



April 2015

FOREST RESTORATION

Adjusting Agencies' Information-Sharing Strategies Could Benefit Landscape- Scale Projects

Accessible Version

GAO Highlights

Highlights of [GAO-15-398](#), a report to congressional requesters

Why GAO Did This Study

The Forest Service within the Department of Agriculture and BIA, BLM, FWS, and NPS within the Department of the Interior have increasingly promoted landscape-scale forest restoration as a way to improve forest health. Through landscape-scale projects, agencies can treat tens or hundreds of thousands of acres, in contrast to projects commonly of under 1,000 acres. Such projects must comply with NEPA by assessing the effects of major federal actions that significantly affect the environment.

GAO was asked to examine federal landscape-scale forest restoration efforts. This report examines (1) the number of such projects the agencies have conducted and how they are scoped; (2) the actions taken by agencies to track the projects' progress; (3) successes and challenges experienced by agencies; and (4) steps taken by agencies to help increase NEPA efficiency for such projects. GAO reviewed agency guidance and documentation related to landscape-scale forest restoration and NEPA processes; examined the number of landscape-scale projects conducted from 2004-2014; and interviewed managers of 20 projects, as well as numerous stakeholders, about their efforts.

What GAO Recommends

GAO recommends that the agencies take steps to identify project managers' information needs and the most effective and efficient information-sharing mechanisms, and adjust their information-sharing strategies as appropriate. The agencies generally agreed with GAO's findings and recommendations.

View [GAO-15-398](#). For more information, contact Anne-Marie Fennell at (202) 512-3841 or fennella@gao.gov.

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What GAO Found

Agencies GAO reviewed—the Forest Service in the Department of Agriculture and the Bureau of Indian Affairs (BIA), Bureau of Land Management (BLM), Fish and Wildlife Service (FWS), and National Park Service (NPS) in the Department of the Interior—reported conducting 34 landscape-scale forest restoration projects (defined by GAO as projects larger than 50,000 acres with a focus on forests) from 2004 through 2014. The Forest Service reported conducting 24 of the 34 projects; BLM, 8; and NPS, 2. FWS reported no landscape-scale projects, and BIA officials stated that BIA supports but does not collect information on tribal landscape restoration projects. Agency officials said they determined the scope of individual projects, such as project area, based on factors unique to each project, such as the ecological composition of the land.

The three agencies conducting landscape-scale forest restoration projects generally track the progress of individual projects by collecting information on ongoing activities such as acres where vegetation that can fuel wildland fires was reduced, and miles of stream improved or restored. No agency has undertaken a systematic assessment of the results of its landscape-scale restoration activities—that is, the extent to which the projects have achieved their restoration objectives—largely because most of the projects were recently begun, and their results will not be known for years. However, all project managers GAO spoke with were conducting or planning to conduct efforts to collect information on long-term results, and some project managers noted that they have already observed some positive effects, such as an enhanced ability to suppress wildfires.

Agency officials and stakeholders stated that to date they had experienced a variety of successes and challenges, and each agency has mechanisms to share information among projects. Successes included increasing the pace and scale of restoration and achieving efficiencies in project costs and timelines, and challenges included responding to litigation and sustaining stakeholder participation over time. Agencies share information on restoration through mechanisms such as webinars and websites on project management. However, many project managers and stakeholders told GAO that managers would benefit from additional information sharing, such as lessons learned from successes and challenges experienced on other projects. Several managers also said that existing national information-sharing mechanisms were not always the most useful for their specific information needs. GAO has reported on the importance of information sharing to achieve agency objectives and sustain collaboration. Agency officials stated that they have not assessed the information needs of project managers. By taking steps to identify the information needs of project managers and the mechanisms most useful for sharing information, the agencies may enhance the effectiveness and efficiency of landscape-scale projects.

Agency officials and project managers told GAO they are taking steps aimed at increasing the efficiency of their National Environmental Policy Act (NEPA) processes for landscape-scale projects by updating agency NEPA guidance and implementing and assessing a variety of approaches aimed at efficiency. However, it is too early to assess the effects of these approaches because projects are generally working under previous NEPA decisions while developing new NEPA analyses using these approaches.

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Abbreviations

BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CEQ	Council on Environmental Quality
CFLRP	Collaborative Forest Landscape Restoration Program
EIS	environmental impact statement
FWS	Fish and Wildlife Service
NEPA	National Environmental Policy Act
NPS	National Park Service

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April 9, 2015

The Honorable Lisa Murkowski
Chairman
Committee on Energy and Natural Resources
United States Senate

The Honorable Ron Wyden
United States Senate

The condition of the nation's forests has been degraded by the results of past agency land use and management practices, and by drought and other stressors that are being exacerbated by climate change. As we have previously found, over the past century, various practices—including fire suppression and timber harvesting—have reduced the normal frequency of fires in many forest ecosystems and contributed to abnormally dense, continuous accumulations of vegetation that can fuel uncharacteristically large or severe wildland fires. In addition, as we found in our May 2013 report on climate change, federal lands are vulnerable to a wide range of effects from climate change, including increases in wildfires and drought, forests stressed by drought becoming more vulnerable to insect infestations, and various species at risk of extinction due to the loss of critical habitat, according to multiple scientific studies.¹ Many of these effects have already been observed on federally managed lands and are expected to continue.

In the face of these large and increasing threats, there is growing agreement among land managers that efforts to restore forests should be undertaken at a scale commensurate with the scale at which disturbances, such as unnaturally severe wildfires that burn millions of acres annually, are occurring—that is, at a landscape scale. There are varying definitions for landscape-scale restoration efforts, but such efforts are generally considered to be substantially larger than traditional restoration projects, and treat tens or hundreds of thousands of acres in contrast to projects that commonly treat less than 1,000 acres. In addition, the scope of landscape-scale restoration projects commonly

¹GAO, *Climate Change: Various Adaptation Efforts Are Under Way at Key Natural Resource Management Agencies*, [GAO-13-253](#) (Washington, D.C.: May 31, 2013).

includes multiple rather than single restoration objectives, employs treatments that cross jurisdictional borders, and involves collaboration among federal, state, local, and nongovernmental partners.

Federal land management agencies—including the Forest Service within the Department of Agriculture and the Bureau of Indian Affairs (BIA), Bureau of Land Management (BLM), Fish and Wildlife Service (FWS), and National Park Service (NPS) within the Department of the Interior—have increasingly promoted landscape-scale forest restoration approaches to improve forest health. These agencies have issued various statements, guidance, and policies explicitly supporting landscape-scale forest restoration as a means to increase the pace and scale of their efforts. Federal legislation has also addressed landscape-scale forest restoration; specifically, Title IV of the Omnibus Public Land Management Act of 2009 directed the Department of Agriculture, in consultation with Interior, to establish a Collaborative Forest Landscape Restoration Program (CFLRP) to select and fund ecological restoration treatments for priority forest landscapes.²

Like other land management activities, landscape-scale restoration projects are subject to the National Environmental Policy Act (NEPA) and other environmental laws, such as the Endangered Species Act. Under NEPA, federal agencies must assess the effects of major federal actions—those they propose to carry out or to permit—that significantly affect the environment. In recent years, the Council on Environmental Quality (CEQ) has issued guidance and initiated pilot studies with federal agencies—including the Forest Service, NPS, and others—to streamline the implementation of NEPA by identifying ways to complete the required environmental reviews more efficiently and effectively.³ In addition, Congress has passed laws such as the Healthy Forests Restoration Act that include provisions that limit the alternatives the Forest Service must evaluate in its NEPA analyses for certain hazardous fuel reduction projects in national forests.⁴

²Pub. L. No. 111-11, Title IV, § 4003(a), 112 Stat. 1141 (2009).

³CEQ, within the Executive Office of the President, oversees the implementation of NEPA, reviews and approves federal agency NEPA procedures, and issues regulations and guidance documents that govern and guide federal agencies' interpretation and implementation of NEPA.

⁴Pub. L. No. 108-148, as amended, 16 U.S.C. § 6501 et seq.

You asked us to examine how the agencies are planning and conducting landscape-scale forest restoration projects, including their use of NEPA analysis as part of such projects. This report examines (1) the number of landscape-scale forest restoration projects that agencies have conducted, and how they determined the scope of these projects; (2) the actions taken by the agencies to track the progress of the projects; (3) successes and challenges the agencies have experienced in conducting landscape-scale restoration projects; and (4) steps the agencies have taken to help increase the efficiency of the NEPA process for landscape-scale restoration projects.

To conduct our work, we reviewed and analyzed relevant laws, agency memoranda, directives, guidance, and other documentation related to landscape-scale forest restoration in general and to specific restoration projects. We also interviewed officials from the Forest Service, BIA, BLM, FWS, and NPS at their headquarters. To examine the number of landscape-scale forest restoration projects that agencies have conducted, we asked the five agencies to provide information on all forest restoration projects that they had conducted during the 10-year period from 2004 to 2014—that is, projects the agencies initiated or had ongoing during that time—that they considered to be landscape scale. From the projects that were reported to us, we limited our review to those with a landscape area greater than 50,000 acres.⁵ We also limited our review to those projects focused on restoring forest ecosystems rather than other landscape types such as grasslands or wetlands, and to ongoing projects, rather than those still in the planning phase or already completed. Of the 112 projects identified by the agencies, 34 projects—24 Forest Service projects, 8 BLM projects, and 2 NPS projects—met our selection criteria and were included in our review.

To examine how agencies determined the scope of these projects, such as the project area, treatment objectives, and other characteristics, we conducted semistructured interviews of project managers from 20 selected Forest Service, BLM, and NPS landscape-scale projects to gather information on their experiences with project scoping,

⁵We chose 50,000 acres as the minimum project size for our review because it is the minimum project area that qualifies for funding under the CFLRP and because the Society of American Foresters—a national scientific and educational organization representing the forestry profession—has also cited 50,000 acres as the threshold for landscape-scale projects.

implementation, successes and challenges, and the NEPA review process. Generally, for each agency, we selected the largest project in each state in which the agency was conducting a project. To conduct these interviews, we visited 8 geographically dispersed projects (including Forest Service projects in Arizona, Florida, Montana, New Mexico, and North Carolina, and BLM projects in New Mexico and Oregon), and interviewed officials from the remaining 12 projects by telephone. During the site visits, we interviewed project managers and visited the locations of forest restoration treatments. During each site visit, we also interviewed local stakeholders involved in the projects. These local project stakeholders included representatives of environmental organizations, timber industry representatives, and others. We also interviewed representatives from 8 national-level nongovernmental organizations to obtain their perspectives on the agencies' overall implementation of landscape-scale projects. We believe that the results of our interviews appropriately characterize the views of project managers responsible for the 34 landscape-scale forest restoration projects in our review—specifically, those projects over 50,000 acres. However, the results may not be generalizable to smaller projects not included in our review.

To examine the actions taken by the agencies to track the progress of the projects, and identify successes and challenges the agencies have experienced in conducting them, we relied on the document reviews and interviews described above, and analyzed project documentation such as project annual reports, monitoring plans, and project proposals. As part of this analysis, we examined both agency efforts to collect information on ongoing project activities as well as steps being taken to provide long-term monitoring of project results. In addition, we systematically analyzed comments made by agency officials and stakeholder group representatives during the interview process to identify the successes and challenges associated with conducting landscape-scale projects. To examine the extent to which information was shared among projects, we relied on the interviews we conducted with agency headquarters officials and on our semistructured interviews of project managers.

To examine steps the agencies have taken to help increase the efficiency of the NEPA process for landscape-scale projects, we interviewed, and reviewed project documentation from, agency officials and stakeholder group representatives. We also reviewed and analyzed applicable laws, agency guidance, and CEQ guidance and memoranda on NEPA efficiencies to identify the guidance available to landscape-scale project officials and the strategies and tools being used by projects to increase

the efficiency of NEPA processes. (See app. I for further details on our objectives, scope, and methodology.)

We conducted this performance audit from February 2014 to April 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

As we have found in previous reports, past agency land use and management practices—as well as drought and other stressors exacerbated by climate change—have degraded the nation’s forests.⁶ Under these conditions, the nation’s wildland fire problems have worsened dramatically, threatening communities, as well as important natural and cultural resources. Natural wildland fires triggered by lightning play an important ecological role on the nation’s landscapes, shaping the composition of forests and grasslands, periodically reducing vegetation densities, and stimulating seedling regeneration and growth in some species. However, various practices implemented over the past century—including fire suppression, grazing, and timber harvesting—have reduced the normal frequency of natural fires in many forest and rangeland ecosystems and contributed to abnormally dense, continuous accumulations of vegetation. Such accumulations not only can fuel uncharacteristically large or severe wildland fires but also—with more homes and communities built in or near areas at risk from wildland fire—threaten human lives, health, property, and infrastructure. The National Interagency Fire Center reports that, from 2004 to 2013, an average of about 6.7 million acres burned annually in wildfires.⁷

Additionally, according to reports by the U.S. Global Change Research Program, changes in the climate have been observed in the United States

⁶See, for example, GAO, *Wildland Fire Management: Federal Agencies Have Taken Important Steps Forward, but Additional, Strategic Action is Needed to Capitalize on Those Steps*, [GAO-09-877](#) (Washington, D.C.: Sept. 9, 2009).

⁷The National Interagency Fire Center is the nation’s logistical support center for responding to wildland fires, and coordinates the mobilization of fire suppression supplies, equipment, and personnel at the federal, regional, and local levels.

and will adversely affect aspects of the nation's natural environment.⁸ These changes in the climate—including warmer temperatures, changes in precipitation patterns, rising sea levels, and more intense storms—affect the natural environment in a number of ways including more severe drought, increased frequency of large wildfires, insect infestations, changed habitats, and possible loss of species that cannot survive in the changed conditions. Precisely how and to what extent changes in the climate will affect particular federal lands in the future is uncertain, but climate-related changes have already been observed on federally managed lands and waters. In February 2013, we added Limiting the Federal Government's Fiscal Exposure by Better Managing Climate Change Risks to our list of areas at high risk of fraud, waste, abuse, and mismanagement, or most in need of transformation, because climate change poses significant financial risks to the federal government in its role as the manager of large amounts of land and other natural resources, among other things.⁹

In light of these threats to forest health, land managers are focusing on ecosystem restoration—that is, assisting the recovery of ecosystems that have been degraded, damaged, or destroyed.¹⁰ According to Forest Service guidance, ecosystem restoration focuses on reestablishing the composition, structure, pattern, and ecological processes necessary to facilitate ecosystem sustainability, resilience, and health under current and future conditions. The treatments used vary depending on the restoration needs of the ecosystem. For example, for a forest at risk from uncharacteristic wildfire, treatments may be implemented to reduce potentially flammable vegetation, such as thinning of trees and underbrush, followed by prescribed burns (deliberately set fires that replicate the positive effects of natural fire) to help sustain the restoration process. To restore insect-infested forests, treatments may be

⁸The U.S. Global Change Research Program coordinates and integrates federal research on changes in the global environment and their implications for society. Led by a team of officials from 13 participating departments and agencies, the program engages in a variety of activities designed to strengthen and strategically direct climate change research in the US and improve the flow of that information to federal, state, and local decision makers, and the public.

⁹GAO, *High-Risk Series: An Update*, [GAO-13-283](#) (Washington, D.C.: February 2013).

¹⁰According to the Forest Service, ecosystems are spatially explicit, relatively homogeneous units of the earth including all interacting organisms and elements of the environment within their boundaries.

implemented to reduce the susceptibility of trees to infestation or to prevent the spread of insects from infested trees, such as chemically spraying the trees, or felling the trees and chopping them into small pieces that dry out and become inhospitable to insect larvae. To restore watershed function, techniques to restore stream resiliency may be applied, such as adding appropriately sized stream crossing structures and reducing sedimentation by rerouting harmful road segments away from streams and decommissioning unneeded roads.

There is a growing consensus among land managers that to address the large-scale impacts of wildfire, climate change, and other stressors on the landscape, forest restoration efforts should be undertaken at a landscape scale. For example, in 2010, the Western Governors' Association Forest Health Advisory Committee recommended that "planning and implementing small and sometimes disconnected projects may be necessary to lay the groundwork for larger efforts, but will not suffice by themselves when unhealthy forests span millions of acres and unnaturally severe wildfires burn hundreds of thousands of acres at a time. Forest restoration planning and implementation should occur at a scale commensurate with the scale at which dominant disturbances—such as unnaturally severe fires—are occurring."¹¹ Expanding on the idea that restoration should occur at a large scale, in 2010 the Lincoln Institute of Land Policy further noted that such efforts "should be multijurisdictional, multipurpose, and multi-stakeholder, and operate at various geographic scales using a variety of governance arrangements. The goal of each project is to address issues at a scale that is big enough to surround the problem, but small enough to tailor the solution."¹²

The five agencies in our review collectively manage resources on about 728 million acres of land in the United States, including national forests, national grasslands, certain Indian lands, national parks, and national wildlife refuges. As shown in table 1, the Forest Service and BLM manage the majority of these lands, with the Forest Service managing the largest number of forested acres and the greatest proportion of forested acres

¹¹Western Governors' Association Forest Health Advisory Committee, *Forest Health Landscape-Scale Restoration Recommendations*, December 2010.

¹²Policy Focus Report, the Lincoln Institute of Land Policy, *Large Landscape Conservation: A Strategic Framework for Policy and Action*, 2010. The Lincoln Institute is a private foundation that brings together scholars, practitioners, public officials, and others to inform and improve land policy decision making.

among all of the five agencies. The Forest Service estimates that up to 82 million acres of its land are in need of restoration, with about 65 million at high risk from catastrophic wildfire, and BLM estimates that 16 million acres of forest and woodland it manages are in need of restoration.

Table 1: Land Management Agencies' Total Acreage and Forested Acreage Managed (in millions)

Agency	Total acres	Forest acres	Percentage forested
Bureau of Land Management	245	58	24
Forest Service	193	145	75
Fish and Wildlife Service	150	16	11
National Park Service	84	18	21
Bureau of Indian Affairs	56	18	32
Total	728	255	35

Sources: GAO analysis of agencies' information. | GAO-15-398.

These agencies have emphasized landscape-scale forest restoration to varying degrees in carrying out their land management responsibilities, as follows:

- The **Forest Service's** mission is to sustain the health, diversity, and productivity of the nation's forests and grasslands for multiple uses including recreation, timber harvesting, livestock grazing, mining, and wilderness protection. In 2009, the Secretary of Agriculture called for the agency to engage in forest restoration at the landscape-scale by taking an "all-lands approach" that included state and private forests. The agency's 2012 planning rule requires that land management plans provide for opportunities for landscape-scale restoration, and the agency's current directive and draft policy for ecological restoration address collaboration across ownerships and jurisdictions to achieve landscape restoration objectives. Also in 2012, the agency issued a report outlining a series of initiatives to increase the pace and scale of forest restoration using, among other things, the landscape-scale approach.¹³ In 2014, the Forest Service and Natural Resources Conservation Service initiated their Chiefs' Joint Landscape Restoration Partnership to improve the health and

¹³Forest Service, *Increasing the Pace of Restoration and Job Creation on Our National Forests*, February 2012.

resilience of forest ecosystems where public and private lands meet for long-term benefits.¹⁴

- **BLM** manages federal land for multiple uses, including recreation; range; timber; minerals; watershed; wildlife and fish; natural scenic, scientific, and historical values; and the sustained yield of renewable resources. In 2009, the Secretary of the Interior ordered the development of landscape strategies to respond to climate change impacts and, in subsequent years, stated that a landscape approach would be central to BLM's resource development and conservation strategy.¹⁵ BLM has integrated landscape management into various guidance documents and has developed a landscape-level rapid ecoregional assessment process that is designed to result in land management directives that identify specific restoration priorities within ecoregions.¹⁶ BLM plays a key role in a number of Interior's landscape initiatives. For example, BLM's rapid ecoregional assessments have been funded and implemented through Interior's Cooperative Landscape Conservation Initiative, and funding from Interior's Healthy Landscapes Initiative has been used to supplement ongoing BLM restoration efforts within select areas.
- **FWS** is responsible for managing lands under its jurisdiction—primarily the national wildlife refuge system—for the conservation, management, and, where appropriate, restoration of fish, wildlife, and plant resources and their habitats. In 2006, FWS leadership adopted Strategic Habitat Conservation as the agency's approach to develop and implement a landscape approach to conservation that was strategic, science-driven, collaborative, adaptive, and understandable. FWS has developed draft technical guidance for implementing the approach.
- **NPS** has as its mission to conserve the scenery, natural and historic objects, and wildlife of the national park system so that they will

¹⁴The Natural Resources Conservation Service within the Department of Agriculture works with farmers, ranchers, and forest landowners across the nation to help them boost agricultural productivity and protect natural resources through conservation.

¹⁵Secretarial Order 3289, September 2009, amended February 2010; Secretarial Order 3323, September 2012; and Secretarial Order 3330, October 2013.

¹⁶Ecoregions are areas within which ecosystems—and the type, quality, and quantity of environmental resources—are generally similar.

remain unimpaired for the enjoyment of current and future generations.¹⁷ In 2011, NPS began a Call to Action initiative to develop a strategy for advancing the agency's mission into its next century. One of the themes was to preserve America's natural and cultural resources through a number of goals, including collaborating with other land managers and partners to create, maintain, and restore landscape-scale connectivity. NPS's plan for achieving this goal calls for "scaling up"—that is, promoting large landscape conservation to support healthy ecosystems and cultural resources.

- **BIA** provides services directly or through contracts, grants, or compacts to 566 federally recognized tribes with a service population of about 1.9 million American Indian and Alaska Natives. According to BIA documentation, tribal forests provide an essential source of revenue and jobs for many tribal governments and their members, and play an important role in sustaining tribal cultures and traditions. Through its Office of Trust Services, BIA provides land-related functions including forestry and wildland fire management. BIA encourages tribes to take a landscape approach in their forestry and fire management planning. For example, BIA was involved in implementing and disseminating the Intertribal Timber Council's 2013 Indian Forest Management Assessment, which described the importance of landscape-scale management for tribes.

Federal legislation also has addressed landscape-scale forest restoration. Specifically, Title IV of the Omnibus Public Land Management Act of 2009 directed the Department of Agriculture, in consultation with Interior, to establish a Collaborative Forest Landscape Restoration Program (CFLRP) to select and fund ecological restoration treatments for priority forest landscapes.¹⁸ The purposes of the act are to (1) encourage ecological, economic, and social sustainability; (2) leverage local resources with national and private resources; (3) facilitate the reduction of wildfire management costs by reestablishing natural fire regimes and reducing the risk of uncharacteristic wildfire; (4) demonstrate the degree to which various ecological restoration techniques achieve ecological and watershed health objectives and affect wildfire activity and management costs; and (5) demonstrate the degree to which use of forest restoration

¹⁷National park units consist of, among others, national battlefields, historical sites, monuments, parks, reserves, and seashores.

¹⁸Pub. L. No. 111–11, Title IV, § 4003(a), 112 Stat. 1141 (2009).

by-products can offset treatment costs while benefitting local rural economies and improving forest health.

Projects selected for the CFLRP were to have restoration strategies that were complete or substantially complete and that identified and prioritized treatments for a 10-year period within a landscape of at least 50,000 acres. The act provided funding authority for requests of up to \$40 million annually for fiscal years 2009 through 2019, to fund up to 50 percent of the cost of carrying out and monitoring ecological restoration projects on National Forest System land, up to \$4 million annually for any one project.¹⁹ The projects were required to be developed and implemented through a collaborative process and implemented in accordance with NEPA, the Endangered Species Act, and any other applicable laws. Projects were also required to use a multiparty monitoring, evaluation, and accountability process to assess the positive or negative ecological, social, and economic effects of projects for not less than 15 years after project implementation commences.

Like other land management activities that may significantly affect the environment, landscape-scale forest restoration projects are subject to NEPA, as well as other environmental laws, such as the Endangered Species Act. Under NEPA, federal agencies must assess the effects of major federal actions—those they propose to carry out or to permit—that significantly affect the environment. This environmental review process has two principal purposes: (1) to ensure that an agency carefully considers detailed information concerning significant environmental impacts and (2) to ensure that this information will be made available to the public. In that capacity, NEPA has become a primary mechanism for public participation in federal agency decisions significantly affecting the environment, through the public involvement provisions of NEPA regulations. In addition, the adequacy of NEPA analyses has been a focus of litigation.

Under NEPA, agencies evaluate the likely environmental effects of projects they are proposing using an environmental assessment or, if the projects likely would significantly affect the environment, a more detailed environmental impact statement (EIS). EISs can be developed at a

¹⁹According to Forest Service officials, funds appropriated under the act may not be used to cover project planning costs, such as NEPA analyses.

programmatic level—where larger-scale, combined, and cumulative effects can be evaluated and where overall land use management objectives are defined—as well as at a project level, where the effects are evaluated of a particular project in a specific place at a particular time. If the agency determines that activities of a proposed project fall within a category of activities the agency has already determined has no significant environmental impact—called a categorical exclusion—then the agency generally need not prepare an environmental assessment or environmental impact statement.²⁰

As the federal office that oversees the implementation of NEPA, CEQ has noted that implementation by agencies has sometimes fallen short of its goals. For example, according to CEQ, if agencies are unclear about the purpose of the law, they may treat the detailed assessment as an end in itself rather than a decision-making tool, or seek to create litigation-proof documents, increasing costs and time but not necessarily quality. In recent years, to help agencies to improve the quality and timeliness of their environmental reviews, CEQ has issued guidance and initiated pilot projects with federal agencies to improve the efficiency of NEPA implementation. In March 2012, CEQ issued its final guidance for preparing efficient and timely environmental reviews, providing techniques that can be used by all federal departments and agencies.²¹ For example, the CEQ guidance encouraged agencies to coordinate and take appropriate advantage of existing documents and studies when performing NEPA environmental reviews, and to use early and well-defined scoping to focus environmental reviews on appropriate issues and avoid unnecessary work.

In addition, through its NEPA Pilot Program, CEQ is working with relevant agencies to implement five pilot projects to replicate time- and cost-saving approaches across the federal government. CEQ initiated the program in 2011 and has included Forest Service and NPS projects among its pilots. According to CEQ documents, successful pilots could lead to the adoption of new or revised NEPA procedures, in keeping with CEQ's

²⁰For example, the Agricultural Act of 2014 (2014 Farm Bill) established a categorical exclusion for certain projects addressing insect or disease infestations. Pub. L. No. 113-79, Title VIII, § 8204 (2014).

²¹CEQ, *Improving the Process for Preparing Efficient and Timely Environmental Reviews under the National Environmental Policy Act*, March 2012.

responsibility for reviewing NEPA regulations for provisions that may be outmoded, ineffective, insufficient, or excessively burdensome. CEQ plans to coordinate with agencies to find ways to more widely deploy the best practices identified through successful pilot projects.

Agencies Have Conducted 34 Landscape-Scale Restoration Projects, Determining Scope on a Project-Specific Basis

The agencies we reviewed reported conducting 34 landscape-scale forest restoration projects from 2004 to 2014, with the Forest Service conducting the majority of such projects, and BLM and NPS conducting a smaller number. FWS officials told us that their agency had not conducted any such projects, and BIA officials told us that BIA supports tribal landscape restoration, but it does not collect information on the specific projects conducted by tribes. Officials at each agency conducting landscape-scale projects told us that they determined the scope of individual projects based on a variety of factors unique to each project, such as the ecological composition of the land and natural boundaries or barriers.

Forest Service Has Conducted the Majority of the 34 Projects Reported, with BLM and NPS Conducting a Smaller Number

Agencies in our review reported conducting 34 landscape-scale forest restoration projects—specifically, those larger than 50,000 acres with a focus on forest restoration—from 2004 to 2014. The Forest Service reported having the majority of these projects, accounting for 24 of the 34 projects—most of which were conducted under the CFLRP.²² BLM reported 8 such projects—primarily in New Mexico—and NPS reported 2 such projects, 1 each in Arkansas and Florida. FWS officials told us that the agency has some forest restoration projects in wildlife refuges, but they are not landscape scale; these officials noted that refuges generally do not encompass forests, and are generally managed to provide habitat for particular species, such as waterfowl, meaning that landscape-scale forest restoration projects are unlikely to be consistent with the agency's mission. BIA officials told us that the agency is involved in landscape-scale projects in concert with tribes, but it does not collect information on

²²One Forest Service project—the agency's Black Hills Mountain Pine Beetle Response in the Black Hills National Forest of South Dakota—is being implemented outside of the CFLRP.

the individual projects.²³ Forest Service, BLM, and NPS landscape-scale project managers told us that wildlife refuges and tribes are partners in some of their projects.

The Forest Service's projects were generally much larger than those of the other agencies, in some cases encompassing more than a million acres. (See table 2.) The Forest Service's projects were also relatively early in their implementation because they were initiated after CFLRP funding for landscape-scale projects first became available in fiscal year 2010; some BLM and NPS projects were initiated before 2010 and remain ongoing. The Forest Service's landscape-scale projects cumulatively cover about 17.1 million acres, or about 21 to 26 percent of the 65 to 82 million acres the agency has identified as needing restoration; BLM's projects cover about 1.6 million acres, or about 10 percent of the 16 million acres the agency identified as needing restoration; NPS projects cover about 800,000 acres, or about 15 percent of the 5.3 million acres that agency officials identified as needing restoration.²⁴

²³According to BIA documentation, individual tribes set their own goals and objectives for the use of forest resources, and provide long-term direction for management. This documentation notes that tribal land management plans provide for a systematic treatment schedule over long planning horizons to maintain and enhance forest health and outputs for the entire forest, and that tribes are taking a leading role in collaborating with stakeholders to ensure a consistent supply of forest outputs to support the industries which rely on them. In addition, tribes are actively working with cooperators such as the Forest Service and BLM through the Tribal Forest Protection Act which creates opportunities for larger cross-jurisdictional treatments.

²⁴In addition to landscape-scale projects, the agencies are conducting other restoration efforts at a smaller scale that are intended to address restoration needs.

Table 2: Landscape-Scale Forest Restoration Projects from 2004 to 2014, by Agency

Agency	Name of project	State	Project size (acres) ^a	Year initiated
Forest Service	Four Forest Restoration Initiative	AZ	2,400,000	2010
	Accelerating Longleaf Pine Restoration	FL	2,000,000	2010
	Tapash Sustainable Forest Collaborative	WA	1,629,959	2010
	Southwestern Crown of the Continent	MT	1,449,670	2010
	Selway-Middle Fork Clearwater	ID	1,400,000	2010
	Black Hills Mountain Pine Beetle Response	SD	1,200,000	2012
	Northeast Washington Forest Vision 2020	WA	916,283	2012
	Colorado Front Range Landscape Restoration Initiative	CO	800,000	2010
	Kootenai Valley Resource Initiative	ID	800,000	2012
	Weiser-Little Salmon Headwaters	ID	798,900	2012
	Southern Blues Restoration Coalition	OR	690,723	2012
	Lakeview Stewardship	OR	662,289	2012
	Uncompahgre Plateau	CO	572,000	2010
	Amador-Calaveras Consensus Group Cornerstone	CA	390,904	2012
	De Soto Longleaf Pine Ecosystem Restoration and Hazardous Fuel Reduction	MS	382,000	2012
	Burney-Hat Creek Basins	CA	369,036	2012
	Shortleaf-Bluestem Community	AR/OK	348,482	2012
	Pine-Oak Woodlands Restoration	MO	345,710	2012
	Ozark Highlands Ecosystem Restoration	AR	344,393	2012
	Grandfather Restoration	NC	330,360	2012
	Southwest Jemez Mountains	NM	210,000	2010
	Zuni Mountain	NM	210,000	2012
	Dinkey Landscape Restoration	CA	154,000	2010
Deschutes Skyline	OR	130,000	2010	
Bureau of Land Management	North Steens Ecosystem Restoration	OR	330,000	2007
	Chupadera Mesa	NM	256,201	2008
	El Malpais National Conservation Area	NM	376,948	2001
	Upper Rio Puerco Watershed	NM	200,000	1980
	Pelona	NM	193,200	1994
	East Magdalena	NM	102,283	2003
	North San Mateo	NM	77,544	1997
	Ladrone / Polvadera	NM	51,925	2000

Agency	Name of project	State	Project size (acres) ^a	Year initiated
National Park Service	Big Cypress National Preserve	FL	729,000	2003
	Buffalo National River	AR	95,000	2003

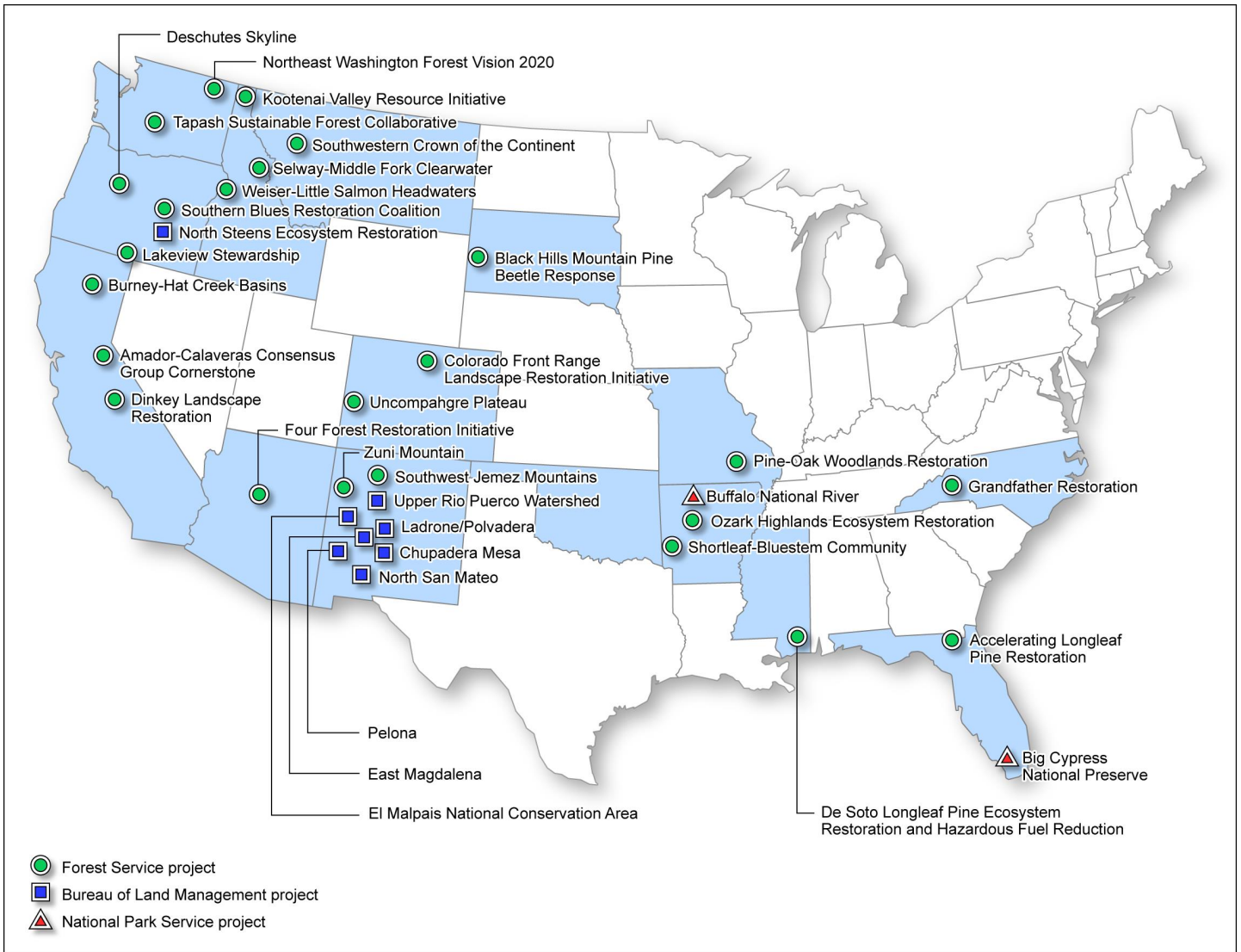
Sources: Forest Service, Bureau of Land Management, and National Park Service agency documents. | GAO-15-398.

Notes: We defined landscape-scale forest restoration projects as those projects greater than 50,000 acres in size with a focus on forest restoration.

^aProject size indicates the overall acreage of the project area. Not all acres within this area may be treated under the project.

The 34 landscape-scale projects were conducted in 15 states across the country, as shown in figure 1.

Figure 1: Map of Landscape-Scale Forest Restoration Projects



Sources: Forest Service, Bureau of Land Management, and National Park Service agency documents; Map Resources (map). | GAO-15-398

Notes: We defined landscape-scale forest restoration projects as those projects greater than 50,000 acres in size with a focus on forest restoration.

Project locations on map are approximate. Agencies reported no projects in Alaska or Hawaii.

The amounts spent by the three agencies on these projects varied significantly. Most expenditures were for Forest Service projects; since 2010, the CFLRP fund has provided \$155 million for the 23 Forest Service projects in the program. As noted, that amount was intended to

fund up to 50 percent of the cost of carrying out and monitoring projects, with the remainder coming from other Forest Service programs, funds provided by partner groups, or in-kind contributions. Because the Forest Service was still analyzing the most recent project information at the time of our report, it could not provide current information on the amount it had expended on projects beyond the \$155 million in program funds. In addition, the Forest Service had spent an estimated \$2.8 million for its Black Hills Mountain Pine Beetle Response project, which is being conducted outside of the CFLRP. BLM and NPS project managers estimated expenditures of about \$11.1 million and \$1.2 million, respectively, on their landscape-scale projects over the past 10 years.²⁵

Projects involved a variety of objectives and treatment methods. For example, timber sales were a part of many projects, helping to restore forests to their natural condition by removing uncharacteristically dense vegetation. The sale of timber under stewardship contracts, under which contractors can take the value of timber or other materials they remove from the forest as full or partial payment for the restoration work they do,²⁶ provided reimbursement to contractors for conducting other restoration activities, such as thinning smaller diameter trees of lesser value and hauling the woody materials out of the forest to reduce the threat of severe wildfire or improve wildlife habitat. Figure 2 shows an example of forest condition in New Mexico before and after thinning. Figure 3 shows an example of a project in Arizona where, according to project managers, thinning trees helped prevent a wildfire from reaching a residential area.

²⁵For BLM, this estimate includes seven of the eight landscape-scale projects discussed in our review. Agency officials did not provide an estimate for the remaining project.

²⁶GAO has previously reported on stewardship contracting. See, for example, GAO, *Federal Land Management: Use of Stewardship Contracting Is Increasing, but Agencies Could Benefit from Better Data and Contracting Strategies*, [GAO-09-23](#) (Washington, D.C.: Nov. 13, 2008).

Figure 2: Forest Condition Before and After Thinning in New Mexico



Source: GAO. | GAO-15-398

The picture on the left shows the forest condition before thinning of smaller diameter trees. The picture on the right shows the forest condition after thinning, which, according to project managers, is the desired condition for this type of forest.

Figure 3: The Effect of Tree Thinning on Wildfire Containment in Arizona



Source: GAO. | GAO-15-398

The area to the right of the road was thinned, while the area to the left of the road was not. Project officials told us the thinning helped prevent a wildfire from crossing the road and reaching a nearby community.

Prescribed burning was often used to restore the forest understory to its natural condition, with burning sometimes preceded by other treatments; for example, one project in Florida included mechanically chopping and mulching overgrown palmetto plants before burning the area. Some projects attempted to restore forest habitat for wildlife by, for example, replacing road culverts to improve fish passage in streams, and by removing nonnative tree species to allow the restoration of native tree species that provide important habitat for certain bird species. Activities to restore watershed health included improving roads and trails to reduce erosion that causes sedimentation in streams, modifying areas damaged by water runoff to mitigate erosion, and removing invasive plant species from riparian areas.

Agencies Determine Scope Based on Project-Specific Factors Such as Restoration Needs and Natural Boundaries

The project managers we spoke with at each agency told us that they determined the scope of their individual projects, such as the project area, treatment objectives, and stakeholders involved, based on a variety of factors unique to each project. The project managers most commonly told us that they considered factors such as the unique ecological composition of the land, natural boundaries and barriers found in the landscape, the availability and interest of other land managers as well as other stakeholders, and the efficiencies that could be gained from increasing project size. These project managers told us they broadly distinguished their ongoing landscape-scale projects from traditional forest restoration projects based on the larger number of acres involved, multiple objectives being addressed with multiple types of treatment, and collaborative restoration planning and implementation involving a diverse mixture of land managers and stakeholders.

All 20 of the landscape-scale project managers we spoke with told us the unique ecological composition of the landscape was an important factor in determining the project scope. With this factor in mind, project managers aimed to restore large segments of—or an entire—ecosystem having relatively uniform restoration needs, rather than “committing random acts of restoration” as some project managers put it. Project boundaries were generally drawn across jurisdictional boundaries because project managers sought to include features such as a contiguous forest of a certain type, the habitat of a certain plant or animal species, or the entirety of a watershed needing restoration. In addition, project boundaries were sometimes drawn to include the entirety of a landscape that was in similar condition—for example, to encompass an area where all trees were susceptible to attack by an invasive insect, or where the forest had similar fuel conditions to be treated.

Most of the project managers also told us they took natural boundaries and barriers into account when determining the scope of projects. For example, barriers such as the steepness or rockiness of terrain may be taken into account in determining project scope, if these factors prevent entry to perform treatments in parts of the landscape. Project managers also told us they considered man-made barriers such as roads and highways that affect landscape management. For example, they take into consideration where smoke from prescribed fires may be hazardous to highway traffic and communities, or where roads in the forest may be helpful in controlling fires.

Most project managers we spoke with told us the availability and interest of other land managers to participate in their projects was also a key factor in determining project scope, so that restoration could occur across as much of the landscape as possible regardless of land ownership. Project managers told us it was important to have the support and participation of other federal agency land managers, state land managers, and tribal, private, and nongovernmental organization landowners across the landscape. These project managers told us that involving land managers and owners in the scoping process was beneficial because they contributed knowledge of the landscape and its restoration needs and in doing so laid the groundwork for carrying out joint restoration activities, such as concurrently conducting prescribed burns across the boundaries of federal, state, or private land. One BLM project manager told us that the scope of his project was determined by bringing in all the interested land managers and owners within the landscape, tacking a map onto the wall, and having each of them mark their areas of concern on the map.

Similarly, a majority of the landscape-scale project managers we spoke with told us that the availability and interest of additional stakeholders (other than land managers) to participate in the project was a scoping factor. The managers told us that the involvement of national, state, and local interest groups—ranging from the National Wild Turkey Federation to a community group concerned about invasive plant species blocking access to fishing streams—helps identify the wide variety of concerns across the landscape and focus on common priorities. In some cases, managers told us that they were approached by long-standing collaborative groups proposing that the federal agency conduct restoration at the landscape scale—that is, the stakeholders saw the need for the agency to adopt landscape-scale restoration and urged agency officials to do so in concert with them. With limited budgets, landscape projects also benefit from planning and implementation

expertise that stakeholders bring to the table, such as ecosystem research and monitoring assistance from university stakeholders.

A majority of project managers we spoke with told us they also considered potential efficiencies from working at a larger scale in determining the scope of the projects, with the expectation that the larger scale would reduce the cost per acre of restoration. For example, some managers told us the cost per acre of contracts for mechanical thinning of trees generally goes down as the number of contract acres goes up; subsequent to thinning, managers could use prescribed fire more effectively, which they told us is generally the most economical treatment available. In addition, some managers told us that, for projects where multiple applications of prescribed burning were necessary, they expected prescribed burning costs to decline with each successive application because progressively smaller fire crews would be needed to control them. Managers further told us that the larger scope and longer timeline of landscape-scale projects are conducive to the use of stewardship contracting. Some managers also told us that scoping projects so that they can be covered by a single NEPA environmental analysis can avoid the need for multiple smaller analyses, potentially saving time and money.

Other scoping factors mentioned by some managers included the staff, funding, and time frame available for implementing projects. Some managers, for example, noted that talented and knowledgeable staff was needed to support large and complex projects, so they scoped projects to fit the number and skills of the available staff. For the Forest Service's CFLRP projects, project managers told us that the program funding allowed them to scope landscape-scale projects to accelerate the rate of restoration beyond what they had been historically achieving with smaller projects. BLM project managers also noted that, starting in 2001, funding to implement the National Fire Plan helped them to accelerate restoration and hire staff to do the work.²⁷ Regarding time frames, some managers told us that the need to work quickly and with flexibility across the landscape led them to scope the project at the landscape scale—for example, to stay ahead of a fast-moving insect infestation. However, managers more often told us that a time frame was largely irrelevant to

²⁷Created in response to severe wildfires in 2000, the National Fire Plan is a combination of federal strategies, plans, projects, and other activities, funded with substantial new Congressional appropriations for wildland fire management beginning in fiscal year 2001.

their projects because forest restoration will be ongoing for many years and the results will need to be maintained in perpetuity.

Agencies Generally Track the Progress of Restoration Project Activities, but It Is Too Early to Assess Long-Term Results

The agencies generally track the progress of individual landscape-scale restoration projects by collecting information on ongoing activities such as acres of hazardous fuels reduced, volume of timber harvested, and miles of stream improved or restored. The agencies have also begun collecting information on their projects' long-term restoration results. However, none of the agencies has undertaken a systematic evaluation of the projects' results, in large part because most of the projects were only recently begun, and their results will not be known for many years.

The agencies track information in various ways. In the Forest Service, for each CFLRP project, the agency gathers information on the progress of each of the restoration activities that the project managers proposed to conduct when the project was initially selected for funding under the program.²⁸ This information is included in annual reports to program management, which also include information on the amount and source of funds expended; actions taken to reduce forest fire hazard; estimated jobs created by the project and other benefits to communities; the status of the multiparty monitoring, evaluation, and accountability process; the total acres treated for restoration each year; and the cumulative number of acres treated during the life of the project. Program officials also obtained information about project activities through other mechanisms, such as a monthly teleconference with project managers and visits to 12 of the 23 CFLRP projects, which were conducted during fiscal years 2013 and 2014.

CFLRP management officials told us that they use information in the projects' annual activity reports—which are posted to the program's public website—to inform stakeholders and Congress about the projects'

²⁸In establishing the program, the Forest Service requested detailed landscape-scale forest restoration project proposals from its regions in 2010 and 2012. The proposals were reviewed by an advisory panel, and the Forest Service Chief approved CFLRP funding for 10 projects in 2010 and an additional 13 projects in 2012 based on the panel's recommendations. As noted, the Forest Service is also conducting one landscape-scale project outside of the CFLRP.

progress, and to make program management and budget decisions.²⁹ Program officials stated that information from all of these sources will be used to develop a report to Congress on the CFLRP projects for delivery in 2015, as required in the program's authorizing legislation.³⁰ CFLRP officials told us that information on project activities has seldom been used to adjust the scope or funding of the projects because officials want the projects to be accountable for what they originally proposed to accomplish. However, they have allowed the scope of projects to be altered in rare cases due to the effects of natural events that were beyond the project's control; for example, the scope of one project was reduced to account for a wildfire that destroyed planned treatments areas. They have also adjusted the delivery of project funding; in one case, for example, a project was not ready to spend money it had requested, and another project needed more funding than originally estimated for a particular activity, so funding was adjusted between the projects.

Because their landscape-scale forest restoration projects are not part of a program like the Forest Service's CFLRP projects, BLM and NPS have not centrally tracked detailed information about their landscape-scale projects; rather, the agencies generally report information on landscape-scale projects' restoration activities into standard agency databases just as they do any other agency project. More detailed project information is available from decentralized sources, such as the individual BLM district and field offices or NPS units conducting the projects. Similar to the Forest Service, BLM and NPS officials told us that project activity information is generally used to make budgeting decisions, identify project needs, track internal performance measures, and provide information to Congress and the public.

²⁹The CFLRP has provided Congress with a brief project status report for each year of the program. In addition, in 2011 and 2012, the CFLRP Steering Committee, composed of representatives from key national forest restoration stakeholders, used the project information to create a program summary with information on each project to further inform Congress and the public on the program's progress.

³⁰The CFLRP legislation requires that not later than 5 years after the first fiscal year in which funding is made available to carry out ecological restoration projects under the program, and every 5 years thereafter, the Secretary of Agriculture, in consultation with the Secretary of the Interior, shall submit a report on the program, including an assessment of whether, and to what extent, the program is fulfilling the purposes of the legislation.

The projects vary considerably in the progress they have made in conducting restoration activities. Some projects are ahead of schedule in terms of the acreage they proposed to treat. For example, on the Forest Service's Southern Blues Restoration Coalition project in Oregon, project managers told us that they treated 70,000 acres by the end of fiscal year 2014, exceeding the 40,000 acres envisioned in the initial project plan. Given the rapid progress the project had made, project officials proposed doubling the overall area to be treated.³¹ In contrast, some projects face challenges in conducting planned treatments. For example, according to the fiscal year 2013 annual report for the Forest Service's Four Forest Restoration Initiative in Arizona, the project was about 1 year behind the schedule outlined its 2010 proposal due to the lack of manufacturing capacity to process trees removed from the project area. When we met with the project managers in October 2014, they told us that a 300,000-acre stewardship contract had been awarded in May 2012, but work under the contract was progressing more slowly than expected; while task orders had been issued for treatment of 30,000 of the 300,000 acres under contract, only 3,000 acres had been treated as of October 2014. Overall, the Forest Service estimates that its CFLRP projects have treated about 1.6 million acres from fiscal year 2011 through the end of fiscal year 2014, with some of those acres receiving multiple treatments during that time frame.³²

In addition to tracking ongoing restoration activities, all of the projects were conducting or planning to conduct monitoring efforts to collect information on their long-term restoration results. The CFLRP legislation requires the Forest Service to use a multiparty monitoring, evaluation, and accountability process to assess the positive or negative ecological, social, and economic effects of CFLRP projects for not less than 15 years after project implementation commenced. For the Forest Service's Black Hills Mountain Pine Beetle Response, an annual monitoring and evaluation report including information on the effectiveness of treatments is required under the record of decision for the project's NEPA analysis. Because all of these projects were recently initiated, Forest Service

³¹At the time of our review, agency officials had not made a decision on this proposal.

³²At the time of our review, the Forest Service had not completed its analysis of data reported by individual projects, and therefore could provide an estimate of total acres treated under the program, but could not provide the acres treated by each individual project.

monitoring efforts were either under development or had been in place for a relatively short period of time. NPS and BLM project managers also told us that they are monitoring their restoration efforts to varying extents, in some cases depending on the availability of funding and staff to do so. For example, some projects have a formal monitoring process to study the results of restoration activities over time, while other projects have more informal efforts that look at treatment results on an ad hoc basis.

Project managers told us their monitoring efforts took various forms, such as post-prescribed burn monitoring to determine effects on fuel reduction, watershed monitoring for ecological effects, habitat monitoring for effects on wildlife, and socioeconomic monitoring for effects on communities. For example, a BLM project manager told us that plots were selected for monitoring, and as they were successively treated with thinning and prescribed burns, photos were taken from a fixed position to monitor whether the plots were making progress toward the desired condition established in Natural Resources Conservation Service reference guidance. Another example of monitoring is a CFLRP project that contracted for a study of the economic impact of the project on the three adjacent counties, the state, and the nation.

None of the agencies has undertaken a systematic evaluation of the results of its landscape-scale restoration activities—that is, the extent to which projects have achieved their restoration objectives—in large part because the long-term effects of landscape-scale projects may not be known for many years. In the meantime, some of the monitoring information being collected is used as baseline data for future effectiveness assessments, as a feedback mechanism to adjust treatment methods, or to provide project managers with information to determine the desired conditions they hope to achieve through restoration. Nevertheless, some project managers told us that they have already observed some positive effects, such as increasing populations of endangered birds where habitat is restored, enhanced ability to suppress wildfires after prescribed burning, and decreased sedimentation into streams where road improvements have been made.

Agencies Have Experienced Successes and Challenges in Conducting Projects, but Could Benefit from Adjusting Their Information-Sharing Strategies

Agency officials and stakeholders we spoke with told us that they experienced a variety of successes and challenges that affected the time, costs, and difficulty of planning and conducting landscape-scale forest restoration projects. Successes included increasing the pace and scale of restoration, achieving efficiencies in project costs and timelines, and improving relationships with stakeholders. Challenges included responding to litigation, sustaining stakeholder participation over time, and obtaining funds for planning. The Forest Service, BLM, and NPS have each established mechanisms through which successes and challenges are shared across their landscape-scale projects, but nearly all project managers and a number of stakeholders told us that project managers would benefit from additional sharing of information across projects, and a number of managers told us existing information-sharing mechanisms were not always the most useful way to share information.

Successes Include Increasing the Pace and Scale of Restoration, Achieving Project Cost and Time Efficiencies, and Improving Relationships with Stakeholders

Agency officials and project stakeholders told us that they have experienced a variety of successes associated with landscape-scale forest restoration. Successes most commonly identified included the following:

- **Increasing the pace and scale of restoration.** Several Forest Service project managers told us that through the CFLRP they have been able to increase the pace and scale of on-the-ground restoration progress by orders of magnitude by planning and implementing projects at a larger scale. For example, project managers from one CFLRP project told us that, within 2 years of starting the project, the agency had tripled the number of restoration activities and NEPA analyses that it had previously completed in the area through smaller-scale restoration projects, with each NEPA analysis for the project covering 40,000 acres or more, rather than the 5,000- to 10,000-acre analyses they did for previous smaller-scale projects. Similarly, program managers from another CLFRP project told us that, by working at a landscape scale, they were able to accelerate the pace of the project, increasing the acres treated with prescribed burning from an annual average of about 25,000 acres to about 50,000 acres in both 2011 and 2012, using CFLRP funding to add staff to the timber and fire programs.
- **Achieving cost and time efficiencies.** Several agency officials told us that working at a larger scale enabled them to get more planning and implementation done with fewer resources. For example, Forest Service project managers at a project we visited told us that they paid

contractors \$180 per acre for mechanical thinning in the forest rather than the \$500 or \$600 per acre they had paid in the past because of the larger scale of the contract area. Similarly, Forest Service project managers from another project we visited said that, after about 4 years of planning and NEPA analysis, 1 million acres will be approved for treatment, in contrast to a typical analysis size of 20,000 acres. They estimated that it would take 50 years to get 1 million acres of NEPA analyses approved in units of 20,000 acres at a time, making the time and cost savings associated with planning at the landscape scale significant.

- **Improving relationships with stakeholders.** Many project managers and stakeholders told us that collaborative landscape-scale restoration has improved relationships between the federal agencies and entities such as environmental groups, private landowners, and the public. According to these project managers, improved relationships allowed the federal agencies to identify areas of agreement, increase capacity by leveraging resources with stakeholders, and reduce the amount of litigation from objections to project activities. Specifically,
 - Many project managers and stakeholders told us that working in close collaboration to plan projects had led to the identification of “zones of agreement,” or areas of common ground and consensus on restoration treatment methods or objectives. For example, project managers cited restoration of riparian areas (narrow vegetated areas adjoining rivers, streams, and lakes) and prescribed burning in wildland-urban interface areas as zones of agreement for their respective projects. Officials said that focusing on these zones of agreement allows them to prioritize actions with agreed-upon treatments rather than spending time on resource issues where there is disagreement with stakeholders. On a few projects, the collaborative groups have documented these zones of agreement in formal agreements that can be applied across multiple projects of a similar type, allowing the agencies to accelerate restoration without having to renegotiate treatments or objectives for similar projects.

- Some officials told us that collaboration with stakeholder groups has given them increased capacity by leveraging resources through in-kind and monetary contributions.³³ For example, CFLRP project managers said that stakeholder groups provide increased capacity through in-kind contributions such as species-specific expertise or monitoring assistance, and for implementation of work on the ground through in-kind contributions such as volunteers removing weeds and invasive species. In addition, collaboration can attract nonfederal funding; for example, a CFLRP project collaborative group applied for and received \$200,000 from a private corporation and another \$100,000 from a nonprofit foundation for the project based on its strong record of collaborative success.
- Some agency officials and project stakeholders told us that collaboration on projects can help reduce the likelihood of litigation—which some said can slow down or halt restoration projects. Other project managers explained that collaboration provides an opportunity to build trust between the agency and stakeholders and identify areas of contention during project planning instead of during litigation. For example, documentation from a CFLRP project showed that early collaboration and relationship building helped officials complete three large-scale NEPA analyses in under 12 months, with few objections and no litigation resulting. According to documentation, prior to this instance it took over 24 months to complete a single NEPA analysis, and every analysis had been appealed. For another CFLRP project, the strong relationship that was developed led project stakeholders to file briefs with federal district and appellate courts in support of the agency’s proposed actions when the project was challenged by other groups. The district court ultimately rejected the challenge, and the case is now on appeal. Project managers and an official from a national stakeholder group explained that this level of support was unheard of in prior decades when relationships between federal agencies and stakeholders were largely adversarial.

³³The CFLRP legislation provides that no more than 50 percent of the cost of carrying out and monitoring ecological restoration treatments under the act can come from the restoration fund.

- **Prioritizing treatments.** Some officials and stakeholders we spoke with highlighted successes resulting from the ability to address forest landscapes as a whole to prioritize needs, and the flexibility to apply treatments when and where they are needed. For example, CFLRP project managers at a project we visited told us that the CFLRP provided the first opportunity to consider the entire scope of a landscape, not just a piece of it. In working at such a large scale, officials said they are able to prioritize restoration across the landscape and implement it when and where it is most appropriate. Similarly, BLM project managers said that the landscape-scale approach to restoration has allowed them the flexibility to apply the treatment that they anticipate will be most effective based on the conditions they encounter on the ground without having to do additional planning.

Challenges Include Responding to Litigation, Sustaining Stakeholder Participation, and Obtaining Funds for Planning

Agency officials and project stakeholders told us that they have also experienced a variety of challenges associated with landscape-scale forest restoration. Challenges that were most commonly identified included the following:

- **Responding to litigation.** While some agency officials told us that collaboration on landscape-scale projects has helped them reduce the likelihood of litigation, some officials also said that doing environmental analysis at a landscape scale can make projects a target for litigation due to their size and complexity. Agency officials and stakeholders told us that responding to litigation delays or limits restoration activities, adds uncertainty to the project, discourages collaborators from participating in projects, and strains agency and stakeholder resources. Some stakeholders we met with expressed particular frustration with project litigation by groups that were invited to collaborate but opted not to. Some projects experienced lawsuits even with significant efforts at outreach and collaboration; for example, project managers from two regions told us that their CFLRP projects faced litigation despite robust collaborative efforts by the Forest Service. A Forest Service report on the CFLRP described litigation as having a “gridlock” effect on the projects, and officials from one project told us that three recent decisions associated with the project were litigated, with one lawsuit taking more than 3 years to settle. Agency officials also said that the anticipation of litigation can lead officials to prepare more extensive NEPA analyses than they believe would have otherwise been necessary, a time-consuming and resource-intensive exercise.

- **Sustaining stakeholder participation.** As noted previously, project managers and stakeholders told us that relationships have been enhanced through collaboration, but some project managers and stakeholders told us that it is difficult for voluntary collaborators to sustain the cost and time commitment of participating in lengthy restoration projects. Agency officials and stakeholders said that with limited monetary and staff resources, stakeholders become fatigued from participating in the many meetings and activities associated with the collaborative process, particularly when projects span many years and, as a result it is challenging to keep them engaged. For example, a project stakeholder in Montana said that it is a major challenge for her organization to sustain participation in the CFLRP project given the time and cost of making a 160-mile round trip to attend monthly collaborative meetings.
- **Obtaining planning funds.** Several Forest Service project managers told us that obtaining funding for planning, such as NEPA analysis, is a challenge. CFLRP officials told us that the legislation authorizing the program does not allow program funds to be used for planning. To be selected and funded under the program initially, the projects were required to have substantially completed planning, including having approved NEPA decisions in place that would allow program funding to be used for project implementation. In many cases, however, projects selected for the program had completed NEPA analyses for only small portions of the project area, and needed additional NEPA analyses to move forward. Project managers and stakeholders told us that as the projects have progressed, and work has been completed in areas covered under previously completed NEPA analyses, new analyses must be completed before work can commence in other areas. They told us that because CFLRP funds are not available for these new analyses, it can be difficult to obtain funding for additional planning. As a result, projects may be stalled while waiting for the analyses to be completed.
- **Air quality concerns.** Some project managers told us it is challenging to implement prescribed burns—one of the primary methods for forest landscape restoration—because the smoke it creates raises air quality and safety concerns. In addition to limitations imposed by weather and concerns about firefighter safety, officials told us that they must also consider state air quality standards and public perceptions about smoke when planning and conducting prescribed burns. For example, in New Mexico, CFLRP project managers told us that events such as marathons and a hot air balloon festival occur in the fall when conditions are best for prescribed

burning, limiting how much they can burn because public acceptance of smoke during those times is very low.

- **Biomass utilization.** Many project managers we spoke with said they face challenges related to biomass utilization, with some citing the low value of the woody biomass resulting from forest thinning activities, which some said results in a high treatment cost per acre. Others noted difficulties in finding contractors willing to do the work, as well as building the market and industry capacity for biomass use that is needed to sustain forest restoration.³⁴ For example, in the Southwest, several project managers told us that as mills have gone out of business over the past decade, biomass taken out of the forest has to be hauled further away to be processed, raising the cost per acre of treatment. In addition, they said because markets for commercial biomass products such as pellets, mulch, firewood, and animal bedding are limited, it is of little economic value to stewardship contractors, who could otherwise offset the agency's costs of restoration by taking the value of the biomass as full or partial payment for their work. Project managers told us that it is challenging to find long-term contractors that can process the biomass generated by their projects, which are needed to sustain restoration.
- **Staff resources and turnover at BLM and Forest Service.** Limited staff resources and turnover are also challenges, according to several agency officials and stakeholders. Some said this is particularly challenging given the lengthy time frames of landscape-scale projects. BLM and Forest Service officials cited a shortage of staff for a variety of key activities, such as data gathering, preparing timber sales, or NEPA analysis development. Other project managers and stakeholders said that agency staff turnover has caused delays in the NEPA analysis process and affected continuity in working with stakeholders as new staff take time to learn about the project and

³⁴GAO has previously found that that woody biomass use is hampered by the high costs of harvesting and transporting it from forests and the difficulty in obtaining a reliable supply in some areas. In addition, in some areas an exacerbating factor to biomass utilization is the absence of local infrastructure to process and a market with large enough demand for the volume of biomass being removed from the forests. See GAO, *Natural Resources: Woody Biomass Users' Experiences Offer Insights for Government Efforts Aimed at Promoting Its Use*, [GAO-06-336](#) (Washington, D.C.: Mar. 22, 2006) and *Natural Resources: Federal Agencies Are Engaged in Various Efforts to Promote the Utilization of Woody Biomass, but Significant Obstacles to Its Use Remain*, [GAO-05-373](#) (Washington, D.C.: May 13, 2005).

build new relationships with stakeholders, causing projects to lose momentum. In some cases, according to officials and stakeholders, as new agency staff are assigned to projects, it can disrupt the continuity of planning and relationships with stakeholder groups.

- **Adapting to the landscape-scale approach.** Several project managers and stakeholders said that planning, implementing, or managing projects at a large scale is a challenging cultural change for federal agencies and stakeholders. For example, several stakeholders and agency officials told us that federal agencies have traditionally done small-scale, site-specific NEPA analyses for projects. As a result, some staff may be reluctant to do project analyses at a larger scale because it represents a change in the way of doing business for agencies and stakeholders. It also requires adaptation by regulatory agency officials such as those at FWS, who provide consultation on the effects of restoration activities on endangered species. Agency officials and stakeholders we spoke with told us that the landscape approach has caused delays in their interactions with regulatory agency staff who are unaccustomed to that approach for NEPA analysis.
- **Jurisdictional issues.** Agency officials said that they are aiming for restoration at the landscape scale, including land from all ownerships, but coordinating implementation on all these lands is challenging. One Forest Service official, for example, noted the difficulty of obtaining agreement across jurisdictions on priorities and treatments that will be effective at the landscape scale. Funding cross-jurisdictional projects may also be an issue; for example, a researcher who has studied CFLRP told us that, unless stakeholders cobble together grant or state funding to work on state and private lands adjoining national forests, those lands cannot be incorporated into a project because the CFLRP legislation stipulates that funded treatments generally must occur on federal lands.³⁵ If other lands are not included in landscape-scale projects, some officials told us, their restoration efforts may be less effective. For example, NPS project officials said that, while they have done restoration burning on national park lands, adjoining Forest Service lands have not been restored, which they said is a barrier to full landscape restoration. Likewise, the CFLRP researcher we spoke

³⁵Under the CFLRP legislation, a project involving actions on nonfederal lands is only eligible for selection if the landowner provides evidence that it intends to participate in, and provide appropriate funding to carry out, these actions.

with said that landscape restoration involving an invasive species cannot be achieved if a species is eradicated on Forest Service lands but it is not treated on adjacent lands.

Agencies Could Benefit from Adjusting their Strategies for Sharing Information across Projects

Lessons that project managers have learned through the successes and challenges of their restoration projects—for example, methods used to achieve project cost and time efficiencies, or strategies used to overcome challenges in sustaining stakeholder participation—have yielded information about specific techniques developed for landscape-scale projects. For example, some CFLRP project managers told us they are using newly developed models for classifying hazardous fuels in order to improve landscape-scale fuel reduction efforts, wildlife-focused document templates for NEPA analysis, and agreement documents with their collaborative partners that can be applied to multiple projects. The Forest Service, BLM, and NPS use various mechanisms for sharing such information among projects, but nearly all project managers we interviewed, as well as representatives from several national stakeholder groups, told us that project managers would benefit from more information about landscape-scale restoration, and a number of project managers told us existing information-sharing mechanisms were not always the most useful way to share information. By assessing project managers' information needs and the most effective and efficient mechanisms for sharing the information, and then, as appropriate, adjusting their strategies for sharing information, the agencies may enhance the effectiveness and efficiency of their landscape-scale projects.

This is consistent with the Standards for Internal Control in the Federal Government; the Information and Communication standard cites the importance of effective communications within agencies, with information flowing down, across, and up the organization in a form and time frame that enables personnel to effectively and efficiently achieve agency objectives, as well as communicating with, and obtaining information from external stakeholders.³⁶ In previous reports, we have found that sharing information is important. In January 2002, for example, we found that

³⁶GAO, *Internal Control: Standards for Internal Control in the Federal Government*, GAO/AIMD-00-21.3.1 (Washington, D.C.: Nov. 1, 1999).

successful industry and government organizations overcame barriers by making a strong management commitment to sharing information.³⁷

The agencies we reviewed use numerous mechanisms to share information within their agencies. Forest Service officials, for example, told us that information is shared through webinars on restoration topics such as reporting on ecological outcomes, a website for posting success stories on topics such as reestablishing plant and animal species, and a monthly conference call for landscape-scale project managers across the agency to discuss topics such as project accomplishments and challenges. In addition, a small number of meetings have been held in which project managers gather to exchange information on such topics in person. Headquarters officials told us that in January 2015 they began discussing the possibility of holding a national meeting within the year, which would be hosted by the National Forest Foundation.³⁸

Both BLM and NPS also share information about the landscape-scale projects they are conducting. For example, BLM officials told us that the top forestry officials for each BLM state office meet in person annually, as travel funds allow, which provides an opportunity to share landscape-scale forest restoration successes and challenges and to document what has been learned through the projects. BLM also maintains a website where such information is shared across projects. NPS officials said that information is shared within and outside of the agency regarding the agency's two landscape-scale projects.³⁹ For example, officials said they share information through mechanisms including an annual newsletter relating to fire ecology that shares success stories and lessons learned; a regional fuel reduction advisory team that disseminates information across the parks; a regional consortium for fire-related research; and other mechanisms, such as conferences and telephone calls.

³⁷GAO, *NASA: Better Mechanisms Needed for Sharing Lessons Learned*, [GAO-02-195](#) (Washington, D.C.: Jan. 30, 2002).

³⁸The National Forest Foundation is a nonprofit partner of the Forest Service that conducts national programs and community-based programs that aim to promote the health and public enjoyment of the national forest system. The organization has organized a series of webinars and in-person meetings relevant to landscape-scale forest restoration.

³⁹NPS's restoration objectives are primarily being implemented through prescribed burning, a topic area which officials told us has a strong communication network for practitioners through which information on lessons learned is shared.

Even with these various information-sharing mechanisms, 16 of the 20 project managers we interviewed, along with five of the eight national stakeholders we interviewed, told us that information sharing on the part of the agencies is not sufficient and that project managers would benefit from additional sharing of information, strategies, or lessons learned. For example, some managers told us that mechanisms such as monthly telephone calls do not always provide information relevant to their projects or sufficient opportunity to share information across projects. Some told us that telephone calls and webinars do not have the personal connections that are conducive to frank discussions about mistakes made or failures experienced in conducting landscape-scale projects. In addition, project managers from three projects said that, even with the agencies' information-sharing mechanisms, sharing information across projects is primarily limited to informal or ad hoc discussions between project managers about their experiences. However, we have previously found that by using informal coordination mechanisms, agencies may rely on individual officials to ensure effective collaboration and that this informal collaboration could end once personnel move to their next assignments.⁴⁰

Project managers varied in the type of additional information they told us they would benefit from, as well as the form in which they believed the information would be most effectively delivered. Regarding the type of information, project managers cited topic areas about which they believed more information would be beneficial, including lessons learned in preparing landscape-scale monitoring plans, working with project collaborators, and conducting educational outreach to communities. In addition, some project managers and stakeholders supported information sharing across all projects, while others said there is limited benefit to information sharing at a national level because of the variation in ecosystems across projects, which can involve varying forest types and animal species, thereby limiting the applicability of the information. These project managers generally emphasized the value of information sharing at the regional level, where conditions and objectives are likely to be similar across projects and, therefore, discussions are more likely to focus on information relevant to their projects.

⁴⁰GAO, *National Security: Key Challenges and Solutions to Strengthen Interagency Collaboration*, [GAO-10-822T](#) (Washington, D.C.: June 9, 2010).

Managers also provided various perspectives on the most useful mechanism for sharing information. A few project managers we interviewed said that webinars on landscape-scale forest restoration are useful and facilitate information sharing, but, as noted, others said that they did not always find these mechanisms of communication useful. Several project managers and stakeholders told us that meeting in person is the most effective way to share information on landscape-scale restoration efforts, stating that people are more likely to freely discuss challenges face-to-face, and enduring relationships can be facilitated through in-person interactions. For example, some said in-person meetings can incorporate educational field visits to project sites, which some project managers said are highly valuable for communicating information such as treatment methods and progress toward restoration.

Given the variety of information topics and mechanisms project managers said they would find useful, the agencies may benefit from identifying their project managers' information needs and taking steps to facilitate information sharing that would further benefit landscape-scale project managers. Headquarters officials from all three agencies told us that they had not taken steps to assess their project managers' information needs or the mechanisms that would be most beneficial for sharing such information. The Forest Service has asked project managers for their input on topics for webinars. A BLM headquarters official said that the agency has left it to the discretion of its state offices to determine the information needs of its project managers, and an NPS official told us that agency has not assessed its project managers' information needs because it treats landscape-scale projects the same as other restoration projects. By taking steps to identify the information-sharing needs of their project managers and the mechanisms most useful for sharing information, and, based on the results, adjusting their information-sharing strategies, as appropriate, the agencies may better position project managers within and across the agencies to take advantage of the collective knowledge and expertise gained through project implementation.

Agencies Are Taking Steps Aimed at Increasing the Efficiency of Their NEPA Processes but It Is Too Early to Determine Their Effects

Agency officials and project managers told us they are taking steps aimed at increasing the efficiency of their NEPA processes for landscape-scale projects by updating agency NEPA guidance and implementing and assessing a variety of approaches to NEPA. The Forest Service is conducting efforts in conjunction with CEQ aimed at increasing landscape-scale NEPA efficiency, while BLM has issued guidance specific to landscape-scale NEPA analysis. NPS officials told us that the agency is currently revising its NEPA handbook to improve the efficiency of all agency NEPA reviews, including those for landscape-scale projects.

The Forest Service has initiated two efforts being led by the Ecosystem Management Coordination group aimed at increasing landscape-scale NEPA efficiency. First, in close coordination with CEQ, the Forest Service has set up three teams to analyze three potential NEPA approaches: (1) adaptive management, which involves learning from the results of past actions to update knowledge and adjust management actions in the future;⁴¹ (2) focused environmental assessments, which are narrowly focused and are typically 15 to 20 pages instead of hundreds; and (3) iterative EISs, which allow for the proposed action and alternatives to be modified during the drafting of the document. Second, the group is studying 13 landscape-scale projects for ways to improve the efficiency of environmental analysis for landscape restoration efforts.⁴² The group aims to identify existing guidance, pitfalls, and lessons learned from doing landscape-scale environmental analyses thus far. A Forest Service headquarters official said the agency intends to use these projects as “showcases” and as learning tools for other projects to emulate. The official also said that, eventually, lessons learned from these projects will be integrated into guidance and policy and will be used to develop webinars and formal training for staff.

The Forest Service also noted other steps it was taking to help increase the efficiency of the NEPA process, including steps that are applicable to

⁴¹GAO addressed adaptive management in detail in GAO, *Yellowstone Bison: Interagency Plan and Agencies' Management Need Improvement to Better Address Bison-Cattle Brucellosis Controversy*, [GAO-08-291](#) (Washington D.C.: Mar. 7, 2008).

⁴²Eleven of those pilots are newly initiated projects that are going through the NEPA process prior to implementation of work on the ground and are, therefore, not included in our count of 34 ongoing landscape-scale projects. The remaining two projects are ongoing CFLRP projects that need new NEPA analyses to implement planned work and are included in our review.

landscape-scale projects. In a report titled *Increasing the Pace of Restoration and Job Creation on Our National Forests*, the agency stated that it was working with CEQ to (1) increase the use of landscape-scale NEPA approaches and flexible EISs, such as programmatic EISs that are typically regional in scope, often cross jurisdictional boundaries, and include multiple ecosystems; (2) increase the use of and propose new categorical exclusions for soil and water conservation and protection; and (3) develop a strategy to maximize restoration in the event of a major fire by using the most appropriate type of NEPA review for the situation.⁴³ According to the Forest Service's report, these changes help improve the efficiency of the NEPA process to speed the pace of forest restoration. For example, Forest Service documentation describes that using a flexible EIS process, in which a programmatic environmental analysis is completed across a large area, provides the ability to act quickly when unexpected disturbance events occur—such as insects, disease, or fire—without conducting additional environmental reviews, and allows for expedited subsequent environmental reviews in remaining areas.

BLM has issued guidance specific to landscape-scale NEPA analysis and has overall guidance on NEPA analysis that includes information that is applicable to landscape-scale projects. Specifically, in 2014, BLM issued an instructional memorandum describing how to incorporate landscape-scale and rapid ecoregional assessments into BLM land-use planning and project-level NEPA documents.⁴⁴ Rapid ecoregional assessments are used to examine, for example, ecological values, conditions, and trends within ecoregions, which are large, connected areas that have similar environmental characteristics and span administrative boundaries. According to BLM's website, ecoregions typically encompass areas much larger than those managed by individual BLM field offices.⁴⁵ Examples of ecoregions include the Sonoran Desert and the Colorado Plateau. With respect to NEPA, the memorandum encourages the use of landscape and rapid ecoregional assessments to communicate resource conditions,

⁴³Forest Service, *Increasing the Pace of Restoration and Job Creation on Our National Forests*, February 2012.

⁴⁴BLM, "Instruction Memorandum No. 2014-125: Incorporating Landscape Assessments into the Land Use Planning and Project Level Decision Making Process" (August 7, 2014).

⁴⁵BLM, Rapid Ecoregional Assessments, accessed December 16, 2014, http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas.html.

identify resource issues with the public, and develop an analysis of associated effects, among other applications.

In addition, BLM has updated its overall guidance on NEPA analysis to reflect some of CEQ's guidelines. Specifically, BLM's NEPA handbook provides procedural information that is broadly applicable to landscape-scale projects, such as using categorical exclusions and involving the public in NEPA decision making, but does not provide extensive guidance specifically for landscape-scale NEPA analysis.⁴⁶ In addition, BLM's land-use planning handbook provides guidance for preparing and maintaining land-use plans, as well as information on topics applicable to conducting landscape-scale projects and NEPA analyses, such as multijurisdictional planning, adaptive management, and collaborative planning.⁴⁷ These topics encompass some of the strategies highlighted by CEQ to achieve greater efficiency in NEPA analysis.

NPS officials told us the agency is currently in the process of revising its NEPA handbook,⁴⁸ and is developing new guidance that will incorporate the updated CEQ guidance. Officials said the NPS handbook revision is focused on improving the efficiency of all agency NEPA reviews, which would include landscape-scale planning. In addition to the agency's NEPA handbook, officials told us that NEPA training courses are available to staff, and NPS units can obtain assistance from regional NEPA specialists. Given the agency's limited number of landscape-scale projects to date, officials said that NPS is not planning to prepare NEPA guidance specific to landscape-scale analysis at this time.

In addition to using updated guidance, landscape-scale project managers we spoke with told us that they were taking a variety of approaches aimed at improving the efficiency of their NEPA processes, including the following:

- **Toolbox.** The toolbox approach involves using a NEPA analysis that identifies a suite of potential restoration treatments and gives the agency flexibility to apply different treatments depending on the

⁴⁶BLM, *National Environmental Policy Act Handbook H-1790-1* (Washington, D.C.: 2008).

⁴⁷BLM, *Land Use Planning Handbook H-1601-1* (Washington, D.C.: 2005).

⁴⁸NPS, *Director's Order #12, Conservation Planning, Environmental Impact Analysis and Decision Making* (Washington, D.C.: 2011).

conditions they encounter on the ground, rather than the more common approach of identifying in advance the specific treatments to use in each area. For example, officials from one project told us if the slope of an area to be treated is greater than anticipated, it might not be possible to treat the acres mechanically as planned; however, within the toolbox approach, officials would have the flexibility to treat those acres with prescribed fire instead. Officials told us that, without the toolbox approach, work in the area would not be able to proceed without redoing a portion of the NEPA analysis.

- **Design criteria.** The design criteria approach involves creating criteria for specific restoration activities that are applied at locations where that activity is being implemented. For example, for one project we reviewed, the criteria for stream bank restoration included using a diversity of native vegetation species, avoiding the use of surface fertilizer near the stream channel, and installing fencing to prevent livestock access. Design criteria can be applied to multiple subprojects, and can help eliminate the need for additional NEPA analysis each time the same action is taken.
- **Programmatic analysis and tiering.** Programmatic NEPA reviews address general environmental issues relating to broad decisions, such as those establishing policies, plans, programs, or suites of projects, which can effectively frame the scope of subsequent site and project specific federal actions.⁴⁹ The programmatic approach can be used for either environmental assessments or EISs, but it is typically associated with an EIS, while tiered documents are typically environmental assessments used to develop narrower, more site-specific analyses for specific actions that tier off of the initial analysis for subsequent decision making. Programmatic NEPA documents can, for example, provide a framework for repetitive actions across a large geographic area and multiple jurisdictions such as treating invasive species or prescribed burning—activities that have been included in landscape-scale projects. Tiering has the advantage of not revisiting information that has already been considered at the programmatic level, thereby expediting the preparation of the NEPA analysis.

⁴⁹A December 2014 CEQ memorandum provides guidance for the use of programmatic NEPA reviews. See CEQ, “Memorandum for Federal Departments and Agencies: Effective Use of Programmatic NEPA Reviews” (December 18, 2014).

Other approaches aimed at improving the efficiency of NEPA processes being used included involving stakeholders earlier in the process, preparing an analysis with only two alternatives—action or no action—and using categorical exclusions.⁵⁰ Some project managers we interviewed said that they are using multiple approaches within the same project to help increase efficiency. For example, Forest Service managers we interviewed from one project said that they have completed 12 of an anticipated 45 NEPA analyses, which include an aquatic environmental assessment that utilizes the design criteria approach and using categorical exclusions for large-scale vegetation treatments. Other project managers we interviewed said they are taking advantage of categorical exclusion authorities including those provided in the Agricultural Act of 2014 (2014 Farm Bill).⁵¹ Other categorical exclusions project managers said they use on landscape-scale projects are for road maintenance to reduce sedimentation of streams, as well as removing aging infrastructure such as culverts to restore natural water flows as a part of their landscape-scale approach.

It is too early to evaluate the effects of these approaches for the projects that we reviewed, however. Many of the landscape-scale projects we reviewed, particularly those included in the Forest Service's CFLRP, are in their early stages and are still implementing work under NEPA documents completed without using these new approaches, and several projects that are using processes aimed at improving NEPA efficiency have not yet completed them. As a result, it is not yet clear whether these strategies are effective in increasing the efficiency of the NEPA process. As project managers complete ongoing environmental analyses for landscape-scale projects using approaches aimed at achieving NEPA efficiency, the effects of these approaches may become more apparent.

Conclusions

Recognizing the increasing threats to forest landscapes across the country, the Forest Service, BLM, and NPS have sought to increase the

⁵⁰Typically NEPA analyses examine a range of alternatives the agency might choose to implement—including a “no action” alternative.

⁵¹As noted, the act added a categorical exclusion for addressing insect infestations. The categorical exclusion is for projects less than 3,000 acres, and while the projects we examined were 50,000 acres or larger, landscape-scale projects often have multiple subprojects, which may be smaller than 3,000 acres and therefore may take advantage of this categorical exclusion. These projects must be located on national forest lands.

pace and scale of their forest restoration efforts by implementing restoration on a landscape scale. The agencies have treated many thousands of acres under the landscape-scale approach and reported other benefits such as improved relations with stakeholders and increased leveraging of resources. Many agency officials and stakeholders told us that the landscape-scale approach represents a cultural change for the agencies, and the agencies have put in place multiple mechanisms to share information across projects. Nevertheless, nearly all project managers told us they would find additional information useful regarding lessons learned concerning landscape-scale projects. The agencies have not taken steps to assess their project managers' information needs or the mechanisms that would be most beneficial for sharing such information. By taking steps to identify project managers' information needs, and the most effective and efficient mechanisms for sharing information, and adjusting their information-sharing strategies as appropriate, the agencies may better position project managers within and across agencies to take advantage of the collective knowledge and expertise gained through project implementation.

Recommendations for Executive Action

To better position project managers within and across agencies to take advantage of the collective knowledge and expertise gained through project implementation, we recommend that the Secretaries of Agriculture and the Interior direct the Chief of the Forest Service and the Directors of BLM and NPS, respectively, to take the following two actions:

- take steps to identify the information needs of their project managers and the most effective and efficient mechanisms for sharing that information, and
- as appropriate, make adjustments to their information-sharing strategies.

Agency Comments and Our Evaluation

We provided the Departments of Agriculture and the Interior with a draft of this report for their review and comment. In its written comments, the Forest Service, responding on behalf of the Department of Agriculture, generally agreed with our findings and recommendations, noting that our recommendations are consistent with its efforts to improve its strategy for sharing information. The Forest Service's comments are reproduced in appendix II. In an emailed response provided on March 27, 2015, the Department of the Interior generally agreed with our findings and

recommendations, and provided additional information about tribal forest management, which we have incorporated into our report as appropriate.

As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies of this report to the appropriate congressional committees, the Secretaries of Agriculture and the Interior, and other interested parties. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff members have any questions about this report, please contact me at (202) 512-3841 or fennella@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix III.

A handwritten signature in black ink that reads "Anne-Marie Fennell". The signature is written in a cursive style with a large initial "A" and a long horizontal stroke at the end.

Anne-Marie Fennell
Director, Natural Resources and Environment

Appendix I: Objectives, Scope, and Methodology

Our objectives were to examine (1) the number of landscape-scale forest restoration projects that agencies have conducted, and how they determined the scope of these projects; (2) the actions taken by the agencies to track the progress of the projects; (3) successes and challenges the agencies have experienced in conducting landscape-scale restoration projects; and (4) steps the agencies have taken to help increase the efficiency of the National Environmental Policy Act (NEPA) process for landscape-scale restoration projects.

To conduct our work we reviewed and analyzed relevant laws, agency memoranda, directives, guidance, and other documentation related to landscape-scale forest restoration in general and to specific restoration projects. The agencies in our review were the Forest Service within the Department of Agriculture and the Bureau of Indian Affairs (BIA), Bureau of Land Management (BLM), Fish and Wildlife Service (FWS), and National Park Service (NPS) in the Department of the Interior. We also interviewed officials from these five agencies at their headquarters. To examine the number of landscape-scale forest restoration projects that these agencies have conducted, we asked the five agencies in our review to provide information on all forest restoration projects they conducted during the 10-year period from 2004 to 2014—that is, projects the agencies initiated or had ongoing during that time—that they considered to be landscape scale.¹ In focusing our review on forest ecosystems rather than other landscape types such as grasslands or wetlands, we requested that agencies include information on only those projects where forest restoration was a primary objective. Forest types being treated as part of the projects the agencies identified included flatland woods, which officials said are typically wet and swampy; piñon and juniper ecosystems; and mixed conifer forests that include, for example, Douglas-fir and ponderosa pine trees. Regarding the time frame for project inclusion, we selected a 10-year timeframe to increase the

¹Because the agencies define “landscape” in varying ways, we requested that officials send information on projects that fit their own agency’s definition of a landscape. For example, the Forest Service defines a landscape as “a defined area irrespective of ownership or other artificial boundaries, such as a spatial mosaic of terrestrial and aquatic ecosystems, landforms, and plant communities, repeated in similar form throughout such a defined area.” Alternatively, BLM defines a landscape as, “all the natural features such as grasslands, hills, forest and water, that distinguish one part of the earth’s surface from another part; usually that portion of land that the eye can comprehend at a single view, including all its natural characteristics.” Officials from BIA, FWS, and NPS told us their agencies do not have set definitions for landscape.

likelihood that the projects would have yielded results that could be evaluated.

In response to our request, the agencies identified a total of 112 projects: 24 Forest Service projects, 57 BLM projects, and 31 NPS projects, with project areas ranging from thousands to millions of acres. BIA and FWS did not identify any landscape-scale projects. Because the agencies' definitions of landscape scale varied, we limited our review to those with a project area of at least 50,000 acres to ensure consistency in the size of the projects we examined. We chose 50,000 acres as the minimum project size for our review because it is the minimum project area that qualifies for funding under the Collaborative Forest Landscape Restoration Program (CFLRP), and because the Society of American Foresters—a national scientific and educational organization representing the forestry profession—has also cited 50,000 acres as the threshold for landscape-scale projects. We also limited our review to ongoing projects, rather than those still in the planning phase or already completed, to ensure that some project activities had taken place and to increase the likelihood that officials knowledgeable about the projects would still be available to provide project information. Of the 112 projects identified by the agencies, 34 projects—24 Forest Service projects, 8 BLM projects, and 2 NPS projects—met our criteria and were included in our review. The agencies provided documentation that included information such as the 34 projects' names, locations, size in acres, and initiation date. We reviewed the data and found it sufficiently reliable for our purposes.

To examine how agencies determined the scope of these projects, such as the project area, treatment objectives, and other characteristics, we conducted semistructured interviews of project managers from 20 selected Forest Service, BLM, and NPS landscape-scale projects to gather information on their experiences with (1) project scoping and implementation, including key factors considered when determining project boundaries and project characteristics; (2) successes and challenges, such as those related to achieving on-the-ground accomplishments and process improvements; and (3) the NEPA review process, including efforts aimed at improving efficiency. For these semistructured interviews, we generally selected the largest project for each agency in each state in which the agency was conducting one or more projects. We conducted site visits to 8 of the 20 projects including Forest Service projects in Arizona, Florida, Montana, New Mexico, and North Carolina, and BLM projects in New Mexico and Oregon, and we conducted the remaining interviews by telephone. Table 3 shows the projects included in our review and the method of contact.

Table 3: Landscape-Scale Forest Restoration Projects Contacted for GAO’s Review, by Agency

Agency	Name of project	State	Contact method
Forest Service	Four Forest Restoration Initiative	AZ	Site visit
	Accelerating Longleaf Pine Restoration	FL	Site visit
	Tapash Sustainable Forest Collaborative	WA	Telephone interview
	Southwestern Crown of the Continent	MT	Site visit
	Selway-Middle Fork Clearwater	ID	Telephone interview
	Black Hills Mountain Pine Beetle Response	SD	Telephone interview
	Colorado Front Range Landscape Restoration Initiative	CO	Telephone interview
	Southern Blues Restoration Coalition	OR	Telephone interview
	Amador-Calaveras Consensus Group Cornerstone	CA	Telephone interview
	Ozark Highlands Ecosystem Restoration	AR	Telephone interview
	De Soto Longleaf Pine Ecosystem Restoration and Hazardous Fuel Reduction	MS	Telephone interview
	Pine-Oak Woodlands Restoration	MO	Telephone interview
	Grandfather Restoration	NC	Site visit
	Southwest Jemez Mountains	NM	Site visit
	Zuni Mountain	NM	Site visit
Bureau of Land Management	North Steens Ecosystem Restoration	OR	Site visit
	Chupadera Mesa	NM	Telephone interview
	El Malpais National Conservation Area	NM	Site visit
National Park Service	Big Cypress National Preserve	FL	Telephone interview
	Buffalo National River	AR	Telephone interview

Source: GAO | GAO-15-398.

During the site visits, we conducted interviews with project managers and visited locations of forest restoration treatments. For each site visit, we asked the agency’s project manager to invite its project stakeholders to meet with us during our visit. As a result, in addition to agency staff, we also interviewed local stakeholders involved in each of the 8 projects we visited. These local project stakeholders included representatives of environmental organizations, timber industry representatives, and others. We believe that these results appropriately characterize the views of project managers responsible for the 34 landscape-scale forest restoration projects in our review—specifically, those projects over 50,000 acres. However, the results may not be generalizable to smaller projects not included in our review.

In addition to meeting with local stakeholder groups about individual projects, we also interviewed representatives from eight national-level

nongovernmental organizations to obtain their perspectives on the agencies' overall implementation of landscape-scale projects. These organizations included the seven member organizations of the Collaborative Forest Landscape Restoration Coalition's steering committee²—American Forests, Defenders of Wildlife, Forest Business Network, The Nature Conservancy, Society of American Foresters, Sustainable Northwest, and The Wilderness Society—as well as the National Forest Foundation, which is not on the committee but which has hosted webinars and peer learning sessions on successes and challenges associated with landscape-scale restoration. We selected these organizations to represent a variety of viewpoints on landscape-scale forest restoration. The views of representatives from the organizations we contacted are not generalizable to other nongovernmental organizations, but they provided various perspectives on the agencies' efforts at landscape-scale forest restoration.

To examine the actions taken by the agencies to track the progress of the projects, and identify successes and challenges the agencies have experienced in conducting them, we relied on the document reviews and interviews described above, and we analyzed project documentation such as project annual reports, monitoring plans, and project proposals. As part of this analysis, we examined both agency efforts to collect information on ongoing project activities, as well as steps being taken to provide long-term monitoring of project results. In addition, we systematically analyzed comments made by agency officials and stakeholder group representatives during the interview process on successes and challenges associated with conducting landscape-scale projects. We reviewed the comments to identify general categories of successes and challenges, classified the comments into these general categories, and verified the accuracy of our classifications. We included in our report those successes and challenges that were most commonly mentioned during the interviews and that were corroborated with other sources of information included our review, such as Forest Service site visit documentation and annual reports. To examine the extent to which information was shared among projects, we relied on the interviews we conducted with agency headquarters officials and on our semistructured interviews of project managers.

²The Collaborative Forest Landscape Restoration Coalition is an organization with a stated goal of securing federal funding for, and ensuring the success of the CLFRP.

To examine steps the agencies have taken to help increase the efficiency of the NEPA process for landscape-scale projects, we interviewed, and reviewed project documentation from, agency officials and stakeholder group representatives. We also reviewed and analyzed applicable laws, agency guidance, and Council on Environmental Quality guidance and memoranda on NEPA efficiencies to identify the guidance available to landscape-scale project officials and the strategies and tools being used by projects to increase the efficiency of NEPA processes.

We conducted this performance audit from February 2014 to April 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Comments from the Department of Agriculture



United States
Department of
Agriculture

Forest Service
Washington Office

1400 Independence Avenue, SW
Washington, DC 20250

File Code: 1420: 2400
Date: MAR 27 2015

Ms. Anne-Marie Fennell
Director, Natural Resources and Environment
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

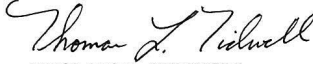
Dear Ms. Fennell:

The U.S. Department of Agriculture appreciates the opportunity to respond to the U.S. Government Accountability Office (GAO) draft report "Forest Restoration: Adjusting Agencies' Information-Sharing Strategies Could Benefit Landscape-Scale Projects, (GAO-15-398)." The USDA generally agrees with the findings in the GAO draft report.

Landscape-scale restoration is a critical part of how we are addressing the needs of the Nation's forests and GAO's recommendations for improving how we share information are consistent with our current efforts. We continue to conduct monthly information-sharing calls with all Forest Service Regions and relevant national forests to identify and respond to the needs of project managers and improve our approaches to landscape-scale restoration and NEPA efficiency in these projects. We have hosted webinars and regional workshops on the Collaborative Forest Landscape Restoration Program (CFLRP) and plan to have a 2015 national workshop on CFLRP as well. We will continue to improve our communication strategy for sharing information with project managers.

Thank you again for the opportunity to review the draft report. If you have any questions, please contact Thelma Strong, Chief Financial Officer, at 202-205-0429 or tstrong@fs.fed.us.

Sincerely,


THOMAS L. TIDWELL
Chief



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Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Anne-Marie Fennell, (202) 512-3841 or fennella@gao.gov

Staff Acknowledgments

In addition to the individual named above, Steve Gaty (Assistant Director), Brad C. Dobbins, Emily E. Eischen, and Richard P. Johnson made key contributions to this report. Important contributions were also made by Mark Braza, Alison O'Neill, and Kiki Theodoropoulos.

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