Species Status Assessment

Common Name: Shortfin mako **Date Updated:** 1/12/2024

Scientific Name: *Isurus oxyrinchus* **Updated by:** Siobhan Keeling

Class: Chondrichthyes

Family: Lamnidae

Species Synopsis *(a short paragraph which describes species taxonomy, distribution, recent trends, and habitat in New York):*

Shortfin mako shark are a temperate and tropical specie, found in the Atlantic, Pacific and Indian oceans**.** In northwestern Atlantic, this species ranges between 20° and 40°N, bordered by the Gulf Stream in the west and the mid-Atlantic ridge in the east (Casey and Kohler 1992). It is a highly migratory species, with tagging data showing a single well-mixed population in the Northern Atlantic (Casey and Kohler 1992). Shortfin mako is a large, late-maturing pelagic shark species. Its life-history makes it vulnerable to mortalities associated with bycatch in longline and other fisheries (COSEWIC 2011). In 2011, the majority of shortfin mako harvest is from the U.S. Atlantic Coast and Gulf of Mexico. In 2011, U.S. commercial fisheries harvested over 207,000 pounds of shortfin mako (NOAA 2013). In 2012, International Commission for the Conservation of Atlantic Tunas (ICCAT) conducted a stock assessment for shortfin mako sharks, concluding that the fishery was not overfished, but was vulnerable and recommended a precautionary approach to prevent the overfishing stocks (ICCAT 2012). The IUCN Red List status has changed from vulnerable in 2009 to endangered in the 2019 assessment (Rigby et al. 2019).

I. Status

a. Current legal protected Status

i. **Federal:** Not Listed **Candidate:** No

ii. **New York:** Not listed

b. Natural Heritage Program

i. **Global:** GNR, Unranked

ii. **New York:** SNR, Unranked **Tracked by NYNHP?:** No

Other Ranks:

-New York 2025 HPSGCN status: High Priority Species of Greatest Conservation Need

-IUCN Red List: Endangered

-Northeast Regional SGCN: RSGCN

-COESWIC: Threatened

-CITES: II

Status Discussion:

Shortfin mako is assessed to be globally endangered due to its estimated decline (Rigby et al. 2019). In 2017, ICCAT found that overfishing was occurring, and the stock was overfished as well (ICCAT 2017, Rigby et al. 2019).

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Declining	Stable	1980s to present		-
Northeastern US	Yes	Declining	Stable	1986-present (Northwest Atlantic)		-
New York	Yes	Declining	Stable	Not specified		-
Connecticut	No data	-	-	Not specified	Not listed	No
Massachusetts	No data	-	-	Not specified	Not listed	No
New Jersey	No data	-	-	Not specified	Not listed	No
Pennsylvania	No	-	-			-
Vermont	No	-	-			-
Ontario	No	-	-			
Quebec	No	-	-			-

Column options
Present?: Yes; No; Unknown; No data; (blank) or Choose an Item
Abundance and Distribution: Declining; Increasing; Stable; Unknown; Extirpated; N/A; (blank) or Choose an item
SGCN?: Yes; No; Unknown; (blank) or Choose an item

Monitoring in New York *(specify any monitoring activities or regular surveys that are conducted in New York):*

The National Marine Fisheries Services Cooperative Shark Tagging Program is an ongoing effort from recreational, commercial anglers and NMFS to tag sharks throughout the Atlantic Ocean and Gulf Coast. Since 1962 over 221,000 sharks of 52 different species have been tagged. The tagging of sharks provides information on stock identity, movements and migration, abundance, age and growth, mortality and behavior (NMFS 2011).

Trends Discussion *(insert map of North American/regional distribution and status):*

The current population trend is decreasing according to the IUCN red list (Rigby et al. 2019). Shortfin makos are distributed circumglobally in tropical and temperate seas. In the western Atlantic, this species spans from the Grand Banks south to Uruguay and northern Argentina, including the Gulf of Mexico and Caribbean (Cailliet et al. 2009). Analysis of longline logbooks show a decline in catch per effort of 40% between 1986-2000 in the northwest Atlantic (Baum et al. 2003). The median size of shortfin mako sharks caught off the eastern coast of Canada has declined since 1998, suggesting the loss of larger sharks (Campana et al. 2005). A stock assessment was conducted in 2012 by ICCAT for the shortfin mako. Results of their assessment found the North Atlantic stock to be in good health, with a low probability of being overfished. However, their analysis had inconsistencies between estimated biomass and CPUE trends,

producing wide confidence intervals in estimated trajectories, meaning that a precautionary approach should be taken in the management of this species.

Distribution Map

Isurus oxyrinchus

Legend

EXTANT (RESIDENT)

Compiled by:

IUCN SSC Shark Specialist Group 2018

Figure 1. IUCN Red List Shortfin Mako distribution map (Rigby 2019)

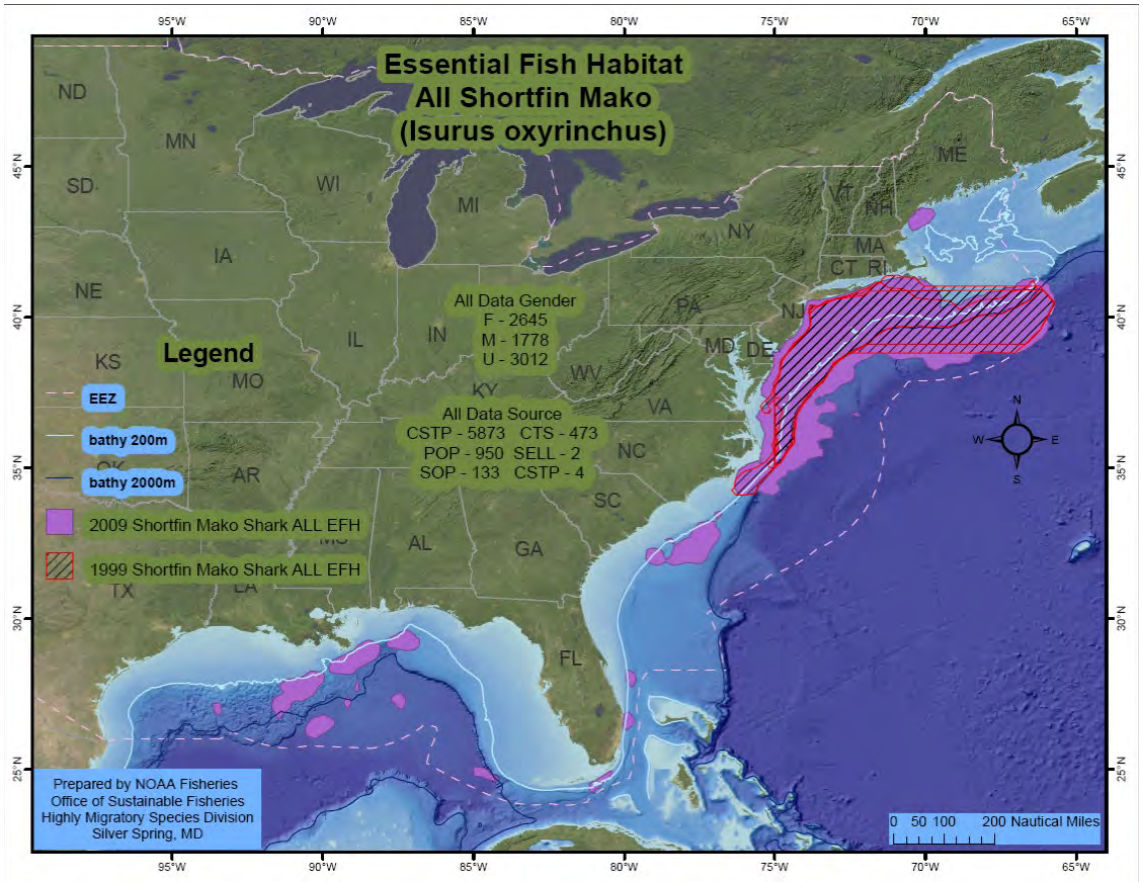

Figure 2. Essential habitat for shortfin mako (NMFS 2009).

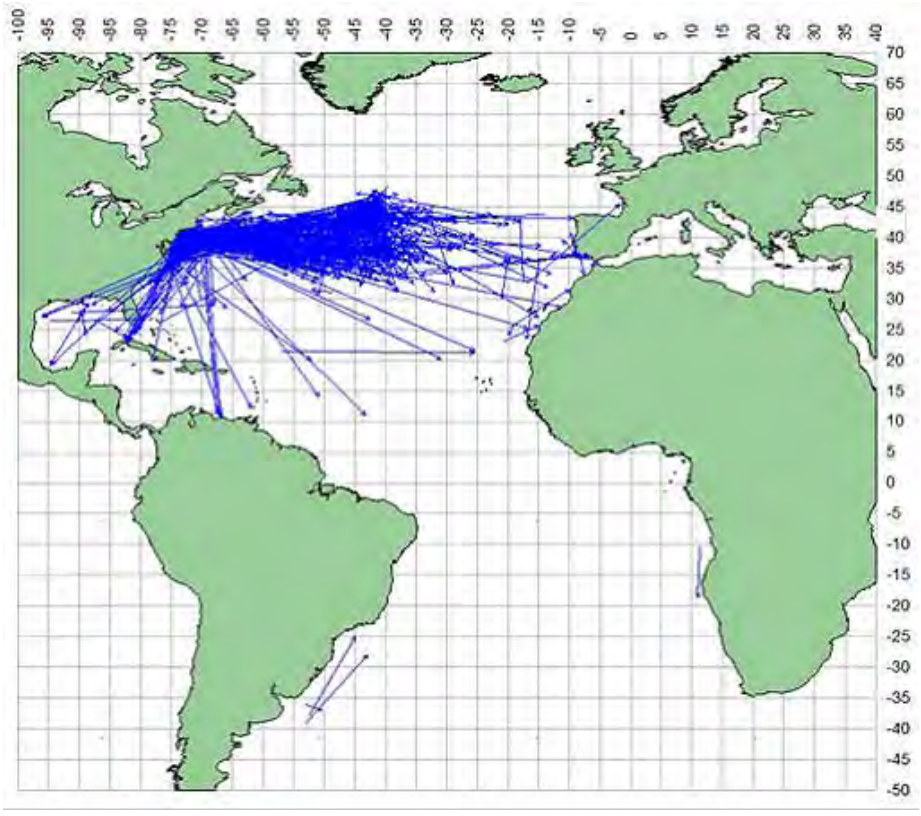

Figure 3. Straight displacement between release and recovery of tagged shortfin mako sharks (ICCAT 2012).

III. New York Rarity *(provide map, numbers, and percent of state occupied)*

This species was considered common off the south shore of Long Island (Briggs and Waldman 2002).

Details of historic and current occurrence:

Historic:

Latham (1964) found it in Long Island Sound at Orient in 1947. Stuart Brill (NYSDEC) caught a pup on rod and reel at Oak Beach in 1971.

Current:

There are no current occurrence records in New York.

New York's Contribution to Species North American Range:

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Core	

Column options
Percent of North American Range in NY: 100% (endemic); 76-99%; 51-75%; 26-50%; 1-25%; 0%; Choose an item
Classification of NY Range: Core; Peripheral; Disjunct; (blank) or Choose an item

IV. Primary Habitat or Community Type *(from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):*

a. Marine, Deep Subtidal

b. Marine, Shallow Subtidal

Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/ Community Trend	Time frame of Decline/Increase
No	No	Stable	

Column options
Habitat Specialist and Indicator Species: Yes; No; Unknown; (blank) or Choose an item
Habitat/Community Trend: Declining; Stable; Increasing; Unknown; (blank) or Choose an item

Habitat Discussion:

Shortfin makos are neritic and oceanic that occupy epipelagic and mesopelagic zones. This species is found worldwide in tropical and warm-temperate waters at depths of 888m (Rigby et al. 2019).

V. Species Demographics and Life History

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/ Catadromous?
-	-	Yes	-	-	-

Column options
First 5 fields: Yes; No; Unknown; (blank) or Choose an item
Anadromous/Catadromous: Anadromous; Catadromous; (blank) or Choose an item

Species Demographics and Life History Discussion *(include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):*

Shortfin makos have a 3-year reproductive cycle with an estimated gestation period of 15 to 18 months. Litter sizes are mainly 10 to 18 pups but can range from 4 to possibly 30 pups (Rigby et al. 2019) They are ovoviviparous, and once hatched they feed by oophagy in utero(Passarelli et al. 2018). Size at birth is 60 to 70 cm total length (TL) with the maximum size of this species around 445 cm (TL). Females mature at 265 to 312 cm (TL) and are usually 10 to 21 years, but can be a maximum of 28 to 32 years. Males mature at 166 to 204 cm (TL) (Rigby et al. 2019)

Instantaneous rate of natural mortality is estimated to be 0.16 and the estimated generation length is 14 years. Results from a tagging study show this species makes extensive movements up to 3,433 km and having 36% of recaptures caught at greater than 420 km from the tagging location (Casey and Kohler 1992). Mitochondrial DNA shows that there is a separation of female shortfin makos between eastern and western Atlantic populations; however, DNS shows that male mixing is occurring across the North Atlantic (Casey and Kohler 1992). The diet of shortfin makos consist of teleost fishes and cephalopods (Stillwell and Kohler 1982, Stevens 1984).

VI. Threats *(from NY 2015 SWAP or newly described)*

The shortfin mako is commonly caught by target fisheries and as bycatch in longline and gillnets directed at tuna and billfish (Cailliet et al. 2009, Rigby et al. 2019). This species is mainly taken as bycatch in offshore and high-seas waters by industrial pelagic fleets. It is also caught in coastal longlines, gillnets, and sometimes trawls (Rigby et al. 2019) It is also a prized recreational fish, commonly sought after and retained for its high quality meat (Cailliet et al. 2009). Due to its high value, when it is caught as bycatch it is often kept (Campana et al. 2005).

The effect of increased global ocean temperatures on sharks is unknown but is likely to result in changes in distribution, migratory movements, and prey availability (ZSL 2010). Synergistic effects between climate and other present threats, particularly by-catch mortality, will likely exacerbate climate-induced changes (Harley et al. 2006).

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
3. Energy Production & Mining	3.3 Renewable Energy	3.3.2 Wind farms (offshore)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
5. Biological Resource Use	5.4 Fishing & Harvesting Aquatic Resources	5.4.1 Recreational or subsistence fishing	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
5. Biological Resource Use	5.4 Fishing & Harvesting Aquatic Resources	5.4.2 Commercial fishing	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
5. Biological Resource Use	5.4 Fishing & Harvesting Aquatic Resources	5.4.2 Commercial fishing (bycatch/discard)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1. Threats to shortfin mako.

Are there regulatory mechanisms that protect the species or its habitat in New York?

Yes: X **No: _____** **Unknown: _____**

If yes, describe mechanism and whether adequate to protect species/habitat:

In NYS, anglers must enroll in the recreational marine fishing registry prior to pursuit of this species. New York anglers may take one shortfin mako per vessel per trip with a minimum fork length of 71 inches for males and 83 inches for females. Any shark that is landed must have head and fins attached while returning to the dock (NYSDEC 2021).

Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:

Current management strategies in New York aim to improve the capacity to sample and quantify demersal and pelagic shark populations at all life stages and the role the state's waters play in their life cycle (NYSDEC 2005).

The New York State Wildlife Action Plan (NYSDEC 2005) provides recommendations for conservation/management actions for pelagic shark species:

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

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

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

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

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

The shortfin mako is listed as a large coastal shark by NOAA, under the Atlantic Highly Migratory Species Fishery Management Plan for Atlantic Tuna, Swordfish and Sharks (NMFS 2006). This listing results in the monitoring of international stock and development of future management goals.

Action Category	Action	Description
A.2 Direct Species Management	A.2.0.0.0 Direct species management	-Harvest management -Trade management
C.6 Design and Plan Conservation	A.2.0.0.0 Direct species management	Species recovery
A.1 Direct Habitat Management	C.6.5.0.0 Conservation planning	Site/area protection

Table 2. Recommended conservation actions for shortfin mako (Rigby et al. 2019)

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