

Ten New Invaders Since 1993

INSECTS IN WOOD PACKAGING



Photo: Joe Cavey, USDA APHIS

Asian longhorned beetle (*Anoplophora glabripennis*) and **emerald ash borer** (*Agrilus planipennis*)

These two insects have been introduced to North America as larvae inside crates and other

packaging. If they are not eradicated, they could kill large numbers of hardwood trees in forests across the continent. The Asian longhorned beetle could cause \$700 billion in losses to forest products, maple syrup, nursery, and tourist industries, plus the cost of replacing damaged city trees. The emerald ash borer has already caused more than \$11 million in damage to trees. If it spreads across the continent, total losses could exceed \$85 billion.

SOLUTION: Require shippers to phase in the use of crates, pallets, and other containers made from fiberboard, metal, or other materials in which forest insects can't live.

PLANT DISEASE MOVED ON NURSERY STOCK

Sudden oak death (*Phytophthora ramorum*) Sudden oak death (SOD) has killed more than 100,000 oak trees in California and southern Oregon, and infected virtually all woody species in the forests of the affected region. Numerous oaks and shrubs native to the eastern United States could be killed if the pathogen is introduced there. While it is not known either where SOD originated or how it entered the country, suspicion is focused on imports of woody plants. Quarantines imposed by California and the U.S. Department of Agriculture are not sufficiently stringent to prevent spread of SOD on nursery stock.

SOLUTION: Prompt adoption of a strong North American Plant Protection Organization (NAPPO) standard aimed at preventing introductions of insects and diseases transported on imported woody plants.

INVASIVE PLANTS IN THE NURSERY OR AQUARIUM TRADE

Giant salvinia (*Salvinia molesta*)



Photo: R. Westbrooks, U.S. Geological Survey

Giant salvinia is a free-floating aquatic fern that can double its mass in a few days under ideal conditions. It forms a thick mat that covers the water surface, crowding out native plants and animals. Introduced both intentionally and accidentally, it has caused severe economic and ecological problems in many countries, including New Zealand, Australia, and South Africa. Although listed as a Federal noxious weed in 1981, giant salvinia was later introduced to the United States and has since been found in 10 southern states and Hawaii, where it could infest slow-moving or quiet freshwater habitats, wetlands, and rice fields.

Roundleaf toothcup (*Rotala rotundifolia*)

Roundleaf toothcup was first reported in North America in 2002, in northern Alabama and then in southern Florida. This plant from southern Asia and Japan is popular in the water garden trade because of its rose-colored flowers and lush, creeping perennial growth. It is expected that roundleaf toothcup could grow in many states with mild climates.

Caulerpa (*Caulerpa taxifolia*)

Known as "green cancer" in Europe, *Caulerpa taxifolia* is a marine seaweed native to tropical waters that was specially bred for use in large aquaria. After

being discarded from an aquarium into the Mediterranean, it now forms monocultures over tens of thousands of hectares that preclude other marine plants and animals, and diminish the value of the area for fishing and diving. It has invaded at least two bays in southern California, where it could spread and wreak environmental and economic havoc. So far, a multimillion-dollar eradication effort has stopped it. Other *Caulerpa* species have invaded and are causing damage in Florida. The genus as a whole is invasive, but has not been studied enough to pinpoint all problem species. Keeping out all species in the genus except those scientifically shown to be safe would be a sensible, proactive approach.

SOLUTION: Implement pre-import screening of plants being introduced through the nursery or aquarium trade.

AQUATIC ANIMALS INTRODUCED IN BALLAST WATER



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Veined rapa whelk (*Rapana venosa*)

Veined rapa whelks are large, predatory marine snails native to the Sea of Japan. Likely introduced to the lower Chesapeake Bay via ballast water transport of larvae from the eastern Mediterranean or Black Sea, rapa whelks eat a variety of mollusks, including

oysters, clams, and mussels. They were first detected off Hampton Roads, Virginia in 1998. Since rapa whelks have been blamed for destroying shellfish stocks in other habitats that they have invaded, there is concern about this predator's likely impact on the clam and oyster populations in the lower Chesapeake.

Fishhook water flea (*Bythotrephes cederstroemi*)

The fishhook water flea was first detected in 1998, transported to the Great Lakes from northeastern Europe in the ballast tanks of commercial ships—after ballast water exchange for the Great Lakes was required. Like other freshwater invaders introduced to the Great Lakes, water fleas are likely to spread across North America. The fishhook water flea can be easily transported on fishing gear. The related spiny water flea population exploded throughout the Great Lakes and into many inland lakes in the United States and Canada after first detection in 1984. At stake are fishing resources across North America: The two water fleas directly compete with juvenile fish for food, rapidly reproduce both sexually and asexually, have an ecological advantage against predators due to

their spine, and produce a nasty buildup on recreational fishing gear.

SOLUTIONS: Prompt and effective regulation of ballast water discharges from ocean-going vessels into all national waters can stop future such invasions. To stop the spread of the two water fleas, individuals should be vigilant about cleaning all boating and fishing equipment to make sure no clumps of water fleas are transported to uninfected inland waters.

HUMAN AND ANIMAL DISEASES SPREAD THROUGH PET IMPORTS

Monkeypox

Monkeypox is a disease originating in Africa caused by a contagious virus related to smallpox. It affects mainly rodents such as rats, squirrels, and mice, but humans are susceptible. Monkeypox was introduced into the U.S. in a shipment of African rodents by an animal importer. No agency had restricted such imports. Spread mostly through infected pet prairie dogs that were exposed to the African rodents, monkeypox caused more than 80 suspected cases of human disease in six states. If monkeypox infects native prairie dog populations, it could not only decimate populations of native U.S. species, but also could make them permanent reservoirs for the virus.

West Nile virus

West Nile virus is a mosquito-borne illness that first appeared in New York State in 1999, probably on legally or illegally imported birds. Since that time, it has spread explosively across 46 states, Canada, Mexico, and Caribbean islands. Over 12,000 cases of human illness have been documented along with more than 500 deaths. Documented bird deaths, among more than one hundred species, are in the tens of thousands with actual mortality likely to be far higher. Other wildlife and horses are also affected and many species are extremely susceptible to the virus. Its long-term impact on human and animal populations is not known.

SOLUTION: Pass new legislation that allows only the import of non-native animal species that have first been evaluated and screened based on any risks they present to human health, animal health, and the environment.