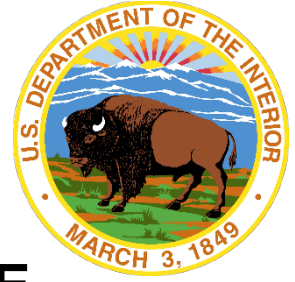


U.S. DEPARTMENT OF THE INTERIOR TECHNICAL AND APPLICATIONS GUIDE



Implementing Landscape-Level Approaches to Resource Management

Version 1.0 (2024)

Implementing Landscape-Level Approaches to Resource Management

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The U.S. Department of the Interior (Interior Department) Landscape-Level Working Group (LLWG) was chartered in 2023 to assist Interior Department employees to implement landscape-level approaches to managing natural and cultural resources, in accordance with Departmental Manual Section 604, Chapter 1. That policy directs LLWG to develop guidance and other resources, as well as coordinate landscape-level activities across the Interior Department. The working group includes representatives from across the Department's bureaus and offices with relevant subject matter expertise and professional experience.

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While reviewers of the guidance were limited to Interior Department staff, the intent is to continue including additional information, examples, and perspectives—including from individuals outside the Department—over time. This high-level overview was written for Interior Department employees and does not aim to be a fully comprehensive or highly detailed instructional tool. Rather, this guidance is intended to serve as a preliminary foundation (Version 1.0) to be built upon in the future.

Cover Photo: Theodore Roosevelt National Park Sunset Perfection

Credit: Dave Bruner/NPS

One place that almost always promises a wonderful sunset view is the Wind Canyon Trail in the South Unit of TRNP. A short stroll (0.3 miles) to an overlook of the Little Missouri flowing in a curve below with badlands buttes in the horizon, the sun is the cherry on top of the gorgeous view as it sets for the evening.

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Executive Summary

Tackling complex natural and cultural resource challenges requires a collaborative approach. Threats like invasive species, zoonotic disease, wildfire, drought, and sea-level rise transcend boundaries and often pose risks at a scale that necessitates coordination across jurisdictions. Working at the landscape level allows the U.S. Department of the Interior (Interior Department) and its partners to address problems they cannot resolve alone and achieve goals they cannot attain in isolation. Landscape-level approaches confer the following additional benefits:

- Facilitating coordination across jurisdictions and disciplines;
- Offering decision support tools for balancing multiple uses and prioritizing objectives;
- Leveraging limited staffing and funding resources;
- Advancing shared interests with federal, state, Tribal, and non-governmental partners; and
- Maximizing social, economic, and environmental outcomes

In 2023, the Interior Department revised and re-issued Departmental Manual chapter [604 DM 1](#), *Implementing Landscape-Level Approaches to Resource Management*, which directs bureaus, offices, and staff to work collaboratively across boundaries and jurisdictions. This guide provides recommendations for implementing that policy and landscape-level approaches more broadly.

Bureaus and offices can apply landscape-level approaches through planning, mitigation, and management actions. This includes:

- Conducting assessments and planning across boundaries;
- Coordinating resource management across bureaus and agencies;
- Applying landscape-level approaches to mitigating adverse impacts to resources, in accordance with [604 DM 3](#), *Landscape-Level Mitigation Policy*; and
- Integrating interdisciplinary information about natural and cultural resources.

Additionally, staff can participate in landscape-level partnerships that include non-governmental partners. Below are best practices for participating in these collaboratives. Many of these considerations also pertain to landscape-level work outside of formal partnerships.

Best Practices for Collaborative Partnerships



Senior managers can support implementation of these best practices in the following ways:

- Promoting landscape-level guidance and initiatives;
- Dedicating resources (including funding and staffing) to landscape-level initiatives and building staff capacity to apply landscape-level approaches effectively;
- Providing guidance to landscape-level initiatives, including participating in the governance of landscape-level partnerships.

Ultimately, landscape-level approaches allow bureaus, offices, and staff to leverage resources and expertise to address challenges and opportunities at multiple scales. This, in turn, helps the Interior Department to advance its mission and achieve environmental, economic, and social goals. Many initiatives, programs, and staff across the Interior Department are seeing the success of these approaches already. This guide elevates those examples and encourages more consistent application of landscape-level approaches by sharing lessons learned, best practices, and tools.

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Abbreviations

AFWA	Association of Fish & Wildlife Agencies
AIM	Assessment, Inventory, and Monitoring
AT	Appalachian National Scenic Trail
ATBC	America the Beautiful Challenge
ATC	Appalachian Trail Conservancy
ATLP	Appalachian Trail Landscape Partnership
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
Blueprint	Southeast Conservation Blueprint
BOEM	Bureau of Ocean Energy Management
BWG	Bison Working Group
DM	Departmental Manual
DOD	U.S. Department of Defense
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
GLRI	Great Lakes Restoration Initiative
IATF	Interagency Task Force
Interior Department	U.S. Department of the Interior
JV	Joint Venture(s)
LCD	landscape conservation design
NAS/NASEM	National Academies of Sciences, Engineering, and Medicine
NBS	nature based solutions
NCCOS	National Centers for Coastal Ocean Science
NEPA	National Environmental Policy Act
NGO	non-governmental organization
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
OCS	Outer Continental Shelf
OSMRE	Office of Surface Mining Reclamation and Enforcement
PEIS	Programmatic Environmental Impact Statement
RWG	Regional Working Group
SEAFWA	Southeastern Association of Fish & Wildlife Agencies
SECAS	Southeast Conservation Adaptation Strategy
SCD	Sagebrush Conservation Design
SWPA	State Wildlife Action Plan(s)
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WAFWA	Western Association of Fish & Wildlife Agencies
WEA	Wind Energy Area

SECTION 1

INTRODUCTION: PURPOSE AND AUDIENCE

Kayakers paddling on the
Blackfoot River in Montana

Photo: Bob Wick/BLM

1 Introduction: Purpose and Audience

1.1 Context

The practice of natural resource management has transformed dramatically in the United States and across the globe over the past century. There is widespread recognition that natural and cultural resources are embedded within complex socio-ecological networks that span geographic and administrative boundaries. This creates the need to address challenges at the scale at which they are impacting our communities, ecosystems, and economies. This means working with partners across a landscape to create and advance a shared vision for working lands, clean water, healthy air, recreational opportunities, cultural heritage, and wildlife habitat (Bateson et al., 2018).

The U.S. Department of the Interior (Interior Department), which is responsible for managing the nation's natural and cultural heritage, embraces this "landscape-level approach." Most notably, in 2023, the Interior Department updated and re-issued the Departmental Manual chapter, *Implementing Landscape-Level Approaches to Resource Management* ([604 DM 1](#)). This policy directs the Interior Department and its bureaus and offices to coordinate across jurisdictions and work collaboratively with diverse partners.

1.2 Purpose and Audience

The purpose of this guide is to assist staff in understanding and applying 604 DM 1. The chapter states that it "is the policy of the Department to support conservation and resource management objectives that achieve landscape goals at multiple spatial and temporal scales" in order to "enhance program and project outcomes in the context

of a changing climate." More specifically, 604 DM 1 states that it is the policy of the Interior Department to:

1. Promote and advance landscape-level approaches;
2. Coordinate with diverse partners;
3. Consider actions at multiple scales
4. Use high-quality, interdisciplinary information to understand landscape dynamics;
5. Respond to environmental change and maximize ecosystem functions and services; and
6. Integrate science, management, and monitoring efforts.

This resource provides guidance on how to carry out 604 DM 1, including:

- Summarizing and explaining key provisions of the 604 DM 1 and companion policy [604 DM 3](#), *Landscape-Level Mitigation Policy*;
- Identifying best practices, tools, and case studies for applying landscape-level approaches; and
- Outlining implementation challenges and potential solutions, including how senior managers can support staff to adopt landscape-level approaches.

The primary audiences of this guide are:

- Bureaus, offices, and staff applying landscape-level approaches; and
- Senior managers and other leaders within the Interior Department who have the authority to allocate resources (e.g., staff and funding) to landscape-level partnerships or initiatives.

Landscape-level approaches can be applied by a bureau, multiple bureaus and offices working together, or formal partnerships that involve myriad governmental and non-governmental partners. Version 1.0 of this guidance dedicates the greatest amount of attention to best practices for applying landscape-level approaches collaboratively with external partners. Those recommendations aim to support staff who are starting to engage in landscape-level partnerships, as well as those who are already involved and want to improve or advance collaborative efforts.

In developing this guidance, the authors synthesized information across a wide variety of disciplines such as landscape ecology, collaborative conservation, climate

science, social science, cultural heritage, economics, and recreation management. Given the breadth of topics and domains of expertise, this guide is meant to provide a high-level overview of landscape-level approaches, rather than a detailed description of any particular element. Many staff across bureaus, offices, and programs—throughout the country—are already applying landscape-level approaches with great success. This guidance seeks to elevate those examples and provide resources to support bureaus, offices, staff, and senior managers to apply landscape-level approaches effectively and consistently.



Glacier National Park in Montana.
Source: NPS

SECTION 2

THE BENEFITS OF COORDINATING AT THE LANDSCAPE LEVEL

**Berryessa Snow Mountain National Monument
in California**

Photo: Jesse Pluim/BLM

2 The Benefits of Coordinating at the Landscape Level

2.1 Definitions

604 DM 1 offers the following definitions:

- A landscape is “an area encompassing an interacting mosaic of ecosystems and human systems characterized by a set of common management conditions” (604 DM 1). The spatial extent of such an area can vary greatly because the size depends on the management context. A landscape can include not only terrestrial but also aquatic environments, such as freshwater and marine ecosystems, which are sometimes called “river-scapes” and “seascapes.” This guide uses the term “landscape” to include watersheds and coastal and marine areas.
- Landscape goals are “broad statements of present and desired future landscape patterns, condition, function, and services that meet multiple social, environmental, and economic goals of diverse stakeholders... (604 DM 1).” Successfully advancing these goals requires developing scale-appropriate management objectives, which should reflect measurable desired outcomes for a particular natural or cultural resource.
- The landscape-level approach is a collaborative process of identifying threats, opportunities, and objectives to prioritize natural and cultural resource management actions. This entails coordinating across spatiotemporal scales and geographic and administrative boundaries.

These definitions largely echo those put forth by the National Academies of Sciences, Engineering, and Medicine (NAS, 2016, p. 2). Additional explanations of these terms from bureaus that have established their own formal definitions are featured in the appendix.

2.2 The Benefits of Landscape-Level Approaches

The Interior Department’s responsibility to protect and manage the nation’s natural resources and cultural heritage is extensive. It manages over 500 million of acres of federal land, 700 million acres of subsurface mineral estate, 3.2 billion acres of the ocean on the Outer Continental Shelf, and water supplies for 31 million Americans. Coordination of multiple uses across this vast area is a challenge unto itself. However, the fact that many species and natural processes cross the borders of the federal estate to state, local, and private lands and waters, creates an even more “complex web of management responsibility for natural and cultural resources” (NAS, 2016). Moreover, these lands and waters are undergoing rapid change due to a changing climate, economic transitions, cultural shifts, expanding development, and growing pollution (Jenni et al., 2021; Bonnot et al., 2019; Balvanera et al., 2019). These changes present large-scale threats—such as the proliferation of invasive species, growing zoonotic disease threats, more severe wildfire, more frequent drought, rising sea levels, widespread pollution, and increasing habitat loss, degradation, and fragmentation—that pose risks to the Interior Department’s [strategic goals and objectives](#)¹.

¹ The Interior Department develops its four-year strategic plan in accordance with the Government Performance and Results Act of 1993 and the GPRA Modernization Act of 2010.

Addressing these complex challenges at the scale at which they impact natural and cultural resources requires a coordinated approach to planning and management that spans institutional siloes, jurisdictions, and geographic boundaries (NAS, 2016; Bixler et al., 2016). According to the NAS, “The landscape approach is particularly important where multiple jurisdictions are involved; where the threats to species, ecosystems, and cultural resources occur at large regional scales; and where biological and geomorphic processes span across ecosystems” (2016, p. 1). Coordinating across boundaries, disciplines, and sectors allows decision-makers to balance competing values and objectives (Campellone et al., 2018). This helps ensure sustainable management of resources and prepares ecosystems and communities to adapt to changing conditions (Bonnot et al., 2019). Moreover, landscape-level approaches incorporate knowledge from a variety of domains and perspectives, leading to more holistic and innovative strategies (Campellone et al., 2018). Finally, this cooperative approach facilitates resource sharing enabling partners to accomplish more ambitious goals and tackle vulnerabilities at broader scales than would otherwise be possible (Bateson et al., 2018).

Implementing landscape-level approaches assists the Interior Department to accomplish its [mission](#) of understanding and managing the nation’s natural and cultural resources, as well as fulfilling its responsibilities and commitments to Tribes and Indigenous Peoples. The landscape-level approach offers a structured process for bureaus and offices to balance multiple uses, prioritize objectives, advance shared interests, and weigh tradeoffs at different spatial and temporal scales—from local to regional and short- to long-term (Carter et al., 2017). Additionally, managing threats and opportunities across projects, programs,

bureaus, and offices—and in cooperation with partners—enables the Interior Department to adopt a portfolio approach to [enterprise risk management](#). With this approach, the Interior Department can identify risks to the stated objectives, assess risk levels, and pursue risk treatments at scale when risk tolerance is exceeded. Furthermore, integrated resource management across government agencies [improves customer service and reduces costs](#).

This approach also allows the Interior Department to help advance state, Tribal, and locally identified resource management priorities that align with those of its bureaus and offices. For instance, multiple bureaus support the [Midwest Landscape Initiative](#), the [Southeast Conservation Adaptation Strategy](#) (SECAS; see Section 1.1.1), the [Northeast Landscape Wildlife Conservation Committee](#), and the [Western Native Trout Initiative](#), all of which are landscape-level partnerships advancing priorities of regional fish and wildlife agencies. Additionally, various bureaus serve on the steering committees of collaboratives such as the [Crown Managers Partnership](#), which has identified and advanced social, ecological, economic, and climate priorities of Tribes, First Nations, the State of Montana, provinces, and federal agencies in the Crown of the Continent Ecosystem in the Northern Rockies. The [Desert Renewable Energy Conservation Plan](#) (DRECP) is another example of how landscape-level planning can align federal and state resource priorities. The plan, which covers nearly 11 million acres, balances energy development, conservation, and outdoor recreation priorities of the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), the California Energy Commission, and the California Department of Fish & Wildlife.

Finally, coordinating with partners at multiple scales can create opportunities to leverage state, federal, and private funding and resources across partners, programs, and sources to drive investments toward shared priorities. Landscape-level approaches can help prioritize where and how to use limited resources most strategically. For instance, the Interior Department’s [Restoration and Resilience Framework](#) invests in seven landscape-level initiatives in key geographies across the country to drive transformational outcomes with strategic investments that improve degraded lands and waters and help communities and ecosystems adapt to a changing climate.

In addition to the examples mentioned above, the Interior Department is involved in dozens of partnerships to advance landscape-level initiatives central to its mission. A handful of examples are highlighted in the “Best Practices in Action” boxes throughout this document.



Solar energy development in the DRECP landscape.

Source: Tom Brewster/BLM

Members of the Landscape-Level Working Group selected initiatives representing a variety of geographies, types of partnerships, and natural and cultural resource planning and management issues. Additionally, these different examples highlight that the Interior Department can play a leadership role to varying degrees and in various ways in landscape-level partnerships and initiatives.

Section 2 Key Points:

- Landscapes are socio-ecological systems—within terrestrial and aquatic environments—characterized by a common set of management conditions.
- Landscape-level approaches:
 - Facilitate coordination across jurisdictions and disciplines.
 - Provide tools for tackling complex threats at scale.
 - Offer frameworks for balancing multiple uses and prioritizing objectives.
 - Create collaborative processes to advance shared interests with partners.
 - Leverage funding to create transformative investments.
 - Maximize social, environmental, and economic outcomes.

SECTION 3

BEST PRACTICES: RESOURCE PLANNING, MANAGEMENT, AND MITIGATION

Great Sand Dunes National Park and Preserve
in Colorado

Photo: Patrick Myers/NPS

3 Best Practices: Resource Planning, Management, and Mitigation

Landscape-level approaches can be applied in resource planning, mitigation, and management. This Chapter provides guidance to support bureaus and offices to operate and coordinate at greater scales. Chapter 4 discusses the application of landscape-level approaches through formal partnerships with partners beyond the Interior Department. Most of the policy provisions of the Departmental Manual chapter on implementing landscape-level approaches (604 DM 1) and best practices in that policy apply to the guidance covered in this chapter as well.

3.1 Conduct Assessments and Planning Across Boundaries

Bureaus and offices can coordinate across the Interior Department or across land management units within their bureau to conduct assessments and planning efforts at greater scales. More specifically, a bureau can update plans for multiple adjacent units together to provide consistent management direction across a larger area. For example, BLM [amended 13 resource management plans](#) in Colorado to align state and federal standards for managing oil and gas development in seasonal big game habitat and migration corridors. At an even broader scale, BLM [is amending](#) 76 resource management plans across 10 states in the West to address greater sage-grouse conservation, energy development, livestock grazing, and other public land uses across the species' range. This planning effort has also involved coordination beyond the Interior Department by [synergizing efforts with the U.S. Forest Service](#) (USFS).

Additionally, the National Wildlife Refuge System's planning policies direct the USFWS to conduct landscape-level planning and to use and contribute to relevant landscape conservation designs ([602 FW 1, Refuge Planning Overview](#) and [602 FW 3, Comprehensive Conservation Planning](#)). When feasible, refuges may be grouped under a shared plan with an overarching vision that can then be implemented through refuge-specific management actions that contribute to landscape-level outcomes (602 FW 3). Overall, the approach outlined in these policies enhances conservation of lands and waters throughout the system and extends those benefits beyond the boundaries of a given refuge.

Bureaus can also draft a Programmatic Environmental Impact Statement (PEIS) to assess consequences of a management action under NEPA. For example, the Office of Surface Mining Reclamation and Enforcement (OSMRE) and USFWS coordinated with the U.S. Army Corps of Engineers (USACE), the U.S. Environmental Protection Agency (EPA), and state agencies to prepare a [PEIS](#) to address the environmental impacts of mountaintop mining activities across 12 million acres in Appalachia. Similarly, the Bureau of Ocean Energy Management (BOEM) has conducted PEISs to assess the potential effects of multiple, neighboring offshore wind energy projects (e.g., the [New York Bight PEIS](#) and [California Offshore Wind PEIS](#)). Landscape-level approaches can also be used in Endangered Species Act (ESA) consultations, as was done with the [South Atlantic Regional Biological Opinion](#) to assess potential impacts of dredging and material placement activities to 30 threatened or endangered species or subspecies across 5 states and 2 territories.

3.2 Coordinate Management Across Bureaus and Agencies

Bureaus and offices can also coordinate their responses to management challenges and opportunities at the landscape level.

Working together—with other bureaus or with other agencies—enables partners to address regional threats that transcend a particular management unit or that affect resources managed by different entities. Additionally, such coordination creates opportunities to jointly apply for funding, share information, and leverage staff capacity and technical expertise. See Section 2.2 for more information on the benefits of this approach.

One example of this approach is the Bison Working Group (BWG), which includes representatives from the Bureau of Indian Affairs (BIA), BLM, National Park Service (NPS), USFWS, and the U.S. Geological Survey (USGS). In 2023, the Secretary of the Interior issued [Secretary's Order 3410](#) to promote collaborative efforts to restore wild and healthy bison populations across the prairie grassland ecosystem. The order also established a new, permanent charter for the BWG, which has received continuous support across administrations since its inception in 2008. The BWG has developed a Bison Shared Stewardship Strategy, a national conservation genetics ('metapopulation') strategy, and joint Bison Management Apprenticeship program. The BWG has also led coordination with Canada and Mexico, resulting in a [Trilateral Letter of Intent](#) signed in September of 2024 to commit to international collaboration on bison conservation at a continental scale. By working across bureaus and agencies in this manner, the Interior Department is able to manage bison as wildlife and restore large landscapes more effectively.

Additionally, bureaus can partner with other agencies outside of the Interior Department to advance shared management goals. For instance, bureaus have partnered with the Department of Defense (DOD) on several landscape-level initiatives. This includes the [Sentinel Landscapes Partnership](#), which includes the Interior Department, DOD, U.S. Department of Agriculture (USDA), and the Federal Emergency Management Agency (FEMA). The partnership promotes collaboration between these federal agencies and with state, municipal, and Tribal governments, as well as nonprofit organizations, private landowners, and land managers. These partners work together on projects that address priorities related to natural resources, agriculture, recreation, climate resilience, and military readiness within designated "Sentinel Landscapes" across the country. The USFWS, NPS, and BLM programs all contribute to this effort.

Another partnership with DOD is the [Innovation Landscapes Network](#). USGS is partnering with the DOD, the interagency [Joint Fire Science Program](#), and USFS to co-produce and apply knowledge, technology, and modeling—including social science research on community values—to address wildfire and climate resilience within key geographies. These pilot Innovation Landscapes include federal lands managed by the USFWS, NPS, and BLM, and leverage partnerships with non-federal agencies and organizations. The current pilots—in Alaska, Hawai'i, the East, and the Southwest—are improving understanding of how landscape-level treatments can help ecosystems and communities adapt. Each interagency landscape team facilitates a "bottom-up" approach involving local adaptation, custom modeling application, and manager-driven science support.

3.3 Apply Landscape-Level Approaches to Mitigating Adverse Impacts

In 2024, the Interior Department revised and reissued [604 DM 3](#), *Landscape-Level Mitigation Policy*, which accompanies 604 DM 1. The policy provides direction regarding how to apply landscape-level approaches when mitigating² adverse impacts resulting from bureau or office management activities. More specifically, 604 DM 3 states that the following principles should be applied:

- Coordinate across the Interior Department and with partners—including other federal, state, tribal, and local governmental partners, as well as non-governmental stakeholders (e.g., landowners)—and integrate mitigation measures into landscape-level plans.
- Evaluate impacts at the landscape level, including the effects on habitat connectivity, landscape heterogeneity, and economic activities and values.
- Apply concepts developed for site-specific mitigation to mitigating impacts at the landscape level.
- Consider how the timing of the action or mitigation could shape processes at the landscape level (e.g., natural cycles) and impact efficacy of the mitigation measures (e.g., conducting mitigation in advance of anticipated impacts or potentially delaying mitigation measures to pool resources across the landscape).
- Incorporate environmental justice considerations to avoid disproportionate impacts on marginalized communities, in accordance with [525 DM 1](#),

Environmental Justice Implementation Policy.

- Apply adaptive management, evidence-building frameworks, and best available sources of knowledge.

It is important to apply landscape-level approaches to mitigating adverse impacts to resources because even site-specific actions may have far-reaching effects. Unless mitigation actions account for landscape-level dynamics, ecosystem connectivity and function may be permanently altered, or cultural and recreational landscapes may be irreparably damaged (Malcom et al., 2024). Additionally, it is important to evaluate how individual mitigation decisions in cumulative impacts and spatial patterns at the landscape level (Steinhoff, 2008). This includes patterns of environmental injustice, such as paving over wetlands in urban areas, which displaces ecosystem services³ and results in a greater concentration of associated wetland mitigation banks in rural areas (Ruhl et al., 2009). For more information, see the Interior Department's Office of Policy Analysis [report](#) and [brief](#) *Complex, Interacting Issues Shape Landscape-scale Mitigation Policy Needs*.

Landscape-level approaches can be applied across the mitigation hierarchy, a widely applied framework recommending that adverse impacts to protected resources should be addressed sequentially. Avoiding damage is the first course of action, minimizing any unavoidable harm is the second, remediation is the third, and offsetting any residual impacts not captured by the preceding steps is the final action (Arlidge et al., 2018). According to USFWS

² 604 DM 3 defines mitigation as “any measure(s) taken to make the effect of an action less severe, dangerous, or damaging to a resource or process.”

³ 604 DM 1 defines ecosystem services as the direct and indirect benefits that ecosystems provide to society, such as clean water, food, energy, climate regulation, pollution reduction, erosion control, and recreational opportunities.

[mitigation policy](#) 501 FW 2 (p. 3), applying a landscape-level approach to actions across the mitigation hierarchy “means considering the broader ecological context of both impacts and mitigation opportunities.” Doing so does not override any statutory or regulatory authority dictating the appropriate scope of review for a project, nor do landscape-level approaches aim to override state, Tribal, or local plans (501 FW 2). BLM also takes a [landscape-level approach to mitigation](#) by applying the mitigation hierarchy at all relevant scales, considering impacts across the entire area of the affected resources, and, when possible and appropriate, identifying shared standards with neighboring land managers.

604 DM 1 states that it is the Interior Department’s policy to identify opportunities and priorities for mitigation at the landscape level to ensure projects are complementary and maximize outcomes, particularly for ecosystem services and climate resilience. This approach aligns with the Interior Department’s policy to prioritize and integrate nature-based solutions (NBS), wherever practicable, to maximize benefits to both people and nature ([600 DM 7](#)).⁴ Relatedly, there are well-established methods and frameworks to quantify the societal value of ecosystem services in economic terms (OMB, 2023). Such monetary values can help inform assessments of both adverse impacts and mitigation opportunities at various spatial scales.

Landscape-level approaches can identify priority habitats or recreational or cultural sites that should be avoided when development projects are proposed. They can also highlight the most effective places

within a broader ecosystem to site mitigation actions designed to offset adverse impacts of a particular project (BLM and Sonoran Institute, 2012).

Implementing mitigation at the landscape-level involves a number of considerations, including:

- evaluating impacts across multiple scales,
- coordinating with partners,
- assessing socio-ecological implications,
- incorporating environmental justice considerations,
- addressing regional economic considerations, and
- applying adaptive management and evidence-building frameworks (Malcom et al., 2024).

Additionally, it is important to identify evidence that particular mitigation actions are effective at broader scales before applying them in novel contexts (Malcom et al., 2024).

3.4 Integrate Interdisciplinary Information About Natural and Cultural Resources

It is important to integrate cultural heritage and natural resource considerations into landscape-level planning, mitigation, and management. Nature and culture are intertwined, and landscapes contain interconnected social, environmental, and economic values. Experts recommend ensuring that planning and implementation involves cross-sector engagement, incorporates expertise across disciplines,

⁴ 600 DM 7 defines NBS as “actions that incorporate natural features and processes to protect, conserve, restore, sustainably use, and manage natural or modified ecosystems to address socio-environmental challenges while providing measurable co-benefits.”

and recognizes the diversity of natural and cultural values across the plan area (Brown et al., 2024). One example of this integrated and collaborative approach is the [co-management of Bears Ears National Monument](#) between BLM, USFS, and the Hopi Tribe, Navajo Nation, Ute Mountain Ute Tribe, Ute Indian Tribe of the Uintah & Oura Reservation, and the Pueblo of Zuni, which comprise the Bears Ears Inter-Tribal Coalition. The 1.36-million-acre area within the boundaries of the monument contains cultural sites sacred to many Tribes—who continue to rely on the area for traditional and ceremonial uses—unique paleontological resources, world-class recreational opportunities, working rangeland, and wildlife habitat.

The integration of cultural heritage and natural resource considerations is also central to the implementation of NBS across landscapes. NBS are designed to address challenges such as climate change, human health, and food supply and water security. Thus, consideration of natural resource and socio-cultural values at the landscape level is critical to successful implementation of NBS (600 DM 7). This includes not only ensuring that NBS projects result in benefits for communities and society, but that they advance environmental justice⁵. NBS applied through a landscape-level approach can upscale benefits at multiple spatial and temporal scales through meaningful coordination, collaboration, and engagement. For more information, see the Interior Department’s [Nature-based Solutions Roadmap](#) and interactive, online [tool](#).

Additionally, 604 DM 1 states that landscape-level approaches should be used to address climate change, in accordance with [523 DM 1](#), *Climate Change Policy*, which calls for partnership- and ecosystem-based approaches to adaptation and resilience. A recent survey found that half of landscape partnerships now focus on addressing climate mitigation and adaptation (Cook et al., 2023). Fortunately, the Interior Department is developing tools and models for integrating climate change considerations into planning and management. For instance, USGS staff authored a [paper](#) exploring how the “Resist-Accept-Direct” framework for responding to social-ecological transformation can be applied at the landscape level to inform decisions at multiple scales in the Upper Mississippi River Basin (Ward, et al., 2023).



The historic Kalawao Settlement in Kalaupapa National Historic Park, Hawaii.
Source: NPS Park Cultural Landscapes Program

⁵ 600 DM 7 defines environmental justice as “the fair treatment and meaningful involvement of all people regardless of income, race, color, gender, national origin, Tribal affiliation, or disability, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”

The framework can also be used to coordinate management, including addressing climate change, across jurisdictions in the basin (Ward, et al., 2023). Additionally, USGS collaborated with multiple other federal agencies to launch the [U.S. Sea Level Change](#) initiative, which provides data visualizations and educational tools to inform coastal planning, management, and emergency operations.

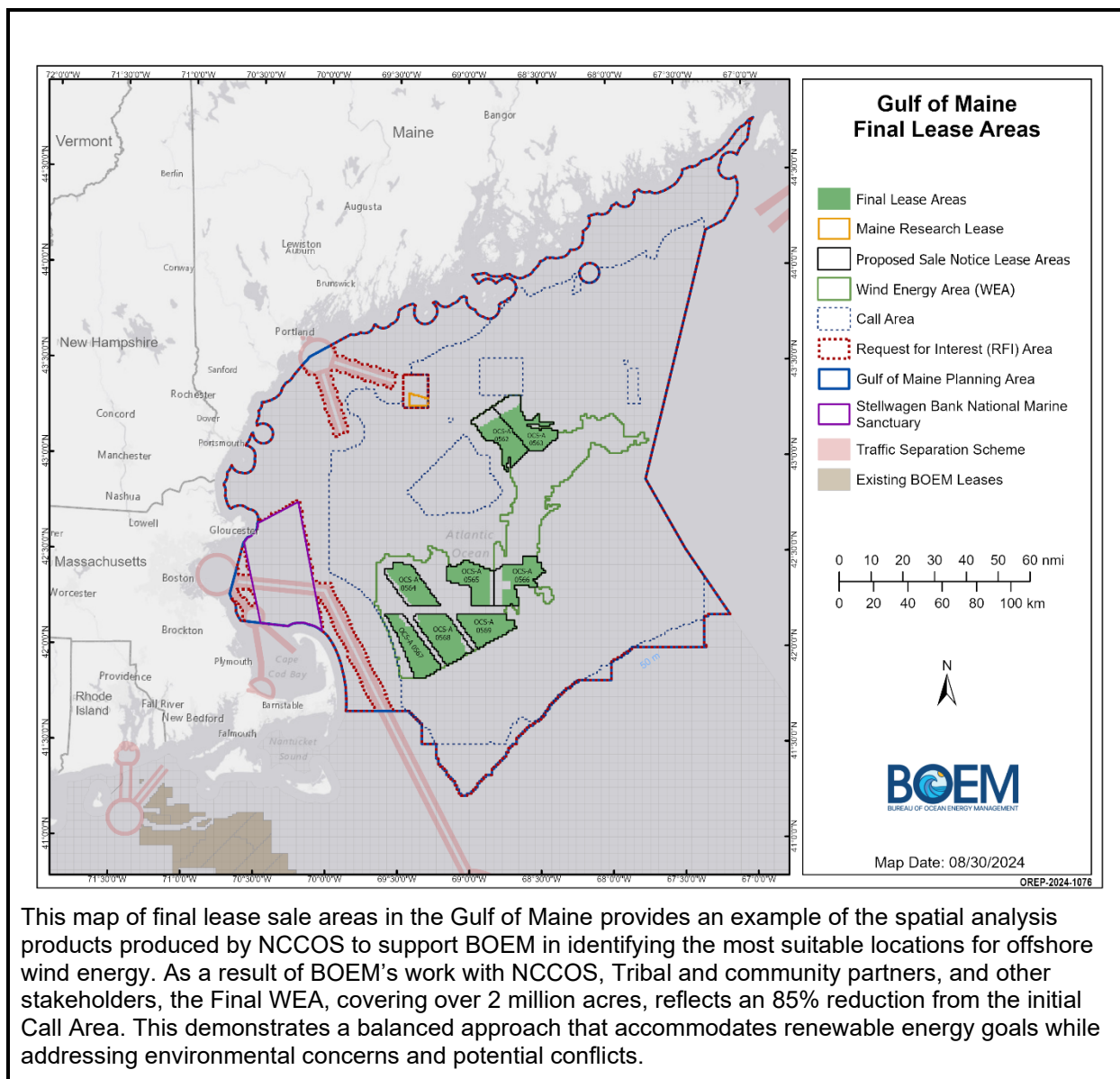
It is important to integrate cultural heritage and natural resource considerations into landscape-level planning, mitigation, and management. Nature and culture are intertwined, and landscapes contain interconnected social, environmental, and economic values.

Best Practices in Action:

Marine Spatial Planning for Offshore Wind Development

BOEM accomplishes responsible, science-based management of energy, mineral, and geological resources on the Outer Continental Shelf (OCS). This includes conducting seascape-level planning for offshore wind prior to offering an area for leasing and subsequent development. This approach helps identify the most promising areas for commercial-scale offshore wind development while concomitantly protecting important habitats, species, and other uses of the marine environment. To do this, BOEM begins by soliciting public input before identifying a lease sale area. Examples of outreach efforts include public meetings, community workshops, user group meetings, and government-to-government consultations with Tribes. Some additional formal public engagement processes occur through designated task forces and Notices in the Federal Register.

After identifying a broad Planning or Call Area for potential leasing, BOEM works with NOAA's National Centers for Coastal Ocean Science (NCCOS) to develop comprehensive [marine ecosystem spatial models](#). NCCOS gathers data on cultural heritage, protected species, national security considerations, industry activity, economics, wind energy, fisheries, and other resources and relevant factors. The suitability modeling process also incorporates input from various groups—such as Tribes, fishers, conservationists, government agencies, and industries—to minimize impacts to sensitive species, habitats, cultural resources, and ocean activities. This holistic assessment helps guide BOEM's decision-making at multiple scales and ultimately allows BOEM to narrow down a Final Wind Energy Area (WEA) within which final lease sales are delineated. BOEM and NCCOS' suitability modeling process employs the best available science and knowledge to illustrate uses within each parcel of the ocean and inform responsible management of the OCS. These tools have been applied in large seascapes like the Gulf of Mexico, Central Atlantic, Gulf of Maine, and others to identify areas of least conflict that can reliably provide offshore wind resources to support commercial-scale development. In the future, this collaborative, landscape-level approach to commercial-scale offshore wind has the potential to be applied to planning efforts for other resources.



In sum, assessing conditions and impacts at landscape-level scales improves resource planning and management by providing information of the potential effects a decision may have on the health of an entire ecosystem, including landscape intactness and connectivity (Carter et al., 2017). Scaling up the level of analysis provides a

more accurate and comprehensive picture of the full suite of direct, indirect, and cumulative impacts for multiple resource objectives. This reveals potential unintended consequences that allow managers to make more informed decisions, thereby preventing costly and damaging mistakes.



A desert tortoise attempting to cross a highway in the Joshua Tree National Park landscape.
Source: Brad Sutton/NPS

Section 3 Key Points: *How can bureaus and offices manage resources at the landscape level?*

- Conduct assessments and planning across boundaries.
- Coordinate management across bureaus and agencies.
- Apply landscape-level approaches to mitigating adverse impacts, in accordance with 604 DM 3, *Landscape-Level Mitigation Policy*.
- Integrate natural resource, cultural heritage, and climate considerations.

SECTION 4

BEST PRACTICES: COLLABORATIVE PARTNERSHIPS



Caribou herd swimming in the Kobuk River,
Kobuk Valley National Park in Alaska

Photo: Matt Cameron/NPS

4 Best Practices: Collaborative Partnerships

Outlined below are insights on landscape-level approaches drawn from literature and the professional experience and expertise of the Interior Department staff who engage in this work. Relevant provisions in 604 DM 1 are summarized to provide policy context for implementing landscape-level approaches. This guide then provides recommendations for Interior Department staff to consider applying as appropriate and relevant to the context in which they are operating. Finally, the guide includes examples of how these best practices have been applied by landscape-level partnerships (see “Best Practices in Action” boxes).

Overall, academic and professional literature suggests a general set of steps for building, sustaining, and improving multi-party partnerships working together at the landscape level. This involves convening relevant parties, establishing collaborative processes, assessing landscape conditions, developing a spatial design, co-producing a strategy for achieving shared goals, and evaluating progress (Campellone et al., 2018; Finn et al. 2018). Given that this is an iterative and collaborative process, the principles of adaptive management and collaborative natural resource management (e.g., co-production of knowledge, participatory design, and collective decision-making) undergird these efforts (Campellone et al., 2018; NAS, 2016).

This set of considerations is outlined and explained throughout the rest of this Chapter. For a high-level summary on the phases of developing and sustaining a

collaborative landscape-level partnership, see the Network for Landscape Conservation’s⁶ Pathways Forward [report](#) (page 13). Overall, as that report suggests, landscape-level approaches applied in this context move “beyond top-down approaches to a more inclusive framework, with informal governance structures built around bringing people and communities together across boundaries to create shared vision and action” (Bateson et al., 2018).

4.1 Identify Partners and Create a Shared Vision

It is the Interior Department’s policy to work with federal, state, Tribal, and local partners to implement landscape-level approaches to resource management (604 DM 1). Involving multiple parties positions the Interior Department to achieve its goals at scale, including minimizing adverse impacts on resources and enhancing ecosystem services (604 DM 1). Addressing these issues collaboratively allows Interior Department staff to exchange information with relevant experts, leverage funding with other interested parties, advance shared goals with additional capacity, address threats that operate beyond a given bureau’s jurisdiction, and build stronger relationships with partners (NAS, 2016, see also Section 2.2).

4.1.1 Identify and Share Existing Information

When Interior Department staff recognize a need to coordinate action at the landscape level, they can reach out to other federal and non-federal partners to share information, assessments, and strategies. It is also important to learn what relevant groups,

⁶ The [Network for Landscape Conservation](#) is a network of partnerships throughout the United States and cross-border regions that advance collaborative, community-based conservation at the scale of large landscapes. Interior Department staff—including representatives from BLM, NPS, USFWS, and USGS—serve on the network’s [Coordinating Committee](#).

efforts, and plans might already exist. Tools like the Network for Landscape Conservation's [initiatives database](#), the [Find a Collaborative](#) tool from the Collaborative Conservation Mapping Project, the USFWS's [Assessment of Landscape Plans](#), and the USDA [Landscape Conservation Initiatives](#) also provide information on existing collaboratives and initiatives. Assessing opportunities to participate in or build off of the work of collaboratives that have already been inventoried prevents duplication of efforts. Doing so also ensures that any new plans benefit from information that has already been gathered and analyzed.

4.1.2 Convene Interested Parties or Join Existing Partnerships

As indicated above, hundreds of formal landscape-level partnerships exist across the country (Bateson et al., 2018). Before launching a new initiative, it is important to assess whether an existing partnership may already be addressing the issues of interest within a given region. Participating in existing partnerships may be more strategic than starting a new one.

In order to make informed decisions as a partnership, it is important to have the appropriate set of management authorities, technical expertise, and local perspectives present at the table (Bodin et al., 2017). The Association of Fish & Wildlife Agencies (AFWA) has outlined best practices for forming regional partnerships involving state wildlife agencies (AFWA, 2018a, b). Additionally, the USFWS and the AFWA jointly produced [guidance](#) on engaging Tribes in State Wildlife Action Plans (SWAPs), including through landscape-level

planning. Similarly, the AFWA SWAP and Landscape Conservation Work Group, which includes USFWS leadership, developed a [framework](#) to advance landscape-level conservation through coordinating SWAPs across boundaries.

While involving relevant federal, state, and Tribal governments is critical, landscape-level partnerships may also benefit from the involvement of non-governmental entities across a variety of sectors. Governance systems are more likely to be perceived as fair and legitimate if they reflect the diversity of entities affected by decisions the partnership makes (Doyle-Capitman and Decker, 2018). It can therefore be helpful to conduct an analysis of the key stakeholders, rights holders,⁷ and other interested or affected parties when forming a partnership or when evaluating a partnership's current representation (Bixler et al., 2016). Additionally, establishing membership criteria tied to the purpose of the partnership can help create transparency and equity (AFWA, 2018a). Finally, identifying the appropriate roles and responsibilities of the various members of the partnership lays the groundwork for clear and agreed upon decision-making processes and authorities (AFWA, 2018a). See Section 4.2.2 for more information on governance systems.

4.1.3 Establish a Shared Vision and Identify Resources

Clarifying a shared purpose for a landscape-level initiative motivates partners and aligns efforts around a common vision. An effective vision statement describes desired future conditions, reflects the missions and goals of participating entities, and inspires

⁷ Stakeholders are those who have an interest in resource management decisions or are impacted by them (Brodeur et al., 2023). Rightsholders are a subset of stakeholders who have specific rights, such as Tribes and Indigenous Peoples (Brodeur et al., 2023). In determining who to engage in a partnership or resource management decision, it is important to distinguish rightsholders from other stakeholders and to identify the relevant interests and rights at play (Brodeur et al., 2023).

collective action (Finn et al., 2018). It is important to ensure senior managers or leaders of each organization are involved in establishing this big picture or "North star" that will guide the efforts of the partnership (Finn et al., 2018). See Section 5.3 for more discussion of the role of senior managers in governance of landscape-level initiatives.

It is also important in this initial stage to identify what resources each partner can contribute to the collective effort (Labich, 2015). Funding and staffing are needed for activities such as coordinating the

partnership, gathering information, developing tools, analyzing data, providing user support, implementing projects, conducting outreach, and monitoring outcomes (Goldberg, 2018). In order to support these tasks, the partnership can pool their own resources and secure outside resources, such as submitting joint grant applications. Creating a plan for this at the outset helps set the partnership up for success when they develop an implementation strategy down the road (see Section 1.1).



Discussions on the Southeast Conservation Blueprint at a workshop in 2023.
Source: Louise Vaughn/USFWS

Best Practices in Action:

The Partnership-Driven Approach of the Migratory Bird Joint Ventures

The [Migratory Bird Joint Ventures](#) cover most of the U.S. and Canada and the northern portion of Mexico.



Geography of the Migratory Bird Joint Ventures across North America.
Source: USFWS.

Reason for Establishment

In 1986, the United States and Canada signed the North American Waterfowl Management Plan to reverse the decline of waterfowl populations. The Plan called for the establishment of cooperative regional partnerships, called Migratory Bird Joint Ventures (or simply, Joint Ventures), to address the issue by conserving key habitat across the continent. The Joint Ventures (JVs) have been enshrined in the [USFWS Manual](#).

Governance

The 24 regional JV offices are run by the USFWS and/or non-governmental organizations (NGOs). Each JV has dedicated staff to coordinate outreach and science. Each JV also has a Management Board, representing the organizations involved, to direct and support the JV. In addition, each JV has a Technical Committee of experts from agencies, universities, and NGOs to provide guidance. Additionally, the Association of Joint Venture Management Boards, made up of Management Board Chairs and members from each of the JVs, was created to improve conservation delivery.

Funding

The program receives funding from congressional appropriations for the USFWS. The JV partners also contribute other federal and non-federal dollars, with every federal dollar being leveraged by 35 dollars in partner contributions.

Key Accomplishments

The JVs have helped conserve 27 million acres of important habitat for migratory birds and other wildlife.

Best Practice 4.1: Identify Partners and Create a Shared Vision

JVs work with relevant partners within their boundaries, including landowners, government agencies, and NGOs. JV staff participate in different national and international networks that provide for JVs to coordinate and strengthen their efforts beyond the regional level. These include the North American Waterfowl Management Plan International Committee and Science Support Team; the Partners in Flight Eastern and Western Working Groups; the U.S., Canadian, and Mexican Shorebird Conservation Plans; and the Waterbird Conservation for the Americas Plan. Additionally, the Joint Ventures Communication, Education, and Outreach Team brings together JV staff to share lessons learned regarding strategic messaging and public engagement.

4.2 Employ Effective Collaborative Processes

604 DM 1 calls for the Interior Department and its bureaus and offices to adopt a transparent and inclusive approach to coordinating with partners and engaging the public, especially under-represented communities. In the context of collaborative landscape-level partnerships, this means cultivating trusting relationships with partners (McKinney et al., 2010). It also entails establishing a governance structure with clear roles, responsibilities, communication systems, and collaborative processes (McKinney et al., 2010). Additionally, collaboration is more durable and effective over the long run when the partnership learns and adapts over time (McKinney et al., 2010). Ultimately, the degree to which partners collaborate to advance mutual goals significantly influences the extent to which the partnership's desired landscape-level outcomes are achieved (NAS, 2016).

4.2.1 Invest in Relationship-Building and Coordination

Investing in long-term relationships is essential to successful collaboration. Effective partnerships are built on respect and trust, which is fostered as individuals get to know each other both personally and professionally over time. Trust is cultivated through inclusive, deliberative processes that allow participants to “combine their different values, experiences, and knowledge in order to identify issues and potential solutions, analyze alternatives, debate choices, and establish priorities...” (Campellone et al., 2018, p. 68). The respectful and productive communication and interactions that strengthen relationships are often best facilitated by a skilled coordinator. Some of the strongest

partnerships therefore have dedicated coordination staff who facilitate communication, orchestrate meetings, and build consensus, as well as track decisions, progress, data, and documents (Johnson et al., 2021). Given the many coordination tasks multi-party collaboration requires, it is best if this role is filled by a dedicated, full-time staff member, a team of individuals, or an organization (Goldberg, 2018).

4.2.2 Ensure the Partnership has an Appropriate Governance System

Developing a strong but flexible governance structure facilitates healthy long-term relationships by promoting clear communication and expectations (AFWA, 2018b). Best practice is to create a “homegrown” governance system that is catered to the specific context of the partnership (Scarlett and McKinney, 2016, p. 124). In doing so, it is important to respect the distinct authorities and responsibilities of federal, state, regional, and local governments, and the sovereignty of Tribal governments (Mawdsley et al., 2020; AFWA, 2018a).

It can be helpful to form a steering committee or executive board responsible for establishing a shared vision and purpose; assessing collective progress and impact; and making decisions regarding initiatives, projects, policies, messaging, funding, and staffing (Goldberg, 2018). These advisory bodies are most effective when they include senior-level representatives of the federal, state, Tribal, and/or local governments and organizations involved that have the authority to make decisions and commit resources (Doyle-Capitman and Decker, 2018). Many partnerships also have technical committees or working groups with appropriate subject matter experts to work on specific, substantive issues. If the

Federal Advisory Committee Act applies,⁸ formal governance requirements regarding the establishment and operations of the committee must be followed.

The governance system is more likely to be perceived as fair if the decision-making processes, authorities, and communication are transparent (AFWA, 2018b). This can include adopting charters, bylaws, and other procedures outlining who will make decisions, how, when, and why (Alexander et al., 2016). Clearly establishing the appropriate avenues for both core and peripheral partners to participate in decision-making and implementation improves transparency (Doyle-Capitman and Decker, 2018). Additionally, laying out internal communication norms and systems fosters a shared understanding of common purpose, messaging, and progress (BLM and Sonoran Institute, 2012).

On a deeper level, examining power dynamics of governance arrangements with regard to rights and responsibilities is important. Assessing who holds power in decision-making, and how that power and accountability is distributed across actors in the governance structure can help improve equity and inclusivity (Brown et al., 2024). Certain rights holders, such as Tribes and Indigenous Peoples and marginalized communities, have historically been left out of resource decisions that affect their rights or other interests. It is important to ensure that those participating in the governance system represent the diversity of natural and cultural values across the landscape and have meaningful, equitable, and transparent opportunities to participate (Brown et al., 2024).

If a governance structure already exists, it can be helpful to ensure the collaborative processes, roles, and responsibilities are clear and effective. Regardless of the form of the governance structure, it functions best when intentionally designed (or re-designed) to meet the current needs of the partnership (Bateson et al., 2018). Governance systems benefit from periodic review so they can adjust over time as partners, challenges, opportunities, objectives, or other circumstances change (Bateson et al., 2018). Some considerations include examining potential improvements in representation, participation, and coordination of the partnership (Brown et al., 2024). See Section 4.5.2 to learn more about evaluating and refining governance structures for landscape-level partnerships.

Investing in long-term relationships is essential to successful collaboration. Effective partnerships are built on respect and trust, which is fostered as individuals get to know each other both personally and professionally over time.



Chinook salmon migration on the Tuolumne River in California.

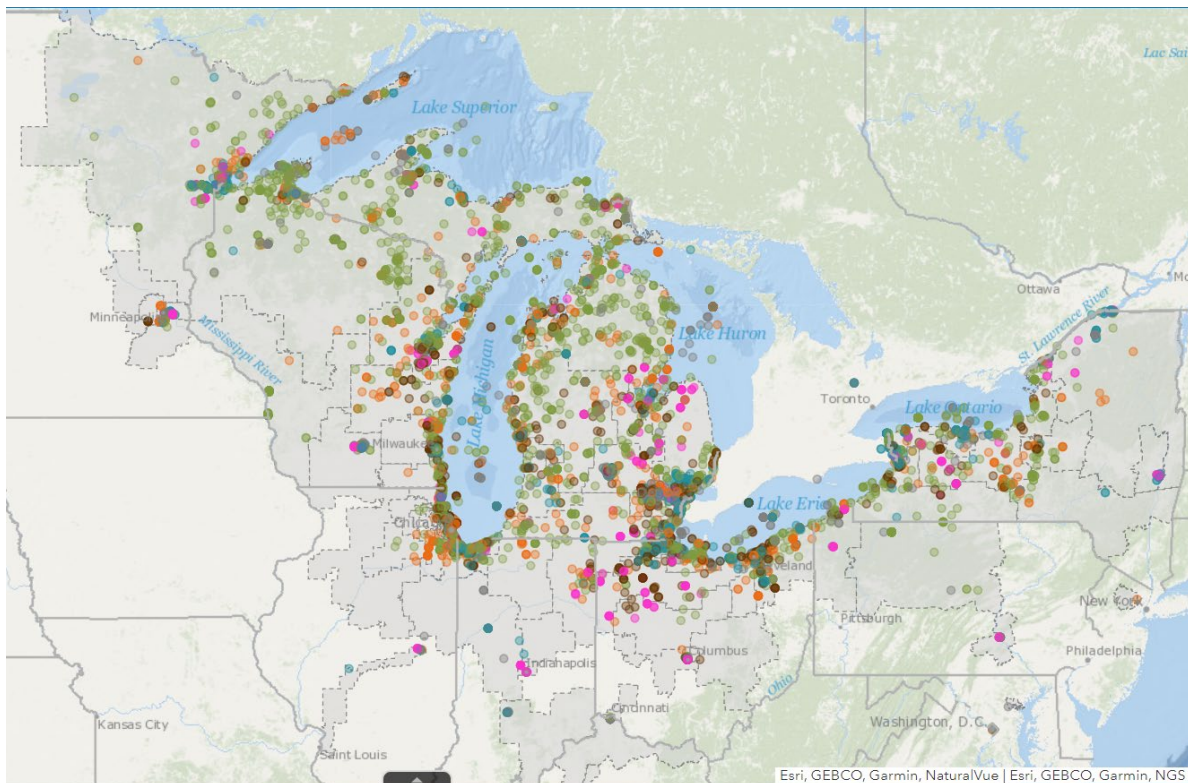
Source: Dan Cox/USFWS

⁸ According to the Government Services Administration, “Any advisory group, with limited exceptions, that is established or utilized by a federal agency and that has at least one member who is not a federal employee, must comply with” the [Federal Advisory Committee Act](#).

Best Practices in Action:

Governance of the Great Lakes Restoration Initiative

The [Great Lakes Restoration Initiative](#) (GLRI) encompasses the Laurentian Great Lakes and surrounding lands across 8 states in the United States. It is the largest system of surface freshwater in the world, serving 30 million people.



Map of the GLRI geography, including various projects throughout the landscape, represented as colored dots.

Source: GLRI

Reason for Establishment

Development pressure on the Great Lakes has severely strained the ecosystem, resulting in lost flora and fauna, as well as diminished soil, air, and water quality. These trends led to widespread concerns over water pollution, invasive species, algal blooms, habitat degradation, and recreation economies. In response, President Bush issued Executive Order 13340 in 2004 establishing the Great Lakes Interagency Task Force (IATF) and Regional Working Group (RWG). GLRI began in 2010 as a non-regulatory program to accelerate efforts to protect and restore the Laurentian system, building upon the Great Lakes Regional Collaboration Strategy. GLRI promotes coordination between federal agencies, the Great Lakes states, 35 Tribes, local communities, regional bodies, and other interests in the region.

Governance

The IATF oversees implementation of the [GLRI Action Plan](#) and ultimately reports to the President of the United States. The EPA Administrator chairs the task force, which also includes the Secretary of State, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, the Secretary of Housing and Urban Development, the Secretary of Transportation, the Secretary of Homeland Security, the Secretary of the Army, and the Chair of the White House Council on Environmental Quality. The RWG, led by EPA, includes 16 federal agencies that coordinate GLRI activities and provide recommendations to IATF on the GLRI Action Plan. Additionally, the Great Lakes Advisory Board—a formal federal advisory committee—provides recommendations to the EPA Administrator on GLRI implementation.

Funding

GLRI received approximately \$3.8 billion from annual Congressional appropriations between fiscal years 2010 and 2024.

Key Accomplishments

GLRI assesses the health of the Great Lakes at different scales to ensure progress towards goals related to water quality, habitat quality, native aquatic species populations, invasive species populations, and algal blooms. Since 2010, GLRI has funded over 8,500 restoration and protection projects to implement the GLRI Action Plan. These projects have conserved approximately 460,000 acres of habitat and 6,000 river miles. GLRI partners have also implemented invasive species control activities on more than 200,000 acres.

GLRI has also been a catalyst for strengthening and revitalizing Tribal cultures and traditions connected to the Great Lakes ecosystem. Beginning in Fiscal Year 2020, the GLRI Distinct Tribal Program was initiated through a government-to-government relationship that supports Tribes in the region to develop and implement programs to pursue priorities under the GLRI Action Plan. As of January 2023, the BIA has provided over \$113 million in GLRI funding to implement almost 800 Tribally led restoration projects and capacity awards.

Best Practice 4.2: Ensure the Partnership Employs Effective Collaborative Processes

The RWG and federal agencies advance collaboration on policies, strategies, plans, programs, projects, activities, and priorities for the Great Lakes system. GLRI has been instrumental in building and enhancing the capacity of Tribes to participate in intergovernmental resource management for the Great Lakes. GLRI's collaborative governance model has allowed the partnership to marshal resources and advance solutions to widespread issues, such as invasive species, non-point source pollution, and habitat degradation. Establishing restoration of the Great Lakes as a national priority—and committing the leadership and resources necessary to reverse declines—has unified efforts across multiple scales to address the issues more effectively.

4.3 Assess Landscape Conditions and Trends

High-quality, interdisciplinary information and expertise is necessary to accurately assess conditions, trends, vulnerabilities, and opportunities across landscapes (Campellone et al., 2018; Bonnot et al., 2019). Landscape-level approaches identify “present and desired future landscape patterns, condition, function, and services that meet multiple social, environmental, and economic goals of diverse stakeholders” (604 DM 1). 604 DM 1 therefore commits the Interior Department and its bureaus and offices to using high-quality information⁹ from multiple sources to understand landscape dynamics and make evidence-based decisions. Sources of information could include management plans, geographic information systems, climate data, ecological information, social science, and Indigenous Knowledge. The latter is defined as the “body of observations, oral and written knowledge, innovations, practices, and beliefs developed by Indigenous Peoples through interaction and experience with the environment” (604 DM 1).

[301 DM 7](#), *Departmental Responsibilities for Consideration and Inclusion of Indigenous Knowledge in Departmental Actions and Scientific Research* (released in 2023), provides relevant direction on applying Indigenous Knowledge. Additionally, any scientific assessments should comply with [305 DM 3](#), *Integrity of Scientific and Scholarly Activities*. For information on how to apply high-quality climate information and consider climate uncertainty, refer to [526 DM 1](#), *Applying*

Climate Change Science (published in 2023). Overall, landscape assessments align with the [Interior Department’s mission](#) to provide scientific and other information about natural and cultural resources.

4.3.1 Establish Objectives and Future Desired Conditions

Before collecting information, it is helpful to establish the overarching management objectives and desired conditions (or outcomes) across the landscape (Stewart et al., 2020). This helps determine what data are most relevant. Consider identifying the geographic boundaries of the landscape; primary drivers of change in the system; key indicators for cultural and natural resources; and values related to recreation and community health and well-being (Finn et al., 2018). It is also important to discuss how plans or other decision-making tools produced by the partnership will be used to advance shared goals (Stewart et al., 2020).

A key responsibility of landscape-level partnerships is to “agree on a long-term vision and goals, and clear, specific, practical, and measurable objectives, performance measures, and outcomes to guide work and ensure accountability” (AFWA, 2018b). Objectives are most strategic when they are specific, measurable, achievable, results oriented, and applicable across relevant timeframes and spatial scales (Carter et al., 2017). Setting strategic objectives at the beginning of the effort will better facilitate the application of adaptive management principles outlined in Section 4.5.1.

⁹ In order to be high-quality, this information must meet the standards for objectivity, utility, and integrity set forth in the Interior Department’s [Information Quality Guidelines](#).

4.3.2 Gather Information through Research and Outreach

Understanding complex socio-ecological dynamics within a landscape involves both research and outreach. This involves data, knowledge, and subject matter experts across the natural and social sciences. Assessing both current and “desired future conditions of a multifunctional landscape is a complex task suited to no single discipline” (Campellone et al., 2018, p. 70). As such, landscape assessments involve qualitative and quantitative data on natural and cultural resources including ecological, social, and economic information, as well as local and Indigenous Knowledge (Campellone et al., 2018). These assessments often also rely on models of current and projected future land use and climate patterns derived from remote sensing data (Bonnot et al., 2019). If data on conditions of interest do not exist, experts can consider the validity and utility of proxy datasets, indices, modeled data, or expert opinion (Finn et al., 2018).

It is important to gather input early and often from federal, state, Tribal, and local government partners, as well as a diverse array of non-governmental groups and individuals, including natural resource organizations, industry associations, local communities, private landowners, and Indigenous Peoples (NAS, 2016). The USFWS [Engagement Wayfinder](#) is a useful tool that provides guidance and resources on planning and conducting meaningful public outreach. Landscape-level plans are strongest when they reflect the needs, concerns, and values of people within the geography (Brown et al., 2024). This bottom-up approach also leads to more durable landscape plans and outcomes. Successful implementation hinges on broad support, especially at the local level. Some options for gathering feedback include

meetings, interviews, webinars, workshops, focus groups, and surveys. Conducting this outreach in person, particularly by going to where people live and work, builds stronger relationships with local communities.

The [Values Mapping for Planning in Regional Ecosystems](#) effort led by the USGS provides a model for surveying the public on how they value land within certain BLM units for recreation, spiritual purposes, educational opportunities, economic activity (e.g., grazing), and more. The project also seeks to understand and address concerns regarding how land use might change in response to natural hazards. Some additional sources of information include the NPS’s [Cultural Resources Geographic Information Facility](#) and the [Geoheritage Sites of the Nation](#). The [American Conservation and Stewardship Atlas](#), which serves as a repository of information on biodiversity, climate change impacts, and equity, is another helpful source of information.

Quantifying economic values for ecosystem services can also inform landscape-level approaches to management. Mapping tools, such as [EPA’s EnviroAtlas](#) and USGS [Land Change Monitoring, Assessment, and Projection’s](#) land use and land cover products, can help assess ecosystem service outcomes across the landscape. Additionally, resources such as the [Recreation Use Values Database](#) and estimates of the [Social Cost of Greenhouse Gases](#) are helpful valuation tools. When existing data are not sufficient, public surveys can provide information useful for evaluating tradeoffs across multiple spatial scales (Tagliafierro et al., 2013).

Additionally, including Indigenous Knowledge and the perspectives of Indigenous Peoples, including those who were removed from the area, strengthens landscape assessments. Tribes and

Indigenous communities have deep connections to landscapes across the country and hold knowledge that could help understand conditions and trends. Moreover, they may retain Tribal treaty and reserved rights within the landscape and have cultural connections even if they no longer reside there. Including this information aligns with the [Interior Department's stated mission](#) to protect and manage natural resources and cultural heritage and honor its federal trust responsibilities and other commitments to American Indians, Alaska Natives, Native Hawaiians, and affiliated Island Communities.

Prior to seeking Indigenous Knowledge, it is crucial to build trusting, respectful, and reciprocal relationships. It is important to consult the Tribal government and Indigenous leadership to develop appropriate processes for receiving Indigenous Knowledge from Knowledge Holders, as well as interpreting and applying the knowledge. Consider consulting academic frameworks (e.g., Yua et al., 2022) on equitable and inclusive co-production of knowledge with Indigenous Peoples and refer to relevant federal policies (e.g., the aforementioned 301 DM 7 and [White House guidance](#) on Indigenous Knowledge). Experts in the field of Indigenous Knowledge within the Interior Department (e.g., the Indigenous Knowledges Coordination Committee) and beyond can advise on protecting sensitive Indigenous Knowledge and respecting data sovereignty¹⁰.

One example of a partnership that is incorporating cultural indicators important to Tribes into their landscape assessment and conservation strategy is SECAS (see Section

1.1.1 for more information). In 2023, SECAS began working with Tribal communities and organizations to [include Indigenous Knowledge](#) into a spatial model to support restoration of rivercane, a species with great cultural significance to Indigenous Peoples throughout the Southeast. SECAS plans to eventually include rivercane as a cultural keystone species indicator in the Southeast Conservation Blueprint. This will help better represent Tribal priorities while protecting Tribal data sovereignty. More recently, SECAS has supported a grant proposal by partners to grow a reliable source of rivercane stock to facilitate its use in nature-based solutions across the region.

Across the country in the Rocky Mountains, the Crown of the Continent Landscape Conservation Design includes the culturally significant whitebark pine as a key landscape feature. Whitebark pine provides First Foods for numerous Tribes and First Nations across its western North American range. However, it is listed as a threatened species due to climate change and an invasive blister rust pathogen. Partners engaged through the [Crown Managers Partnership](#) are working on an Indigenous-led effort to restore whitebark pine. This includes targeted seed collections from identified pathogen-resistant trees, seedling propagation by the Confederated Salish and Kootenai Tribes in Montana, and a multi-partner outplanting effort guided by spatial models identifying priority areas.

Finally, incorporating climate information into assessments of current and future conditions allows resource managers and communities to better address large-scale threats. Vulnerability assessments can reveal

¹⁰ Data sovereignty refers to the rights of Tribes and Indigenous Peoples to govern how data about them is collected and managed (Carroll et al., 2019).

the sensitivity, exposure, and adaptive capacity of various resources to potential stressors present in the landscape, such as climate change (Finn et al., 2018; Bonnot et al., 2019). A useful resource is the Interior Department technical and applications [guide](#), *Best Practices for Incorporating Climate Change Science into Department of the Interior Analyses, Consultations, and Decision Making*, published in 2024. Another tool is the [Strategic Hazard Identification and Risk Assessment Project](#), which includes assessments of exposure of Interior Department assets (e.g., infrastructure, employees, and resources) to climate-related hazards under future scenarios. Additionally, the USGS has developed a useful framework for [Protecting Cultural Resources in the Face of Climate Change](#).

4.3.3 Create a Plan for Managing and Analyzing the Data

Data gathered through these efforts is more likely to be helpful in decision-making if the information is analyzed with the intended users and uses in mind. It is critical to involve experts who can adequately assess what data are most appropriate and how to properly interpret them in a particular geographic, ecological, and management context. For this reason, it can be helpful to assemble an interdisciplinary team with social, economic, and environmental expertise representing the sectors involved in the partnership (NAS, 2016). Additionally, while making data and associated metadata accessible (e.g., through a centralized online repository) is a best practice, user guides may be necessary if the data are available for direct download and manipulation.

It is also important to examine underlying assumptions about the data. Potential sources of uncertainty may include the

complexity of socio-ecological systems, the accuracy of the data inputs, and the ability of systems-response models to predict future conditions (Finn et al., 2018). Scenario planning can help address some of this uncertainty by displaying a range of potential future conditions (e.g., see the NPS [Scenario-Based Climate Adaptation Showcase](#)). Consider documenting assumptions and uncertainties and proceeding with conducting the landscape assessment with the information available.

Finally, it is helpful to have a data management plan for a variety of reasons. Given that data can become outdated quickly, identifying a timeline for updating information on a regular basis is useful. Additionally, is important to consider data privacy and Indigenous data sovereignty concerns. When developing shared information systems, there are a variety of intellectual property rights and ethical considerations to bear in mind (Brown et al., 2024). For instance, it may be necessary to protect sensitive information related to private property, cultural sites, or Indigenous Knowledge (Brown et al., 2024). When Indigenous Knowledge is involved, it is important to include Knowledge Holders and Tribal governments or Indigenous leadership on your team to ensure it is appropriately interpreted and applied (see Section 4.3.2). Carefully thinking through how data will be stored, shared, transferred, and secured to protect these rights and sensitive information at the beginning will help maintain trust down the road.

4.3.4 Develop Spatial Tools

One tool that can help inform the decisions of landscape-level partnerships is a [landscape conservation design](#) (LCD). An LCD is a set of collaboratively produced, spatially explicit products and adaptation strategies to achieve collective goals (Finn et

al., 2018; Campellone et al., 2018; Bonnot et al., 2019). This tool allows partners to identify where threats and opportunities could advance or undermine shared management objectives across a landscape. Holistic LCDs reflect “societal values and cross-jurisdiction, multisector interests with the best available interdisciplinary science and knowledge” (Campellone et al., 2018, p. 66). A step-by-step explanation of the process for developing an LCD is outlined in [Recommended Practices for Landscape Conservation Design](#) and [Primer on Landscape Conservation Design](#), both of which were co-authored by Interior Department staff.

Spatial products are most useful when they can be readily interpreted and applied by partners, decision-makers, and the public. It is best practice to hire or designate specialists to maintain spatial plans, manage the underlying data, and ensure appropriate use of spatial products. For instance, the SECAS has a [team](#) of user support, science, and communication specialists—in addition to the partnership’s coordinator—who support successful implementation of the initiative’s blueprint (see Section 1.1.1).

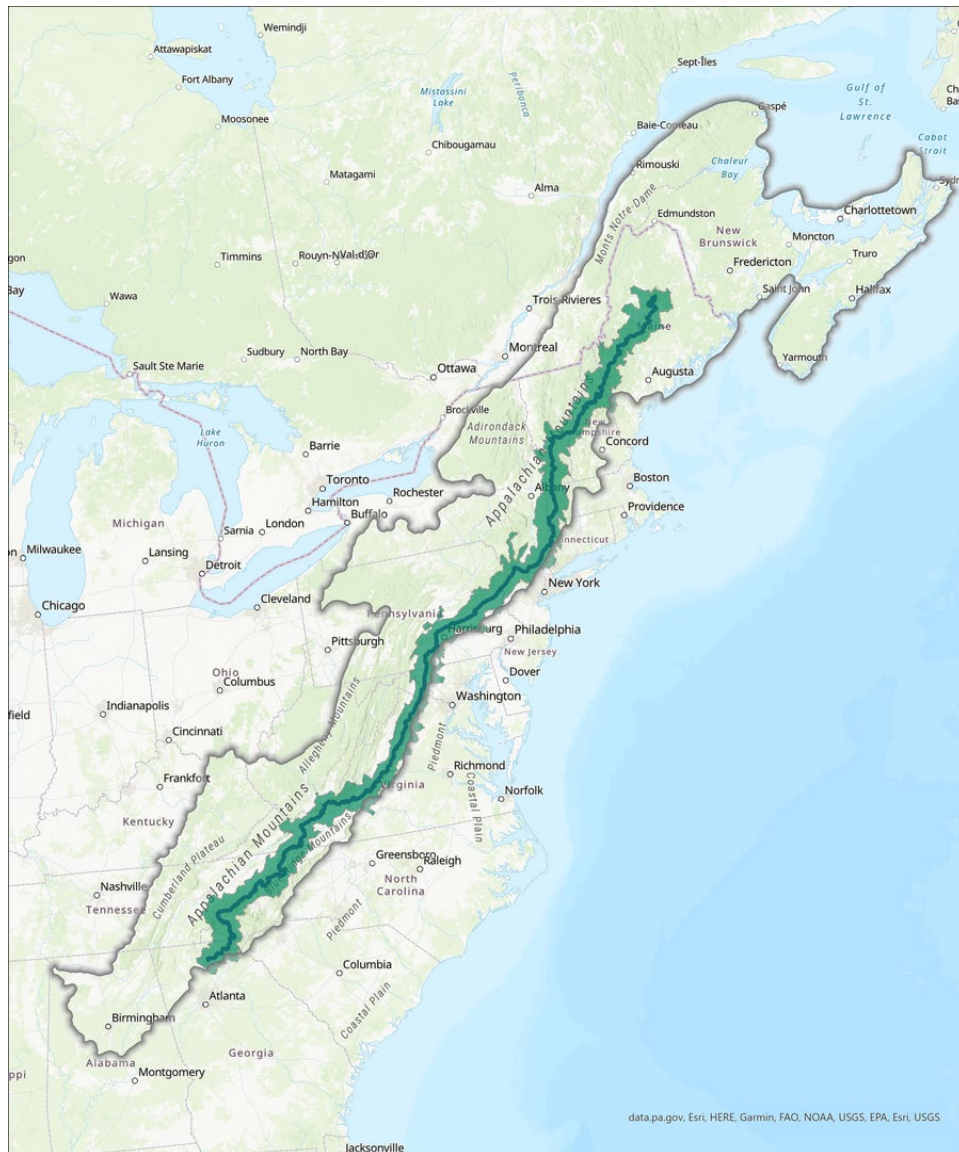


Pronghorn moving through grasslands.
Source: Alan Nyiri Photography

Best Practices in Action:

Conserving the Appalachian Trail Landscape

The Appalachian National Scenic Trail (AT) traverses through the Appalachian Mountains across 14 states, from Georgia to Maine. The surrounding landscape, which contains both natural and highly urban environments, is home to 38 million people. The landscape also supports regional economies, water supplies, and globally-renown recreation opportunities. The region also has high biodiversity, hosting many rare and [migratory species](#) across a wide range of elevations and latitudes.



Map of the Appalachian Trail and surrounding landscape.
Source: ATLP

Reason for Establishment

The [Appalachian Trail Landscape Partnership](#) (ATLP) was established in 2015 as a network of partners seeking to protect and connect the landscape encompassing the AT. The ATLP's mission is "to connect the wild, scenic, and cultural wonders of the Appalachian Trail and its surrounding landscape." To advance this goal, the partnership has adopted an ecosystem-based approach to improving landscape connectivity, biodiversity, access to outdoor recreation, and climate resilience.

Governance

The ATLP includes numerous organizations, agencies, and regional conservation networks. The partnership is led by a steering committee that includes representatives from the NPS, the USFS, state agencies, the Appalachian Trail Conservancy (ATC), and other NGOs.

Funding

The partnership has received funding for high-priority projects through the privately funded [Wild East Action Fund](#), which is administered by the ATC. Between 2018 and 2022, the Wild East Action Fund provided 90 grants that helped conserve 88,800 acres of land across the landscape. The NPS and the ATC also fund administrative support for the partnership. Additionally, the Land and Water Conservation Fund provides funding to secure key land parcels within the AT corridor.

Key Accomplishments

ATLP has developed communications, advocacy, education, and outreach strategies that have inspired millions of individuals and decisionmakers to conserve the AT landscape. On average, ATLP partners conserve over 20,000 acres of private land per year. More broadly, ATLP has identified a suite of options for integrating climate-smart actions into planning and conservation.

Best Practice 4.3: Assess Landscape Conditions and Trends

The ATLP has worked to identify high-priority recreation and conservation areas and evaluate land acquisition opportunities. This includes a scientific analysis of the areas with the greatest biodiversity and climate resilience, as well as barriers to equitable access of public lands. The ATLP is also working to identify and conserve iconic scenery along the AT. For example, the NPS and the ATC created a Visual Resource Inventory that captures baseline conditions for key scenic viewpoints along the trail.

Additionally, in 2022, ATLP members published a [report](#) entitled "Conserving an Intact and Enduring Appalachian Landscape: Designing a Corridor in Response to Climate Change." The document identifies key climate refugia, carbon sinks, and wildlife corridors across the landscape. It also establishes a vision for a connected landscape that supports healthy forests, biodiversity, clean air, safe drinking water, and resilient communities in an era of rapid change.

4.4 Identify Priorities and Develop a Strategy

604 DM 1 states that landscape-level approaches should be used to prioritize areas for conservation; make management and budget decisions; and maximize ecosystem functions and services. 604 DM 1 further directs the Interior Department and its bureaus and offices to evaluate these actions across multiple spatial and temporal scales, including how decisions at one scale may affect resources and objectives at other scales. 604 DM 1 also encourages the use of decision support tools to “inform management actions in the face of ecosystem transformation and economic and societal changes.”

4.4.1 Agree upon Top Priorities

In order to achieve future desired conditions across the landscape, it is important to agree upon top priorities and a strategy for advancing them collectively. This includes identifying who will be pursuing what actions where and on what timeline. Doing so allows partners to align planning, implementation, and evaluation efforts from the local level on up and assess cumulative progressive and impact (Finn et al., 2018).

While decision support tools like landscape conservation designs greatly aid in providing a structured process for prioritizing opportunities, opinions may differ regarding where to invest limited resources. For partnership-based initiatives that rely on consensus, this collaborative process will take time. When positions are at odds, it can be helpful to elucidate the underlying shared values and advance common interests through a “mutual gains” approach (CADR, 2018). Consider hiring a professional mediator or facilitator to guide the prioritization process, whether from

Interior Department’s [Office of Collaborative Action and Dispute Resolution](#) or another organization.

4.4.2 Develop a Measurement and Evaluation Plan

To continually improve the efforts of the landscape-level partnership and initiative, it is important to measure outcomes and evaluate progress. In order to evaluate the partnership, it can be helpful to include process-based performance metrics that measure levels of engagement, reciprocity, and trust (NAS, 2016). This information can lend insight into how well collaborative processes are working. In order to evaluate the initiative, it is important to include metrics related to outputs and outcomes (NAS, 2016). This information can lend insight into the efficacy of the strategy, products, and services. The evaluation may include a combination of qualitative and quantitative methods and techniques, such as participant surveys, field data, and remote sensing (NAS, 2016; see Sections 4.3.2 and 4.5.1 for more information). Understanding what relevant monitoring efforts already exist helps avoid duplicating efforts.

4.4.3 Develop a Communications Plan

Most successful landscape-level partnerships facilitate effective communication among partners and develop compelling external messaging about the initiative. As discussed in Section 4.2.2, systems for ensuring clear and timely communication within a partnership is a critical element of healthy governance. Furthermore, developing shared messaging ensures partners are on the same page when speaking with the public, external decisionmakers, and the media. Storytelling is a communications tool that can garner broader and deeper support. Highlighting accomplishments in this way helps

audiences better understand the benefits of the work, including how the initiative will protect the values they care about and advance their goals (Bateson et al., 2018). However, as noted in Section 4.1, no matter how sophisticated the communications strategy, decision-makers and the public are unlikely to embrace a plan developed without their consultation. A well-crafted rollout strategy is not a substitute for conducting thoughtful and meaningful engagement and outreach in developing landscape assessments and plans (see Section 4.3.2 for more information).

4.4.4 Develop a Funding and Staffing Plan

Even the best plan is unlikely to gain traction or sustain momentum without resources. It is therefore important to identify funding and staffing needs and how to address them over the short-, medium-, and long-term. This includes funding to support coordinating the partnership, conducting scientific research, developing technical tools, maintaining online resources, implementing projects, engaging in outreach, and conducting monitoring and evaluation (Labich, 2015). Consider identifying how each partner can contribute to implementation, including communications support, technical assistance, staffing, and project funding. One example of a strategy that addresses funding and staffing—as well as communications and monitoring and evaluation—is the [National Fish Habitat Action Plan](#). This plan was developed by a nationwide network of [National Fish Habitat Partnerships](#) that coordinate aquatic and riparian habitat projects based on regional priorities of many partners.

One funding strategy is to pilot projects that, if successful, could then attract further funding (Goldberg, 2018). Additional strategies include establishing a fiscal agent,

drafting memoranda of understanding, or collecting membership dues (Labich, 2015). Requiring matching funds for landscape-level projects can spur public-private partnerships and leverage limited resources (McKinney et al., 2010). For instance, the [Migratory Bird Joint Ventures](#) have been able to leverage every dollar of Congressional funding at a ratio of 31:1 by securing other federal and non-federal dollars (see the “Best Practices in Action in Section 4.1 for more information on these partnerships). Such partnerships with reliable streams of annual congressional appropriations supplemented by multi-year grants from non-governmental partners (e.g., philanthropic foundations) offer a sustainable funding model. Regardless of the source, it is prudent for partners to remain vigilant for opportunities to apply for grants together, rather than competing for the same pool of funds (Labich, 2015).

One major potential federal source for project funding is the [Land and Water Conservation Fund](#), which has funded conservation and recreation projects in every county in the country. Additionally, see Section 3.2 for a discussion of the [Sentinel Landscapes Partnership](#) funding source. The Interior Department has also invested funding from the Infrastructure Investment and Jobs Act and Inflation Reduction Act into several relevant programs. One is the [Restoration and Resilience Framework](#), which funds landscape-level initiatives in seven geographies across the country. Another is the [America the Beautiful Challenge](#), which has funded dozens of collaborative conservation, restoration, and stewardship projects throughout the country. Additionally, some bureau programs, such as the [USFWS Competitive State Wildlife Grants](#), incentivize collaboration between states on landscape-level conservation. To find additional relevant federal funding

opportunities, visit the [financial assistance page](#) on Conservation.gov.

Finding funding sources to hire partnership or network coordinators can be even more challenging than finding project dollars for landscape-level work. However, there is a growing recognition of the value of investing in collaborative capacity¹¹ (Baxter and Land, 2023). For instance, the Network for Landscape Conservation’s [Catalyst Fund](#)

has provided funding for dozens of landscape-level partnerships across the country to improve their collaborative capacity. Additionally, the Salazar Center for North American Conservation administers the [Peregrine Accelerator Fund](#), which invests in “conservation solutions in priority landscapes” as well as “training, mentorship, and peer-learning opportunities” to scale and replace best practices.



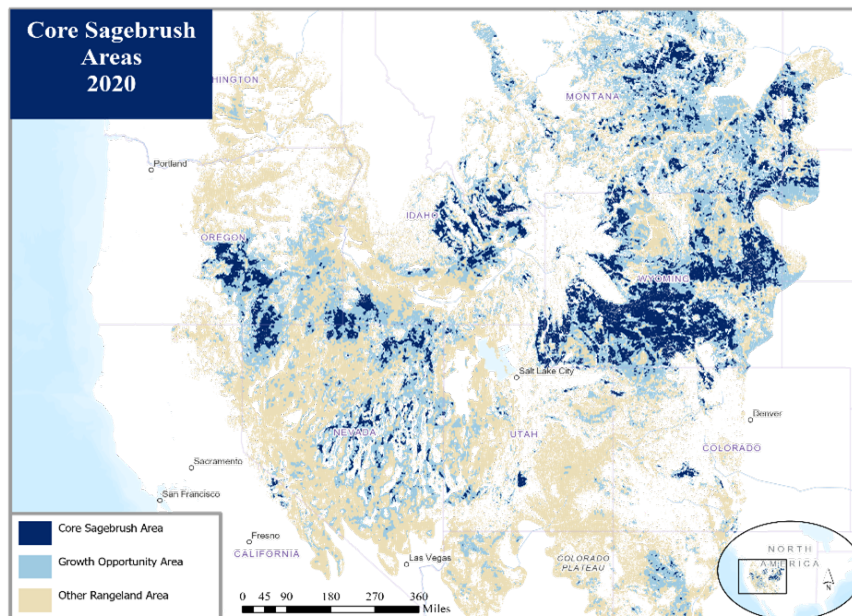
Birds flying over Lake Lowell in Deer Flat National Wildlife Refuge in Idaho.
Source: Lena Chang/USFWS

¹¹ Collaborative capacity refers to the ability of a group to work together to achieve shared goals. It involves the following elements: coordination and facilitation; decision-making structures; collaborative skills and tools; systems and infrastructure; shared strategies and priorities; and collective purpose and goals (Baxter and Land, 2023).

Best Practices in Action:

Developing a Sagebrush Conservation Strategy and Design

The sagebrush biome spans over 160 million acres, covering portions of 13 states and two Canadian provinces. The Sagebrush Conservation Design (SCD) is limited to the U.S. portion.



Map of the Sagebrush Conservation Design, illustrating the “defend the core, grow the core” approach.
Source: USGS

Reason for Establishment

Recently, the sagebrush biome has suffered an average annual loss of 1.3 million acres largely due to invasive annual grasses and wildfire. In response, the Western Association of Fish & Wildlife Agencies (WAFWA) developed a [Sagebrush Conservation Strategy](#). An interdisciplinary working group of experts came together to conceptualize a spatially explicit conservation design to advance the framework (Remington et al., 2021). The development of this SCD—built on more than 20 years of interagency coordination to address long-term declines in both sagebrush and greater sage-grouse—has been petitioned for listing under the ESA several times since 2005 (Doherty et al., 2022). Federal and state agencies and Tribal governments—along with non-governmental organizations and industry—came together to reverse the habitat declines and prevent the need to list the bird.

Governance

Given the size of the sagebrush biome, there are a number of conservation collaboratives across the range. These partnerships facilitate coordination across agencies and organizations to share data, develop range-wide tools, and coordinate management actions. Federal resource management agencies have entered into memoranda of agreement or

understanding with each other and with state wildlife agencies on topics such as adaptive management and sage-grouse population monitoring. Additionally, WAFWA has joined agreements for the development of the Sagebrush Conservation Strategy.

Funding

Several Interior Department bureaus receive Congressional appropriations for restoration actions that benefit sagebrush and sage-grouse. The Bipartisan Infrastructure Law and the Inflation Reduction Act provided additional funding to bolster conservation delivery in the biome. The Interior Department has strategically coordinated these investments through the [Sagebrush Keystone Initiative](#). In addition to these federal dollars, state, Tribal, and philanthropic investments also support the implementation of actions to defend and grow core sagebrush habitat areas highlighted in the SCD (“defend the core, grow the core”).

Key Accomplishments

[SCD partners](#) have identified the threats driving sagebrush decline and the management actions needed to offset those losses and maintain the ecosystem services. As a result, collaboratives that span jurisdictions have delivered conservation and restoration actions on millions of acres of sagebrush in recent years.

Best Practice 4.4: Develop a Strategy to Advance Priorities

An interdisciplinary team of experts conducted a range-wide assessment to identify the highest quality, most intact sagebrush landscapes, and quantify habitat loss and other resource changes through time. They also identified key drivers of those declines, including proliferation of invasive annual grasses, conifer expansion into sagebrush rangelands, and human development within sagebrush habitat. The team then mapped where those impacts intersect with categories of “Core Sagebrush Areas,” “Growth Opportunity Areas,” and “Other Rangeland Areas.” They incorporated climate considerations by creating a matrix of where Core Sagebrush Areas are likely to persist in the face of future climate scenarios and where conservation and restoration actions may be more durable over time (Doherty et al., 2022). The resulting SCD serves to highlight areas with the highest return on investment for conservation and restoration actions. Agencies and organizations can use this tool to prioritize the allocation of resources and develop more strategic tactics to defend and grow core habitat.

Additionally, tools like the [Conservation Efforts Database](#) and the [Land Treatment Digital Library](#) indicate whether the rates of implementation are meeting or exceeding the rates of habitat loss and degradation. Further, the SCD quantified changes in high-quality sagebrush landscapes in 5-year intervals to assess trends and progress over time. While the SCD is a biome-wide tool, there are a number of other [landscape assessment tools](#) that can help managers make decisions across a variety of scales. Overall, by collaborating assessing and mapping conditions, threats, and opportunities—across temporal and spatial scales—the partnership was able to develop an effective strategy for reversing sagebrush declines.

4.5 Evaluate Progress and Adapt

Landscape-level approaches are most effective when they integrate science and monitoring into decision support tools to inform evidence-based management (604 DM 1; NAS, 2016). This is consistent with adaptive management principles, as outlined in, [522 DM 1, Adaptive Management Implementation Policy](#). Adaptive management is an iterative planning, decision-making, and learning process to predict, monitor, and evaluate outcomes and adjust actions to improve performance (522 DM 1). More information on applying this framework can be found in the Interior Department's [Adaptive Management Technical Guide](#), which features several landscape-level examples.

4.5.1 Evaluate Progress Towards Desired Landscape Conditions

Monitoring and evaluating changes to key indicators across scales lends important insights into landscape dynamics and the efficacy of management actions (Carter et al., 2017). BLM's [Assessment, Inventory and Monitoring](#) (AIM) framework provides a useful model for assessing key indicators across temporal and spatial scales to adaptively manage resources across large landscapes (Toevs et al., 2011). In particular, the AIM strategy highlights the importance of standardizing field methods and indicators to facilitate data comparison across boundaries (Kachergis et al., 2022). Furthermore, AIM field data and remote sensing products inform decision-making at local, regional, and national levels within the BLM, such as providing useful insights on restoration treatments, habitat assessments, and land use planning (Kachergis et al., 2022).

The U.S. Bureau of Reclamation's [Glen Canyon Adaptive Management Program](#) is another example of large-scale application of adaptive management. This effort, guided by a federal advisory committee, uses research and monitoring to inform cooperative management of the reach of the Colorado River from Lake Powell in Arizona to Lake Mead in Nevada.

An example of how bureaus are working together to evaluate progress towards shared goals is an effort to build a [framework to assess landscape-level restoration outcomes](#). The USGS, BIA, BLM, NPS, and the USFWS are collaborating to design and test a framework to help increase the return on investments in restoration. The framework aligns with broadly accepted restoration evaluation standards to facilitate sharing data with non-governmental partners.

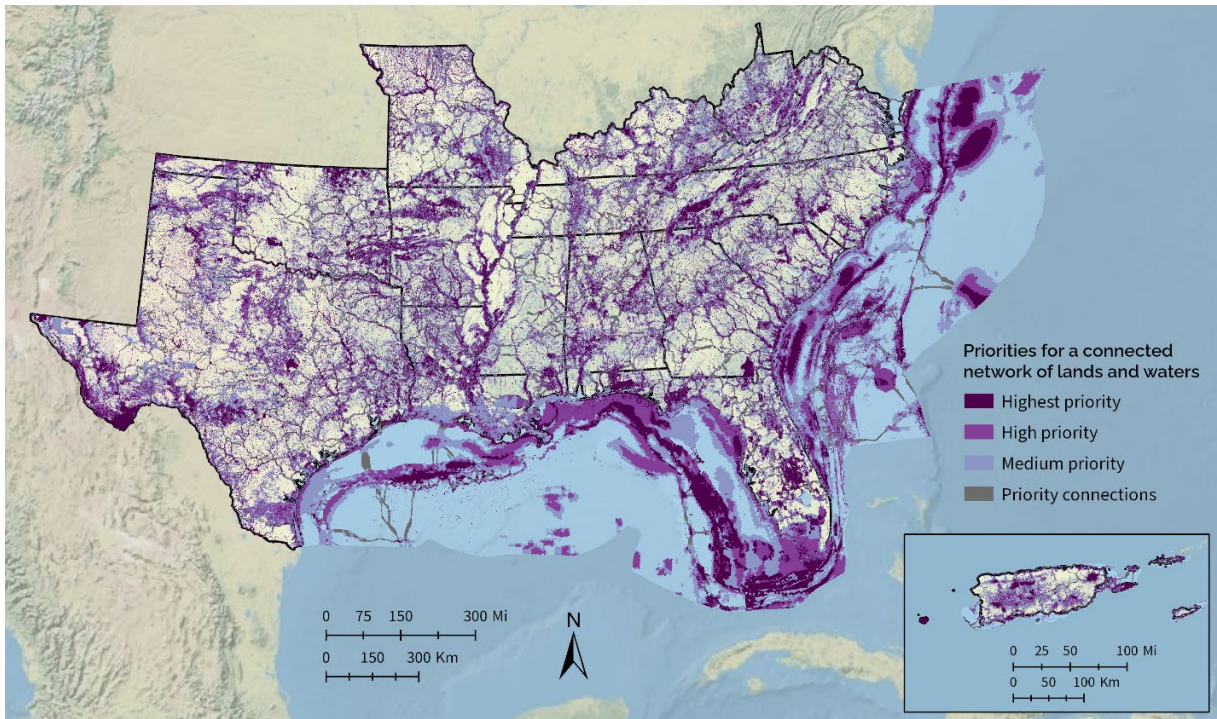
4.5.2 Evaluate the Performance of the Partnership

In addition to monitoring outcomes on the landscape, it is important to assess how well the partnership is working. The "[Partnership Impact Model](#)" offers a framework for evaluating the progress and identifying opportunities to refine the partnership's tools, plans, and processes. This allows partnerships to demonstrate the value of their collective efforts, which helps secure additional resources and support, including funding and staffing (Anklam, 2020; AFWA, 2018b; Scarlett and McKinney, 2016; Alexander et al., 2016; Bixler et al., 2016). Finally, sharing data, findings, and lessons learned in peer-reviewed publications or publicly accessible online resources advances the field of practice.

Best Practices in Action:

Refining the Southeast Conservation Adaptation Strategy

The SECAS covers 15 states and two U.S. Caribbean territories, which aligns with the Southeastern Association of Fish & Wildlife Agencies (SEAFWA) region. SECAS also extends to the full U.S. offshore marine environment in the Atlantic and Gulf, and to the nearshore marine waters around Puerto Rico and the U.S. Virgin Islands. SECAS hopes to expand to the full U.S. Caribbean marine area in the future.



The Southeast Conservation Blueprint (2024 version featured above) identifies priority areas for a connected network of lands and waters across the Southeast and U.S. Caribbean.

Source: SECAS

Reason for Establishment

The SECAS was established in 2011 by the SEAFWA states, in partnership with the USFWS. The SECAS initially served as a forum for the former Landscape Conservation Cooperatives in the Southeast to align subregional products and tools across a broader area to better serve partners working at the regional scale.

Governance

Representatives from 35 federal, state, NGOs, and agencies are involved in the governance of SECAS. At the highest level, the SECAS Executive Steering Committee includes 5 state wildlife agency directors and the Southeast Regional Director of the USFWS. This committee, which meets twice per year, is an official joint-party subcommittee of SEAFWA. It is tasked with providing oversight and strategic direction to the SECAS.

Additionally, the SECAS Points of Contact serve as technical representatives on behalf of each SEAFWA State Director and each Principal from the Southeast Natural Resource Leaders Group, an entity that brings together leaders from over a dozen federal agencies in the region. Five non-governmental organizations also designate Points of Contact.

Funding

All current funding for SECAS staff comes from the USFWS's Science Applications Program. The North Carolina Wildlife Resources Commission provides office space for staff based in Raleigh. Past funding for staff has also come from the USFS, the NOAA, and the NPS.

Key Accomplishments

The SECAS serves as a regional hub for conservation science and decision-support guiding action and investments to maximize impact across the landscape. As of August 2024, more than 450 individuals from over 180 organizations have used the [Southeast Conservation Blueprint \(Blueprint\)](#). So far, the Blueprint has helped bring in more than \$270 million in conservation funding to protect and restore over 315,000 acres in the region.

As a regional forum for collaboration, the SECAS is also helping identify and advance shared priorities. For example, the SEAFWA used the SECAS Goal Report to elevate two regional priority issues (aquatic connectivity and grasslands restoration) through the [America the Beautiful Challenge](#) (ATBC). In 2022 and 2023, all projects supported by the SECAS staff that addressed those two priorities received funding.

Best Practice 4.5: Evaluate Progress and Adapt

The overarching SECAS vision is a connected network of lands and waters that supports thriving fish and wildlife populations and improved quality of life for people. The SECAS is also working to achieve a more measurable goal of a 10% or greater improvement in the health, function, and connectivity of Southeastern ecosystems by 2060.

The partnership's staff track progress through an annual Goal Report, which highlights successes and challenges. More broadly, the SECAS uses the ["lean startup method"](#) to refine its products and tools. This innovative approach places a special emphasis on rapid iteration and learning. It helps the SECAS keep up with the changing landscape, be more responsive to user feedback, and build trust with its community.

For instance, the Goal Report revealed that grassland and savanna bird indicators were continually declining. This prompted the SECAS Executive Committee to secure ATBC funding to conserve grassland and savanna ecosystems. Additionally, the partnership developed new indicators for grassland and savanna ecosystems for both the Blueprint and Goal Report. These new indicators will better measure trends in grassland and savanna extent across the Southeast, and better identify key areas for restoration, management, and protection.

The SECAS has also adapted the Blueprint, which serves as a spatial implementation strategy to achieve partnership's goals. The partnership's staff solicit feedback from experts and users and have updated the Blueprint accordingly to incorporate new models, features, and information.

The SECAS governance structure has also evolved over time to fit the changing needs of the partnership. In 2020, the SECAS contracted researchers to conduct a formal [assessment](#) of its governance structure and produced a set of recommendations for potential improvements (Johnson et al., 2021). Since then, the SECAS has clarified its collaboration and decision-making processes through a formal partnership [charter](#). The partnership also recently co-hosted a [Southeast Landscape of the Future Summit](#) as part of efforts to engage the education, energy, transportation, and housing sectors.



Hiker crossing a wooden bridge at Great Smoky Mountains National Park.
Source: Victoria Stauffenberg/NPS

Section 4 Key Points: *What are best practices for applying landscape-level approaches through collaborative partnerships?*

- Identify partners and create a shared vision.
- Employ effective collaborative processes.
- Assess landscape conditions and trends.
- Identify priorities and develop a strategy.
- Evaluate progress and adapt.

SECTION 5

SUPPORTING IMPLEMENTATION OF LANDSCAPE-LEVEL APPROACHES

California Coastal National Monument

Photo: David Ledig/BLM

5 Supporting Implementation of Landscape-Level Approaches

Senior managers in the Interior Department who have the authority to make staffing and funding decisions—such as line officers, refuge managers, park superintendents, regional directors, or program directors—are critical champions for landscape-level approaches. They also have an important role to play in addressing barriers to successful implementation of these approaches. According to the Network for Landscape Conservation (Peterson et al., 2018; Bateson et al., 2018; McDevitt, 2024), the top challenges for landscape-level collaboration are as follows:

- Insufficient capacity, particularly for essential “backbone” leadership and coordination (including a lack of staffing or high staff turnover);
- Inadequate funding to support work across larger spatial scales and longer time horizons;
- Staff lacking relevant skills and experience, lacking access to training to develop these competencies, and lacking the time to fully engage in the partnership on top of other duties; and
- Internal and external communication challenges, including difficulty communicating clearly within the partnership and conveying the importance of the work with funders and elected officials.

Supporting landscape-level initiatives and the adoption of landscape-level approaches requires an investment of time and energy. However, that upfront investment pays dividends in the long run, as described in Section 2.2. Outlined below are the steps senior managers can take to create the

enabling conditions necessary for landscape-level initiatives to be successful and to support their staff to implement landscape-level approaches effectively.

5.1 Promote Landscape-Level Guidance and Initiatives

Senior managers can help ensure their staff are aware of existing authorities, policies, guidance, memoranda of understanding, memoranda of leadership intent, and other resources or direction encouraging the use of landscape-level approaches. If no such guidance exists at the bureau or office level, it may be valuable to develop new guidance. Some relevant existing examples include:

- Interior Department [Secretarial Order 3362](#), *Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors*, takes a partnership-based, landscape-level approach to facilitating habitat connectivity across 11 states. The BLM, USGS, NPS, and USFWS work together—and with Departmental leadership—to implement the policy by collaborating with other federal agencies, states, Tribes, universities, private landowners, and non-governmental organizations to facilitate ungulate migration in priority areas across the West identified by states and Tribes, in accordance with the order. Since 2019, the Interior Department and the USDA have also contributed several million dollars annually to the [Western Big Game Seasonal Habitat and Migration Corridors Fund](#) administered by the National Fish and Wildlife Foundation.
- The NPS released [Policy Memorandum 24-02](#), *Landscape and Seascape Conservation and Ecological Connectivity through Cooperative Conservation*, in 2024. The

memorandum affirms the NPS's commitments to advancing landscape and seascape conservation. More specifically, it directs managers and staff at all levels to collaborate with partners beyond park boundaries, including establishing new partnerships where needed.

- The BLM worked with the USGS to develop [Multiscale guidance and tools for implementing a landscape approach in the Bureau of Land Management](#). The BLM also issued [Instruction Memorandum 2023-05, Habitat Connectivity on Public Lands](#), directing state offices to consult with state agencies and Tribes to facilitate wildlife movement across landscapes.
- The USGS created a 2020-2030 [Landscape Science Strategy](#). This document creates a roadmap for better understanding “how the physical, biological, and social components of ecosystems and landscapes interact with each other and are affected by” stressors from the local to the global scale (Jenni et al., 2021, p. 1). The USGS's stated goals are to produce interdisciplinary science that can inform management of the nation's landscapes and communicate how these landscapes are changing.
- The USFWS recently updated refuge planning policies (including [602 FW 1](#), [602 FW 2](#), and [602 FW 3](#)), to center landscape-level approaches. This builds off the USFWS 2013 [guidance](#) entitled, *A Landscape-Scale Approach to Refuge System Planning*. Relatedly, the Chief of the National Wildlife Refuge System and the Assistant Director of Science Applications issued a memorandum of leadership intent on collaborating to incorporate landscape-level conservation into planning and management.

Additionally, in 2021, the USFWS signed a charter with the AFWA establishing a [Landscape Conservation Joint Task Force](#). Senior managers can also act as champions for landscape-level initiatives by promoting them within the Interior Department (both upwards and downwards), to other governmental agencies, and to the media, public, and key elected officials. This helps secure the internal and external support necessary to maintain staff morale and ensure resources continue to flow to the partnership. Members of a landscape-level partnership's steering committee can be effective messengers to convey the value of working across boundaries to achieve shared goals at scale.

5.2 Dedicate Resources and Build Capacity

5.2.1 Support Staff to Apply Landscape-Level Approaches Effectively

Senior managers can also designate Interior Department staff with appropriate expertise and sufficient capacity to support relevant landscape-level initiatives and participate in related partnerships. Many staff are stretched thin, and many personnel budgets do not afford hiring new staff. However, dedicating staff time towards participating in landscape-level approaches helps achieve the mission and goals of the Interior Department and its bureaus and offices.

Additionally, professional development trainings on topics such as landscape ecology, climate science, spatial analysis, collaborative problem-solving, natural resource conflict resolution, environmental mediation, strategic planning, program evaluation, and working across cultures can prepare staff to implement landscape-level approaches more effectively (Imperial et al.,

2016; Goldberg, 2018). Senior managers can allocate training funds, encourage their staff to build these skillsets, and include related competencies in staff performance plans.

Various relevant course options exist within [DOI Talent](#), such as *Applied Landscape-Scale Conservation Biology*, *Geographic Information Systems*, *Adaptive Management*, *Enhanced Skills in Natural Resource Negotiation*, *Human Dimensions Foundations of Natural Resource Conservation*, *Building Skills for Effective Facilitation*, *Collaborative Conservation: Partnerships in Practice*, *Natural Resource Decision Making in a Changing Environment*, and *Decision Analysis for Climate Change*. The Interior Department's [Office of Collaborative Action and Dispute Resolution](#) also provides numerous trainings in facilitation, collaboration, public participation, conflict resolution, and negotiation. Additionally, the NPS's [Connected Conservation](#) community of practice hosts webinars and resources on landscape-scale conservation.

Beyond the Interior Department, the [John S. McCain III National Center for Environmental Conflict Resolution](#) at the federal Udall Foundation offers a number of trainings and certificates in collaboration and conflict resolution. The [Partnership and Community Collaboration Academy](#) also offers relevant interagency training programs, such as *Managing by Network* and *Collaborative Conservation: Partnerships in Practice*. Finally, attending conferences and workshops—such as the [Salazar Center](#) international symposia on conservation impact and AFWA [annual meetings](#)—can allow staff to exchange lessons learned from colleagues applying

landscape-level approaches, and build a network of fellow practitioners.

Building relationships across boundaries takes time. Convening partners, cultivating trust, establishing a shared foundation of relevant information, planning, and implementation can take years (Olliff et al., 2016). It is important to adjust expectations for the timescale outcomes accordingly. Finally, providing awards or other formal recognition for leadership in this field can serve to acknowledge, reward, and further incentivize staff to implement landscape-level approaches.

5.2.2 Identify Potential Funding Sources

Many partnerships struggle to acquire the initial seed capital necessary to launch collaborative efforts and to secure sustainable funding streams in the long term (Goldberg, 2018). In particular, “[a]nnual, individual agency funding currently constrains the capacity to coordinate, plan, and execute phased project components” (McKinney et al., 2010). Senior managers can help secure funding and create processes to combine and move dollars in an efficient way.¹² This could entail contributing existing program dollars, identifying relevant grant opportunities, forming public-private partnerships, or seeking new funding through budget requests.

When estimating the amount of funding necessary, it is important to calculate not only the project dollars needed, but also the resources needed to coordinate the initiative (e.g., hiring or retaining coordinators within or beyond the Interior Department). Staff may also be required to develop and implement spatial plans and corresponding management strategies. As new initiatives

¹² In doing so, it is important to comply with relevant Congressional appropriations language and the [Antideficiency Act](#).

and programs emerge, consider whether they could fund the work of existing landscape-level partnerships. See Section 4.4.4 for further discussion of staffing and funding needs and strategies for landscape-level work.

5.3 Provide Guidance to Landscape-Level Initiatives

Landscape-level partnerships are most effective when they engage leaders with the authority to make management decisions and commit staff and funding. When senior managers contribute to the overarching shared vision, help identify key threats, assist in prioritizing objectives, and allocate resources, landscape-level initiatives have a greater chance of success (Imperial et al., 2016). Often these senior managers sit on a board, executive committee, or some other advisory body to provide strategic direction to the partnership and oversight over the initiative. For instance, the steering committees of the SECAS (see Section 1.1.1), [Northeast Landscape Wildlife Conservation Committee](#), and [Midwest Landscape Initiative](#) include the regional

USFWS director and the directors of each state wildlife agency. They provide oversight and share the priorities and accomplishments of the partnerships within their agencies and with external partners. While senior managers may delegate many responsibilities to their staff, it is important for them to understand and communicate the purpose and value of the landscape-level initiative and partnership. Regardless of how the governance system is designed, it is important to respect the distinct authorities of leaders across federal, Tribal, state, provincial, county, and municipal agencies to manage different resources at various levels (AFWA, 2018b).

In addition to participating in the governance of landscape-level partnerships, senior managers can provide strategic direction to landscape-level initiatives across bureaus and offices in the Interior Department. This could involve helping to establish the initiative's goals, identify priorities, pool funding across bureaus, and guide the development of strategic plans and landscape conservation designs.

Section 5 Key Points: *How can senior managers help address barriers to implementation of landscape-level approaches?*

- Promote landscape-level guidance and initiatives.
- Dedicate resources (including funding and staffing) to landscape-level initiatives and build staff capacity to implement landscape-level approaches effectively.
- Provide guidance to landscape-level initiatives, including participating in the governance of landscape-level partnerships as appropriate.

6 Conclusion

604 DM 1 directs bureaus and offices to work across boundaries to improve social, environmental, and economic outcomes. This involves assessing resource conditions at multiple scales and coordinating planning, mitigation, and management actions across jurisdictions, as described above. This guide also outlines best practices for participating in collaborative partnerships to address shared management challenges at the landscape level. This includes identifying partners and creating a shared vision; employing effective collaborative processes; assessing conditions and trends across the landscape; identifying priorities and developing a strategy to advance them; and evaluating progress and adapting as necessary.

Senior managers can support their staff to implement these best practices, as well as provide strategic direction, staffing, communications, and funding support to landscape-level initiatives.

Overall, the recommendations and resources provided in this guide aim to improve the Interior Department's natural and cultural resource management across the country. As the "Best Practices in Action" and other examples throughout this guidance illustrate, Interior Department staff across bureaus, programs, disciplines, and geographies have a wealth of experience and expertise in applying landscape-level approaches effectively. This guide aims to share those lessons learned and support additional staff from the field on up to adopt this useful approach.



Chuckwalla Mountains Wilderness in California.
Source: Bob Wick/BLM

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8 Appendix: Bureau Definitions of Landscape-Level Approaches

Below are definitions that bureaus have established for terms related to landscape-level approaches.

Bureau	Term	Definition	Source
BLM	Landscape approach	The “landscape approach integrates multiscale information to understand the effects of natural and human influences on resource conditions and trends.”	BLM’s Landscape Approach
NPS	Cooperative conservation	Working beyond park boundaries with federal, state, and local agencies and Tribal governments, as well as private landowners, non-governmental organizations, the private sector, and other concerned parties to preserve natural and cultural resources that transcend jurisdictions.	NPS Management Policies, Chapter 1.6 - Cooperative Conservation Beyond Park Boundaries (see also Chapter 4.1.4 Partnerships)
USFWS	Landscape-scale approach	<p>“A structured and analytical method that informs resource management decisions at multiple spatial scales, typically when diverse stakeholders seek multiple social, environmental, and economic goals.”</p> <p>“A scale-appropriate decision-making approach that implements existing conservation plans, where available, and emphasizes early engagement and coordination across Federal, State, Tribal, local, and nongovernmental levels.”</p>	<p>USFWS Manual Section 502, Chapter 1, Strategic Habitat Conservation</p> <p>USFWS Manual Section 502, Chapter 2, Mitigation Policy</p>
	Landscape planning and design	“Conducting biological planning and conservation design at a landscape scale, which brings people together across geographies and cultures to collaborate on conserving natural and cultural landscapes.”	USFWS Manual Section 602, Chapter 1, Refuge Planning Overview , Exhibit 1

Bureau	Term	Definition	Source
USGS	Landscape approach	“A landscape approach is a set of concepts and principles used to guide resource management when multiple stakeholders are involved, and goals include diverse and sustainable social, environmental, and economic outcomes.”	Multiscale Guidance and Tools for Implementing a Landscape Approach to Resource Management in the Bureau of Land Management
	Landscape science	“Landscape science seeks to understand how the physical, biological, and social components of ecosystems and landscapes interact with each other and are affected by these stressors across local to global scales.”	USGS Landscape Science Strategy 2020-2030