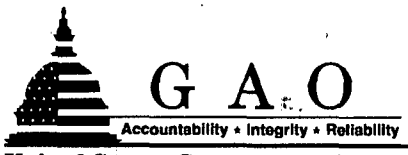
698.8



No trends data

United States Government Accountability Office
Washington, D.C. 20548

February 25, 2005

The Honorable Richard Pombo
Chairman
Committee on Resources
House of Representatives

Dear Mr. Chairman:

Did not use

The infestation of invasive nonnative plants, animals, and microorganisms is a long-standing and growing problem in the United States. As we have reported in the past, these species pose a significant risk to industries such as agriculture, ranching, and fisheries by damaging the environment on which these industries depend. Many scientists believe that invasive species are also a significant threat to biodiversity and are major or contributing causes of population declines for almost half the endangered species in the United States.

The federal government has a substantial stake in the battle against invasive species. Numerous federal agencies spend over a billion dollars annually to prevent, detect, control, or otherwise manage invasive species. To date, however, most efforts have been focused on invasive insects, diseases, and weeds that infest agricultural resources because of the economic impact these species have on crops. But invasive species are not limited to just agricultural lands, and there is a growing awareness that they also cause harm to other types of ecosystems and natural resources such as forests, rangelands, and urban areas by, for example, crowding out native species and affecting the frequency of wildfires. The spread of invasive weeds in these nonagricultural areas is said to resemble an explosion in slow motion, and weeds now cover an estimated 133 million acres in the United States.

Several federal laws and an Executive Order provide direction to agencies for addressing invasive weeds. For example, the Plant Protection Act authorizes the U.S. Department of Agriculture (USDA) to list weeds that it determines can cause certain harms, including damage to agriculture or natural resources. Under the act, these weeds are designated as being "noxious weeds." The department is authorized to regulate the movement of these noxious weeds in interstate commerce and may order that they be destroyed. The Secretary of Agriculture has delegated this authority to the Animal and Plant Health Inspection Service (APHIS). In addition, under section 15 of the Federal Noxious Weed Act, all federal agencies are

required to undertake a number of control efforts for undesirable plants, which include designated noxious weeds. In 1999, the President issued Executive Order 13112, which established the National Invasive Species Council made up of the heads of certain federal departments and agencies. As directed by the order, the council developed a national management plan that includes recommended actions for addressing all types of invasive species, including weeds.

Various statutes, such as those regarding natural resource protections in our national parks, forests, refuges, and rangelands, also provide authority to the federal land management agencies to control invasive weeds on federal lands. Nonfederal entities and private landowners also play a role in combating invasive weeds under state and local laws or because of their interest in resource protection. Federal agencies are authorized to enter into cooperative agreements to assist nonfederal landowners with those efforts. Since weed control often involves chemical treatments that may have major impacts on the environment, agencies must also comply with the National Environmental Policy Act, which requires them to analyze the impacts of major federal actions.

The 108th Congress continued to recognize the daunting task that managing invasive species poses by enacting laws to provide additional resources for addressing specific invasive species. In 2003, Congress authorized $6 million per year over a 5-year period for Maryland and Louisiana programs to eradicate nutria—a South American rodent that destroys wetland habitat. In 2004, Congress passed the Noxious Weed Control and Eradication Act, which authorizes $15 million for each fiscal year over a 5-year period for a new program of grants and cooperative agreements to support state, county, and other weed management entities' efforts to control invasive weeds; the Secretary of Agriculture is responsible for establishing this new program.

In this context, we identified (1) the federal and nonfederal entities that implement projects to address terrestrial invasive weeds on nonagricultural lands, (2) the sources of funding that these entities use, (3) the views of federal and nonfederal officials on the barriers that limit the effectiveness of weed control efforts, and (4) these officials' observations on specific aspects of how to implement a new program—or to infuse new resources into an existing program—to support weed management and control. We also determined the legal ramifications of the use of certain terms—such as invasive, noxious, and nonnative—and their associated definitions on control efforts (see app. II). For purposes of this report, we

use the term "invasive weeds" to refer to terrestrial plants or plant parts that are either native or nonnative to a particular ecosystem and could threaten the environment, economy, or public health. Invasive weeds include those that are identified as "noxious weeds"—terrestrial or aquatic weeds that the federal government or state governments regulate because of the harm they can cause; noxious weeds may be native or nonnative. Our definition for invasive weeds is different from the invasive species definition under Executive Order 13112 in that it includes native species. We define nonagricultural land to include all land that is not actively used for row crop production, orchards, cereal grains, or pastures. On the other hand, for purposes of this report, forests and rangeland are nonagricultural land uses.

To analyze these issues related to terrestrial weeds on nonagricultural lands, we examined weed management entities' policies and practices at the federal, state, and local levels. We limited our review of federal agencies' weed management activities to the four major land management agencies: the Department of the Interior's (Interior) Bureau of Land Management (BLM), Fish and Wildlife Service (FWS), and National Park Service (NPS); and USDA's Forest Service. We also examined federal programs that these and other agencies within Interior and USDA administer to support weed management by nonfederal entities. In addition, we reviewed agencies within those departments that conduct or support weed-related research. Finally, we reviewed invasive weed management issues in five states—California, Colorado, Idaho, Maryland, and Mississippi—to gain an understanding of the nonfederal entities involved in weed management. We selected these states to provide a range of characteristics, including geography, federal land ownership, and maturity of weed management programs. We used structured interviews to obtain information from 57 federal, state, local, and nongovernmental officials. We conducted unstructured interviews with another 36 officials. All told, we spoke with over 90 federal and nonfederal officials representing 58 agencies and organizations. We did not attempt to evaluate the effectiveness of these federal and nonfederal efforts to address nonagricultural weeds, and were unable to identify with precision the amount of funding these entities devote to weed management. We conducted our review from May 2004 through December 2004 in accordance with generally accepted government auditing standards. For more details on our scope and methodology, see appendix I.

Results in Brief

A wide range of organizations manage terrestrial invasive weeds on nonagricultural lands across the United States, including federal agencies, state and local governments, large and small nongovernmental organizations, and individual landowners. In the federal government, large land management agencies such as the Bureau of Land Management and the Forest Service are among the most visible participants in such weed management, although other federal agencies also control weeds, conduct research, and support the efforts of other weed management entities. The federal land management agencies primarily control weeds as part of their larger responsibilities for natural resource conservation but also in order to comply with federal laws on managing invasive weeds, such as section 15 of the Federal Noxious Weed Act. In the five states we reviewed, state agencies responsible for agriculture, natural resources, and transportation most often manage weeds on state lands and may also work on private lands on a reimbursable basis. In three of these states, county officials are responsible for managing weeds on county lands and for assisting private landowners. Private entities ranging from major land conservation organizations to small neighborhood associations and individual landowners also participate in weed management.

The federal and nonfederal entities working on invasive weeds that we identified draw upon multiple sources of public and private funding. Federal land management agencies typically do not have specific congressional appropriations for invasive weed management but allocate funds out of their general operational budgets. While the agencies are not able to determine expenditures with precision, they estimated that in fiscal year 2004 they collectively spent around $40 million for weed control activities on their lands. Similarly, states and counties we reviewed typically rely on general operating funds to support their efforts, while some also levy specific taxes or receive grants from private organizations. The five states we reviewed vary widely in geographic size as well as in the size of their weed management programs; rough estimates of their annual funding levels range from hundreds of thousands of dollars to over $10 million. States and local governments also frequently use funding from the numerous federal grant and cooperative agreement programs that support natural resource and land management activities of nonfederal entities. Most of these federal programs—which are in addition to the programs federal agencies conduct to manage weeds on their own lands—are focused on broader natural resource management issues, such as protecting water quality or reducing soil erosion, but allocate tens of millions of dollars each year to invasive weed projects. To make these

funding decisions, the federal agencies typically select grant applications that best meet the objectives and eligibility criteria of the grant program; the agencies sometimes receive input from other federal officials and state and local experts to aid in decision making. Nongovernmental organizations involved in weed management use grants from a variety of governmental and private sources.

Officials we interviewed overwhelmingly believe that the lack of consistent and adequate funding limits effective weed management (39 of 48 of those who commented on management on nonfederal land and 37 of 41 who commented on management on federal lands). Consistent funding is critical because weed treatment needs to occur regularly, year after year, to keep the weed population under control; progress made in one year can be lost without subsequent treatments. However, funding is not consistent because the availability of grants or general operating funds fluctuate from year to year. Timely funding—at a point in the year when weeds can be most easily treated—also makes eradication efforts more effective. Officials identified other barriers to effective weed management, but not nearly as frequently as funding. For example, more than one-third of the officials (15 of 41) said that requirements under the National Environmental Policy Act to analyze the potential impacts of major federal actions to the environment were overly time consuming and a hindrance to effective and timely weed management on federal land. While officials were generally supportive of the intent of the act, they said that the procedures could make it difficult to respond rapidly to new infestations.

Weed management officials varied in how they believed additional resources for weed control should be delivered, and more than one-third of those we interviewed did not have firm opinions on the matter. In some respects, the opinions expressed were similar to the approach taken in the newly enacted Noxious Weed Control and Eradication Act of 2004. A notable difference, however, is that 33 of the 38 officials who expressed an opinion believed that existing programs should be modified to direct more funding to weed management and that a new program was not necessary. Many officials noted that existing programs have developed relationships with weed management entities that should be maintained. The act, however, requires the Secretary of Agriculture to establish a new program. Under a new program, officials generally agreed that a wide range of activities should be funded, including education, prevention, early detection and rapid response, control, monitoring, and research; the act, in fact, does authorize USDA to fund a broad array of weed management activities and projects. With regard to leadership for a new program, 20 of

31 officials believed that it should be managed by USDA or one of its agencies. The act does require USDA to establish the program, but does not specify which agency within USDA should implement it. Officials pointed out what they believed were strengths and weaknesses of both USDA and Interior agencies with respect to managing support programs for weed management, including geographic coverage and the level of experience in working on weeds, particularly in natural areas. For example, some commented that USDA's Natural Resources Conservation Service has good geographic coverage but little experience managing nonagricultural weeds. Others appreciated the focus that Interior's land management agencies have on protecting natural areas.

Among the 39 officials commenting on how the federal government should allocate additional funds for weed management, 24 stated that the states should play the primary role in determining which projects to fund, while 8 advocated giving this responsibility to a federal agency. To some degree, the act addresses both approaches by giving responsibility for making funding decisions to USDA but requiring the department to rely on technical and merit reviews conducted by regional, state, and local experts, to the maximum extent practicable. Regardless of which USDA agency is chosen to implement the new program, USDA and Interior officials stressed to us that collaboration with other relevant federal agencies within the two departments would be beneficial since it would allow the agencies to share expertise on specific invasive weeds and experience with nonfederal entities. The law, however, does not specifically call for other federal agencies to be involved in setting direction for the program or in making funding decisions.

Federal and state laws use many different terms, such as "noxious" and "exotic," to describe harmful weeds. In federal law, three different terms are used for, or encompass, invasive weeds—"invasive species," "noxious weeds," and "undesirable plants." At the state level, almost all states use the term "noxious weed" but define it differently. Importantly, control efforts by weed management entities are affected by—and in some cases can be restricted by—definitions for these terms, federal and state noxious weed lists, and other federal and state legal provisions. For example, some states limit control efforts to only those weeds on federal or state lists, while other states authorize control efforts for additional weeds. In addition, some states further categorize listed noxious weeds and, in doing so, make distinctions in the types of control efforts that are authorized or required.

To ensure that in administering its new grant funding program USDA considers the broad range of issues related to weed management and the needs of weed management entities across the country, we recommend that it collaborate with other federal agencies experienced in managing invasive weeds and related grant programs to help develop the mechanisms for allocating funds to weed management entities and to serve as technical advisers in determining what entities should receive such funding.

The Department of the Interior provided comments on a draft of this report and generally agreed with the findings and supported the recommendation. With regard to our recommendation for collaboration between USDA and Interior on implementation of the new grant funding program, the department suggested that the issue be approached through the National Invasive Species Council and that council's advisory committee. Four Interior bureaus (the National Park Service, Fish and Wildlife Service, Bureau of Land Management, and the U.S. Geological Survey) also reviewed the report and provided technical comments relating to funding data and the number of acres infested with weeds. We have incorporated these comments where appropriate. The letter from the department is in appendix V.

The Department of Agriculture did not respond to our request to comment on a draft of this report, although the Animal and Plant Health Inspection Service and the Forest Service provided technical comments and clarifications. We have incorporated those where appropriate.

Background

As we have reported in the past, the impact of all types of invasive species in the United States is widespread, and their consequences for the economy and the environment are profound.[1] Invasive species are found on agricultural cropland and in natural and urban areas, and can be either terrestrial or aquatic. Invasive species represent all taxonomic groups—plants, animals, and microorganisms—and cause harm by multiplying rapidly, crowding out native species, damaging agricultural and industrial

[1]GAO, *Invasive Species: Clearer Focus and Greater Commitment Needed to Effectively Manage the Problem*, GAO-03-1 (Washington, D.C.: Oct. 22, 2002); *Invasive Species: Federal and Selected State Funding to Address Harmful, Nonnative Species*, GAO/RCED-00-219 (Washington, D.C.: Aug. 24, 2000).

resources, and generally altering natural systems.[2] For example, they can alter entire ecosystems by disrupting food chains, preying on critical native species such as pollinators, increasing the frequency of fires, or—as in the case of some plants—simply overshadowing and outcompeting native plants. As such, many scientists believe that invasive species are a significant threat to biodiversity and many endangered species in the United States. The cost to control invasive species and the cost of damages they inflict, or could inflict, on property or natural resources are estimated to total billions of dollars annually. Once they have arrived, invasive species are hard to eradicate. As the Fish and Wildlife Service noted, "Invasive species management is a never-ending activity because of the insidious and explosive nature of the species themselves. Elimination of established populations of multiple invasive species has not yet been demonstrated in the 100-year history of the Refuge System."[3]

The Plant Conservation Alliance—an organization created in 1994 to protect native plants by ensuring that their populations and communities are maintained, enhanced, and restored—estimates that about 4,000 foreign plant species have been introduced into the United States since European settlement began, and as many as 1,000 of these have been identified as a threat to our native flora and fauna as a result of their aggressive, invasive characteristics.[4] All 50 states have been affected, although certain states are particularly hard hit. California, Florida, and Hawaii are hosts to an estimated 2,000 nonnative plants, or half of the 4,000 that exist nationwide.

Some of the 4,000 introduced plant species were brought as food crops and do not display invasive or harmful characteristics. Others arrived by accident, perhaps germinated from seeds either contaminating otherwise beneficial commodities such as grain or in the soil once used as ships' ballast. Other plant species were introduced intentionally to serve some purpose or as an ornamentally desirable plant. Kudzu, for example—a

[2]Taxonomy is defined as the orderly classification of organisms according to their presumed natural relationships.

[3]The National Strategy for Management of Invasive Species, National Wildlife Refuge System (April 23, 2003).

[4]The Plant Conservation Alliance is a consortium of 10 federal agencies and over 220 nonfederal cooperators representing various disciplines within the conservation field, including biologists, botanists, habitat preservationists, horticulturists, soil scientists, nonprofit organizations, and concerned citizens.

rapidly growing vine that thrives in the southeastern and mid-Atlantic United States—was intentionally introduced from Japan by USDA in the 1930s to control soil erosion but has now overtaken many natural areas. Similarly, multiflora rose was promoted for use as a living fence, like hedgerows on pastureland, but has spread far beyond its original purpose. Ornamentally pleasing but also invasive plants include English ivy, autumn olive, Japanese honeysuckle, and purple loosestrife. Some species that are considered invasive—autumn olive, for example—are still advertised as beneficial to the environment because they are a food source for wildlife. However, once established, the seeds of invasive plants can spread through wind, water, and animals, and by hitching a ride on people or their vehicles. Invasive weeds may also take hold or spread as a result of disturbances in ecological systems. Disturbances could include deforestation, road building, or changes in water quality or quantity.

Historically, weed control has been practiced primarily in agricultural areas. However, there is a growing recognition that invasive weeds' effects are felt throughout natural areas as well. For example, sagebrush-grassland ecosystems such as those in the Great Basin states, including Idaho, Nevada, Oregon, and Washington, are degraded by cheatgrass, introduced from Eurasia. This grass, along with other nonnative grasses such as medusahead, are now the dominant plant species on tens of millions of acres in the West. Because cheatgrass tolerates wildfire and adds to fuel loads, it has increased the frequency of major fires in these grasslands—ecosystems that cannot handle frequent, intense fires—thereby causing a near extirpation of native flora and fauna. In the Northeast and Midwest, purple loosestrife is rapidly degrading wetlands by filling in open waters with dense stands—some thousands of acres in size. In the Southwest, tamarisk—also known as salt cedar—proliferates along streams in otherwise arid landscapes, ousting native trees and shrubs upon which native animals depend while also lowering water tables. This report focuses on efforts to manage terrestrial invasive weeds in nonagricultural areas, including forests, rangelands, parks, and urban areas.

Government Agencies at All Levels and Nongovernmental Entities Manage Invasive Weeds

A wide range of organizations and individuals manage and control invasive weeds on nonagricultural lands across the United States, including federal, state and local agencies; large and small nongovernmental organizations; and private landowners. The weed management activities of these entities are guided by federal and state laws, agency policies and regulations, executive initiatives, or natural resource management principles.