The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

The Nature Conservancy's Invasive Species Initiative

On their home turf, plant and animal populations are kept in check by natural controls like predators and food supply. But when a species is introduced, accidentally or intentionally, into a new landscape—one not adapted to its presence—the consequences can be devastating. "Invading" plants and animals sometimes spread unchecked, disrupting natural cycles, crowding out native species and costing billions in property damage and lost economic productivity.

The Nature Conservancy's Invasive Species Initiative aims to control these marauding pests through a combination of prevention, restoration, research and outreach.

hostile aliens

the problem with invasive species

A primary rule of nature is interdependence. Ecosystems develop and evolve over centuries, each species adapting its own rhythms to blend perfectly into the dance of life that defines a place. The end result is a natural system in which each species fits perfectly.

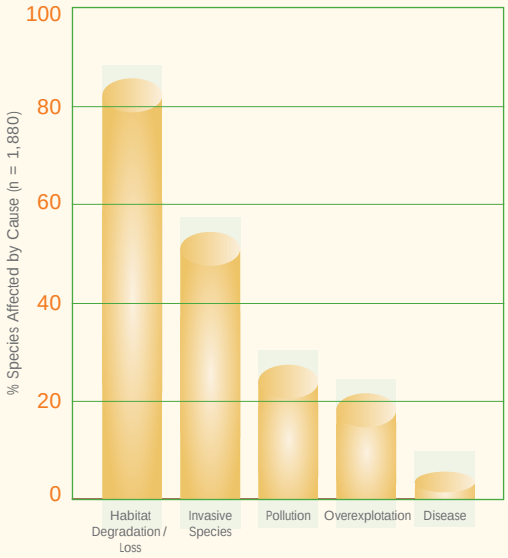
This delicate balance yields the tremendous diversity of nature, but it also leaves species vulnerable. The sudden introduction to a new landscape of a foreign species, one adapted to the rhythms of another place, can cause chaos. The first brown tree snakes were seen on Guam in the mid-1950s, for instance, likely arriving as stowaways on boats from their native New Guinea. Guam's birds made easy prey for the eight-foot serpent, which flourished unchecked in its new home. The snake eliminated 12 bird species on the island, some found nowhere else in the world, and now threatens to invade Hawaii.

Brown tree snakes are just one example of a non-native, invasive species, a plant, animal or other organism that is introduced into a new area and, free from its natural competitors and predators, becomes an environmental bully. Invasive plants, for example, often outgrow natives, hoarding much needed light, water and nutrients. Some even alter soil chemistry, pushing native species further to the brink of extinction.

Invasions are occurring around the word at an unprecedented rate and scale. In the United States alone, more than 4,500 foreign species have gained a permanent foothold or taken root over the past century. Some are cultivated intentionally: Large and costly infestations of purple loosestrife, scotch broom and water hyacinth resulted from gardeners' planting these species for their bright showy flowers. Anglers and game managers introduced flathead catfish to rivers beyond its native range, and these behemoths are now devouring some of America's most endangered native fish.

Others take hold accidentally. A Caspian Sea tanker dumped its ballast water—and the Asian zebra mussel—into the Great Lakes a little more than a decade ago, and the tiny terror now threatens to smother 140 native mussel species. Waterfront industries have paid billions to repair clogged pipes and other damage caused by the mussels.

Invasive species come in all shapes and sizes. Purple loosestrife, the brown tree snake and the cactus moth are three examples of the wide array of species that can become invasive when introduced outside of their native realms.



Invasive species are a leading threat to imperiled and endangered plants and animals in the United States, as shown above, and around the world.

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The introduction of an invasive species is often the unintended consequence of a seemingly innocent action. The seeds of invasive plants, for example, can be spread when hikers fail to clean their boots between visits to different areas.

ecosystem invasions

the consequences of invasive species

Invasive species contribute directly to the decline of threatened and endangered plants and animals. Only habitat loss poses a greater threat. To understand the danger, consider the islands of the Pacific. The entire island chain of Hawaii has been devastated by an onslaught of foreign insects, snakes, plants and pests. Feral pigs trample delicate nesting birds, rosy wolf snails gorge themselves on the island's native snails, and miconia plants shade out native plants and degrade water quality.

Hawaii is an extreme example, but no type of habitat or region of the globe is immune. Aquatic and estuarine systems are especially vulnerable, and invasions in these ecosystems are harder to contain and reverse. Introductions in New Zealand have resulted in that country creating the strictest laws in the world against non-native species.

Invasive species also exact heavy costs in lost productivity. In the cattle country of North America's Great Plains, for instance, ranchers and natural area managers have combined forces to battle leafy spurge, a Eurasian invader that has infested about 5 million acres across the region. It overtakes prime livestock pasture, chokes out native grasses and is impervious to conventional attempts to destroy it. Cattle and other grazers refuse to eat it. The United States Department of Agriculture estimates the leafy spurge plague costs ranchers in the Dakotas, Montana and Wyoming more than $144 million a year in losses.

All told, invasive species are estimated to cost $137 billion annually in losses to agriculture, forestry, fisheries and the maintenance of open waterways in the United States alone.

stemming the tide

the invasive species initiative

In assembling its Conservation Blueprint—a map of the areas most critical for the long-term protection of ecosystems and wildlife—The Nature Conservancy has discovered that invasive species are one of the top sources of stress across all priority conservation areas. Conservation success will depend greatly on preventing new invasions and managing invaded systems effectively.

Building on years of experience in invasive species management, the Conservancy has created the Invasive Species Initiative to address this urgent and pervasive threat. A team of Conservancy specialists will work with a network of private and public partners worldwide to pursue the following strategies:

1) Prevention—Prevention offers the greatest benefit for the least cost. We are supporting enhanced port inspections and voluntary efforts to eliminate intentional introductions of non-native, invasive species.
2) Early Detection/Rapid Response—We are building upon the success of initiatives like the one under way in Chicago, where hundreds of local residents have been trained and have volunteered their time to check trees for signs of invasive Asian longhorned beetles.

3) Restoration—We are working with hundreds of local organizations at sites throughout the Americas, Asia and the Pacific to remove and prevent the spread of invasive species.
4) Research—We are working with leading academic institutions, like the University of California and the University of Florida, to develop new research to improve the management and control of invasives.
5) Outreach—We are working with government agencies and international organizations to develop policies for invasive species awareness, management and prevention.

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In the Florida Keys, the Conservancy is working with local volunteers, including the Boy Scouts, to help protect the islands from the spread of invasive species. Similar efforts are under way at locations around the world.

the invasive species initiative at work

Across the United States and around the world, the Conservancy's Invasive Species Initiative is creating and expanding coalitions of conservation organizations, government agencies and volunteers to help stop the spread of problematic plants and animals.

In Florida, non-native trees and vines threaten the native forests of the Florida Keys. Three of the worst are Australian pine, Brazilian pepper and lead tree. In response, the Conservancy, working as part of the Florida Keys Invasive Exotic Task Force, addressed the problem directly by removing 99 percent of the non-native species found on the once heavily infested West Summerland Key. The coalition also launched a public education effort to cut off the invasion at one of its sources: the use of invasive trees in landscaping.

In California, invasive trees, including the ironically named tree-of-heaven, threaten to take over the best remaining reaches of the lowland streamside forests of the Central Valley. The Conservancy has organized the "Hard Corps," a team of volunteers in support of an invasives management plan, and is battling the invasion with a combination of early detection and rapid response. After hundreds of hours of monitoring and control work, the team cleared the Consumnes River Preserve of the worst invaders, and is now focused on preventing new incursions.

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Cover photo: Although once promoted as a way to prevent soil erosion, Kudzu has grown to become one of the most notorious invasive species in North America, where it escapes its intended use, smothers native plants and sometimes even uproots entire trees through the sheer force of its weight.

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