SECTION VIII

SPECIES PROFILES:

FISH, BIRDS, AND INVERTEBRATES
INTRODUCTION

The waters of the Hudson-Raritan Estuary are rich with a diversity of fish species. Some fish reside year-round within the Estuary while others spend only part of the year in area waters as they migrate to and from ocean waters and other estuaries.

Seasonal occurrence and distribution of fish in the Hudson-Raritan Estuary is related to life history patterns. Studies have identified over 145 species representing more than 50 families of resident and migratory fin fish. In addition, 81 species of fish have been recorded during sampling efforts conducted in the Jamaica Bay region, adjacent to the Estuary.

The Hudson-Raritan Estuary is a major spawning and nursery ground for many species of fish and shellfish. Studies have found close to two dozen species of fish in egg and larval stages in upper New York Bay alone. Most fish spawn in early spring and summer. During this time eggs and larvae are found throughout the Hudson River but are concentrated in particular areas according to species. Other studies have shown that the lower bay region serves as an important area for juvenile and young-of-the-year fish of many species.

Year-round residents, or fish that spawn and remain within the estuary for their entire life cycle, include the silverside, killifish or mummichog, white perch, and bay anchovy. They are important forage organisms for seasonally abundant carnivores and may attract other coastal species into the estuary.

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INTRODUCTION

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Selected species are identified using the following categories:

**Common and Scientific Names:** The common and scientific names used follow the 1980 AFS check list. Scientific names are used universally by scientists, while common names vary. Scientific names are italicized, with the first letter of the genus capitalized and the species name lower cased.

**Identification:** Included is a brief description of the species, focusing on characteristics that are obvious and easy to recognize. Descriptions generally begin with the head and progress to the tail. In addition, other distinctive characteristics are included such as color and special behaviors.

**Size:** Lengths and weights are at maximum recorded levels.

**Range:** The range is given in a north to south direction and is very general. Range is often useful for identifying species.

**Local Distribution:** Local distribution provides specific information on a species level of occurrence in the Hudson-Raritan Estuary.

**Habitat:** Lists the types of habitat they preferred including substrate type, water composition and depth. This information can be useful in identification, as many species are habitat specific.

**Spawning** Information on spawning is provided to help understand the life cycles of a particular species. Detailed information is not currently available on all species, therefore some species may have more detail than others.

**Feeding:** Explains how the species feed and includes a list of their preferred food items.

Definitions of unfamiliar terms included *Common Fishes of the Hudson-Raritan Estuary and Adjacent New York Bight* may be found in the glossary section of this curriculum guide.
# COMMON FISHES OF THE HUDSON-RARITAN ESTUARY

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**Family Synodontidae**

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**Family Belonidae**

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**Family Cyprinodontidae**

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Fundulus heteroclitus
Fundulus majalis

**Family Atherinidae**

Menidia menidia

* American Shad
* Atlantic menhaden

* Bay anchovy

Rainbow smelt

Inshore lizardfish

* Oyster Cracker

* Atlantic tomcod
Pollock

* Red hake

* Atlantic needlefish

* Sheepshead minnow

* Mummichog

* Striped mummichog

* Atlantic silverside
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Family Soleidae
  * Trinectes maculatus
    * Hogchoker

Family Tetradontidae
  * Sphoeroides maculatus
    * Northern puffer

NORTHERN PUFFER
*Sphoeroides maculatus*

Identification:

- Small mouth located at the tip of the snout.
- Mouth without true teeth. Jaw bones form cutting edges.
- Gill openings small and set oblique.
- Rough skin.
- Dorsal fin close to caudal peduncle.
- Dark olive green on top.
- Sides greenish yellow with 6 to 8 dark bands or blotches.
- Bottom white.
- Can inflate themselves with air or water and float at the surface.
- Commonly known as a blowfish.

Size:

Length to 14 in. (36 cm). Females usually larger than males of the same age.

Range:

Atlantic coast of the United States from Cape Cod to Florida, occasionally straying farther north.

Local Distribution:

Buffers become abundant in the Hudson-Raritan Estuary in mid May and remain until early fall when waters begin to cool. They migrate into deeper waters to spend the winter, where they lie on the bottom in a dormant state.

Habitat:

- An inshore fish.
- Found in depths up to 50 feet (15 m).
- Enter brackish water in various estuaries.
Spawning:

- Spawning takes place in New Jersey from mid May until June.
- A single female can contain up to 180,000 eggs.
- Eggs are round and adhere to each other or to anything they come in contact with when they sink.
- Hatching occurs in about 3 to 5 days.

Feeding:

- Voracious feeders.
- Diet consists of small crustaceans, especially crabs, shrimps, isopods, small mollusks, worms and sea urchins.
SUMMER FLOUNDER
Paralichthys dentatus

Identification:

- Large mouth with prominent teeth.
- Eyes on left side of head.
- A flat fish upon reaching the juvenile stage.
- Brown or olive on top with varied colored spots.
- Bottom white.
- Commonly known as a fluke

Size:

Length to 12-16 in. (30-40 cm) and weigh between 3/4-2 lbs. (1.3-1 kg); however, can grow up to 25 in. (94 cm) and 26 lbs. (12 kg).

Range:

Atlantic coast of the United States from Maine to North Carolina.

Local Distribution:

Summer flounder follow inshore-offshore migrations. They begin their residence in the Hudson-Raritan Estuary in April. They continue to move inshore through May and June and reach peak abundance in the Hudson-Raritan Estuary in July or August. As water temperatures begin to drop in early fall, summer flounder leave local bays and estuaries and start their offshore migration. By late fall all summer flounder reach their wintering grounds, in depths of 70 to 155 m. They remain there until spring when they begin their inshore migration.
Habitat:

- Migrate inshore in the summer.
- Frequent ocean waters, bays, and estuaries.
- Prefer sandy, muddy sand, mussel beds and clay bottoms.
- Winter months they migrate offshore to depths of 70 to 155 m.

Spawning:

- Spawning occurs from Southern New England to Cape Hatteras during their offshore migration in the autumn months.
- Maturation occurs during their third year of life.
- A 16 inch (40 cm) female produces 300,000 eggs while a 26 inch (65 cm) female produces 3.5 million eggs.
- Eggs are buoyant and drift towards shore:
- Hatching occurs in 2-6 days.
- Larvae resemble other fishes and have eyes symmetrically placed on either side of the head.
- Pelagic larvae go through a metamorphosis.
- Eyes migrate to the left side of the head.
- At this point they settle to the bottom.
- When they take up a benthic existence they migrate to nursery areas in estuaries.
- Remain in the estuary until they migrate with the adult population.
- Growth is rapid during warmer months.

Feeding:

- Voracious feeders.
- Depend on sight to feed.
- Feed only during daylight hours.
- Diet consists of worms, shrimps, squid, rock crabs, silversides, killifish, American sand lance, juvenile bluefish and weakfish.
ATLANTIC NEEDLEFISH
Strongylura marina

Identification:

- Bill-like mouth filled with prominent teeth.
- Long slender body.
- Caudal fin bluish.
- Side of head pale below the center of the eye.
- Green on top.
- White bottom.

Size:

Length to 2 ft. (61 cm).

Range:

Atlantic coast of the United States from Maine to Florida; Northern Gulf of Mexico south to Brazil.

Local Distribution:

Needlefish move into the Hudson-Raritan Estuary in early July as water temperatures rise and remain in the region until the middle of October.

Habitat:

- Ocean waters, bays and estuaries.
- Enters fresh water.

Spawning:

- Little is known about the spawning habits of this species.
- They possibly migrate up river mouths to spawn in protected waters.
Feeding:

- Diet consists of all smaller fishes.
MUMMICHOG
Fundulus heteroclitus

Identification:

- Small mouth.
- Stout body with a blunt head.
- Back and belly rounded.
- Males darkish green or steel blue on top, white and yellow spots, and silver bars on the sides.
- Females paler than the males. Uniform olive to green, lighter below, darker above without definite markings.
- Bottom, pale yellow or orange.
- Commonly known as killifish.

Size:

Length to 5 in. (12 cm).

Range:

Atlantic coast of North America from Gulf of St. Lawrence to Florida.

Local Distribution:

The mummichog is a year-round resident in the Hudson-Raritan Estuary. When water temperatures are warm they inhabit the edges of tidal creeks and saltwater marshes. When temperatures drop during late fall the mummichog lie in a sluggish state on the bottom, or burrow in the mud in these same areas.

Habitat:

- Prefer shallow waters near the shoreline in estuaries.
- Often trapped in tidal pools.
- Can survive extreme temperature and salinity fluctuations.
Spawning:

- Spawning occurs from June into August.
- Males court and pursue the females, sometimes fighting over a mate.
- Eggs are non-buoyant and sticky; stick to anything they come in contact with.
- Hatching occurs in 9 to 18 days.
- Hatching is temperature dependent.

Feeding:

- Omnivorous, diet consists of a variety of plants and animals.
- Diet includes diatoms, eelgrass, shrimp, other crustacea and small fish.
MULLET
Mugil cephalus

Identification:

- Small mouth.
- Long cigar shaped body.
- Spinous dorsal fin.
- Bluish on top, silver bottom.

Size:

Length to 15 in. (38 cm), but reported to reach 36 in. (91 cm.).

Range:

Nearly worldwide in warm waters Atlantic coast of North America from Nova Scotia to Florida; south to Brazil.

Local Distribution:

Arrive in the Hudson-Raritan Estuary in late spring early summer and spend the summer New Jersey’s bays, creeks and estuaries. When water temperatures fall they funnel out of the inlets and begin to migrate south, following the coastline.

Habitat:

- Inshore waters, bays, estuaries and lagoons.

Spawning:

- Spawning takes place offshore in southern waters.
Feeding:

- Diet consists of mud, debris and plankton.
SCUP
Stenotomus chrysops

Identification:

- Teeth small and incisor like.
- Mouth terminal.
- Body deep and compressed.
- Back elevated.
- Front section of dorsal fin is spinous.
- Silvery on sides.
- Sides marked with faint dark bars.
- Milky or yellowish white on the bottom.

Size:

Length to 18 in. (46 cm) and weigh up to 4 lbs. (1.8 kg).

Range:

Atlantic coast of North America from Nova Scotia to Florida.

Local Distribution:

Scup are summer fish arriving in the Hudson-Raritan Estuary in June and leaving in October.

Habitat:

- Inhabit estuaries and continental shelf waters.
- Prefers hard or sandy bottom.
Spawning:

- Spawning occurs May through August.
- Eggs are buoyant, transparent and spherical.
- Hatching occurs in approximately 40 hours.
- Growth is rapid.

Feeding:

- Strictly bottom feeders.
- Diet consists of crustaceans, mollusks, worms and small fish.
SPOT
Leiostomus xanthurus

Identification:

- Small mouth.
- Body deep and compressed.
- Back elevated.
- Distinct brown spot on shoulder.
- 12-15 narrow, diagonal dark lines on upper body.
- Bluish to brownish above.
- Brassy on sides.
- Silvery or white below.
- Forked caudal fin.

Size:

Length to 14 in. (36 cm).

Range:

Atlantic coast of the United States from Massachusetts to Florida.

Local Distribution:

Spot are summer fish arriving in the Hudson-Raritan Estuary in June and leaving in October.

Habitat:

- Inhabit bays, estuaries and continental shelf waters.

Spawning:

- Spawning occurs from October through March.
- Growth is rapid.
Feeding:

- Strictly bottom feeders.
- Diet consists of crustaceans, mollusks, worms, and small fish.
NORTHERN KINGFISH
Menticirrhus saxatilis

Identification:

- Mouth contains no teeth.
- Upper jaw extends past the lower.
- Blunt nose and snout overhang the mouth.
- Lower jaw with single barbel.
- First dorsal fin longer than other fins.
- Dusky grey to black on top.
- Sides cross marked with dark bars.
- Milky or yellowish white on the bottom.

Size:

Length to 17 in. (43 cm) and weigh up to 3 lbs. (1.4 kg).

Range:

Atlantic coast of the United States from Cape Cod to Florida.

Local Distribution:

Kingfish are summer fish arriving in the Hudson-Raritan Estuary in May and leaving in October. They migrate south to warmer waters.

Habitat:

- Inhabit ocean coastlines and river mouths.
- Prefers hard or sandy bottom.
Spawning:

- Spawning occurs in bays and sounds from June until August, but may occur later if waters do not warm sufficiently.
- Growth rapid.
- Measure 4 to 6 inches (10-15 cm) by their first winter.
- Maturity is reached by males and females at age 3.

Feeding:

- Strictly bottom feeders.
- Diet consists of shrimp, small mollusks, worms and young fish.
AMERICAN EEL
Anguilla rostrata

Identification:

- Mouth filled with small teeth.
- Body elongate and snakelike.
- Covered With a slime coating.
- Color varies from brown to dark green on top.
- Bottom cream to white.

Size:

Length to 5 ft. (1.5 m) and weigh up to 16.5 lbs. (7.5 kg); females usually larger than males of the same age.

Range:

Coastal regions of North America including Greenland, Labrador and Newfoundland south to the Gulf of Mexico.

Local Distribution:

Eels occur year-round in rivers and creeks of the Hudson-Raritan Estuary.

Habitat:

- Coastal and open ocean waters, estuaries and freshwater rivers.
- Prefer mud, grass, rocks or other substrate where they can hide.
- Females move farther up rivers and remain there for 7 to 8 years.
- Males live close to, or in, tidal waters until females migrate.
Spawning:

- Catadromous, spawning in saltwater and migrating to freshwater to grow,
- Spawning takes place in the Atlantic ocean in the Sara Gasso Sea.
- Spawning occurs as early January and may continue into August.
- Eels undergo oceanic, estuarine and river phases.
- Females release 10 to 20 million eggs.
- Hatching begins in February and continues into August.
- Larval stage may last for more than a year, this is followed by the “glass eel” stage.
- At this point they are unpigmented.
- As they develop pigment they migrate into freshwater and become elvers.
- Remain in freshwater for several years and are called yellow eels.
- Yellow eels mature and undergo changes in color and body shape and begin to migrate down river to the ocean spawning grounds. At this point they are called bronze eels.
- After spawning the adults die.
- Growth takes place very slowly.
- Male eels mature at age 3 and females at age 4-5.
- May live for 20 years.

Feeding:

- Benthic feeders.
- Feed predominantly at night.
- Diet consists worms, crustaceans, mollusks and fish.
CUNNER
Tautogolabrus adspersus

Identification:

- Small mouth.
- Several rows of conical teeth.
- Color is usually a uniform greenish grey with blotching. Color can vary greatly depending on the bottom they are inhabiting.
- Commonly known as a bergall.

Size:

Length to 15 in. (38 cm) and weigh up to 2.2 lbs. (1 Kg.).

Range:

Atlantic coast of North America from Newfoundland and Gulf of St. Lawrence to Chesapeake Bay.

Local Distribution:

Cunners are present in the waters of the Hudson-Raritan Estuary year-round, but move offshore during the colder months.

Habitat:

- Inhabit waters from shallow bays out to deep shelf waters.
- Prefer rocky areas, around pilings, seawalls and wrecks.
Spawnin:\n
- Spawning takes place in June, July, and August along the coastline.
- Eggs are buoyant and transparent.
- Hatching occurs in about 40 hours.
- Growth is rapid, measuring 2.5-3.5 inches (5-7 cm) by the fall.

Feeding:

- Aggressive scavengers
- Feeding occurs along the bottom.
- Diet consists of small mussels, clams, worms and crabs, but will eat almost anything.
BAY ANCHOVY
Anchoa mitchilli

Identification:

- Wide mouth.
- Large eyes.
- Large, thin detached scales.
- Narrow silvery stripe running from gill opening to caudal fin.
- Whitish silvery translucent fish.

Size:

Length to 4 in. (10 cm).

Range:

Atlantic Coast of North America from the Gulf of Maine to Florida; Gulf of Mexico south to Yucatan.

Local Distribution:

The bay anchovy occurs in the Hudson-Raritan Estuary from May through October.

Habitat:

- Shallow bays and estuaries.
- Prefer shallow waters with salinity ranges of 24 to 30 parts per thousand.

Spawning:

- Spawning in mid April to July.
- Most spawning occurs early in the evening.
- Eggs are buoyant and nearly transparent.
- Hatching occurs in approximately 24 hours.
- Growth is hard to follow because of the long spawning season.
Feeding:

- Diet consists mainly of zooplankton, copepods, small gastropods, annelids and bivalves.
OYSTER CRACKER
Opsanus tau

Identification:

- Large flat head and mouth.
- Tapering body with plump belly.
- Mostly soft rayed fish.
- Fleshy flaps on upper and lower jaws, on cheeks and over each eye.
- Skin covered with a thick layer of mucus.
- Color ranges from dark muddy olive green to brown or yellow. Darker on top and lighter on bottom.
- Irregularly marked with bars and marblings.
- Like many bottom fish it adjusts coloring to blend with the substrate.
- Commonly known as a toadfish.

Size:

Length to 15 in. (38 cm).

Range:

Atlantic coast of North America from Cape Cod to Cuba; occasionally straying northward to Maine.

Local Distribution:

Oyster Crackers are year-round residents in the Hudson-Raritan Estuary and undergo little movement.

Habitat:

- Largely coastal, rocky bottoms, jetties and wrecks.
- Tolerate polluted waters.
Spawning:

- Spawning occurs in June and early July.
- Large eggs are laid in holes, under stones, shells and among eelgrass.
- Eggs adhere in a single layer to whatever serves as a nest.
- Male guards the eggs for about three weeks until they hatch.
- Larvae remain attached to the nest by an adhesive disc until they reach 5/8 of an inch (15 mm.).

Feeding:

- Voracious, omnivorous fish.
- Feeding takes place on or near the bottom.
- Lie in wait for prey and dart out to grab it as it passes.
- Diet consists of worms, amphipods, shrimps, crabs, mollusks, squid and small fishes.
THREE SPINE STICKLEBACK
Gasterosteus aculeatus

Identification:

- Small mouth.
- Three dorsal spines.
- Body usually with bony plates on side.
- Dark on top.
- Silvery on sides and on bottom.

Size:

Length to 4 in. (10 cm).

Range:

Baffin Island and Hudson Bay to North Carolina; circumpolar and in eastern N. Pacific.

Local Distribution:

Three spine sticklebacks are year-round residents in the Hudson-Raritan Estuary. They enter the mouths of creeks and streams in the spring to spawn, and go into deeper waters for the winter.

Habitat:

- Prefer shallow water near shore,
- Frequently occur in floating vegetation or beds.

Spawning:

- Occurs in brackish water from May to June.
- Have an elaborate nest building process.
Feeding:

- A pugnacious species that uses its spines to drive away other species.
- Diet consists of invertebrates, small fish and fish eggs.
BLACK SEA BASS  
Centropristis striata

Identification:

- Large mouth and thick head.
- Spinous dorsal fin.
- Caudal fin round.
- Head and body bluish black to dark brown, bottom is bluish gray.
- Color tends to vary with age and type of structure they occupy.
- Males develop a hump on the nape.

Size:

Length to 2 ft. (60 cm) and weighs up to 8 lbs. (3.6 Kg).

Range:

Atlantic coast of North America from Maine to northeast Florida and east Gulf of Mexico.

Local Distribution:

Black sea bass begin to appear in large numbers in the waters of the Hudson-Raritan Estuary when water temperatures begin to rise in the spring. They reach peak abundance by the beginning of the summer. When water temperatures warm considerably they will migrate to the north. When water temperatures begin to fall they become abundant again as they migrate south and offshore. They spend the winter in the southern part of their range.

Habitat:

- Prefer to live near rocks, wrecks, pilings or any type of structure that offers protection and food.
- Young enter brackish water.
Spawning:

- Spawning takes place May to June.
- Eggs are buoyant.
- Hatching occurs in approximately 75 hours.
- Black sea bass begin life as females and transform into males.
- Sex reversal takes place between two and five years of age.

Feeding:

- Feeding occurs along the bottom.
- Use their large mouth to capture prey.
- Diet consists of crustaceans, mollusks and fish.
TAUTOG
Tautoga onitis

Identification:

- Conical teeth, with two or three in the front of each jaw much larger than the others.
- Heavy stout fish with thick lips.
- Dark fish, generally chocolate grey, with mottling or blotches of darker color.
- Color tends to vary with age, and type of structure they occupy.
- Commonly known as a blackfish.

Size:

Length to 3 ft. (91 cm) and weighs up to 22 lbs. (10 Kg).

Range:

Atlantic coast of North America from Nova Scotia to South Carolina.

Local Distribution:

Tautog begin to appear in large numbers in the waters of the Hudson-Raritan Estuary when water temperatures begin to rise in early spring. They reach peak abundance by mid spring. When water temperatures warm considerably they begin their northerly migration. When water temperatures begin to fall they become abundant again as they migrate south and offshore. They spend the winter in the southern part of their range. Those that remain in the Hudson-Raritan Estuary area move off to deeper waters.

Habitat:

- Rarely stray more than 10 to 12 miles from shore or depths of 100-150 feet (30-45 m.).
- Enter brackish water.
- Prefer to live near rocks, wrecks, pilings or any type of structure that offers protection and food.
Spawning:

- Spawning takes place in June.
  - Eggs are buoyant.
  - Growth is slow.

Feeding:

- Feeding occurs along the bottom.
  - Use their large front teeth to pry mussels or barnacles off the structure on which they grow, then use their back teeth to crush them.
  - Often they lie dormant until a certain stage of the tide, and then feed.
  - Diet consists of invertebrates, preferring mussel, barnacles, crabs, hermit crabs and worms.
WINTER FLOUNDER
Pleuronectes americanus

Identification:

- Small mouth with lips and no teeth.
- A flat fish upon reaching the juvenile stage.
- Eyes on right side of head.
- Color varies from brown, and reddish-brown to grey on top and white on the bottom.
- When brown in color they often have spots.

Size:

Length to 10-14 in. (25-35 cm) and weigh 3/4-2 lbs. (1/3-.9 kg); however can grow up to 25 in. (64 cm) and 8 lbs (3.5 kg).

Range:

Atlantic coast of North America from Labrador to Georgia: Most abundant from Gulf of St. Lawrence to New Jersey.

Local Distribution:

Winter flounder migrate from bays and estuaries offshore to cooler coastal waters as water temperatures warm in late spring. Large fish are less tolerant of warmer waters and begin the migration first. When water temperatures cool in the fall the fish begin to move back into lower portions of the Hudson-Raritan Estuary. Populations in local bays and estuaries are at their highest between December and April.
Habitat:

- Prefer waters between 3-426 feet (1-130 m)
- Found on sand, clay, gravel and muddy-sand bottoms.
- Enter mouths of estuaries and extend into water that is nearly fresh during winter.
- In warmer parts of their range they can be found in deeper waters during late spring and summer months.

Spawning:

- Spawning takes place from mid winter to early spring.
- Spawn in water 6-20 feet (2-6 m) deep in the upper reaches of the estuary.
- Eggs are not buoyant, sink to the bottom and stick to each other in clusters.
- When the eggs hatch the larvae resemble those of other laterally compressed fish, but as they grow they go through a metamorphosis and settle to the bottom as a flat right handed fish.
- Juveniles, because of their larger size, fight the currents and migrate downstream.
- Eventually leave the estuary to follow the adults in their migration.
- Females mature at 2-3 years of age.

Feeding:

- Feeding takes place along the bottom.
- Depend on sight for feeding therefore they feed only during the day.
- Move about in search of food.
- Diet consists of small worms, crustaceans, mollusks and some plant material.
ATLANTIC SILVER SIDE
Menidia menidia

Identification:

- Small mouth lacking teeth.
- Slender, thin bodied fish with a round belly.
- Large eyes.
- Translucent bottle green on top.
- Silver band running along each side outlined in black.
- Bottom is white.
- Commonly known as a spearing.

Size:

Length to 6 in. (15 cm).

Range:

Atlantic Coast of North America from Gulf of St. Lawrence to northeast Florida.

Local Distribution:

Atlantic silverside is a resident species in the Hudson-Raritan Estuary. In the warmer months they abound in the shallow waters of local bays, creeks and estuaries. In the colder months they enter deeper water within the estuary.

Habitat:

- Live in brackish as well as high salinity waters.
- Prefer sandy or gravely shores along the waters edge.
Spawning:

- Spawn in May, June and early July.
- Gather in schools and deposit their eggs on sandy bottoms.
- Eggs sink and stick together in clusters or sheets.
- Hatching occurs in 8-10 days.
- Growth is rapid with maturity reached at approximately 1 year of age.

Feeding:

- Omnivorous.
- Diet consists of algae, copepods, shrimp, young squid, worms, insects and fish.
  eggs.
STRIPED MUMMICHOG
Fundulus majalis

Identification:

- Male has 15-20 black vertical bars on side.
- Female with 2-3 black horizontal stripes.
- Body is more slender and snout more pointed than the common mummichog.
- Dark olive green on top, with silver sides and greenish-yellow on the bottom.
- Commonly known as a killifish.

Size:

Length to 7 in. (18 cm).

Range:

Atlantic Coast of North America from New Hampshire to northeast Florida; north Gulf of Mexico.

Local Distribution:

The striped mummichog is a resident species of the Hudson-Raritan Estuary. It winters in the deeper waters of the estuaries.

Habitat:

- Often found along the open beach.
- Live in nearshore shallow waters.
- Prefer high salinity waters.

Spawning:

- Spawning occurs from April to September in shallow water.
- Eggs are large and only a small number are produced.
- Eggs are laid on sand.
Feeding:

- Diet consists of small mollusks, crustaceans, insects and fish.
FOUR SPINE STICKLEBACK  
*Apeltes quadracus*

**Identification:**
- Four to five dorsal spines.
- No bony plates on side.
- Skin has no scales.
- Flat belly and sharp back differs from other sticklebacks.
- Brownish olive or greenish brown on top, with dark mottling.
- Bottom is silvery white.

**Size:**
Length to 3 in. (7 cm).

**Range:**
Atlantic coast of North America from the Gulf of St. Lawrence to North Carolina.

**Local Distribution:**
Four spine sticklebacks are a year-round resident in the Hudson-Raritan Estuary. They enter the mouths of creeks and streams in the spring to spawn, and enter slightly deeper water for the winter.

**Habitat:**
- Prefer shallow near shore waters.
- Inhabit both vegetation beds and floating vegetation.
Spawning:

- Spawning occurs from May to July.
- Go through an elaborate nest building process.
- Male builds a nest of plant fragments.
- The nest is conical, with an opening at the top.
- The male picks up the eggs laid by the female and deposits them at the top of the nest.
- Eggs sink and stick together in clumps when inside the nest.
- Hatching occurs in six days.

Feeding:

- A pugnacious species that uses its spines to drive away other species.
- Diet consists of small invertebrates, small fish and fish eggs.
BLUEFISH
Pomatomus saltatrix

Identification:

- Mouth large with prominent sharp teeth.
- Deeply forked tail.
- Greenish or bluish on top.
- Silvery on sides and on bottom.

Size:

Length to 45 in (1.1 m) and weigh up to 27 lbs. (12 kg).

Range:

Atlantic Coast of North America from Nova Scotia to Florida; Bermuda to south Argentina. Widely but irregularly distributed elsewhere in the Atlantic and Indian oceans.

Local Distribution:

Bluefish arrive in the New York Bight sometime in late spring. A buildup of fish occurs in the Hudson-Raritan Estuary until it reaches a peak in mid-summer. When water temperatures begin to drop in fall they begin an extensive migration along the coast that can last until December, if the waters do not cool too quickly.

Habitat:

- Oceanic in nature, but can be found in bays, creeks and estuaries.
- Prefer warm waters.
- Generally not found in abundant numbers in water temperatures below 60 degrees Fahrenheit.
- Like to congregate around some type of structure. This can range from rockpiles to rises in the sea floor.
Spawning:

- Spawn offshore twice a year, in the spring and in the summer.
- A mature fish contains about 900,000 eggs.
- Young bluefish, from the spring spawn migrate inshore and spend the summer in local bays, creeks, and estuaries.
- Fish from the summer spawn swim towards the coast and migrate south in the fall.
- Become sexually mature at age two.

Feeding:

- Feeding occurs throughout the water column.
- Rely primarily on sight to find food.
- Feed on a variety of invertebrates and fishes.
- Diet consists of shrimp, squids, crabs, worms and fishes.