

## Commonly Seen Organisms in Oyster Gardens in the NY/NJ Harbor Estuary

A condensed, field version of 'Commonly Seen Organisms in Oyster Gardens' created by Allison Mass, June 2008, designed to help NYC oyster gardeners identify the many other organisms that may inhabit their oyster gardens.

**PREDATORS:** These are all organisms that can harm your oysters. They may eat the actual flesh of the oyster, weaken the shell, or simply outcompete the oysters for food and oxygen. If you see a large number of these predators in your garden, be sure to make a note in your data sheet and try to remove them. Don't forget, crabs can pinch hard!!



**Oyster drills** (*Urosalpinx cinerea*): A small (up to 1 inch) gastropod (snail) with a single shell. One end is open and flared out. Oyster drills prey on oysters by using their long, rough radula (tongue like appendage) to bore a hole in the shell of the oyster and suck the meat out.



**Mud Crabs:** Small crabs (less than 1") with 10 legs; front legs have claws (one bigger than the other). Claws can be colored differently; the rest of the body is a lighter brown. Prey on juvenile oysters and crabs; can crush the shells of up to 1/2 inch bivalves!



**Blue Crabs** (*Callinectes sapidus*): Has a wider shell than mud crabs, and larger size (up to 9 inches for adults). Last pair of legs is modified into swimmerettes. Spiny projections off the sides of the carapace (body). Olive green bluish coloring, with brighter blue color under claws and a whiter underbelly. Picture shows a juvenile.



**Green Crab** (*Carcinus maenas*): Shell has 5 'teeth' (small pieces sticking out) behind each eye; shell is about 90 mm wide. Usually a darker green color on top, with a yellowish underbelly; during molting the color can become orange and blotched with white spots. Known to eat bivalves, especially juvenile oysters (the crab is limited by the oyster's size, it can't eat larger oysters).



**Japanese Shore Crab** (*Hemigrapsus sanguineus*): An invasive species, it first appeared on the NJ coast in 1988 and quickly spread north. Occurs in the intertidal zone, using rocks as places to hide and forage for food; also seen on oyster reefs and mussel beds. Small size (adults are usually up to 1.5 inches) with a more square shaped carapace (the part of the shell that covers the main body) than other crabs. Usually dark brown green black in color; walking legs usually banded in color. Eats blue mussels, soft shell clams, and oysters mainly; can have a large effect on these populations. Note the colored leg bands and square shaped carapace.



**Flatworms:** These flattened, wider worms are usually found as parasites (an animal that lives off of another, causing harm or death to the host) on larger organisms, such as oysters. Very small size (up to 1 inch). Thin, translucent body. Feed on oysters and barnacles by slipping under the shell and eating the animal from within. Species found in NY/NJ: Oyster flatworm (*Stylochus ellipticus*): pale colored with eyespecks along front margin and tiny tentacles on top of body.



**Sea Robin** (*Prionotus carolinus*): A small fish (usually smaller than 1m long as adults) that lives its life near the bottom of the intertidal area. It has a bony head, and larger pectoral fins (located towards the head of the fish, under the gills). The fins almost resemble stubby 'arms' as they are very fleshy. Three spines come off of each fin and are used as feelers. Grey reddish brown coloring, with some paler spots and stripes on the back and sides; white coloring on belly; yellowish brown fins. Feeds on bivalves, worms, crustaceans, and other smaller fish.



**Black Fish** (*Tautoga onitis*) Has very prominent 'lips' with teeth jutting outward. Usually less than 2m long as an adult. Often associated with reefs (mussel and oyster). Feeds on bivalves, snails, and crustaceans.

**REEF ASSOCIATES:** organisms that live with the oysters on, or around, an oyster reef. The relationship can be either mutualistic (where both parties benefit) or commensalistic (where only one party benefits, but the other is not harmed). Usually, these organisms benefit from the protection of the oyster reef and clearer water that can occur over the reef, but the oysters themselves do not benefit.



**Barnacles:** Small organism, sometimes found cemented along the ropes and mesh of oyster gardens and on the oysters themselves. Usually white to beige in color, and have a pyramid like shape, with plates forming a cone. The outer surface of the barnacle is hard, due to calcium carbonate shell plates. Main type of barnacles found in NYC nets is the acorn barnacles. Common species seen in NY/NJ: Northern rock barnacle which is found in more saline waters, and the Ivory barnacle which is found in lower salinity water.



**Blue Mussels** (*Mytilus edulis*): Small bivalve (up to 4 inches) with 2 shells (hinged together) that occurs attached to hard substrates (rocks, pilings, ropes, etc) and usually found in clumps. Shells are smooth on the outside, blue black in color and often glossy/shiny. Mussels attach themselves using tough byssal threads which glue the bivalve to the surface.



**Ribbed mussel** (*Geukensia demissa*; previously known as *Modiolus demissa*): Long, thin bivalve with 2 hinged shells that have ribs running lengthwise; brownish, green brown coloring. Found in salt marshes and other estuarine areas, usually attached to the base of marsh grass and half buried in the sediment. Usually occur in clumps. Attaches to plants and each other using tough byssal threads. During low tides, shells are usually closed to prevent dehydration, but the bivalves sometimes open to take in air.



**Sea Squirts/ Tunicates:** Small, round, jelly like animal that can occur in large numbers on oyster gardens. Rounded, with 2 siphons on the top side. "Sea grapes" (*Molgula* and *Bostrichobranchus* spp.) have uneven siphons; most other species of sea squirt have even siphons. Most species live attached to hard substrates, such as ropes and oyster nets. Squeezing the sea grape can cause the siphon to shoot water out at you (hence the name, sea squirt!) Outer surfaces often covered in debris and encrusting algae.



**Shore Shrimps** (*Palaemonetes* spp., especially *P. pugio*): Small (1.5 2 inches); often clear with dark streaks; with numerous legs and antennae. First and second legs have claws, others with hairlike projections for swimming. The rostrum (piece over the head) extends outward beyond the antennae. Likes to hide out in eelgrass or other seagrass beds, or congregate around pilings. Known as "grass shrimp" but are not true Grass shrimp (*Hippolyte* spp.)



**Slipper shells:** A small gastropod with a one-valved shell, which is found attached to the underside of hard substrates (including other shells and live organisms). The underside of the shell has a platform extending about 1/2 way across the shell opening. Usually white-beige in color. Often considered a "nuisance species" in oyster gardens and beds because they compete with oysters for food and space, and can inhibit oyster spat from setting to a bed. Species seen in NY/NJ: Eastern slipper shell (*Crepidula plana*): flattened, pure white, and small (up to 1 inch. Common/ Atlantic slipper shell (*Crepidula fornicata*): has a more rounded/arched shell, with brown markings and a slightly crooked axis (tip is bent to one side); small size (1.5 inches). *Crepidula plana* (left), *Crepidula fornicata* (right)



**Mud Snails** (*Ilyanassa obsoleta*) Small (up to 3 cm) gastropod snail with a whorled, cone shaped shell. Opening to the shell is oval and large (1/2 the height of the shell). Dark black or brown in color. Often the shell is covered in mud, algae, and encrusting bryozoans. Extremely abundant in Mid Atlantic intertidal estuaries. Crawls along surface of the mud. Eats algae, worms, and detritus (dead and decaying matter) in the mud; eaten by birds.



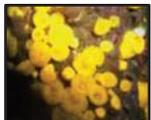
**Mud Tube Worm** (*Spionidae* family, especially *Streblospio benedicti*) Polychaete (marine segmented worms) with one pair of parapodia per segment (paddle like appendages). Head is cone shaped, with 4 eyes, a pair of tentacles, and 2 pairs of gills. Reddish brown coloring with dark green around gills. Small size (up to 6 mm). Lives in fine sandy, and silty sediments that are easy to ingest. Make tubes out of sediment and mucus and live inside the tubes, right below the surface.



**Amphipod** (*Gammarus* spp.) Small crustaceans (like crabs, shrimp, and lobsters) that are laterally flattened. Large eyes on either side of the head. Multiple pairs of legs on the thorax.



**Sand Worm** (*Nereis* spp.; commonly called Clam worms) Polychaete worm, with a set of setae (bristled, spiny like projections) and parapodia (appendages) on each segment. Head has a pair of sickle shaped jaws, and short blunt palps near the eyes.



**Sponges:** The simplest of all true 'animals', sponges look like a plant but are really living animals. Sponges can be free standing, encrusting, and boring (becoming intertwined with their substrate). Species found in NY/NJ: Red beard sponge (*Microciona prolifera*): a reddish orange brown sponge that encrusts on a substrate, grow up to 8 inches; in shallow subtidal estuaries. Boring sponges (*Cliona* spp.): very small (less than 1/4 inch), yellowish in color; bore into mollusk shells (especially oysters!). Doesn't eat the oyster, but can weaken the shell enough for another parasite or predator to kill the oyster.



Golden Star Tunicate (*Botryllus schlosseri*) is a colonial tunicate consisting of many small individuals called zooids. A colony consists of many of star-shaped clusters of zooids linked together within a purple to brown or clear, firm, fleshy matrix. A single cluster is usually less than one-half inch in diameter and may have up to about 20 zooids.