

ACTIVITY 2: ROLES IN THE ECOSYSTEM

Overview

Organisms interact in an ecosystem. In this activity you will be identifying the roles of organisms using information about how they obtain nutrients.

Background Information on Ecosystems

Sunlight is the primary source of energy for an ecosystem. **Producers** can use sunlight directly to make nutrients for themselves and others through **photosynthesis**. Producers are also called autotrophs. **Autotrophs** are organisms that can make nutrients from inorganic substances like carbon dioxide and water.

Consumers are heterotrophs. **Heterotrophs** depend on other organisms for nutrients. In an ecosystem, there are three categories of consumer: primary, secondary, and tertiary.

- **Primary consumers** obtain nutrients by eating producers. Primary consumers that eat only plants or phytoplankton are called **herbivores**.
- **Secondary consumers** obtain nutrients by eating primary consumers, or a diet of both plants and animals. Secondary consumers may include carnivores, omnivores, scavengers, filter feeders, and siphon feeders. **Carnivores** are meat eaters. **Omnivores** eat both plants and animals. **Scavengers** obtain nutrients from dead animal carcasses (**carrion**). **Filter feeders** and **siphon feeders** obtain nutrients by passing water through their systems and removing food particles and decayed matter called **detritus**.
- **Tertiary consumers** are usually the top consumers. Tertiary consumers rely on primary and secondary consumers for nutrients. Nutrients for tertiary consumers pass from producer to primary consumer to secondary consumer. Tertiary consumers may be both a scavenger and a carnivore depending on food availability.

Finally, **decomposers** are organisms that break down dead plant and animal matter. Decomposers are the recyclers of the ecosystem, removing nutrients for themselves and leaving fine particles called detritus for others.

Instructions

Using the “Wadden Sea Species Cards”

1. Work in a small group (3 or 4 students).
2. Use information from the reading to classify each organism in the card deck.
3. Sort the cards into three groups: producer, consumer, and decomposer.
4. Sort the consumers into three groups: primary, secondary, tertiary.
5. Build a digital display or chart as a record of your work.
6. View the displays or charts created by other groups and compare similarities and differences.
7. Leave a comment or question for the other groups.

Consider the Following

As a scientist, how would you organize the producers, consumers, and decomposers of the *Wattenmeer* ecosystem to show how energy flows through the system?

Work in your group to arrange the cards to show how energy flows through the ecosystem.