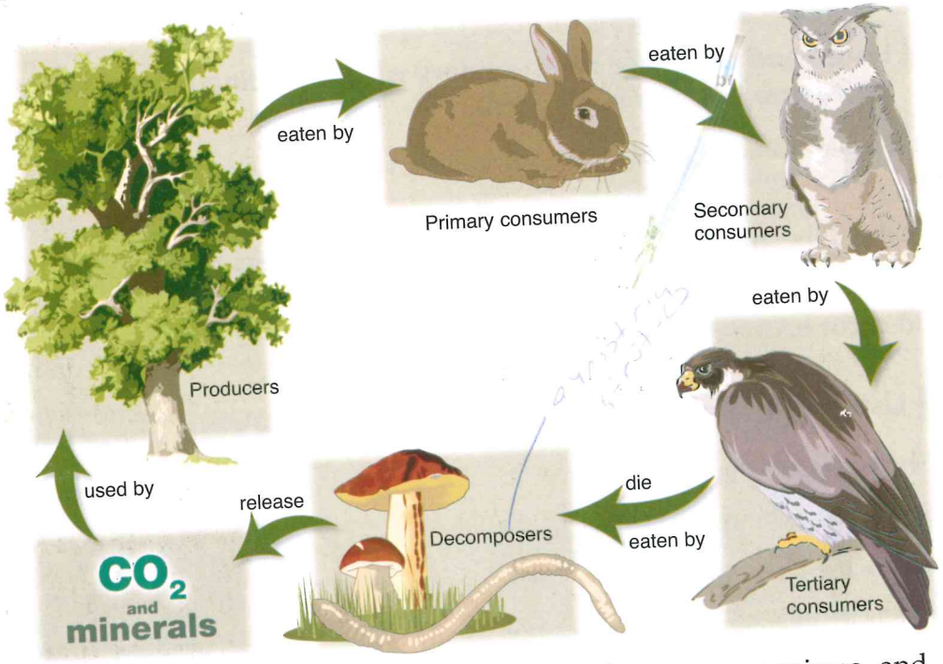
UNIT 15

Chains, webs and cycles

Section 1 Vocabulary

CD 2-18

A. Read the text and look at the diagram.

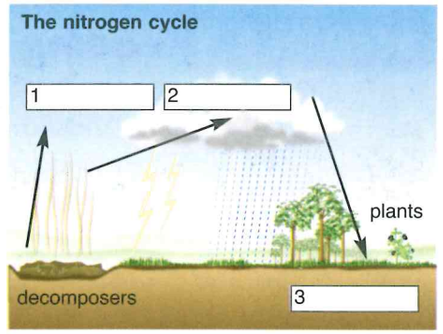


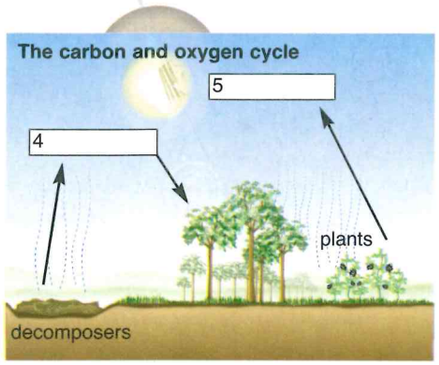
Ecology is the study of the **relationships** between organisms and the **environment**. All organisms exist in relationship to many other organisms. Animals eat plants and are eaten, in turn, by other animals. This relationship is called a **food chain**. There is a **flow of energy** from the organism that is eaten to the organism that eats.

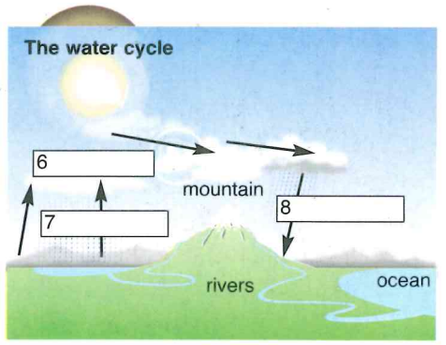
A food chain begins with a **producer** – a plant which can produce energy with the help of sunlight. Plants are eaten by **primary consumers**, which are usually small animals like mice or rabbits. These animals are usually **herbivorous**, which means they only eat plants. The primary consumers are eaten by **secondary consumers**, which are usually bigger animals like owls. These animals are usually **carnivorous**, which means they only eat other animals. The secondary consumers are often eaten by other animals, such as falcons. These are the **tertiary consumers**.

Eventually, the tertiary consumers die and are "eaten" by the **decomposers**, which include **worms**, **fungi** and **bacteria**. In the process of decomposition, carbon dioxide and minerals are released into the soil. These are then available to producers to start the **cycle** again.

B. Read the description of each natural cycle. Label the diagrams with the correct words in bold.







The nitrogen cycle

- Decomposers break down dead animals and plants. Bacteria release nitrogen.
- The **nitrogen** rises into the air.
- **Lightning** changes nitrogen and oxygen into nitrous acid.
- The nitrous acid falls in rain onto the land.
- Plants fix the nitrogen to make **nitrates**.
- Nitrates help plants to grow

The carbon and oxygen cycle

- Decomposers break down dead animals and plants.
- Decomposers release carbon dioxide.
- The **carbon dioxide** rises into the air.
- Plants use carbon dioxide to convert sunlight into energy and oxygen.
- The **oxygen** rises into the air.
- Animals breathe oxygen. When the animals die, decomposers break down their dead bodies.

The water cycle

- Water evaporates from the land and water.
- The **water vapor** rises into the air.
- The water vapor condenses to form **clouds**.
- The clouds rise and cool over hills and mountains.
- **Rain** falls from the clouds onto the land.
- The water runs into rivers and oceans.

CD 2-19

Section 2 Reading

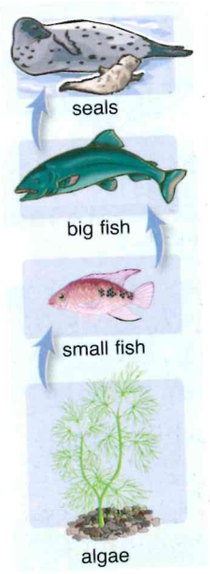


Figure 1: A simple food chain

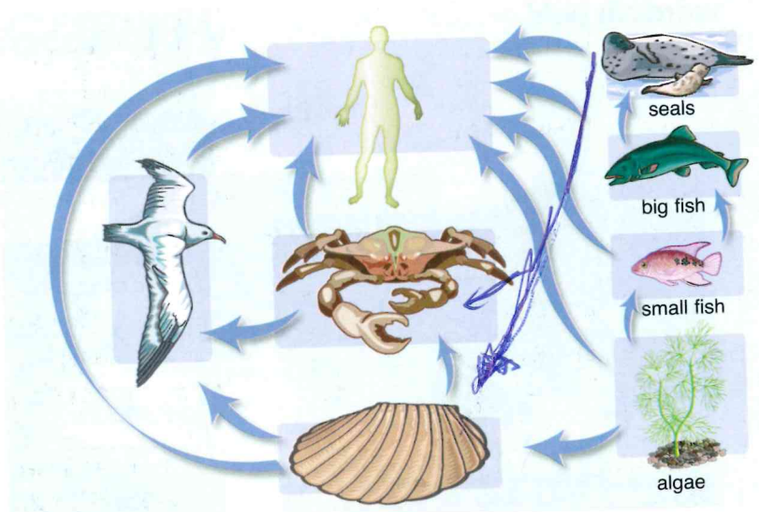


Figure 2: Part of a complex food web

All organisms in nature are part of a food chain. They eat something and are, in turn, eaten by something else. For example, in Figure 1, the primary consumers are small fish which eat the producer, algae. They are, in turn, eaten by secondary consumers, big fish. If the supply of algae fell in one area for some reason, the population of small fish in that area would be affected. Would the population of small fish decline? We cannot say without more information because most organisms are part of more than one food chain. They are, in fact, part of a food web.

In Figure 2 we can see a possible food web including the small fish and the algae. In this case, the reduction of algae would be disastrous for the small fish because they have no other source of food. However, the effect of the reduction would not stop there. In this web, the big fish prey on the small fish, so their numbers would also be affected. What about the seals which prey on the big fish? Their numbers would probably not decline because they have another source of food – crabs.

Man is at the top of many food webs and is not normally affected by a decline of one particular species. In the food web in Figure 2, man eats all of the consumers so he could change his eating habits if numbers changed. However, environmental events which affect large areas, such as the destruction of rainforests, or even the whole world, such as global warming, could threaten man's food supply on the whole planet.

A. Choose the best answer in each case.

1. What is the producer in Figure 1?
   a. seals
   b. big fish
   c. small fish
   d. algae
2. What do the seals in Figure 2 prey on?
   a. big fish
   b. crabs
   c. man
   d. big fish and crabs
3. *Their* (line 14) refers to:
   a. crabs
   b. big fish
   c. little fish
   d. seals
4. A reduction in algae would probably not affect the seals because:
   a. they prey on big fish and little fish
   b. they prey on crabs
   c. they prey on big fish
   d. they prey on little fish
5. Man is not normally affected by the decline of one species because:
   a. he is at the top of many food webs
   b. he cannot change his eating habits
   c. he doesn't eat other consumers
   d. his food supply comes from the rainforest

B. Study the following example sentences.

Talking about hypothetical events

If the supply of algae fell, the small fish **would** be affected.
If the number of crabs increased, it **might** make up for the decline in big fish numbers.
If the numbers of one species changed, man **could** change his eating habits.

C. Circle the correct forms of the verbs.

All organisms in nature (*are / would be / could be)* part of a food web. If the supply of algae (*fall / fell / would fall)* in one area, the population of small fish in that area (*is / was / would be)* affected. In some cases, the reduction of algae (*is / was / would be)* disastrous for the small fish because they (*have / had / would have)* no other source of food. However, the effect of the reduction (*does / did / would)* not stop there. In the web on page 72, the big fish (*prey / preyed / would prey)* on the small fish, so their numbers (*are / could / would be)* affected. What about the seals which prey on the big fish? Their numbers (*do / did / would)* probably not decline because they (*have / had / would have)* another source of food: crabs.

CD 2-20

Section 3 *Listening*

A. **Listen and complete the summary of the reading text in Section 2. Write one word in each space.**

All organisms in nature are part of one or more food _____. This means that any change in the _____ of one organism will affect many other _____ in the web. If the numbers of one organism _____, the organisms that _____ on it may decline also if they have no other source of food.

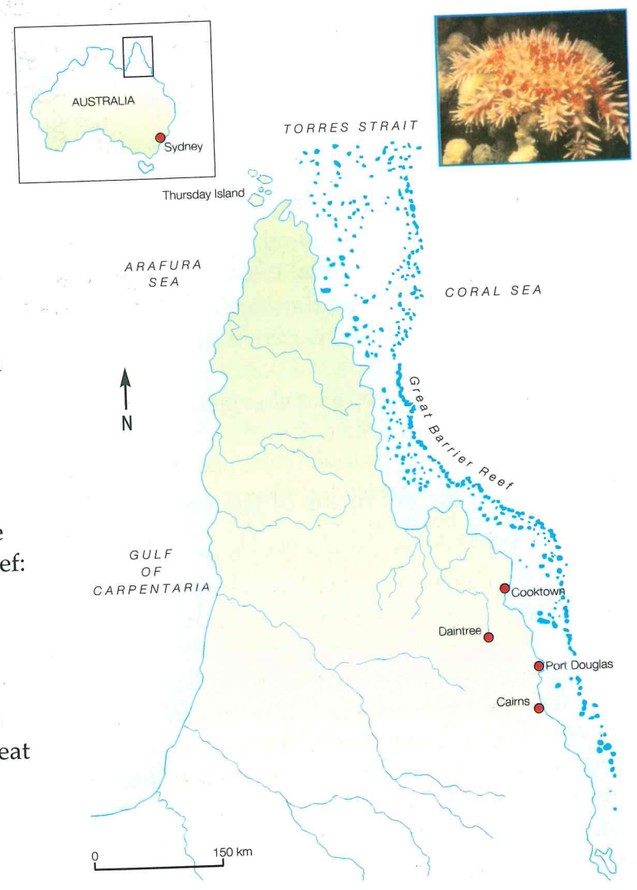
CD 2-21

B. **Listen to the text. Choose the best answer in each case.**

1. What is the text about?
   a. Australia
   b. the Great Barrier Reef
   c. the crown of thorns starfish
   d. tourism

2. The reef is being destroyed by:
   a. the crown of thorns starfish
   b. polyps
   c. fishing
   d. shellfish collecting

3. Tourists might be destroying the reef:
   a. by eating the polyps
   b. by killing the starfish
   c. by killing the animals that eat the starfish
   d. by visiting the reef



CD 2-22