2020 Field Guide
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AQUATIC INVERTEBRATES
Amphipods (Order Amphipoda, most commonly Families Gammaridae & Aortidae)

**Max Size:** <1.5 cm (0.5 in)
**Habitat:** Fresh and salt water environments.
**Diet:** Omnivorous, consume wide range of dead and decaying organic matter, will sometimes predate smaller invertebrates

**Fun Facts:**
- Amphipods (meaning “both feet”) have several types of legs that serve different functions, such as walking, swimming, digging, etc.
- In the New York Harbor, healthy populations of Amphipods can exceed 20,000 individuals per square mile.
- Amphipods feed on algae, detritus, and plankton, and are in turn a major food source for many species of fish, especially seahorses and pipefish, for which they comprise the bulk of their diet.
- Distinguished from isopods by their compressiform (laterally compressed) bodies, versus the isopods’ depressiform (dorso-ventrally compressed) shape.

Barnacles (Semibalanus balanoides & Amphibalanus eburneus)

**Max Size:** <1 cm diameter (<0.5in)
**Habitat:** Shallow, marine environments and attached to hard substrates.
**Diet:** Plankton
Fun Facts:

- Larval Barnacles travel for food and shelter, but once they mature they settle in one location, typically on rocks, ships, piers and pilings, but sometimes large animals such as whales.
- Barnacles typically live for about 10 years, but some of the larger species can live up to 20 years.
- They are actually crustaceans that construct a calcareous shell around themselves; they look like little, upside-down shrimp inside the shell!
- *S. balanoides* (Northern barnacle) is more common, *A. eburneus* (ivory barnacle) is whiter and wider with a lower peak.

Bloodworm (*Glycera spp.*)

Max Size: Up to 14 inches, most do not reach this size
Habitat: Sediment on bottom of river
Diet: Carnivorous, tend to eat smaller worms and other invertebrates

Fun Facts:

- These worms catch their prey by projecting a toothed proboscis out of their mouth
- Venom injected into prey through the worm's teeth immobilizes and kills prey. This venom is copper based
- Bloodworms undergo metamorphosis during reproduction. Their body changes to allow them to swim rapidly to the water’s surface where they release their gametes in a form of broadcast spawning, after which they die

Blue Crab (*Callinectes sapidus*)

Max Size: 20+ cm (carapace width point to point) (8 in); arm span at least twice that
**Habitat:** Brackish coastal waters and estuaries.
**Diet:** Omnivorous. Bivalves, crustaceans, small fish, other blue crabs.
**Fun Facts:**
- Female Blue Crabs are distinguished from males by the triangular shape of their abdominal plate (as opposed to the narrower males’) and sometimes by red highlights on the tips of their claws.
- One of the top invertebrate predators of the Hudson Estuary, aggressive and solitary, eating anything they can catch
- Few Blue Crabs live longer than three years.
- The Blue Crab is well known for its cannibalistic habits; as cannibalized crabs make up as much as 13% of their diets.
- Scientific name means “Tasty, beautiful swimmer”.

**Blue Mussel (Mytilus edulis)**

**Max Size:** 10 cm (4 in)
**Habitat:** Tidal estuaries, coastal waters, from the Arctic to N. Carolina
**Diet:** Plankton
**Fun Facts:**
- In the planktonic larval stage Blue Mussels float freely through currents before finding a surface upon which to attach and call home.
- Blue Mussels are semi-sessile organisms, meaning they can detach and reattach to surfaces such as rocks and pilings to better position themselves during changes in tides. They do this with hair-like, adhesive strands called byssal threads.
- Their scientific name means “edible mussel”.
- Like other bivalve mollusks, mussels can help to reduce the amount of excess nutrients (such as N and P) in water bodies as they metabolize and immobilize them.
Bryozoan, Lacy Crust (*Membranopora membranacea*)

**Max Size:** Individuals are 0.42 x 0.13 mm in size  
**Habitat:** Can be found encrusted on surfaces and structures in the estuary, including other organisms  
**Diet:** Plankton  
**Fun Facts:**  
- Bryozoans are capable of reproducing asexually by budding off new zooids, which is how most bryozoan colonies tend to increase in size  
- As sessile filter feeding organisms, bryozoans compete for space and food with other species in the river, including tunicates and sponges

Clam worm (*Nereis spp.*)

**Max Size:** 15cm (6 inches)  
**Habitat:** Rocks, vegetation, reefs, and mud  
**Diet:** Omnivorous. Smaller invertebrates, decaying organic matter  
**Fun Facts:**  
- Fast swimming predators that hunt mostly soft bodied prey  
- Powerful jaws with teeth of hardened protein-zinc compound; jaws distinguish them from blood worms
**Grass Shrimp (Palaemonetes pugio)**

*Max Size:* 7 cm (2.5 in)  
*Habitat:* Eelgrass beds, salt marshes, estuaries.  
*Diet:* Omnivorous. Forages for algae, decaying organic matter  
*Fun Facts:*  
- Named for their frequent proximity to eelgrass.  
- Translucent carapace allows them to hide better in open water, higher up amongst submerged aquatic vegetation.  
- Species name is Latin for “dagger” in reference to their serrated rostrum that provides some protection from would-be predators.  
- One of the more numerous macroinvertebrates in HRPK.

**Isopods (Order Isopoda; most commonly Idotea spp.)**

*Max Size:* <3 cm (1in)  
*Habitat:* Aquatic & terrestrial environments.  
*Diet:* Omnivorous. Forages for algae, decaying organic matter; other species are parasitic or predatory.  
*Fun Facts:*  
- Isopoda is a wide and varied order of class Crustacea, with many aquatic and terrestrial species. Most are foragers but some are parasitic; one in particular consumes and “replaces” a fish’s tongue!  
- The Gribble (*Limnora lignorum*) is an isopod commonly seen in the New York Harbor as it tunnels under the surface of submerged wood pilings and eats organisms that grow on the wood.
Many terrestrial isopods and some aquatic (such as *Sphaeroma quadridentatum*) or the sea pill bug) can contract into a ball or pill-shape as a defense mechanism when startled; this is called conglobation.

Isopod means “equal foot”, named because in most species, all pairs of legs are of nearly the same structure.

**Mud Crabs** (*Rhithropanopeus harrisii* [pictured] & *Panopeus herbstii*)

Max Size: <8 cm (carapace width) (3 in)
Habitat: Estuaries and muddy substrates.
Diet: Omnivorous. Forages for algae, decaying organic matter

**Fun Facts:**

- Mud crabs are brown to olive green, allowing them to camouflage in their muddy habitat.
- Mud crabs feed on algae, bivalves and decaying tissue.
- Mud crabs are native to the Atlantic Coast of North America but have been accidentally introduced to over 20 different countries throughout the world.
- They prefer to spend most of their time wedged into safe nooks and crevices, or bury themselves in the mud when not foraging.
- Even though *R. harrisii* (white fingered mud crab) and *P. herbstii* (black fingered mud crab) may often be distinguished by their eponymous chela coloring, it is thought that they frequently hybridize, making identification often difficult.

**Mud Dog Whelk** (*Nassarius obsoletus*; also referred to as *Ilyanassa & Tritia*)

Max Size: 2.5 cm (1 in)
Habitat: Estuaries and muddy substrates.
**Diet:** Omnivorous. Forages for algae, decaying organic matter

**Fun Facts:**

- Mud dogs are deposit detritivores that will eat nearly organic matter.
- Their species name means “common”, and indeed they are incredibly numerous. They belong to the family *Nassaridae* meaning “wicker basket”.
- They overwinter in the mud, using their siphon as a snorkel.
- Hard, calcareous shell protects them from many predators, but not Blackfish!

**Orange Sheath Tunicate (*Botrylloides violaceus*)**

**Max Size:** Colonies usually 2-3mm thick, area depends on number of individuals in colony

**Habitat:** Submerged surfaces in the estuary, including wood, rocks, metal, and other organisms

**Diet:** Plankton

**Fun Facts:**

- Unlike *M. manhattensis*, orange sheath tunicates are colonial, living in groups settled onto surfaces in the estuary
- This colonial living style may give this species important advantages when competing with other sessile organisms. This species is often seen growing over larger, solitary sea squirts.

**Oyster Drill (*Urosalpinx cinerea*)**

**Max Size:** 2.5 cm (1 in)

**Habitat:** Estuaries and rocky substrates, particularly around oyster reefs

**Diet:** Carnivorous. Bivalves.
Fun Facts:

- Named due to their mechanism of feeding: they use a tongue-like structure (radula) to rasp away at the shells of bivalves such as oysters and mussels, “drilling” a small pinhole through which to feed on the soft tissue underneath.
- Distinct from mud dogs due to their beige-orange flesh, and lighter, more ridged shell.
- Can devastate oyster reefs

Oyster, Eastern (*Crassostrea virginica*)

Max Size: 20+cm (8in)
Habitat: Shallow waters, saltwater bays, and estuaries from New England to the Gulf.
Diet: Plankton
Fun Facts:

- Oysters are sequential hermaphrodites, meaning they change sex as they grow; 90% of oysters under a year old are male and most older oysters are female.
- Their scientific name means, “Thick oyster from Virginia”
- Eastern Oyster beds form habitat for many other creatures, improve water quality, and reduce bank erosion; features when combined with their high relative population make them characterized as a foundation species.
- Eastern Oysters used to be plentiful in the Hudson River but due to over harvesting, pollution, and habitat destruction, population levels have plummeted. Thanks to the efforts of many groups, they are beginning to make a comeback.

Pacific Shore Crab aka Asian Shore Crab (*Hemigrapsus sanguineus*)

Max Size: ~1.5 inches carapace width
Habitat: Salt marshes, shallow waters with rocky shorelines
Diet: Omnivorous, will opportunistically scavenge for a wide range of food
Fun Facts:

- As their name suggests, these crabs were introduced to the east coast of the United States, where they have become an invasive species, but are originally native to shorelines in the western Pacific Ocean.
- Pacific shore crabs were first sighted on the east coast in 1988 off the New Jersey coastline.
- This species is problematic in areas it has become invasive due to its ability to outcompete native species like mud crabs, and its predation of economically significant species like blue mussels.

Red Beard Sponge (*Microciona prolifera*)

Max Size: 20 cm (8 in)

**Habitat:** Attaches to benthic structure like rocks, piles, and shells.

**Diet:** Plankton

Fun Facts:

- Sponges are one of the oldest, simplest forms of animal. They lack tissue layers and complex organs that we tend to associate with animals.
- Many sponges have glass (silicate) spicules within their tissue to provide structural support. These look like little needles or stars.
- Sponges filter feed constantly using collar cells (cells with a flagellum and a structure called a collar). Collar cells use their flagella to generate currents that draws water into the sponge’s pores, where plankton and other tiny particles are collected as food.
Ribbed mussel (*Geukensia demissa*)

**Max Size:** 9cm (4 inches)

**Habitat:** As adults, attach to benthic structure like rocks, piles, other shell building organisms.

**Diet:** Plankton

**Fun Facts:**
- Mussels are semi-sessile organisms, meaning they can detach and reattach to surfaces such as rocks and pilings to better position themselves during changes in tides. They do this with hair-like, adhesive strands called byssal threads.
- Ribbed mussels can be distinguished from blue mussels by the texture of their shell. The shell is characterized by a series of ridges, or ribs, which is where this species gets its name.
- Male and female ribbed mussels can be distinguished by the color of their mantle, males tend to be yellowish while females are brown.
- The ribs on a ribbed mussel can be used to determine the age of the individual.

Sand Shrimp (*Crangon septemspinosa*)

**Max Size:** 7 cm (2.5 cm)

**Habitat:** Eelgrass beds, salt marshes, estuaries.

**Diet:** Omnivorous. Forages for algae, decaying organic matter

**Fun Facts:**
- Sand Shrimp burrow in the sediment with only antennae exposed, emerging at night to forage for food.
- Dusky, sand coloration for camouflage
- Easy to distinguish from the Grass shrimp by the flat, spade-like shape of its head. The sand shrimp additionally lacks a rostrum.
- Sand Shrimp can withstand a relatively wide range of temperatures and salinities.

**Sea Squirts (Molgula manhattensis)**

![Image of Sea Squirts](image)

**Max Size:** 4 cm (1.5 in)

**Habitat:** coastal waters, attaches to any hard substrate

**Diet:** Plankton

**Fun Facts:**

- Sea Squirts are immobile filter feeders that can re-adhere to surfaces if they are removed.
- Sea squirts have both male and female reproductive organs making self-fertilization possible; the gametes released via broadcast spawning typically meet those of other sea squirts in the water column.
- When squeezed, excess water held within the sea squirt may be expelled from its siphons, giving it its name.
- Sea squirts are tunicates, an odd taxon of animals that are actually chordates like fish and humans. They are thereby more related to us than to their fellow invertebrates. Larvae have a dorsal nerve cord that is digested during metamorphosis into an adult.
Spider Crab, nine-spined (*Libinia emarginata*)

**Max Size:** Up to 30cm (1 foot) leg span  
**Habitat:** Benthic habitats in bays, estuaries, and shorelines along the east coast  
**Diet:** Omivorous, forages for algae, sea stars  
**Fun Facts:**

- Sometimes called decorator crabs. Carapace is covered in tiny, hooked hairs that it uses to attach plants, sponges, and other organic material to itself.  
- Can walk forward and sideways, unlike most crabs  
- Very docile, relies on camouflage for protection

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Star Tunicate (*Botryllus schlosseri*)

**Max Size:** Individual zooids 3mm; colonies (stars) up to 5 cm (2 in)  
**Habitat:** Submerged surfaces in the estuary  
**Diet:** Plankton  
**Fun Facts:**

- Unlike *M. manhattensis*, star tunicates are colonial, living in groups settled onto surfaces in the estuary  
- This colonial living style may give this species important advantages when competing with other sessile organisms. This species is often seen growing over larger, solitary sea squirts.
Surf Clams (Families Mactridae, Tellinidae, etc., *Spisula solidissima* pictured)

**Max Size:** Up to 17 cm (7 in) but typically <2.5 cm (1 in)

**Habitat:** Intertidal zones, in mud/silt, sand, other loose sediments

**Diet:** Plankton

**Fun Facts:**

- Use their strong foot to burrow in the sediment
- Easy to distinguish from mussels by larger width of shell relative to the hinge.
- Their ability to dig makes them more well suited to soft sediment habitats than other bivalves
FISHES
American Eel (*Anguilla rostrata*)

**Max Size:** 120 cm (4 ft.)
**Habitat:** Catadromous. Benthic. Ocean, rivers, and estuaries on the Atlantic coast.
**Diet:** Diverse diet of fish, aquatic insects, and crustaceans.
**Fun Facts:**

- Eels’ slime coat, a defense mechanism common to all fishes used to protect themselves from predators and bacteria, is particularly thick, making them nearly impossible to grip.
- Adult American eels live at the bottom of the Hudson River and its tributaries almost all year-round, but those of breeding age will leave to spawn in the Sargasso Sea, hundreds of miles off-shore in the mid-Atlantic. They are thus catadromous - running downstream to spawn.
- Males mature at a smaller size; any eel over 2 feet is likely female.
- Eels can survive out of water for long periods of time; sometimes slithering across land to travel between water bodies.

Bay Anchovy (*Anchoa mitchilli*)

**Max Size:** 10 cm (4 in)
**Habitat:** Pelagic. Shallows, bays, and estuaries from Maine to the Yucatan.
**Diet:** Zooplankton.
**Fun Facts:**

- Anchovies are small and therefore run in large schools for protection.
- Bay Anchovies are one of most abundant species of fish found in estuaries on the East Coast.
- Bay Anchovies are a critical source of food for many fish and bird species in Hudson River Park.
- Females spawn up to 50 times per season and eggs generally hatch within 24 hours.
Blackfish (*Tautoga onitis*)

Max Size: 90cm (3 ft.)  
Habitat: Benthic. Inshore waters, Nova Scotia to S. Carolina.  
Diet: Hard shelled animals including snails, mussels, and crabs  
Fun Facts:  
- Blackfish are a benthic, or bottom dwelling, species that belongs to the wrasse family  
- These fish are camouflaged to hide against dark surfaces like rocks, wood, and other structure in their environments (juveniles feature more cryptic, mottle camouflage while adults feature more solid, darker shades)  
- Blackfish commonly rest on their sides against structures in their environment  
- Blackfish have large, blunt teeth that allow them to crush through hard shells  
- Juvenile blackfish are often mistaken for black sea bass, and vice versa. Pay close attention to the size and orientation of the mouth. Blackfish have a much smaller mouth, eyes, and fins relative to body size than the black sea bass.

Black Sea Bass (*Centropristis striata*)

Max Size: 60cm (2 ft)  
Habitat: Benthic. Inshore waters, bays, and sounds, from Massachusetts to the Gulf.  
Diet: Crabs, shrimp, smaller fish  
Fun Facts:  
- Black sea bass are protogynous hermaphrodites, meaning that they start out as females. Seabass will swim in groups called ‘harems’ with a single dominant male who mates with the rest of the group, who are all female. When the dominant male dies, a female of the group will change sex and take the male’s place.
• Distinguished from Blackfish by their larger mouths, fins, and eyes relative to body-size, a more streamlined body shape, and sometimes a thick horizontal band along their lateral line which blackfish never exhibit.
• Like most bass, their teeth are tiny, forming rough pads that help them to grip their food as they swallow it whole.

Bluefish (*Pomatomus saltatrix*)

Max Size: 60+cm (2+ ft.)
Habitat: Pelagic. Temperate and subtropical open waters, worldwide.
Diet: Fish and invertebrates.
Fun Facts:

• Bluefish are strong and powerful swimmers with sharp teeth.
• Bluefish feed on small fish such as anchovy and silversides which are abundant in the Hudson River.
• Bluefish are a prize catch for recreational fishers and are highly sought after.
• Baby Bluefish are known as Snappers.

Cunner (*Tautogolabrus adspersus*)

Max Size: 25 cm (10 in)
Habitat: Benthic. Inshore waters from Newfoundland to the Chesapeake.
Diet: Omnivorous. Especially barnacles and mussels.
Fun Facts:

• In the wrasse family (*Labridae*), like the blackfish.
• Distinguished by shallower body, flat head, and higher mouth.
• Can be a rainbow of colors, dependent on habitat substrate.
Feather Blenny (*Hypsoblennius hentz*)

**Max Size:** 3-4 inches (9-10cm)
**Habitat:** Benthic. Nova Scotia to Texas. Blennies tend to inhabit shells and other habitat that offer them with both a good hiding place and a good site to nest
**Diet:** Carnivorous, consume smaller organisms and take bites out of larger fish
**Fun Facts:**
- Male feather blennies have a bright blue spot located near the front end of their dorsal fin
- Blennies are highly territorial, and will attempt to defend their territory from perceived threats
- Blennies have been observed biting and charging at fish much larger than they are
- Feather blennies get their name from feathery cirri located on their head that help them to sense movement in their environments

Hogchoker (*Trinectes maculatus*)

**Max Size:** 20 cm (8 in)
**Habitat:** Benthic. Bays and estuaries from Massachusetts to Florida and Panama.
**Diet:** Worms, crustaceans, and small fishes.
**Fun Facts:**
- Historically, Hogchokers have been abundant in the Hudson River, farmers used to use them as affordable feed for some of their livestock. This species received its unusual name because Hogchokers often choked pigs when they were swallowed whole.
- Hogchokers are a flat fish with a brownish gray body and vertical lines and spots.
  - These small fish use camouflage for protection and can change color within seconds.
  - They are dextral (right eyed) flatfish

**Oyster Toadfish (Opsanus tau)**

**Max Size**: 32 cm (1 ft.)

**Habitat**: Benthic. Inshore waters in and under wood and rocks, from Maine to Florida.

**Diet**: Small crabs, small fishes, and crustaceans.

**Fun Facts**: N:\Summer Staff Information\2020

- Male toadfish emit a foghorn-like sound during the mating season to attract females, like a toad, though both sexes can croak.
- Toadfish are benthic, preferring to spend most of their time nestled in debris such as rocks and wood. They become very territorial of their “spot” and spar with individuals.
- Toadfish are some of the hardiest fish in the Hudson, able to tolerate difficult water conditions, be out of water longer than most fish, and can eat just about anything they can fit in their massive mouth.
- Because of their durability they were selected by NASA to be sent into space in 1998 to study the effects of lower gravity on the development of otoliths (earstones).
- Toadfish are ambush predators, lying in wait while camouflaged for prey to swim by.

**Pipefish, Northern (Syngnathus fuscus)**

**Max Size**: 30 cm (1 ft.), avg. 15 cm (6 in)

**Habitat**: Benthic. Hides amongst vegetation and debris. From Labrador to the Gulf of Mexico.
Diet: Amphipods and crustaceans.

**Fun Facts:**

- Northern Pipefish have long and slender bodies, mimicking the shape of seagrass in order to camouflage from predators.
- The Northern Pipefish is covered by a thick set of bony scales.
- Along with seahorses, belong to the family syngnathidae meaning “fused jaw”.
- Just like seahorses, the males of the species keep their young in a pouch.

**Puffer, Northern (Sphoeroides maculatus)**

Max Size: 36cm (1 ft.)
Habitat: Pelagic, but prefer shallow coastal waters, from Newfoundland to Florida.
Diet: Shellfish.

**Fun Facts:**

- Puffers gets their name from its ability to inflate itself when it’s threatened, which it does by inhaling water or inflating with air, depending on the species.
- Northern Puffers have strong jaws with a beak-like array of fused teeth which they use to crush and cut the shells and flesh of crustaceans and fish alike.
- Though their flesh is not toxic like many species of puffer, its organs are, thanks to the tetrodotoxin contained within.

**Scup (Stenotomus chrysops)**

Max Size: 45 cm (1.5 ft)
Habitat: Pelagic. Coastal waters to the continental shelf, from Massachusetts to the Carolinas.
Diet: Invertebrates, crabs, clams, and snails.
Fun Facts:

- The Scup is also known as the Porgy.
- Scups have been known to live up to 20 years.
- The Scup can often be found swimming in schools. Most of the fish within a school are normally only 3 to 4 years of age.
- When stressed, Scups show black stripes.

Seahorse, Lined (*Hippocampus erectus*)

**Max Size (for Hudson):** 10 cm (4 in)
**Habitat:** Benthic. Shallow bays and estuaries, to deeper shelf waters, hiding amongst vegetation and debris. Nova Scotia to Venezuela.
**Diet:** Amphipods and small crustaceans.

Fun Facts:

- Seahorses are found in temperate and tropical waters all over the world, including the Hudson River.
- The male seahorse receives eggs from the female and keeps them in a pouch where he fertilizes and carries them until they are ready to hatch.
- Seahorses can easily die of exhaustion in stormy weather; they are not strong swimmers and rely on their prehensile tail to anchor themselves to vegetation and substrata.
- The serial, bony rings that make up their secondary, dermal skeleton are quadrilateral - one of the only instances of square biological components in animals.

Sea Robin, Northern (*Prionotus carolinus*)

**Max Size:** 45 cm (1.5 ft.)
**Habitat:** Benthic. Sandy-bottomed, shallow waters from New England to North Carolina

**Diet:** Crabs, worms, and fishes.

**Fun Facts:**

- Sea Robins get their name from their fan-shaped pectoral fins which open and close rapidly when they swim, giving them a wing-like appearance.
- Sea Robins use free rays of their pectoral fins that appear and function like digits to feel for prey. This gives them the illusion of crawling across the bottom as they swim.
- Sea Robins can produce sounds with their swim bladders which sounds like a croaking frog, just like the toadfish.

**Shads (subfamily Alosinae)**

**Alewife (Alosa pseudoharengus)**

![American Shad (Alosa sapidissima)](image)

**Atlantic Menhaden (Brevoortia tyrannus)**

![Atlantic Menhaden](image)
Max Size: 25-60cm (10 in - 2 ft.) - varies widely by species
Habitat: Anadromous. Pelagic. Open ocean to freshwater rivers.
Diet: Plankton, small crustaceans, fish eggs

Fun Facts:

- Anadromous; swimming upstream to spawn around May-June in massive schools historically up to 30 miles in breadth.
- Filter feeders, using their gill rakers and arches to capture plankton as they breath.
- The Shadberry bush is named after the fish due to the synchronicity of the Shad run and the fruiting of the bush.

Silverside, Atlantic (*Menidia menidia*)

Max Size: 15cm (6 in)
Habitat: Pelagic. Open water from Canada to Florida.
Diet: Zooplankton.

Fun Facts:

- Atlantic Silversides are obligate shoalers, becoming physically stressed if they are not in a school. This stress can contribute to health problems and potentially lead to death.
- Atlantic Silversides are a favorite prey of many larger fish including striped bass, bluefish, and flounders.
- The silver and translucent body helps to distract and fool predators.
- Atlantic Silversides mature in 1 year, and very few make it to 2 years old.

Spotted Hake (*Urophycis regia*)

Max size: 40 cm (16 in)
Diet: Small crustaceans, worms, small mollusks, squids, and fish.
Habitat: Benthic/Pelagic. Shallows to open ocean depths, from Canada to Gulf of Mexico.

Fun Facts:

- Hake are in the cod family (*Gadidae*)
- Their filamentous (long and thin) pelvic fins are semi-prehensile (able to be moved independently), allowing them to feel the substrate underneath for prey
- They are incredibly slippery thanks to relatively small scale size and a thick mucus coat.
- Light colored spots run along the length of its body, indicating the position of the hake’s lateral line, a dense collection of nerve cells that help fish to sense movement

**Striped Bass (*Morone saxatilis*)**

Max Size: 130 cm, avg. 50-90cm (4 ft., avg. 1.5-3 ft.)

Habitat: Anadromous. Pelagic. Shallows near rocks and structures to open water from Canada to Gulf of Mexico.

Diet: Any smaller fishes, softer-bodied crustaceans

Fun Facts:

- Striped Bass are fast, aggressive predators, eating nearly any fish (or soft-bodied organism) smaller than them.
- Striped bass are one of the most important game fish on the Hudson River. Their use of the Lower Hudson Estuary as a nursery was a key part of shutting down the Westway project - and the subsequent protected designation of the estuarine sanctuary.
- Their stripes help to break up their silhouette in the water, making them more difficult to be spotted by prey.
- These fish are anadromous, which means they migrate upstream seasonally to spawn in fresher waters and live as adults in the ocean. They spend their juvenile/adolescent years within the bounds of HRPK.
Sturgeon, Atlantic (*Acipenser oxyrhynchus oxyrhynchus*)

**Max Size:** 4.5 m (15 ft.), avg. 1.8-2.4 m (6-8 ft.)

**Habitat:** Anadromous. Benthic. Inshore brackish water to the ocean, from New Brunswick to Florida.

**Diet:** Crustaceans, worms, and mollusks.

**Fun Facts:**
- This ancient fish species has been around for more than 120 million years.
- Endangered due to historical over-harvesting for meat; nicknamed Albany beef.
- Anadromous (up-running) migratory species that use the fresh upper waters of the Hudson as a spawning ground.
- Body covered in bony scutes as opposed to scales

Sturgeon, Shortnose (*Acipenser brevirostrum*)

**Max Size:** 90-120 cm (3-4 ft.)

**Habitat:** Anadromous. Benthic. Inshore brackish water to the ocean, from New Brunswick to Florida.

**Diet:** Mollusks and large crustaceans.

**Fun Facts:**
- Shortnose Sturgeon have been listed as federally endangered since 1967.
- Smaller than the Atlantic sturgeon, though young sturgeon are sometimes difficult to tell apart.
- The Shortnose Sturgeon is not only present in the Hudson River but also in the Great Lakes.
- This species comes through the Hudson Estuary during its yearly migration.
Summer Flounder (*Paralichthys dentatus*)

Max Size: 90 (3 ft.)
Diet: Shrimp, fish, and crustaceans.
Habitat: Benthic. Coastal and shelf waters from Nova Scotia to Florida.

Fun Facts:
- Flounder use camouflage as they lie on the bottom of the river bed to ambush prey, as well as hide from predators.
- Their color and pattern changing abilities are thanks to their highly developed chromatophores (color cells) in their skin - some of the best in the bony fish taxon.
- Flounder are born with one eye on each side of their head; as they grow older, one eye will slowly migrate until it is directly next to the other allowing them a full view of the water above
- Summer flounder have both eyes on the left side of their body as adults and are thus sinistral or left-eyed flatfish

Tomcod, Atlantic (*Microgadus tomcod*)

Max Size: 30 cm (1 ft)
Habitat: Shoals, harbors, river mouths from Newfoundland to Virginia.
Diet: Small crustaceans, worms, small mollusks, squids, and fish.

Fun Facts:
- Atlantic Tomcod are known for their unique adaptation of resisting the PCB toxins (polychlorinated biphenyls) that were once deposited in the Hudson River.
- Tomcods are popular with fishers because they are available in colder months however, they have recently become absent in Hudson River Park due to increasing
water temperatures from the effects of Climate Change that prevent them from spawning in the Park.

- The three dorsal fins on the back of the tomcod are the easiest way to identify them. The barbel on their chin is used to find food.

White Perch (*Morone Americana*)

**Max Size:** 45 cm (19in)

**Habitat:** Pelagic. Fresh and brackish rivers, lakes, and coastal areas from Lake Ontario and Nova Scotia to South Carolina. Found throughout most of the Hudson.

**Diet:** Fish eggs, minnows, grass shrimp, and bloodworms.

**Fun Facts:**

- White Perch are euryhaline: tolerating a wide range of salinity and are thus found in both brackish and freshwater throughout New York State
- Females can lay over 140,000 eggs in a span of one week.
- Hard scales and spiny fins protect fish from predators.
- Not true perch, but in fact bass of the same genus as stripers.

Winter Flounder (*Pseudopleuronectes americanus*)

**Max Size:** 70 cm (2 ft.)

**Habitat:** Benthic. Near-shore waters from Labrador to Georgia.
Diet: Shrimp, fish, and crustaceans.

Fun Facts:

- Eyes are located on the right side of the body as adults, making them dextral or right-eyed flatfish.
- Flounder depend on sight to find their food, and feed mostly during the day.
- Mouths smaller, with less distinct teeth compared to the summer flounder.
- Named for their coming into shoals during winter, moving to deeper water in the summer; inverse of the summer flounder’s pattern.
PLANKTON
Phytoplankton

Diatoms (Phylum Bacillariophyta)

Size: several µm – 1mm
Habitat: Photic Zone of water column. Worldwide.
Diet: Photosynthesis
Fun Facts:

- Diatoms are unicellular algae with shells made of silica—phytoplankton for short!
- This organism is at the base of the aquatic food chain.
- First appeared on the planet more than 180 million years ago.
- They are estimated to complete 25% of all carbon fixation on the planet.

COMMON DIATOM SPECIES

Coscinodiscus centralis
Asterionellopsis spp.

Ditylum spp.
*Thalassiosira spp.* (note, much smaller than *Coscinodiscus spp.*, roughly 25 micrometers in diameter)

*Odontella spp.*
Skeletonema spp. *(Thalassiosira and Asterionellopsis chains also present)*

**Dinoflagellates (Phylum Dinoflagellata)**

**Size:** several µm – 1mm  
**Habitat:** Photic Zone of water column. Worldwide.  
**Diet:** Photosynthesis.  
**Fun Facts:**

- Dinoflagellates are photosynthetic however some may also consume prey.  
- Dinoflagellates have two flagella, or whip like appendages, that help them move.  
- Some cause red tides which may poison humans and fish.  
- Some may be bioluminescent, making the water look like it is glowing at night.
Zooplankton

Comb Jelly (Phylum Ctenophora)

Size: Up to 6 cm
Habitat: Marine to brackish waters worldwide.
Diet: Zooplankton and small crustaceans.
Fun Facts:

- Comb jellies are planktonic predators and are prey to fish, sea turtles, crustaceans, other ctenophores, and are even eaten by humans.
- Comb jellies can be sensitive to water quality, so their presence in the Hudson River indicates that the river is in good health.
- Comb jellies get their name from their eight rows of plates made of fused cilia (little hairs) that they use to move through the water.
- Unlike their close relative, the jellyfish, comb jellies do not have stinging tentacles and are harmless to humans.

Copepod (Subclass Copepoda)

Size: 1 – 2 mm
Habitat: Fresh, Salt, Frozen waters and Hydrothermal vents worldwide.
**Diet:** Phytoplankton and/or zooplankton, depending on species.

**Fun Facts:**

- The Copepod’s Greek name meaning “oar-footed” refers to the legs that move in sync.
- Important piece of the food chain—links algal cells to juvenile fish and whales.
- Some species are parasitic to fish; others eat mosquito larva and help to curb malaria.
- Copepods are the most numerous multi-celled aquatic animals.

**Copepod & Barnacle Nauplii (Subclass Copepoda & Infraclass Cirripedia)**

**Size:** VERY SMALL -1mm  
**Habitat:** Fresh, Salt, Frozen waters and Hydrothermal vents, worldwide.  
**Diet:** Phytoplankton  
**Fun Facts:**

- Several crustaceans start their lives as larvae referred to as nauplii, and go through several nauplius stages before developing into adults  
- Nauplius derives from the greek Nauplios, a name of a son of Poseidon. Thus, nauplius is an apt name for the young marine crustaceans of the world!  
- Pictured on left is a copepod nauplius, while on the right is a barnacle nauplius, which can be distinguished by two spikes located near the anterior of their body
Fish Larvae (Class *Actinopterygii*)

**Size:** <1 mm-20 mm  
**Habitat:** Photic Zone of water column worldwide.  
**Diet:** Phytoplankton and/or zooplankton, depending on species.  
**Fun Facts:**

- Fish larvae are meroplankton, meaning they don’t stay plankton their whole lives.
- After they hatch, Fish Larvae eat their own eggs sacs and then eat other plankton and algae.
- After a few days, Fish Larvae move on to the next stage of their lifecycle – adolescent Fries.
- Only an estimated 10% of fish larvae are known and may be identified.

Lion’s Mane Jelly (*Cyanea capillata*)

**Size:** Up to 7’ diameter bell; 200 ft long tentacles  
**Habitat:** Colder waters in the Atlantic and Pacific oceans.  
**Diet:** Zooplankton, small fish, ctenophores, and other jellies.  
**Fun Facts:**

- This species has tentacles that give a painful sting, even after they die.
- Lion’s Mane Jelly form shoals (or “schools”) that may stretch for kilometers.
- Lion's Mane Jellies are continuously swimming.
- Lion’s Mane Jellies eat by lowering their tentacles onto fish and stunning them with millions of stinging cells called nematocysts.
Polychaete Worm Larvae (Class Polychaeta)

Size: 0.5-2.5 mm
Habitat: Photic Zone of water column.
Diet: Phytoplankton and/or zooplankton, depending on species.
Fun Facts:

- Polychaetes are referred to as bristle worms due to the protruding hairs from parapodia on each body segment
- Polychaetes are an incredibly diverse group showcasing many different survival strategies. Polychaetes include clam worms, tube worms, fan worms, bobbit worms, and many more!
- Larval stages of polychaetes of different species can look very similar to one another, but can be differentiated by the orientation of their feeding palps and other bodily features

Rotifer (Phylum Rotifera; Pictured: Synchaeta spp.)

Size: Up to 2mm
Habitat: Photic Zone of water column.
Diet: Organic particulate, dead bacteria, algae, and protozoans.
Fun Facts:

- Rotifers are commonly referred to as wheel animals due to the ciliated corona that they use to collect food. When feeding, the cilia move in a way that makes them resemble wheels in motion.
- Rotifers move their cilia in a way that generates currents in the water to draw plankton into their mouth.

Snail Veliger (Class Gastropoda) [Pictured: Mud Dog Whelk]

Pictured: Profile (left) and top down view (right) of mud dog veliger. Note that the larva already has a shell even in this early stage of life.

Size: <1mm
Habitat: Photic Zone of water column.

Fun Facts:

- Many mollusk larvae are referred to as veligers, which means ‘sail-bearing’. This refers to ciliated flaps that are used for swimming and feeding.
- Snail larvae spend a period of time swimming and feeding on plankton in the open water column before settling to the bottom of bodies of water.