

## Hermit Crabs

Picture yourself as a tiny, shelled invertebrate swishing around in a washing machine. You would be tossed around until the machine stopped its wash cycle, and when the rinse cycle started you would be tossed around all over again. Well, that's somewhat the life of tiny animals called Hermit Crabs living in tide pools.

Some hermit crabs live most of their lives on the land and these are the ones some students have in their classrooms. They are different from ocean hermit crabs and have specific needs of their own. For now, we will study hermit crabs living their entire lives in the ocean. There are about 500 species of ocean hermit crabs and about 300 species of land hermit crabs in the world, so there are lots of hermit crabs to learn about!

On the Pacific and East coast of the United States, most hermit crabs live in tide pools carved out by the pounding waves or by other forces such as boring clams leaving pockets in the rocks where pools of water can form. Each time the waves come to shore, ocean water washes over such pools and swirls inside. The only break from this pounding comes at low tide, when the ocean withdraws and the tide is at its lowest and the pools are left alone. When the tide is at its highest, or high tide, the pools are completely covered with seawater and the swirling is not so intense. Low tide is an important time for us to get a glimpse into the life in these tide pools.

Hermit crabs survive in these tide pools in shells they have adopted and so are not considered true crabs. True crabs molt their entire outer shells and hide until their new ones become hard. However, hermit crabs use borrowed shells to protect their abdomens, the long parts of their bodies behind their heads that are soft and pliable. When hermit crabs become larger, they must find larger shells, and this is not easy in a tide pool. Other hermit crabs are also looking for homes in a constant real estate battle for housing.

When a hermit crab spots a shell that seems suitable, he does not expose his soft abdomen right away. That is the part of him predators seek. Therefore, he uses his claws to investigate the size and potential of a new shell. When the hermit crab finds one with potential, he leaves his old shell and backs into the new one as quickly as he can so he won't have his tasty abdomen seen by predators. Once inside his new shell, he won't have to move again until he grows bigger and then his search for a new home starts all over again. Unless of course he spies one he thinks is a better shell and picks a fight with the hermit crab living inside. Hermit crabs don't bother live snails, but they are always on the prowl for a better empty shell or perhaps one with a less aggressive hermit crab inside.

## Hermit Crabs (Cont'd)

When you spot a shell moving quickly in a tide pool, it is probably a hermit crab because snails move slowly and feel heavier in your hands than hermit crabs. The best thing to remember about hermit crabs at the ocean is they need to live in the water most of the time. So if you want to hold one in a tide pool, the best thing to do is to let him stay in the water. Don't take him out. Not only will he be stressed, but also he will hide inside his shell. You may find that if you gently hold him under the water in the palm of your hand, he will walk on it. But be careful because his walking may tickle, and you don't want him to fall! Also, don't take empty shells home with you when leaving the tide pools because you are causing a housing crisis for hermit crabs looking for suitable homes.

Ocean hermit crabs are found all over the world. Some live in the intertidal zone, that part of the ocean near the shore between low and high tide, and some live in deeper waters called the subtidal zone, which is past the high tide mark and always underwater. Some hermit crabs even live in the benthic zone, the bottom of the ocean, in sandy or muddy areas. In tide pools, most often hermit crabs are found in small snail shells especially in the intertidal zone. Some larger hermit crabs prefer big, heavier shells such as that of a whelk or a moon snail. Some hermit crabs have been found in half shells or in tubes left behind by worms or even in unusual places such as parts of hollow bamboo.

Hermit crabs are always busy getting food as well as finding shells. As scavengers, they usually feed on dead plants and animals left behind by others. Some living in deeper water are filter feeders, meaning they are capable of feeding on particles filtered from the seawater. In turn, hermit crabs have many predators such as birds, true crabs, octopus, and some fish that are able to ingest them shells and all!

When they are threatened, snails retreat inside their shells and close their openings with their operculum, a tiny shell that acts as a trap door at the opening, sealing the animal inside. But hermit crabs are only occupying snail shells and don't have an operculum. Looking closely at shells with hermit crabs in them you only see claws called or pincers peeking out of the shells. Most hermit crabs are right handed, that is their right claw is much larger than their left claw. A few hermit crabs possess large left claws and smaller right ones.

The difference in size between the two claws is practical. Hermit crabs use their larger claws to seal off the opening of their shells and to ward off predators. They also use their larger claws for shredding food, and the smaller ones they use for getting bits of food to their mouths and to the mandibles, the chewing parts of their mouths.

## Hermit Crabs (Cont'd)

Hermit crabs, like true crabs, are decapods or invertebrates with stalked eyes and five pairs of legs, one or more with pincers. The last two pairs of legs in hermit crabs, however, are smaller, modified, and the fifth pair act like hooks to secure the abdomens to the back part of their shells. The other two pairs of legs are large and used for walking and their pincers are located at the front. When you see enlarged photographs of hermit crabs, what you notice most are their big eyes emerging from their eyestalks and the larger feelers, or antennae, located on the outside of the eyes used for touching. The smaller feelers, called antennules, are located between the eyes and are used for smelling. The eyes are compound and the eyestalks can move in all directions.

Sometimes hermit crabs living in the deeper parts of the ocean are covered with anemones, sponges, or hydroids that tag along for a ride. Sometimes both the hermit crabs and their hitchhikers benefit from the relationship. The animals tagging along get scraps the hermit crabs leave behind, and in return, the hermit crabs benefit from the camouflage the hitchhikers present. In the case of hitchhiking anemones, the stings from the anemones ward off potential attackers. Sometimes, however, the hitchhikers can be parasitic and not beneficial to their hosts. Hermit crabs can transplant these travelers when changing shells or move to a new shell if the relationship isn't working. Sometimes in the case of large sponges, the benefit of the protection the hermit crabs get from the sponges outweighs the lack of mobility.

Tide pool hermit crabs are the most talked about members of the species. Not only are their numbers impressive, but they are also fun to watch. They are not like hermits who live reclusive or isolated lives, but always are viewed in large groups in tide pools. They are called hermit crabs because they live alone in adopted shells, but the ones in deeper waters often have hitchhikers accompanying them and are not alone. In tide pools they are a busy group, scurrying around between waves either looking for shells to live in or food to eat - dragging their homes behind them.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Hermit Crabs Questions

Use the article and a dictionary to find definitions for the following vocabulary words:

inter tidal

sub tidal

abdomen

benthic

tide pool

decapod

operculum

scavenger

antennae

antennules

molt

## Hermit Crabs Questions

Use this article to answer the following questions in complete sentences:

1. Why is a hermit crab not a true crab?
2. In what part of the ocean do most people see hermit crabs?
3. What do hermit crabs eat?
4. Who eats hermit crabs? What part of the hermit crabs do they eat?
5. When a hermit crab finds a new shell, how does it decide its suitability?



Name \_\_\_\_\_

Date \_\_\_\_\_

## Hermit Crabs Answers

inter tidal – the area between low and high tides

sub tidal – the area past the high tide mark

abdomen – rear part of the body of crustaceans behind head and claws

benthic – the bottom part of the ocean

tide pool – a pool of water left when the tide level falls to low tide

decapod – invertebrate animals with five pairs of legs

operculum - flap-like shell that acts like a trap door for the opening of snail shells

scavenger – an animal that eats dead plants or animals or parts of them

antennae – long feelers located on head

antennules – smaller antennae or feelers

molt – cast off or shed outer skin or shell

### Hermit Crabs Answers (Cont'd)

1. Why is a hermit crab not a true crab?

A true crab's entire body is covered by its own shell that it must molt when the animal becomes larger. A hermit crab does not have its own shell and must protect its abdomen with an empty shell it borrows.

2. In what part of the ocean do most people see hermit crabs?

Usually people see hermit crabs in tide pools, but they also live in sub tidal in the deep ocean floor.

3. What do hermit crabs eat?

Most are scavengers eat dead plants or animals and some are filter feeders in the deeper parts of the ocean but still eat dead plants or animals.

4. Who eats hermit crabs? What part of the hermit crabs do they eat?

Birds, true crabs, some fish, and octopus all want the soft abdomen of the hermit crab.

5. When a hermit crab finds a new shell, how does it decide its suitability?

It checks out the shell with its pincers for its size and if the shell is empty.

6. How does a hermit crab get into his new shell?

He quickly exits his old shell and backs into the new one just as quickly to avoid being eaten.

### Hermit Crabs Answers (Cont'd)

7. When you find a hermit crab in a tide pool, why should you leave him in the water? How could you observe him safely?

A hermit crab should not be out of the water for too long, and if disturbed he will withdraw in his shell. If you place him gently in the palm of your hand, he may walk on it. He should be placed back in the tide pool habitat.

8. How can you tell a snail from a hermit crab?

A snail is heavier and moves more slowly than a hermit crab. Also, when you look closely at a snail it closes up with its operculum. When you look closely at a hermit crab, what you see is a claw peeking out.

9. Why should you leave empty shells in tide pools?

Hermit crabs need them for homes and if you take empty snail shells, you are making it more difficult for them to find new homes.