Invasive Species Information Node

The NBII Invasive Species Information Node creates a central repository for information pertaining to the identification, description, management, and control of invasive species.

Background

The National Biological Information Infrastructure (NBII) <www.nbii.gov> is an electronic information network that provides access to biological data and information on our nation's plants, animals, and ecosystems. Data and information maintained by federal, state, and local government agencies; non-government organizations; and private-sector organizations are linked through the NBII gateway and made accessible to a variety of audiences including researchers, natural resource managers, decision-makers, educators, students, and other private citizens.

Implementation of the NBII is being accomplished through the development of nodes that serve as interconnected entry points to the NBII and the information held by partners. These nodes function as fully digital, distributed, and interactive systems that focus on developing, acquiring, and managing content on a defined subject area (thematic nodes) or a geographic region (regional nodes). One of the thematic nodes being developed is the Invasive Species Information Node.

Japanese honeysuckle (Lonicera japonica) *was brought to the United States from Asia as ground cover to prevent erosion. As an invasive species, it can topple small trees and shrubs by its weight. The resulting change in forest structure may negatively affect songbird populations.*

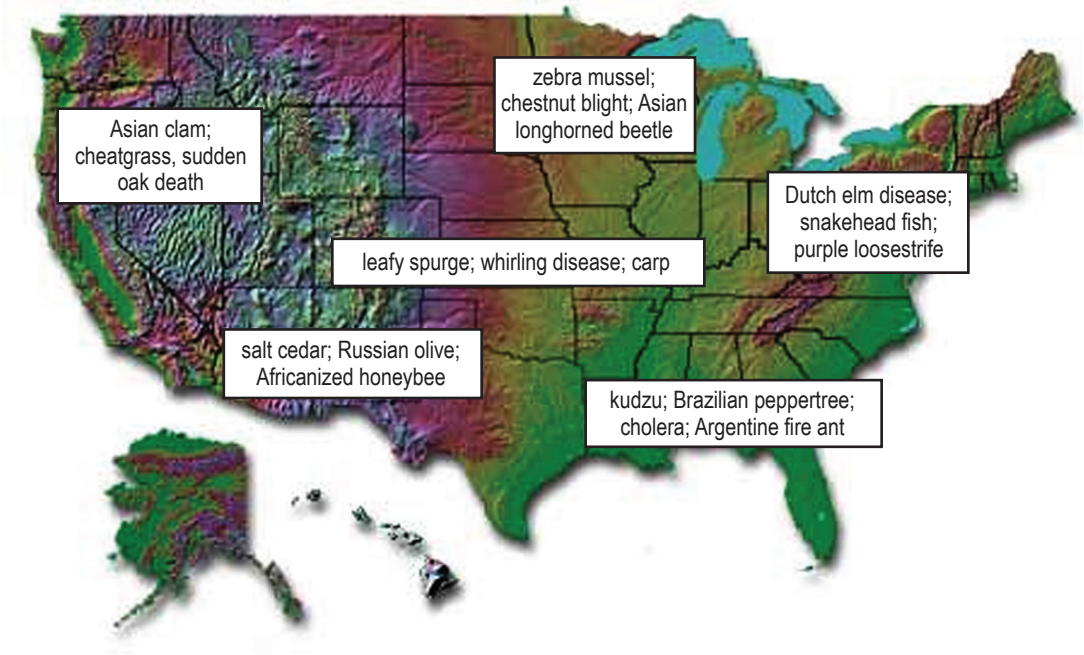
Overview

Hundreds of species from other countries arrive in the United States unintentionally each year—and introductions are on the rise. America is under siege by many harmful species of plants, animals, and diseases, primarily from other countries. The current environmental, economic, and health-related costs of invasive species (also called alien, exotic, nonindigenous, or non-native species) could exceed $138 billion per year—more than all other natural disasters combined. Invasive species, in short, are the number one environmental challenge of the twenty-first century.

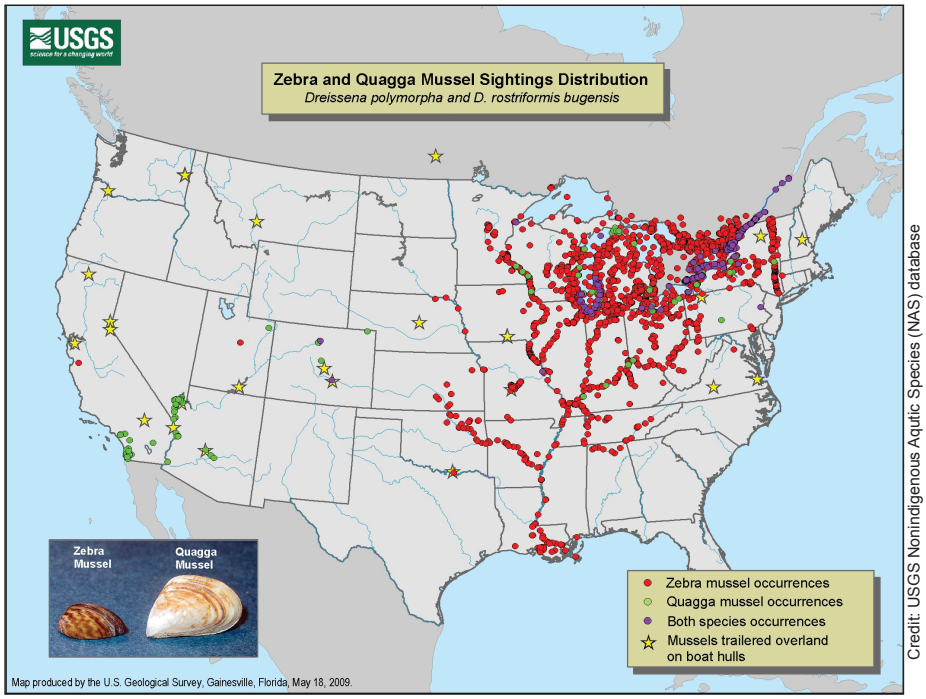
Current notorious examples, which are just a few of thousands, can be seen on the map below.

The Invasive Species Information Node provides access through a single Web portal to a vast array of information on potentially harmful invasive species throughout the nation. This increased accessibility of data from all reliable sources allows different information types to be combined and compared, which permits improved management of invasive species and better identification of vulnerable habitats. Sources of data include: international partners, other NBII nodes, agencies and non-government organizations, state and local partners, museums and taxonomic experts, and the public.

Invasive species arrive on our shores in a variety of ways. Transportation



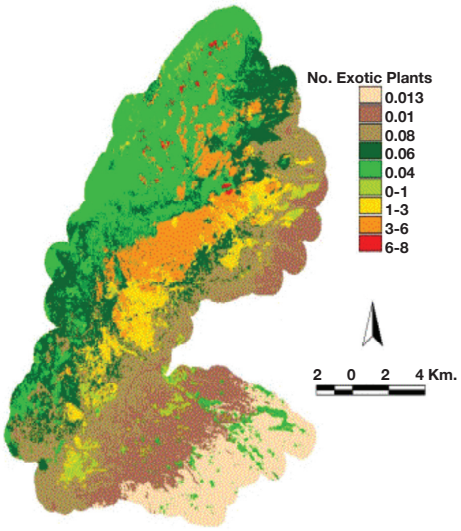
efficiencies that make it possible to travel around the globe in hours rather than weeks also make it possible for organisms to survive transportation from one continent to another. One of the most notable means by which invaders are transported is in ships' ballast, which is released as ships enter U.S. ports. These species are then spread throughout U.S. waterways by other ships taking on ballast and traveling around the country. This is the primary method responsible for the spread of zebra mussels throughout the Great Lakes and many inland rivers. Other means of spread for species that eventually become invasive include the release of unwanted pets, the escape of imported horticultural species from gardens, and as hitchhikers in packing materials such as wooden crates.



Invasive mussels (Dreissena *spp.*) *clog pipes and concentrate contaminants in lakes, rivers, and streams.*

Products

International partnerships have been forged to help populate and serve the Global Invasive Species Database and promote interoperability of databases. Extensive national partnerships allow for the immediate sharing of immense data sets on invasive plants, animals, and diseases in every county in the country. Web-enabled species identification tools are under development to help distinguish invasive species from their look-alikes, in connection with a mapping and reporting system for all species. This will allow for early detection of invaders, and enable invasive species experts to rapidly respond to new invasions, when they are easiest to control.



Predictive spatial models—such as this map that forecasts invasive species richness after the recent wildfire near Los Alamos, NM—are the type of tools that must be produced in even higher resolution to help ensure our native species are protected in the decades ahead.

Based on shared and submitted data, county-level and point information on occurrence will be linked to plot-level and site-level information on species abundance and spread. New spatial models will be made available to researchers, land managers, and educators to assess current distributions of invasive species, potential distributions, and levels of uncertainty associated with ecological forecasting models on the spread of invasive organisms. The information will be linked to control and restoration efforts to evaluate cost-effectiveness—sharing successes and failures to advance the science of control and containment of invasive species and to preserve native biodiversity.

What You Can Do

Join the partnership. The Invasive Species Information Node is the data arm of the newly-formed National Institute of Invasive Species Science, a virtual institute of data-sharing partners based in the USGS Fort Collins Science Center. By submitting invasive species data to the Institute, contributors have access to the data submitted by all partners. We urge you to volunteer your data, time, expertise, equipment, or funding to advance the program. Help us build invasive species knowledge and control the problem.

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