

Ten Invasive Species that the United States Exported

Although the serious consequences caused by invasive species reaching our shores have received considerable attention, the problems caused when U.S. species land in other countries has not. Exported species have caused extensive damage to other nations, but little progress has been made toward creating policy, both international and domestic, to mitigate the exportation of potentially invasive species. Today, we continue to send species, intentionally and unintentionally, from the United States to other nations. These species can be transported by air, land, and sea through tourism, military operations, trade, development assistance projects, and industry expansion. Here are just some of the problem species we have exported:

Western corn rootworm

(Diabrotica virgifera) was introduced into Serbia from the United States in the early 1990s and has since spread to six other countries. This leaf beetle, a major insect pest of corn, is aggressively invading European corn fields. Unchecked, the beetle may cause damages and costs in Europe similar to those in the United States, about \$1 billion annually.



habitats such as cities, suburbs, and farms. *

The **North American bullfrog** (*Rana catesbeiana*) is native to the central and eastern United States and Canada. They have been introduced to the western United States and Canada, Mexico and the Caribbean,

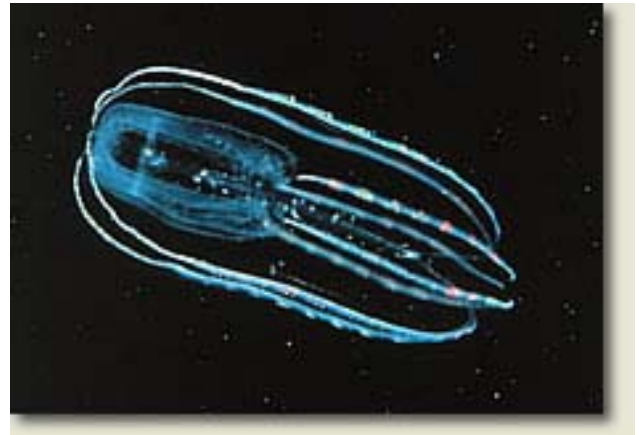


South America, Europe, and Asia. In Venezuela, the bullfrog became established in 1998 after intentional illegal releases in Andean water bodies. It is one of the most frequently cultivated

edible frogs worldwide and has been widely distributed via aquaculture and aquarium trade. Adult bullfrogs are voracious predators of aquatic, terrestrial, and flying invertebrates and vertebrates. *

The **Eastern grey squirrel** (*Sciurus carolinensis*) was imported as a pet to England, Italy, and South Africa and is expected to spread through Europe and Asia. Population expansion in the U.K. and Italy has caused the local extinction of the native red squirrel, which is smaller and less aggressive than its American cousin. It causes damage to woodland through bark stripping activity and spreading parapoxvirus. Eastern grey squirrels thrive in forests and human-dominated

Leidy's comb jelly (*Mnemiopsis leidy*), considered by some as the "revenge of the zebra mussel," is indigenous to the western Atlantic Ocean. Its predatory nature, along with population explosions in



the Mediterranean, Black, and Caspian seas, have led to tremendous ecosystem changes. Already, the jelly has caused the collapse of the anchovy fishing industry in the Black Sea. Comb jelly populations declined there only after one of its native predators was introduced to the region. They are capable of self-fertilization, producing about 2,000 to 3,000 eggs per day. Eradication is almost impossible. *

Largemouth bass (*Micropterus salmoides*). Good taste and appealing sporting quality has caused the largemouth bass to be widely introduced throughout the world. It is a voracious, carnivorous, solitary ambush predator that feeds both day and night. Its diet includes other fish, amphibians, insects, and any small living animal or bird that falls into the water.

Largely because of the male's care in building and guarding nests, many eggs survive, and a few adult bass can quickly populate new waters. *



* The bullfrog, Eastern grey squirrel, Leidy's comb jelly, and largemouth bass have all been nominated among 100 of the "World's Worst" invaders by IUCN's Invasive Species Specialist Group.

Bonamia ostreae, a parasite of European oysters, was inadvertently introduced into Europe from California by the translocation of infected oysters in the late 1970s. The parasite contributed to a drastic drop in the French production of certain oysters from 20,000 tons per year in the 1970s to 1,800 tons in 1995.

Pinewood nematode (*Bursaphelenchus xylophilus*) was identified in 1934 in Louisiana and is likely native. It occurs in 28 states but causes little direct damage in the United States. The nematode was found at only one location in Japan prior to the 1930s, spread to 34 Japanese prefectures through the 1940s, and to 45 of the 47 prefectures by the 1970s. Expansion of the nematode's range has been recorded in China, Korea, Taiwan, and Portugal. Currently, chemical control for the beetles carrying this parasite is being tested in Japan.



Rosy wolfsnail (*Englandina rosea*). Native to the southeastern United States, the predatory rosy wolfsnail was introduced to islands in the Pacific and Indian Oceans from the 1950s onward as a biological control agent for another alien species, the giant African snail (which was itself initially introduced as a food source for humans but became an agricultural

pest). In French Polynesia, the fast moving rosy wolfsnail rapidly started eliminating local endemic species such as Partula tree snails. Already, many Partula tree snails have been lost and survivors mainly exist in zoos and in the world's first wildlife reserves for snails. This invasion by a biological control agent has caused a significant loss of biodiversity.

The **devil's beggartick** (*Bidens frondosa*) is native from northern Canada to the southern United States and has spread into Europe. It grows mainly on riversides, near water reservoirs, and in other areas with high soil moisture. In the Czech Republic, it is displacing native *Bidens* species. Compared with the native species, the devil's beggartick needs less moisture and is able to grow in relatively dry sites. High reproductive capacity and the ability to disperse are likely to contribute to its success in invading stands of native species.



The **red swamp crayfish** (*Procambarus clarkii*), native to the south-central United States, has spread through Europe since 1973, when it was introduced illegally into Spain. Today, dense populations inhabit central and southern Spain and Portugal, and are abundant in France, Italy, and, to a lesser degree, England, Switzerland, Germany, and the Netherlands. With the crayfish came a strain of fungus lethal to non-American crayfish species. Dense populations of certain European crayfish were wiped out in a short period and are thought to be lost in Portugal. Loss of habitat range for native crayfish was accelerated by fishermen who attempted to restore crayfish populations by restocking with red swamp crayfish.

All the nations of the world pay a high price for the spread of invasive species. A recent estimate of annual economic costs of invasive species in five countries—the United States, South Africa, the United Kingdom, Brazil, and India—came to \$336 billion. As both a recipient and giver of these ecologically harmful and economically detrimental "gifts," the United States must address the challenges of invasive species globally. Efforts to implement and coordinate both national and international policy must be bolstered, for example, by passing the National Invasive Species Council Act (NISCA); by addressing invasion pathways and ecosystem protection in trade-related agreements; and by creating policies and programs that help developing nations receive the necessary scientific, technological, and financial resources for combating harmful non-native species.