Section 3.3.
How Introduced Species Affect Ecosystems.

Textbook pages 138 to 147.

Before You Read.

Invasive species can dramatically change or destroy ecosystems. Do you think unwanted weeds, such as dandelions, are invasive species?

How can introduced species affect an ecosystem?

Native species are plants and animals that naturally inhabit an area. **Introduced species** or **foreign species** are species that have been introduced into an ecosystem by humans, either intentionally or accidentally. They do not naturally inhabit the ecosystem. Introduced species are usually beneficial or harmless. However, some introduced species, known as **invasive species**, can dramatically change or destroy ecosystems. With climate change and the expansion of international trade and travel, invasive species are entering new ecosystems at an increasing rate. This rapid spread of introduced invasive species is a major cause of global biodiversity loss. Introduced species can affect native species through competition, predation, disease, parasitism, and habitat alteration, as shown in the table on the next page.

Examples of the effects of introduced species include:

- Scotch broom was introduced to British Columbia as a garden plant. It has up to 18 000 seeds per plant, can survive drought, and fixes nitrogen in the soil, causing conditions that many native species have trouble growing in. Together with other introduced species, it is competing with the keystone species Garry oak on Vancouver Island.
- European starlings outcompete native birds for nesting sites, and cause decreases in their populations. Barn owls are able to keep the numbers of starlings low in some areas.

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- Eurasian milfoil forms mats on the surface of waterways that decrease the amount of sunlight available to organisms lower down. It is spread by boat traffic since it can regrow from small pieces.
- Norway rats eat a wide variety of foods, including preying on native species.
- Blister rust grows on the native white whitebark pine, causing disease that kills the trees.
- Wild boars are considered one of the world's worst invasive species. Their behaviours spread weeds and interfere with natural succession, and they prey on native species.

- Purple loosestrife is an introduced species, and the introduced loosestrife-eating beetle is proving to be a good way to control its spread.

competition.

- Introduced invasive species reproduce rapidly and are often aggressive. Lacking natural predators, they easily outcompete native species for food and habitat.
- Invasive carpet burweed from South America competes with rare native plants for habitat. Its spiny tips protect it from predators.

predation.

- Introduced predators can have more impact on a prey population than native predators, as prey may not have adaptations to escape or fight them.
- Yellow crazy ants that escaped from cargo from West Africa have devastated the population of red crabs, a keystone species on Christmas Island, Australia.

disease and parasites.

- An invasion of parasites or disease-causing viruses and bacteria can weaken the immune responses of native plants and animals.
- The sea lamprey, a parasitic fish that has invaded freshwater ecosystems in eastern Canada, sucks body fluids from its prey by attaching to it with a sucker-like mouth.

habitat alteration.

- Introduced invasive species can make a natural habitat unsuitable for native species by changing its structure or composition.
- Wild boars damage ecosystems by rooting, wallowing, and spreading weeds that interfere with natural succession.