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Living Oceans
Foundation

STANDARDS

- **CCSS:** RST.9-10.1, 2, 4, 5, 7, 8, 10; RST.11-12.1, 2, 4, 10; SL.6.1-8.1; SL.6.5-8.5
- **NGSS:** MS-LS2-3, MS-LS2-4
- **OLP:** (grades 6-8) 5.A.1, 5.A.3, 5.A.4, 5.A.6, 5.A.16, 5.A.21, 6.A.5-6.A.7, 6.D

ONLINE CONTENTS

- [Food Web Quiz](#)
- [Coral Reefs: Unraveling the Web](#) Coral reefs are an ecosystem that supports millions of different creatures. A coral reef is so complex, it's better to think of it as a food web - a network of food chains - that tells a story about the interdependence of all the animals and plants that live in the reef.

FOOD WEB

This lesson is a part of the *Food Web* unit, which explains how matter is recycled and energy is transferred in the biotic (living) parts of a coral reef ecosystem. Below is a summary of what is included in the entire unit.

UNIT CONTENTS

A. [Background Information](#)

- Earth's System
- Matter
- Energy
- Feeding Strategies
- Food Chain
- Food Web
- Ecological Pyramids
- Energy Pyramid & 10% Rule

B. Lessons

[Watch It! Unraveling the Web](#)

- A worksheet to accompany the [Coral Reefs: Unraveling the Web](#) video

[Stringing it Together](#)

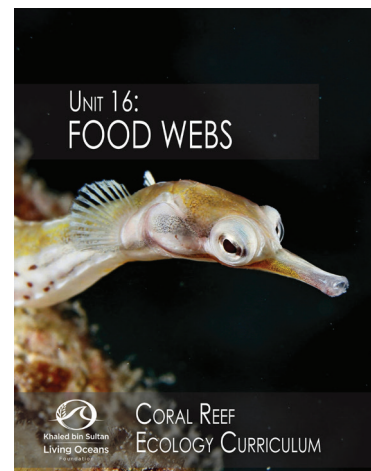
- An activity that models food chains and food webs in the coral reef ecosystem to aid in understanding how matter is recycled and energy flows through it

[Read it! Sharks](#)

- A worksheet to accompany the [Sharks!](#) field blog

[Read it! Faces & Functions of Algae](#)

- A worksheet to accompany the [The Faces and Functions of Algae on the Reef](#) field blog





WATCH IT!

UNRAVELING THE WEB

INSTRUCTIONS: Watch *Coral Reefs: Unraveling the Web* YouTube video (<https://youtu.be/kuEe4376il8>) and answer the following questions.

1. What kinds of animals live in a coral reef ecosystem? Provide three examples.

2. What is the role of a sea cucumber living in a coral reef?

3. What is a food chain?

4. What is a food web?

5. What is the role of a parrotfish and sea urchins living in a coral reef?

6. What happens when sea cucumbers and parrotfish populations decline?





WATCH IT!

UNRAVELING THE WEB

7. What does it mean to have a balanced food web?

8. Throughout the video there are examples of humans disrupting the coral reef food web. Provide three examples of how humans disrupt the coral reef food web either from the video and/or from independent research.



VIDEO SCRIPT:

A coral reef, when healthy, it's one of nature's miracles.

An ecosystem that supports millions of different creatures.

From major predators like sharks to grazers like parrot fish, from sea urchins to octopus, to sea cucumbers.

This creature feeds on bacteria and other microorganisms that could become problems.

It breaks them down and then poops out clean sand, redistributing nutrients for other creatures.

Bacteria is at the bottom of a food chain, a diagram of "what eats what" in the reef.

But a coral reef is such a complex ecosystem, that it's better to think of it as a food web, a network of food chains that tells a story about the interdependence of all the animals and plants that live in the reef.

Take the parrotfish.

Named for its sharp, beak-like teeth, parrotfish feed on algae that grows on the reef.

Together with sea urchins, they act as lawnmowers, keeping the algae in check.

But in some places, like Jamaica, fishermen are now catching too many parrotfish.

The sea urchins nearby have also undergone a population crash.

The loss of these two grazers is reflected in Jamaican reefs. Many of them are now overgrown with algae.

So, the food web is all about balance.

If one link is threatened, or another one grows too dominant, it sends shock waves through the web.

Each link of the food web impacts every other part.

Follow the connecting lines and you'll see that animals can eat more than one animal and can be prey to many others.

They all need each other, even the large predators.

And many types of predators, like sharks, are now endangered by another predator far more dangerous – humans.

We disrupt the reef's food web in dozens of ways, large and small.

For example, too much fertilizer in farming or sewage in coastal areas, introduces too many nutrients into the sea.

This can trigger those booms and busts that upset the coral reef's food web.

WATCH IT!

UNRAVELING THE WEB

They threaten the reef's ability to support the millions of organisms that rely on it for food and shelter.

But a coral reef can recover.

It's up to us.

We are an important part of this food web.

We must change our actions and rethink what we do to help preserve reefs.

Only then can we restore their natural balance.

WATCH IT!

UNRAVELING THE WEB

INSTRUCTIONS: Watch *Coral Reefs: Unraveling the Web* YouTube video (<https://youtu.be/kuEe4376il8>) and answer the following questions.

1. What kinds of animals live in a coral reef ecosystem? Provide three examples.

Answers may include snappers, butterflyfish, damselfish, clownfish, anemones, crabs, sea turtles, remoras, eels, corals, sharks, parrotfish, sea urchins, octopi, and sea cucumbers.

2. What is the role of a sea cucumber living in a coral reef?

Sea cucumbers feed on bacteria and microorganisms living in sand, which can be harmful to a coral reef. The sea cucumber consumes the sand, eating bacteria and microorganisms; then it excretes clean sand, redistributing nutrients for other organisms to eat.

3. What is a food chain?

A food chain is a linear diagram of what-eats-what, showing how energy is transferred from one organism to another.

4. What is a food web?

A food web is a complex interdependent network of food chains.

5. What is the role of a parrotfish and sea urchins living in a coral reef?

Their role is to consume algae that grows on coral reefs. They are called grazers.

6. What happens when sea cucumbers and parrotfish populations decline?

There are not enough grazers (sea cucumber and parrotfish) to remove the algae and it begins to overgrow the coral reef.

WATCH IT!**UNRAVELING THE WEB**

7. What does it mean to have a balanced food web?

When one or more plant and/or animal population(s) become too low and/or too high, this throws the entire food web out of balance. For example, if a coral reef predator, such as sharks, are almost completely removed from the ecosystem, then the population of the organisms that it consumes will go unchecked. These unchecked populations will increase, and they will consume more prey, because there are more of them. In turn, they will reduce their preys' populations. A food web consists of balanced production and consumption of all organisms. This does not mean that each population size is equal in size to all other populations though.

8. Throughout the video there are examples of humans disrupting the coral reef food web. Provide three examples of how humans disrupt the coral reef food web either from the video and/or from independent research.

Answers may include sewage and chemical runoff, sedimentation from removing trees and plants, oil spills, introduction of invasive species, marine debris, using harmful sunscreens; vessel groundings, anchor damage, physical contact with corals; destructive fishing practices and overfishing; and ocean acidification, sea level rise, and bleaching due to climate change.