

Exotic species: a costly burden

“The war against [exotic plants] takes doggedness and a long-term perspective. . . . If we want our natural areas to have the species diversity and scenic beauty they deserve, we must give nature a hand” (Tenenbaum, D. 1996. Weeds from hell. *Technology Review* 99(6): 32-40). Highly aggressive, persistent, and noxious exotic plants are the primary threat to many natural and restored native ecological communities. The survival of millions of acres of such communities depends on the removal of the exotics. More than 4,000 floral and faunal exotic species are able to survive without human help in the United States. Of these, 79 species cost the nation an esti-

mated \$97 billion dollars between 1906 and 1991 in damage to agriculture, industry, and health. The damage from exotics to biological diversity has not been expressed in terms of dollars; however, according to E. O. Wilson, Harvard University biologist and authority on preserving biological diversity, invasion by exotics has probably been the largest cause of extinction through most of human history. Many, if not most, biologists are convinced that a reduction in diversity robs natural communities of resilience to recover from natural disasters such as fire or storms. A reduction in diversity also constitutes an elimination of genes and substances that benefit medicine, industry, and agriculture.

The takeover by exotic species is hardly natural. In the absence of their natural predators and competitors, they can rapidly outcompete native species. The author provides examples, a few of which are given here.

The Australian tree melaleuca displaces all native vegetation in wet and dry areas. In Florida, it dominates 500,000 acres and colonizes 50 acres per day. Hydrilla, a water weed, chokes 75,000 acres of rivers in Florida. Like many aquatic weeds, hydrilla jumps from one lake to another on boats and boat trailers. Kudzu, the vine that ate the South, can grow as many as 50 feet per year and smothers everything in its path, including buildings, trees, and utility poles. In the Northeast and Midwest, Eurasian water milfoil, a submerged plant, and purple loosestrife, a showy wetland flower, aggressively and comprehensively replace native wetland vegetation. The stench from decomposing purple loosestrife is oppressive. Cheatgrass in the West carpets 100 million acres. It is highly combustible

and returns quickly after fires. In other words, it fuels fires and benefits from them. Salt cedar in the Southwest has taken over streams and riverbanks. Its roots draw salt from below the soil, and its salty leaves raise the soil salinity and thereby retard the growth of native trees.

Sadly, many exotic species were purposely brought to the United States. Some plants were sold by nurseries and continue to be offered in spite of their known harm to native species. For example, 80% of Florida's exotic pest plants were sold by nurseries.

Getting rid of exotics defies simple solutions. Prohibiting the sale of foreign species would conflict with significant industrial interests in horticulture and agriculture. Banning them under the Federal Noxious Weed Act has as yet been underused. Early eradication may be best but first requires intensive public education followed by intensive public support. Another option is creating favorable conditions for native species. For example, in Everglades National Park (Florida), park staff stripped 8 inches of soil from the surface of 60 acres. In the remaining damper, lower soil, wetland species returned but not the exotic pesky Brazilian pepper tree. Biocontrol with introduced predators of exotics is controversial because of the risk that the introduced predator, also an exotic, may become a pest.

A leading role in biological controls by the federal government seems desirable, but money is in short supply. "When resources are allocated, exotics are a quiet issue and usually left to the end, even though it's in our mandate to preserve and protect natural areas," according to Carol DiSalvo, an entomologist with the NPS Envi-

ronmental Quality Division
who contributed to the article.
Federal laws seem inadequate
and not sufficiently enforced.
Needed is public pressure.