

Hermit Hermit Crab

Pagurus bernhardus
Pagurus prideaux

Class: Malacostraca
Order: Decapoda
Family: Paguridae
Genus: Pagurus

Distribution

The hermit crab is a small crustacean found in ocean waters worldwide. Many species are known from only one or a few localities, and many are known worldwide. New species are occurring.

Habitat

They live along coasts in most types of sea beds, including rocky and shell bottoms, in sea grass beds, and sandy or silty sediments, but excluding muddy bottoms.

Food

The hermit crab is an omnivorous scavenger, feeding on a wide variety of plant and animal matter.

Reproduction

Before copulation, a male pulls a female around by her shell opening, using his minor chelipod. He holds her by one of her right walking legs, pulling her towards him and tapping her appendages with his major chelipod.



Pagurus bernhardus

These crabs inhabit the local shoreline year round.

Hermit crabs in the families *Paguridae* and *Diogenidae* are all aquatic marine crabs. The family *Paguridae* on its own contains several hundred different species. This species *P. bernhardus* is known to occur from Spitsbergen, Iceland and the Murman Sea throughout the boreal North American and European coasts and in the Mediterranean Sea. It is common in Nova Scotian coastal waters. This is one of two known species occurring locally at Burntcoat Head. The other species is *P. prideaux*. It is similar in appearance and has somewhat the same distribution.

Although hermit crabs do venture into deeper waters, they are more commonly found in coastal waters where there is more food and places to hide. Smaller individuals live in shallower waters than larger individuals. A few species are land based. Female terrestrial hermit crabs must return to the sea to breed. Larvae live mainly in pools and may be found under objects such as rocks and seaweed.

It consumes microscopic bivalves, scraps of dead animals, microbes, and detritus. They are also able to filter organic particles from the water and will even graze on periphyton (a type of algae).

This is followed by a period where both male and female tap each other with their chelipods. The female also palpates the male's mouthparts. When a female is ready to mate, she gives either a tactile or chemical signal, causing a male to turn her around to face him. Individuals must partially emerge from the protection of their gastropod shells and press their ventral surfaces together to allow copulation. Shallow water breeding season is in general January to February. In deeper waters, where seasons are not very distinct, females can be found carrying eggs throughout the year.



Development

Females extrude eggs into their shells, gather them via the pleopods, and then brood them in a manner similar to other crabs. They will carry around the fertilized eggs (which are attached to the abdominal legs) for up to 2 months before they hatch.

Characteristics

This species has a carapace of up to 4.0 cm long and a maximum body length of 8 cm. The colour is reddish or brownish. The body is divided into two segments. There are five pairs of legs. The two compound eyes are on movable stalks.

Adaptations

These crabs inhabit the abandoned shells of animals, such as periwinkles and whelks, using them as protection for their soft bodies. Shells are held in place by the last two pairs of reduced legs. If disturbed it retreats deeper into the shell and barricades the shell's opening with the walking legs, especially with the right forceps.

Status/Threats

These are under no threat. Potential ocean acidification is a threat to all marine species. They are preyed upon by gulls, fish, starfish, octopus and other crabs. They are vulnerable when molting and changing shells

Sightings in Nova Scotia

The young develop in stages, with the first two occurring inside the egg. Most hermit crab larvae hatch at the third stage, the zoea. In this larval stage, the crab has several long spines, a long, narrow abdomen, and large fringed antennae. Several zoeal moults are followed by the final larval stage, the megalopa. The larvae may remain with their mother for a number of weeks after hatching before becoming independent and venturing off into the ocean on their own. Sexual maturity for the larvae is often reached before they are 1 year old. Juvenile hermit crabs are common on rocky shores in all months of the year.

The first pair of walking legs (known as chelae) has large forceps or claws, the right one being larger; those of the males are larger than the females. They have a hard, rough, granular surface like the two following pairs of walking legs while the remaining two pairs are greatly reduced. They are used to hold the shell in place and to circulate breathing water. They have four antennae. The two body segments are the cephalothorax and abdomen. The cephalothorax is encased by a carapace consisting of three thick cuticle layers. The abdomen is soft and coiled to the right. Family: Paguridae are the right clawed hermit crabs. Family: Diogenidae are the left clawed hermit crabs.

The size of the shell is important, it affects the fitness of the hermit crab, a shell that is too large does not offer the best protection and a shell that is too small restricts its growth. Individuals may attack each other in attempts to claim ownership of a shell. Chelae are used for gathering food and for protection. The larger of the two claws (chelae) is used in fighting and defence.

Pagurus prideaux, a second species occurring at Burntcoat Head, is similar in appearance to *Pagurus bernhardus* but is smaller and redder. In warmer waters it is well known for its symbiotic relationship with a species of sea anemone, *Adamsia palliata*. Young crabs of this species catch young cloak anemones and carry them on their backs. The anemone expands as the crab grows. The close cooperation between these two animals involves protection and food supply. If the hermit crab feels threatened in any way, it uses chemical or mechanical signals to get the anemone to spread out its long pink tentacles. In return the anemone gets to eat the remains from the hermit crab's meals. Young hermit crabs catch young cloak anemones. They grow up together and rarely switch partners. In colder waters, this role is filled by *Hormathia digitata* a cold water anemone.



Pagurus prideaux

These are easily seen along the shoreline of Burntcoat Head.