

Ragged Claws Under Silent Seas

Deep Water Crabs of the Charleston Bump

A Photo Documentary by
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Photo courtesy of NOAA Ocean Exploration



What is a crab?

Crabs are distinguished by having 5 pairs of legs on the thorax. Hence, it is in the Order Decapoda which means "10-legged."

- The first pair of legs is generally claw-like.
- A carapace overhangs the gills.
- The abdomen is reduced and fits tightly under the body.

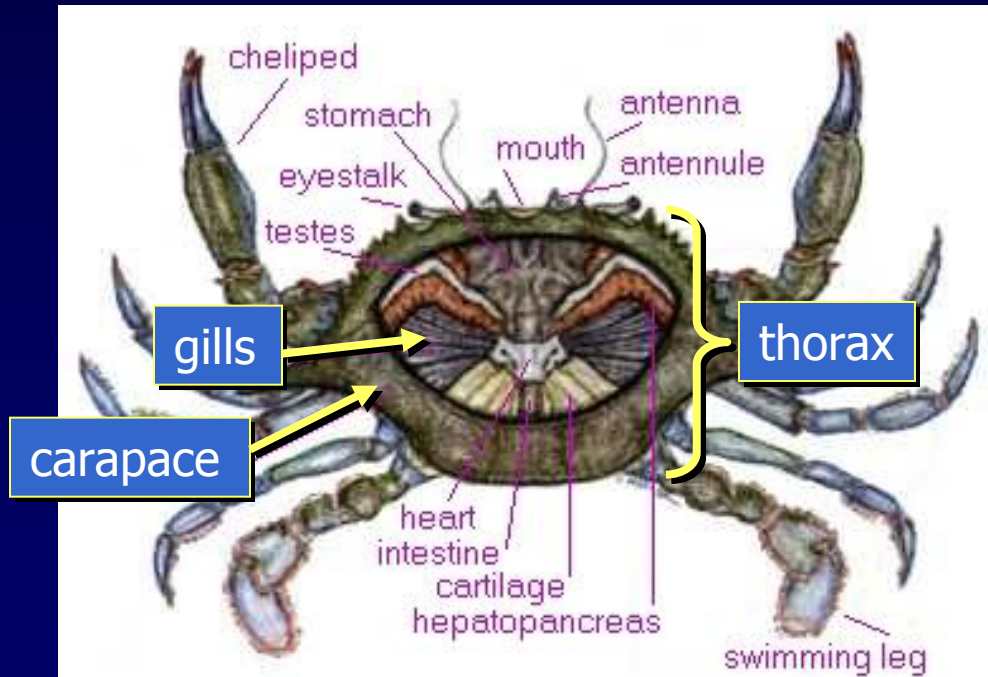


Figure courtesy of Virginia Institute of Marine Science, Sea Grant Marine Advisory Program



How do crabs make a living in the deep sea?

Feeding

- Crabs are opportunistic feeders. Food is limited, so free-falling food is welcome!
- Some hermit crabs are suspension feeders.
- Crabs directly manipulate and chew their food by means of mouthparts and chelae (pincers).



A golden crab feeds while resting on the deep sea floor.



How do crabs make a living in the deep sea?

Feeding

- The stomach grinds food, and digestive juices reduce food to a paste-like substance.
- The gut contents are often hard to identify due to their highly reduced state.

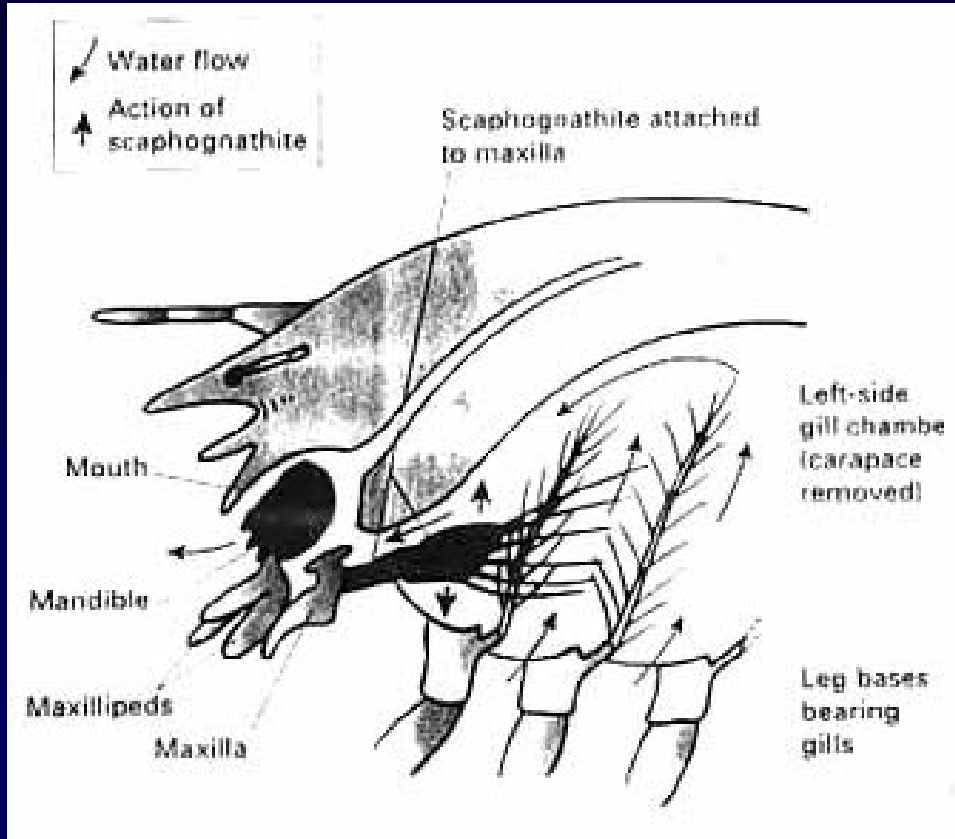


A golden crab feeds while resting on the deep sea floor.

Photo courtesy of E. Wenner



Respiration



- Crabs have highly branched gills that increase surface area for keeping their circulation fluids close to an oxygen source.
- Currents insure a good source of oxygen.
- A crab's activity level influences its oxygen consumption.
- When not feeding, most crabs are resting!



Sense Organs

- Crab eyes may be either large or reduced.
- Having eyes mounted on stalks helps to increase field of view and range.
- Light is limited or absent in the deep sea.
- Reduction or loss of eyes is common in some deep sea decapods.



A giant red hermit crab collected from the shallow continental shelf near the Charleston Bump shows off his large eye stalks.



Crabs must hide or be eaten!

A six-gill shark
consumes an
unsuspecting
deep sea crab.

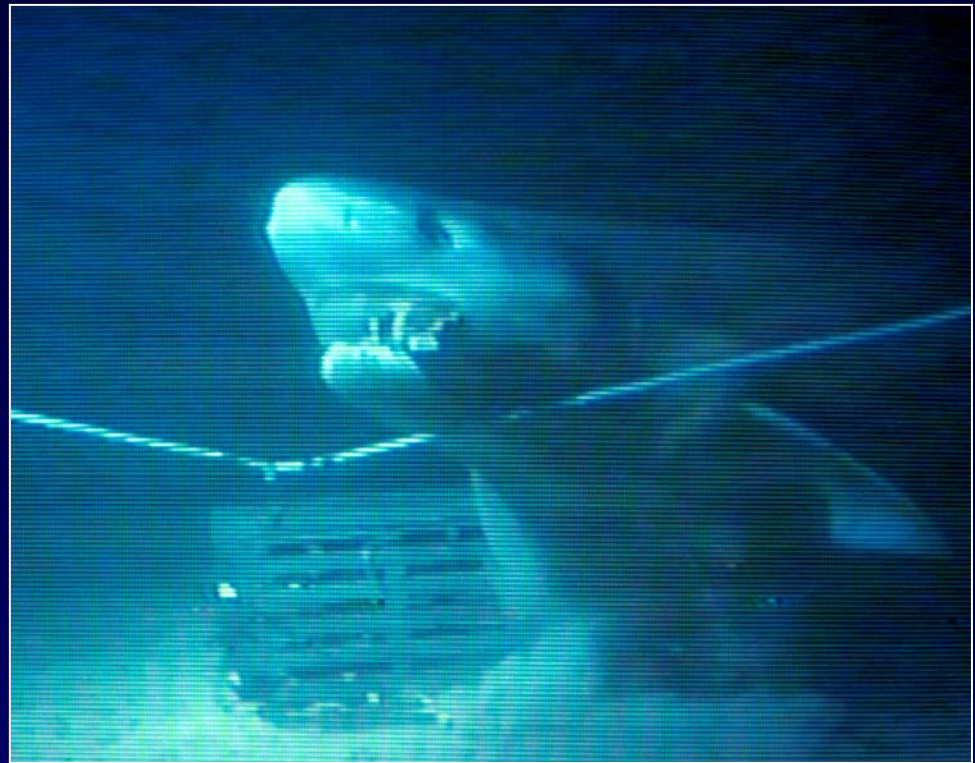


Photo courtesy of E. Wenner



Reproduction

- Most reproduction occurs year round.
- The temperature in the deep sea is relatively constant so breeding seasons are rare.
- Eggs are generally large and few in number compared to shallow water species.
- Vertical migration can occur or larvae may reside near the seafloor.
- Large eggs have large stores of yolk.



Courtship?

A male and female *Bathynectes longispina* from the Charleston Bump appear to be courting one another.



Where do the crabs of the Charleston Bump live?

Coral Mounds



This downward-looking view of a coral mound shows both living and dead stony corals. The complex framework of the branching coral provides excellent crab habitat beneath.

Photo courtesy of E. Wenner



High Relief Ledges



Large rock slabs create ledges that provide excellent habitat for large fish as well as crabs.



Rocky slabs and rubble



Much of the Charleston Bump seafloor has large rocky slabs or rock rubble, under which many crabs find small, safe habitats.

Photo courtesy of NOAA Ocean Exploration

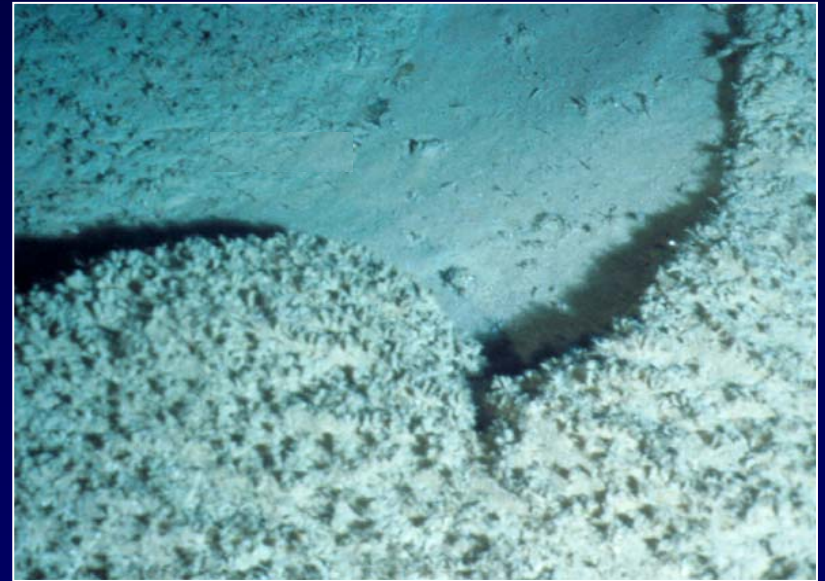


Low relief Hard Bottom



A galatheid crab (squat lobster) roams the low relief hard bottom of the Charleston Bump.

Low relief areas may also have rock ledges and shallow caves for housing crabs.



Photos courtesy of SERTC (left) and NOAA Ocean Exploration (right)



Commonly encountered Bump crabs

Golden Crab, *Chaceon fenneri*

- Large buff-colored crab (>15 cm)
- Lives on a variety of substrates including coral mounds
- Prefers rocky ledge habitat
- Prized for its meat



Photo courtesy of E. Wenner



Jonah crab, *Cancer borealis*

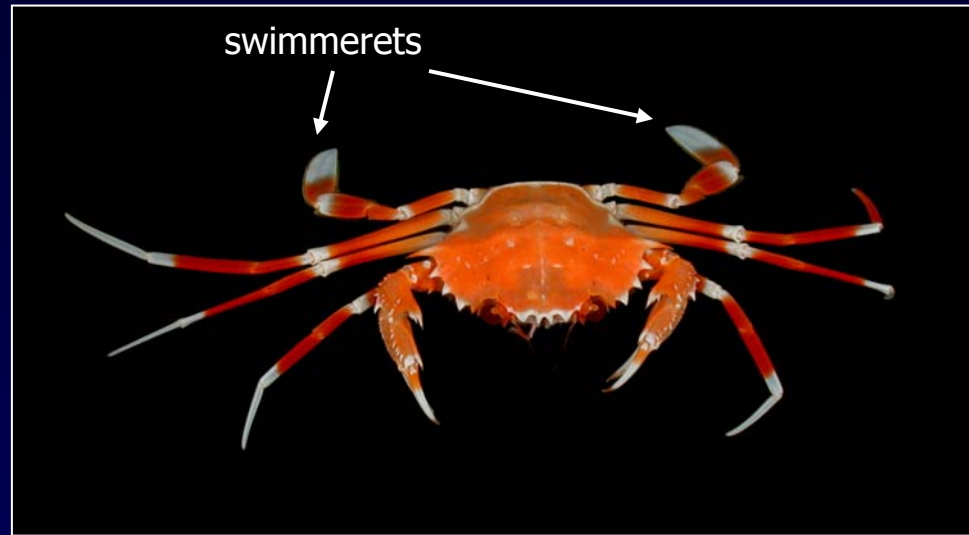


- Favorite habitat is soft bottom ooze
- Infrequently encountered on rocky habitats or coral mounds
- Digs vertical pits and burrows to expose prey
- Favorite food of large predators such as sharks



Deep water swimming crab, *Bathynectes longispina*

- A relative of the blue crab
- Has swimmerets on the fifth legs
- Commonly encountered on rocky hard bottom substrates and coral mounds
- Frequently observed hiding in depressions under exposed rocks
- Beautiful red coloration helps make the crab invisible at deep depths where light levels are extremely low.



Deep water Spider Crab, *Rochinia crassa*



- Has characteristic long legs and spiny carapace
- Commonly occurs on soft bottom ooze
- Feeds on bottom dwelling worms and mollusks
- Often occurs in association with the Jonah crab

Photo courtesy of E. Wenner



Deep water Squat Lobsters

- Not true crabs
- Belong to the Family Galatheidae
- Commonly occur on rocky hard bottom habitat
- Cling to rocky overhangs and occur in association with *Bathynectes*
- Variety of coloration from red and white striped to orange to white
- Largest squat lobster encountered at the Bump was *Eumunida picta*



What's next in our study of the Charleston Bump crabs?

- Analyze photographs and videotapes from submersible dives to document crab abundance and habitat relationships
- Identify specimens and catalog them as part of the Southeastern Regional Taxonomic Center (SERTC)
- Produce pictorial key to decapod crustaceans from the Charleston Bump
- Plan for next expedition!



Betty Wenner displays a shoulder-sized golden crab collected on an earlier expedition to the Bump.

Photo courtesy of E. Wenner



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