

Status and Plans in the United States

A. Gordon Brown, Invasive Species Coordinator, Office of the Secretary
Dennis B. Fenn, Chief Biologist, U.S. Geological Survey
U.S. Department of the Interior

The Problem

Invasive alien species are transforming America's landscape. Foreign animal and plant species are replacing native wildlife and wreaking enormous financial and ecological damage. Alien species invasions are second only to habitat destruction in causing species to be endangered and costs are almost certainly in the tens of billions of dollars annually and may exceed \$120 billion. Among other things, invasive alien species crowd out nutritious native forage, cause serious losses of valuable crops and trees, create fire hazards, limit recreation, clog lakes and waterways, undermine fisheries, and foul water pipes.

Alien species causing harm include weeds like thistles and leafy spurge, which cattle cannot eat; purple loosestrife, which chokes wetlands; miconia, which may destroy the Hawaiian rainforest; and melaleuca trees now expanding across the Everglades. Animals are also problems. The zebra mussel is clogging water supply facilities. The brown tree snake has extirpated forest birds on Guam and the Asian tiger mosquito is causing serious human health problems in some areas.

Diverse stakeholders such as agricultural commodity groups and environmental organizations have common needs to address the invasive species problem. Those affected recognize that the problem is bad and getting worse. Global pathways for invasion are multiplying rapidly, while federal authorities and programs have significant gaps. Immediate action is needed.

United States at Risk

The threat of biological invasions is urgent, pervasive, and growing. Alien species first established years ago are emerging from obscurity to invade our farms, rangelands, marshes, waterways, and wild lands. Many widespread invaders are expanding their ranges into new areas. The number of alien species arriving in the U.S. is increasing, both through

intentional importation and inadvertent introductions as travel and trade continue to expand.

The U.S. is at particular risk. With the largest national economy and the highest volume of imports, the 50 U.S. states encompass a remarkable range of life zones, which means that somewhere within our borders suitable habitat may exist for new invaders from virtually anywhere in the world. Recently expanding trade with Russia, China, and South Africa has opened new biological connections with numerous ecological regions similar to those in the U.S.

Biological invasions are a defining environmental and economic issue. As harmful invaders continue to spread, public awareness builds and demands increase for action at home and abroad. The concerns of farmers, ranchers, commercial fishing interests, and public health officials have spurred U.S. measures to prevent and control economic pests and agents of disease. Now others are joining the campaign: wild land managers, recreationists, gardeners, and others concerned about the rapidly increasing impacts of invasions on ecosystems and native species.

Addressing these concerns will require accurate information on hundreds of free-living species that pose known or potential risks to natural and managed ecosystems in the U.S.

Once introduced in the U.S., commercial and noncommercial pathways, such as horticulture, the pet trade, and hobby collectors can spread potential invaders rapidly nationwide; or they can be spread inadvertently as hitchhikers in shipments or vehicles. Only a small proportion of alien species establish free-living populations, and only a small proportion of these become highly invasive and cause severe harm. However, the huge economic and biological impacts of aggressive invaders, and the enormous costs of achieving control once invasions have become widespread, underscore the need for additional investment and increased cooperation to

develop the information needed for effective prevention policies and coordinated action.

The Executive Order on Invasive Species

The Administration issued an Executive Order on Invasive Species on February 3, 1999, to place increased emphasis on efforts to prevent the introduction of invasive species and to provide for their control, and to minimize the economic, ecological, and human health impacts which invasive species cause. The Executive Order outlines federal agency duties, creates a new Invasive Species Council and defines its duties, and directs creation of an Invasive Species Management Plan:

Federal Agency Duties. Each agency whose actions may affect the status of invasive species will have to identify such actions. To the extent practicable, each federal agency will be required to use its programs and authorities (1) to prevent the introduction of invasive species, (2) to detect and respond rapidly and to control populations of such species in a cost-effective and environmentally sound manner, (3) to monitor invasive species populations accurately and reliably, (4) to provide for restoration of native species and habitat conditions in ecosystems that have been invaded, (5) to conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species, and (6) to promote public education on invasive species and the means to address them.

Agencies will not authorize, fund, or carry out actions believed likely to cause or promote the introduction or spread of invasive species unless a determination is made that the benefits outweigh the potential harm and that all prudent measures to minimize harm will be taken concurrently.

Invasive Species Council. An Invasive Species Council will be established and co-chaired by the Secretary of the Interior, the Secretary of Agriculture, and the Secretary of Commerce and will include the Secretaries of Defense, State, Treasury, Transportation, and the Administrator of the Environmental Protection Agency. The Secretary of the Interior will establish an advisory committee to provide information and advice for consideration by the Council including recommended plans and actions

at local, state, regional, and ecosystem-based levels to achieve the goals of the Management Plan in cooperation with stakeholders and existing organizations.

Duties of the Council. The Council will provide national leadership and: (1) oversee implementation of the Executive Order and see that federal agency activities concerning invasive species are coordinated, complementary, cost-efficient, and effective; (2) encourage planning and action in cooperation with stakeholders; (3) develop recommendations for international cooperation in addressing invasive species; (4) develop, in consultation with the Council on Environmental Quality, guidance to federal agencies under the National Environmental Policy Act on prevention and control of invasive species, including the procurement, use, and maintenance of native species; (5) facilitate development of a coordinated network among agencies to document, evaluate, and monitor impacts from invasive species on the economy, the environment, and human health; (6) facilitate establishment of a coordinated, up-to-date Internet-based network facilitating access to and exchange of invasive species information, and (7) prepare and issue a national Invasive Species Management Plan.

Invasive Species Management Plan. The Invasive Species Management Plan will be developed through a public process and issued in 18 months and include (1) a review of existing and prospective approaches and authorities for preventing introductions, including those for identifying pathways, (2) research needs, and (3) recommend measures to minimize the risk that introductions will occur utilizing a science-based process to evaluate risks. If recommended measures are not authorized by current law, the Council will develop and recommend to the agencies legislative proposals for necessary changes.

The Invasive Species Council will update the Management Plan biennially and concurrently evaluate and report publicly on success in achieving its goals and objectives. The Management Plan will identify the personnel and other resources and additional levels of coordination needed and be submitted to the Office of Management and Budget (OMB) for consideration in the budget process. Within 18 months after measures have been recommended in any edition of the Management Plan,

federal agencies will be expected to take the actions recommended. No less than once every five years, the Council will report to OMB on the effectiveness of the order and whether it should be revised.

The Information Needs

Alien species data exist in myriad files and databases. However, the integration and sharing of information to improve decisions and provoke on-the-ground actions have not kept pace with the rapidly growing threats from invasive alien species to our economy, our ecosystems, and our native biological heritage. This workshop represents an unprecedented forum: the first time managers of databases representing all major taxonomic groups have joined in common cause to identify gaps in coverage and propose new strategies for linking and extending the use and usability of existing alien species database resources. This complements a key component of the Invasive Species Council: to make accessible an information network on impacts and actions to be taken for prevention and control of spread and restoration of production and natural systems injured by invasive alien species. The system could be an important component of the National Biological Information Infrastructure (NBII), which provides a cooperative framework for locating, documenting, and integrating

biological information using consistent standards developed by interagency consensus.

New support is building: the President's Council of Advisors on Science and Technology has recently identified invasive species and the development of a "new generation of NBII" as priority issues of concern. The Committee on Environment and Natural Resources (CENR), within the White House Office of Science and Technology Policy, has proposed a multiyear interagency research initiative on the effects of interacting stresses on U.S. ecosystems. The initiative recognizes invasive species, along with land use change, extreme natural events, climate change, and chemical pollution, as major drivers of ecosystem change, and calls for increased efforts to document the establishment and spread of invasive species.

The proceedings of this workshop will help implement the CENR recommendations and support the work of the new Invasive Species Council by systematically documenting existing knowledge designed to serve the missions of many agencies and organizations. They will provide invaluable information for identifying taxonomic gaps, opportunities for linking databases, and ultimately for integration and synthesis of data from many sources through a distributed national information system.