

The Invasive Problem

from <http://www.nps.gov/plants/alien/bkgd.htm#problem>

Impacts of Invasive Alien Plants. Invasive non-native organisms are one of the greatest threats to the natural ecosystems of the U.S. and are destroying America's natural history and identity. These unwelcome plants, insects and other organisms are disrupting the ecology of natural ecosystems, displacing native plant and animal species, and degrading our nation's unique and diverse biological resources. Aggressive invaders reduce the amount of light, water, nutrients and space available to native species, alter hydrological patterns, soil chemistry, moisture-holding capacity, and erodibility, and change fire regimes (Randall 1996). Some exotics are capable of hybridizing with native plant relatives, resulting in unnatural changes to a plant's genetic makeup; others have been found to harbor plant pathogens, such as bacterial leaf scorch (*Xylella fastidiosa*) that can affect both native and non-native plants, including ornamentals (McElrone, et al., 1999). Still others contain toxins that may be lethal to certain animals. For example, [garlic mustard](#) has been found to contain compounds that are lethal to a native butterfly species.

Exotic organisms have been referred to as biological pollution (Westbrooks 1991). In some cases, exotic plant invaders are driving our rarest species closer to extinction. According to the U.S. Fish and Wildlife Service, an estimated 42% of the nation's endangered and threatened species have declined as a result of encroaching exotic plants and animals. And management of these species is expensive. Each year, the National Park Service and the Fish and Wildlife Service spend an estimated 2 and 10 million dollars, respectively, on controlling exotic plants (Westbrooks, 1998). Invasive plants also cause great economic losses and expenditures each year, measured in billions of dollars, for agriculture, forestry, range lands and roadways management (Westbrooks 1998).

Impacts to Native Fauna. Our native fauna, including insects, birds, mammals, reptiles, fish and other animals, is dependent on native plants for food and shelter. While some animals have a varied diet and can feed on a wide number of plant species, others are highly specialized and may be restricted to feeding on several or a single plant species. For example, caterpillars of the monarch butterfly have evolved to feed primarily on plants in the genus *Asclepias* (milkweeds) that contain special chemicals. The term *host plant* is generally used to describe a plant species that is required food for at least one stage of an insect or other animal. As exotic plants replace our native flora, fewer host plants are available to provide the necessary nutrition for our native wildlife.

Approximately 4,000 species of exotic plants (Kartesz and Morse 1997) and 500 exotic animals (Office of Technology Assessment 1993) have established free-living populations in the United States. Nearly seven hundred are known to cause severe harm to agriculture at a cost of billions of dollars annually. [Over 1,000](#) exotic plant species have been identified as a threat to our native flora and fauna as a result of their aggressive, invasive characteristics.

Some of the known ecological impacts of invasive plants are summarized below, and include:

- reduction of biodiversity
- loss of and encroachment upon endangered and threatened species and their habitat
- loss of habitat for native insects, birds, and other wildlife
- loss of food sources for wildlife
- changes to natural ecological processes such as plant community succession
- alterations to the frequency and intensity of natural fires
- disruption of native plant-animal associations such as pollination, seed dispersal and host-plant relationships

Invasive alien plants:

- compete with and replace rare and endangered species
- encroach upon limited habitat of rare and endangered species
- reduce or eliminate localized or specialized native plant communities, such as spring ephemeral plant communities
- disrupt insect-plant associations necessary for seed dispersal of native plants
- disrupt native plant-pollinator relationships
- reduce and eliminate host plants for native insects and other wildlife
- hybridize with native plant species, altering their genetic makeup
- serve as host reservoirs for plant pathogens and other organisms that can infect and damage desirable native and ornamental plants;
- replace nutritious native plant foods with lower quality sources
- kill trees and shrubs through girdling
- increase the incidence of plant disease and stress in forested areas
- prevent seedling establishment of native trees and shrubs
- reduce vigor of mature trees through shading
- reduce the amount of space, water, sunlight and nutrients that would be available to native species
- increase erosion along stream banks, shorelines and roadsides
- change characteristics of the soil structure and chemistry
- alter hydrological flows and conditions

The best way to reduce plant invasions is to focus on preventing non-native species introductions, managing existing infestations, minimizing disturbance to forests, wetlands, barrens and other natural communities, and learning to work with, rather than against, "Mother Nature."