



Fact Sheet

U.S. Department of the Interior National Park Service Natural Resource Information Division



Exotic Species in the National Park System

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Exotic species, also known as *alien*, *introduced*, *nonindigenous*, and *nonnative species* or simply *exotics*, are plant or animal species that humans intentionally or unintentionally introduced into areas outside of the natural ranges of such species. The invasion of exotic species is one of the most serious problems of national parks. Exotics invade and colonize parks by every possible means and frequently harm or altogether displace native species. If exotics are not aggressively controlled, the National Park System is at risk of losing a significant portion of its native biological resources.

Harm to Native Resources from Exotic Species

People have accidentally or intentionally introduced hundreds of exotic species into natural communities of North America. Although many died out, some persisted and have become pests. Exotic species disrupt complex native ecological communities, jeopardize endangered native plants and animals, and degrade native habitats. Hybridization with exotics alters the genetic integrity of native species. Exotic diseases transmitted by exotic species threaten the preservation of native species that are without natural defenses against them. The management of exotics and their effects on the economy and the natural communities in the United States costs millions of

dollars each year. Many exotics are well known to the general public. For example:

The exotic chestnut blight in 1904 wiped out the American chestnut (*Castanea dentata*) and changed the composition of hardwood forests in eastern North American. The heights of few if any chestnuts today exceed 76 m (25 feet).

Gypsy moths (*Lymantria dispar*) were imported in the 1860s in hope of improving silk production. The species escaped and its defoliation of trees has caused havoc in forests.

The zebra mussel (*Dreissena polymorpha*), a small black and white striped bivalve mollusk, first appeared in the United States in 1988. Since then it has spread throughout the Great Lakes and into the Mississippi basin. This exotic is displacing the native mussels in the lakes and rivers. Its abundance reaches such levels that it can remove food from the water that other species need.

The invasion of exotic plants has become a major threat to biological diversity in every area of the nation. Native ecosystems are being disrupted by, among others, kudzu (*Pueraria lobata*) in the Southeast, purple loosestrife (*Lythrum salicaria*) in the

Northeast, salt cedar (*Tamarix ramosissima*) in the Southwest, leafy spurge (*Euphorbia esula*) in the Northwest, and banana poka (*Passiflora mollissima*) in Hawai'i. The spread of purple loosestrife is endangering the persistence of the already federally listed swamp pink (*Helonias bullata*).

The house or English sparrow (*Passer domesticus*) was introduced from Europe 110-140 years ago. By the mid twentieth century, this exotic had expanded its range over all of North America. It has been a successful competitor of small native birds.

Feral hogs (*Sus scrofa*) are free-ranging descendants of domestic hogs or European wild boars that escaped from domestication or were released for hunting. They are the most prolific large wild mammals in the United States and occur from Texas to Florida, in the Carolinas, in some areas of California, on eight of the major Hawaiian Islands, and on Puerto Rico and the Virgin Islands. Hogs eat anything from grain to carrion. Rooting for subterranean vegetation damages crops, pastures, and forest vegetation and causes erosion. Predation and habitat destruction harm native wildlife and livestock. Feral hogs are reported from 13 National Park System units. For example, rooting by feral hogs has been particularly destructive of fragile plant communities

in Great Smoky Mountains National Park and at one time caused significant soil erosion and damage to endangered plant species on Santa Rosa Island in Channel Islands National Park.

Control of Exotics in the National Park System

The distinction between changes in resources by natural processes and changes of resources by human actions has been important in the management of National Park System units. This particular approach to management rests on the National Park Service Organic Act (16 U.S.C. 1 et seq [1988], Aug. 25, 1916, ch. 408, 39 Stat. 535) that mandates the National Park Service to "conserve the scenery and the natural and historic objects and the wild life therein . . . [to] leave them unimpaired for the enjoyment of future generations." Changes of natural communities from anthropogenic actions in the National Park System, including the invasion by exotics, would be contrary to the intentions of the act. Comprehensive control of exotics and their effects in the National Park System is therefore compulsory.

Exotic species pose serious problems in at least 194 of the 368 National Park System units. Systemwide management plans call for the management of more than 535 exotic species during 1996-2000 at a cost of more than \$80 million. Yet, funding during this same four-year period permits only less than 10 percent of the projects (about \$8 million).

The National Park Service in cooperation with local, state, and other federal organizations is making concerted efforts to control exotic species. For example, Yellowstone National Park and representatives of its surrounding states, forests, and communities developed and implemented long-range management of exotic plants.

The National Park Service also developed an exotic species ranking system for the evaluation of exotic plants by species-specific level of impact in a park and the potential of the species for becoming a pest. The system is designed to separate innocuous from the disruptive species. For example, of the more than 1,440 vascular plants on Indiana Dunes, 300 are exotic, but only 14 are considered major threats to native species at this time.

The National Park Service, which has long been concerned about the control of exotics, has assisted with the establishment of several exotic pest-plant councils. The councils represent many state, federal, and private agencies that address exotic plant issues throughout the country. The service is also working with state and federal agencies on the development of biological control agents to manage exotic plant species in several parks.

The National Park Service is a member of the *Federal Interagency Committee for the Management of Noxious and*

Exotic Weeds. This committee of more than 17 federal agencies developed a national strategy for dealing with the weeds. More than 100 federal, state, and private organizations endorsed the strategy. The strategy also emphasizes partnerships to accomplish the difficult task of managing exotic plants.

In 1996, the National Park Service published a strategy for managing exotic plants that are disruptive to parks. This strategy relies on sound integrated pest management. The IPM Coordinator of the service is working with parks and others to develop ecological and integrated management of exotic plants.

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