposa 2003). Others migrate to the mouth of the tidal channel and return up the same channel in spring when the water temperature reaches 15˚C (Abraham 1985).

Although the mummichog's morphology is adapted to feeding at the surface, they also feed in mid-water or off the bottom on a variety of plant and animal matter including diatoms, amphipods, mollusks, crustaceans, insect larvae, small fish, fish eggs, and vegetation (Smith 1985). They predominately feed at high tide during daylight, but also opportunistically at other times of the day. Mummichog have been known to consume as many as 2,000 mosquito larvae a day, often resulting in their use as a natural mosquito control in ponds and ditches. Common predators are blue crabs, striped bass and other predatory fish, wading birds, and aerial searching birds (NatureServe 2013).

Primary Habitat Type
Estuarine; Brackish Intertidal
Estuarine; Brackish Shallow
Estuarine; Freshwater Intertidal

Distribution:
Mummichog historically occurred in the lower Hudson River, Long Island Sound and bays, as well as the Atlantic Bight (Carlson and Daniels 2004). There are no records of mummichog between Newburgh and Claverack in the Hudson River, and as of 1985 the status of the populations below and above this stretch had yet to be determined (Smith 1985). A freshwater Bronx River population was identified in 1979 (Samaritan and Schmidt 1982). Mummichog persist in the same locations they occurred in historically, including the lower Hudson River, Long Island Sound and bays, and the Atlantic Bight.



Abraham (1985)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Biological Resource Use	Fishing & Harvesting Aquatic Resources (commercial and recreational harvest for bait)	W	H	L
2. Natural System Modifications	Dams & Water Management/Use (entrainment and impingement in power plants)	N	L	H
3. Pollution	Household Sewage & Urban Waste Water (poor water quality)	N	L	H
4. Pollution	Agricultural & Forestry Effluents (runoff and siltation)	N	L	H
5. Natural System Modifications	Other Ecosystem Modifications (shoreline modification: docks, jetties, etc…)	N	L	H
6. Natural System Modifications	Other Ecosystem Modifications (loss of marsh due to ditching/continued effects of ditching)	W	L	H
7. Climate Change & Severe Weather	Habitat Shifting & Alteration (loss of marshes from sea level rise)	P	M	V
8. Natural System Modifications	Dams & Water Management/Use (loss of connectivity by culverts, dams)	N	L	H

References Cited:

Able, K.W. and J.D. Felley. 1986. Geographical variation in *Fundulus heteroclitus*: tests for concordance between egg and adult morphologies. American Zoologist 26(1): 145-157.

Abraham, B.J. 1985. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Mid-Atlantic) – mummichog and striped killifish. U.S. Fish & Wildlife Service Biological Reports 82(11.40). U.S. Army Corps of Engineers, TR EL-82-4. 23p.

Carlson, D.M. and R.A. Daniels. 2004. Status of fishes in New York: increases, declines and homogenization of watersheds. American Midland Naturalist 152(1): 104-139.

Lotrich, V.A. 1975. Summer home range and movements of *Fundulus heteroclitus* (Pisces: Cyprinodontidae) in a tidal creek. Ecology 56(1): 191-198.

NatureServe. 2013. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. Accessed: 4 April 2013.

Raposa, K. 2003. Overwintering habitat selection by the mummichog, *Fundulus heteroclitus*, in a Cape Cod (USA) salt marsh. Wetlands Ecology and Management 11: 173-182.

Samaritan, J.M. and R.E. Schmidt. 1982. Aspects of the life history of a freshwater population of the mummichog, *Fundulus heteroclitus* (Pisces: Cyprinodontidae), in the Bronx River, New York, U.S.A. Hydrobiologia 94: 149-154.

Smith, C.L. 1985. The inland fishes of New York State. New York State Department of Environmental Conservation. Albany, New York. 522p.

Common Name: No. American ninespine stickleback ***SGCN***
Scientific Name: *Pungitius pungitius occidentalis*
Taxon: Marine Fish

Federal Status: Not Listed
New York Status: Not Listed

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

Synopsis:
The North American ninespine stickleback, is a subspecies of the ninespine stickleback, *Pungitius pungitius* (Keivany and Nelson 2000). North American ninespine sticklebacks are distributed inland and coastally. Their coastal form ranges from Alaska to Baffin Island, and from southern Greenland along the east coast to New Jersey. Inland, they range from Alberta, Manitoba, and Saskatchewan eastward to the Great Lakes and upper St. Lawrence Valley, with the southernmost population in the Mississippi drainage of Indiana (Collette and Klein-MacPhee 2002). New York's inland population is considered extirpated since occurrences in New York lakes have not been reported since 1971. The species is still occurring in marine and coastal waters around Long Island (Carlson 2009). Information specific to *Pungitius pungitius occidentalis* in the literature is scarce, and in some instances conflicting, making it difficult to assess with great certainty this species' current status and trends.

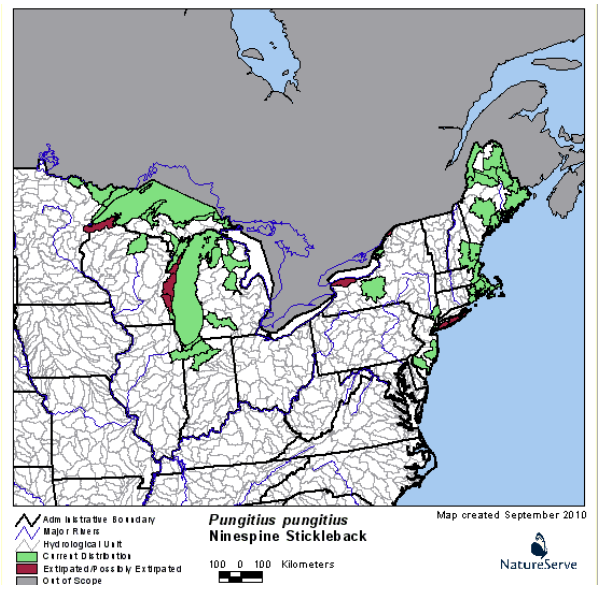
Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Moderate Decline	Moderate Decline
6% to 10%	X	Common			
11% to 25%		Fairly common			
26% to 50%		Uncommon			
> 50%		Rare	X		

Habitat Discussion:
North American ninespine sticklebacks are typically found in dense vegetation in shallow estuaries, tidal marsh pools, and coastal and inland freshwater. Often captured during seine hauls in no deeper than one meter, they have been found at depths up to 92 meters in the Great Lakes. Different populations of *P. p. occidentalis* have been captured at varying salinities and temperatures, and have shown varying preference for these factors in the laboratory (Collette and Klein-MacPhee 2002).

Primary Habitat Type
Lake
Marine; Deep Sub-tidal
Tidal Creek

Distribution:
There have not been any records of inland occurrence from Lakes Keuka, Canandaigua, and Ontario since 1971. The inland population in NY is now considered extirpated. Currently, the species lives in marine waters and lower tributaries of Long Island (Carlson 2009). In 2005, a ninespine stickleback was captured by the NYSDEC's Western Long Island Seine Survey in Oyster Bay, New York (J. Socrates, pers.

comm.). This survey no longer samples in Bellport Bay, making it difficult to compare with the historic occurrences. Conflicting with other sources, NatureServe (2013) shows this species as extirpated on Long Island.



NatureServe (2012)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Pollution	Household Sewage & Urban Waste Water (water quality degradation resulting in loss of SAV)	R	L	H
2. Human Intrusions & Disturbance	Recreational Activities (loss of SAV boating)	W	H	H
3. Climate Change & Severe Weather	Habitat Shifting & Alteration (loss of SAV from climate change)	W	H	V
4. Natural System Modifications	Other Ecosystem Modifications (loss of SAV dredging)	R	H	H
5. Pollution	Agricultural & Forestry Effluents (nutrient runoff)	R	L	H
6. Natural System Modifications	Dams & Water Management/Use (loss of connectivity from culverts, dams)	N	L	H

References Cited:

Carlson, D. 2009. Species Accounts of inland fishes of NYS that might be classified as Endangered, Threatened of Special Concern (Jan 2009). New York State Department of Environmental Conservation. Albany, NY. 65 pp.

Collette, Bruce B. and G. Klein-MacPhee. Bigelow and Schroeder's Fishes of the Gulf of Maine. 3rd ed. Washington: Smithsonian Institution Press, 2002. Print.

Keivany, Y., and J.S. Nelson. 2000. Taxonomic Review of the Genus *Pungitius*, Ninespine Sticklebacks (Gasterosteidae). Cybium. 24(2):107-122.

NatureServe. 2013. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. http://www.natureserve.org/explorer. Accessed 4 June 2013.
Socrates, Julia. 2013. Personal communication. NYSDEC, East Setauket, NY.

Common Name: Northern puffer ***SGCN***
Scientific Name: *Sphoeroides maculatus*
Taxon: Marine Fish

Federal Status: Not Listed
New York Status: Not Listed

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

Synopsis:

The northern puffer is a club-shaped fish with a unique defense mechanism; individuals puff up into a prickly ball by inhaling air or water into a special chamber near the stomach. Northern puffer is an inshore species occurring along the Atlantic Coast from Newfoundland, Canada southward to northeastern Florida. They reside in brackish and marine estuaries and bays at depths of 1.8 to 18 meters (Weber et al. 1998). This species supports a small commercial fishery in New York waters and in recent years has become of interest to recreational anglers. Little is known about the status of populations of northern puffer in New York waters, but in recent years both commercial and recreational landings have been well below the historic average (Weber et al. 1998).

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	X		
26% to 50%	X	Uncommon			
> 50%		Rare			

Habitat Discussion:
Northern puffer inhabit bays, estuaries, and protected coastal waters of temperate climates and are an important component of estuarine submerged aquatic vegetation beds. Spawning takes place in shallow nearshore waters where sandy or muddy bottoms are required for eggs to adhere to. Northern puffer occur in water depths of 10-180 m, but are most abundant from 1.8-18 meters (Weber et al. 1998). They prefer salinities of 20 to 32.5 ppt, bottom water temperatures ranging from 11 to 27˚C, and bottom dissolved oxygen levels from 2.3 to 11.8 mg/l (Weber et al. 1998). They are thought to leave bays and coastal waters in winter for deep offshore waters, as catches decline greatly after September. Northern puffer are active throughout the water column during daylight and become inactive during the night, lying on the bottom or partially burying themselves in soft sandy bottoms (Sibunka and Pacheco 1981).

Primary Habitat Type
Estuarine; Brackish Shallow
Marine; Deep Sub-tidal
Marine; Shallow Sub-tidal

Distribution:
Individuals have been caught in every year of the CTDEEP estuarine seine survey (1988–2011) throughout the bays of the Long Island Sound (sites at Groton, Waterford, Old Lyme, Clinton, New Haven, Bridgeport, Greenwich, and Milford) (CTDEEP 2012).

Aquamaps (2010)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Biological Resource Use	Fishing & Harvesting Aquatic Resources (overharvest)	R	M	L
2. Pollution	Household Sewage & Urban Waste Water (degraded water quality)	R	L	H
3. Pollution	Agricultural & Forestry Effluents (nutrient runoff)	R	L	H
4. Pollution	Industrial & Military Effluents (toxic contaminants)	R	L	H
5. Human Intrusions & Disturbance	Recreational Activities (loss of SAV from boating)	W	M	H
6. Natural System Modifications	Other Ecosystem Modifications (loss of SAV from dredging, development, bulkheads)	R	M	H
7. Climate Change & Severe Weather	Habitat Shifting & Alteration (loss of SAV from climate change)	W	M	V

References Cited:

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Connecticut Department of Energy and Environmental Protection (CTDEEP). 2012. A study of marine recreational fisheries in Connecticut; part 2: estuarine seine survey. Federal Aid in Sport Fish Recreation F-54-R-31 Annual Performance Report. Hartford, CT. 26p.

Sibunka, J.D., and A.L. Pacheco. 1981. Biological fisheries data on northern puffer, *Sphoeroides maculates* (Bloch and Schneider). NOAA/NMFS, Northeast Fisheries Center, Technical Report No. 26. 66p.

Weber, A., C. Grahn, and B. Havens. 1998. Species composition, seasonal occurrence and relative abundance of finfish and macroinvertebrates taken by small-mesh otter trawl in Peconic Bay, New York. New York State Department of Environmental Conservation, Marine Finfish Unit. East Setauket, New York. 128p.

Common Name: Oyster toadfish ***SGCN***
Scientific Name: *Opsanus tau*
Taxon: Marine Fish

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: GNR
New York: Not Ranked
Tracked: No

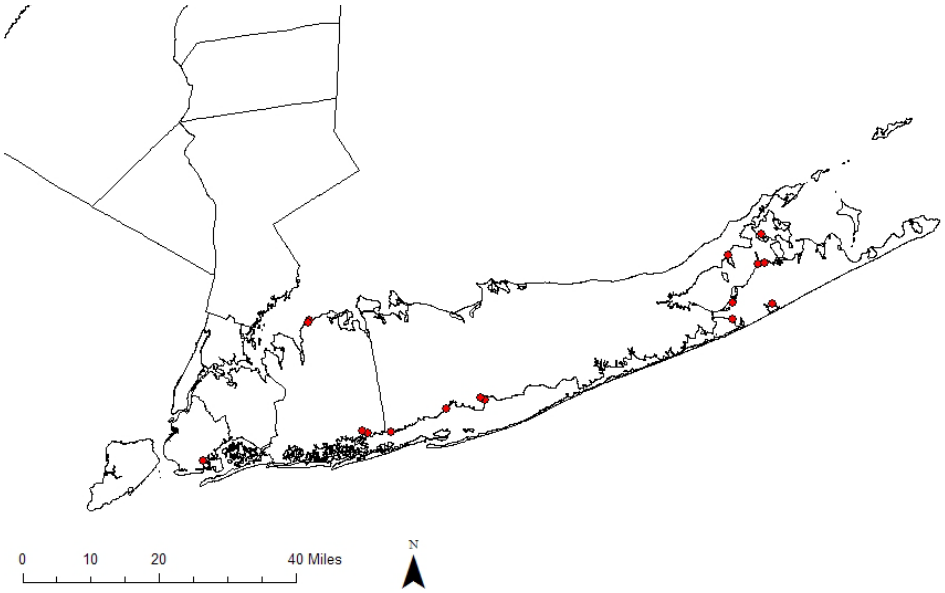
Synopsis:
Oyster toad fish range from Cape Cod, Massachusetts southward to northern Florida (Robins et al. 1986, Collette and Klien-MacPhee 2002). This species is found in salt and brackish waters, preferring areas with sand and muddy bottoms on oyster reefs, shoal water, eelgrass beds or in hollows/dens (Massie 1998, Collette and Klien-MacPhee 2002). This species is quite capable of living in polluted waters and has been known to find shelter in submerged tires and cans (Massie 1998). This species is considered to be common along the Atlantic Coast. In New York it is found in the New York Harbor and up the Hudson along the west side of Manhattan, as well as in the bays of Long Island. Population trends are not well understood, but commercial landings have dropped drastically since 1992.

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	X		
26% to 50%		Uncommon			
> 50%	X	Rare			

Habitat Discussion:
Oyster toadfish is a year round resident species, inhabiting shoal waters. It is most commonly found on sandy or muddy bottoms on oyster reefs, shoal water, among eelgrass or in hollows/dens (Massie 1998, Collette and Klien-MacPhee 2002). This species is well adapted to living among pollution and litter, and has been found inside tires and submerged cans (Massie 1998). In a trawl survey of Peconic Bay, oyster toadfish were collected at depths ranging from 1.8–17.7m, bottom salinity ranging from 17.5–32.5ppt, bottom dissolved oxygen ranging 2.3–11.8 mg/L, and bottom temperatures ranging from 9.5–28˚C (Weber et al. 1998).

Primary Habitat Type
Estuarine; Brackish Deep
Estuarine; Brackish Shallow

Distribution:
The oyster toadfish currently occurs in bays and estuaries surrounding Long Island (M. Richards and D. Carlson, personal communication).



Records from 1938 of oyster toadfish in New York State (D. Carlson, personal communication). Does not include all known occurrences. Map created by Shawn Ferdinand, NYSDEC.

Aquamaps (2013)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Biological Resource Use	Fishing & Harvesting Aquatic Resources (overharvest)	W	H	M
2. Pollution	Industrial & Military Effluents (Heavy metals, petroleum)	R	L	H

References Cited:

Carlson, Douglas. 2013. Personal communication. NYSDEC. Watertown, NY.

Collette, B.B. and G. Klien-Macphee. 2002. Bigelow and Schroeder's fishes of the Gulf of Maine, 3rd edition. Washington: The Smithsonian Institution.

Massie, F. 1998. The uncommon guide to common life of Narragansett Bay. Save The Bay Inc., Rhode Island.

Robins, C. R., G.C. Ray, J. Douglass, and R. Freund. 1986. A field guide to Atlantic Coast fishes of North America. New York, NY: Houghton Mifflin Company.

Richards, Matt. 2013. Personal communication. NYSDEC. East Setauket, NY.

Weber, A., C. Grahn, and B. Havens. 1998. Species composition, seasonal occurrence and relative abundance of finfish and macroinvertebrates taken by small-mesh otter trawl in Peconic Bay, NY. NYSDEC report, East Setauket, NY.

Common Name: Shortnose sturgeon ***SGCN***
Scientific Name: *Acipenser brevirostrum*
Taxon: Marine Fish

Federal Status: Endangered
New York Status: Endangered

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

Synopsis:
The shortnose sturgeon, the smallest of the five North American species of the genus *Acipenser*, occurs solely in the Northern hemisphere, inhabiting coastal rivers of eastern North America. Their northern distribution extends to the St. John River, New Brunswick, Canada and their southern distribution to the St. Johns River, Florida (Dadswell et al. 1984). The National Marine Fisheries Service recognizes 19 distinct population segments, each defined as a river/estuarine system in which shortnose sturgeons have been captured in the generation time of the species (30 years) (NMFS 1998). Shortnose sturgeon are considered amphidromous, typically spending their entire life history in their natal rivers, limiting use of marine waters (Bain et al. 1998). In New York, this sturgeon is only found in the Hudson River, where it moves seasonally from New York Harbor to the Troy Dam; only one extant and one historical spawning area are known (NYNHP 2011). Mature spawning adult shortnose sturgeon migrate upstream in the spring to spawn from the Troy Dam south to Coeymans; they migrate southward in the Hudson River to feed during the summer. The Hudson population is thought to have increased from the 1970s to the 2000s, while other stocks along the Atlantic Coast remain seriously depressed (Woodland and Secor 2007).

Shortnose sturgeons in the Hudson River are becoming more common since being placed on the Endangered Species List in 1967. The Hudson River population is currently considered stable at a high level and is in a stable habitat with an excellent estimated viability (Bain et al. 2008). The single occurrence in New York will continue to face some threats, and the New York Natural Heritage Program states that the S1 rank is still appropriate (NYNHP 2011). Woodland and Secor (2007) indicated that high recruitments from 1986 through 1992 are likely contributing to the increase in Hudson River shortnose sturgeon.

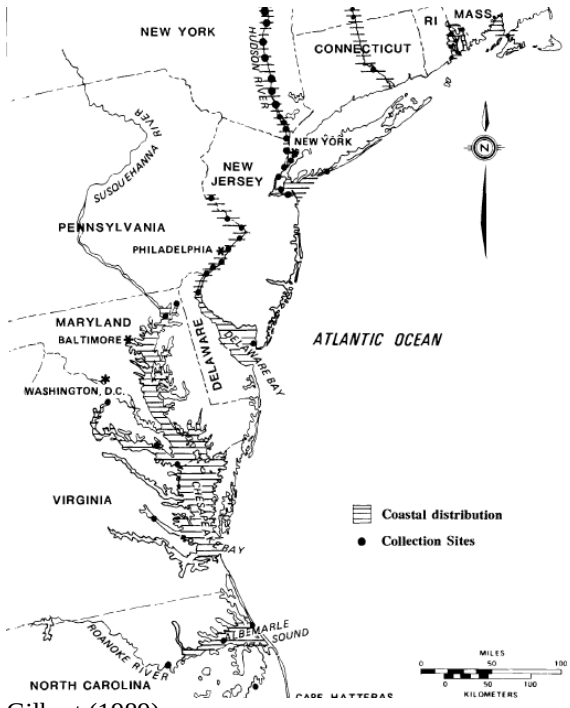
Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Stable	Increasing
6% to 10%	X	Common			
11% to 25%		Fairly common	X		
26% to 50%		Uncommon			
> 50%		Rare			

Habitat Discussion:
New York's shortnose sturgeon population inhabits the entire Hudson River estuary, below the Federal Dam at Troy, consisting of 245 kilometers of tidal freshwater river and brackish estuary habitats. Captures in coastal marine waters and non-natal rivers are rare, but have occurred (Bain et al. 2007). From late spring to early fall, shortnose sturgeon are dispersed throughout the channel habitats of this river-estuary. Both adults and juvenile fish tend to overwinter near the fresh/brackish water interface in the Haverstraw Bay region while mostly adults aggregate near Kingston (river kilometer 139) (Bain et al.

1998). Spawning occurs in between Coeymans and the Troy Dam in late April-May. Once eggs hatch, larvae disperse downstream; juvenile use much of the Hudson River estuary, commonly associated with deep waters and strong currents (Bain et al. 2007). Summer habitat for all life stages is dispersed throughout much of the estuary in the mid-river region.

Primary Habitat Type
Estuarine; Brackish Deep
Estuarine; Freshwater Deep Sub-tidal

Distribution:
Shortnose sturgeon currently occur solely in the Hudson River, with one known spawning site (downstream of the Troy Dam) and two wintering sites (near Kingston and Haverstraw Bay) (Dovel et al. 1992).



Gilbert (1989)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Biological Resource Use	Fishing & Harvesting Aquatic Resources (bycatch)	R	L	M
2. Natural System Modification	Dams & Water Management/Use (water control structure entrainment)	N	L	M
3. Pollution	Industrial & Military Effluents	P	L	H
4. Transportation & Service Corridors	Shipping Lanes (dredging)	N	M	H
5. Transportation & Service Corridors	Shipping Lanes (vessel strikes)	P	L	H
6. Energy Production & Mining	Renewable Energy (hydro turbines)	N	L	H
7. Transportation & Service Corridors	Shipping Lanes (Hudson River transportation corridor: railroad/road bridge reconstruction, transmission)	P	L	V
8. Biological Resource Use	Fishing & Harvesting Aquatic Resources (illegal harvest: caviar/flesh)	R	L	H
9. Pollution	Household Sewage & Urban Waste Water (discharge from sewage treatment plants)	W	L	M

References Cited:

Bain, M.B., D.L. Peterson, and K.K. Arend. 1998. Population Status of Shortnose Sturgeon in the Hudson River. Final Report to NMFS and US Army Corps Engineers, and Hudson River Foundation. Cornell Univ., Ithaca, NY. 51p.

Dadswell, M.J., B.D. Taubert, T.S. Squiers, D.M. Marchette, and J. Buckley. 1984. Synopsis of biological data on Shortnose Sturgeon, *Acipenser brevirostrum*, LeSueur 1818. NOAA Technical Report NMFS-14, FAO Fisheries Synopsis No. 140. 45p.

Dovel, W.L., A.W. Pekovitch, and T.J. Berggren. 1992, Biology of the shortnose sturgeon (*Acipenser brevirostrum* Lesueur, 1818) in the Hudson River estuary, New York. C.L. Smith (editor), in Estuarine Research in the 1980s. State University of New York Press, Albany, New York. 187-227p.

Gilbert, C.R. 1989. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Mid-Atlantic Bight)- Atlantic and shortnose sturgeons. U.S. Fish Wildl. Serv. Biol. Rep. 82(11.122). U.S. Army Corps of Engineers TR EL-82-4. 28p.

National Marine Fisheries Service (NMFS). 1998. Recovery Plan for the Shortnose Sturgeon (*Acipenser brevirostrum*). Prepared by the Shortnose Sturgeon Recovery Team for the National Marine Fisheries Service, Silver Spring, Maryland. 104p.

New York Natural Heritage Program (NYNHP). 2011. Online Conservation Guide for *Acipenser brevirostrum*. Available from: http://www.acris.nynhp.org/guide.php?id=7168. Accessed March 4th, 2013.

Woodland, R.J. and D.H. Secor. 2007. Year-class strength and recovery of endangered shortnose sturgeon in the Hudson River. New York Tr. AFS 136(1): 72-81.

Common Name: Spotfin killifish ***SGCN***
Scientific Name: *Fundulus luciae*
Taxon: Marine Fish

Federal Status: Not Listed
New York Status: Not Listed

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

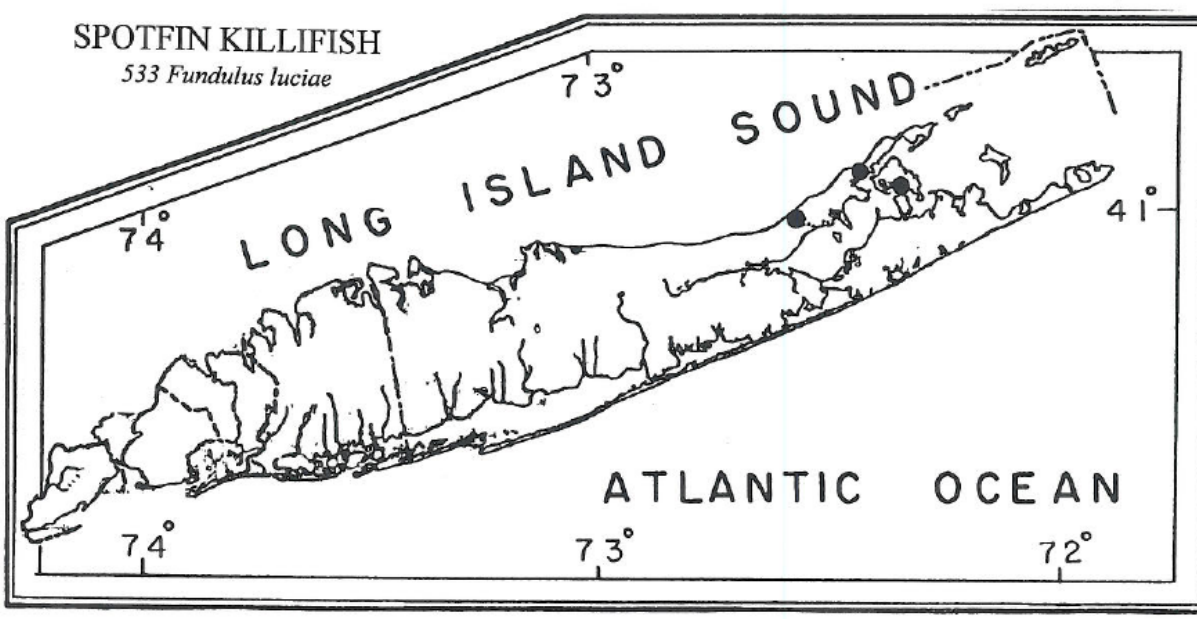
Synopsis:
The spotfin killifish is a small marine forage fish that has a spotty distribution along the Atlantic Coast from Long Island, New York and Rhode Island to North Carolina and Georgia; the core of the distribution seems to be in the Chesapeake Bay and Delmarva Peninsula region (Smith 1985, NatureServe 2012). In New York, spotfin killifish are found in the Hudson River and off the coast of Long Island (Yozzo and Ottman 2003). This species can be found in salt and brackish marshes (Smith 1985, Yozzo and Ottman 2003). Populations are likely more abundant than previously thought and relatively stable (Yozzo and Ottman 2003, NatureServe 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			
> 50%		Rare	X		

Habitat Discussion:
Habitat includes high intertidal areas in brackish, sometimes oxygen-deficient shallow ditches, mudholes, and tidal rivulets in stands of smooth cordgrass and/or phragmites (Yozzo and Ottman 2003, NatureServe 2012). The spotfin killifish can also be found in upper tidal marsh areas where water is almost completely fresh; there are records from freshwater ponds in Virginia and Maryland (Lee et al. 1980).

Primary Habitat Type
Estuarine; Brackish Intertidal; Tidal Wetland

Distribution:
There have been 168 spotfin killifish archived in New York State from 1938 to 1985 and all samples were collected in Suffolk County on the south shore of Long Island or Fishers Island (Yozzo and Ottman 2003). In 2000 two adult females and nine juveniles were collected at Piermont Marsh, Rockland County, representing the first record of spotfin killifish in the Hudson River (Yozzo and Ottman 2003); more collections were made at this site in 2001. Nine spotfin killifish were collected in 2001 at another new site, Ralph Creek, Jamaica Bay, on the south side of long Island (Yozzo and Ottman 2003).



Historical occurrences (Raney 1953)

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Biological Resource Use	Fishing & Harvesting Aquatic Resources (commercial and recreational harvest for bait)	W	M	L
2. Natural System Modifications	Dams & Water Management/Use (entrainment and impingement in power plants)	N	L	H
3. Pollution	Household Sewage & Urban Waste Water (poor water quality)	N	L	H
4. Pollution	Agricultural & Forestry Effluents (runoff and siltation)	N	L	H
5. Natural System Modification	Other Ecosystem Modifications (shoreline modification docks, jetties, etc…)	N	L	H
6. Natural System Modification	Other Ecosystem Modifications (loss of marsh from ditching/continued effects of ditching)	W	L	H
7. Climate Change & Severe Weather	Habitat Shifting & Alteration (loss of marshes from sea level rise)	P	M	V
8. Natural System Modifications	Dams & Water Management/Use (loss of connectivity)	N	L	H

References Cited:

Lee, D. S., C. R. Gilbert, C. H. Hocutt, R. E. Jenkins, D. E. McAllister, and J. R. Stauffer, Jr. 1980. Atlas of North American freshwater fishes. North Carolina State Museum of Natural History, Raleigh, North Carolina. i-x + 854 pp.

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New York State Department of Environmental Conservation. 2005. New York State Comprehensive Wildlife Conservation Strategy. http://www.dec.ny.gov/index.html.

Raney, E. C., "Geographic Range Maps for Marine Fish Species in New York State" (unpublished report, Ichthyological Association Inc., Lansing, New York, 1960).

Smith, L.C. 1985. The Inland Fishes of New York State. NYSDEC. Albany, NY.

Yozzo, D.J. and F. Ottman. 2003. New distribution records for the spotfin killifish, *Fundulus luciae* (Baird), in the lower Hudson River estuary and adjacent waters. Northeastern Naturalist 10(4): 399-408.