
Ghost Tide to Living Waters

A participatory installation restoring endangered aquatic animals with January Yoon Cho.

Ghost Tide to Living Waters is a participatory outdoor installation featuring 100 cutouts of endangered and threatened aquatic animals native to New York State, made from recycled cardboard boxes. Through play, creativity, and learning, participants help bring these disappearing animals back to life.

Audiences are invited to:

1. **Catch** an animal by walking through the installation.
2. **Discover** their animal at the worktable and learn about its habitat and story.
3. **Create** by coloring and decorating their catch.
4. **Release** the animal back into the “water” by rehangng it in the installation.

This project is commissioned by Eco Arts Festival 2026 on Governors Island, presented by Artichoke Dance Company.

About
Ghost Tide to Living Waters



www.yooncho.com/ghost-tide-to-livin-waters-installation

Artist Website
January Yoon Cho



www.yooncho.com

Instagram



[@january_yoon_cho_art](https://www.instagram.com/january_yoon_cho_art)

NYS Endangered & Threatened Aquatic Animal List

- **Extinct** - Species is no longer living or existing.
- **Extirpated** - Species is not extinct, but no longer occurring in a wild state within New York, or no longer exhibiting patterns of use traditional for that species in New York (e.g. historical breeders no longer breeding here).
- **Endangered** - Any native species in imminent danger of extirpation or extinction in New York State.
- **Threatened** - Any native species likely to become an endangered species within the foreseeable future in New York State.
- **Special Concern** - Any native species for which a welfare concern or risk of endangerment has been documented in New York State.

Source: New York State Department of Environmental Conservation

<https://dec.ny.gov/nature/animals-fish-plants/biodiversity-species-conservation/endangered-species/list>



MOLLUSKS

Clubshell (*Pleurobema clava*)



Photo Credit: Endangered freshwater mussels, Ryan Hagerty/USFWS Public Domain
<https://www.fws.gov/media/endangered-freshwater-mussels>

Size:

Up to about 3 in (7.6 cm) long; wedge-shaped, solid shell with a high, pointed umbo The clubshell is a small to medium size (up to 3 inches long) freshwater mussel

Habitat:

Clean, loose sand and gravel in small to medium rivers and streams; burrows up to 4 in into the substrate Clubshells prefer clean, loose sand and gravel in medium to small rivers and streams, burying themselves in the bottom substrate to depths of up to four inches

Diet:

Filter-feeder: strains algae, bacteria, and organic particles from the water column (typical of freshwater mussels)

Life History:

Long-lived, possibly to 50 years larvae (glochidia) fish gills before dropping off as juveniles Once settled in, clubshells are long-lived, living possibly up to 50 years

Status in NY:

Endangered (federal & state); historically in Lake Erie drainages, now essentially extirpated from most of NY, with restoration focused on Cassadaga Creek

MOLLUSKS

Salamander mussel (*Simpsonaias ambigua*)



Photo Credit: (L) <https://westsidenewsny.com/news/2023-08-27/u-s-fish-and-wildlife-service-proposes-to-list-the-salamander-mussel-as-endangered/> (R) <https://ubap.inhs.illinois.edu/research/edna/salamander-mussel-and-the-mud-puppy/>

Size:

About 2 in (5.1 cm) long and roughly 1 in (2.5 cm) high; thin, elongate-elliptical shell The shell is about 2 inches (42 mm) long and about 1 inch high (20 mm)

Habitat:

Sand or silt beneath large, flat stones in swift-current areas of medium to large rivers and lakes

Diet:

Filter-feeder, drawing plankton and fine organic detritus from flowing water

Life History:

Only freshwater mussel known to use a non-fish host — its glochidia parasitize the mudpuppy salamander; lives roughly 10 years the salamander mussel is the only freshwater mussel in North America to use a non-fish host... The salamander mussel lives for approximately 10 years

Status in NY:

Endangered; Long thought extirpated in NY — only a dead shell found in 2018 in a Lake Erie tributary; not currently state-listed but proposed for federal endangered status, and ranked critically imperiled by NY's Natural Heritage Program

MOLLUSKS

Rayed Bean (*Paetulunio fabalis*, formerly *Villosa fabalis*)

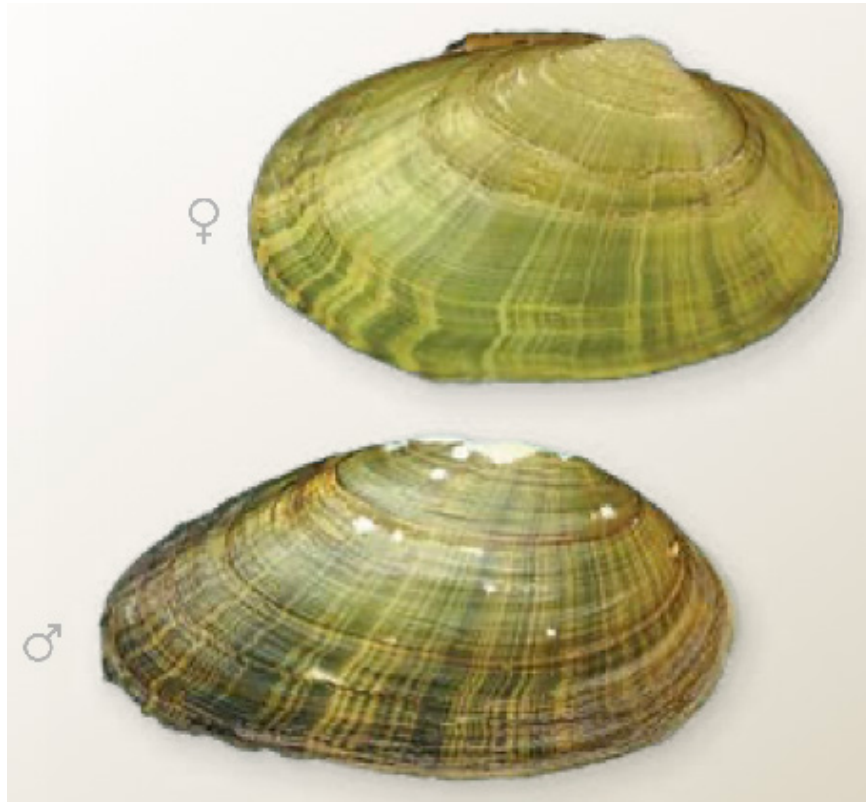


Photo Credit: <https://dam.assets.ohio.gov/image/upload/ohiodnr.gov/documents/wildlife/backyard-wildlife/Pub%205517%20-%20Freshwater%20Mussels%20of%20Ohio%20R1022.pdf>

Size:

Usually under 1.5 in (3.8 cm) long, occasionally to about 1.8 in; small, thick-shelled and elongate, with unusually heavy hinge teeth for its size The rayed bean is a small mussel, usually less than 1.5 inches (in) (3.8 centimeters (cm)) in length

Habitat:

High-quality creeks and small rivers, in sand and gravel, often buried deeply; also found in some larger rivers and shallow Great Lakes shoreline habitat

Diet:

Filter-feeder, straining phytoplankton and organic matter from the current

Life History:

Lifespan estimated around 20 years; glochidia likely rely on darter fish as hosts, which limits natural dispersal since darters have small home ranges

Status in NY:

Endangered (federal since 2012, and state); known in NY from only about 8 waterbodies, mostly in the Allegheny River basin

Fishes

Shortnose Sturgeon (*Acipenser brevirostrum*)



Photo Credit: Shortnose sturgeon, Hagerty, Ryan/USFWS, Public Domain, <https://www.fws.gov/media/shortnose-sturgeon-1>

Size:

NY's smallest sturgeon; rarely exceeds 3.5 ft and 14 lb the shortnose sturgeon is the smallest of New York's sturgeons, rarely exceeding 3.5 feet in length and 14 pounds in weight

Habitat:

River mouths, tidal rivers, and estuaries; in NY spends its whole life cycle in the Hudson River, using both fresh and brackish water river mouths, tidal rivers, estuaries, and bays serve as prime habitat for the shortnose sturgeon

Diet:

Benthic feeder on invertebrates like insect larvae, worms, and small mollusks in river/estuary sediments (typical for sturgeon)

Life History:

Complex and not fully understood; spends its entire life in the Hudson River, spawning upstream near Albany in spring; can live several decades the shortnose sturgeon's life history is complex; much of its spawning behavior and early life stages are still not fully understood

Status in NY:

State & federally endangered; the Hudson River population is considered relatively stable but still vulnerable due to low reproduction and habitat threats although probably not threatened at current population levels, this species remains vulnerable due to low reproductive rates and the potential for significant by-catch

Fishes

Atlantic Sturgeon (*Acipenser oxyrinchus*)



Photo Credit: Atlantic sturgeon, Hagerty, Ryan/USFWS, Public Domain, <https://www.fws.gov/media/atlantic-sturgeon-10>

Size:

Much larger: up to 14 ft and over 800 lb, though fish over 200 lb are now rare weight up to 800 pounds, length up to 14 feet

Habitat:

Coastal waters and large tidal estuaries/rivers; migrates from the ocean into rivers like the Hudson to spawn the Atlantic sturgeon ranges along the Atlantic coast and major estuarine drainages, and when not spawning spends most of its adult life in salt or brackish water in the Atlantic Ocean

Diet:

Bottom-feeder on invertebrates such as worms, crustaceans, and mollusks in estuary and marine sediments the Atlantic sturgeons are benthic bottom feeders that utilize both estuary and marine habitats

Life History:

Long-lived (up to 60 years) and slow to mature — males at 5–20 years, females 7–30 years — spawning only every 1–5 years; juveniles rear in the Hudson for years before heading to sea Atlantic sturgeon live at least 30 years, with the oldest aged to be 60 years old; they don't mature until at least 10 to 30 years old, and then they reproduce every one to five years

Status in NY:

Federally endangered (NY Bight, Chesapeake Bay, Carolina & South Atlantic populations) since 2012; the Hudson is a core spawning and nursery river, but the population remains far below historic levels listed (2012) as endangered for the New York Bight, Chesapeake Bay, Carolina, and South Atlantic distinct population segments

Fishes

Silver Chub (*Macrhybopsis storeriana*)

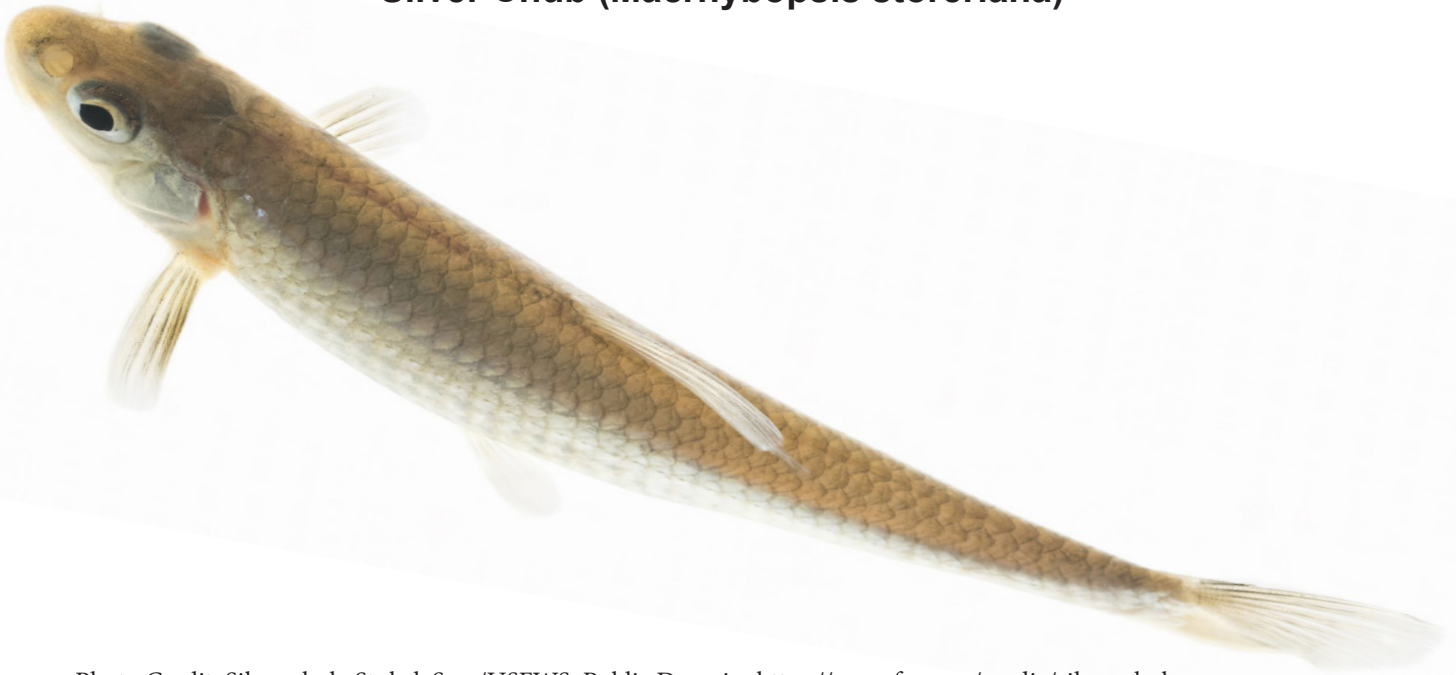


Photo Credit: Silver chub, Stukel, Sam/USFWS, Public Domain, <https://www.fws.gov/media/silver-chub>

Size:

A larger minnow species, typically 6–9 in, up to about 9.1 in maximum the maximum size of a silver chub is 231 mm (9.1 in) in total length

Habitat:

Deep, clean waters of large lakes and low-gradient rivers, favoring sand/fine gravel pools but moving into riffles to avoid silt silver chubs are typically found in deep waters of low-gradient streams and rivers as well as in lakes, preferring pools with clean sand and fine gravel substrates but moving into riffles to avoid silt

Diet:

Juveniles eat small crustaceans and midge larvae/pupae; adults shift to mayfly larvae, small mollusks, and crustaceans during the first year, silver chub consume small crustaceans and midge larvae and pupae, while adults eat mayfly larvae, small mollusks, and crustaceans

Life History:

Short-lived — males live about 3 years, females about 4; most reach sexual maturity by age 1; spawns over rock/gravel in early summer life longevity for male silver chubs is three years and for females is four years, and Kinney found most 1-year old fish to be sexually mature

Status in NY:

State endangered; considered extirpated from New York since the 1950s, with no records along NY shores since 1928 this species has been in decline in New York since about 1953 and is considered extirpated from the state

Fishes

Gilt Darter (*Percina evides*)



Photo Credit: <https://ncfishes.com/north-carolina-has-a-new-species-of-darter-sort-of/>

Size:

Small darter, up to about 3–3.5 in the gilt darter is a small fish that reaches three inches in length

Habitat:

Clear, fast-flowing gravel/rubble riffles in large rivers with algae beds; in NY, found only in the Allegheny River it prefers clear, fast-flowing gravel or rubble riffles where algae and other aquatic vegetation beds occur, and in New York State, this darter is only found in the Allegheny River

Diet:

Assumed to feed mainly on aquatic insects, though no formal diet studies exist no food studies have been done of this species, but it is assumed that aquatic insects are important food items

Life History:

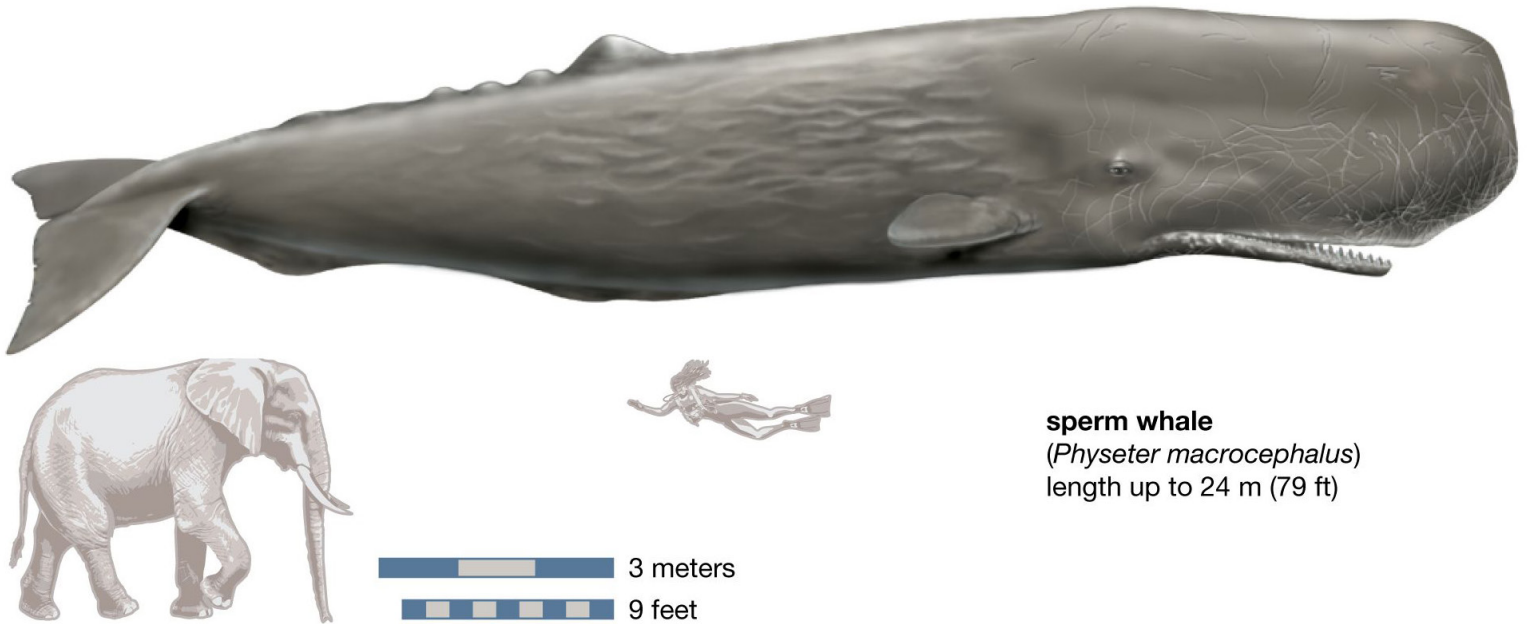
Poorly documented; brightly colored breeding males appear in spring riffles of large rivers to spawn, but details of the full life cycle remain largely unknown few facts are known about the life history of this darter; brightly colored males have been observed in riffle areas of large rivers in the spring

Status in NY:

State endangered; now found only in the Allegheny River in NY, where siltation has driven recent declines despite active stocking/restoration efforts in New York State, this darter is only found in the Allegheny River, and recent declines in New York's Allegheny River populations are being attributed to siltation of the river

Mammals

Sperm Whale (*Physeter catodon*)



sperm whale
(*Physeter macrocephalus*)
length up to 24 m (79 ft)

© Encyclopædia Britannica, Inc

Photo Credit: <https://www.britannica.com/animal/sperm-whale>

Size:

Largest toothed whale; females ~35 ft/15 tons, males up to ~52 ft/45 tons females may weigh about 15 tons and be 35 feet in length, while males may weigh about 45 tons and reach 52 feet

Habitat:

Deep oceanic waters worldwide, favoring continental shelf edges, canyons, and seamounts; not a coastal species common offshore near continental slopes, canyons, and seamounts

Diet:

Deep-diving squid specialist, feeding mainly on cephalopods the most likely impacts to sperm whales involve changes in marine food webs, especially those causing reductions in squid, their main prey

Life History:

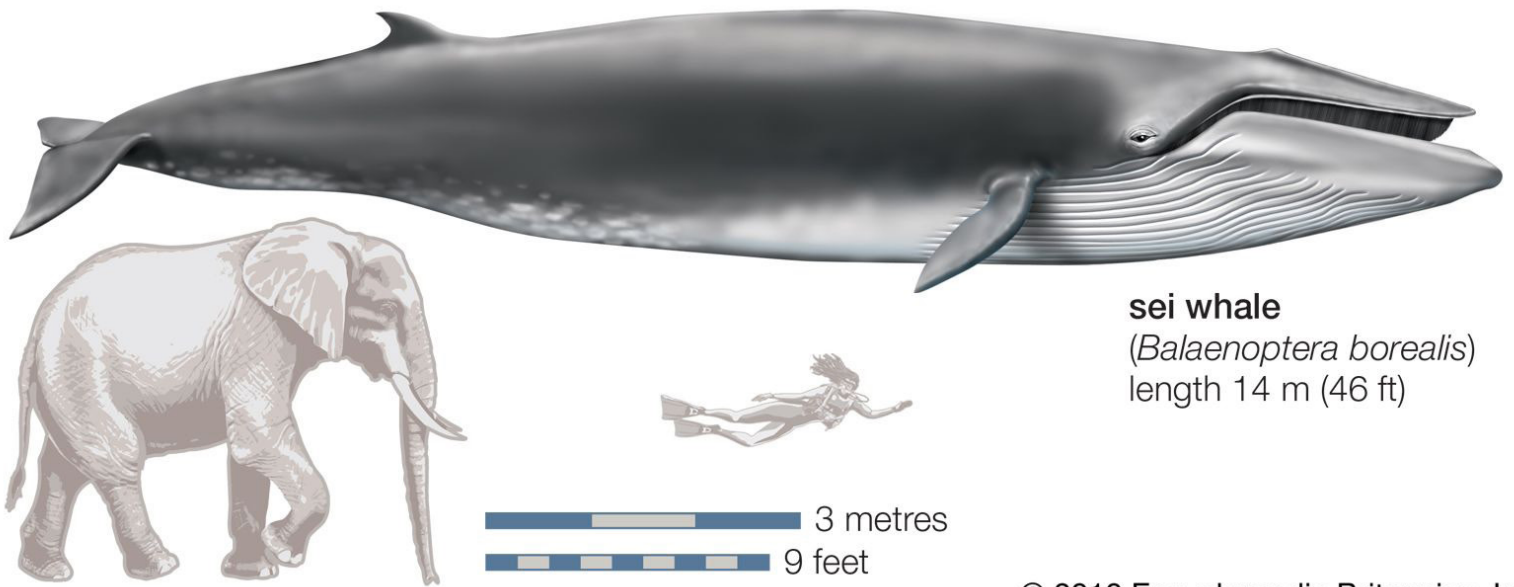
Long-lived (decades); males range widely and can be aggressive when threatened; not tightly migratory but shifts poleward in summer sperm whales do not undertake predictable seasonal migrations, although there is a general trend among animals at midlatitudes to move poleward during summer and return during winter

Status in NY:

Federally endangered (ESA); population more stable globally than other great whales due to lighter historical hunting pressure, though squid-prey shifts from climate change are an emerging concern

Mammals

Sei Whale (*Balaenoptera borealis*)



sei whale
(*Balaenoptera borealis*)
length 14 m (46 ft)

© 2010 Encyclopædia Britannica, Inc.

Photo Credit: <https://www.britannica.com/animal/sei-whale>

Size:

Third-largest baleen whale, 40–60 ft, up to about 50 tons; females larger than males the sei whale is the third largest baleen whale, with length ranging from 40 to 60 feet and weight up to 50 tons, and females larger than males

Habitat:

Temperate to subpolar waters offshore along continental slopes and shelf edges; moves poleward to feed, equatorward to breed a pelagic rorqual found mainly in temperate to subpolar waters, offshore along continental slopes and shelf edges, moving poleward in spring-summer to feed and equatorward in winter to breed

Diet:

Zooplankton — copepods and krill — plus some small fish and squid their diet primarily consists of zooplankton (copepods and krill); however, small fish and squid can also be part of their diet

Life History:

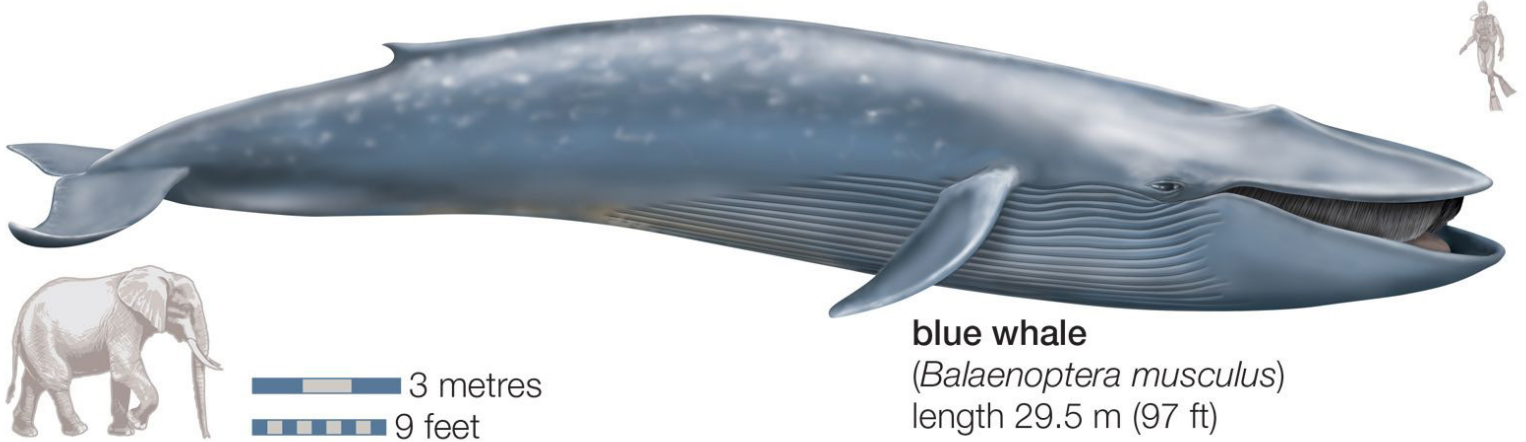
Breeds in brief winter aggregations with no lasting pair bonds; gestation ~10–12 months, usually one calf, calving every 2–3 years sei whales form brief winter breeding aggregations with no lasting pair bonds; gestation is about 10-12 months, typically one calf, with a calving interval of 2-3 years

Status in NY:

Federally endangered (ESA) and depleted under the MMPA; population size in U.S. waters unknown the sei whale is listed as endangered under the Endangered Species Act, also designated as depleted under the Marine Mammal Protection Act, with the total population in all U.S. waters unknown

Mammals

Blue Whale (*Balaenoptera musculus*)



© 2010 Encyclopædia Britannica, Inc.

Photo Credit: <https://www.britannica.com/animal/blue-whale>

Size:

Largest animal ever known to have lived; up to nearly 100 ft (record ~29.9 m in females)
record size up to 29.9 m long in females, with typical adults ~24-27 m

Habitat:

Circumglobal, oceanic; migrates between tropical/subtropical breeding grounds and polar/temperate feeding grounds circumglobal and oceanic, found in all major oceans, migrating seasonally from tropical and subtropical breeding areas to temperate and polar feeding grounds

Diet:

Filter-feeds almost exclusively on krill it is a baleen whale (rorqual) that filter-feeds primarily on krill

Life History:

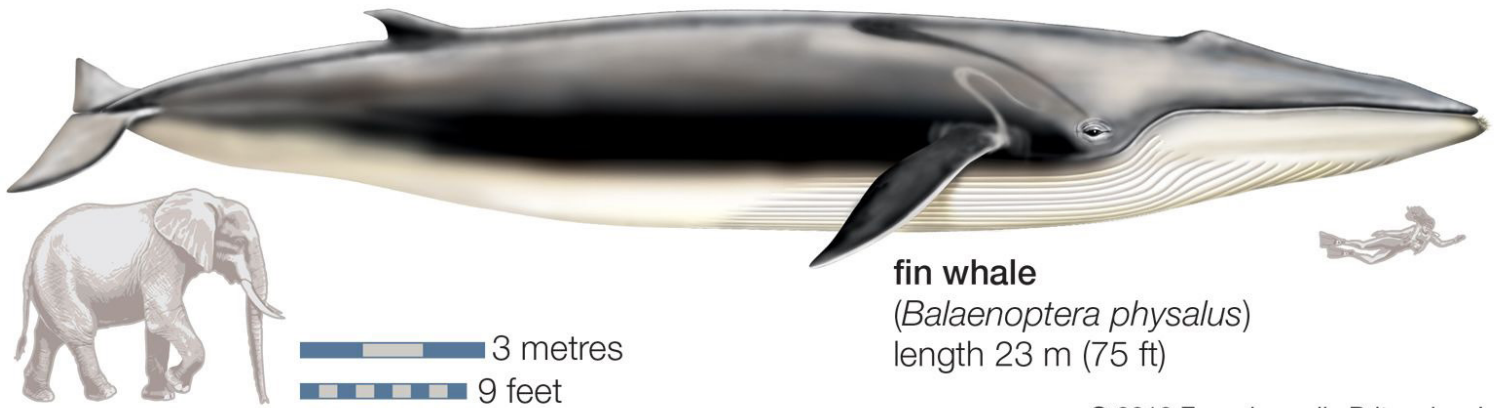
Long-lived, roughly 80–90 years, estimated via earplug growth layers blue whales' average lifespan is estimated at around 80 to 90 years, with age estimated by counting layers of wax-like earplugs

Status in NY:

Federally endangered (ESA) and depleted (MMPA); still recovering slowly from 20th-century whaling that killed an estimated 350,000 the estimated total kill of blue whales in the 20th century was 350,000 animals

Mammals

Finback Whale (*Balaenoptera physalus*)



© 2010 Encyclopædia Britannica, Inc.

Photo Credit: <https://www.britannica.com/animal/fin-whale>

Size:

Second-largest whale species, 75–85 ft, 40–80 tons their length ranges from 75 to 85 feet and weight ranges from 40 to 80 tons

Habitat:

Worldwide oceans; migratory between polar feeding and lower-latitude wintering areas found throughout the world's oceans

Diet:

Filter-feeds on krill, with regional variation in prey species krill (euphausiids), where abundant krill dominates the diet

Life History:

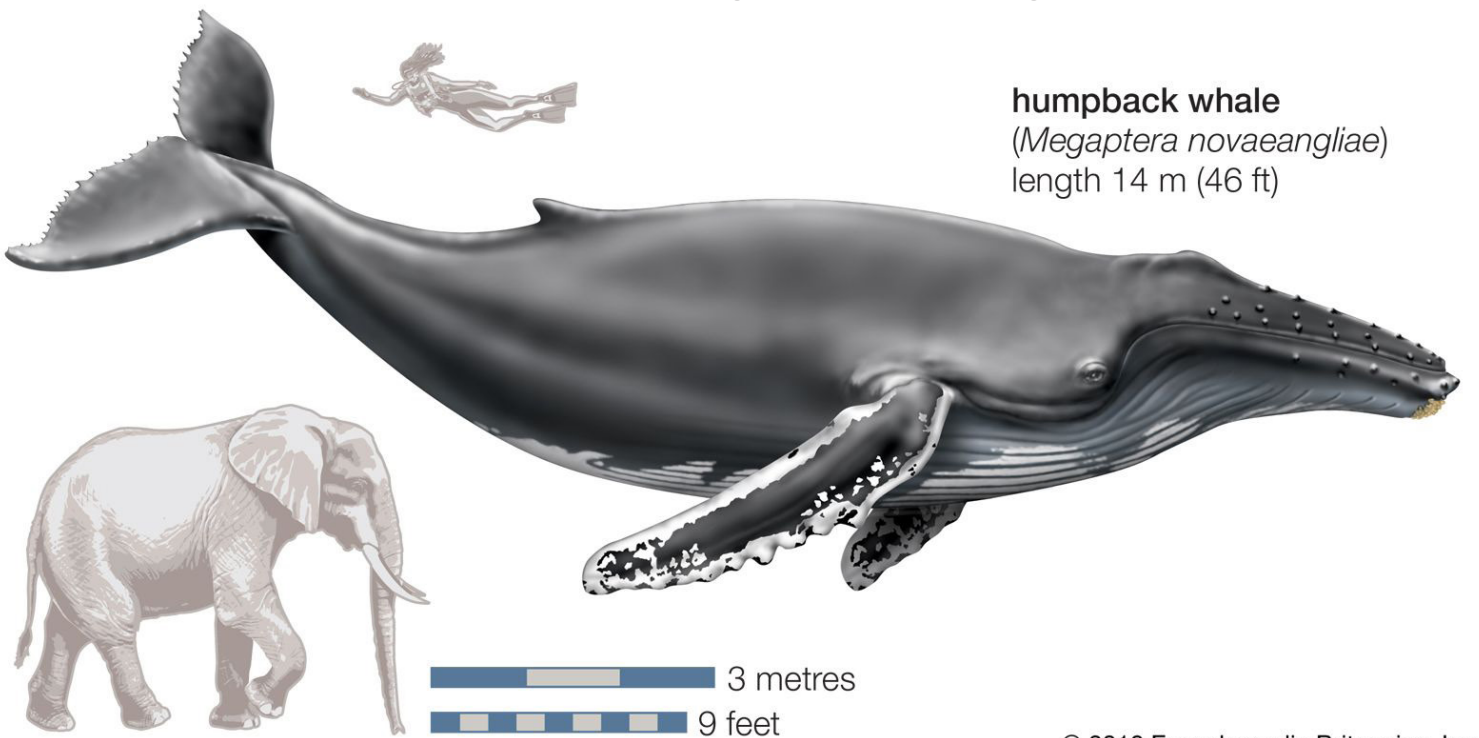
Long-lived (80–90 years); matures around 6–10 years, gestation 11–12 months, calves every 2–3 years maturity is around 6-10 years, gestation 11-12 months, with calving every 2-3 years

Status in NY:

Federally endangered (ESA) and depleted (MMPA); still recovering from historic whaling, threatened by ship strikes and entanglement it is listed as endangered throughout its range under the Endangered Species Act and depleted throughout its range under the Marine Mammal Protection Act

Mammals

Humpback Whale (*Megaptera novaeangliae*)



© 2010 Encyclopædia Britannica, Inc.

Photo Credit: <https://www.britannica.com/animal/humpback-whale>

Size:

Medium-large baleen whale, roughly 39–52 ft, about 36 tons humpbacks usually range from 12 to 16 metres (39 to 52 feet) in length and weigh approximately 36 metric tons

Habitat:

Coastal to open ocean worldwide; migrates between polar/subpolar summer feeding grounds and tropical winter breeding grounds, sometimes entering harbors and rivers humpback whales live along the coasts of all oceans, occasionally swimming close to shore, even into harbours and rivers, undertaking long migrations between polar feeding grounds in summer and tropical or subtropical breeding grounds in winter

Diet:

Filter-feeds on krill and small schooling fish, often using bubble-net feeding techniques (well documented behavior)

Life History:

Long migrations between feeding and breeding grounds each year; known for complex songs and cooperative feeding behavior

Status in NY:

Federally endangered (ESA) since 1970 for the species as a whole, though several distinct population segments have since been reclassified as threatened or delisted as they recover the United States listed all humpback whales as endangered under the Endangered Species Conservation Act in 1970 and then under the Endangered Species Act in 1973

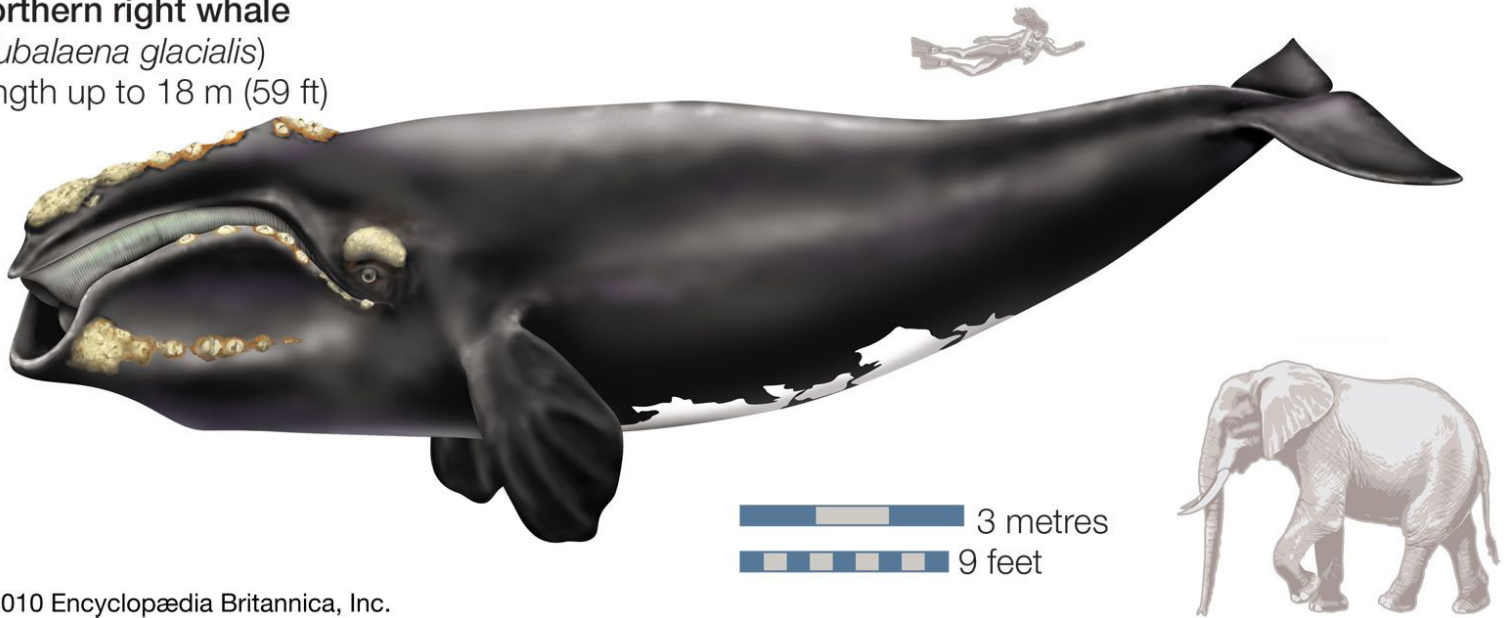
Mammals

Right Whale (*Eubalaena glacialis*)

northern right whale

(*Eubalaena glacialis*)

length up to 18 m (59 ft)



© 2010 Encyclopædia Britannica, Inc.

Photo Credit: <https://www.britannica.com/animal/right-whale>

Size:

Robust, stocky whale, 45–55 ft, up to about 70 tons adult whales measure between 45 and 55 feet long and can weigh up to 70 tons

Habitat:

Coastlines and large bays, plus open sea; a key NY-area habitat is off the coast during migration, needing narrow warm-water ranges (13–15°C) for calving right whales prefer coastlines and large bays but also spend time in the open sea, requiring temperatures of 13 to 15 degrees Celsius for successful calving

Diet:

Skims plankton — mainly copepods — by swimming with mouth open through dense patches, unlike lunge-feeding rorquals right whales are skimmers, feeding by continuously filtering food through their baleen while moving, mouth open, through patches of plankton

Life History:

Long-lived (at least ~50 years estimated); mates and calves in warm southern waters in winter, feeds in northern waters the rest of the year; very slow-reproducing while there is some uncertainty about this whale's life span, on average it is believed to be at least 50 years

Status in NY:

Critically endangered — one of the most endangered large whales in the world; population estimated at roughly 380 animals with no sign of strong recovery, threatened mainly by vessel strikes and fishing gear entanglement the most recent North Atlantic right whale population abundance estimate is approximately 380 whales, an increase of approximately 20 individuals since 2020

REPTILES

Southeastern Mud Turtle (*Kinosternon subrubrum*)



Photo Credit: https://michaelcpowell.com/wp-content/uploads/2024/05/turtle1_16may24_blog.jpg

Size:

Small, 3–5 in (7–10 cm) carapace length size 3-5 inches (7-10 cm) in length

Habitat:

Slow-moving/standing shallow water with soft mud bottoms and abundant aquatic vegetation — ponds, marshes, and brackish wetlands; in NY, restricted to Long Island and Staten Island it inhabits a variety of wetland habitats including ponds and freshwater and brackish marshes, as well as slow-moving streams with a muddy bottom and emergent aquatic vegetation

Diet:

Omnivorous — snails, insects, crustaceans, carrion, and aquatic vegetation (typical for the species)

Life History:

Females mature around 6–8 years; eggs laid in upland sandy/loamy soil, hatchlings often overwinter in the nest and emerge in spring hatchlings in South Carolina overwinter in the nest and emerge primarily March to May

Status in NY:

State endangered; New York sits at the extreme northern edge of the species' range, with populations confined to a few downstate sites New York is at the extreme northernmost edge of the distribution, and populations occur only on Long Island, Staten Island

REPTILES

Bog Turtle (*Glyptemys muhlenbergii*)



Photo Credit: Bog turtle, Lisa Brouellette/USFWS, Public Domain, <https://www.fws.gov/media/bog-turtle-14>

Size:

North America's smallest turtle, up to about 4.5 in (11.4 cm) the bog turtle is North America's smallest turtle, growing only to 4.5 inches in length

Habitat:

Open, groundwater-fed sedge meadows, fens, and bogs with soft muddy bottoms and a mix of wet/dry microhabitats; avoids shaded, overgrown wetlands bog turtles occupy shallow wetland habitats that tend to be open-canopy herbaceous sedge bogs, fens or wet meadows, with microhabitats characterized by soft muddy bottoms and low-growing grasses and sedges

Diet:

Omnivorous: insects and larvae, snails, berries, seeds, plants, and small vertebrates bog turtles are omnivorous and feed on insects and insect larvae, snails, berries, seeds, plants, and various vertebrates

Life History:

Long-lived — oldest documented individual reached 62 years; requires stable, unshaded wetland habitat throughout its life cycle the oldest documented bog turtle was 62 years old

Status in NY:

State endangered and federally threatened (northern population); one of the most critically imperiled turtles in North America, with New York populations concentrated in a handful of southeastern and central-NY metapopulations the smallest turtle in New York and one of the most critically imperiled in North America; the northern population of bog turtle is federally listed as threatened

REPTILES

Atlantic Hawksbill Sea Turtle (*Eretmochelys imbricata*)



Photo Credit: hawksbill sea turtle , Caroline S. Rogers/NOAA, Public Domain, <https://www.fws.gov/media/hawksbill-sea-turtle>

Size:

Small-to-medium sea turtle; nesting females average about 34 in (87 cm) carapace length and 176 lb (80 kg) nesting females average a length of 87 centimeters in curved carapace length and weigh 80 kilograms

Habitat:

Coral reefs, rocky areas, shallow coastal waters, lagoons, and narrow creeks/passes, rarely deeper than 65 ft; rare in NY waters hawksbills frequent rocky areas, coral reefs, shallow coastal areas, lagoons or oceanic islands, and narrow creeks and passes, and are seldom seen in water deeper than 65 feet

Diet:

Narrow, hooked beak specialized for prying sponges and soft corals off reefs their narrow, pointed beaks allow them to prey selectively on soft-bodied animals like sponges and soft corals

Life History:

Long-lived (50–60 years); females nest at night roughly every 2–3 years, laying multiple clutches per season on tropical beaches life span 50-60 years

Status in NY:

State & federally endangered; global declines continue due to poaching for tortoiseshell and coral reef habitat loss; rarely recorded in NY waters

REPTILES

Kemp's Ridley Sea Turtle (*Lepidochelys kempii*)



Photo Credit: © Thane Wibbles <https://www.seaturtlestatus.org/articles/the-gulf-of-mexicos-only-endemic-sea-turtle>

Size:

Smallest sea turtle in the world; adults about 2 ft (24–30 in) long, up to ~100 lb the Kemp's ridley turtle is the smallest of the sea turtles, with adults reaching about 2 feet in length and weighing up to 100 pounds

Habitat:

Shallow bays, estuaries, and seagrass beds with muddy or sandy bottoms; juveniles range north into the Atlantic as far as Nova Scotia Kemp's ridleys are often found in estuaries, in particular in or near shallow seagrass habitats, rarely venturing into waters deeper than 160 feet

Diet:

Shallow-water benthic feeder, primarily on crabs, also shrimp, clams, jellyfish, and fish this turtle is a shallow water benthic feeder with a diet consisting primarily of crabs

Life History:

Only sea turtle that nests primarily during the day, mainly at Rancho Nuevo, Mexico; females mature in 10–15 years and can lay up to 120 eggs per nest, up to 3 times a season females reach sexual maturity in 10-15 years, may lay as many as 120 eggs in a nest, and may nest up to 3 times during the nesting season

Status in NY:

State & federally endangered — the rarest and most endangered sea turtle species in the world *L. kempii* is the rarest species of sea turtle and is the world's most endangered species of sea turtle as well as the smallest

REPTILES

Leatherback Sea Turtle (*Dermochelys coriacea*)



Photo Credit: (L) <https://www.inaturalist.org/photos/449029171> (R) <https://www.inaturalist.org/taxa/39677-Dermochelys-coriacea>

Size:

Largest living turtle, 4–8 ft long and 500–2,000+ lb the adult leatherback can reach 4 to 8 feet in length and 500 to 2000 pounds in weight

Habitat:

Open ocean and deep pelagic waters; highly migratory and tolerant of cold temperate waters (regularly seen off the NY/New England coast) the leatherback sea turtle makes regular and routine migrations to New England and the Canadian Maritime Provinces in search of its favored invertebrate food items, oceanic jellyfish

Diet:

Feeds almost exclusively on jellyfish and other soft-bodied gelatinous prey, plus some squid leatherbacks primarily eat soft-bodied, open-ocean prey like jellyfish, but they will also consume squid, crustaceans, fish, and seaweed

Life History:

Highly migratory, swimming over 10,000 miles a year between nesting and foraging grounds; deepest diver of all sea turtles, reaching nearly 4,000 ft leatherbacks are highly migratory, some swimming over 10,000 miles a year between nesting and foraging grounds, and are accomplished divers with the deepest recorded dive reaching nearly 4,000 feet

Status in NY:

State & federally endangered; global population trend is decreasing despite some regional recovery signs, threatened by fishing gear entanglement, plastic ingestion, and habitat loss the leatherback has been listed as vulnerable since 2013, though the global population is predicted to rise, but faces threats like mistaking plastic for food and entanglement in fishing nets

FISHES

Lake Sturgeon (*Acipenser fulvescens*)



Photo Credit: Lake sturgeon, Ryan Hagerty/USFWS, Public Domain, <https://www.fws.gov/media/lake-sturgeon>

Size:

Large — commonly reaches about 6 ft and 90 kg (~200 lb), among the largest and longest-lived freshwater fish it is common for the lake sturgeon to reach a length of about 1.8 meters and have a mass, on average, of 90 kilograms

Habitat:

Bottom-dweller of large lakes and rivers; spawns in rocky, swift-flowing river sections with gravel/cobble substrate; in NY, found in the St. Lawrence River, Great Lakes, Lake Champlain, and Oneida Lake lake sturgeon are benthic fish that occupy the bottom habitats of large freshwater lake and river ecosystems, migrating into large rivers to lay eggs on rocky substrates in swift water

Diet:

Benthic feeder using barbels to locate invertebrates, mollusks, crustaceans, and small fish on lake/river bottoms (typical sturgeon diet)

Life History:

Extremely long-lived and slow to mature, with some individuals reaching over 100 years; spawns in early summer, migrating to shore/river shallows over pebble substrate a lake sturgeon was caught that was estimated to be 154 years old, and in early summer lake sturgeons migrate toward the shores of freshwater lakes for spawning purposes

Status in NY:

State threatened since 1983 (fishery closed in 1976); reduced from historic range due to overfishing, dams, and habitat loss, with active NY restoration/stocking efforts including in the Genesee River the NYSDEC closed the sturgeon fishery in 1976 and listed the species as "Threatened" in 1983

FISHES

Mooney (*Hiodon tergisus*)



Photo Credit: *Hiodon tergisus*, Patterson, Matthew/USFWS, Public Domain, <https://www.fws.gov/media/hiodon-tergisus-1>

Size:

Medium, usually 11–15 in and 1–2 lb, up to about 18 in maximum the mooneye is a medium-sized fish, usually reaching 11-15 inches in length and 1-2 pounds in weight

Habitat:

Clear-water lakes, rivers, and low-gradient streams; intolerant of turbidity; in NY found in the Lake Erie, Lake Ontario, St. Lawrence, and Lake Champlain drainages the Mooneye prefers clear water habitat of large streams, rivers, and lakes, and is found in the Lake Erie, Lake Ontario, the St. Lawrence River, and the Lake Champlain drainage basins

Diet:

Surface-oriented feeder on aquatic/terrestrial insects, plus crustaceans, mollusks, and small fish; juveniles feed more on the bottom on caddisfly, mayfly, and midge larvae as surface feeders, they eat primarily aquatic and terrestrial insects, but they are also known to eat crustaceans, mollusks, and small fish; young mooneyes feed in more benthic regions on immature caddisflies, mayflies, and midges

Life History:

Spring spawner (March–May), migrating into rivers to lay eggs over rocks in swift water; males mature around 3 years, females 4–5; lives up to about 8–11 years males usually reach sexual maturity in 3 years, while females are often not mature until 5 years of age, and the mooneye migrates into medium to large rivers from March through May to deposit eggs over rocks in swift water

Status in NY:

State threatened; declining across NY, with the species thought extirpated from the NY portion of Lake Ontario and steep declines noted in the Champlain and Erie watersheds it is thought to be extirpated from New York portions of Lake Ontario, with steep declines also noted in the Champlain and Erie watersheds

FISHES

Longnose Sucker (*Catostomus catostomus*)



Photo Credit: By National Oceanic and Atmospheric Administration, Great Lakes Environmental Research Laboratory, archive available at GLERL PhotoGallery - Fish - 1074 at the Wayback Machine (archived 25 October 2008), Public Domain, <https://commons.wikimedia.org/w/index.php?curid=7375376>

Size:

Medium-large; typically to about 22 in, up to 25 in and 7.3 lb maximum they are up to 64 cm (25 in) in total length and weigh up to 3.3 kg (7.3 lb)

Habitat:

Cold, clear lakes, rivers, and streams; sensitive to siltation, turbidity, and warming water; found in about 13 of NY's 18 watersheds, most stable in southeastern NY threats to the Longnose Sucker include habitat erosion and sedimentation, turbidity, and pollution, and they are native to 13 of 18 watersheds in New York

Diet:

Bottom feeder on benthic invertebrates; does not build a nest, laying adhesive eggs directly onto gravel longnose suckers are bottom feeders, preying primarily on benthic invertebrates

Life History:

Spawns over gravel with no nest-building; adaptable to a range of cold-water systems, though sensitive to habitat degradation and warming temperatures (general species biology)

Status in NY:

DEC assessment recommends state threatened status due to declining range; possibly extirpated from the Ontario and Oswegatchie watersheds since 1982, most stable in southeastern NY it is recommended that the Longnose Sucker be listed as Threatened due to their decreased distribution, with no records in the Ontario or Oswegatchie watersheds since 1982

FISHES

Bigeye Chub (*Hybopsis amblops*)



Photo Credit: By Noel M. Burkhead - U.S. Geological Survey - <https://nas.er.usgs.gov/queries/factsheet.aspx?SpeciesID=547>, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=64030468>

Size:

Small, about 2.5–3.5 in average length bigeye chub average length ranges from 2.5 – 3 inches

Habitat:

Small to moderate clear-water streams with clean sand, gravel, or rock bottoms, near riffles with light current; highly intolerant of siltation; found in NY's Allegheny, Erie-Niagara, Ontario, and Oswego watersheds the Bigeye Chub is found in small to moderate size, clear-water streams with clean sand, gravel, or rock bottoms, abundant in well vegetated areas with minimum current near riffles

Diet:

Feeds on microcrustaceans, midge larvae, and terrestrial insects they feed on microcrustaceans, midge larvae and terrestrial insects

Life History:

Poorly studied, but likely similar to other chub species; most individuals mature within one year in the southern part of the range very little is known of the life history of this species, but it is likely similar to other chubs, and most individuals mature in one year in the southern portion of their range

Status in NY:

DEC assessment recommends state threatened status; population has declined significantly in the Allegheny watershed and disappeared from the Ontario/Oswego watersheds since the late 1970s it is recommended that the Bigeye Chub be listed as Threatened due to their rarity and the decreases in abundance and distribution seen across their New York range

FISHES

Tonguetied Minnow (*Exoglossum laurae*)



Photo Credit: <https://ncfishes.com/freshwater-fishes-of-north-carolina/exoglossum-laurae/>

Size:

Small, about 3–5 in long the fish ranges from three to five inches long

Habitat:

Small, cool, silt-free creeks and medium streams with moderate gradient; found at deeper pool/run edges over rubble, gravel, and boulder, often near undercut, forested banks; in NY restricted to the Allegheny and Genesee watersheds the Tonguetied Minnow inhabits small creeks and medium-sized streams of moderate gradient with cool, silt-free water, typically found at the deeper edges of pools and runs over rubble, gravel, and boulder substrates

Diet:

Assumed to feed on benthic invertebrates typical of cool, clean streams (specific diet studies limited); closely related Cutlip Minnow is a nest-builder and predator of other fish eggs

Life History:

Males build and actively defend nests; spawning occurs over an extended period with minnows at various developmental stages found in nests these nests are actively defended by males, and mating likely occurs over an extended period as minnow spawn in various stages of development have been observed in the nests

Status in NY:

State threatened; limited, fragmented NY distribution in the Allegheny and Genesee watersheds, with continued range loss and increasing rarity, especially in the Genesee listed as Threatened by New York State: likely to become Endangered in the foreseeable future, with decreases in abundance and large range loss in the Allegheny watershed since the mid-1900s

FISHES

Banded Sunfish (*Enneacanthus obesus*)



Photo Credit: <https://www.floridamuseum.ufl.edu/discover-fish/florida-fishes-gallery/banded-sunfish/>

Size:

Small — smallest sunfish in NY, averaging about 2 in, up to 3 in the banded sunfish is the smallest species of sunfish in New York State, averaging two inches in length

Habitat:

Darkly stained, sluggish, vegetated waters — ponds, lakes, stream backwaters, and bogs over sand/mud; in NY restricted to nine interconnected waters on eastern Long Island Banded Sunfish inhabit darkly stained and sluggish waterbodies including ponds, lakes, backwaters of streams and rivers, and bogs with abundant vegetation and substrates of sand and mud; the only NY populations are in nine interconnected waters of eastern Long Island

Diet:

Assumed similar to other sunfishes — aquatic insects and other small invertebrates it is assumed that this fish has similar habits to other sunfishes, with adults feeding on aquatic insects, as well as other small [invertebrates]

Life History:

Males build and guard small nests in aquatic vegetation; spawns spring through summer, with buoyant, undefended eggs males build small nests in aquatic vegetation, and spawning occurs April through July, with the buoyant eggs drifting from the nest and not being guarded

Status in NY:

State threatened; restricted to nine interconnected Long Island waterbodies, making it vulnerable to any single environmental catastrophe because the only New York populations of the banded sunfish are located in nine interconnected waters of eastern Long Island, it is considered vulnerable to environmental catastrophes and listed as threatened

FISHES

Northern Sunfish (formerly Longear Sunfish) (*Lepomis peltastes*)



Photo Credit: iNaturalist Photo 396173256, © Quinn, uploaded by © Quinn <https://www.inaturalist.org/photos/396173256>

Size:

Small, thin, deep-bodied; averages 4–4.5 in the northern sunfish is a small, thin, deep-bodied fish that averages 4-4.5 inches in length

Habitat:

Clear, low-gradient streams and lakes with submerged aquatic vegetation and a gravelly-to-sandy bottom; in NY now essentially limited to a stretch of Tonawanda Creek and the adjacent Erie Canal it is found in clear, low gradient streams and lakes with submerged aquatic vegetation and a gravelly to sandy bottom, native to 3 of 18 NY watersheds, with the only remaining sustained population in a 6 km segment of Tonawanda Creek

Diet:

Typical centrarchid diet of aquatic insects and small invertebrates (specific NY diet data limited)

Life History:

Nest-building species (like other *Lepomis*); vulnerable to hybridization and competition with more aggressive introduced sunfish species (Green Sunfish, Round Goby) males construct and defend nests, but the Northern Sunfish faces competition and predation from invasive Green Sunfish and Round Goby in its remaining NY habitat

Status in NY:

State threatened; likely extirpated from western NY as of the most recent surveys (no Northern Sunfish captured since 2009–2014 despite stocking efforts) we conclude that the Northern Sunfish is extirpated in western New York state, following irregular captures through 2009 and stocking/monitoring through 2018 with no recaptures after 2014

FISHES

Round Whitefish (*Prosopium cylindraceum*)



Photo Credit: © falcontennis <https://www.inaturalist.org/photos/59432435>

Size:

Medium, averaging 8–12 in, occasionally to 22 in the round whitefish is a medium-sized fish, averaging 8-12 inches in length and occasionally reaching 22 inches

Habitat:

Cool, clear lakes and large rivers over a range of depths; spawns over gravel/rocky shoals in shallow water; in NY restricted to a handful of Adirondack lakes and ponds found in cool, clear waters of lakes and large rivers over a wide range of depths, with round whitefish presently known to inhabit only six Adirondack water bodies

Diet:

Bottom feeder, primarily on zooplankton and benthic invertebrates primarily consumes zooplankton and benthic invertebrates

Life History:

Fall spawner (Nov–Dec) over gravel shoals; eggs hatch after about 140 days; matures around age 3–4 at roughly 12 in round whitefish spawn in the fall over gravel shoals, eggs hatch approximately 140 days later, and both sexes become mature at about 12 inches in length at age 3-4

Status in NY:

State threatened (recently downlisted from endangered as populations respond to stocking); once common throughout the Adirondacks, now confirmed in only about six water bodies DEC has announced that Round Whitefish may soon be taken off New York's list of endangered species and reclassified as threatened, following successful stocking recovery in several Adirondack lakes

FISHES

Comely Shiner (*Notropis amoenus*)



Photo Credit: <https://www.inaturalist.org/taxa/107203-Notropis-amoenus>

Size:

Small, slender minnow up to about 4.3 in (11 cm), commonly around 2.5 in max length 11.0 cm TL; common length 6.3 cm TL

Habitat:

Runs and flowing pools over sand, gravel, or rubble in creeks and medium-to-large rivers, generally 2+ ft deep, including pools and backwaters of swift streams adults occur in runs and flowing pools over sand, gravel or rubble, of creeks and medium to large rivers, and the comely shiner prefers streams and other bodies of water 2 or more feet deep

Diet:

Specific diet undocumented for NY; related shiners typically feed on small aquatic insects, algae, and zooplankton

Life History:

Fall spawner (Nov–Dec) over gravel shoals; eggs hatch after about 140 days; matures around age 3–4 at roughly 12 in round whitefish spawn in the fall over gravel shoals, eggs hatch approximately 140 days later, and both sexes become mature at about 12 inches in length at age 3-4

Status in NY:

State threatened; historic range of up to 92 NY waterbodies has shrunk to just 10 waterbodies with records since 2003, with likely extirpation from the Chemung watershed historically found in up to 92 waterbodies across the state, there are only 23 records in 10 waterbodies since 2003, and it is recommended that the Comely Shiner be listed as Threatened due to significant range decline

FISHES

Ironcolor Shiner (*Notropis chalybaeus*)



Photo Credit: <https://www.inaturalist.org/photos/259070464>

Size:

Small, up to 2.5 in a small fish that only reaches 2.5 inches in length

Habitat:

Warm, low-gradient, clear streams and swamps with mud/sand substrate, tannin-stained water down to pH 4.2, favoring deep pools and slow runs with vegetation; in NY, only known from the Bashakill Marsh Ironcolor Shiners inhabit warm, low gradient, clear streams and swamps with mud and/or sand substrate, and may occur in tannin-stained waters at a pH as low as 4.2

Diet:

Small aquatic and terrestrial insects they feed on small aquatic and terrestrial insects, and other [invertebrates]

Life History:

Spawns by broadcasting eggs into open water during daylight, males chasing females in slack-current areas; lives about 3 years, matures at 1 year Ironcolor Shiners live to about 3 years old and become sexually mature at 1 year old; during daylight hours, males chase females in areas of little or no current and eggs are broadcast into open water

Status in NY:

State threatened; New York sits at the edge of the species' range, with only a single known population remaining in the Bashakill Marsh — highly vulnerable to a single catastrophic event because only a single population is found in New York State, the ironcolor shiner is very vulnerable [to habitat loss], with the Bashakill Marsh as its only known NY location

FISHES

Swallowtail Shiner (*Notropis procne*)



Photo Credit: © sercfisheries <https://www.inaturalist.org/photos/216195689>

Size:

Small, about 1.6–3.1 in it has a slender and long body of about 40–55 millimetres

Habitat:

Upland streams and small rivers with clean gravel, occasionally lakes; spawns in riffles 4–12 in deep; tolerant of turbidity/sandy substrate but avoids deep pools and rapids
Swallowtail Shiner are typically found in upland streams, small rivers, and occasionally in lakes; this species is tolerant of turbidity and sandy substrates, but avoids deep pools and swift rapids

Diet:

Diet not well documented in NY; typical minnow diet of small invertebrates and algae (general species biology)

Life History:

Short-lived, 2–3 years, some maturing at 1 year; spawns late spring to early summer this species lives 2-3 years, some maturing at 1 year, with spawning occurring in late spring and early summer

Status in NY:

State threatened; historic range of up to 50 NY waterbodies has shrunk to 26 records in 15 waterbodies since 2003, with possible competitive displacement by the invasive Mimic Shiner historically found in up to 50 waterbodies across the state, there are only 26 records in 15 waterbodies since 2003, and *Notropis volucellus* (Mimic Shiner) may be outcompeting Swallowtail Shiner

FISHES

Western Pirate Perch (*Aphredoderus sayanus*)



Photo Credit: © Dominic <https://www.inaturalist.org/photos/701175031>

Size:

Small-to-medium, up to about 5.5 in (14 cm) size: 14 cm

Habitat:

Clear, warm water with low current — bottomland lakes, overflow ponds, and quiet backwaters of low-gradient streams with dense vegetation and woody debris; in NY, native to bays/tributaries of Lakes Ontario and Erie pirate perch are found in clear warm water with low currents, congregating where there is dense vegetation, woody debris, root masses and undercut banks

Diet:

Not detailed for NY populations; pirate perch generally feed on small invertebrates in low-current habitats (general species biology)

Life History:

Reproductively unusual — spawns via an internal “transbranchial” process, with eggs and larvae developing in the female’s gill chamber before release (documented species-wide trait)

Status in NY:

State threatened; likely extirpated from the Erie-Niagara watershed (not recorded since 1928), persisting in low numbers in the Ontario watershed the Western Pirate Perch has not been recorded since 1928 and is likely extirpated from the [Erie-Niagara] watershed, while in the Ontario watershed there has been a combination of range loss and expansion

FISHES

Bluebreast Darter (*Etheostoma camurum*)



Photo Credit: ©Steven Wang <https://www.inaturalist.org/taxa/1556843-Nothonotus-camurus>

Size:

Small, rarely over 3 in the bluebreast darter is small in size, rarely reaching longer than three inches

Habitat:

Warm, clear-to-slightly-turbid small to medium rivers with moderate-to-fast current over coarse gravel, rubble, or boulders; in NY restricted to the Allegheny River and Oswayo Creek Bluebreast Darters prefer the warm, typically clear, or slightly turbid, small to medium rivers with moderate to fast-flowing currents and substrate of coarse gravel, rubble, or boulders

Diet:

Feeds mostly on very small larvae of aquatic insects food items for this species consist mostly of the very small larvae of aquatic insects

Life History:

Reaches about age 3; matures around age 1; spawns late spring to early summer (May–July), migrating upstream to spawn, with eggs hatching in 7–10 days Bluebreast Darters typically reach an age of 3 years, spawning takes place from late spring to early summer, and eggs deposited by females hatched within seven to 10 days

Status in NY:

State threatened (officially, per current DEC regulations); restricted to a single NY population in the Allegheny River/Oswayo Creek, highly sensitive to siltation and pollution there is a single population in New York that is in the Allegheny River and Oswayo Creek, and this species does not tolerate even moderate degrees of siltation

FISHES

Swamp Darter (*Etheostoma fusiforme*)



Photo Credit: © Kevin Metcalf <https://www.inaturalist.org/photos/479563773>

Size:

Small, up to about 2.3 in, most around 1.6 in this species can reach a length of 5.9 cm (2.3 in), though most are only about 4 cm (1.6 in)

Habitat:

Murky, sluggish ponds, lakes, and stream/river backwaters with mud/debris bottoms and abundant vegetation; tolerates wide temperature range, low pH, and low oxygen; in NY confined to the Peconic River area of eastern Long Island Swamp darters inhabit murky, sluggish waterbodies including ponds, lakes, and backwaters of streams and rivers, with mud and debris on the bottom and abundant aquatic vegetation, and can tolerate a wide range of temperatures as well as low pH and low oxygen

Diet:

Diet not detailed in NY sources; darters in this genus generally feed on small aquatic invertebrates such as midge larvae and microcrustaceans (general species biology)

Life History:

Life history not well studied in NY; general species biology suggests spring spawning typical of small darters (specific NY data limited)

Status in NY:

State threatened; range in NY extremely limited to the Peconic River and a few nearby Long Island ponds, but population appears stable within that restricted range in New York, its range is extremely limited, occurring in only a few ponds near to, and in the Peconic River in eastern Long Island

FISHES

Spotted Darter (*Nothonotus maculatus*)



Photo Credit: © Roger Dennison <https://www.inaturalist.org/observations/348553054>

Size:

Small, up to about 3.5 in, most around 2.2 in this species can reach a length of 9 centimetres (3.5 in) TL though most only reach about 5.5 centimetres (2.2 in)

Habitat:

Fast, rocky riffles in small-to-medium clear rivers with large rubble/boulder substrate; expert at hiding under rocks; in NY found only in French Creek in the extreme southwest the spotted darter prefers fast rocky riffles in small to medium-sized streams, and is easiest to locate in the fastest riffles, where it is expert at swimming back under rocks

Diet:

Diet not detailed in NY sources; riffle-dwelling darters generally feed on aquatic insect larvae (general species biology)

Life History:

Life history poorly documented in NY due to low abundance; eggs are laid on the undersides of stones in quiet water (general species biology) eggs are laid on undersides of stones in quiet water

Status in NY:

State threatened; NY's only population is in French Creek in the extreme southwest corner of the state, with population levels much lower in recent samples (1994, 2000) than in 1991–92 studies in New York State, it is only found in French Creek, in the extreme southwest part of the state, and population levels have been much lower based on samples in 1994 and 2000 than earlier studies indicated a healthy, self-supporting population