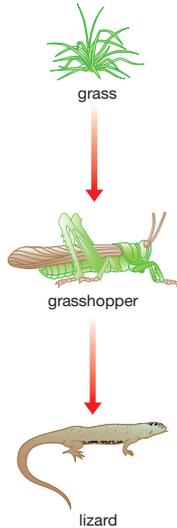


Lesson 1

Food chains



▲ Figure 14.8 A simple food chain.

The simplest way of showing feeding relationships within an ecosystem is a **food chain** (Figure 14.8).

In any food chain, the arrow (→) means 'is eaten by'. In the food chain illustrated, the grass is the **producer**. It is a plant so it can photosynthesise and produce food materials. The grasshopper is the **primary consumer**. It is an animal which eats the producer and is also a **herbivore**. The lizard is the **secondary consumer**. It eats the primary consumer and is also a **carnivore**. The different stages in a food chain (producer, primary consumer and secondary consumer) are called **trophic levels**.

Many food chains have more than three links in them. Here are two examples of longer food chains:

filamentous algae → mayfly nymph → caddis fly larvae → salmon

In this freshwater food chain, the extra link in the chain makes the salmon a **tertiary consumer**.

plankton → crustacean → fish → ringed seal → polar bear

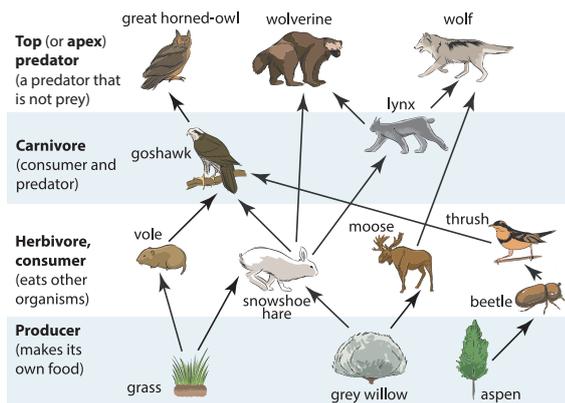
In this marine (sea) food chain, the fifth link makes the polar bear a **quaternary consumer**. Because nothing eats the polar bear, it is also called the **top carnivore**.

Food chains are a convenient way of showing the feeding relationships between a few organisms in an ecosystem, but they oversimplify the situation. The marine food chain above implies that only crustaceans feed on plankton, which is not true. Some whales and other mammals also feed on plankton. For a fuller understanding, you need to consider how the different food chains in an ecosystem relate to each other. Figure 14.9 gives a clearer picture of the feeding relationships involved in a freshwater ecosystem in which salmon are the top carnivores. This is the **food web** of the salmon.

Food webs

Food chains can be joined together to form **food webs**, which show how different animals compete for the same food (inter-specific competition). In food web C, you can see that goshawks compete with lynxes for hares. If the goshawks get a disease and die, there will be more hares. The population of lynxes may then increase.

The organisms in an ecosystem all depend on one another for many things, not just food. We say that they are **interdependent**. For example, birds use trees for shelter and plants use animal waste to help them grow (the waste contains mineral salts).



C | a food web in northern Canada

More complex food webs

