Appendix A7:

Comprehensive Wildlife Conservation Strategy Species Group Reports for Marine fish

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

27-Sep-05

Taxa Group: Marine fish

Species Group: Alewife - marine district population

Threats:

Possible over harvest of adults on the spawning grounds for bait in the recreational and commercial fisheries, loss of access to historic spawning grounds, and degradation of spawning and juvenile habitat - primarily in inshore areas.

Trends:

NY has no long term data series to suggest population trends.

SEQR - No Action Alternative:

Difficult to predict. Without data on spawning population it is unclear what the future direction of the stock is.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Alewife (Alosa pseudoharengus)					U	Migratory

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Alewife (Alosa pseudoharengus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Alewife (Alosa pseudoharengus)	North Atlantic Coast	North Atlantic Coast	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Alewife (Alosa pseudoharengus)	Breeding	Estuarine	shallow subtidal	sand/gravel

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Alewife (Alosa pseudoharengus)				
	Breeding	Riverine	coastal plain stream	sand/gravel bottom
	Breeding	Riverine	deepwater river	sand/gravel bottom
	Breeding	Riverine	warmwater stream	sand/gravel bottom
	Feeding	Marine	deep subtidal	pelagic
	Nursery/Juvenile	Estuarine	shallow subtidal	pelagic
	Nursery/Juvenile	Estuarine	shallow subtidal	sand/gravel
	Nursery/Juvenile	Riverine	coastal plain stream	sand/gravel bottom
	Nursery/Juvenile	Riverine	deepwater river	pelagic

Goal and Objectives for Alewife - marine district population

Goal: Restore and maintain stock of alewives at levels that meet bioenergetic requirements of predators and provide for sustainable recreational and bait fishing consumption.

Objective 1 : By 2010 determine a biomass threshold and target for maintenance of a sustainable stock and fishery in the Hudson River estuary.

Measure: *Annual indices of relative abundance of adult and yoy fish*

Objective 2 : Establish a condition index for potential alewife predators in the Hudson River estuary by 2008

Measure: *Length and weight of predators in Hudson River estuary.*

Objective 3 : For the Hudson Estuary alewife population, collect adults and spawning stock abundance information to determine acceptable levels of fishing mortality by 2008.

Measure: *Annual estimates of adult abundance and mortality rate*

Objective 4 : Identify alewife predators in the Lower Hudson/ Long Island Bays

Measure: *Conduct food habits survey to identify major predators*

Objective 5 : Maintain condition index of alewife predators at established level in the Hudson River by 2020

Measure: *Up-to-date condition index*

Objective 6 : Quantify upstream spawning habitat that could be opened on X streams in the Lower Hudson/Long Island Bays and Atlantic Ocean watersheds by 2025.

Measure: *quantitative habitat survey of Lower Hudson/Long Island Bays and Atlantic Ocean watersheds, amount of accessible/ inaccessible spawning habitat identified in each watershed*

Recommended Actions

Habitat research:

* Document habitat use by alewife at various life stages.

Life history research:

* Develop basic biological data: fecundity, maturity, age structure, longevity.

Population monitoring:

* Develop method to index annual abundance of age zero and adult fish
* Develop annual data on age structure of spawning stock

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Taxa Group: Marine fish
Species Group: American eel

Threats:
American eels are a long-lived, late maturing, panmictic, semelparous species. Due to these complicated life history traits the population cannot withstand sustained harvest rates at or above natural mortality. However, American eels have been traditionally harvested at every life-stage within various parts of their range, which extends from Greenland to Venezuela. A catadromous fish, American eels inhabit diverse habitats, including salinities from freshwater to oceanic. Therefore, in addition to directed harvest, American eels are threatened by barriers to migration, especially dams constructed for water control and hydroelectric production where upstream and downstream passage are inadequate or absent. American eels are also susceptible to contamination resulting from industrial pollution, studies have indicated that the effects of pollution and migration barriers may have contributed to the suppression of female development in the species. Due to their wide ranging life history cycle, American eel recruitment is also thought to be affected by climate, weather, and oceanic circulation patterns.

Trends:
There is evidence from fishery dependent and fishery independent data that the abundance of American eels is declining in the Lake Ontario/St. Lawrence River, and Lake Champlain/Richelieu River systems. There is also evidence that recruitment has declined in these systems. Both trends point to a localized recruitment failure, and stock collapse, occurring within a distinct segment of the population. This trend causes imminent concern. Most eels from these systems are female, and are thought to contribute the majority of female biomass to the spawning stock. In response, Ontario Ministry of Natural Resources has closed all commercial fisheries for American eel in the province of Ontario. Canada Department of Fisheries and Oceans has proposed to reduce all human-induced mortality by 50% in the maritime provinces . The Great Lakes Fisheries Commission, as well as an international group of concerned scientists, have issued declarations of concern for the American eel population, as well as other anguillid eel populations worldwide. Information on abundance and recruitment from other portions of the range is scant, incomplete or short-lived, not indicating trends observed in the northern part of the range.

SEQR - No Action Alternative:
No action will most assuredly result in complete stock collapse, and possible extirpation of the species.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
American eel (Anguilla rostrata)			S5	G5	U	Migratory

Species Distribution - Watershed Basin

Species	Historical	Current	Stability

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
American eel (Anguilla rostrata)	SW Lake Ontario	SE Lake Ontario	Decreasing
	Lower Hudson - Long Island Bays	NE Lake Ontario - St. Lawrence	Decreasing
	Atlantic Ocean - NY Bight	Allegheny	Unknown
	SE Lake Ontario	Upper Hudson	Unknown
	Upper Hudson	Lake Erie	Unknown
	NE Lake Ontario - St. Lawrence	Atlantic Ocean - NY Bight	Unknown
	Allegheny	Lower Hudson - Long Island Bays	Unknown
	Lake Champlain	Susquehanna	Unknown
	Delaware	SW Lake Ontario	Decreasing
	Susquehanna	Delaware	Unknown
		Lake Champlain	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
American eel (Anguilla rostrata)	Great Lakes	Great Lakes	Decreasing
	North Atlantic Coast	North Atlantic Coast	Unknown
	St. Lawrence-Lake Champlain Valley	St. Lawrence-Lake Champlain Valley	Decreasing

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
American eel (Anguilla rostrata)				
	Breeding	Marine	unknown	unknown
	Nursery/Juvenile	Estuarine	cultural	structure
	Nursery/Juvenile	Estuarine	deep subtidal	mud
	Nursery/Juvenile	Estuarine	deep subtidal	structure
	Nursery/Juvenile	Estuarine	intertidal	emergent marsh
	Nursery/Juvenile	Estuarine	shallow subtidal	pelagic
	Nursery/Juvenile	Lacustrine	coastal plain	mud bottom
	Nursery/Juvenile	Riverine	coastal plain stream	sand/gravel bottom
	Nursery/Juvenile	Riverine	deepwater river	mud bottom

Goal and Objectives for American eel

Goal: To conserve and protect the American eel resource to ensure its continued role in the ecosystems while providing the opportunity for its commercial, recreational, scientific, and educational use.

Objective 1 : Assure that fishery removals in NY are in compliance with the Interstate Fishery Management Plan.

Measure: *New York remains in compliance with the Interstate Fishery Management Plan.*

Objective 2 : Determine annual catch per unit effort of all commercial American eel fisheries.

Measure: *Commercial CPUE of all eel fisheries.*

Objective 3 : Determine relative abundance of outmigrating silver eels in NE Lake Ontario-St. Lawrence, Lower Hudson/Long Island Bays, Susquehanna, and Delaware Watersheds.

Measure: *X silver eel surveys.*

Objective 4 : Determine relative abundance of yellow phase eels in the NE Lake Ontario-St. Lawrence River, Lower Hudson/Long Island Bays, Susquehanna, and Delaware Watersheds.

Measure: *X Yellow eel surveys.*

Objective 5 : Determine relative index of annual recruitment of glass eels in the Lower Hudson/Long Island Bays, Susquehanna, and Delaware Watersheds.

Measure: *X glass eel surveys.*

Objective 6 : Develop a listing of protective timeframes for activities known or suspected of adversely affecting all life stages of eels and their habitats.

Measure: *Number of activities under guidance*

Objective 7 : Develop systematic research program for eels based on ASMFC Fishery Management Plan by 2006

Measure: *Number of eel research projects funded annually*

Objective 8 : Economic valuation of eel fishery by 2015

Measure: *Regulatory economic impact statement by 2015*

Objective 9 : Full implementation of the ACCSP for eels to meet monitoring and reporting requirements of the eel Fishery Management Plan

Measure: *?*

Objective 10 : Identify important American eel habitat within the state and categorize and prioritize them in terms of their value to the overall state population.

Measure: *Number of water bodies surveyed/evaluated*

Objective 11 : Increase upstream passage of eels at Robert Moses Power Dam through construction of an additional eel ladder.

Measure: *Increased numbers of upstream migrant eels.*

Objective 12 : Institute licensing and reporting mechanisms to ensure that annual effort and landings information by life stage are provided to the state by harvesters

Measure: *Ratio of reports received to licenses issued*

Objective 13 : Investigate, develop, and improve technologies for eel passage both up- and downstream

Measure: *Reduction in migratory mortality of eels by 2015*

Objective 14 : Reduce hydropower related mortality of outmigrating adult eels in NE Lake Ontario-St. Lawrence Watershed by 50% in 10 years. (Check on other Great Lakes mortality issues)

Measure: *Annual mortality of adult outmigrating eels.*

Objective 15 : Reestablish American eels into historic habitats

Measure: *Number of water bodies with eel populations*

Objective 16 : Statewide stock assessment including fishing mortality rates, growth rates, and calculated sustainable harvest rate by 2015

Measure: *Working model of NY American eel pop. by 2015*

Recommended Actions

Fact sheet:

* Develop appropriate information relative to this species.

Recommended Actions

Habitat restoration:

* Restoration of habitat for American eels in many cases involves the design and construction of upstream and downstream passage around barriers impassable to eels. In many cases, such passage facilities can also serve as sampling frames to collect abundance and life history information necessary to evaluate and manage the species. As eels reside in a variety of diverse habitats, including salt marshes, protection and restoration of aquatic habitats becomes a crucial element in any eel conservation and management plan. Aspects of habitat protection, including salt marsh, will be included in the final watershed recommendations.

Life history research:

* Research is needed to develop methods of determining age and identifying sex. Examination of fecundity at age and mechanism of maturation and recruitment to the spawning stock is also needed to develop population life history models.

Modify regulation:

* Existing regulations need to be modified so that all eel harvesters within the State , both commercial and recreational, inland and marine, are subject to the same regulations and requirements.

New legislation:

* New Legislation may be necessary to require operators of various water withdrawal and water diversion projects, especially hydroelectric dams, to upgrade their mechanical systems so as to minimize the impingement and entrainment and maximize survival of impinged and entrained American eel through such systems, and to install and maintain adequate fish passage devices for both continuous upstream and downstream passage of American eels.

New regulation:

* New regulations are needed to identify and permit commercial harvesters, and dealers, in support of the collection of accurate landings and effort data. New regulations may be necessary which limit or prohibit the possession of American eels for use or sale as bait.

Other action:

* Working in cooperation with USFWS, incorporate eel passage needs, to reduce mortality of all life stages of eels, during licensing and relicensing at hydropower facilities. Methods should include possible short duration shut down of facilities during peak migration, bypass methods that effectively attract eels, and other methods to deter their entrainment.

Other management plan:

* Because the range of American eel and that of anguillid eels in general extends beyond the boundaries of the State's and the Atlantic States Marine Fisheries Commission jurisdiction's, contemplation of additional management planning is reasonable. It is possible that New York would be a participant in international agreements protecting American eels throughout their range, and anguillid eels worldwide.

Recommended Actions

Population monitoring:

* Monitoring studies are needed within the various habitats to examine abundance by age, size, and sex of intermediate and adult life stage members of the stock. Recruitment indices of young , and adults are necessary to examine the effects of management on the population and spawning stock. Study efforts must be designed and coordinated to ensure valid results.

Relocation/reintroduction:

* If necessary, and if found to be scientifically sound, a relocation/reintroduction program may be necessary for the Lake Ontario/St. Lawrence River system where elvers are collected and transported from the coast to locations within Lake Ontario.

Statewide management plan:

* To complement unification of the regulations governing harvest, use, and possession of American eels by recreational and commercial stakeholders, a Statewide management plan which conveys the State's policies on inter-jurisdictional, intergovernmental, and international management of the State's American eel resource is necessary.

Web page:

* Develop appropriate web based information relative to the American eel.

References

Electric Power Research Institute (EPRI). 1999. American eel (Anguilla rostrata) scoping study: a literature and data review of life history, stock status, population dynamics, and hydroelectric impacts. EPRI, TR-111873, Palo Alto, CA.

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Dixon, D.A., editor. 2003. Biology, management, and protection of catadromous eels. American Fisheries Society, Symposium 33, Bethesda, Maryland.

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Taxa Group: Marine fish

Species Group: American shad

Threats:

Overfishing on adult stock. Gaunlet fisheries in near shore ocean on spring migratory runs; followed by terminal fishery in river system.
Unknown level of bycatch on adults and sub-adults in variety of fisheries on coast (weakfish, bluefish etc) from VA north to Canadian Maritimes.

Hudson- Shallow spawning habitat threatened with continued shoreline development and related dredging activities due to increased commercial boat traffic.

Susquehanna- dams (located in PA) are still a threat to the use of the migratory spawning stock. However, work on fish passage at all major dams in the drainage continues.

Trends:

Hudson R. stock appears to have stabilized at the lowest level observed in the past 120 years.

Delaware R. stock recovered slightly from major overfishing event during WWII , after the dissolved oxygen block in the Philadelphia area was cleaned up in the late 1970 early 1980s. This stock also appears to have stabilized at an historic low level.

SEQR - No Action Alternative:

Clupeid stocks are notorious for remaining at suppressed population levels. Stocks may remain at very low levels for the foreseeable future, or may begin to decline if fishing pressure continues.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
American shad (Alosa sapidissima)			S4	G5	P	Migratory

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
American shad (Alosa sapidissima)	Upper Hudson	Upper Hudson	Stable
	Atlantic Ocean - NY Bight	Lower Hudson - Long Island Bays	Stable
	Lower Hudson - Long Island Bays	Atlantic Ocean - NY Bight	Unknown
	Delaware	Delaware	Unknown
	Susquehanna	Susquehanna	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
American shad (Alosa sapidissima)	High Allegheny Plateau	Lower New England Piedmont	Stable
	Lower New England Piedmont	High Allegheny Plateau	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
American shad (Alosa sapidissima)				
	Breeding	Estuarine	shallow subtidal	sand/gravel
	Breeding	Riverine	deepwater river	sand/gravel bottom
	Nursery/Juvenile	Estuarine	intertidal	sand/gravel
	Nursery/Juvenile	Riverine	deepwater river	sand/gravel bottom

Goal and Objectives for American shad

Goal: Restore Hudson River American shad stock to abundance level prior to WWII (pre 1930s). Allow spawning American shad access to NY waters of the Susquehanna River.

Objective 1 : By 2006, reduce mortality rate on adult stock to acceptable rates as defined in NYSDEC /ASMFC American shad stock assessment.

Measure: *Monitor adult spawning stock and estimate annual mortality rates.*

Objective 2 : By 2008, identify and protect spawning and nursery habitat.

Measure: *Implementation of dredge/ shoreline development permit restrictions to spawning and nursery habitat.*

Objective 3 : By 2008, reduce bycatch mortality of American shad stocks in coastal ocean waters.

Measure: *Bycatch sampling program of off shore fisheries in Nyman other (as per ASMFC) states coastal waters.*

Objective 4 : By 2025, establish a spawning population of American shad in NY waters of the Susquehanna River.

Measure: *As per goals of the Susquehanna River Anadromous Fish Restoration Committee, increase counts of shad at barriers (dams) in the watershed by building state of art fish passage facilities.*

Recommended Actions

Life history research:

* need to know basic biology: develop fecundity at age estimates ; better information needed on maturity schedules

Modify regulation:

* may need to increase escapement period, enlarge spawning area closures

Other action:

* Determine ocean bycatch : identify fisheries, ages taken

Population monitoring:

* continue to monitor spawning stock and young of year
  need to develop alternative relative abundance index for adults ; in past used in-river Hudson commercial fishery data, fishers no longer fishing

References

Hattala, K., A. Kahnle, D. R. Smith, R.V. Jesien and V. Whalon. 1998. Total mortality, population size and exploitation rates American shad of the Hudso River Estuary, New York. Interim report for the Atlantic States Marine Fisheries Commission.

Hattala, K. and A. Kahnle. 1998. Stock status and definition of over-fishing rate for American shad of the Hudson River Estuary, New York. NY Dept of Environmental Conservation. IN Atlantic States Marine Fisheries Commission American shad Stock Assessment Peer Review Report. Washington D.C. USA.

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Taxa Group: Marine fish

Species Group: Atlantic sturgeon

Threats:

Dredge and development activities in spawning and nursery areas

At current overfished status, ocean bycatch throughout its migratory range may further erode status. Unknown contaminant effect on juveniles

Trends:

Stock at the lowest level in 120 years. May be stable at this very low level.

SEQR - No Action Alternative:

Unknown. Ocean bycatch issues need to be identified and addressed.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Atlantic sturgeon (Acipenser oxyrinchus)	T	X	S1	G3	T	Migratory

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Atlantic sturgeon (Acipenser oxyrinchus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	Upper Hudson	Upper Hudson	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Atlantic sturgeon (Acipenser oxyrinchus)	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Atlantic sturgeon (Acipenser oxyrinchus)				
	Breeding	Estuarine	deep subtidal	unknown
	Nursery/Juvenile	Estuarine	deep subtidal	unknown

Goal and Objectives for Atlantic sturgeon

Goal: Restore Hudson River Atlantic sturgeon to fishable level.

Objective 1 : Identify habitat use of juvenile/immature Atlantic sturgeon in nearshore waters along the south shore of Long Island

Measure: *survey presence over time and space by bottom trawl.*

Objective 2 : Maintain broad range of ages in adult spawning stock

Measure: *Age structure of fish in spawning stock*

Objective 3 : Monitor the effects of the current 40 year coast-wide moratorium on adult stock status.

Measure: *Annual index of relative abundance of mature fish*

Objective 4 : Monitor the effects of the current 40 year coast-wide moratorium on juvenile abundance

Measure: *Estimates of annual juvenile abundance*

Objective 5 : Protect spawning and nursery habitat within the estuary and nursery habitat in the near shore ocean

Measure: *Location of spawning and nursery habitat within the Hudson and location of areas of concentration of juveniles and sub-adult fish in the near shore ocean.*

Objective 6 : Reduce bycatch of Atlantic sturgeon in Atlantic Ocean commercial fisheries

Measure: *Periodic estimates of bycatch in numbers and size by fishery and over time*

Objective 7 : Understand adult and sub-adult Atlantic sturgeon movement on the Atlantic coast.

Measure: *Employ use of archival tags to gain data on marine habitat use. Coordinate all current and future sampling programs that encounter Atlantic sturgeon for tracking tagged fish.*

Recommended Actions

Fact sheet:

* need public info sheet

Habitat research:

* Conduct trawl survey in near shore ocean waters along south shore of Long Island to identify concentration areas of juvenile a sub-adult fish
  Sonic tag and follow wild juveniles to identify seasonal habitat use within the Hudson River Estuary
  Sonic tag and follow wild adult fish to identify spawning locations and any pre and post spawning aggregation areas.
  Employ use of archival tags to gain data on marine habitat use of adult sturgeon

Life history research:

* Develop age length data to allow age estimates of juvenile fish from length

Other management plan:

* Restrict fisheries over time and space that have the greatest sturgeon bycatch.

  Maintain moratorium on possession

Population monitoring:

* Develop and implement sample program to obtain annual index of abundance of juvenile fish by age within the estuary

  Develop and implement survey every five years to identify age composition of mature fish in spawning population

  Develop and implement survey to estimate relative annual abundance of mature fish in the spawning population.

  Develop and implement method to estimate absolute abundance of age one juveniles in Estuary every five years.

  Conduct sea sampling to learn bycatch in number and size of Atlantic sturgeon by fishery over space and time in Commercial fisheries of the Atlantic ocean.

References

see complete reference list in #1 above

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Kahnle, A., K. Hattala, and K. McKown. 1998. Hudson River stock status. IN Atlantic sturgeon stock assessment peer review report. Atlantic States Marine Fisheries Commission. Washington D.C., USA

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Taxa Group: Marine fish
Species Group: Blueback herring

Threats:
Possible overfishing by both recreational and commercial bait fisheries

Trends:
No data to indicate trend. Hudson stock has colonized the Mohawk River system through the State Barge Canal system. Access to the Mohawk / canal system is artificial. It is unclear what the overall effect of this additional spawning area has had on the stock.

Anecdotal information suggests that the sub-stock using the Mohawk system has been increasing in recent years, with some fluctuation.

SEQR - No Action Alternative:
Difficult to predict. Without data on spawning population it is unclear what the future direction of the stock is.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Blueback herring (Alosa aestivalis)					P	Migratory

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Blueback herring (Alosa aestivalis)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	Upper Hudson	Upper Hudson	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Blueback herring (Alosa aestivalis)	Lower New England Piedmont	Lower New England Piedmont	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Blueback herring (Alosa aestivalis)				
	Breeding	Estuarine	shallow subtidal	sand/gravel
	Breeding	Riverine	warmwater stream	sand/gravel
	Nursery/Juvenile	Estuarine	shallow subtidal	sand/gravel
	Nursery/Juvenile	Riverine	shallow subtidal	sand/gravel

Goal and Objectives for Blueback herring

Goal: Maintain stock at levels that support predators and fishing (recreational and commercial)

Objective 1 : By 2010, Develop and maintain a target mortality rate at and maintain it at or below acceptable rate

Measure: *annual estimates of adult mortality rate*

Objective 2 : Determine predator/ prey relationship of blueback herring and its major predators in the Lower Hudson and Long Island Bays.

Measure: *Results of food habits surveys to identify major predators*

Objective 3 : Develop a spawning stock survey to understand stock status of blueback herring in the Hudson River Estuary.

Measure: *annual indices of adult abundance*

Objective 4 : Maintain stock abundance at current or higher levels

Measure: *annual indices of relative abundance of adult and yoy fish*

Recommended Actions

Habitat research:

* Current habitat use specifics unknown.

Life history research:

* Need basic biological data: fecundity, maturity, age structure, longevity.

Recommended Actions

Modify regulation:

* Given decline in other neighboring systems, may be prudent to institute some bag limits on take.

Population monitoring:

* Develop monitoring program for adult stock abundance, annual data on age structure of spawning stock

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Taxa Group: Marine fish
Species Group: Demersal sharks

Threats:
The major threat to the demersal sharks is overfishing even with the implementation of strict state and federal regulations there remains a large worldwide harvest of these species. New York's commercial and recreational fisheries for sharks are moderate, however, there is great recreational interest fishing for these species.

Trends:
The trends for all three of these species is downward. Rebuilding these species to former levels will take several decades because of their low fecundity, slow rates of maturity and high incidences of mortality from overfishing, and bycatch losses.

SEQR - No Action Alternative:
New York has implemented regulations consistent with the National Marine Fisheries Service regulations and needs to continue to sustain these regulations. A no action alternative would allow these regulations to slip or lapse thus placing additional pressure on these species.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Dusky shark (Carcharhinus obscurus)					P	Migratory
Sand tiger shark (Carcharias taurus)					P	Migratory
Tiger shark (Galeocerdo cuvier)					P	Migratory
Sandbar shark (Carcharhinus plumbeus)					P	Migratory

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Sandbar shark (Carcharhinus plumbeus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
Tiger shark (Galeocerdo cuvier)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Sand tiger shark (Carcharias taurus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Dusky shark (Carcharhinus obscurus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Sandbar shark (Carcharhinus plumbeus)	North Atlantic Coast	Lower New England Piedmont	Decreasing
Tiger shark (Galeocerdo cuvier)	North Atlantic Coast	North Atlantic Coast	Unknown
Sand tiger shark (Carcharias taurus)	North Atlantic Coast	North Atlantic Coast	Unknown
Dusky shark (Carcharhinus obscurus)	North Atlantic Coast	North Atlantic Coast	Decreasing

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Sandbar shark (Carcharhinus plumbeus)	Feeding	Marine	deep subtidal	sand/gravel
Tiger shark (Galeocerdo cuvier)	Feeding	Marine	deep subtidal	sand/gravel
Sand tiger shark (Carcharias taurus)	Feeding	Marine	deep subtidal	sand/gravel
Dusky shark (Carcharhinus obscurus)	all	Marine	deep subtidal	sand/gravel

Goal and Objectives for Demersal sharks

Goal: Rebuild domestic stocks of sharks consistent with the National Standards contained in the Magnuson-Stevens Fishery Conservation and Management Act (Pub Law 104-297)

Objective 1 : Assemble additional inshore data necessary for assessing and managing shark stocks of interest to New York by 2010.

Measure: *Support data additional collections relative recreational and commercial fisheries of shark in New York State or by New York State vessels.*

Objective 2 : Collect historic information relative to the utilization of inshore habitats as pupping and nursery grounds for demersal sharks by 2010.

Measure: *Support a review of historic commercial and recreational records, historic fishery data collections and accounts to determine the level and extent of inshore habitat utilization by demersal sharks.*

Objective 3 : Minimize, to the extent practicable, bycatch of sharks by 2015.

Measure: *Implement appropriate management actions and educational information for marine fisherman who might encounter sharks under protection.*

Objective 4 : Prevent or end over fishing of sharks by 2015.

Measure: *Implement appropriate management to protect inshore species of shark.*

Recommended Actions

Habitat research:

* Based upon available literature, evaluate New York's inshore habitat's as potential pupping grounds and nursery grounds.

Life history research:

* Collect available data and where practicable new data on all life stages of demersal sharks found in New York or harvested by New York fisherman.

Modify regulation:

* Insure that New York's Rules and Regulations remain consistent with the Federal Rules and Regulations for sharks.

Population monitoring:

* Collect available data and where practicable new data on demersal shark populations found in or adjacent to New York's Marine District.

Web page:

* Provide current population and life history information relative to demersal sharks in New York and throughout there range as an education tool for our citizens.

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Taxa Group: Marine fish

Species Group: Estuarine associates of SAV

Threats:

Loss of salt marsh and SAV beds from tidal flow restrictions and habitat degradation reduces the amount of habitat for fish that are dependent on SAV's for some or all of their life stages

Trends:

Data from NYSDEC fishery independent surveys demonstrate a general decline from the mid-1980s for some SAV dependent species (northern pipefish, sticklebacks). These surveys are not directed toward SAV dependent species and may not sample well in these habitats.

SEQR - No Action Alternative:

The no action alternative would not provide information necessary to manage and protect this species group appropriately.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Lined seahorse (Hippocampus erectus)					U	Resident
N. American ninespine stickleback (Pungitius pungi					U	Migratory
Fourspine stickleback (Apeltes quadricus)			N/A	N/A	U	Migratory
Common pipefish (Syngnathus fuscus)					U	Resident
Threespine stickleback (Gasterosteus aculeatus)			N/A	N/A	U	Resident

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Threespine stickleback (Gasterosteus aculeatus)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	Upper Hudson	Upper Hudson	Unknown
Common pipefish (Syngnathus fuscus)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	Upper Hudson	Upper Hudson	Unknown
Fourspine stickleback (Apeltes quadricus)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
N. American ninespine stickleback (Pungitius pungitius	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
Lined seahorse (Hippocampus erectus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Threespine stickleback (Gasterosteus aculeatus)	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown
Common pipefish (Syngnathus fuscus)	North Atlantic Coast	North Atlantic Coast	Unknown
Fourspine stickleback (Apeltes quadricus)	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown
N. American ninespine stickleback (Pungitius pungitius o	North Atlantic Coast	North Atlantic Coast	Unknown
	Lower New England Piedmont	Lower New England Piedmont	Unknown
Lined seahorse (Hippocampus erectus)	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Threespine stickleback (Gasterosteus aculeatus)				
	all	Estuarine	shallow subtidal	SAV
	all	Marine	shallow subtidal	SAV
Common pipefish (Syngnathus fuscus)				

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Common pipefish (Syngnathus fuscus)				
	all	Estuarine	shallow subtidal	SAV
	all	Marine	shallow subtidal	SAV
Fourspine stickleback (Apeltes quadricus)				
	all	Estuarine	shallow subtidal	SAV
	all	Marine	unknown	unknown
N. American ninespine stickleback (Pungitius pungitius occidentalis)				
	all	Estuarine	deep subtidal	pelagic
	all	Estuarine	intertidal	shoreline
	all	Estuarine	shallow subtidal	SAV
	all	Marine	deep subtidal	pelagic
	all	Marine	shallow subtidal	SAV
Lined seahorse (Hippocampus erectus)				
	all	Estuarine	intertidal	shoreline
	all	Estuarine	shallow subtidal	SAV
	all	Estuarine	shallow subtidal	shoreline
	all	Marine	intertidal	shoreline
	all	Marine	shallow subtidal	SAV
	all	Marine	shallow subtidal	shoreline

Goal and Objectives for Estuarine associates of SAV

Goal: Increase our knowledge of SAV dependent fish, specifically their life history, inter- and intra-species relationships, habitat, ecology, response to anthropogenic and natural impacts, and determine their population status and trends

Objective 1 : By 2007 examine current and historic information on submerged aquatic vegetation and develop a list of reference and impacted SAV beds for the lower Hudson - Long Island bays watershed,

Measure: *List of reference and impacted SAV beds.*

Objective 2 : By 2010 develop a region specific program for integrated monitoring of SAV dependent species and the submerged aquatic vegetation (SAV) that they are dependent on which includes abundance and distribution, in reference and impacted sites.

Measure: *Implementation of monitoring program*

Objective 3 : By 2015 know how inter- and intra-species relationships relates to SAV dependent species population trends.

Measure: *Understand the inter- and intra-species relationships and population trends.*

Objective 4 : By 2015 know how SAV loss relates to SAV dependent species population trends.

Measure: *Understand the relationship ob habitat loss and population trends.*

Recommended Actions

Habitat management:

* Submerged aquatic vegetation habitat protection and restoration are crucial elements in any conservation and management plan for SAV dependent species. Aspects of submerged aquatic vegetation habitat protection and restoration will be included in the final watershed recommendations.
* Salt marsh habitat protection and restoration may be important elements in any conservation and management plan for SAV dependent species. Aspects of salt marsh habitat protection and restoration will be included in the final watershed

Habitat monitoring:

* Update SAV habitat maps and collect appropriate information on fisheries utilization.

Life history research:

* Collect information relative to the life history and inter- and intra-species relationships of SAV dependent species.

Population monitoring:

* Continue existing survey's which capture SAV dependent species and develop new directed surveys as appropriate to assess the needs of this species group.

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Taxa Group: Marine fish

Species Group: Estuarine forage species

Threats:

Potential over harvest to support fish bait industry, water quality degradation, the unknown impacts of mosquito control, and habitat loss or degradation, especially tidal wetlands.

Trends:

There is insufficient data to verify observations relative to these species and their trends at this time for New York waters. Anecdotal information from bait industry in recent years indicates there may have been problems with local supplies of mummichog and Atlantic silversides, though this is not supported with any real evidence.

SEQR - No Action Alternative:

Without knowledge of the stocks status or trends, or the impacts of potential threats, it is difficult to say what will happen if no action is taken regarding these species. Regardless, their importance to the ecology of the Marine District should not be underestimated.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Striped killifish (Fundulus majalis)					U	Resident
Atlantic silverside (Menidia menidia)			S2S3	G5	U	Migratory
Inland silverside (Menidia beryllina)			S2S3	G5	U	Resident
Mummichog (Fundulus heteroclitus)					U	Resident
Spotfin killifish (Fundulus luciae)			S1	G4	U	Resident

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Spotfin killifish (Fundulus luciae)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Mummichog (Fundulus heteroclitus)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Inland silverside (Menidia beryllina)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Atlantic silverside (Menidia menidia)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
Striped killifish (Fundulus majalis)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Spotfin killifish (Fundulus luciae)	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown
Mummichog (Fundulus heteroclitus)	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown
Inland silverside (Menidia beryllina)	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown
Atlantic silverside (Menidia menidia)	North Atlantic Coast	North Atlantic Coast	Unknown
Striped killifish (Fundulus majalis)	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Spotfin killifish (Fundulus luciae)				
	all	Estuarine	intertidal	emergent marsh
	all	Estuarine	shallow subtidal	mud
	all	Estuarine	shallow subtidal	SAV
	Breeding	Estuarine	intertidal	emergent marsh

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Spotfin killifish (Fundulus luciae)				
Mummichog (Fundulus heteroclitus)				
	all	Estuarine	shallow subtidal	mud
	all	Estuarine	shallow subtidal	SAV
	Breeding	Estuarine	intertidal	emergent marsh
	Breeding	Estuarine	intertidal	mud
	Nursery/Juvenile	Estuarine	intertidal	emergent marsh
Inland silverside (Menidia beryllina)				
	all	Estuarine	intertidal	emergent marsh
	all	Estuarine	shallow subtidal	SAV
	Breeding	Estuarine	unknown	unknown
Atlantic silverside (Menidia menidia)				
	Feeding	Estuarine	deep subtidal	pelagic
	Feeding	Estuarine	intertidal	emergent marsh
	Feeding	Estuarine	intertidal	pelagic
	Feeding	Estuarine	shallow subtidal	pelagic
	Feeding	Estuarine	shallow subtidal	SAV
	Hibernating/Overwintering	Marine	deep subtidal	unknown
	Nursery/Juvenile	Estuarine	intertidal	emergent marsh
	Nursery/Juvenile	Estuarine	intertidal	shoreline
	Nursery/Juvenile	Estuarine	shallow subtidal	pelagic
	Nursery/Juvenile	Estuarine	shallow subtidal	SAV
Striped killifish (Fundulus majalis)				
	all	Estuarine	shallow subtidal	sand/gravel
	Breeding	Estuarine	intertidal	sand/gravel

Goal and Objectives for Estuarine forage species

Goal: Maintain estuarine forage base at levels adequate to sustain their ecological function and continue to support harvest for bait and food

Objective 1 : By 2006, the participants in the bait fisheries for silversides and killifishes will be identified and the annual harvest of the fishery will be known through the use of vessel trip reports (VTRs).

Measure: *The participants, scope and impacts of the fishery are known.*

Objective 2 : By 2010, an estimate of fishing mortality will be developed using the annual harvest estimate and the stock status data obtained from our survey programs.

Measure: *Fishing mortality (F) is known.*

Objective 3 : By 2010, critical habitats for estuarine forage fish will be identified and impacts of habitat loss and degradation on their ecology will be known.

Measure: *These critical habitats are identified and impacts of loss or degradation are known.*

Objective 4 : By 2010, the distribution, abundance, status of stocks and trends in populations of silversides and killifishes will be known.

Measure: *The distribution, abundance, stock status and trends in populations of silversides and killifishes are known.*

Objective 5 : By 2010, the impacts of entrainment and impingement in power plant cooling intakes is known for estuarine forage fish.

Measure: *The impacts of entrainment and impingement are known.*

Objective 6 : By 2010, the impacts of mosquito control on estuarine forage fish ecology will be known.

Measure: *The impacts of mosquito control on estuarine forage fish are known.*

Objective 7 : By 2012, a strategic plan for managing the fisheries and sustaining the populations of estuarine forage fish is developed and adopted.

Measure: *Plan developed and adopted.*

Recommended Actions

Habitat management:

* Habitat protection and restoration are crucial elements in any strategic plan for fisheries conservation and management. Aspects of protection and restoration of critical habitat for estuarine forage species will be included in the final watershed recommendations.

Habitat research:

* Conduct field studies to determine the critical habitat requirements for all life stages of the fish species in question.

Recommended Actions

Life history research:

* Conduct field and laboratory research to determine the effects of mosquito control measures on all life stages of the fish species in question, their habitat and their forage.
* Conduct field and laboratory research to determine the effects of predation on all life stages of the fish species in question, their habitat and their forage.

New legislation:

* Seek regulatory authority over the fish species in question or seek legislation to implement management measures proposed in the strategic plan.

New regulation:

* If regulatory authority is granted, develop pursuant regulations to implement management measures proposed in the strategic plan.

Other action:

* Conduct an investigation into the bait fish fishery which will identify participants; identify locations where the fishery is conducted; estimate harvest; estimate by-catch; and assess potential impacts on fish stocks and habitat.
* Conduct compliance monitoring of vessel trip reporting (VTRs) which will be used to determine fishing mortality (F).
* Conduct an investigation to determine the impacts of power plant cooling intake entrainment and impingement on stocks of estuarine forage fish.

Statewide baseline survey:

* Continue existing surveys that document distribution and abundance of this species group, adjusting if possible to more adequately characterize stock status. Implement additional sampling program to fill in data gaps. Analyze these data to identify trends.

Statewide management plan:

* Develop a strategic plan for fishery management that also addresses needs for mitigating impacts (if any) from other identified sources, including mosquito control, water quality and habitat degradation, and others.

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Taxa Group: Marine fish

Species Group: Estuarine migratory pelagic

Threats:

Over harvest to support commercial (bait and reduction purposes) and recreational bait needs, increased predation from increases in abundance of predators, habitat destruction especially inshore estuarine areas, increased summer water temperatures and reduced oxygen levels in major estuaries, Power Plant entrainment and impingement.

Trends:

Trends have generally been downward or unknown. The most information is know about menhaden since there is a fishery management plan through ASMFC.
Menhaden - There has been a general downward trend since 1990 in the menhaden stock, however, the 2004 stock assessment revealed a large 2002 year class (406 billion young-of-the-year). There is no estimate available for 2003 year class so we cannot tell whether production stayed at the higher level or returned to the levels observed for the previous seven years (1995 -2001) when year class production was below 300 billion young-of-the-year.

Bay Anchovy - Unknown

Sand Lance - abundance is down from the 1980's

SEQR - No Action Alternative:

Menhaden - The no action alternative would most likely have limited effect given that this species is managed under an Atlantic State Marine Fisheries Commission Fishery Management Plan.

Bay Anchovy and sand lance - No information for an important prey species for marine and estuarine fisheries, birds, and marine mammals.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Bay anchovy (Anchoa mitchilli)			S3	G5	U	Migratory
Menhaden (Brevoortia tyrannus)			SNRN	G5	U	Migratory

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Menhaden (Brevoortia tyrannus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Bay anchovy (Anchoa mitchilli)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Menhaden (Brevoortia tyrannus)	North Atlantic Coast	North Atlantic Coast	Decreasing
	Lower New England Piedmont	Lower New England Piedmont	Unknown
Bay anchovy (Anchoa mitchilli)	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Menhaden (Brevoortia tyrannus)				
	Breeding	Marine	deep subtidal	pelagic
	Feeding	Estuarine	deep subtidal	pelagic
	Feeding	Estuarine	shallow subtidal	pelagic
	Feeding	Marine	deep subtidal	pelagic
	Feeding	Marine	shallow subtidal	pelagic
	Nursery/Juvenile	Estuarine	deep subtidal	pelagic
	Nursery/Juvenile	Estuarine	shallow subtidal	pelagic
Bay anchovy (Anchoa mitchilli)				
	all	Estuarine	deep subtidal	pelagic
	all	Marine	deep subtidal	pelagic

Goal and Objectives for Estuarine migratory pelagic

Goal: Restore and maintain stocks of estuarine migratory pelagic fish at levels that meet bioenergetic requirements of predators and provide for sustainable bait and reduction fisheries

Objective 1 : By 2006 collect harvest and landings data consistent with the Atlantic Coastal Cooperative Statistics Program (ACCSP).

Measure: *Implement all aspects of the ACCSP program relative to lobster in New York.*

Objective 2 : By 2010 determine habitat use of estuarine migratory pelagic fish (menhaden, bay anchovy, and sand lance) in the lower Hudson - Long Island bays and Atlantic Ocean watersheds.

Measure: *Know the habitat use of menhaden, bay anchovy, and sand lance.*

Objective 3 : By 2010 determine major predators of estuarine migratory pelagic fish (menhaden, bay anchovy, and sand lance) in the lower Hudson - Long Island bays and Atlantic Ocean watersheds.

Measure: *Know the major predators of menhaden, bay anchovy, and sand lance.*

Objective 4 : By 2012 develop a monitoring program for estuarine migratory pelagic fish (menhaden, bay anchovy, and sand lance) in the lower Hudson - Long Island bays and Atlantic Ocean watersheds based on the habitat information collected above.

Measure: *Implementation of the monitoring program.*

Objective 5 : By 2013 establish condition indices for major predators of estuarine migratory pelagic fish (menhaden, bay anchovy, and sand lance) in the lower Hudson - Long Island bays and Atlantic Ocean watersheds.

Measure: *Know the Length and weight of predators in the lower Hudson - Long Island bays and Atlantic Ocean watersheds.*

Objective 6 : By 2018 determine fishery thresholds and targets for maintenance of sustainable stocks and fisheries of estuarine migratory pelagic fish (menhaden, bay anchovy, and sand lance) in the lower Hudson - Long Island bays and Atlantic Ocean watersheds.

Measure: *Know the thresholds and targets.*

Recommended Actions

Habitat management:

* If entrainment, impingement, or thermal impacts are major threats, determine the appropriate measures to mitigate these threats
* Once the important habitats for estuarine migratory pelagic species are determined, the protection and restoration of these habitats will be a crucial element in their conservation and management plan. Aspects of habitat protection and restoration will be included in the final watershed recommendations.

Recommended Actions

Habitat research:

* Determine habitat use of Atlantic menhaden, bay anchovy, and sand lance.
* Determine if entrainment, impingement or thermal impacts are major threats to estuarine migratory pelagic populations.

Life history research:

* Determine major predators of estuarine migratory pelagic species and determine their condition.
* Collect size, age, and maturity data from estuarine migratory pelagic species collected around the Marine and Coastal District of New York.

Other action:

* Collect harvest and landings information for estuarine migratory pelagic species

Population monitoring:

* Develop multi-species models to assess whether estuarine migratory pelagic populations are sufficient to support the needs of the resource and resource users.
* Develop or continue fishery independent monitoring programs for Atlantic menhaden, sand lance, and bay anchovy.

Regional management plan:

* Develop thresholds and targets for estuarine migratory pelagic species

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Originator

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Taxa Group: Marine fish
Species Group: Labrids

Threats:
Because both labrids tend to aggregate on or near structure, they are susceptible to fishing pressure, particularly from recreational anglers. Juveniles of both species are found in shallow near-shore waters on vegetated bottom, generally eelgrass beds but also in the macroalgae Ulva spp. and Codium fragile. Loss or degradation of this type of habitat could have potential negative impacts on survival. These species could also be vulnerable to water quality degradation and could be considered indicators of water quality in shallow, near-shore fish habitat. They both rely heavily on crustacean prey, so could be impacted by mosquito controls if the controls used negatively affect crustaceans.

Trends:
Recreational fishing catch is the only long-term indicator of population trends available for both labrids.

Cunner catch has declined dramatically in the last twenty years, with catches generally between 800,000 and 1.8 million fish for 1981-1990 dropping to catches generally less than 200,000 fish from 1995 to the present. The cause of this decline is unknown, though recreational anglers have blamed a burgeoning commercial fishery for the live market. Commercial landings in New York have dramatically increased from generally less than 1 metric ton from 1950 through 1997 to nearly 10 metric tons in 2002, the last year for which data are available. The decline in recreational catch started well before 1998, however.

Tautog catch has shown a similar trend though the fishery has been covered by a fishery management plan since 1996. Commercial landings have trended downward as well.

SEQR - No Action Alternative:
There is no current fishery management plan for cunner, and it is unknown what will happen if no plan is enacted. While the tautog fishery is being managed, it is unclear if this management is sufficient to sustain populations. It is also unclear what effect, if any, lower population levels of labrids is having on the ecology of near-shore waters. These two species may be important controls on decapod crustacean populations, particularly tautog, which probably prey heavily on the invasive species Carcinus maenas and Hemigrapsus sanguineus. Growth in populations of these decapod invaders may suppress bivalve population restoration efforts.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Cunner (Tautogolabrus adspersus)					U	Migratory
Tautog (Tautoga onitis)			SNRN	GNR	P	Migratory

Species Distribution - Watershed Basin

Species	Historical	Current	Stability

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Tautog (Tautoga onitis)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
Cunner (Tautogolabrus adspersus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Tautog (Tautoga onitis)	North Atlantic Coast	North Atlantic Coast	Unknown
Cunner (Tautogolabrus adspersus)	North Atlantic Coast	North Atlantic Coast	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Tautog (Tautoga onitis)				
	all	Estuarine	deep subtidal	mud
	all	Estuarine	deep subtidal	rocky
	all	Estuarine	deep subtidal	sand/gravel
	all	Estuarine	deep subtidal	structure
	all	Marine	cultural	structure
	all	Marine	deep subtidal	mud
	all	Marine	deep subtidal	sand/gravel
	all	Marine	deep subtidal	structure
	Nursery/Juvenile	Estuarine	shallow subtidal	mud
	Nursery/Juvenile	Estuarine	shallow subtidal	sand/gravel
Cunner (Tautogolabrus adspersus)				
	all	Estuarine	deep subtidal	mud
	all	Estuarine	deep subtidal	rocky
	all	Estuarine	deep subtidal	sand/gravel
	all	Estuarine	deep subtidal	structure
	all	Marine	cultural	structure
	all	Marine	deep subtidal	mud
	all	Marine	deep subtidal	sand/gravel

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Cunner (Tautogolabrus adspersus)				
	all	Marine	deep subtidal	structure
	Nursery/Juvenile	Estuarine	shallow subtidal	mud
	Nursery/Juvenile	Estuarine	shallow subtidal	sand/gravel

Goal and Objectives for Labrids

Goal: Maintain populations at levels adequate to sustain their ecological function and continue to support harvest for food and recreation

Objective 1 : By 2010, critical habitats for all life stages of labrids will be identified and the impacts of habitat loss and degradation on their ecology will be known.

Measure: *These critical habitats are identified and the impacts of loss and degradation are known.*

Objective 2 : By 2010, the distribution, abundance, stock status and trends in populations of tautog and cunner will be known.

Measure: *The distribution, abundance, stock status and trends in populations of these labrids are known.*

Objective 3 : By 2010, the impacts of mosquito control on tautog and cunner ecology will be known.

Measure: *The impacts of mosquito control on tautog and cunner are known.*

Objective 4 : By 2012, a strategic plan for managing the fisheries and sustaining the populations of labrids will be developed and adopted.

Measure: *Plan developed and adopted.*

Objective 5 : Over fishing of tautog will be ended by reducing exploitation to a sufficient level.

Measure: *Target Fishing Mortality (F) = 0.29 according to Addendum III of the ASMFC Fishery Management Plan for tautog*

Objective 6 : The total biomass of tautog will be rebuilt to a desirable level that would produce significantly higher sustainable landings at a much lower exploitation rate.

Measure: *Target Biomass (B) = ?*

Objective 7 : Yield will be optimized and the economic benefits to the various fishing sectors will be maximized

Measure: *Optimum Yield = Target F multiplied by the Current Stock B*

Recommended Actions

Habitat management:

* Habitat protection and restoration are crucial elements in any strategic plan for fisheries conservation and management. Aspects of protection and restoration of critical habitat for labrids will be included in the final watershed recommendations.

Habitat research:

* Conduct field studies to determine the critical habitat requirements for all life stages of the fish species in question.

Life history research:

* Conduct field and laboratory research to determine the effects of mosquito control on all life stages of the fish species in question, their habitat and their forage.
* Conduct field and laboratory research to determine the effects of predation on all life stages of the fish species in question, their habitat and their forage.

Modify regulation:

* Implement appropriate regulatory modifications as necessary to protect tautog from over harvest and to assist in the rebuilding of this population to self-sustaining levels.

New legislation:

* Seek regulatory authority over cunner or seek legislation to implement management measures proposed in the strategic plan.

New regulation:

* If regulatory authority over cunner is granted, develop pursuant regulations to implement management measures proposed in the strategic plan.

Other action:

* Conduct compliance monitoring of vessel trip reporting (VTRs) which will be used to determine fishing mortality.

Population monitoring:

* Support monitoring efforts which will provide the necessary data with which to assess the status of the tautog population.
* Implement sampling programs to fill data gaps.

Recommended Actions

Statewide management plan:

* Develop a strategic plan for fishery management that also addresses needs for mitigating impacts (if any) from other identified sources, including mosquito control, water quality and habitat degradation, and others

References

Bigelow and Schroeder's Fishes of the Gulf of Maine / edited by Bruce B. Collette and Grace Klein-MacPhee, 3rd edition. 2002. Smithsonian Institution Press. Washington D.C.

Fishery Management Report No 25c of the Atlantic States Marine Fisheries Commission. Addendum III to the Fishery Management Plan for Tautog. 200

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Taxa Group: Marine fish
Species Group: Northern puffer

Threats:
Northern puffer populations in New York are currently subject to unregulated harvest by recreational and commercial interests. The potential effects of environmental changes or habitat degradation on populations of northern puffer in New York are unknown.

Trends:
Very little data is available on the status of northern puffer populations in New York. This species traditionally supported small but popular commercial and recreational fisheries in New York. Northern puffer were reported to be commonly found and abundant in near shore areas throughout the middle Atlantic until the late 1960's. Since 1981, New York's commercial fishery has landed an average of 15,000 pounds per year, and NY's recreational fishery has landed an average of 17,000 pounds per year. Most of these landings occurred in the 1980's and early 1990's, and landings in recent years have declined markedly. NYSDEC's trawl survey has collected data on northern puffer since 1987. Trawl survey cue (catch per tow) shows catches (predominantly young of the year) increasing through the early 1990's, peaking in 1992, then declining fairly steadily through 2003. The last above average year class appeared in 2001. There are no estimates available of fishing mortality rates, spawning stock biomass or other biological reference points. Documented evidence on changes in environmental factors or habitat availability or suitability is scarce.

SEQR - No Action Alternative:
Failure to take action to collect additional biological and fisheries information, to determine estimates of fishing mortality, allowable harvest levels and biomass targets will likely result in continued chronically low levels of northern puffer populations in New York waters. Management of the northern puffer resource in New York would lead to improved protection for spawning populations of puffer in New York, minimizing recruitment and growth overfishing and providing a sustainable and increased yield to recreational and commercial fisheries.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Northern puffer (Sphoeroides maculatus)			SNRN	G5	U	Migratory

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Northern puffer (Sphoeroides maculatus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Northern puffer (Sphoeroides maculatus)	North Atlantic Coast	North Atlantic Coast	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Northern puffer (Sphoeroides maculatus)				
	all	Estuarine	shallow subtidal	emergent marsh
	all	Estuarine	shallow subtidal	mudflats
	all	Estuarine	shallow subtidal	sand/gravel
	all	Estuarine	shallow subtidal	shoreline
	all	Estuarine	shallow subtidal	submerged aquatic vegetation
	all	Marine	deep subtidal	mud
	all	Marine	deep subtidal	pelagic
	all	Marine	deep subtidal	sand/gravel
	all	Marine	shallow subtidal	mud
	all	Marine	shallow subtidal	sand/gravel
	all	Marine	shallow subtidal	submerged aquatic vegetation

Goal and Objectives for Northern puffer

Goal: Maintain populations of northern puffer at levels necessary to ensure the long term health and abundance of the resource, sustain its ecological function and continue to support limited harvest.

Objective 1 : A strategic plan for managing fisheries and sustaining populations of northern puffer is developed and adopted.

Measure: *Plan developed and adopted.*

Objective 2 : The critical habitat requirements of northern puffer will be determined.

Measure: *The habitat needs of northern puffer are known.*

Objective 3 : The role of northern puffer in the local estuarine ecology will be assessed.

Measure: *The role of northern puffer in estuarine ecology is known.*

Objective 4 : The status of the northern puffer population will be assessed.

Measure: *Population status of northern puffer is known.*

Recommended Actions

Fact sheet:

* Develop appropriate fact sheet relative to the northern puffer in New York.

Habitat management:

* Habitat protection and restoration are crucial elements in any strategic plan for fisheries conservation and management. Aspects of protection and restoration of critical habitat for northern puffer will be included in the final watershed recommendations.

Habitat research:

* Develop investigations which examines habitat needs of the northern puffer.

Life history research:

* Develop fishery independent research which collect appropriate life history data on this species.

Population monitoring:

* Maintain and support investigations which collect northern puffer biological and harvest information.

Regional management plan:

* Develop as appropriate a regional fishery management plan for this species.

Web page:

* Develop appropriate web based information relative to northern puffer.

References

Weber, Grahn and Havens. 1998. Species composition, seasonal occurrence, and relative abundance of finfish and macroinvertebrates taken by small mes otter trawl in Peconic Bay, New York. NYSDEC Marine Finfish Unit. 123pp

Able and Fahay. 1998. The first year in the life of estuarine fishes in the middle Atlantic bight. Rutgers University Press. 341pp

Sibunka and Pacheco. 1981 Biological and fisheries data on northern puffer, Sphoeroides maculatus. NEFC, NMFS Technical Series Report No. 26.

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Taxa Group: Marine fish

Species Group: Oyster toadfish

Threats:

Toadfish may be particularly vulnerable to fishing pressure, as well as loss of eelgrass habitat. Eelgrass is likely a critical habitat for juvenile toadfish, as it is for several other species of finfish.

Trends:

There is insufficient data available on toadfish populations in New York waters to make any kind of meaningful assessment. The DEC's trawl survey in the Peconic Estuary documented a mean number of fish per trawl at 0.4 in 1987, increasing to 1.6 in 1991 and decreasing since. Available data on annual commercial landings in New York showed landings of nearly 6 metric tons in 1992, spiking to over 19 metric tons in 1993, then plummeting to 100 pounds or less since 2000. Fishing mortality and spawning stock biomass are unknown.

SEQR - No Action Alternative:

Toadfish have been used as experimental subjects for studies on behavior, sound production, physiology, endocrine analyses, insulin and diabetes, and others. Several studies have shown that their predatory behavior on xanthid crabs may keep numbers of these hard-clam predators in check. Failure to take action to understand, manage and restore toadfish populations may result in the loss of an important component of the ecology of New York's estuaries.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Oyster toadfish (Opsanus tau)					U	Resident

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Oyster toadfish (Opsanus tau)	Atlantic Ocean - NY Bight	Lower Hudson - Long Island Bays	Decreasing
	Lower Hudson - Long Island Bays	Atlantic Ocean - NY Bight	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Oyster toadfish (Opsanus tau)	North Atlantic Coast	North Atlantic Coast	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Oyster toadfish (Opsanus tau)				
	all	Estuarine	shallow subtidal	mud
	all	Estuarine	shallow subtidal	rocky
	all	Estuarine	shallow subtidal	sand/gravel
	all	Estuarine	shallow subtidal	SAV
	all	Estuarine	shallow subtidal	structure
	Hibernating/Overwintering	Estuarine	deep subtidal	unknown

Goal and Objectives for Oyster toadfish

Goal: Maintain populations of oyster toadfish at levels necessary to ensure the long term health and abundance of the resource and sustain its ecological function.

Objective 1 : A strategic plan for managing fisheries and sustaining populations of oyster toadfish is developed and adopted.

Measure: *Plan developed and adopted.*

Objective 2 : The critical habitat requirements of oyster toadfish will be determined.

Measure: *The habitat needs of oyster toadfish are known.*

Objective 3 : The role of oyster toadfish in the local estuarine ecology will be assessed.

Measure: *The role of oyster toadfish in estuarine ecology is known.*

Objective 4 : The status of the oyster toadfish populations in New York waters will be assessed.

Measure: *Population status of oyster toadfish is known.*

Recommended Actions

Habitat management:

* Habitat protection and restoration are crucial elements in any strategic plan for fisheries conservation and management. Aspects of protection and restoration of eelgrass beds and other critical habitat for oyster toadfish will be included in the final watershed recommendations.

Recommended Actions

Habitat research:

* Conduct investigations which examine habitat needs of the oyster toadfish.

Life history research:

* Conduct fishery-independent investigations which collect appropriate life history data on oyster toadfish.

Population monitoring:

* Maintain and support investigations which collect oyster toadfish biological data and fishery harvest data.

Regional management plan:

* Develop a strategic plan for fishery management and restoration of oyster toadfish.

References

Bigelow and Schroeder's Fishes of the Gulf of Maine, edited by Bruce B. Collette and Grace Klein-MacPhee, 3rd edition. Washington: The Smithsonian Institution, 2002.

Able, Kenneth W. and Michael P. Fahay. The first year in the life of estuarine fishes in the Middle Atlantic Bight. New Brunswick: The Rutgers University Press, 1998.

Weber, Alice, Christina Grahn and Benjamin Havens. Species composition, seasonal occurrence and relative abundance of finfish and macroinvertebrates taken by small-mesh otter trawl in Peconic Bay, NY. NYS DEC report, June 1998, East Setauket, NY.

Originator

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Organization:
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State:
Zip:
Phone:
Email:

Taxa Group: Marine fish
Species Group: Pelagic sharks

Threats:
The major threat to all coastal sharks is overfishing, coupled with a life history strategy that makes them vulnerable to over harvest. Most pelagic sharks are long lived, slow maturing and produce small numbers of offspring. Many of these sharks, not all, utilize inshore waters as summer habitat, for pupping, and as nursery grounds for juveniles. With the increased competition for the utilization of these waters for boating, swimming, fishing, other commerce addition strain is being placed upon those species of shark which utilize these waters.

Trends:
There is a declining trend in population status for all coastal sharks. Recent management actions may arrest that trend to a degree but further actions may be necessary in order to control other losses due to bycatch and international harvest.

SEQR - No Action Alternative:
The no action alternative would leave current shark management in place, which provides protection consistent with the Federal regulations for these species. New York must continue to provide regulations which are consistent with the needs of these species and the federal management for these species. Further New York, should undertake actions to understand the inshore habitat and habitat needs of coastal sharks for pupping, and as juvenile nursery grounds. As the populations rebuild there will be increased human interaction, New York must be in a position to address there interactions and to address concerns that will ultimately be raised.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
White shark (Carcharodon carcharias)					P	Migratory
Bigeye thresher shark (Alopias superciliosus)					P	Migratory
Longfin mako shark (Isurus paucus)					P	Migratory
Basking shark (Cetorhinus maximus)					P	Migratory
Porbeagle shark (Lamna nasus)					P	Migratory
Thresher shark (Alopias vulpinus)					P	Migratory
Shortfin mako shark (Isurus oxyrhinchus)					P	Migratory
Blue shark (Prionace glauca)					P	Migratory
Bonnethead shark (Sphyrna tiburo)					P	Migratory
Smooth hammerhead shark (Sphyrna zygaena)					P	Migratory
Scalloped hammerhead shark (Sphyrna lewini)					P	Migratory

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Scalloped hammerhead shark (Sphyrna lewini)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
Smooth hammerhead shark (Sphyrna zygaena)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Bonnethead shark (Sphyrna tiburo)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
Blue shark (Prionace glauca)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
Shortfin mako shark (Isurus oxyrhinchus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
Thresher shark (Alopias vulpinus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
Porbeagle shark (Lamna nasus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
Basking shark (Cetorhinus maximus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Longfin mako shark (Isurus paucus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
Bigeye thresher shark (Alopias superciliosus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
White shark (Carcharodon carcharias)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Scalloped hammerhead shark (Sphyrna lewini)	North Atlantic Coast	North Atlantic Coast	Decreasing
Smooth hammerhead shark (Sphyrna zygaena)	North Atlantic Coast	North Atlantic Coast	Unknown
Bonnethead shark (Sphyrna tiburo)	North Atlantic Coast	North Atlantic Coast	Decreasing
Blue shark (Prionace glauca)	North Atlantic Coast	North Atlantic Coast	Decreasing
Shortfin mako shark (Isurus oxyrhinchus)	North Atlantic Coast	North Atlantic Coast	Decreasing

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Thresher shark (Alopias vulpinus)	North Atlantic Coast	North Atlantic Coast	Decreasing
Porbeagle shark (Lamna nasus)	North Atlantic Coast	Lower New England Piedmont	Decreasing
Basking shark (Cetorhinus maximus)	North Atlantic Coast	North Atlantic Coast	Decreasing
Longfin mako shark (Isurus paucus)	North Atlantic Coast	North Atlantic Coast	Decreasing
Bigeye thresher shark (Alopias superciliosus)	North Atlantic Coast	North Atlantic Coast	Decreasing
White shark (Carcharodon carcharias)	North Atlantic Coast	North Atlantic Coast	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Scalloped hammerhead shark (Sphyrna lewini)				
	all	Marine	deep subtidal	pelagic
Smooth hammerhead shark (Sphyrna zygaena)				
	all	Marine	deep subtidal	unknown
	all	Marine	shallow subtidal	unknown
Bonnethead shark (Sphyrna tiburo)				
	all	Marine	deep subtidal	pelagic
Blue shark (Prionace glauca)				
	all	Marine	deep subtidal	pelagic
Shortfin mako shark (Isurus oxyrhinchus)				
	all	Marine	deep subtidal	pelagic
Thresher shark (Alopias vulpinus)				
	all	Marine	deep subtidal	pelagic
Porbeagle shark (Lamna nasus)				
	all	Marine	deep subtidal	pelagic
Basking shark (Cetorhinus maximus)				

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Basking shark (Cetorhinus maximus)	all	Marine	deep subtidal	pelagic
Longfin mako shark (Isurus paucus)	all	Marine	deep subtidal	pelagic
Bigeye thresher shark (Alopias superciliosus)	all	Marine	deep subtidal	pelagic
White shark (Carcharodon carcharias)	all	Marine	deep subtidal	pelagic

Goal and Objectives for Pelagic sharks

Goal: Rebuild over fished pelagic shark stocks in as short a time as possible, control all components of fishing mortality so as to insure the long-term sustainability of the stocks and promote stock recovery to the optimum sustainable yield.

Objective 1 : Ensure sustainable pelagic shark catches from directed and non-directed fisheries by 2015.

Measure: *Implement management measures consistent with the federal rules and regulations designed to protect pelagic shark stocks.*

Objective 2 : Improve species-specific catch and landings data and monitoring of shark catches and to improve and facilitate reporting of species biological and trade data by 2010.

Measure: *Implement state level rules and regulations which require the reporting of all sharks caught and landed in New York through vessel trip reporting at all level (commercial and recreational) and implement necessary dealer reporting requirements.*

Objective 3 : Minimize incidental catches of sharks by 2015.

Measure: *Implement management measures and educational programs which prevent or reduce the unintentional mortalities of unwanted sharks.*

Recommended Actions

Recommended Actions

Fact sheet:

* Develop fact sheets for distribution to commercial and recreational fisherman regarding the well being of the pelagic shark stocks.

Life history research:

* Conduct literature review to determine the pupping and juvenile habitat requirements for pelagic coastal sharks in the Middle Atlantic bight.

Modify regulation:

* Modify New York's regulations as necessary to conform to the federal protection of sharks.

Population monitoring:

* Initiate a volunteer shark data collection program which would collect additional catch and biological information from New York's recreational anglers.

Web page:

* Develop appropriate webpage information relative to the shark species found in the Mid-Atlantic bight and there status.

References

Final Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks. 1999. Department of Commerce, NOAA, NMFS, Highly Migratory Species Management Division, Silver Spring, Maryland. Vol I - III.

Collette, Bruce B., and Grace Klein-MacPhee. 2002. Bigelow and Schroeder's Fishes of the Gulf of Maine. Third edition. Smithsonian Institution Press, Washington D.C. 748 pgs.

Camhi, Merry. 1998. Sharks on the Line, A State by State Analysis of sharks and their Fisheries. Linving Oceans, National Audubon Society, Islip, NY. 158 pgs.

Final United States Plan of Action for the Conservation and Management of Sharks. 2001. Department of Commerce, NOAA, NMFS, Silver Spring, MD 90 pgs.

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Taxa Group: Marine fish

Species Group: Rainbow smelt

Threats:

Smelt are coldwater species on southern limit of their range on Atlantic coast. Ocean and climate warming trends may be indicative of decline seen in remnant Hudson stock.

Trends:

Anadromous population has just about disappeared from the Hudson drainage. Suspected relationship to ocean and documented climate warming.

SEQR - No Action Alternative:

Suspect species may become extirpated from Hudson drainage in future.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Rainbow smelt (Osmerus mordax)			S5	G5	U	Migratory

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Rainbow smelt (Osmerus mordax)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Decreasing
	Upper Hudson	Upper Hudson	Decreasing

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Rainbow smelt (Osmerus mordax)	North Atlantic Coast	North Atlantic Coast	Decreasing
	Lower New England Piedmont	Lower New England Piedmont	Decreasing

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Rainbow smelt (Osmerus mordax)				
	Breeding	Estuarine	intertidal	sand/gravel
	Breeding	Riverine	coastal plain stream	sand/gravel bottom
	Feeding	Estuarine	intertidal	structure
	Feeding	Marine	intertidal	structure
	Feeding	Riverine	coastal plain stream	structure
	Nursery/Juvenile	Estuarine	unknown	unknown
	Nursery/Juvenile	Marine	intertidal	structure
	Nursery/Juvenile	Riverine	coastal plain stream	sand/gravel bottom

Goal and Objectives for Rainbow smelt

Goal: Restore smelt to faunal community of Hudson River Estuary

Objective 1 : To determine available spawning habitat within the Marine and Estuarine waters of New York State.

Measure: *Conduct a literature survey for known and historically known spawning streams on Long Island and in the Hudson River. Followed up by field surveys to determine whether the spawning sites still exist and whether there is any remaining spawning activity.*

Objective 2 : To identify management measures necessary to protect adult Rainbow smelt in the Marine and Estuarine waters of New York State.

Measure: *After the identification of existing spawning habitats, and identifying local partners, review existing Rules and Regulations and Environmental Conservation law protecting the Rainbow smelt and if necessary, suggest other appropriate measures.*

Objective 3 : To protect identified Rainbow smelt spawning sites through partnerships with local land owners, town and county governments and NGOs.

Measure: *Upon identification, review appropriate mechanisms to protect existing spawning habitat by working with local landowners and local governments.*

Objective 4 : Identify extirpation causes of rainbow smelt in Marine and Estuarine waters of New York State in relation to documented climate (warming) change and ocean warming.

Measure: *examine historic long term temperature records in relation to abundance of rainbow smelt in Marine and Estuarine waters of New York State AND in New England states.*

Objective 5 : increase abundance of adults and juveniles

Measure: *annual indices of relative abundance for adults and juveniles*

Objective 6 : Restore spawning populations to five major tributaries with historic spawning populations

Measure: *presence of spawning fish*

Recommended Actions

Habitat monitoring:

* Determine the Rainbow smelt spawning habitat availability within the Marine and estuarine waters of New York State. Provide funding to conduct an inventory of existing and potential spawning habitat in coastal streams and within the Hudson River estuary.

Habitat research:

* identify tributaries with spawning populations
  initiate studies of habitat use by life stage

Life history research:

* obtain data on basic biology (max age, maturity, fecundity)
* Determine the current population structure of the Rainbow smelt with the Marine and estuarine waters of New York and determine those life history factors which are restricting the species.

New regulation:

* Develop as appropriate regulations that protect the Rainbow smelt within the Marine and Estuarine waters of New York state consistent with the status and needs of the resource.

Other action:

* Support regulations to reverse climate warming trend documented for New England states based on increased emissions of greenhouse gases

Population monitoring:

* Initiate studies of population abundance and age structure
  develop method to measure annual relative abundance of juveniles and adults
* Based upon preliminary identification of the populations status and spawning site availability, conduct periodic investigations to determine the populations status and trends.

Recommended Actions

Web page:

* Develop a web based survey to assist the department in obtaining information relative to the Rainbow smelt spawning sites and to provide the public with information relative to this species life history and population status within the Marine and estuarine waters of New York.

References

Hudson River Utility/Generators Annual Year Class Reports for the Hudson River Longriver Monitoring Program. 1974-2001.

Fishes of the Gulf of Maine, Third Edition, Bigelow and Schroeder, 2002, edited by Bruce B. Collette and Grace Klein-MacPhee, Smithsonian Institution Press, Washington and London. 748 pgs.

Originator

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Taxa Group: Marine fish

Species Group: Shortnose sturgeon

Threats:

Dredging / development projects in over-wintering and/or spawning areas. Unknown contaminant (primarily PCB) effects.

Trends:

Population level appears to be stable; stock largest on Atlantic coast.

SEQR - No Action Alternative:

Continued protection under the Endangered Species Act place limitations on nearly all activities within the Hudson River system. Stock should remain stable at current level.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Shortnose sturgeon (Acipenser brevirostrum)	E		S1	G3	E	Resident

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Shortnose sturgeon (Acipenser brevirostrum)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Stable
	Upper Hudson	Upper Hudson	Stable

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Shortnose sturgeon (Acipenser brevirostrum)	Lower New England Piedmont	Lower New England Piedmont	Stable

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Shortnose sturgeon (Acipenser brevirostrum)				
	Breeding	Riverine	deep subtidal	rocky
	Nursery/Juvenile	Estuarine	deep subtidal	rocky

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Shortnose sturgeon (Acipenser brevirostrum)				
	Roosting/Congregating	Estuarine	deep subtidal	unknown

Goal and Objectives for Shortnose sturgeon

Goal: Maintain stock at current high levels of abundance

Objective 1 : maintain adult stock at stable or increasing abundance AND at or above 40,000 animals

Measure: *periodic (every 5 years) estimates of adult population size and annual indices of relative abundance*

Recommended Actions

Habitat monitoring:

* Monitor effects of dredge projects where it impacts shortnose

Other action:

* Unknown effect of major Hudson contaminant (PCB's) on this species. Need a better understanding on contaminant levels.

Other management plan:

* explore possibility of delisting species

Population monitoring:

* conduct mark recapture estimates of population size periodically
  develop methodology and implement sampling for indices of relative abundance

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Taxa Group: Marine fish

Species Group: Skates and Rays

Threats:

Overfishing is a key threat to the skate and rays from direct harvest and from bycatch mortality associated with commercial and recreational gears.

Trends:

The results of the latest stock assessment for the skates and rays suggests that the overall stock complex is at a medium level of abundance. The abundance has fluctuated over the past several decades.

SEQR - No Action Alternative:

The no action alternative would not provide for any further management or protection of this species complex and would maintain the existing fluctuating populations levels for the species complex.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Manta (Manta birostris)					U	Migratory
Cownose ray (Rhinoptera bonasus)					U	Migratory
Roughtail stingray (Dasyatis centroura)					U	Migratory
Clearnose skate (Raja eglanteria)					U	Migratory
Smooth skate (Malacoraja senta)					U	Migratory
Winter skate (Leucoraja ocellata)					U	Migratory
Rosette skate (Leucoraja garmani virginica)					U	Migratory
Little skate (Leucoraja erinacea)					U	Migratory
Barndoor skate (Dipturus laevis)					U	Migratory
Thorny skate (Amblyraja radiata)					U	Migratory
Atlantic torpedo (Torpedo nobiliana)					U	Migratory

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Atlantic torpedo (Torpedo nobiliana)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Thorny skate (Amblyraja radiata)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Barndoor skate (Dipturus laevis)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Little skate (Leucoraja erinacea)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing
Rosette skate (Leucoraja garmani virginica)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Winter skate (Leucoraja ocellata)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Smooth skate (Malacoraja senta)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Clearnose skate (Raja eglanteria)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Roughtail stingray (Dasyatis centroura)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Cownose ray (Rhinoptera bonasus)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
Manta (Manta birostris)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Atlantic torpedo (Torpedo nobiliana)	North Atlantic Coast	North Atlantic Coast	Unknown
Thorny skate (Amblyraja radiata)	North Atlantic Coast	North Atlantic Coast	Unknown
Barndoor skate (Dipturus laevis)	North Atlantic Coast	Lower New England Piedmont	Unknown
Little skate (Leucoraja erinacea)	North Atlantic Coast	North Atlantic Coast	Decreasing
Rosette skate (Leucoraja garmani virginica)	North Atlantic Coast	North Atlantic Coast	Unknown
Winter skate (Leucoraja ocellata)	North Atlantic Coast	North Atlantic Coast	Unknown
Smooth skate (Malacoraja senta)	North Atlantic Coast	Lower New England Piedmont	Stable

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Clearnose skate (Raja eglanteria)	North Atlantic Coast	North Atlantic Coast	Unknown
Roughtail stingray (Dasyatis centroura)	North Atlantic Coast	North Atlantic Coast	Unknown
Cownose ray (Rhinoptera bonasus)	North Atlantic Coast	North Atlantic Coast	Unknown
Manta (Manta birostris)	North Atlantic Coast	North Atlantic Coast	Stable

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Atlantic torpedo (Torpedo nobiliana)				
	all	Marine	deep subtidal	mud
	all	Marine	deep subtidal	rocky
	all	Marine	deep subtidal	sand/gravel
Thorny skate (Amblyraja radiata)				
	all	Marine	deep subtidal	mud
	all	Marine	deep subtidal	rocky
	all	Marine	deep subtidal	sand/gravel
Barndoor skate (Dipturus laevis)				
	all	Marine	deep subtidal	mud
	all	Marine	deep subtidal	rocky
	all	Marine	deep subtidal	sand/gravel
Little skate (Leucoraja erinacea)				
	all	Marine	deep subtidal	mud
	all	Marine	deep subtidal	rocky
	all	Marine	deep subtidal	sand/gravel
Rosette skate (Leucoraja garmani virginica)				
	all	Marine	deep subtidal	mud
	all	Marine	deep subtidal	rocky
	all	Marine	deep subtidal	sand/gravel
Winter skate (Leucoraja ocellata)				
	all	Marine	deep subtidal	sand/gravel
Smooth skate (Malacoraja senta)				

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Smooth skate (Malacoraja senta)				
	all	Marine	deep subtidal	mud
	all	Marine	deep subtidal	sand/gravel
Clearnose skate (Raja eglanteria)				
	all	Marine	deep subtidal	mud
	all	Marine	deep subtidal	sand/gravel
	all	Marine	shallow subtidal	sand/gravel
Roughtail stingray (Dasyatis centroura)				
	all	Marine	deep subtidal	sand/gravel
	all	Marine	shallow subtidal	sand/gravel
Cownose ray (Rhinoptera bonasus)				
	all	Marine	deep subtidal	mud
	all	Marine	deep subtidal	sand/gravel
	all	Marine	shallow subtidal	sand/gravel
Manta (Manta birostris)				
	all	Marine	deep subtidal	pelagic

Goal and Objectives for Skates and Rays

Goal: Maintain self-sustaining skate and ray stock complex throughout the middle Atlantic Bight.

Objective 1 : Collect and summarize available biological data relative to skates and rays in order to provide an updated biological assessment for the complex for New York State waters by 2015

Measure: *Review available biological data collections for information on the skate and ray complex.*

Objective 2 : Collect maturity and fecundity information from skates and rays from a sub sample of the harvest or bycatch by 2010.

Measure: *In cooperation with other researchers provide samples of skates and rays to researchers conducting maturity and fecundity studies.*

Objective 3 : Collect new biological data from skates and rays captured by New York fisherman by 2010.

Measure: *Add dock side and at sea sampling of skates and rays to existing biological sampling collections made under the Atlantic Coastal Cooperative Statistics Program.*

Objective 4 : Insure that all skate and rays harvested are reported on vessel trip reports and by dealers who handle any skates and rays landed in New York by 2010.

Measure: *Update as necessary rules and regulations covering the reporting of harvest, bycatch and landings for fisherman and dealers. Update instructions to fisherman and dealers regarding the needs for harvest and bycatch information on skates and rays.*

Recommended Actions

Fact sheet:

* Develop fact sheets for all species of skates and rays found in or near to New York's Territorial waters.

Life history research:

* Participate in programs to obtain new biological information relative to this species complex for those species found in harvested or landed in New York.

New regulation:

* Implement new rules and regulations as necessary and appropriate consistent with rules and regulations implemented by National Marine Fisheries Service.

Population monitoring:

* Support existing monitoring and develop as necessary new biological monitoring for this species.

Web page:

* Develop webpage information about the species in this complex.

References

Collette, Bruce B. and G. Klein-MacPhee. 2002. Bigelow and Schroeder's Fishers of the Gulf of Maine. Third Edition. Smithsonian Institution Press, Washington D.C. 748 pgs.

Department of Commerce. 2001. Final United States National Plan of Action for the Conservation and Management of Sharks. Dept. of Commerce, NOAA, NMFS, Silver Spring, MD. 90 pgs.

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Taxa Group: Marine fish
Species Group: Tomcod

Threats:
Susceptible to pollution (sewage) and DO blocks. Past data indicates that DO blocks in NY harbor adversely affected tomcod survival in the summer (when they move to the marine waters.)
Unknown contaminant (PCB's and others) effects.

Possible threat from global climate change warming ocean waters

Trends:
Species is on the southern part of its range for a cold water/marine species. Population has varied greatly without specific trend for the past 30 years. Last ten plus years, annual population estimates have become extremely variable with a repeating low-high sawtooth pattern.

SEQR - No Action Alternative:
Population is not directly managed, however it has persisted with great variation in size over the past 30 years.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Atlantic tomcod (Microgadus tomcod)			S3	G5	U	Resident

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Atlantic tomcod (Microgadus tomcod)	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Unknown
	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Unknown
	Upper Hudson	Upper Hudson	Unknown

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Atlantic tomcod (Microgadus tomcod)	Lower New England Piedmont	Lower New England Piedmont	Unknown
	North Atlantic Coast	North Atlantic Coast	Unknown

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Atlantic tomcod (Microgadus tomcod)				
	Breeding	Estuarine	intertidal	shoreline
	Feeding	Estuarine	unknown	unknown
	Feeding	Marine	deep subtidal	unknown
	Nursery/Juvenile	Estuarine	shallow subtidal	unknown
	Nursery/Juvenile	Marine	unknown	unknown
	Roosting/Congregating	Marine	deep subtidal	unknown

Goal and Objectives for Tomcod

Goal: Maintain stock at levels that can support predation by fish and fishing

Objective 1 : Identify factors (environmental or otherwise) that affect population size

Measure: *Examine data from other river systems to identify similarity or differences in population variation*

Objective 2 : Maintain Hudson stock at stable or increasing abundance

Measure: *Estimate of annual population size by year class or index of relative abundance*

Objective 3 : Maintain optimum water quality in spawning, nursery and congregating habitats

Measure: *Implement water quality recommendations of the Hudson River Estuary and (NY) Harbor Estuary Programs.*

Recommended Actions

Population monitoring:

* conduct periodic estimate of adult population size
  develop methodology and implement annual sampling of adult relative abundance by age

References

[Grey literature] Hudson River Utility Yearclass Reports and Striped bass/Atlantic tomcod survey. ASAAC (Utility consultants prepare document) 1974-2002.

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Taxa Group: Marine fish

Species Group: Winter flounder

Threats:

Threats include but are not limited to over harvest, habitat destruction, global warming, and increased predation.

Trends:

The winter flounder stocks are bouncing around at a low level of abundance. The trend overtime has been a serious decline from high abundances in the late 1970's.

SEQR - No Action Alternative:

The no action alternative would leave in place the existing management measures which may need to be modified to assist in the rebuilding of this valuable species of fish.

Species in the Group and their Management Status

Species	Federal Listing	NE Concern	State Rank	Global Rank	State Protection	Migratory Status
Winter flounder (Pseudopleuronectes americanus)			S3?	G5	P	Migratory

Species Distribution - Watershed Basin

Species	Historical	Current	Stability
Winter flounder (Pseudopleuronectes americanus)	Lower Hudson - Long Island Bays	Lower Hudson - Long Island Bays	Decreasing
	Atlantic Ocean - NY Bight	Atlantic Ocean - NY Bight	Decreasing

Species Distribution - Ecoregion

Species	Historical	Current	Stability
Winter flounder (Pseudopleuronectes americanus)	North Atlantic Coast	North Atlantic Coast	Decreasing

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Winter flounder (Pseudopleuronectes americanus)				
	Breeding	Estuarine	deep subtidal	sand/gravel
	Breeding	Estuarine	shallow subtidal	mud

Critical Habitats for Species in the Group

Species	Life Stage or Use	System	SubSystem	Habitat
Winter flounder (Pseudopleuronectes americanus)				
	Breeding	Estuarine	shallow subtidal	sand/gravel
	Feeding	Estuarine	deep subtidal	mud
	Feeding	Estuarine	deep subtidal	sand/gravel
	Feeding	Estuarine	shallow subtidal	sand/gravel
	Feeding	Estuarine	shallow subtidal	submerged aquatic vegetation
	Feeding	Marine	deep subtidal	rocky
	Feeding	Marine	deep subtidal	sand/gravel
	Hibernating/Overwintering	Marine	deep subtidal	rocky
	Hibernating/Overwintering	Marine	deep subtidal	sand/gravel
	Nursery/Juvenile	Estuarine	shallow subtidal	mud
	Nursery/Juvenile	Estuarine	shallow subtidal	sand/gravel
	Nursery/Juvenile	Estuarine	shallow subtidal	submerged aquatic vegetation

Goal and Objectives for Winter flounder

Goal: To rebuild a healthy, self-sustaining inshore population of winter flounder

Objective 1 : Collect current biological data necessary to assess the health and status of winter flounder stocks (inshore and offshore) annually.

Measure: *Support investigations which will collect updated biological data on winter flounder in New York State.*

Objective 2 : Develop information relative to habitat utilization by inshore winter flounder by 2010.

Measure: *Support efforts which provide new or updated information relative to inshore winter flounder significant habitats.*

Objective 3 : Develop information relative to predation on inshore winter flounder 2015.

Measure: *Support efforts which provide new or updated information on the predation on inshore winter flounder.*

Objective 4 : Identify and map winter flounder juvenile habitat by 2015.

Measure: *Identifies critical habitat necessary to the well being of the species and can be used to address impacts.*

Objective 5 : Identify and map winter flounder spawning habitat by 2015.

Measure: *Supports efforts to rebuild winter flounder stocks and to address impact assessments.*

Objective 6 : Monitor commercial and recreational harvest of inshore stocks of winter flounder annually.

Measure: *Implement all aspects of the ACCSP program necessary collect appropriate harvest information on inshore winter flounder. Support increased effort through the MRFSS to understand the recreational harvest of inshore winter flounder.*

Objective 7 : Rebuild winter flounder stocks in sufficient abundance to support stable, productive commercial and recreational fisheries by 2015

Measure: *Implement all aspects of the ASMFC FMP for winter flounder to protect and rebuild the coastal stocks. Implement a management program in New York which protects and rebuilds New York's inshore stock of winter flounder.*

Recommended Actions

Fact sheet:

* Develop appropriate biological fact sheet on inshore winter flounder population and their status.

Habitat research:

* Conduct habitat research that is address at understand or documenting the utilization of specific habitat by winter flounder.

Habitat restoration:

* Where appropriate support habitat restoration which supports inshore winter flounder stocks.

Life history research:

* Support the collection of new and updated data relative to the life history status of this species. A main focus area would be life stage interactions relative to survival between life stages.

Modify regulation:

* Modify regulations as appropriate to protect the inshore stocks of winter flounder consistent with the needs of the species and with the ASMFC Fishery Management Plan for the species.

Population monitoring:

* Support monitoring efforts which focus on the status and well being of this species.

Statewide management plan:

* Support the development of a Marine District Fishery Management Plan for this species.

Recommended Actions

Web page:

* Develop an appropriate webpage document which provides information relative to the status and well being of this species.

References

Collette, Bruce B, and Grace Klein-MacPhee editors, Bigelow and Schroeder's Fishes of the Gulf of Maine, Third Edition. 2002. Smithsonian Institution Press, Washington, D.C. 748 pgs.

Draft Fishery Management Report No. ___ of the Atlantic States Marine Fisheries Commission. Amendment 1 to the Interstate Fishery Management Plan for Winter Flounder. 2004. ASMFC, Washington, D.C. 106 pgs.

Fishery Management Report No. 21 of the Atlantic States Marine Fisheries Commission. Fishery Management Plan for Inshore Stocks of Winter Flounde 1992. ASMFC, Washington D.C. 138 pgs.

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