

Species Status Assessment

Common Name: Rosette skate

Date Updated: 1/12/2024

Scientific Name: *Leucoraja garmani virginica* **Updated by:** Siobhan Keeling

Class: Chondrichthyes

Family: Rajiformes

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

The Rosette skate (*Leucoraja garmani virginica*) ranges from Nantucket Shoals, MA to the Dry Tortugas National Park, FL. Rosette skates are more abundant in the Mid-Atlantic offshore waters compared to southern New England and the George's Bank (Hogan et al., 2013). Rosette skates are a relatively small (< 60 cm total length) species and occurs over continental shelf and shelf break waters (Packer et al., 2003). North of Cape Hatteras populations are considered to be the subspecies *L. garmani virginica*, whereas southern populations are considered *L. g. garmani* (NYS DEC, 2015, Kulka et al., 2020). Rosette skate are most abundance in the Mid-Atlantic offshore region, with few fish caught in Southern New England and Georges Bank. Individuals are caught in Northeast Fishery Science Center (NEFSC) trawl surveys off the southern shore of Long Island, most abundant in autumn and spring surveys (NEFMC 2009). There is no directed fishery for Rosette skate, but it is taken as bycatch in the groundfish and scallop dredge fishery (Curtis and Sosebee, 2015). Along with the six other skates in the region, Rosette skates are managed under the Northeast Skate Complex Fishery Management Plan (FMP) by the New England Fishery Management Council (NEFMC). Based on NEFSC biomass indices, the Rosette skate stock is not considered to be overfished by the NEFMC (New England Fishery Management Council, 2021).

I. Status

a. Current legal protected Status

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

ii. **New York:** Not Listed

b. Natural Heritage Program

i. **Global:** Not Ranked

ii. **New York:** Not Ranked **Tracked by NYNHP?:** No

Other Ranks:

-New York 2025 SGCN status: Species of Greatest Conservation Need

-IUCN Red List: Least Concern

-Northeast Regional SGCN: Watchlist [Assessment Priority]

Status Discussion:

Rosette skate biomass index is currently above the threshold reference point and therefore the stock is not considered to be overfished by the NEFMC (NEFMC 2009). The IUCN states that there is no reason to believe there is any current threat to rosette skate although catch indices are not available for the southern range of the species, leading to the assessment status of Least Concern (Kyne et al. 2012).

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Stable	Stable	1990-Present		-
Northeastern US	Yes	Stable	Stable	1990- Present (Mid-Atl Bight)		-
New York	Yes	Stable	Stable	1990-Present		Yes
Connecticut	Yes	Stable	Stable	1990-Present	Not Listed	No
Massachusetts	Yes	Stable	Stable	1990-Present	Not Listed	No
New Jersey	Yes	Stable	Stable	1990-Present	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*):

Northeast Fishery Science Center (NEFSC) trawl surveys sample in the Mid-Atlantic Bight and record catch of rosette skate.

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

The current population trend is increasing according to the IUCN red list (Kulka et al. 2020). Indices of rosette skate abundance and biomass from the NEFSC surveys were at a peak during 1975-1980, later declining through 1986. Survey indices have increased in 1986 through 2001 then declined slightly before increasing to near the peak values of the late 1970s (see Figure 2). Rosette skate biomass index is currently above the biomass threshold reference point and the maximum sustainable yield target, therefore the stock is not considered to be overfished (NEFMC 2009). Overfishing is not occurring because the three-year moving average of the biomass indices did not exceed the maximum threshold, which defines when overfishing is occurring according to the FMP (NEFMC 2009). The median length of this species in the survey catch data has been stable over the spring and autumn time series.

Distribution Map

Leucoraja garmani



Legend

■ EXTANT (RESIDENT)

Compiled by:

IUCN SSC Shark Specialist Group 2020

Figure 1. IUCN Red List rosette skate distribution map (Kulka et al. 2020)

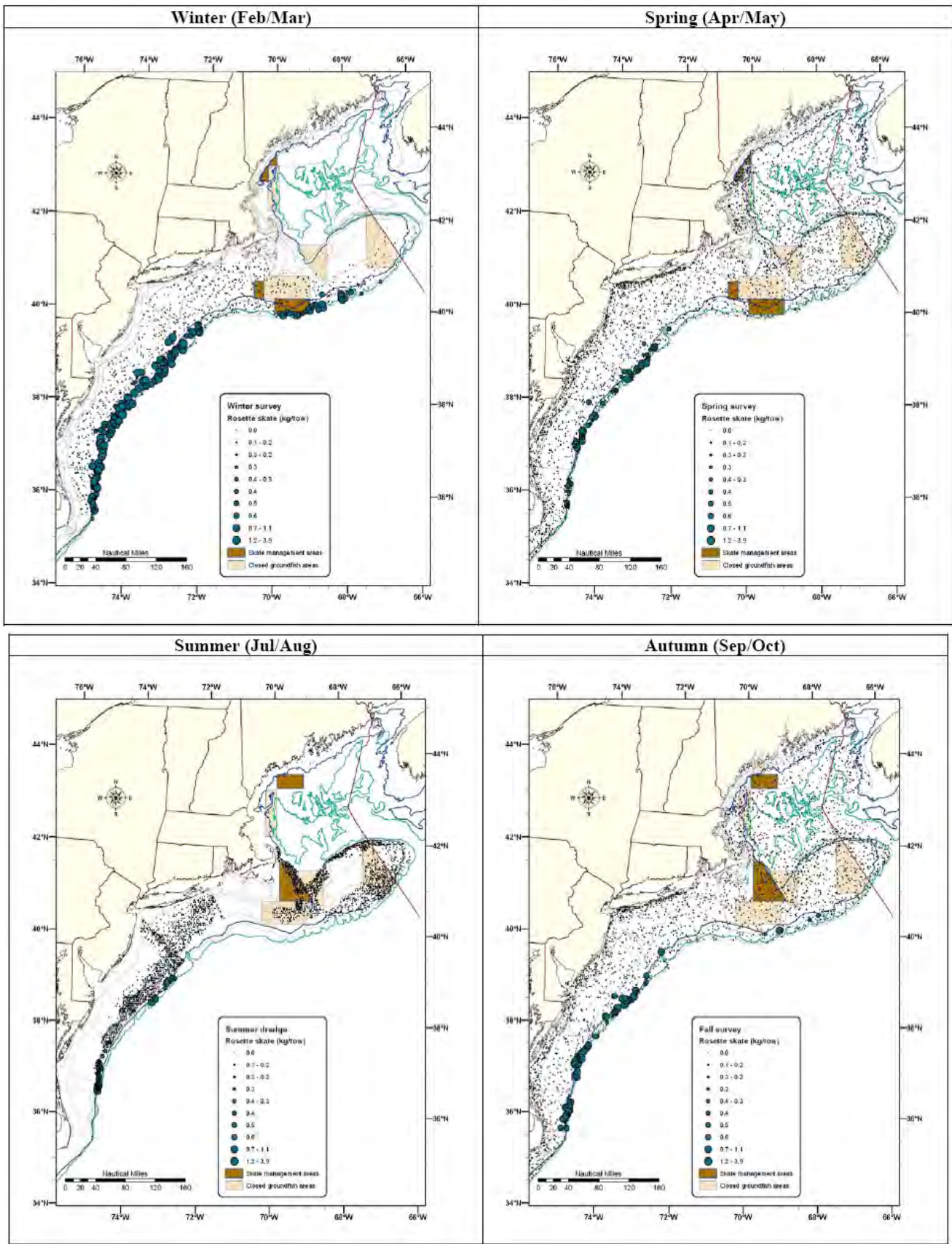


Figure 2. Rosette skate biomass distribution in winter trawl (2000-2007), spring trawl (2000-2008), summer dredge (2000-2007), and autumn trawl (2000-2007) surveys (NEFMC 2009).

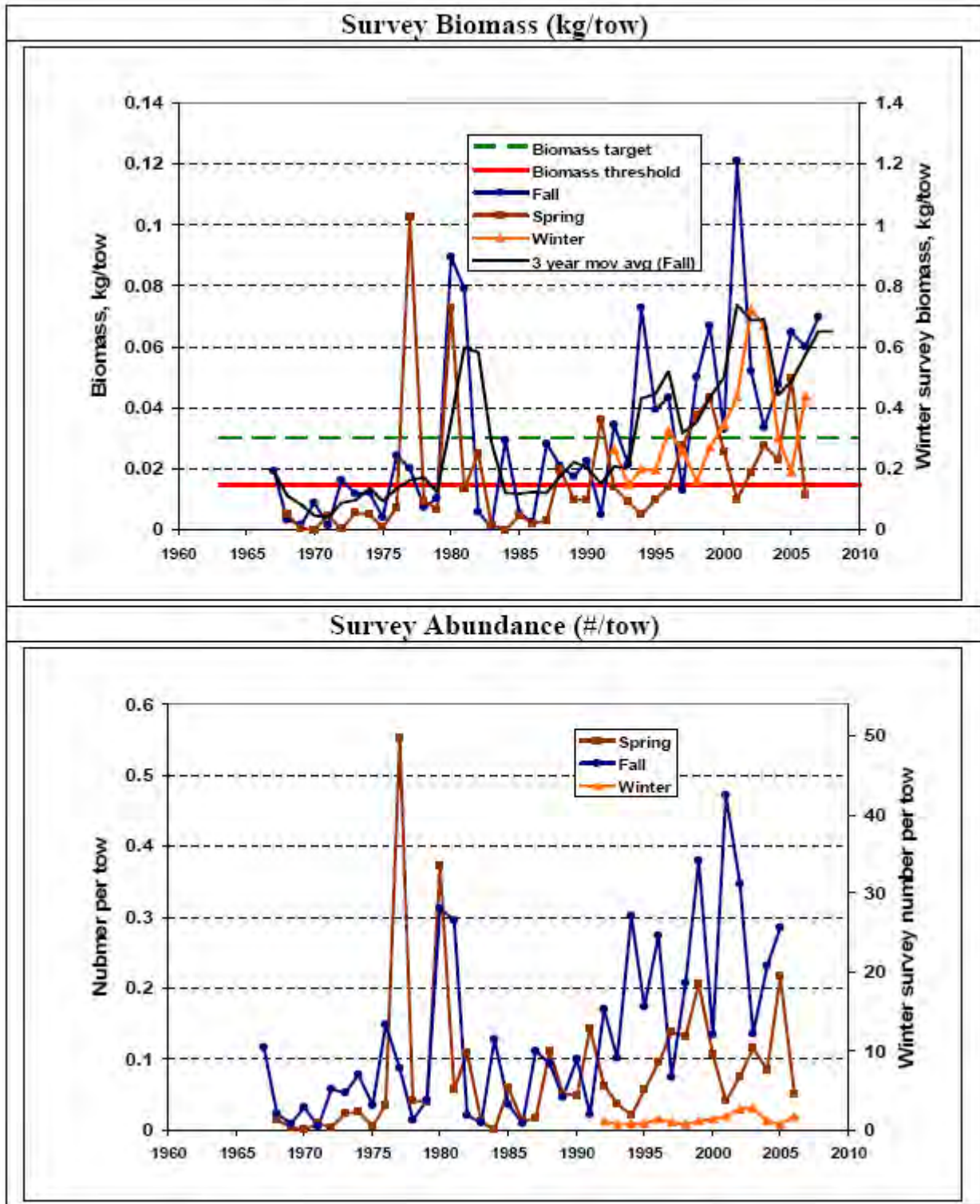


Figure 3. Rosette skate stratified mean weight (top) and number per tow for the winter, spring, and fall (bottom) Northeast Fishery Science Center (NEFSC) trawl surveys from Cape Hatteras to the Gulf of Maine (NEFMC 2009).

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

Rosette skate are fairly abundant on the outer continental shelf from Georges Bank to Virginia.

Details of historic and current occurrence:

McEachran (1977) noted rosette skate were moderately abundant in shallow waters, but rare in deeper waters off Montauk Point, Long Island.

Rosette skate have been caught off the south shore of Long Island in recent NEFSC trawl surveys.

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. Estuarine, Brackish Deep Subtidal
- c. Marine, Deep Subtidal, Benthic Geomorphology, Benthic Flat

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:

Rosette skate are a benthic, deepwater species found on soft bottoms of sand or mud. It occurs at depths of 33 - 530 meters but is most common between 74 - 274 meters and at water temperatures of 5 – 15 °C (Packer et al. 2003). They are found along continental shelves and slopes (Kulka et al. 2020). Although skates do not undertake large-scale migrations, they do move seasonally in response to changing temperatures, generally offshore during summer and early autumn, returning inshore during winter and spring. Rosette skate feed mostly on decapods, crustaceans, and to a lesser extent on amphipods, polychaetes, squids and small fishes (Gedamke 2009).

V. Species Demographics and Life History

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

Rosette skates have a maximum size of 57cm total length (TL). Males reach maturity at 33 cm (TL) and females reach maturity at 33 to 35 cm (TL). Rosette skates are oviparous with offspring hatching at 8 to 9 cm (TL). Little is known about the reproduction and life history of the rosette skate. At northern latitudes, rosette skate reproduce year round with a peak during the summer months. Maximum size and size at maturity have been observed to increase with latitude (Packer et al. 2003). Age at maturity is estimated to be 4 years for both sexes (Packer et al. 2003). Generation length is assumed to be 11 years based on data from a similar sized Little Skate (*Leucoraja erinacea*) (Kulka et al. 2020).

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

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
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.
11. Climate Change	11.3 Changes in Temperature Regimes	11.3.3 Gradual temperature change	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1. Threats to rosette skate

Rosette skate are commonly taken as by-catch in groundfish trawling and scallop dredging operations and discarded. Recreational and foreign landings are considered insignificant, accounting for <1% of the total fishery landings (Gedamke 2009). Potential effects of climate change on rosette skate are unknown; however, temperature fluctuations and shifting habitats may negatively affect this species or its required habitat (Harley et al. 2006).

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:

The rosette skate is part of the northeast skate complex, managed by the Northeast Fishery Management Council Skate Complex Fishery Management Plan (FMP). The FMP includes catch reporting requirements, a total allowable catch (TAC), and possession limits for all managed skate species. Landings are not yet reported by species although this is a requirement under the skate FMP, resulting in over 99% of landings reported as unclassified skates.

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

Species-specific fishery independent data are needed to better understand the status of rosette skate in New York. Compliance with the requirements of the FMP and implementation of new rules and regulations consistent with those developed by the National Marine Fisheries Service would sustain populations of this species throughout its range. Programs are needed to obtain biological information for the rosette skate to better understand life history characteristics and identify potential nursery areas in New York waters.

Action Category	Action	Description
C.8 Research and Monitoring	C.8.1.1.1 Characterization. Demographic study, population, or inventory	Study population size, trends, harvest trends, life history, and distribution

Table 2. Recommended conservation actions for rosette skate (Kulka et al.2020).

VII. References

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- Packer, D.B., C.A. Zetlin, and J.J. Vitaliano. 2003. Essential fish habitat source document: rosette skate, *leucoraja garmani virginica*, life history and habitat characteristics. NOAA Technical Memo NFM NE 176: 17p.