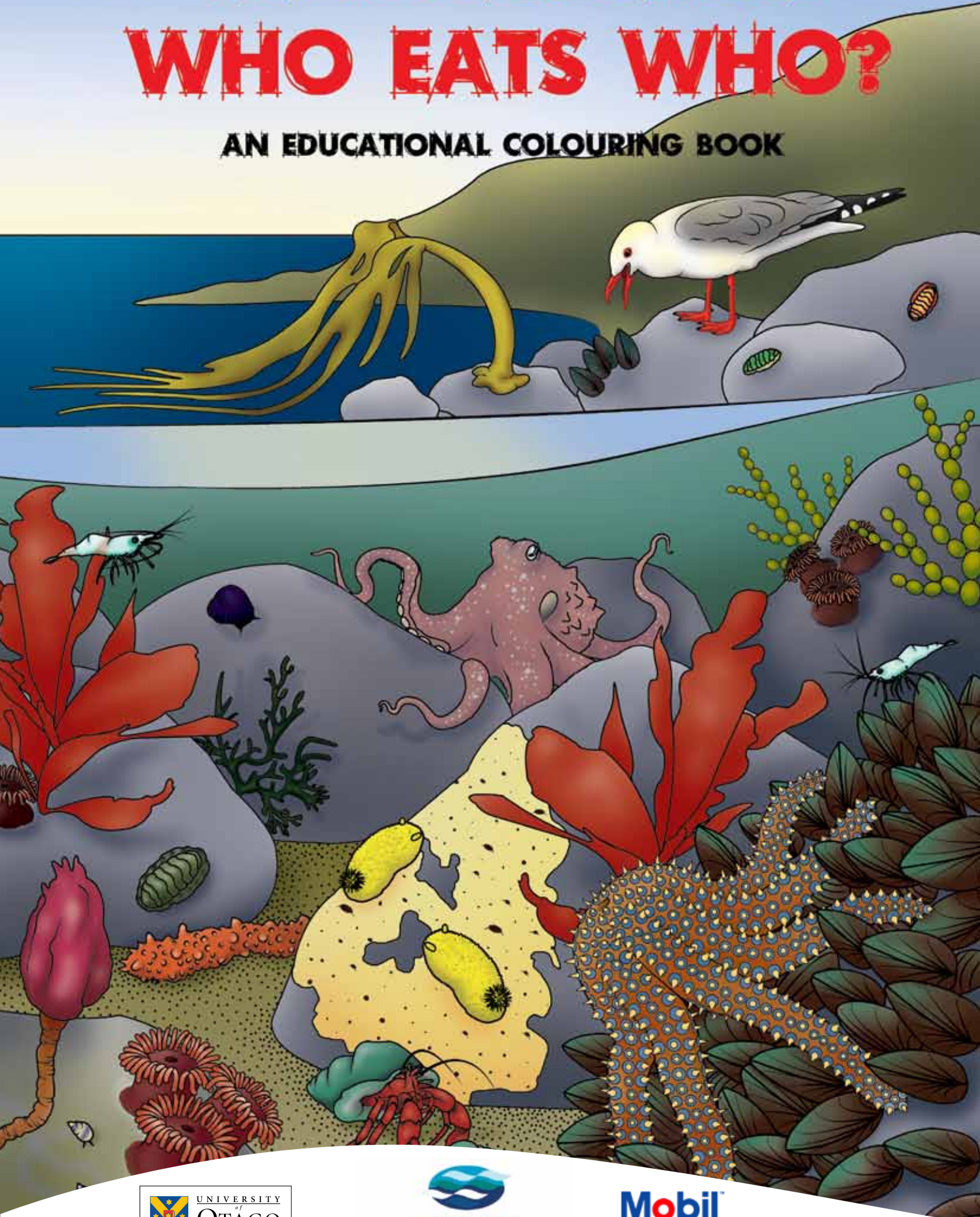


THE ROCKY SHORE WHO EATS WHO?

AN EDUCATIONAL COLOURING BOOK



CREATURES OF THE NZ ROCKY SHORE

This educational activity and colouring book was conceived by staff at the New Zealand Marine Studies Centre and illustrated by Corlis Schneider.

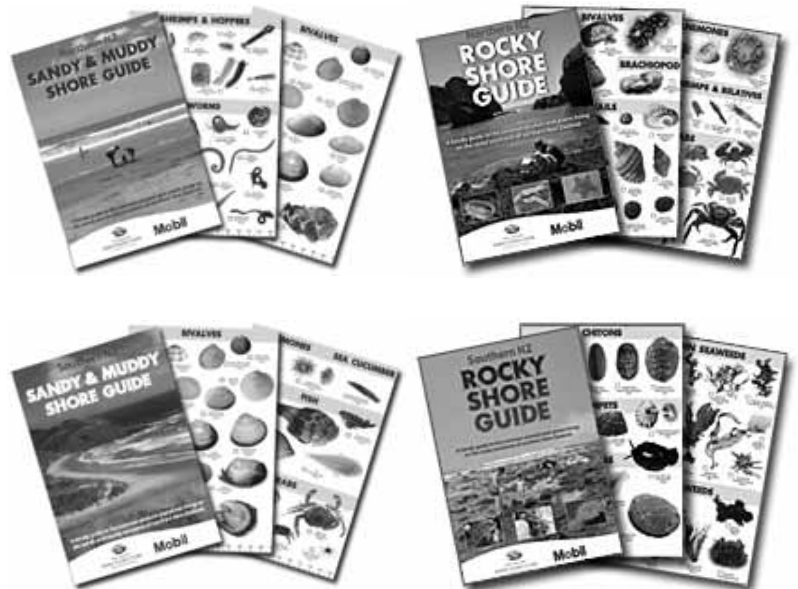
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Information for Teachers and Parents. This educational activity and colouring book features the animals and plants found between the tides on New Zealand's rocky shores and in shallow coastal waters. The illustrations show diet, feeding strategies, adaptations to find and capture food and avoid predators. Children should be encouraged to interpret what is happening in the scenes and predict what might happen next. Further information about a selection of the creatures can be found at the end of this book. Creating a food web will highlight the role of these creatures in the ocean environment. Further discussion topics include factors that could change their food web or affect the animals' ability to find or catch their dinner. Children could then make a poster to illustrate their ideas of what they could do to look after this unique environment.

The illustrations in this book may be copied for educational purposes.

Mobil Oil New Zealand Limited provides funds for community projects in areas where it operates and has been supporting the New Zealand Marine Studies Centre to develop and promote marine education resources since 2008. Mobil has supported a range of publications, including the Northern and Southern New Zealand Rocky Shore Guides and Sandy and Muddy Shore Guides, the Rocky Shore Activities Book, Mudflat Mysteries and The Rocky Shore Who Eats Who Educational Activity Books. These publications, which aim to promote awareness of seashore marine plants and creatures, are useful resources for schools, environmental/coastal groups and families. These resources are also available in te reo Māori.

Further information about Mobil's operations and community programmes is available at www.mobil.co.nz



The New Zealand Marine Studies Centre, part of the University of Otago's Department of Marine Science, showcases marine life from southern NZ waters and provides expert knowledge and education about New Zealand's marine environment. The educational programmes involve students in the excitement of scientific discovery, help them develop knowledge and skills, and encourage individuals to take responsibility and action for the future of our ocean resource. Contact the NZ Marine Studies Centre for further information about the range of educational programmes and resources available for schools and interest groups.

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New Zealand Marine Studies Centre

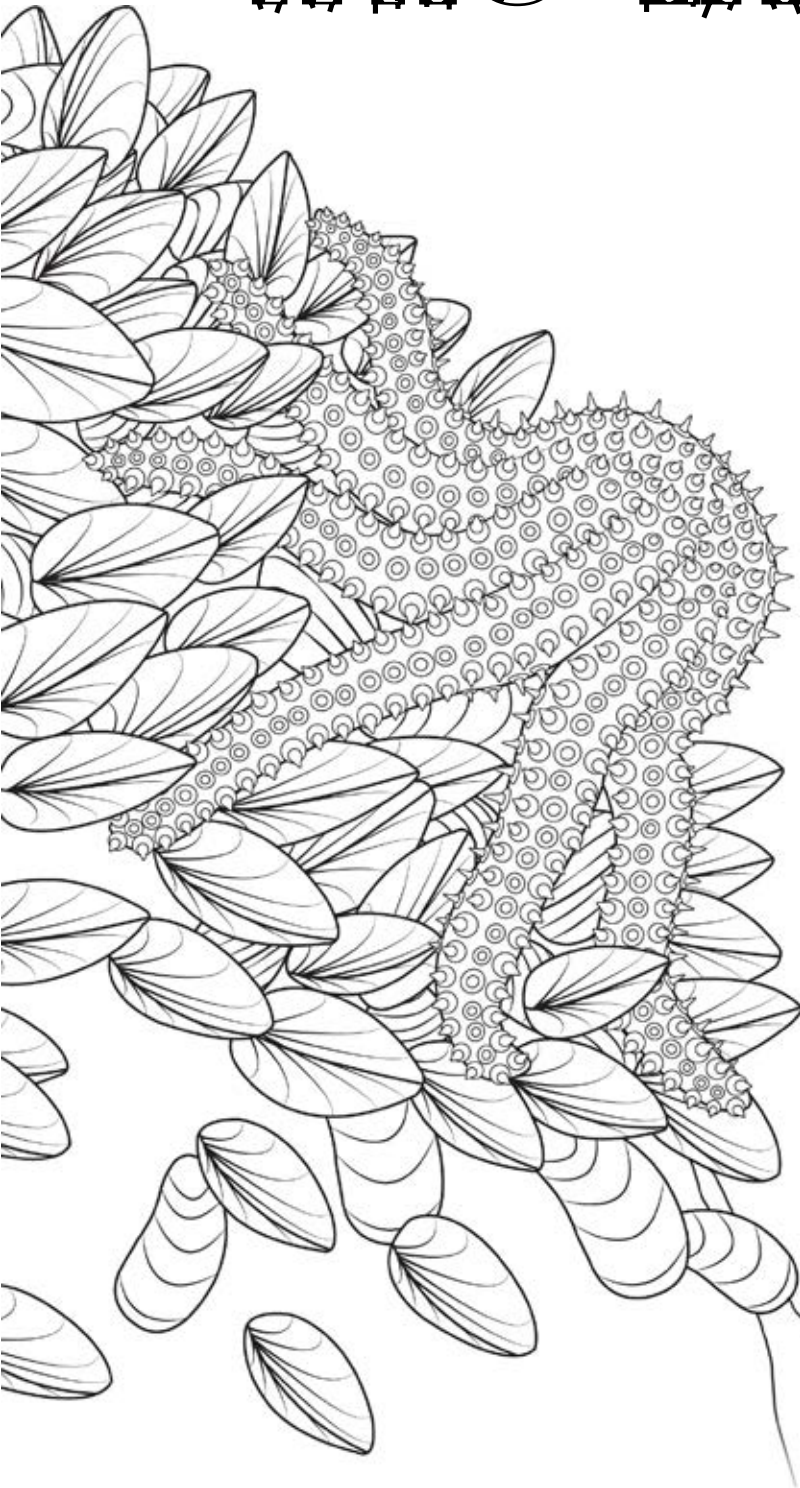
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NEW ZEALAND'S ROCKY SHORE

WHO EATS WHO?



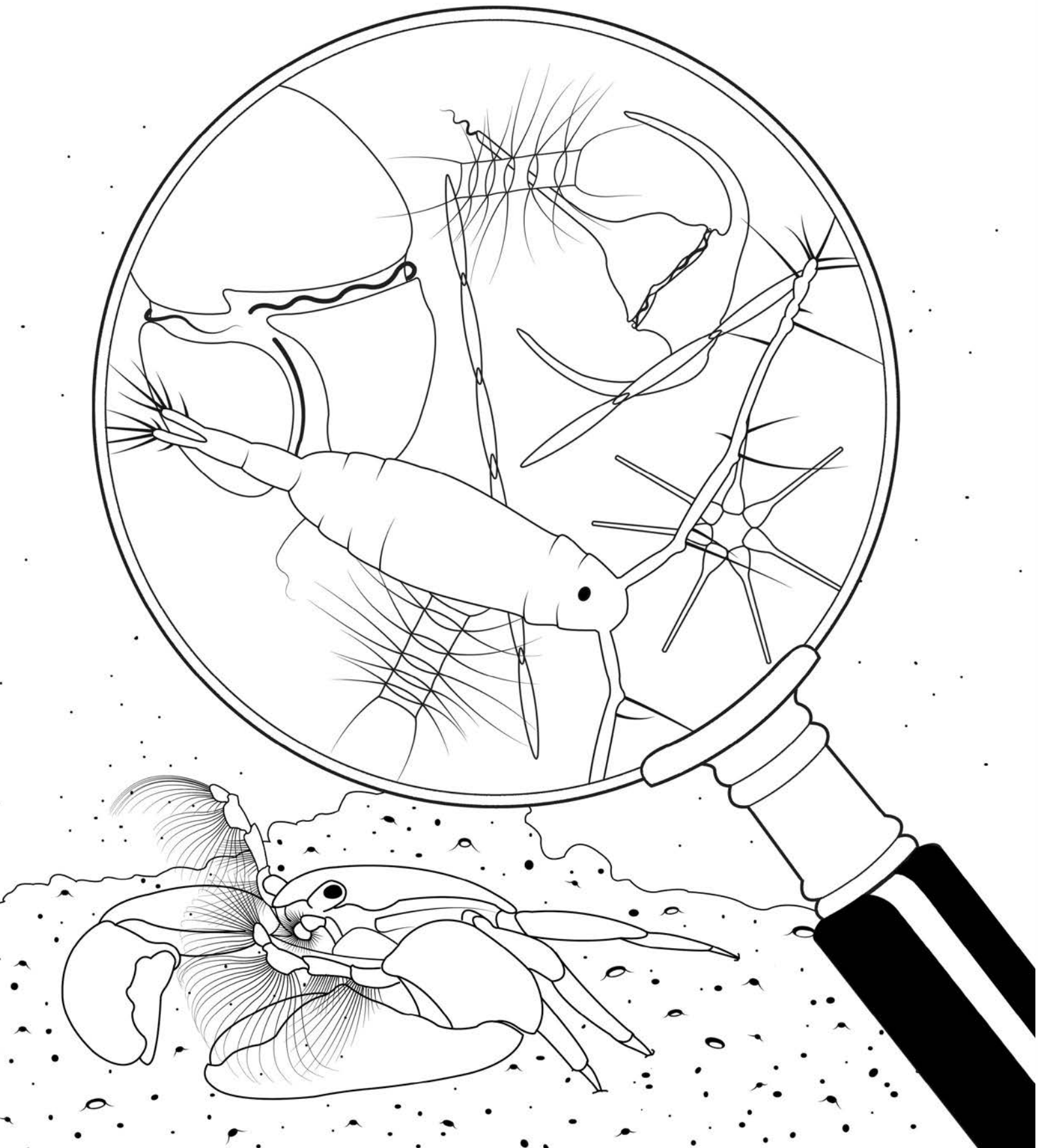
Discover the creatures that live between the tides on the rocky shore and in the shallow coastal waters of New Zealand.

Colour the pictures and gather clues about what they eat, how they catch their food and avoid their predators.

Create a food web to understand the importance of these plants and animals in the ocean environment.

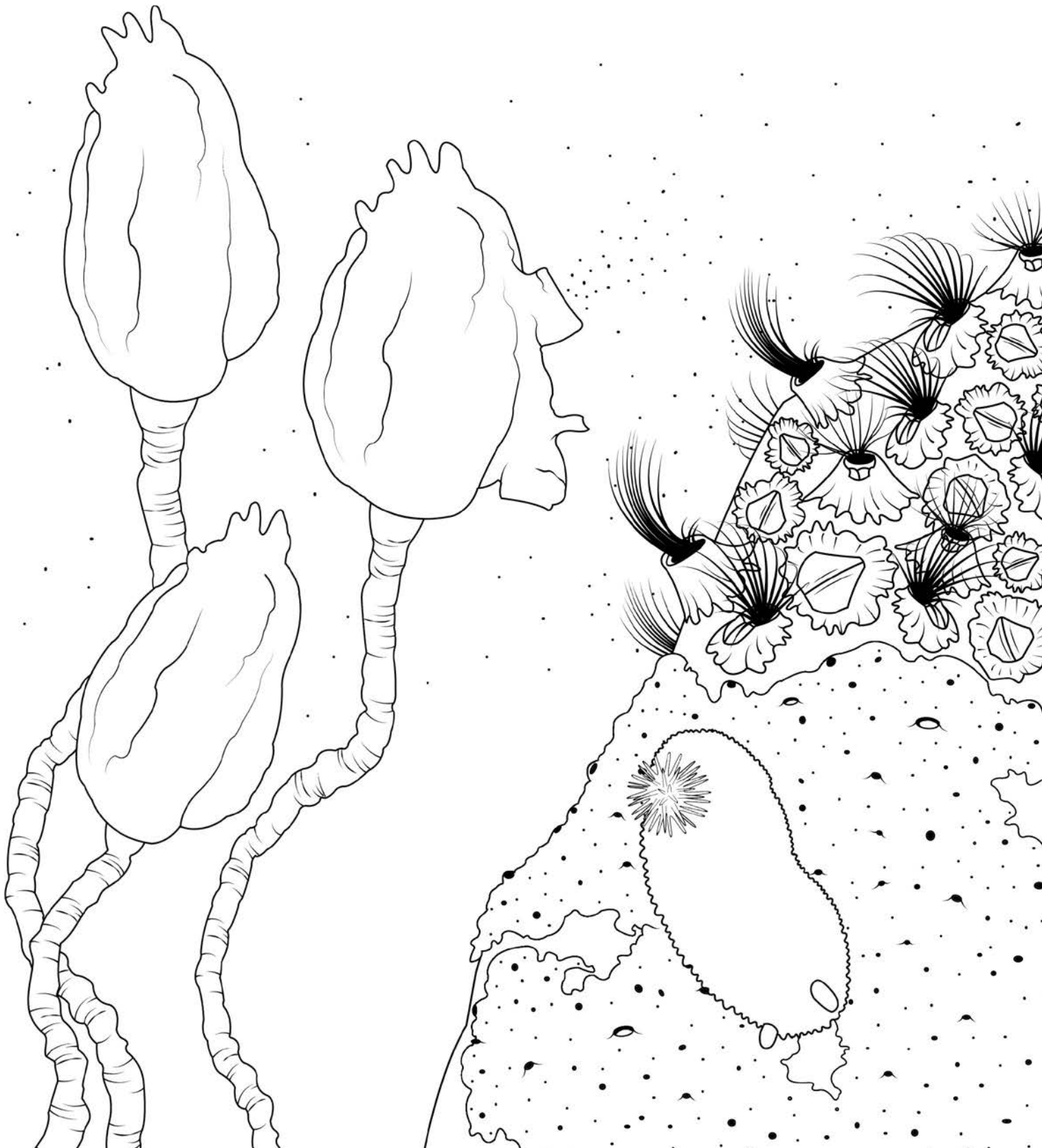
PLANKTON SOUP

Tiny PRODUCERS (phytoplankton) and animals (zooplankton) form the base of the food chain in the ocean. Sea creatures have food all around them, but how do they catch it?



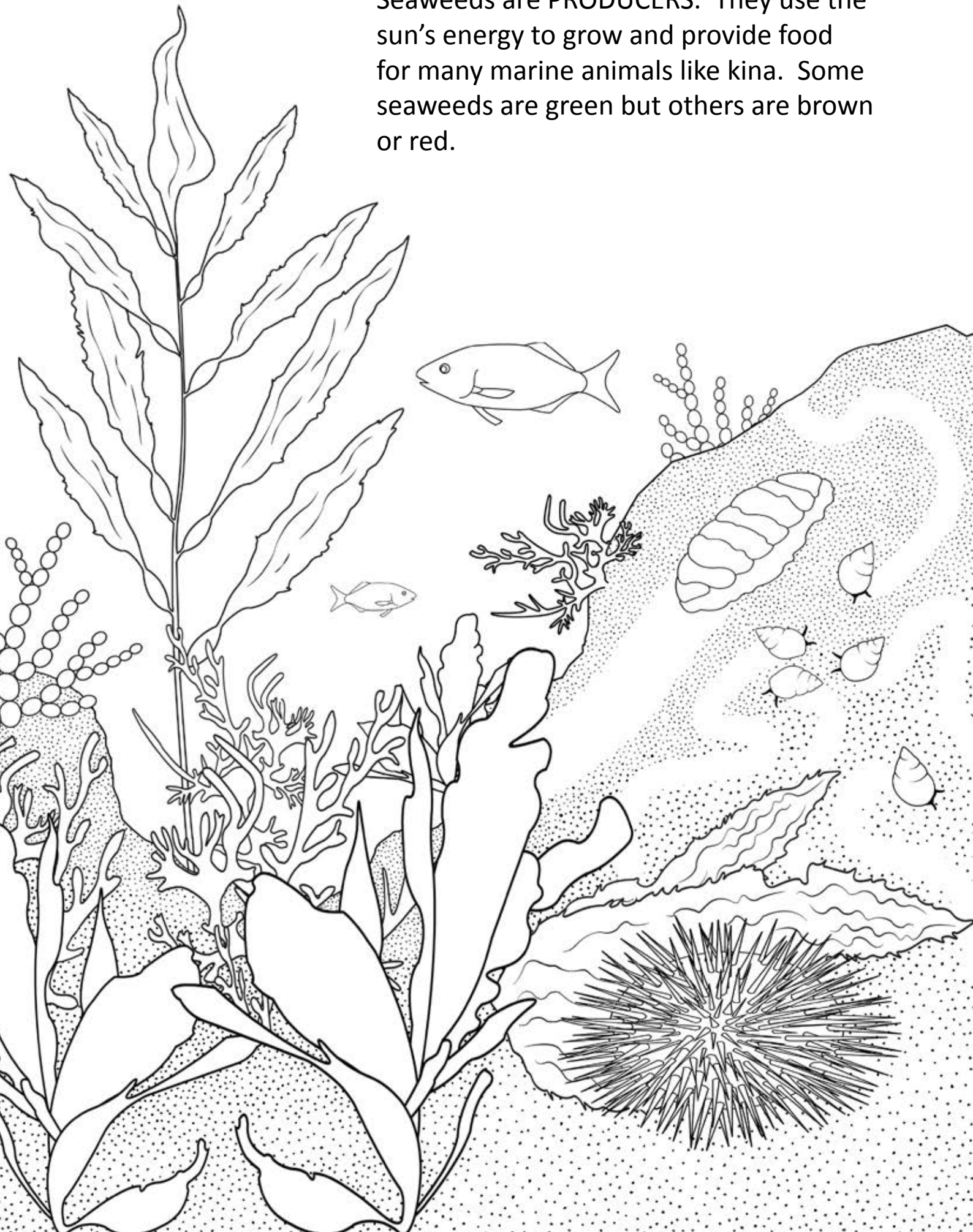
FILTER FEEDERS

Barnacles have tiny feet that they kick out to trap and filter plankton. Sea tulips suck water into one opening, pass it through a sieve to filter out the plankton and then push the water out of another opening.



SEAWEEDS

Seaweeds are PRODUCERS. They use the sun's energy to grow and provide food for many marine animals like kina. Some seaweeds are green but others are brown or red.



GRAZERS

Grazers are the vegetarians of the rocky shore. Can you find the black duck's bill limpet, paua, chitons, limpets, periwinkles and top snails in this picture? They scrape seaweed off the rocks with their long zipper-like tongues.



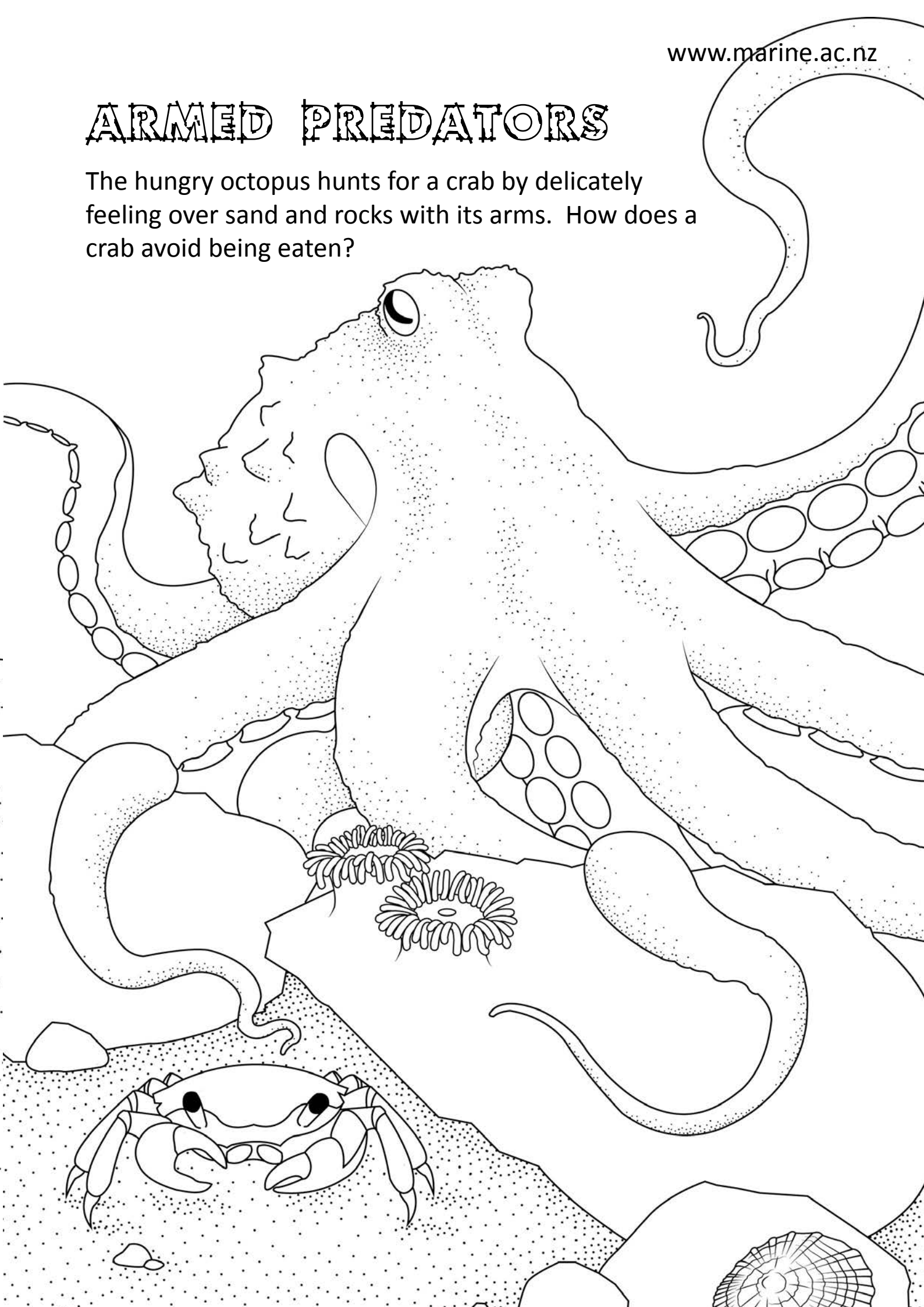
SCAVENGERS

These rubbish collectors - or recyclers - play an important role in the sea. Hermit crabs, sea anemones, sea cucumbers, shrimp and some sea stars eat the dead plants and animals left on the ocean floor.



ARMED PREDATORS

The hungry octopus hunts for a crab by delicately feeling over sand and rocks with its arms. How does a crab avoid being eaten?



Every time you visit the rocky shore you discover something new!

How many creatures can you find in the picture?



Anemones

Octopus

Chitons

Sea Stars

Crabs

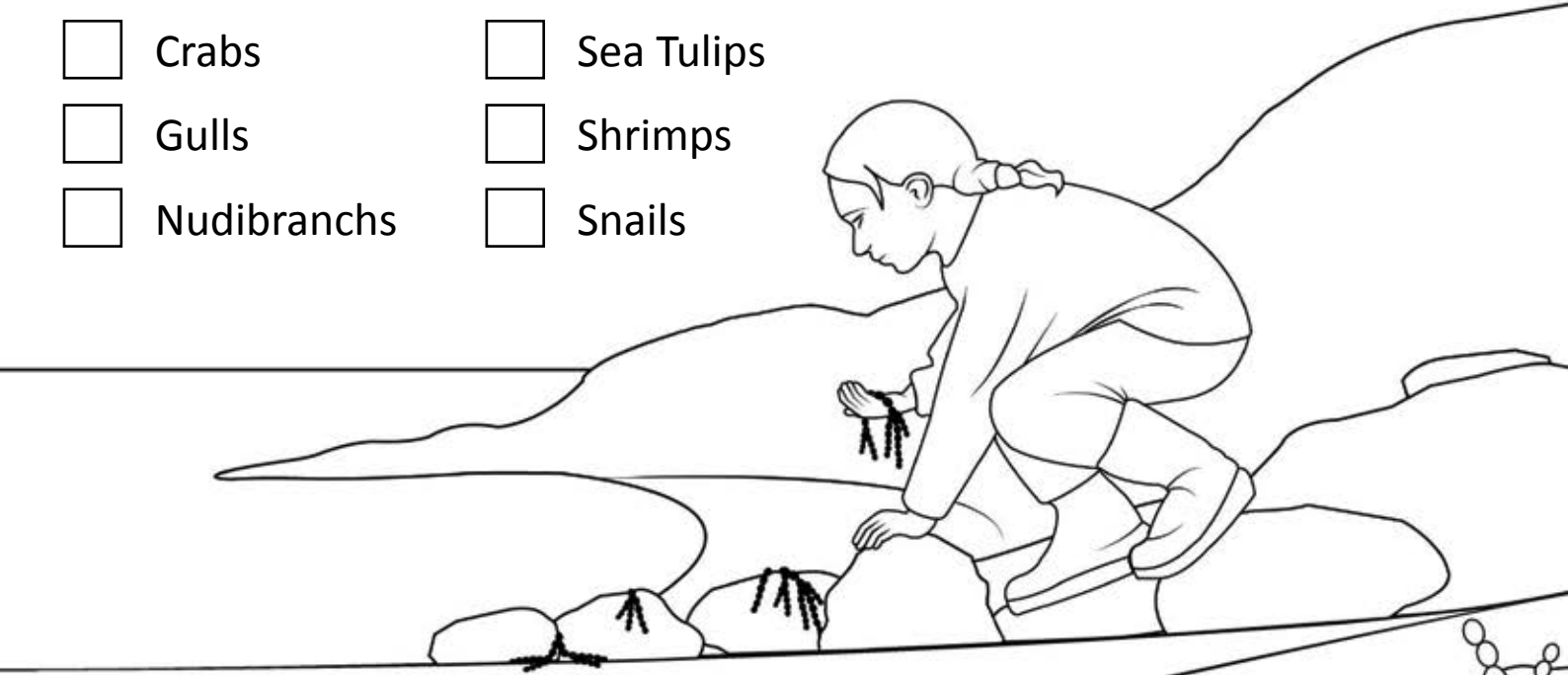
Sea Tulips

Gulls

Shrimps

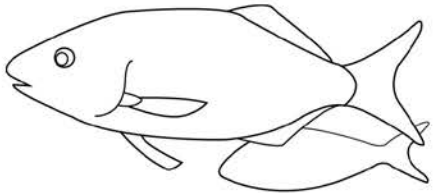
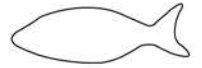
Nudibranchs

Snails



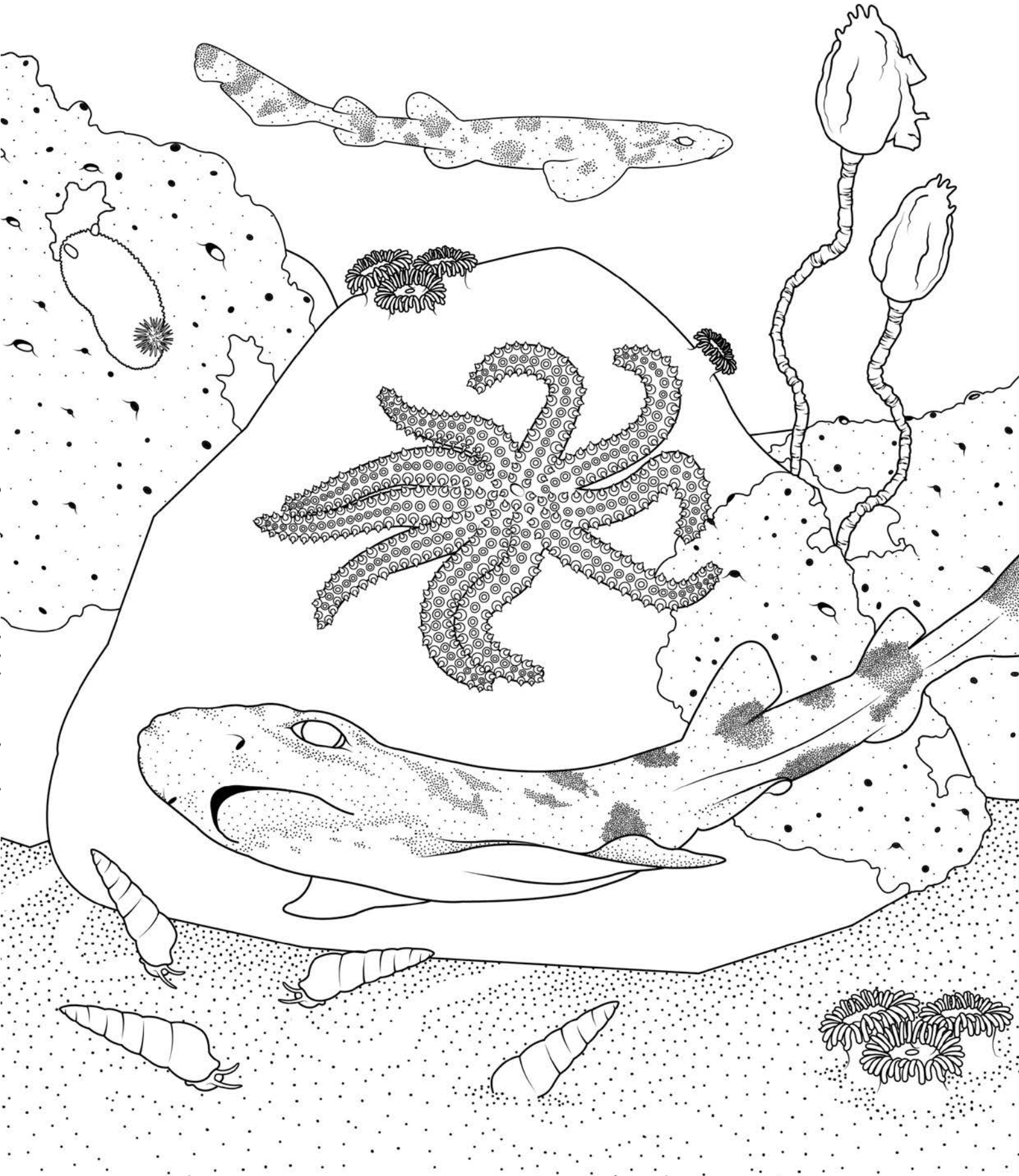
FISHY PREDATORS

You might eat blue cod for your tea, but what does the blue cod like to eat? Crabs are a favourite. How is the crab in this picture hiding?



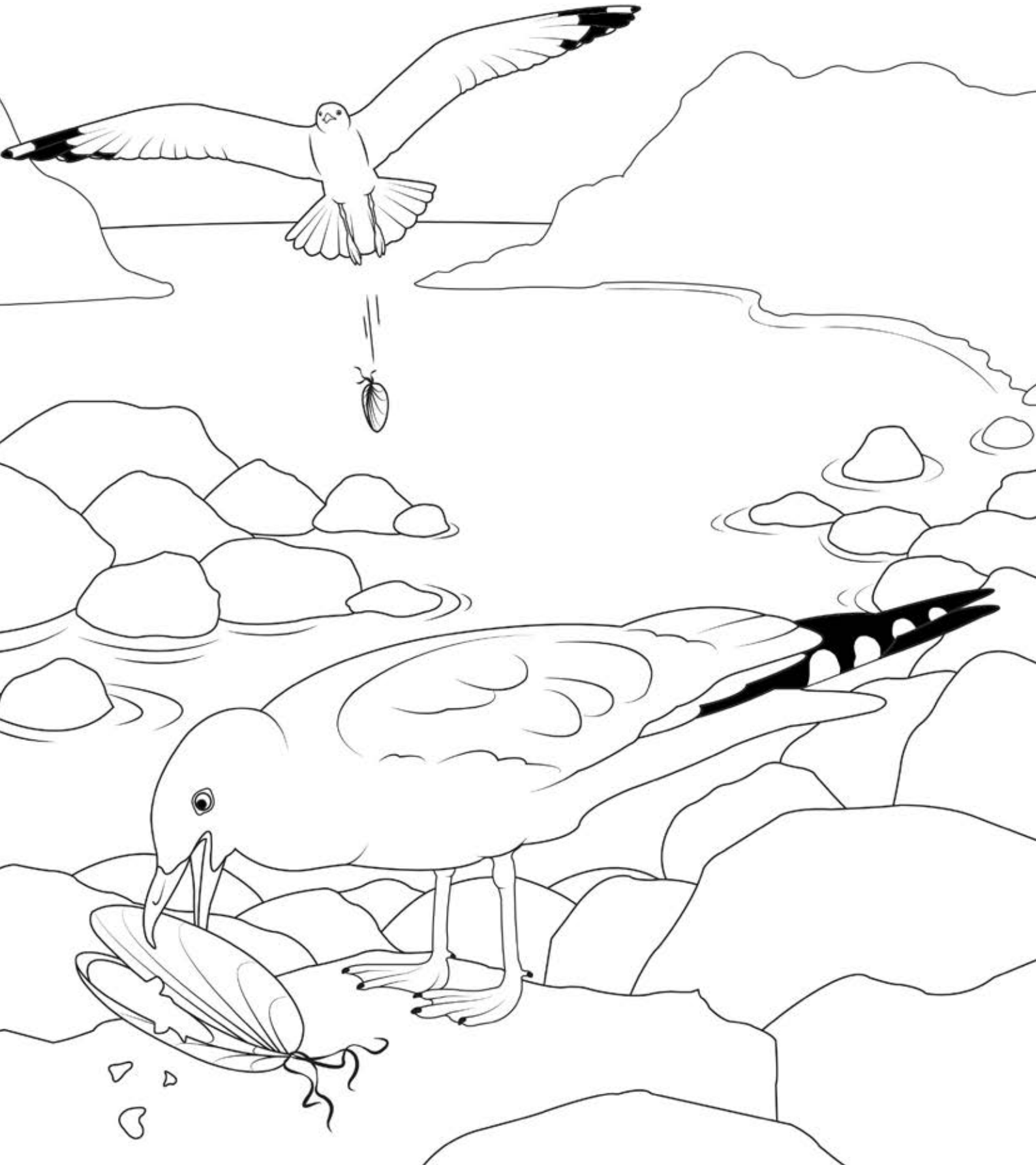
PREDATORS WITH TEETH

Carpet sharks are found in rocky areas near the shore.
They are looking for crustaceans and molluscs.



VISITING PREDATORS

Gulls like fresh shellfish but find it difficult to get into the closed shell. How do they break the shell so they can eat the mussel?



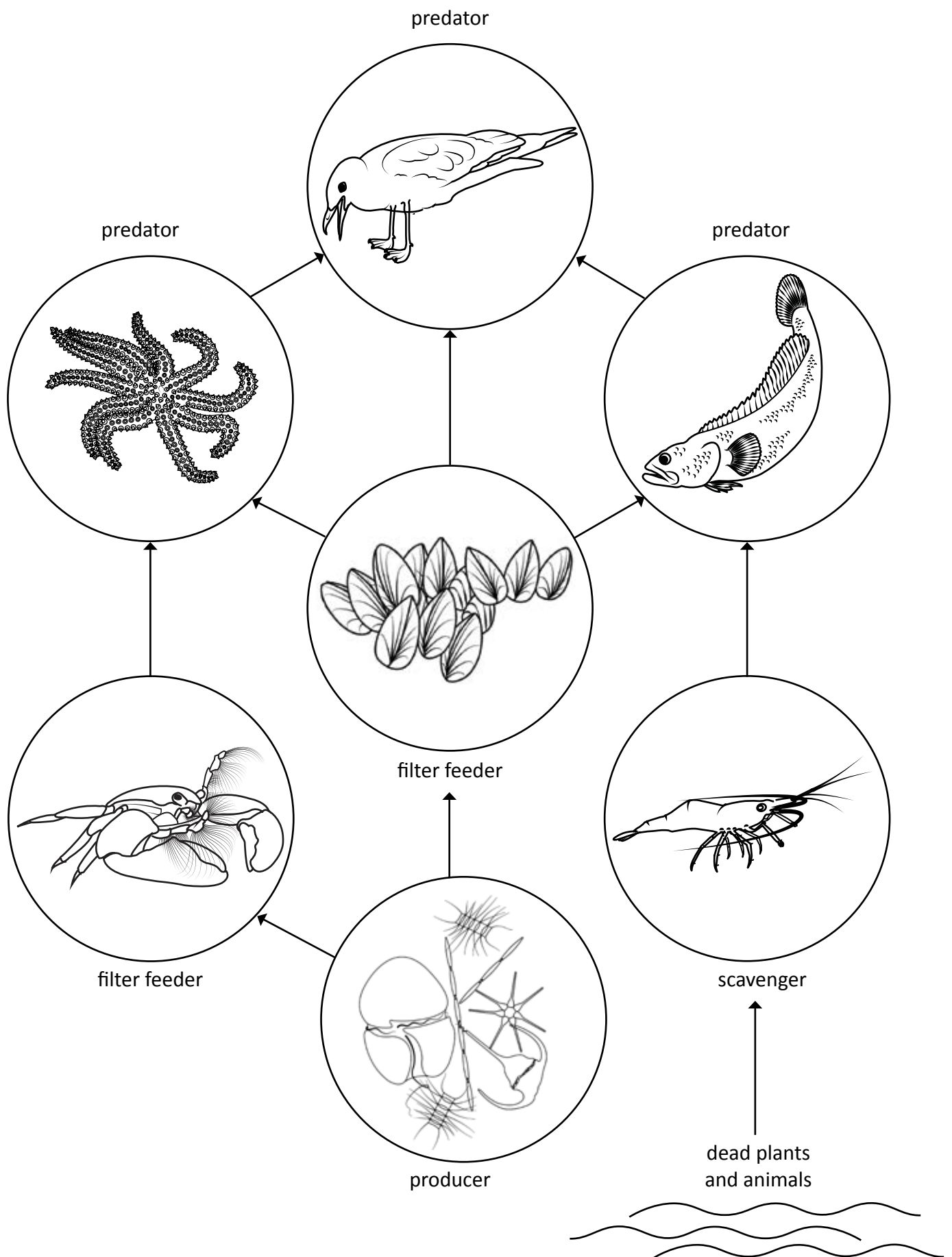
HUMAN GATHERERS

What seafood do YOU like to eat?

When you gather seafood, make sure you follow the fishing guidelines and leave enough for the other creatures!

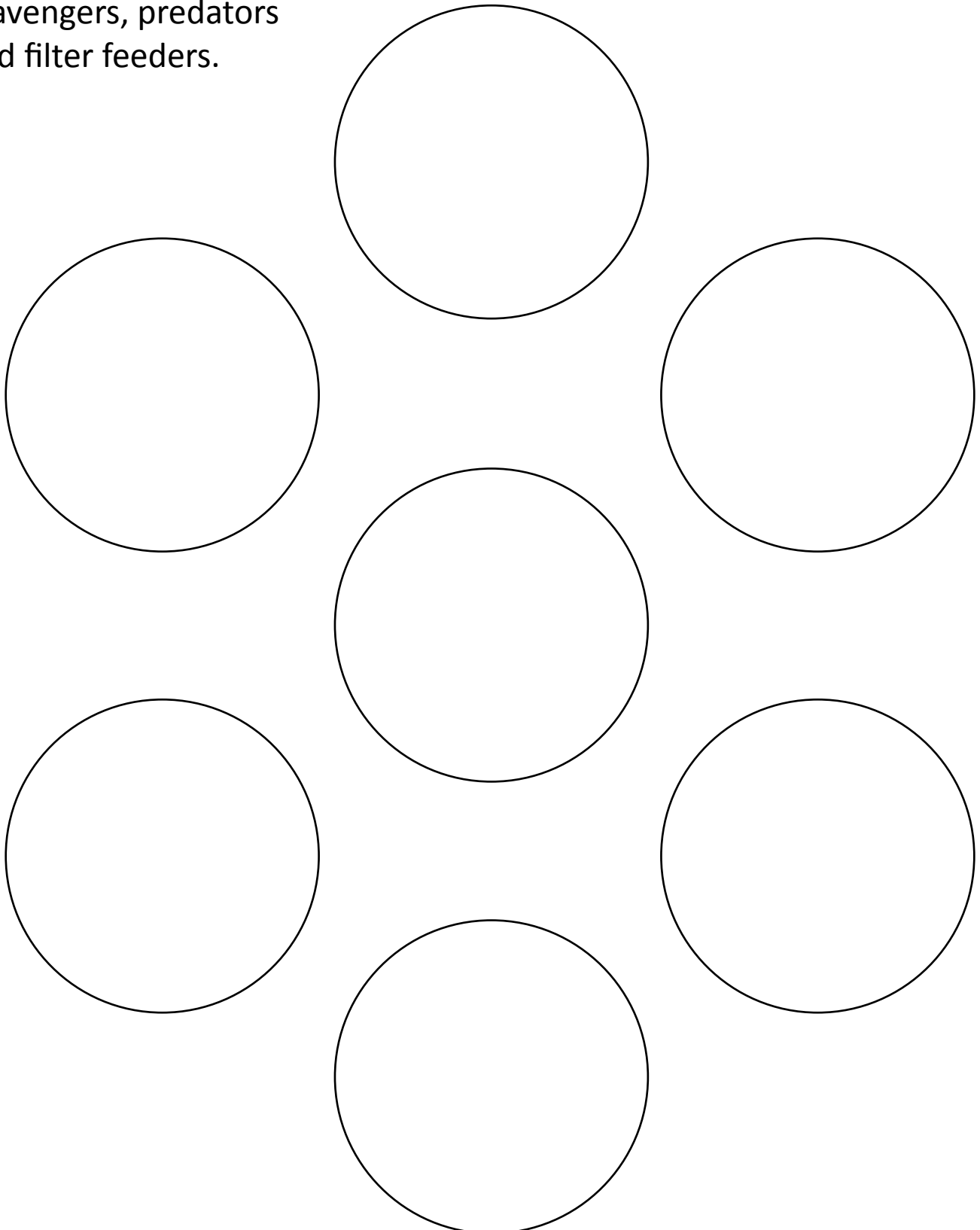


FOOD WEB



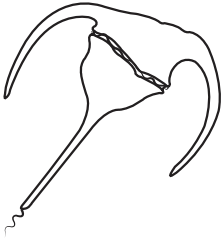
MAKE YOUR OWN FOOD WEB

You can include:
producers, grazers,
scavengers, predators
and filter feeders.



producer

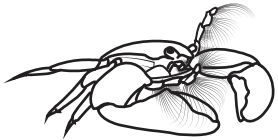
CREATURE KEY



Phytoplankton are single-celled organisms that use the sun's energy to make their own food by the process of photosynthesis. They are free-floating and are eaten by zooplankton and filter feeders.



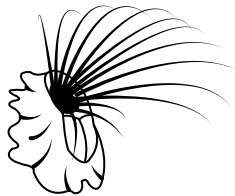
Seaweeds are the plants of the sea. They use photosynthesis to make their own food. Some are tiny and encrust rocks. Others grow to lengths of 50 metres and form underwater forests. Many animals feed on seaweeds.



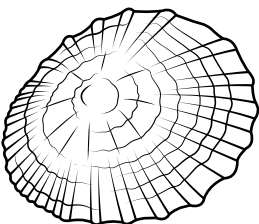
Crabs such as the half crab, are filter feeders. They use nets to filter plankton from the surrounding water. Their large claws are used for defence, not feeding.



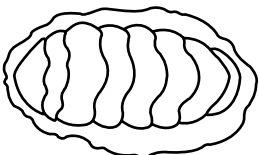
Shore crabs are scavengers. They use their claws to tear dead plants and animals into small bite-sized pieces.



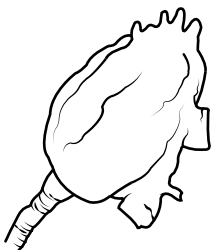
Barnacles are related to crabs and lobsters but are glued to the rock surface, so chasing their food is not an option. They use their feathery legs to filter plankton from the water around them.



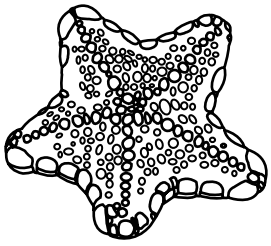
Limpets have a cone shaped shell and a muscular foot for holding onto rocks. They are grazers. They have a long zipper-like tongue called a radula that they use to scrape seaweed off rocks. They move around to graze, but return to a favourite spot to rest.



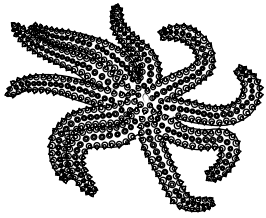
Chitons have eight separate shell plates and a muscular foot to hold onto rocks. Chitons graze on seaweed using their rasping radula. The teeth on their radula are made of iron so they don't wear away when scraping seaweed off rocks. Look carefully for their feeding trails.



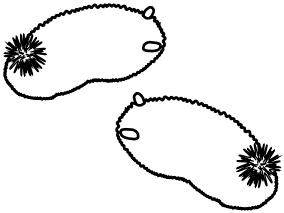
The sea tulip looks like a plant, but it is an animal - a filter-feeding sea squirt. Although sea tulips cannot move, their long stalks allow them to reach plankton-rich water.



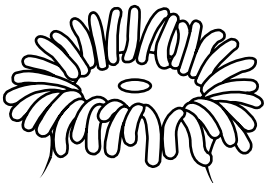
Sea stars come in many shapes and sizes and usually have five arms. The biscuit sea star is a scavenger, scouring the ocean floor for food. Sea stars push their stomachs outside their bodies to absorb their food.



Predatory sea stars, like the spiny sea star, use their tube feet to slowly pull apart mussels and other shellfish. They squeeze their stomachs between the two shells and begin to digest the mussel inside. These sea stars may have up to eleven arms.



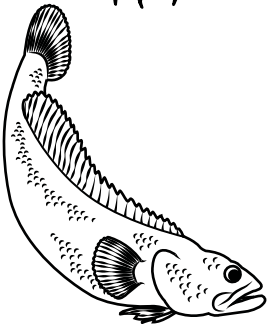
Nudibranchs are predators. They feed on sponges which encrust rocks. Some nudibranchs take on the colour of the sponges they eat. They breathe through feathery gills on the outside of their bodies.



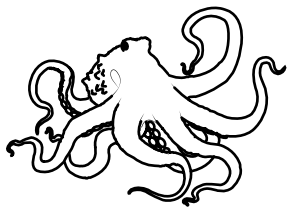
Anemones are predators. They trap passing prey with their stinging tentacles, pulling it into their stomach to digest. They will also scavenge any food that comes their way.



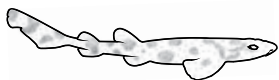
Shrimps scavenge for their food. The glass shrimp is difficult to spot in tide pools because it has a mostly transparent body.



Rock pool fish, such as the olive rock fish, hunt for small crustaceans in tidepools and along the shore. They hide under rocks at low tide so they don't get carried into deeper water where bigger fish might eat them.



Octopus are predators. The mouth of an octopus looks like the beak of a parrot. It uses its beak to crack the hard shells of crustaceans. The ability of octopus to change colour allows them to surprise their prey and hide from other predators.



Sharks will take live prey or scavenge for dead animals. The carpet shark has tiny teeth and eats small crustaceans and molluscs. The largest fish in the ocean is a whale shark which is a filter feeder.



Gulls eat many kinds of live and dead creatures they find on the shore. When they find a mussel or snail, they carry it into the sky and drop it onto the rocks from a height to break the shell open.

