



Unit 5 Section 1 Lesson 2: The Solution, or Part of the Problem?

Introduced Species

Handout 1

In the history of the United States, approximately 50,000 non-native species are estimated to have been introduced into the United States. Introduced species, such as corn, wheat, rice, and other food crops, and cattle, poultry, and other livestock, now provide more than 98% of the U.S. food system at a value of approximately \$800 billion per year. Other exotic species have been used for landscape restoration, biological pest control, sport, pets, and food processing. However, in addition to harming the natural environment and threatening native plants and animals, some non-native species have caused major economic (money) losses in agriculture, forestry, and several other segments of the U.S. economy. One recent study reported approximately \$97 billion in damages caused by 79 exotic species during the period from 1906 to 1991.

Whereas most invertebrate animal and microbe introductions have been accidental, many plant and vertebrate animal introductions have been intentional. In the past 40 years, the rate of and risk associated with introduced species have increased enormously. Some of the approximately 50,000 species of non-native plants and animals that have been introduced in the United States cause a wide array of damages to managed and natural ecosystems.

About 97 of the 1,000 birds in the United States are exotic. Of the 97 introduced bird species, only 5% are considered beneficial, while many (56%) are pests. The English or house sparrow was introduced into the United States intentionally in 1853 to control the canker worm. By 1900, the birds were considered pests because they damaged plants around homes and public buildings and consumed wheat, corn, and the buds of fruit trees. Furthermore, English sparrows harass robins, Baltimore orioles, yellow-billed cuckoos, and black-billed cuckoos, and they displace native bluebirds, wrens, purple martins, and cliff swallows. They are also associated with the spread of approximately 29 diseases in humans and livestock.

The gypsy moth, introduced into Massachusetts in the 1800s as part of a controlled experiment, escaped from the laboratory. The species has since developed into a major pest of U.S. forests and ornamental trees, especially oaks. The U.S. Forest Service currently spends about \$11 million annually on gypsy moth control.

The true challenge lies not in determining the precise costs of the impacts of introduced species, but in preventing further damage to natural and managed ecosystems. Formulation of sound prevention policies needs to take into account the means through which non-native species gain access to and become established in the United States. Since the invasions vary widely, we should expect that a variety of strategies will be needed for prevention programs. For example, public education, sanitation, and effective prevention programs at airports, seaports, and other ports of entry will help reduce the chances for accidental biological invasions. Furthermore, prior to selecting a biological control for intentional release, the life cycle of the proposed control agent must be researched carefully. Research must determine not only that the proposed agent can survive and multiply in sufficient numbers to control the targeted pest, but also verify that the agent's food sources will not threaten those of native species. Every effort must be made to prevent potential pests in other areas of the world from becoming established in the United States.

