

Invasive Species

A Major Threat to Biodiversity

We are building a Web-based system to help researchers and planners predict and manage the influx of invasive plants, animals, and diseases.

Second only to habitat destruction as a cause of global biodiversity loss, the invasive species issue requires a global framework along with local action. A growing number of plants, animals, and pathogens are becoming invasive in natural areas, inland waters, oceans, croplands, and rangelands.

Fighting Invasive Species

Documenting current invasions, predicting new invasion sites, and preventing invasions are vital to the protection of biological diversity and sustainable development in all countries. However, anticipating invasions is difficult, because access to information on the previous invasive ability of species—the best predictor of whether a new species will become invasive—is mostly unavailable. Prediction of and rapid response to invasive species requires ready access to invasive species knowledge bases from many countries. Internet-accessible knowledge bases can provide crucial information for the early detection, eradication, and containment of invasive species—

which are most possible for species that have just arrived.

Information as a Tool

The National Biological Information Infrastructure (NBII) is a Web-based system providing increased access to data and information on biological resources in the United States and around the world. Computer-based information systems like the NBII present specific information to help detect, rapidly respond to, and control invasive species. Such systems are springing up all over the Globe. While varying in scope and administrative origin, these international initiatives are united by a common set of principles. They seek to make biodiversity data freely and quickly available to a broad population of consumers around the

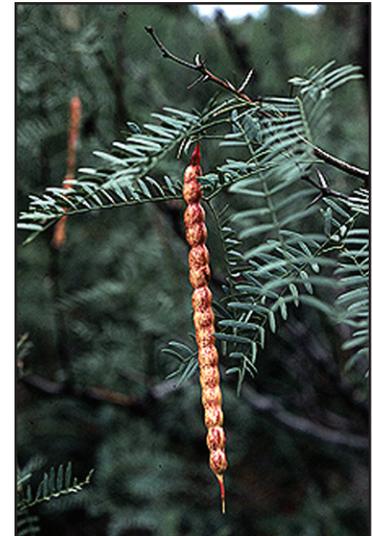


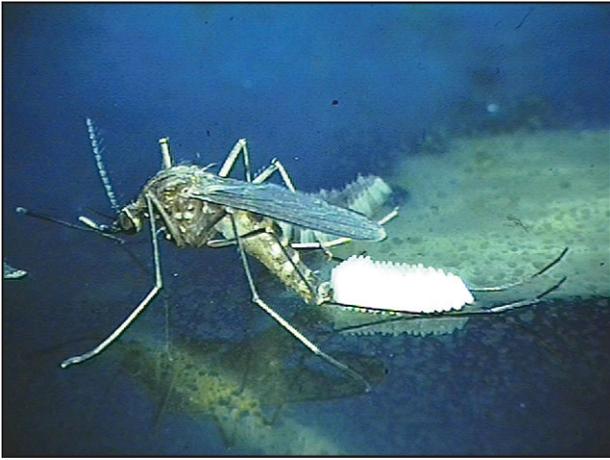
photo credit: W.L. Wagner @ PLANTS

*The deep-rooted western honey mesquite (*Prosopis glandulosa*), a tree that has spread into many arid regions of Africa, causes major water shortages.*

Consequences to Humans

Invasive species hamper efforts toward sustainable development.

- **Fresh water**, a commodity taken for granted by many, has been severely limited by mesquite invasion in South Africa and by tamarisk in the southwestern U.S.A.
- **Power outages** caused by brown tree snakes on Guam occur up to once every three days. Snakes crawl into transformers and short them out.
- **Global agricultural losses** caused by invasive species are estimated to be more than \$200 billion per year. Crop pests such as the golden apple snail and the Mediterranean fruit fly can drastically decrease crop yields and income earned when infested produce is turned away at international borders.
- **Disease epidemics** in all parts of the Globe are caused by invasive pathogens such as the cholera bacterium, West Nile virus, and the meningitis-causing rat lungworm.



In the United States, West Nile virus is transmitted by infected mosquitoes, primarily members of the Culex species.

networks is that ownership of the data remains with its source.

To establish and promote the use of common data collection standards for invasive species necessary for effective information management, the NBII is participating in the development of regional invasive species data consortia (called hubs) in North and South America, the Baltic, Africa, and the Pacific.

world. To achieve this, they participate in the development of a common set of standards to ensure that retrieval and exchange of information can take place across political, linguistic, and institutional boundaries. Finally, they emphasize respect for intellectual property rights. A fundamental requirement for participation in these international information-sharing

We are all affected by escalating numbers of unwanted invasions from microbes to mammals. Dealing with the resulting problems around the Globe requires strong partnerships, information sharing, and other collaborative efforts. The NBII encourages you to join in the invasive species data consortium.

Tools for Integration

The NBII is developing software tools that will be applicable to invasive species issues.

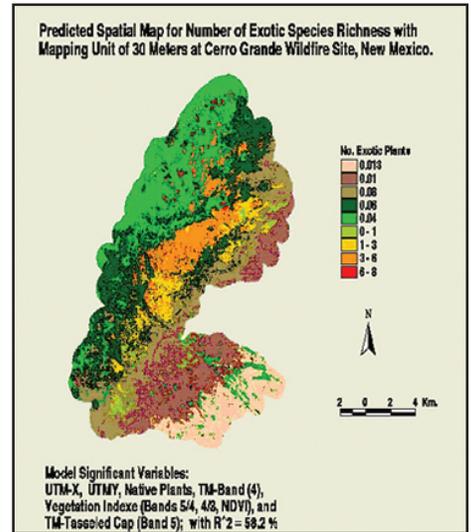
- **Mapping tools** to track the range and spread of invasives on islands
- **Taxonomic lists** of invasive species for inclusion in a Hawaiian Integrated Taxonomic Information System
- **Cataloging software** that draws standardized information from select invasive species Web sites worldwide and presents it in a user-friendly format.
- **An identifying and reporting tool** designed for use by non-scientists. Identification is facilitated by detailed illustrations and interactive maps.

For More Information:

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Find us on the Web at:
<<http://invasivespecies.nbio.gov>>



Predictive spatial map for invasive exotic species at Cerro Grande wildfire site, New Mexico.