

Overview

Invasive species represent an ever-growing problem today around the world. The phrase “invasive species” is typically used to refer to any species of exotic or non-native animal, plant, organism, or pathogen that is transported into a new geographic area and begins to take over, endangering or crowding out native species that have typically thrived in the same area before the invaders were introduced. This common definition is a bit too imprecise, however. It is important to keep in mind that various native species may also be invasive, whereas various non-native species may not be.

The most common traits of invasive species are that they colonize specific habitats by spreading quickly once they are introduced to new areas and that they have negative effects on their new environments. This process is often referred to as bioinvasion, a term used to characterize the introduction of non-native species into various areas throughout the world, which then produces a variety of negative effects ranging from the disruption of food and agricultural production to the dramatic alteration of natural habitats. Increasingly today, bioinvasion results in disconcerting forms of biodiversity loss around the world, and it is increasing in frequency as a result of contemporary trends involving increasing globalization and global travel and tourism. It also commonly results in the (potentially irreparable) disruption of ecosystems, the (potentially permanent) displacement of native species of various kinds, various forms of damage to the world’s precious agricultural and aquatic resources, and potential threats to human health and well-being.

Invasive species come in all forms, shapes, and sizes. Some of the ones making headline news in recent years include the emerald ash borer (which has already killed millions of trees in the United States) and the spiny water flea (which is capable of killing native fish quite readily). Invasive shrubs, including buckthorn and honeysuckle, prevent young trees from regenerating successfully. Zebra mussels clog the intake and distribution pipes of water-based power plants and regularly cut the feet of swimmers. “Killer bullfrogs” devour virtually anything that can fit into their mouths, including various other frog and toad species. The dog strangling vine ends up killing all sorts of native plants, rather than family pets.

Invasive species are introduced into new areas in various ways. Often, they are transported unknowingly by humans in exotic fruits and vegetables that they are carrying, in cargo that they transport across the globe, in firewood that they bring from other regions and leave behind in campgrounds, or even in the treads of their vehicle or bike tires when they explore regions far from their homes. Seeds of invasive plants are frequently transported in the fur of pets or on the soles of people’s shoes. It is also quite common for such invaders to be introduced into the world’s waterways by ships and other watercrafts.

The costs associated with invasive species are high and ever-increasing. Many of these costs stem from efforts to contain or eradicate such harmful invaders. Additional costs, however, result from losses in production in various industries, including agriculture and forestry, as well as declining interest in recreational activities such as hiking, fishing, and water-based sporting activities in tourist areas where invasive species are wreaking visible havoc. In the United States alone, such costs already total over a hundred billion dollars each year, and that estimate does not adequately take into account the long-term costs that are associated with invasive species’ damage to our environment, noteworthy losses in biodiversity and the extinction of various native species.

Once they settle in new areas that are located far from where they originated, invasive species typically no longer encounter threats from the competitors and predators that endangered them in their original habitats. As a result, they are able to spread quite quickly and aggressively in their new locations because there typically are no longer any natural checks and balances on their reproduction. This reality is what makes so many invasive species quite difficult to contain, and even far more difficult to eradicate. As a result, conscious efforts to prevent invasive species from arriving in new locations in the first place are a necessity today, whenever possible. Despite such good intentions, however, they readily take hold in countless new areas today, which means they must be dealt with in meaningful ways.

What, then, might be done to control or eradicate invasive species in the years to come? The promising approaches are varied and numerous. People of all ages can be educated in ways to identify and appropriately respond to the various kinds of invasive species that are common in their geographic regions, such as by weeding, which is an effective weapon in the fight against the majority of invasive plants. Individuals who own lakeside properties or are lake enthusiasts can be trained to serve as volunteer watercraft inspectors. Campers can make a conscious commitment to buy their firewood at locations close to their campsites and to burn every piece of firewood they obtain during their stays. Nursery personnel can carefully inspect all incoming plants that they sell to detect and eliminate any unwanted invaders that may have jumped onto them. Gardeners can intentionally purchase and plant only native plant species. New laws and regulations can be enacted to ban the sale of specific kinds of invasive species, to provide various forms of penalties for individuals who are not responsible when it comes to transporting invasive species, or to determine who must pay the costs associated with invasive species cleanup efforts. Yet another promising approach involves scientists traveling to the home countries of exotic invasive species, locating the natural enemies that such species encountered there, and bringing those enemies back with them to fight the invaders in the new areas they now call home.



QUESTIONS FOR DISCUSSION

1. Have you heard much about the problem of invasive species? If so, what have you heard, and from which sources? If not, why do you believe this is the case, especially given the problem's widespread and ever-growing nature?
2. In your own words, how would you personally define the concept of "invasive species?" How (if at all) might you need to refine your definition to acknowledge the fact that some native species are also invasive, whereas some non-native species are not invasive?
3. Based on your personal understanding, what specific attributes actually make a species "invasive?"
4. What do you regard as being the five greatest threats posed by invasive species, and how did you reach your conclusions?
5. Invasive species come in various shapes and sizes, and they differ across various geographic areas. What sorts of invasive species exist in your geographic area? If you do not know the answer to this question, what specific sources might you consult in order to find out?
6. Some people are surprised to learn that humans are occasionally classified as an "invasive species." Under what sorts of circumstances might this be the case?
7. What types of invasive species (if any) have you heard about from local, national, or international news outlets?
8. What do you regard as being the three most common ways that invasive species get introduced into new areas today?
9. What sorts of costs do you feel are associated with the problem of invasive species, and how should the funds required to cover those costs be generated?
10. Do you personally believe that it is easier to contain or to eradicate invasive species? Why do you feel this way?
11. Do you personally believe that it is more ideal to contain or to eradicate invasive species? Why do you feel this way?
12. What do you feel can be done to control or eradicate invasive species either today or in coming years? Generate a list of at least ten promising approaches.