

Blue Crab Information Sheet from the Chesapeake Bay Program¹

Background

Despite decades of research, many questions remain concerning the behavior of the blue crab, *Callinectes sapidus*. This pugnacious, bottom-dwelling predator has been the object of the most productive commercial and recreational fishery in the Chesapeake Bay for many years, yet its behavior remains mysterious. Nevertheless, we know a considerable amount about the crustacean's life cycle and habitat, during what appears to be a particularly perilous time for the species in the Bay.

Blue Crab Harvest

The 2004 blue crab harvest in the Bay reached approximately 60 million pounds, which is below the long-term average, but it was a 25 percent increase over the 2003 harvest. The three-year commercial baywide harvest average (2002-2004) of 54 million pounds is 26 percent below the long-term average (from 1968 to 2004) of about 73 million pounds annually, and this figure is considerably below prediction levels.

Loss of Habitat

The constant harvest pressure on the species and the loss of submerged aquatic vegetation (or SAV) habitat - which young crabs require for shelter and food during their development - have led directly to the decline in the blue crab's numbers. To stem this trend, [Chesapeake Bay Program partners](#) are urging the continuation of current management plans to promote increased blue crab populations in the Bay. Restoring crab populations to healthy levels requires focused long-term planning, in several areas:

- Fishery management planning;
- Reduced harvest pressure;
- Bay grass restoration; and
- Reducing nutrient pollution to improve the levels of dissolved oxygen in the water during the summer.

¹ <http://archive.chesapeakebay.net/fish1.htm>; Accessed: November 2010

Crab Facts

The olive green-and-white 'blue crab' - so named for its brilliant blue claws - is a dominant benthic (or bottom-dwelling) predator in the estuaries, lagoons and coastal habitats of the Western Atlantic, Caribbean and Gulf of Mexico.

- The blue crab is a 10-legged crustacean, related to the shrimp, lobster and crayfish.
- It walks sideways using its three middle pairs of legs and uses its sharp front pincer claws to defend itself and grasp prey.
- The species earns part of its Latin name (*Callinectes*, in Greek, means 'beautiful swimmer') from the remaining pair of hind appendages, which are broad and flat like paddles and make the crab a remarkable swimmer indeed.
- A crab's gender can be determined by the shape of its underside 'apron'. The male crab's apron is shaped like an inverted 'T.' An adult female's apron is broad and rounded, while an immature female's is triangular. Red tips on the claws also indicate that the crab is female.
- A female carrying a cluster of orange eggs beneath her apron is known as a 'sponge crab' and is nearly ready to spawn.


Blue crabs are both predator and prey in the benthic and planktonic food webs of the Chesapeake Bay .

- In their post-larval and juvenile stages crabs provide food for [eel](#), [drum](#), [spot](#), [Atlantic croaker](#), [striped bass](#), sea trout and [catfish](#).
- Some sharks and [cownose rays](#) feed on juveniles and larger crabs. The Atlantic Ridley sea turtle, an endangered species, migrates to the Bay every summer to feed on the blue crab, its preferred food.
- Cannibalism of young blue crabs by larger crabs is common and may regulate population abundance.


Adult blue crabs are omnivorous. They feed on bivalves, crustaceans, [fish](#), annelids (including [marine worms](#)), plants, detritus and nearly anything else they can find, including dead fish and plants. The blue crab's favorite food appears to be thin-shelled bivalves. When bivalves are scarce, cannibalism on juvenile crabs increases.

The Blue Crab's Life Cycle

- Blue crab larvae—or 'zoea'—are released by mature females into high salinity waters near the mouth of the Chesapeake Bay.

- Currents transport zoea along the continental shelf, where they develop for a period of 30 to 45 days, passing through seven or eight distinct stages. During this period the shrimp-like zoea feed on zooplankton and plant material. (See: [blue crab life stages](#) )
- The zoea then develop into their postlarval ('megalops') stage (in which they resemble tiny crayfish or lobster) and are swept into the Bay by wind and currents, migrating vertically in response to light and tides. They use nocturnal flood tides to assist their movement up the estuary, into shallower nursery habitats, where beds of SAV provide nursery grounds and protection.
- After 6 to 20 days, depending on salinity and temperature, the megalopae molt, producing the true first crab stage. It is at this time that they become recognizable as miniature blue crabs.
- Blue crabs reach maturity at approximately 12 to 18 months of age, growing to approximately five inches wide, which is the legal size for harvesting.
- The sexually mature crab is approximately five inches wide, which is the legal size for harvesting.

Once the blue crab reaches maturity, it will begin to mate.

- Before mating, the male 'cradles' a soft-shell female in its legs and carries her for up to several days while searching for suitable cover, where he guards her during her final molt. Mating takes place while the female is in her soft-shell phase.
- After mating, the male resumes cradling the female for several more days until her new shell has hardened. The male departs to search for another receptive female; the female migrates to the higher salinities of the lower Bay, where she develops an [orange external egg mass](#)  beneath her apron that may contain between 750,000 and 8 million eggs, depending on her size.
- This egg mass darkens over a two-week period as the orange yolk is consumed by the developing larvae. Larvae develop large black eye spots as hatching approaches.
- Spawning occurs over a period of one to two weeks, from May to September, with a minor peak in June and major peaks in July and August.
- Individual females may spawn more than once, depending on the amount of sperm transferred during mating.
- Successive spawns may occur during the same year, or females may wait an entire winter to spawn again the following spring.

The average lifespan of a crab is up to three years, however the maximum age may be as long as five to eight years. Under current levels of fishing pressure, most crabs live from one to two years beyond maturity.

Habitat

Immediately after molting, crabs are particularly vulnerable to predators because their shells are soft, so they often hide in Bay grass beds for protection. Young crabs use Bay grass beds for nursery areas, and crabs of all sizes forage for food there. Bay scientists have found that 30 times more juvenile crabs are found in Bay grasses than in areas without grasses.

Like other aquatic animals, blue crabs are vulnerable to summer's low oxygen conditions. Fueled by nutrient pollution from farms, sewage treatment plants, homes and the exhaust from cars, algal blooms remove oxygen from the water. Crabs often die from low oxygen levels when trapped in crab pots under these conditions.

How YOU Can Help:

- Remember that a single female blue crab can produce up to eight million eggs in one mating season, so try to minimize their capture.
- Keep only crabs that you are going to eat.
- Don't leave crab pots unattended for long periods of time.
- Contribute at the habitat level by participating in Bay grass restoration projects and by limiting activities that could compromise the growth or health of [Bay grasses](#).