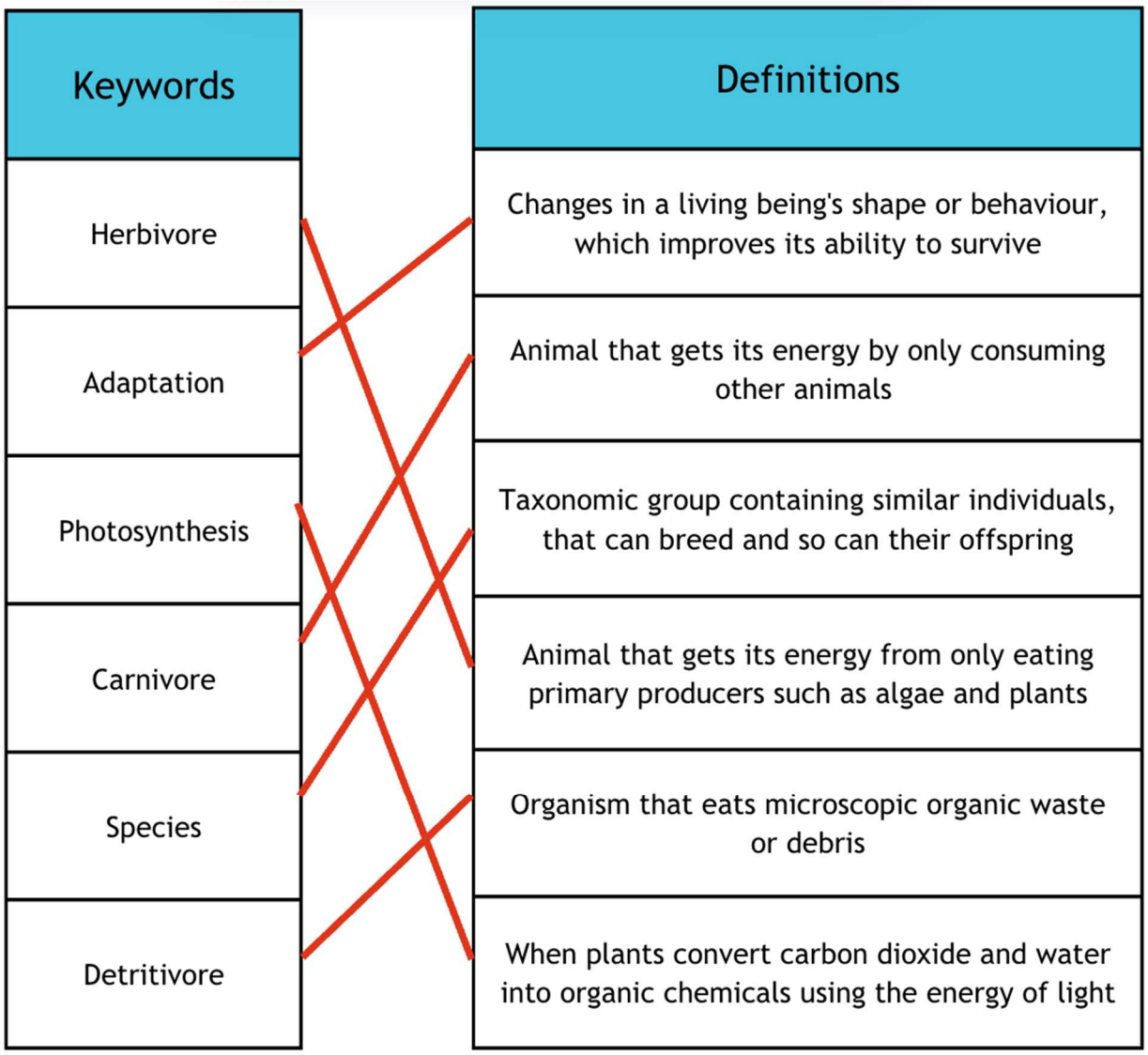
ANSWER KEY

Episode 2: Cryptic Creatures on the Reef

The CCMI scientists have been exploring many different types of creatures in this episode. We have spoken about many important terms on Reefs Go Live. Here are some from this episode that are worth remembering. Draw a line from the key term in the episode to the correct definition.



An important part of marine science is knowing your creatures. With so many animals hiding in the reef it can be tricky to find them all. Test your observational skills and marine biology potential by finding the animals hidden in the image below. Circle any animals you find. In this image you should be able to see four (4) octopuses, five (5) hermit crabs, three (3) sea cucumbers, three (3) shrimp, and four (4) nudibranchs. Can you spot them all?

Some of these animals are very well camouflaged. Why do you think it is important for animals on the reef to blend in with their habitat?

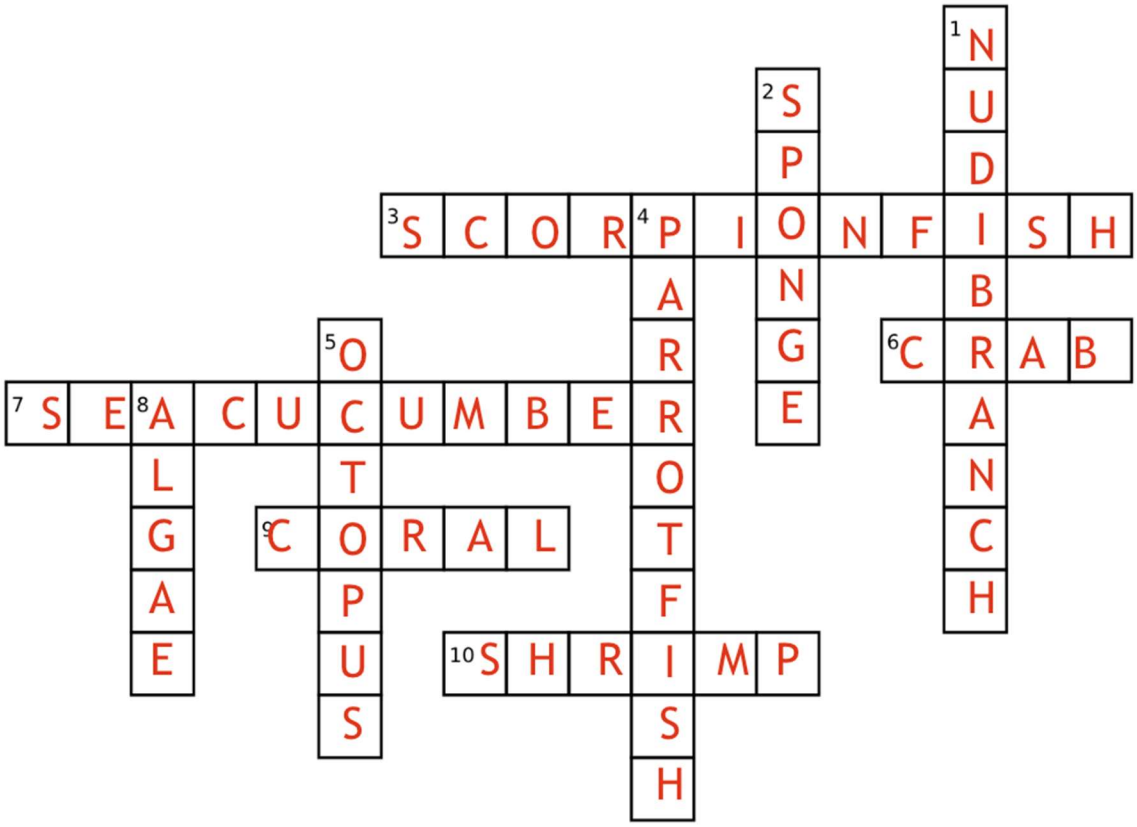
Animals use camouflage to avoid being eaten by **predators**. They also use it to be difficult for their **prey** to see in ambush feeding (eg: scorpionfish).

How do these animals become so well adapted to their environments?

Over generations and many years, animals **evolve** to have beneficial adaptations that help them survive and pass those traits to their offspring. One example is camouflage, where individuals that are harder for predators to see are thus less likely to be eaten.

Who am I? Cryptic Creatures Edition

Read the clues below to identify the marine organisms for each clue. Write the answers in the corresponding crossword boxes.

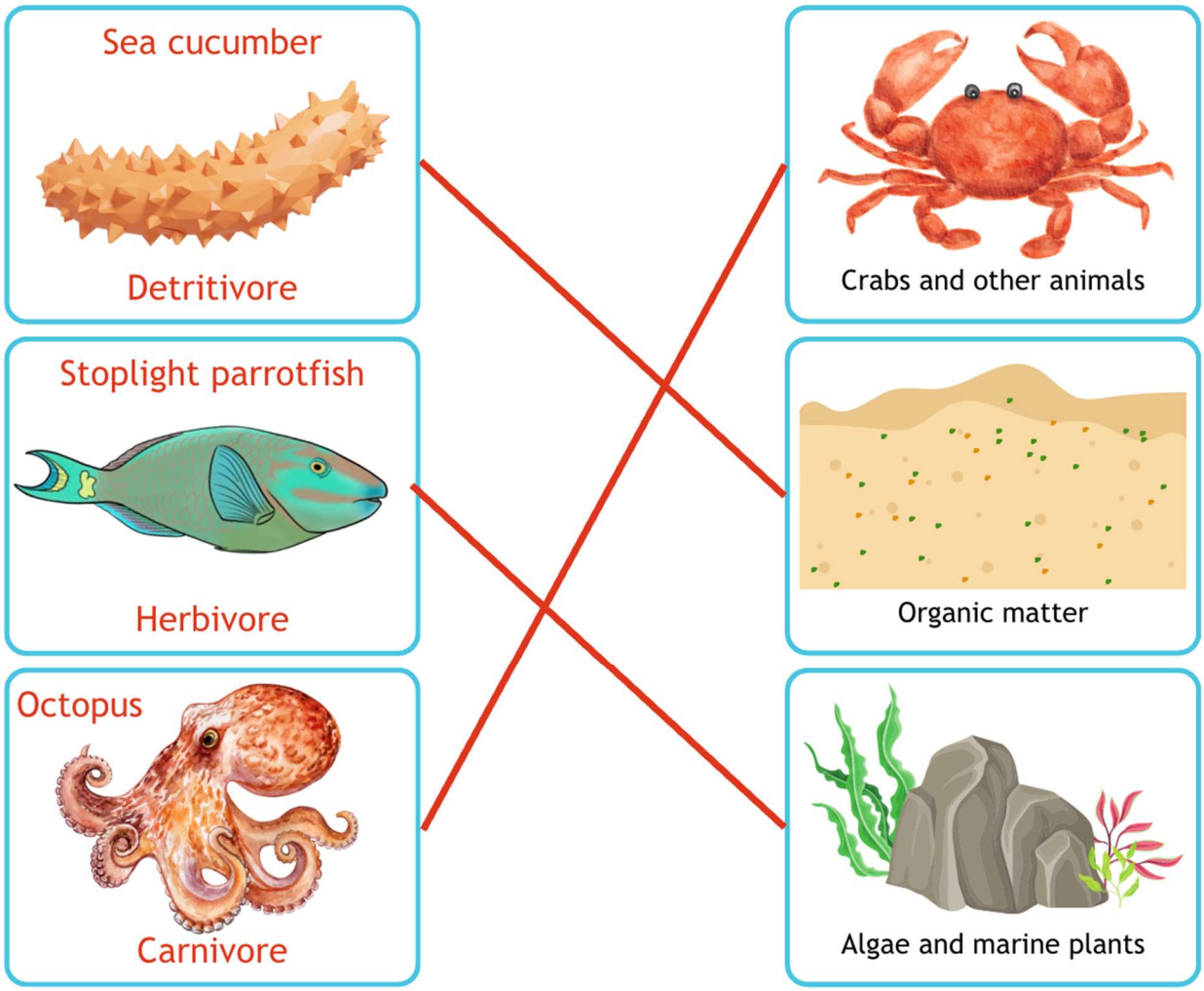


Across	Down
3. I have venomous spines on my back and blend in with rocks	1. I am a sea slug with bright colours and toxins in my tissues
6. I have strong front claws and walk sideways; I like to hide on the reef	2. I can filter gallons of water each day and provide habitat for other animals
7. I am a bottom dwelling animal that eats detritus and recycles nutrients	4. I eat munch on pieces of coral to eat algae and produce sand after digestion
9. Zooxanthellae live in my cells and photosynthesise	5. I have eight arms and can change colour
10. I am a transparent crustacean with a segmented body	8. I make energy through photosynthesis and am food for herbivores

Adaptations in Diet

Match the images of animals on the left to the images of their food on the right.

On the line below each animal, write name of the animal and whether it is an herbivore, carnivore, or detritivore.



Design your own cryptic creature

Underwater animals have many adaptations to help them survive on the reef. Using the some of the adaptations that you learned about in Reefs Go Live, design your own animal that is adapted to live on a coral reef. Write a short description about your animal and its adaptations to survive. Some things to think about when creating your unique animal: What do they eat? Where do they live? What colour are they and why? How do they move? When do they sleep?

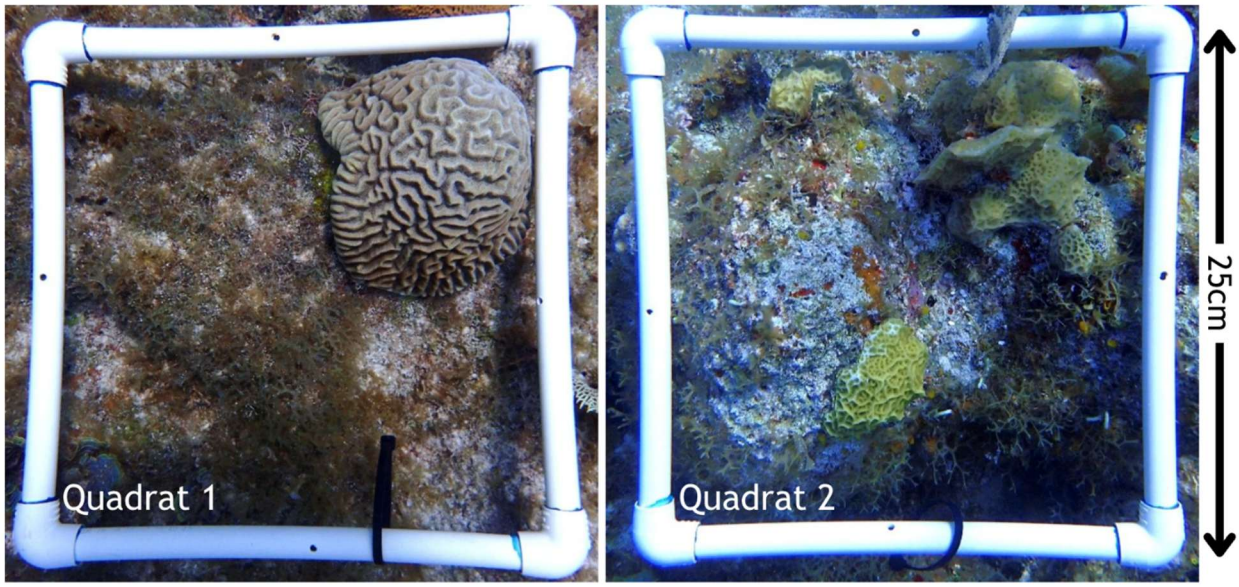
Draw here:
Drawings can be creative. Students should be able to explain use of colours, type of feeding, if they live on the benthos, any special behaviours or other adaptations of their animal, and why they are cryptic.

Write description here:

Become a CCMI Marine Biologist

CCMI has been monitoring the reefs of Little Cayman every year for more than 26 years! This allows scientists to compare data from year to year, see patterns in reef health over time, and notice changes to the reef. The Atlantic and Gulf Rapid Reef Assessment (AGRRA) protocol includes documenting coral cover, coral composition, fish populations, and algae. CCMI's 2024 AGRRA surveys show that due to coral bleaching events, coral cover decreased dramatically in a short period, going from 26% (2023) to less than 10% (2024).

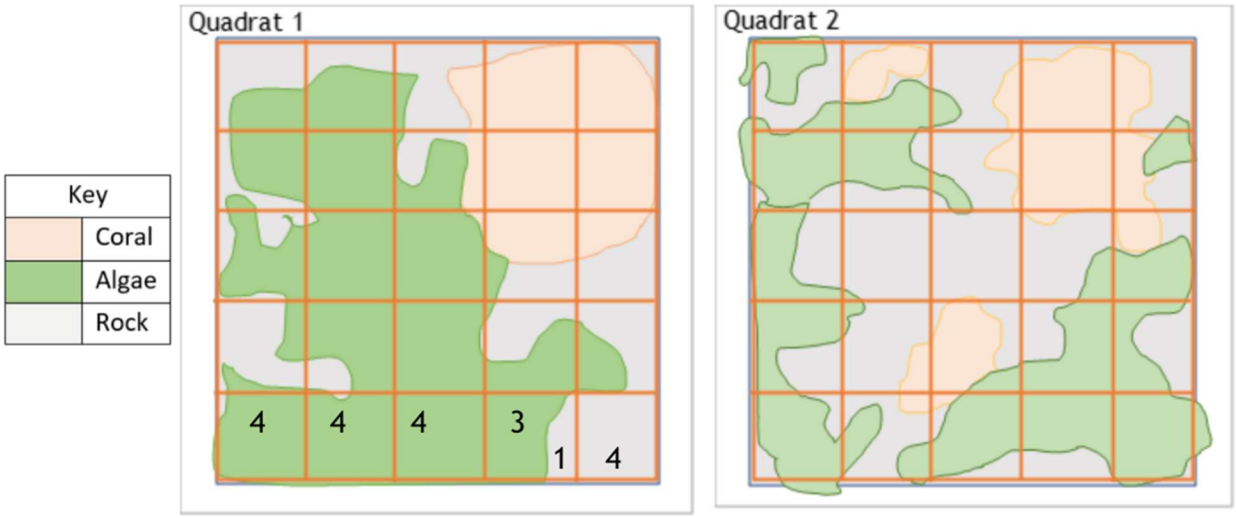
Scientists place a 10 m **transect** line of measuring tape on the reef. To calculate the percentage cover of corals, 25 cm^2 **quadrats** (white plastic squares used to sample the environment) are placed at points along the transect. Researchers then look at each quadrat and estimate the percentage of the quadrat which is coral, algae or rock. Below are two images of areas of the coral reef inside quadrats. Use them to fill in the table. Remember that each side of the quadrat is 25 cm.



(all answers in this section are estimates so may vary)	Quadrat 1	Quadrat 2
How many coral colonies can you count?	1	5
Estimate the length of each coral (cm)	10	5, 10, 4, 3, 7
Estimate the width of each coral (cm)	8	2, 10, 2, 4, 7

Quadrat 1 has a symmetrical brain coral whereas quadrat 2 has several small colonies of lettuce coral. The lettuce coral is one of the most common corals on local coral reefs! CCMI surveys are showing a shift on the composition of local coral reefs; there is a decrease in larger boulder species, such as the symmetrical brain coral, and an increase in smaller species, such as lettuce coral.

To make it easier to estimate the percentage coral cover, a sketch of the quadrats has been created to help identify the coral, algae, and rock (use the key on the left to help). A grid has been placed over the image to help with cover estimates. Each square within the grid = 4% cover out of the total 100% in the quadrat, ½ square = 2%.



Hint You can write numbers on the sketch to help calculate the percentage cover. The bottom row has been done for you. The bottom row has 15% algae cover and 5% rock cover.

(all answers in this section are estimates so may vary slightly)

% Cover	Quadrat 1	Quadrat 2
coral	22%	23%
algae	58%	46%
rock	20%	31%