Blue Crabs

Despite its fearsome appearance and aggressive nature, the blue crab is greatly cherished in the South Carolina lowcountry. Many gourmets prefer the blue crab's sweet meat over all other locally-caught seafood. This interesting animal is often sought by recreational fishermen and it also supports a considerable commercial fishery.

The blue crab requires both inshore brackish waters and high salinity ocean waters to complete its life cycle. They are common from Massachusetts to Texas and a few have been reported as far north as Nova Scotia and as far south as Uruguay. The Chesapeake Bay, North Carolina and Louisiana support the largest blue crab fisheries.

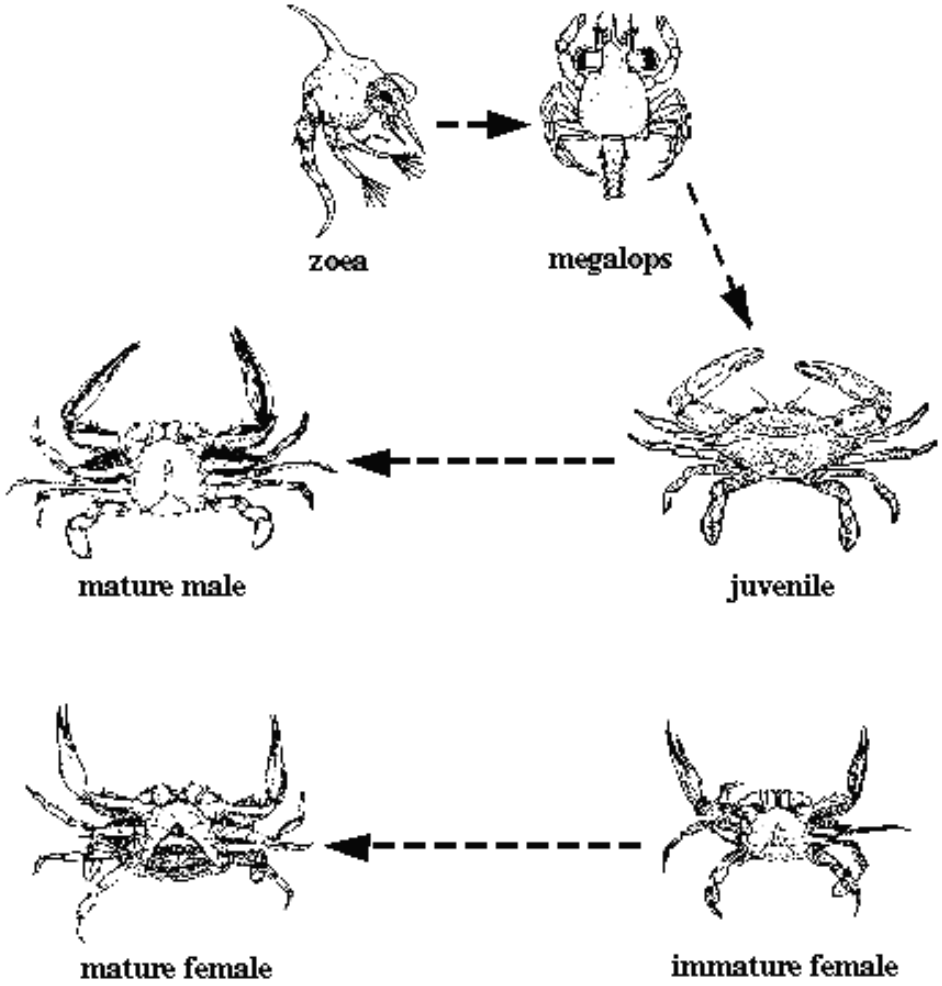
Although other small swimming crabs in this family (Portunidae) occur locally, only the blue crab is of any commercial or recreational importance in South Carolina. The blue crab's scientific name, Callinectes sapidus, translates to "savory beautiful swimmer."

Swimming is accomplished by skulling the oar-like fifth pair of legs, the swimming legs. These paddles usually rotate at 20 to 40 revolutions per minute, but they quickly disappear into a blur as the animal darts away.

Walking is accomplished with the three pair of thin walking legs. Blue crabs almost always walk sideways clearing a path with their sharp lateral spines. The blue crab's most prominent features are the large and powerful claws which are used for food gathering, defense, digging and sexual displays. If not handled properly, blue crabs can inflict severe injury. Male crabs can be distinguished from females by the shape of the abdomen. The male has a T-shaped abdomen which is held tightly against the body until maturity when it becomes somewhat free. The immature female has a triangle-shaped abdomen which is tightly sealed against the body. The mature female's abdomen becomes rounded and can be easily pulled away from the body after the final molt.

Large males, often called "Jimmies" by fishermen, usually have brilliant blue claws and legs. The mature females or "sooks" can be distinguished by the bright orange tips on their claws. Males typically grow larger than females, sometimes reaching seven or eight inches in point-to-point width. Some males have been reported to grow to about ten inches.

Life Cycle of the Blue Crab



Mating and Spawning

Mating generally occurs in brackish water from February to November with peaks in March to July and in October and November. Females mate only during the final molt when they are in the soft shell condition, but males are believed to mate several times.

Researchers have determined that blue crabs release chemical signals called pheromones which attract their mates. Two to three days prior to mat-ing, the male will "cradle carry" the soon-to-shed female after a rather elaborate courtship ritual. These crabs are called "doublers." The male is usually one to two inches larger than its mate. The male protects the soft female when she is vulnerable to predators. After mating, he will continue to carry her until her shell hardens.

After mating, females migrate to higher salinity water in the lower reaches of the estuary or in the ocean. Spawning occurs in near shore ocean water about one or two months after mating in spring or summer. Females that mate in fall or winter usually spawn the following spring.

Females produce up to two million eggs, but only about one egg per million will survive to become an adult. Eggs are carried under the abdomen until they hatch. The egg mass is bright orange at first and becomes darker as the embryos mature and consume the egg yolk. Females carrying an egg mass are called "sponge crabs," and are protected by law in South Carolina. If captured, they must be returned to the water immediately. Sponge crabs usually first appear in early April and are common until August or September.

Eggs hatch after about two weeks into zoea larvae which are 1/100-inch long. During the next month there are six or more larval stages before reaching the megalopal stage. The megalopae, which is about 1/10-inch wide, begin to migrate into the nutrient-rich estuarine waters. Very soon after settling in the saltmarsh creeks, the megalopae transform into the "first crab" stage.

Crabs hatched in April or May become two to three inches wide by Nov- ember and five inches or larger by August the following year. Crabs hatched in early fall will be only -inch in width by winter. After one year, these crabs will be only three to four inches wide and will not mature until the following spring. A few crabs may live for three years but most live for less than a year. South Carolina law requires that captured crabs less than five inches in width be returned to the water.

Growth and Molting

Blue crabs, like all arthropods, must periodically shed their hard exoskeleton in order to grow. The smallest crabs shed every three to five days, juvenile crabs every 10 to 14 days and those 3 inches and larger every 20 to 50 days.

Experienced crabbers can quickly spot crabs about to molt. Five to ten days before molting, a narrow white line appears just within the thin margin of the last two joints of the swimming legs. A few days before shedding, the peeler crab's narrow white lines give way to a red line, and fine white wrinkles appear on the blue skin between the wrist and upper arm. The actual molting lasts for only a few minutes as the crab pushes out the rear of the old shell.

The resulting soft crab, which is limp and wrinkled, will swell to normal shape and usually increase in size by 25 to 35 percent. If disturbed, the vulnerable soft shell crab can swim and walk but prefers seclusion. After a few hours, the crab's shell becomes parchment-like and is fully hardened within two or three days.

During the spring, usually early April, there is a "run" of peeler crabs that lasts for about two weeks. At this time fishermen will target the female crabs that are molting into mature crabs after the winter dormancy. These crabs can be caught in "peeler pots" which are crab traps in which one or two large males are used as bait to attract the females which are ready to mate. The peeler crabs are held for a short time in shedding tanks until the molt. After molting, the soft shell crabs are removed from the water and refrigerated for sale.

Abundance and Predators

Factors controlling year-to-year variation in blue crab stocks exert their influence early in the life cycle. Water circulation patterns controlled by prevailing winds, can either carry the larvae shoreward or sweep them away. Thus, recruitment (addition of new individuals) of megalopae and small crabs may be largely controlled by the coastal water currents and the weather. Young crabs within the estuaries are vulnerable to drought, flood, or unseasonable temperatures.

A relationship seems to exist between river discharge and survival of small crabs. Small crabs survive best during years of relatively high fresh water runoff which increases nutrient input and decreases salinity. However, too much rainfall can also flush the small crabs from the marsh.

Predators claim large numbers of young crabs, and crab populations may vary from year to year according to the abundance of predators. Blue crabs

are subject to predation throughout their life cycle and are particularly susceptible when they are soft during the molting process. As larvae, they are vulnerable to fishes, jellyfish and other planktivores. The megalopae and juvenile crabs are consumed by various fishes and birds, as well as other blue crabs.

Eating Habits

Blue crabs eat a variety of foods, including fishes, oysters, clams, snails, shrimp, worms and other crabs. At high tide, crabs may swim into the salt marsh to pluck snails from the tall grass. At times, they burrow into the bottom with only their eye stalks visible, lying in wait for an unsuspecting fish. Crabbers typically bait their pots with oily fishes which seem to work better than other baits. Presumably, the crabs home in on the oil or odor being released. Studies have shown that blue crabs can follow a current upstream by cris-crossing the stream bed. Crabs are opportunistic feeders, meaning they will eat what is most available regardless of their size, the season or the area they inhabit.

Fishing Gears

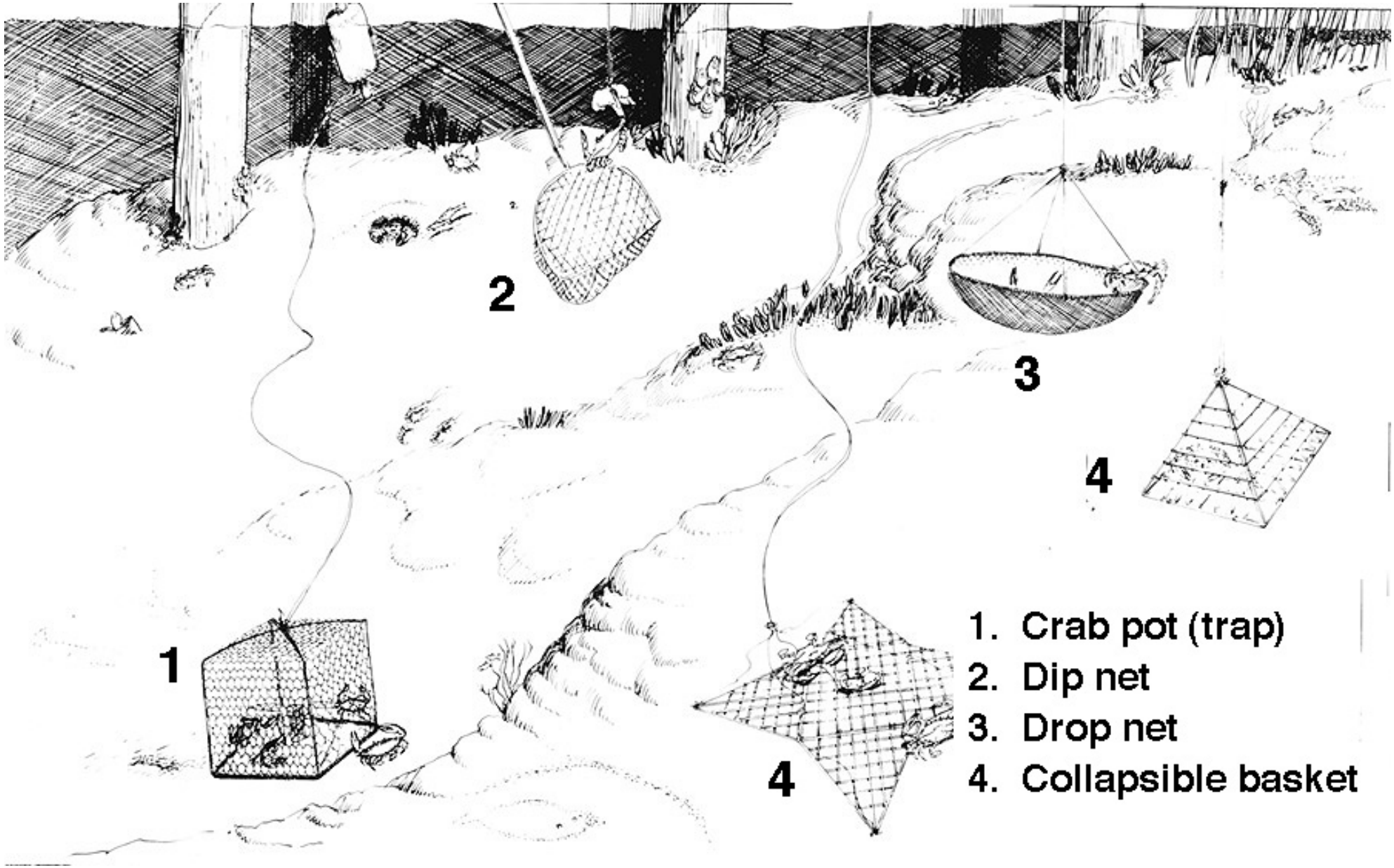
The most common type of commercial fishing gear is the crab pot which is a cubical wire trap with two or four entrance funnels. The pot has two chambers, a lower chamber which has the entrance funnels and the bait well and an upper chamber that is separated from the lower chamber by a wire partition that has two holes. The blue crab's natural reaction to confinement is to swim upward. In doing so, they move into the upper chamber, thereby reducing their chances for escape. The crab pot was first introduced in Chesapeake Bay in about 1936, but was not widely used in South Carolina until the late 1950's. Crabs are also caught and sold as part of the bycatch of shrimp trawlers and after the shrimp trawling season is closed, usually in January, trawling for crabs with large mesh trawls is permitted until March 31.

Recreational blue crab fishermen employ several fishing gears and methods. South Carolina law allows individuals to fish two crab pots without a license if they are properly marked with floats bearing the owner's name. Fishing more than two pots requires a commercial crabbing license. Whether fishing from a dock or boat, recreational crab pots should have a marked float and enough line to prevent the float from being submerged at high tide. Recreational crabbers should also be careful not to leave a pot in an area that would expose the pot and crabs at low tide. Pots should be checked daily and catches can often be doubled if the pots are checked twice per day. To remove crabs, pull the wire apart and shake the crabs into a tub or bucket. Some stubborn crabs may have to be dislodged with a stick. Remember that crabs can pinch, so be very careful about putting your hand in a pot.

Drop nets and collapsible traps, usually baited with herring, can be fished from docks and bridges. Another effective recreational method called "dipping" requires a long-handled dip net, several yards of string and bait. The bait, usually a chicken neck or fish head, is tied to the string and thrown into the water away from the bank. Once a tug is felt, the crabber pulls the bait and crab close enough to be quickly dipped from the water and placed into a waiting bucket. The beginner should be cautious when handling a blue crab since the pinch of the powerful claws can be extremely painful. (The inexperienced crabber should probably wear thick gloves). Always approach from the rear when picking up a crab. An experienced crabber can quickly grab the base of one of its swimming legs while holding the claws down with some object. Should a crab get a hold on a finger, it is usually best not to pull it off. First, try letting it hang; many times the crab will release and drop. If the crab will not release, use the free hand to immobilize the other claw and slowly bend the offending claw backward until the crab releases it.

Crabs can be caught during all twelve months, but become inactive in winter when water temperature falls below 50-55 degrees F. As temperatures rise in March and April, catch rates increase rapidly. The best time of year to harvest large, heavy crabs is usually from October to December. Mature females are typically near the ocean, but large males are most common in the rivers and creeks.

Crabbing Techniques



Cooking & Cleaning Blue Crabs

Blue crabs in South Carolina are not only abundant and easy to catch, but their preparation for the table is a simple process. Crabs should be kept alive prior to cooking by keeping them cool and dry. Crabs may be maintained live in a refrigerator or in a cooler with a small amount of ice.

Crabs should never be put into a container of water as they will die quickly from lack of oxygen. Crabs that have been dead for a while spoil very rapidly, and its best to discard crabs that are dead. Crabs that have been chilled may appear dead, but will begin showing movement as they warm. If no

movement is detected after warming, discard the crab.

A large double boiler is ideal for cooking blue crabs because it allows crabs to be steamed and not boiled. When using a double boiler, wait until the water boils in the lower pot, then place the crabs in the upper pot. If cooking with a single large pot, crabs may be stacked to the top and a few inches of water added to the bottom. Or, the crabs may be completely covered with water. In either case, seasonings may be sprinkled on the crabs or into the water. Some cooks prefer to mix seasonings with cool water in another pot. After cooking, the crabs are moved to the cool, seasoned water and allowed to soak up the seasonings. This prevents over cooking and allows the crabs to become spicier. Cooking generally takes 20 to 30 minutes producing a well-cooked crab with an orange color and meat that has a firm white texture. Another common practice is to clean live crabs prior to cooking by removing the top shell, abdomen, gills and internal organs. Crabs can be chilled to reduce the handling danger, but with experience, a crabber can learn to hold the claws with one hand while removing the back with the other. This method of cooking allows the seasoned water better access to the meat and reduces the mess associated with eating whole, cooked crabs.

Occasionally small black spots can be found in crab meat. This condition, called buckshot or pepper, is the result of tiny parasites that are relatively common in blue crabs. These parasites are not harmful if eaten by humans, but heavy infestations can impair the quality of the meat.

Saltwater Fishing Conservation & Ethics

Although most people once considered ocean resources to be unlimited, recent rapid declines in the populations of many commercial and recreational species have demonstrated the opposite.

Numerous types of saltwater game fish now are being over harvested and other species will face a similar fate unless all anglers practice wise conservation and adopt an ethical approach to fishing.

Size and catch limits, seasons and gear restrictions should be adhered to strictly. These regulations change from time to time as managers learn more about fish life histories and how to provide angling opportunities without depleting stocks.

The challenge of catching, not killing fish, provides anglers with the excitement and the reward of fishing. Undersized fish, or fish over the limit should be released to ensure the future of fish populations. The number of saltwater finfish tagged and released annually in South Carolina has increased significantly in recent years as more and more fishermen take up this practice that provides information on growth and movement of fish as well as conserving resources.

Saltwater fishermen can further contribute to conservation by purchasing a Marine Recreational Fisheries Stamp which is required to fish from a private boat or gather shellfish in South Carolina's saltwaters. Funds generated by the sale of stamps must be spent on programs that directly benefit saltwater fish, shellfish and fishermen. Help ensure the outdoor enjoyment of future generations by strictly adhering to all rules, regulations, seasons, catch limits and size limits, and through the catch and release of saltwater game fish.

Special Note

This publication was made possible in part from funds from the sale of the South Carolina Marine Recreational Fisheries Stamp and the US Fish and Wildlife Service Sportfish Restoration Fund. Help ensure outdoor enjoyment for future generations by strictly adhering to all rules, regulations, sea-sons, catch limits and size limits. The South Carolina Department of Natural Resources publishes an annual Rules and Regulations booklet that lists all saltwater fishing regulations. Have an enjoyable fishing trip by reading these requirements before you fish.

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DNR Mission Statement

The South Carolina Department of Natural Resources is the advocate for and steward of the state's natural resources. The Department of Natural Resources develops and implements policies and programs for the conservation, management, utilization, and protection of the state's natural resources based upon scientifically sound resource assessment and monitoring, applied research, technology transfer, comprehensive planning, public education, technical assistance and constituent involvement. The Department of Natural Resources is pro-active in protecting the state's natural resources for use and enjoyment by future generations of South Carolinians.