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INVASIVE SPECIES

Federal Efforts and State Perspectives on Challenges and National Leadership

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Highlights of [GAO-03-916T](#), testimony before the Subcommittee on Fisheries, Wildlife, and Water, Committee on Environment and Public Works, United States Senate

Why GAO Did This Study

Invasive species—nonnative plants and animals—have caused billions of dollars in damage to natural areas, businesses, and consumers. In 2001, the federal government issued a National Management Plan to coordinate a national control effort involving the 20 or so federal agencies that are responsible for managing invasive species. In October 2002, GAO reported on the implementation of the management plan and efforts to manage ballast water, among other things.

(Invasive Species: Clearer Focus and Greater Commitment Needed to Effectively Manage the Problem) [Oct. 2002, GAO-03-1]

This testimony discusses some of GAO's findings and recommendations in that report. It also presents the results of a subsequent GAO survey of state officials responsible for managing terrestrial and aquatic invasive species. This survey sought state perspectives on (1) the perceived gaps in existing legislation and barriers to addressing terrestrial and aquatic invasive species and (2) the federal leadership structure for addressing invasive species, as well as the integration of federal legislation on terrestrial invasive species with legislation on aquatic invasives.

www.gao.gov/cgi-bin/getrpt?GAO-03-916T.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Barry T. Hill at (202) 512-3841 or hillbt@gao.gov.

INVASIVE SPECIES

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What GAO Found

In 2002, GAO reported that while the National Management Plan calls for many actions that are likely to contribute to preventing and controlling invasive species in the United States, it does not clearly articulate specific long-term goals toward which the government should strive. For example, it is not clear how implementing the actions in the plan will move national efforts toward outcomes such as reducing new invasive species by a specific number or reducing the spread of established species by a specific amount. Moreover, GAO found that the federal government had made little progress in implementing many of the actions called for by the plan. Reasons for the slow progress included delays in establishing teams to be responsible for guiding implementation of the planned actions, the low priority given to implementation by the National Invasive Species Council and federal agencies, and the lack of funding and staff responsible for doing the work. In addition, GAO reported that current federal efforts are not adequate to prevent the introduction of invasive species into the Great Lakes via the ballast water of ships. Although federal officials believe more should be done to protect the Great Lakes from ballast water discharges, their plans for doing so depend on the development of standards and technologies that will take many years.

More recently, state officials who responded to GAO's survey, identified a number of gaps in, or problems with, existing legislation addressing invasive species and other barriers to managing invasives. Many state officials identified a lack of legal requirements for controlling invasive species that are already established or widespread as a key gap in legislation addressing both aquatic and terrestrial invasive species. State officials also often recognized ineffective standards for ballast water as a major problem in aquatics legislation. Regarding barriers to managing invasive species, state officials identified a lack of federal funding for state invasive species efforts, public education and outreach, and cost-effective control measures as major problems. State officials' opinions varied on the preferred leadership structure for managing invasive species and whether to integrate legislative authority on invasive species. Many officials indicated that specifically authorizing the National Invasive Species Council would be an effective management option and favored integrated authority, but in both cases, the margins were relatively small. State officials indicated that the possible benefits of integrated legislation would be increased coordination between federal agencies and states and an increased focus on invasive species pathways, as opposed to focusing on individual species. The possible drawbacks identified included concerns that a single piece of legislation would not be able to address all possible situations dealing with invasive species and might reduce state flexibility in addressing invasives.

Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss the difficult issue of managing invasive species as you deliberate Senate Bill 525,¹ which would reauthorize the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990.² Invasive species—harmful, nonnative plants, animals, and microorganisms—are found throughout the United States and cause damage to crops, rangelands, waterways, and other ecosystems that is estimated in the billions of dollars annually. In addition to their economic costs, invasive species can have a devastating effect on natural areas, where they have strangled native plants, taken over wetland habitats, crowded out native species, and deprived waterfowl and other species of food sources. Conservation biologists rank invasive species as the second most serious threat to endangered species after habitat destruction. Overall, scientists, academicians, and industry leaders are recognizing invasive species as one of the most serious environmental threats of the 21st century. In October 2002, we issued a report on the federal government’s National Management Plan for managing invasive species, ballast water management, and other issues.^{3,4}

My testimony today is based on our October 2002 report as well as new work that you requested. Specifically, I will discuss the findings and recommendations of our October 2002 report that address (1) progress made by federal agencies implementing the National Management Plan and (2) the current state of ballast water management as a pathway for invasive species. I will also discuss some of the results of new work we conducted to obtain state perspectives on (1) the gaps in, or problems with, existing legislation and barriers to addressing terrestrial and aquatic invasive species and (2) the federal leadership structure for addressing invasive species and integration of federal legislation on terrestrial invasive species with legislation on aquatic invasives. To obtain state perspectives, we surveyed the state agencies typically most involved with

¹S. 525, 108th Cong. (2003).

²Pub. L. No. 101-646, 104 Stat. 4761 (1990) (codified as amended at 16 U.S.C. §§ 4701-4751).

³U.S. General Accounting Office, *Invasive Species: Clearer Focus and Greater Commitment Needed to Effectively Manage the Problem*, [GAO-03-1](#) (Washington, DC: Oct. 2002).

⁴Executive Order 13112 created a National Invasive Species Council, now composed of 11 federal departments and agencies, to provide national leadership on addressing invasive species and to develop a plan for managing them.

invasive species—state agencies responsible for agriculture and natural resources or fish and wildlife—sending surveys to at least two agencies within each of the 50 states. We received 68 responses from a total of 45 states. We also surveyed the members of the Invasive Species Advisory Committee, a federal advisory committee established to help the federal government develop and implement its National Management Plan; we received responses from about two-thirds of the 24 Committee members. We also interviewed officials in a few states chosen because of their well-established invasive species programs or the large number of invasive species present. We conducted our work in accordance with generally accepted government auditing standards. We will provide to you the full results of our survey in a separate product.

Summary

As we reported in October 2002, the National Management Plan for addressing invasive species lacks a clear long-term desired outcome and quantifiable measures of performance. While the actions called for in the plan are likely to contribute to controlling invasive species in a general sense, it is unclear how implementing them will move the United States toward a specific outcome, such as reducing new invasive species by a specific number or reducing the spread of established species by a specified amount. Federal officials recognize that the plan has deficiencies and are working on improvements. Currently, the only performance measure that can be assessed is the percentage of planned actions that have been completed. By this measure, implementation has been slow. As of September 2002, federal agencies had completed less than 20 percent of the actions that the plan called for by that date, although they had begun work on others. Reasons for the slow progress included delays in establishing teams to be responsible for guiding implementation of the planned actions, the low priority given to implementation by the National Invasive Species Council and federal agencies, and the lack of funding and staff responsible for doing the work. Some stakeholders expressed the view that the low priority given to implementing the plan and associated limited progress may be due to the fact that the Council and plan were created by executive order and thus do not receive the same priority as programs that are legislatively mandated. We made several recommendations to the Council intended to clarify goals and objectives in the National Management Plan and to improve reporting on the progress of its implementation; Council agencies generally agreed with our recommendations.

We also reported in October 2002 that current federal efforts are not adequate to prevent the introduction of invasive species into the Great

Lakes via the ballast water of ships. Despite federal regulations requiring ships that enter the lakes from more than 200 nautical miles off the U.S. coast to exchange their ballast water in the open ocean (that is, in waters deeper than 2,000 meters and farther than 200 nautical miles from the U.S. coast); retain the ballast water on board; or use an alternative, environmentally sound, method of ballast water management, aquatic invasive species are still entering the Great Lakes and establishing themselves in the ecosystem. According to the experts we consulted, at least two factors contribute to the failure of the existing regulations to prevent introductions. First, about 70 percent of the ships that enter the Great Lakes are classified by the Coast Guard as having no ballast on board and, are therefore, exempt from open-ocean exchange requirements. However, these ships may in fact carry thousands of gallons of residual ballast water and sediment in their drained tanks, and this water and sediment may contain potentially invasive organisms that may be mixed with water later taken from, and then discharged into, the Great Lakes. Second, the open-ocean exchange conducted by ships that have ballast does not effectively remove or kill all organisms in the ballast tanks. Although federal officials believe more should be done to protect the Great Lakes from ballast water discharges, their plans for doing so depend on the development of standards and technologies that will take many years. In the meantime, the continued introduction of invasive species could have major economic and ecological consequences.

According to our new work, state officials identified a number of legislative gaps or problems, and other barriers related to addressing invasive species. A key gap noted in both aquatic and terrestrial legislation is the lack of legal requirements for controlling invasive species that are already established or widespread. State officials said that if there is no federal requirement, there is often little money available to combat a species and that a legal requirement would raise the priority for responding to it. For example, one state official complained about the lack of authority to control Eurasian ruffe, an invasive fish that has spread through several Great Lakes and causes great harm to native fisheries. He compared this to the authorities available to control the sea lamprey, which has a mandated control program that is funded by the U.S. and Canada.⁵ In addition, many state officials frequently cited, as ineffective, the current federal standards for ballast water, which only impose requirements on ships entering the Great Lakes and not other U.S. waters.

⁵Convention on Great Lakes Fisheries, Sept. 10, 1954, U.S.-Can., 6 U.S.T. 2836.

State officials also identified the lack of federal funding for state invasive species efforts as another barrier they face. In particular, states were concerned about not having sufficient funds to create management plans for addressing invasive species, and to conduct monitoring and detection, inspection and enforcement, and research activities. Finally, state officials were also concerned with the lack of cost-effective control measures and insufficient public education and outreach efforts.

State officials' opinions on effective federal leadership structures for addressing invasive species varied. A National Invasive Species Council specifically authorized in legislation was most often identified as an effective leadership structure for managing invasive species, although many officials also thought that continuing with the Council as established by executive order would also be effective. Several federal agency officials thought that giving the Council authority in legislation would make it easier for them to implement the National Management Plan. Regarding the form legislation on invasive species should take, most state officials were in favor of integrating legislation on terrestrial invasive species with legislation on aquatic invasive species, but the margin was relatively small. Many state officials indicated that the possible benefits of integrated legislative authority would be increased coordination between federal agencies and states and an increased focus on invasive species pathways, as opposed to specific species. The possible drawbacks identified included concerns that a single piece of legislation would not be able to address all possible situations dealing with invasive species and may result in reduced state flexibility in addressing invasives.

Background

As we have reported in the past, the impact of invasive species in the United States is widespread, and their consequences for the economy and the environment are profound.⁶ Invasive species affect people's livelihoods and pose a significant risk to industries such as agriculture, ranching, and fisheries. The cost to control invasive species and the cost of damages they inflict, or could inflict, on property and natural resources are estimated in the billions of dollars annually. For example, according to the U.S. Department of Agriculture (USDA), each year the Formosan termite causes at least \$1 billion in damages and control costs in 11 states; USDA

⁶U.S. General Accounting Office, *Invasive Species: Federal and Selected State Funding to Address Harmful Nonnative Species*, [GAO/RCED-00-219](#) (Washington, D.C.: Aug. 24, 2000).

also estimates that, if not managed, fruit flies could cause more than \$1.8 billion in damage each year.⁷ Invasive species continue to be introduced in new locations, with recent examples including the northern snakehead fish in Maryland, the emerald ash borer in Michigan, and the monkeypox virus in the Midwest.

Invasive species may arrive unintentionally as contaminants of bulk commodities, such as food, and in packing materials, shipping containers, and ships' ballast water. Ballast water is considered a major pathway for the transfer of aquatic invasive species. Ballast is essential to the safe operation of ships because it enables them to maintain their stability and control how high or low they ride in the water. Ships take on or discharge ballast water over the course of a voyage to counteract the effects of loading or unloading cargo, and in response to sea conditions. The ballast that ships pump aboard in ports and harbors may be fresh, brackish, or salt water. These waters could potentially contain various organisms that could then be carried to other ports around the world where they might be discharged, survive, and become invasive. Other invasive species may be introduced intentionally; kudzu, for example—a rapidly growing invasive vine that thrives in the southeastern United States—was intentionally introduced from Japan as an ornamental plant and was used by USDA in the 1930s to control soil erosion.

Federal agencies implement a variety of invasive species-related programs and activities pursuant to their specific missions and responsibilities. USDA, for example, spends significant resources on prevention and control activities for invasive species that harm agricultural and forest products. USDA is also responsible for preventing infectious diseases, some of which are considered invasive, from spreading among livestock. States also play a major role in addressing invasive species, either through their own programs or through collaboration with or funding from federal programs. Such programs and the amount of resources expended on them vary considerably among the states.

In response to concerns that we were losing the battle against invasive species, President Clinton signed Executive Order 13112 in February 1999 to prevent the introduction of invasive species; provide for their control; and minimize their economic, environmental, and human health impacts. The executive order established the National Invasive Species Council,

⁷Estimates are in 2001 dollars.

which is now composed of the heads of 11 federal departments and agencies, to provide national leadership on invasive species and to ensure that federal efforts are coordinated and effective, among other things. The executive order also required the Secretary of the Interior to establish a federal advisory committee to provide information and advice to the Council. To achieve the goals of the executive order, the Council was to develop a national management plan that would serve as the blueprint for federal action on invasive species. S. 525, if enacted, would call on the Council to carry out several other activities such as implementing a strategy to share information collected under the proposed legislation and to develop a program for educating the public about certain pathways for invasive species; it would also authorize funds for the Council to carry out these activities.

National Management Plan Lacks Measurable Goals, and Its Implementation Has Been Slow

The National Invasive Species Council's management plan, Meeting the Invasive Species Challenge, issued in January 2001, calls for actions that are likely to help control invasive species, such as issuing additional regulations to further reduce the risk of species introductions via solid wood packing material, developing methods to determine rapid response measures that are most appropriate for specific situations, and devoting additional resources to strengthening inspection services at ports of entry. However, as we observed in our October 2002 report, the plan lacks a clear long-term goal and quantifiable performance criteria against which to evaluate its overall success. For example, the plan does not contain performance-oriented goals and objectives, such as reducing the introduction of new species by a certain percentage or reducing the spread of established species by a specified amount. Instead, the plan contains an extensive list of actions that, while likely to contribute to preventing and controlling invasive species, are not clearly part of a comprehensive strategy. Similarly, many of the actions in the plan call for federal agencies to take certain steps rather than to achieve specific results and do not have measurable outcomes. For example, the plan calls for the Council to work with relevant organizations to "expand opportunities to share information, technologies, and technical capacity on the control and management of invasive species with other countries." The plan also calls for the Council to support international conferences and seminars. These types of actions are more process-oriented than outcome-oriented; taken individually, the actions may be useful, but judging whether they are successful and have contributed to an overall goal, will be difficult.

Federal officials involved in developing the plan told us that they recognize that it has deficiencies and are working on improvements. The

Council acknowledged in the plan itself that many of the details of the actions called for would require further development in the implementation phase. The executive director of the Council staff told us that, in her opinion, given the scope of this first-time effort, it would have been unrealistic and difficult to agree on specific measurable goals. She also said that, in many areas, the federal government does not have the data on invasive species conditions needed to set long-term goals and develop better performance measures. She said that many of the actions called for in the management plan are designed to help develop needed data but pointed out that doing so for some aspects of invasive species management will be difficult given the comprehensive data needed.

The management plan also called for the Council to establish a transparent oversight mechanism by April 2001 to report on implementation of the plan and compliance with the executive order. This mechanism, however, is just now being set in place. Without this mechanism, the only available measure that could have been used to assess overall progress in implementing the plan was the percentage of planned actions that were completed by the dates set in the plan. By this measure, implementation has been slow. Specifically, federal agencies had completed less than 20 percent of the 65 actions that were called for by September 2002. Council agencies had started work on over 60 percent of the remaining planned actions, however, including some that have a due date beyond September 2002. Several actions in the plan that were completed on time related to the development of the Council's Web site, which is found at www.invasivespecies.gov. In addition, the National Oceanic and Atmospheric Administration, the Coast Guard, the Department of the Interior, and the Environmental Protection Agency (EPA) had sponsored research related to ballast water management. Nevertheless, a vast majority of the members of the Invasive Species Advisory Committee, which we surveyed for our October 2002 report, said that the Council was making inadequate or very inadequate progress.

We found several reasons for the slow progress in implementing the plan. First, delays occurred in establishing the teams of federal and nonfederal stakeholders that were intended to guide implementation of various parts of the plan. Second, our review of agencies' performance plans (prepared pursuant to the Government Performance and Results Act) indicated that while some agencies' plans described efforts taken to address invasive species under their own specific programs, none of the plans specifically identified implementing actions called for by the plan as a performance measure. Some stakeholders expressed the view that the low priority given to implementing the plan and associated limited progress may be

due to the fact that the Council and plan were created by executive order, and thus do not receive the same priority as programs that are legislatively mandated. Finally, we also noted a lack of funding and staff specifically devoted to implementing the plan.

To address these shortcomings, we recommended that the Council co-chairs (the Secretaries of Agriculture, Commerce, and the Interior)

- ensure that the updated management plan contains performance-oriented goals and objectives and specific measures of success and
- give high priority to establishing a transparent oversight mechanism for use by federal agencies complying with the executive order and reporting on implementation of the management plan.

We also recommended that all member agencies of the National Invasive Species Council with assigned actions in the current management plan recognize their responsibilities in either their departmental or agency-level annual performance plans. The agencies generally agreed with our recommendations.

Since we issued our report, the Council made significant progress on its first crosscutting budget—one of the planned actions in the management plan that should help to develop performance measures and promote better coordination of actions among agencies. The Office of Management and Budget is currently reviewing the Council's proposal for the fiscal year 2004 budget cycle. In addition, according to Council staff, the oversight mechanism should be finalized in July 2003, and the first revision to the management plan should be finalized later this summer.

Current Regulations Concerning Ballast Water Management Are Not Keeping Invasive Species out of the Great Lakes

According to experts and agency officials we consulted, current efforts by the United States are not adequate to prevent the introduction of aquatic invasive species into the Great Lakes via ballast water of ships, and they need to be improved. Since 1993, federal regulations have required vessels entering the Great Lakes from outside the Exclusive Economic Zone—a zone extending 200 nautical miles from the shore—to exchange their ballast water in the open ocean (that is, water deeper than 2,000 meters) before entering the zone. Exchanging ballast water before arriving in the Great Lakes is intended to serve two purposes: to flush aquatic species taken on in foreign ports from the ballast tanks and to kill with salt water any remaining organisms that happen to require fresh or brackish water. If a ship bound for the Great Lakes has not exchanged its ballast water in the

open ocean it must hold the ballast in its tanks for the duration of the voyage through the lakes or conduct an exchange in a different approved location. Data from the Coast Guard show that the percentage of ships entering the Great Lakes after exchanging their ballast water has steadily increased since the regulations took effect in 1993 and averaged over 93 percent from 1998 through 2001. Despite this, numerous aquatic invasive species have entered the Great Lakes via ballast water and have established populations since the regulations were promulgated.

Experts have cited several reasons for the continued introductions of aquatic invasive species into the Great Lakes despite the ballast water regulations. In particular, the Coast Guard's ballast water exchange regulations do not apply to ships with little or no pumpable ballast water in their tanks, which account for approximately 70 percent of ships entering the Great Lakes from 1999 through 2001. These ships, however, may still have thousands of gallons of residual ballast and sediment in their tanks that could harbor potentially invasive organisms from previous ports of call and then be discharged to the Great Lakes during subsequent ballast discharges. There are also concerns that open-ocean ballast water exchange is not an effective method of removing all potentially invasive organisms from a ship's ballast tank.

Federal officials believe that they should do more to develop treatment standards and technologies to protect the Great Lakes from ballast water discharges. The Coast Guard is now working to develop new regulations that would include a performance standard for ballast water—that is, a measurement of how “clean” ballast water should be before discharge within U.S. waters. The Coast Guard is expecting to have a final rule ready for interdepartmental review by the fall of 2004 that will contain ballast water treatment goals and a standard that would apply not only to ships entering the Great Lakes but to all ships entering U.S. ports from outside the Exclusive Economic Zone. Once the Coast Guard sets a performance standard, firms and other entities will be able to use this as a goal as they develop ballast water treatment technologies. While several technologies are being investigated, such as filtration and using physical biocides such as ultraviolet radiation and heat treatment, a major hurdle to be overcome in developing technological solutions is how to treat large volumes of water being pumped at very high flow rates. In addition, small container vessels and cruise ships, which carry a smaller volume of ballast water, may require different technologies than larger container vessels. As a result, it is likely that no single technology will address the problem adequately. Consequently, it could be many years before the world's commercial fleet is equipped with effective treatment technologies.

Without more effective ballast water standards, the continued introduction of aquatic invasive species into the Great Lakes and other aquatic systems around the country is likely to cause potentially significant economic and ecological impacts.

We reported in October 2002 that the Coast Guard and the Department of Transportation's Maritime Administration are developing programs to facilitate technology development. In addition, the National Oceanic and Atmospheric Administration and the U.S. Fish and Wildlife Service have funded 20 ballast water technology demonstration projects at a total cost of \$3.5 million since 1998 under a research program authorized under the National Invasive Species Act. Other programs also support research, and the Maritime Administration expects to make available several ships of its Ready Reserve Force Fleet to act as test platforms for ballast water technology demonstration projects. Once effective technologies are developed, another hurdle will be installing the technologies on the world fleet.⁸ New ships can be designed to incorporate a treatment system, but existing ships were not designed to carry ballast water technologies and may have to go through an expensive retrofitting process. With each passing year without an effective technology, every new ship put into service is one more that may need to be retrofitted in the future.

Public and private interests in the Great Lakes have expressed dissatisfaction with the progress in developing a solution to the problem of aquatic invasive species introduced through ballast water. An industry representative told us that she and other stakeholders were frustrated with the slow progress being made by the Coast Guard in developing a treatment standard. More broadly, in the absence of stricter federal standards for ballast water, several Great Lakes states have considered adopting legislation that would be more stringent than current federal regulations. In addition, in a July 6, 2001, letter to the U.S. Secretary of State and the Canadian Minister of Foreign Affairs, the International Joint Commission and the Great Lakes Fishery Commission stated their belief that the two governments were not adequately protecting the Great Lakes

⁸A recent study analyzing the market for future treatment technologies reported that there are over 47,000 vessels in the world fleet for which ballast water treatment technologies could be applicable.

from further introductions of aquatic invasive species.⁹ They also noted a growing sense of frustration within all levels of government, the public, academia, industry, and environmental groups throughout the Great Lakes basin and a consensus that the ballast water issue must be addressed now. The two commissions believe that the reauthorization of the National Invasive Species Act is a clear opportunity to provide funding for research aimed at developing binational ballast water standards.

S. 525 sets forth a more aggressive program against the introduction of aquatic invasive species through ballast water and related pathways. In particular, it would require ballast water standards for ships in all waters of the U.S., instead of the current voluntary program for waters outside of the Great Lakes. It also specifically authorizes significantly more funding in the form of grants to states, and federal funding and grants for research, including research on pathways, likely aquatic invaders, and development of cost-effective control methods.

Now let me turn to our most recent work gathering state perspectives on invasive species legislation and management.

State Officials Cited Several Gaps in Existing Federal Legislation and Identified Other Barriers to Addressing Invasive Species

State officials who responded to our survey identified several gaps in, or problems with, existing federal legislation on aquatic and terrestrial invasive species, as well as other barriers to their efforts to manage invasive species.

⁹The Boundary Waters Treaty of 1909 established the International Joint Commission to, among other things, advise the U.S. and Canadian governments concerning transboundary water quality issues. The Commission has six members: three appointed by the President of the United States, with the advice and approval of the Senate, and three appointed by the Governor in Council of Canada, on the advice of the Prime Minister. The Great Lakes Fishery Commission was created in 1955 by a convention on Great Lakes fisheries between the U.S. and Canada.

Perceived Gaps in or Problems with Existing Legislation

According to our new work, the lack of legal requirements for controlling already-established or widespread invasive species was the gap in existing legislation on aquatic and terrestrial species most frequently identified by state officials. Specifically, they said that this is a problem for species that do not affect a specific commodity or when a species is not on a federal list of recognized invasives. Officials noted that if there is no federal requirement, there is often little money available to combat a species and that a legal requirement would raise the priority for responding to it. For example, one state official complained about the lack of authority to control Eurasian ruffe, an invasive fish that has spread through several Great Lakes and causes great harm to native fisheries. He compared this to the authorities available to control the sea lamprey, which has a mandated control program that is funded by the U.S. and Canada. In addition, some state officials said that in the absence of federal requirements, differences among state laws and priorities also pose problems for addressing established species, for example, when one state may regulate or take actions to control a species and an adjacent state does not. Some state officials noted that they have little authority to control or monitor some species and that getting laws or regulations for specific species, such as those for the sea lamprey, takes time.

Many state officials also identified ineffective federal standards for ballast water as a problem for addressing invasive species. Specifically, some state officials complained that standards and treatment technologies, regulations, compliance with reporting requirements, and penalties for noncompliance are lacking and say that research and legislation are needed to address the problem. As we reported in October 2002, federal regulations for ballast water are not effective at preventing invasive species from entering our waters and are only required for ships entering the Great Lakes. Some state officials also said that federal leadership is essential to fund efforts in these areas and to provide coordination among states. As I have already noted, S. 525 would authorize a more aggressive program for developing standards and technologies for regulating ballast water. Although some state officials believe solving the ballast water problem is possible, some officials pointed to difficulties in doing so with some methods. Specifically, these officials noted that some environmentalists are opposed to chemical treatments, while industry groups have objected to the cost of some technologies. S. 525 would revise the definition of “environmentally sound” (as in environmentally sound control measures) to delete the emphasis on nonchemical measures.

Other Barriers to Addressing Invasive Species

State officials reported that inadequate federal funding for state efforts was the key barrier to addressing invasive species—both aquatic and terrestrial. In particular, state officials were concerned about having sufficient funds to create management plans for addressing invasive species, particularly as more states begin to develop plans, and for inspection and enforcement activities. State officials also identified the need for additional funds to conduct monitoring and detection programs, research, and staffing. In particular, some state officials noted that uncertainty in obtaining grant funds from year to year makes it difficult to manage programs, especially when funding staff positions relies on grants. S. 525 would specifically authorize significantly more funding in grants to address invasive species than is specifically authorized under the current legislation.

Many state officials also identified a lack of public education and outreach as a barrier to managing terrestrial invasive species. Public education and outreach activities are important components of the battle against invasive species, as many invasives have been introduced through the activities of individuals, such as recreational boating, and the pet, live seafood, and plant and horticultural trades. For example, the outbreak of the monkeypox virus that has sickened at least 80 people in the Midwest is thought to have spread from a Gambian rat imported from Africa to be sold as a pet. S. 525 includes efforts intended to provide better outreach and education to industry, including the horticulture, aquarium, aquaculture, and pet trades, and to recreational boaters and marina operators, about invasive species and steps to take to reduce their spread.

State officials identified a lack of cost-effective control measures as a key barrier to addressing aquatic invasive species. Some officials commented that there is a need for more species-specific research to identify effective measures. For example, one successful control effort—the sea lamprey control program—costs about \$15 million per year. However, similar control programs for all invasive species would be problematic and officials told us that targeted research on control methods is needed, particularly for aquatic invasive species. S. 525 would authorize a grant program for research, development, demonstration, and verification of environmentally sound, cost-effective technologies and methods to control and eradicate aquatic invasive species.

State Officials' Opinions Varied on Effective Leadership Structures for Managing Invasive Species and Whether to Integrate Legislative Authority on Invasive Species

State officials' opinions varied on the preferred leadership structure for managing invasive species and whether to integrate legislative authority on invasive species. Many state officials indicated that specifically authorizing the National Invasive Species Council would be an effective management option and favored integrated authority, but in both cases, the margins were relatively small.

Federal Leadership Structure for Invasive Species

Currently, no single agency oversees the federal invasive species effort. Instead, the National Invasive Species Council, which was created by executive order and is composed of the heads of 11 federal departments and agencies, is intended to coordinate federal actions addressing the problem. State officials most often identified specifically authorizing the Council in legislation as an effective leadership structure for managing invasive species. Almost all of the Invasive Species Advisory Committee members that responded to our survey agreed with this approach. During our work for our October 2002 report, the executive director of the Council noted that legislative authority for the Council, depending on how it was structured, could be useful in implementing the national management plan for invasive species by giving the Council more authority and, presumably, authorizing more resources. Officials from USDA, the Department of Defense, and EPA also told us that legislative authority, if properly written, would make it easier for Council agencies to implement the management plan, as implementing actions under the executive order are perceived to be lower in priority than are programs that have been legislatively mandated. Many state officials, however, also believed that keeping the current Council authority as established by executive order is an effective option.

Integration of Federal Laws Addressing Invasive Species

As you know, federal authorities for addressing invasive species are scattered across a patchwork of laws under which aquatic and terrestrial species are treated separately. Questions have been raised about whether this is the most effective and efficient approach and whether the federal government's ability to manage invasive species would be strengthened if

integrated legal authority addressed both types of invasives. Some believe such an approach would provide for more flexibility in addressing invasive species; others are concerned that such an approach would disrupt existing programs that are working well.

On the basis of the responses from state officials, no clear consensus exists on whether legislative authority for addressing aquatic and terrestrial invasive species should be integrated. Overall, state officials were in favor of integrating legislative authority, but the margin was relatively small. Differences were more distinct, however, when we considered the state officials' expertise. Specifically, we asked officials whether they considered themselves experts or knowledgeable in aquatic invasive species, terrestrials, or both. A large majority of the state officials who identified themselves as having expertise solely in aquatic invasive species were against integrating aquatic and terrestrial authority. The terrestrial experts were also against integrated authority, but with a smaller majority. These positions contrast with those of the state officials who said they were experts or knowledgeable in both aquatic and terrestrial invasives; these officials favored integrated authority by a large majority. About twice as many members of the Invasive Species Advisory Committee who responded to our survey favored integrating legislation on aquatic and terrestrial invasive species compared to those who did not.

Regarding the drawbacks of integrating authority for aquatic and terrestrial invasive species, many state officials said that it could be difficult to address all possible situations with invasive species and some species or pathways may get overlooked, and were concerned that it may reduce state flexibility implementing invasive species programs. Some state officials said that the two types of invasives should be handled separately, since the ecological complexities of aquatics and terrestrials are very different—different pathways of entry and spread, and different requirements for control methods and expertise. In addition, some officials stated that combining legislative authority would result in competition among various invasive species programs for scarce resources. In particular, one official referred to the “issue of the moment” phenomenon, where a specific invasive species becomes the focus of great public attention and receives a large share of resources, while many other species may get very few resources.

On the other hand, many state officials saw an increased focus on pathways for invasive species—as opposed to on specific species—as a possible benefit of integrating authority for aquatic and terrestrial invasive species. Such an approach could facilitate more effective and efficient

efforts to address invasive species. Many state officials also believed that integration of legislative authority could result in increased coordination between federal agencies and states. Some state officials described the efforts needed to address invasives as requiring broad, interdisciplinary coordination and characterized the current federal effort as fragmented and ineffective. In addition, some state officials said that the classification of species into aquatic or terrestrial types might not be clear-cut and that the current separation between them is “an artificial federal construct,” citing, for example, the difficulty of classifying amphibians.

Mr. Chairman, this concludes our prepared statement. We would be happy to respond to any questions that you or Members of the Subcommittee may have.

GAO Contacts and Staff Acknowledgments

For further information about this testimony, please contact me at (202) 512-3841. Mark Bondo, Mark Braza, Kate Cardamone, Curtis Groves, Trish McClure, Judy Pagano, Ilga Semeiks, and Amy Webbink also made key contributions to this statement.

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