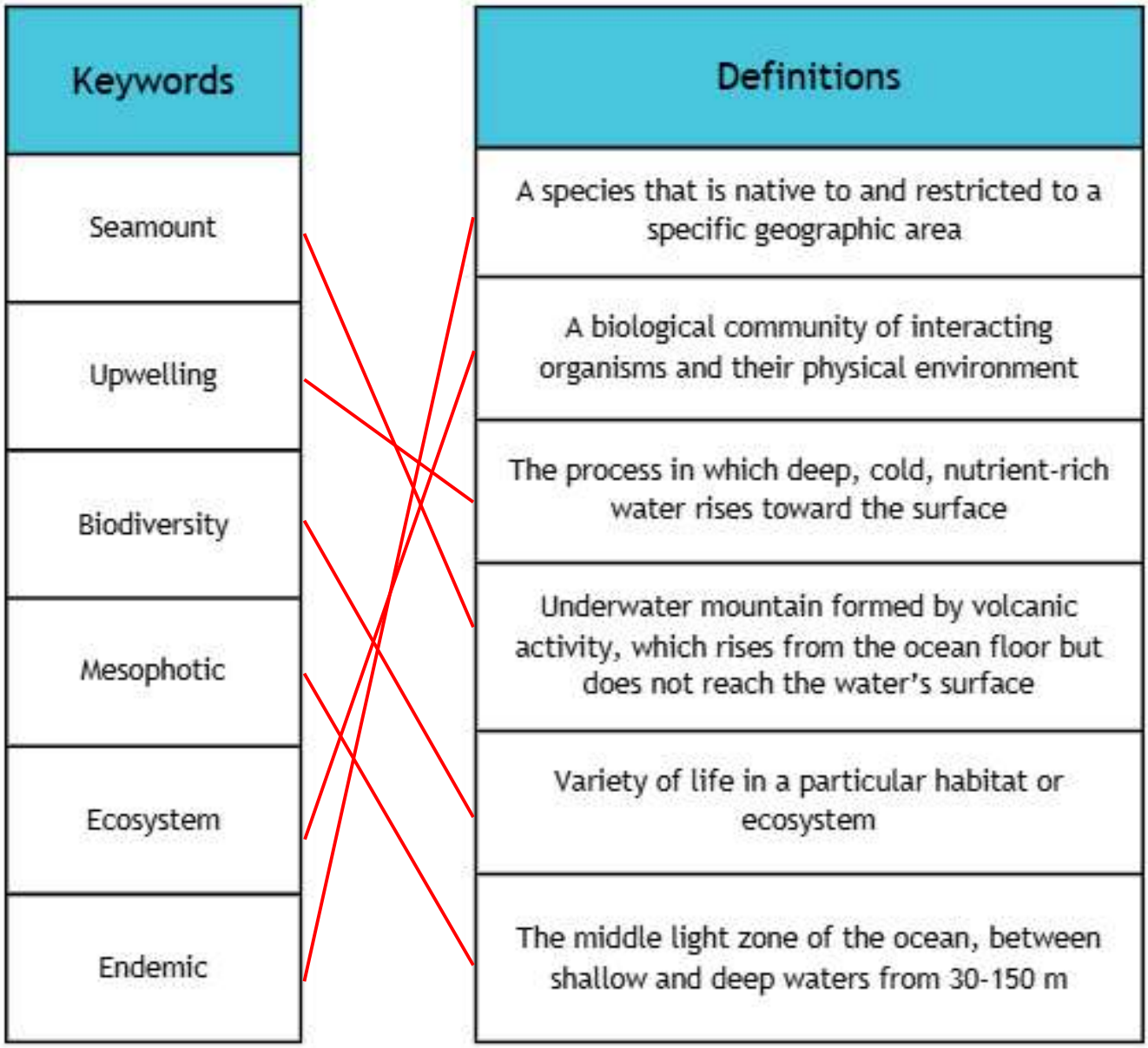
CCMI
REEFS GO LIVE

ANSWER KEY

Exploring the unknown ocean: Underwater mountains of Cayman

CCMI scientists have been exploring two offshore seamounts, Pickle Bank and 12-Mile Banks, and will share their findings during this Reefs Go Live broadcast. During the broadcast, we shared many important terms with our virtual dive buddies. How well do you remember them? Draw lines between the keywords and the correct definitions.



What is a seamount?

Seamounts are underwater mountains that are formed by volcanic activity, and they rise from the ocean floor but do not reach the water's surface.

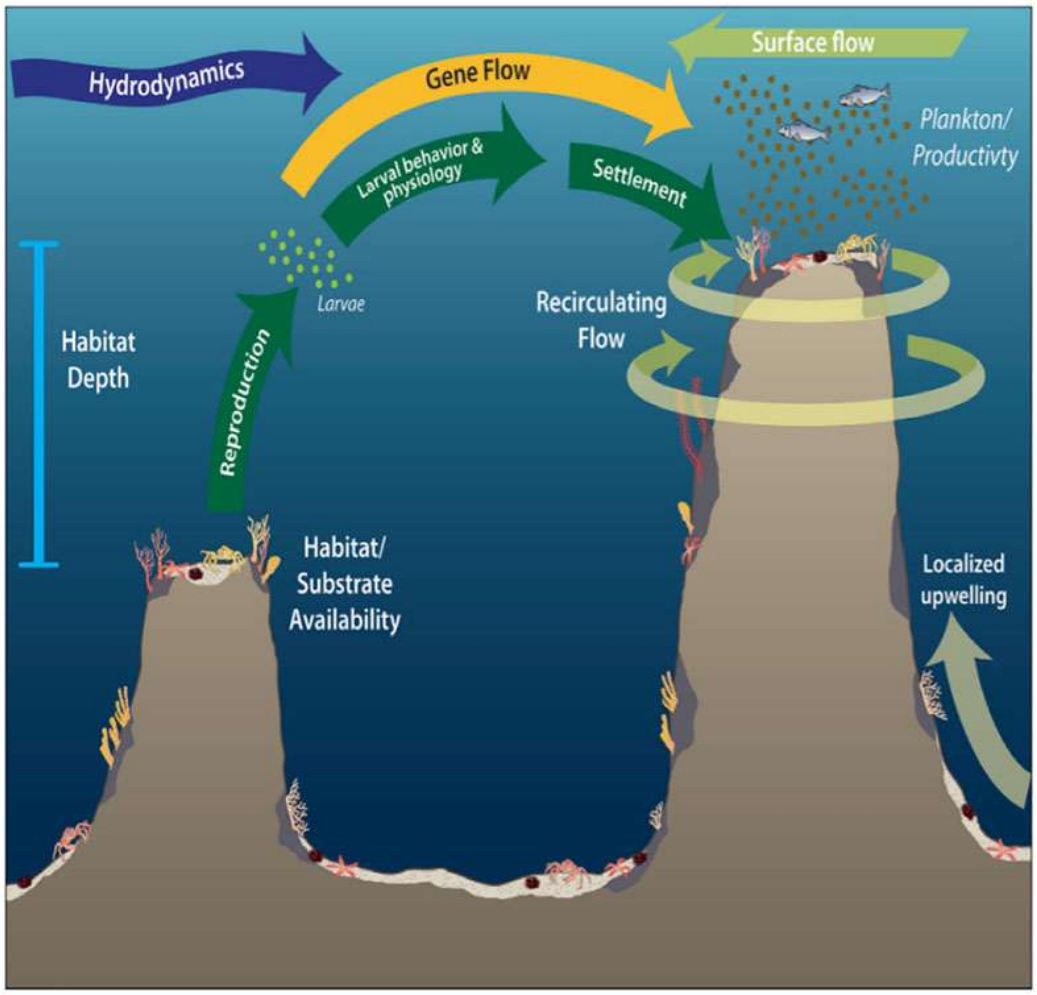


Image: Shank 2010, Oceanography; Morrison et al. 2015. on NOAA website

Seamounts are important biodiversity hotspots because of nutrient-rich upwelling that happens at these underwater mountains. They play a crucial role in marine food webs and act as key feeding and spawning grounds and are habitats for many creatures, including endemic species.

The seamounts explored by CCMI have higher biodiversity than the in-shore coral reefs of the Cayman Islands. As the health of coral reefs decline, how do you think the life on seamounts can help reefs near shore?

Seamounts act as a refuge for many species, including rare and endemic species. These animals can move to inshore reefs because the habitats are connected.

Biodiversity on seamounts

Seamounts are very biodiverse areas of the ocean, meaning that they are home to many types of organisms. These underwater mountains are a refuge for many important reef species including corals, sponges, and fishes. Even though they located far from shore, a long way from where humans live, they are still under threat. Below are some threats to seamounts with some of the letters missing. Fill in the gaps to reveal some of the most concerning threats to seamounts. Hint: all the missing letters are vowels.

1. Overfishing
2. Deep-sea mining
3. Coral bleaching

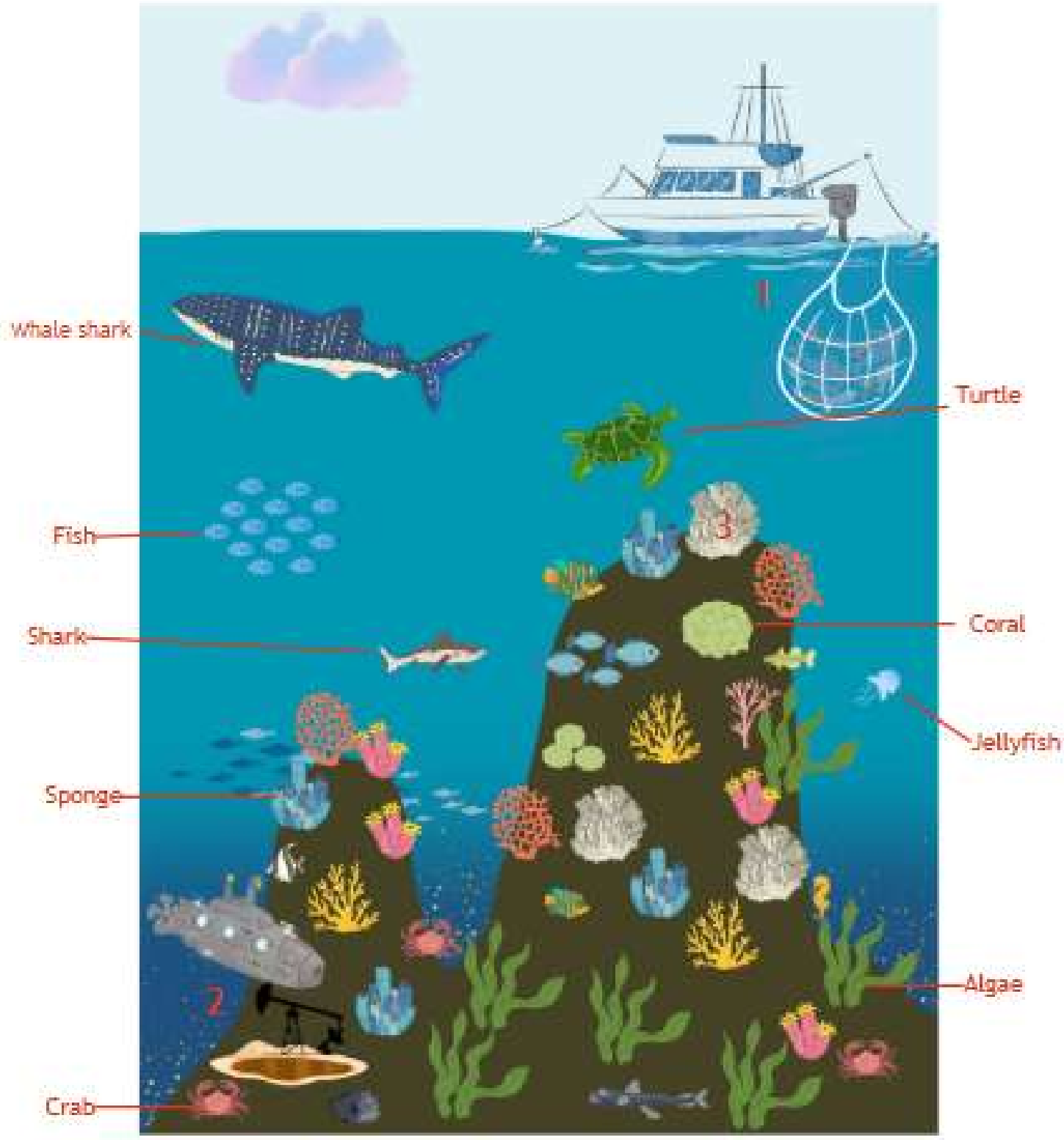
Marine Protected Areas (MPAs) are areas of the ocean that have been legally protected to help preserve the species that live there. These special areas can be formed around seamounts to protect their biodiversity.

Can you think of other ways to help protect seamounts?

Sustainable fishing, responsible tourism, reducing our carbon footprint (any specific answers such as not touching wild animals, reducing waste, eating less fish).

Use the numbers to label these threats where you can spot them on the image on the next page.

Many types of animals call seamounts home. Label the animals you see in this image.



Using the scientific method in our research

In science, we follow a specific set of steps to learn the answers to our questions. This is known as the **scientific method**. Using the following words, fill in the blanks to complete the sentences below.

investigate expedition inshore conclusions

methods information hope

Pickle Bank and 12-Mile Bank were previously unexplored areas of the ocean, meaning that nobody knew exactly what lived there. Ocean explorers and scientists from CCMI started their expedition at Pickle Bank and 12-mile Bank to investigate what species can be found there. This mission was called Expedition Hope.

The researchers used different methods and materials to collect data on the seamounts. They used transects to investigate fish populations and look at fish biodiversity. Scientists also took photographs of the seamount to create a 3D model to map the seamount.

The results are from the information the scientists collected during the expeditions. When put together, this information helps us to see the patterns in the data.

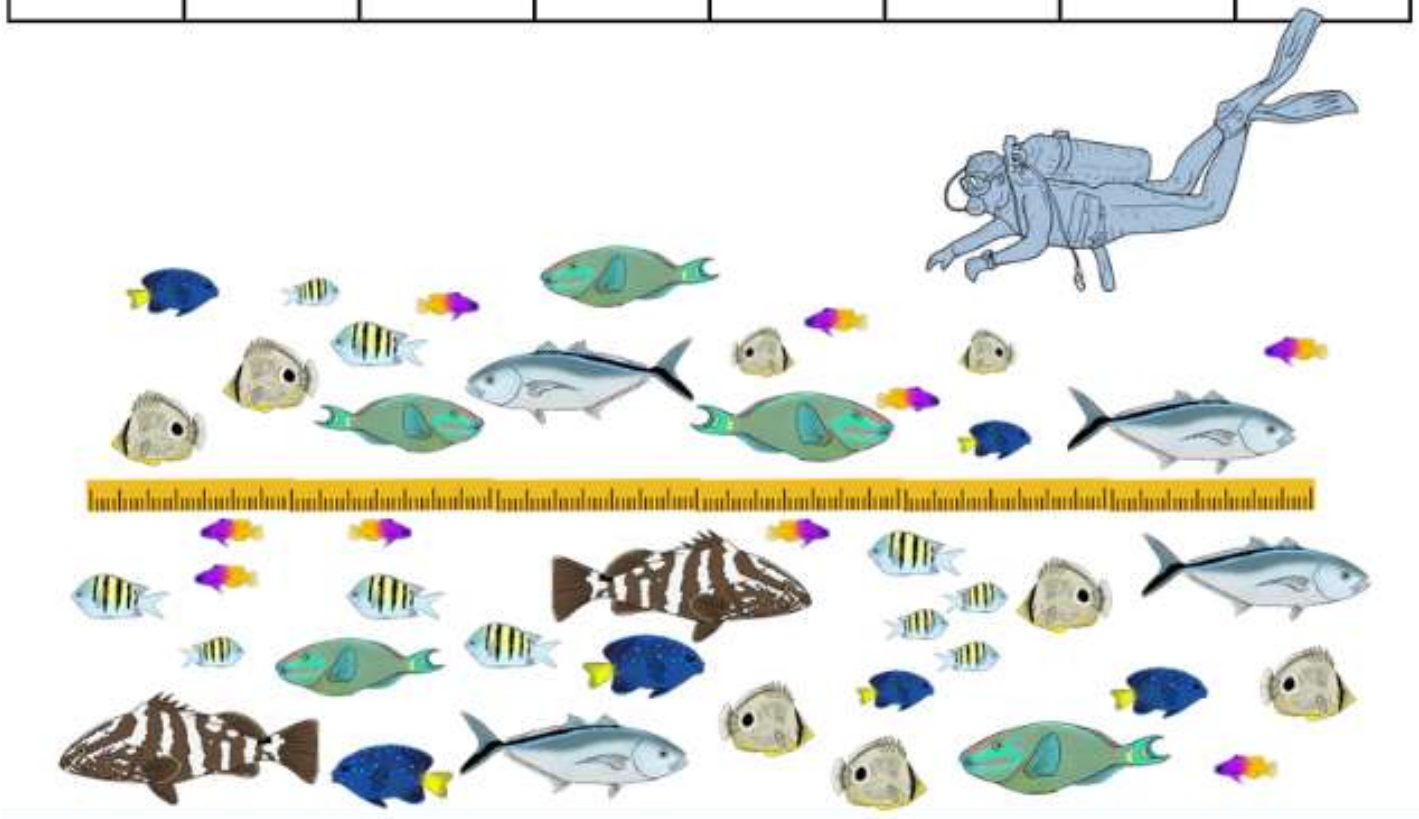
The conclusions found from the results were very interesting, showing that the coral reefs on the seamounts are very productive when compared to the inshore reefs of the Cayman Islands.

Using the scientific method in our research

Brenda is a scientist at CCMI who is collecting data on fish populations using a 30 m transect on Pickle Bank seamount. Help her collect data by identifying each species of fish in the image below and writing the name of that type of fish in the box.

Next, count the number of fish of each species along this transect line, and write the answer in the 'count' box for that type of fish. Brenda will use this information to analyze the data and find her results.

Fish species							
Species name	Seargent major	Yellowtail damselfish	Foureye butterflyfish	Fairy basslet	Bar jack	Nassau grouper	Stoplight parrotfish
Count	10	6	8	9	4	2	5



The CCMI team took many photographs of the seamounts and pieced them all together to create a 3D model, sort of like a jigsaw puzzle.

Cut out the pictures below and piece them together in the right place to create one big image of the coral reefs on a seamount. In the final image, you can see some of the important groups of organisms on the seamounts such as corals, sponges, and fish. (See the following page for the completed image.)