

Inventory and Monitoring

National Park Service

U.S. Department of the Interior

Natural Resource Stewardship and Science



Meeting the Mission 2025

Contributions of the Intermountain Region's Inventory & Monitoring Networks to National Park Science, Management, and Stewardship



Parks of IMR: CHDN / Guadalupe Mountains NP (NPS); GRYN / Grand Teton NP (NPS); SCPN / Grand Canyon NP (M. Quinn); NCPN / Bryce Canyon NP (A. Washuta); ROMN / Rocky Mountain NP (NPS); SOPN / Bent's Old Fort NHS (NPS); SODN / Organ Pipe Cactus NM (NPS).

NPS / ELIOT RENDLEMAN

Meeting the Mission 2025: Contributions of the Intermountain Region's Inventory & Monitoring Networks to National Park Science, Management, and Stewardship

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Please cite as:

Rendleman, E., and M. Bozek, eds. 2026. Meeting the Mission 2025: Contributions of the Intermountain Region's Inventory & Monitoring Networks to National Park Service Science, Management, and Stewardship. National Park Service, Inventory & Monitoring Division, Fort Collins, CO.



Sandstone Bluffs Overlook in El Malpais National Monument (SCPN).
NPS / JOHN KUEHNERT

Acronyms and Abbreviations

Intermountain Region Networks

CHDN: Chihuahuan Desert Network

GRYN: Greater Yellowstone Network

NCPN: Northern Colorado Plateau Network

ROMN: Rocky Mountain Network

SODN: Sonoran Desert Network

SCPN: Southern Colorado Plateau Network

SOPN: Southern Plains Network

Programs, Offices, and Designations

BRD: Biological Resources Division

CCRP: Climate Change Response Program

DRLC: Desert Research Learning Center

GYE: Greater Yellowstone Ecosystem

IMRO: Intermountain Regional Office

I&M: Inventory and Monitoring

NHS: National Historic Site

NHP: National Historical Park

NM: National Monument

NP: National Park

NPP: National Park and Preserve

NRA: National Recreation Area

NRSS: Natural Resources Stewardship and Science Directorate

NRCC: Northern Rockies Conservation Cooperative

NWR: National Wildlife Refuge

SWNC: Southwest Networks Collaboration

WASO: Washington Area Support Office

WSR: Wild and Scenic River

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Salt Basin Dunes Trail-2 in Guadalupe Mountains National Park (CHDN).

MICHAEL W. WILE

1 Introduction

...[T]he illusion of the untouchability of this wilderness becomes so strong that it is stronger than reality, and the polished roadway becomes the illusion, the mirage that has no substance.

— George M. Wright & Ben H. Thompson (1934)

The Intermountain Region’s Inventory and Monitoring (I&M) networks continue to demonstrate the essential role of science in supporting resource management across America’s national parks and monuments. Across 84 parks, our seven networks worked with scores of partners—including National Park Service (NPS) resource managers; U.S. Geological Survey (USGS), U.S. Fish and Wildlife Service (USFWS), and Bureau of Land Management (BLM) scientists; university researchers; data scientists; nonprofit ecologists; and state resource-agency staff—to deliver monitoring data and analyses that help manage park resources, advance scientific understanding of ecosystem function, and support resource stewardship.

These contributions span a wide range of management challenges. I&M analyses have informed agencies on how experimental discharges from upper-basin Colorado River reservoirs affect endangered fish recovery and riparian habitats in Canyonlands National Park and Dinosaur National Monument. Staff supported threatened bull trout (*Salvelinus confluentus*) management downstream of a restored Superfund site at Grant-Kohrs Ranch. Long-term vegetation monitoring guided large-scale wetland recovery efforts in Rocky Mountain National Park, where wetland habitats have declined by 90% over several decades. Networks also assisted post-fire revegetation efforts in Bandelier National Monument, Black Canyon of the Gunnison National Park, and Grand Canyon National Park. Additional work guided American bullfrog (*Lithobates catesbeianus*) control and amphibian recovery—including Chiricahua Leopard frog (*Rana chiricahuensis*)—across nine southwestern parks. And through collaboration with USGS and academic partners, networks co-developed resilience strategies for preserving old-growth pinyon-juniper woodlands. Together, these efforts show how I&M staff continue to deliver effective, actionable science across park landscapes and adjacent lands to support a wide array of resource-management needs.

In FY2025, networks collectively produced 28 Science Reports, 29 data packages, 6 raw-data releases, 24 briefs and web briefs, 6 journal articles, and 6 presentations or posters, reflecting continued scientific productivity and transparency. These outputs support critical needs such as fire-management planning, water-rights adjudication, habitat restoration, threatened-species recovery, and climate-related vulnerability assessment. Networks also strengthened data workflows—standardizing QA/QC, improving dashboards, and accelerating data publication—to ensure park staff have reliable, accessible information for planning, compliance, and resource assessment.

FY2025 also highlighted clear cross-network themes: adaptive monitoring under operational constraints; expanded partnerships with USGS, universities, state agencies, and Tribal, nonprofit, and

community collaborators; and increased integration of remote-sensing, climate exposure, phenology, and vegetation-structure analyses into park-scale evaluations. These shared efforts reflect a region that is becoming more coordinated, more efficient, and more capable of anticipating ecological change.

This compendium showcases these accomplishments across four interconnected sections.

- Chapter 3 highlights applied science and examples of how monitoring informed management decisions across the region in FY2025.
- Chapter 4 documents the long-term monitoring programs that provide the foundation for tracking ecosystem condition and anticipating resource change.
- Chapter 5 features the science communication products—reports, briefs, publications, data releases, and outreach—that ensure I&M science remains transparent, accessible, and useful to parks, partners, and the public.
- Chapter 6 recognizes the staff and partnerships that make this work possible, celebrating excellence in science, operations, collaboration, safety, and workforce development across the Intermountain Region.

The impact the Inventory and Monitoring (I&M) Program of the National Park Service has on evaluating the health of natural resources in our national parks and monuments cannot be overstated. As you read this collection of resource management efforts, you'll find many examples of Inventory and Monitoring Networks delivering on the promise and impact of applied science. They support concrete, informed decision-making, not only by publishing data but also by engaging in in-depth discussions with park resource managers about their findings and how monitoring results affect park resources. Through this work, I&M helps co-produce management strategies and ensures that science remains central to the NPS mission.

This document honors the dedication and collaboration of I&M staff and partners in promoting resilient ecosystems and informed stewardship across the Intermountain Region. Thank you for every contribution you have made, big or small and in every way imaginable, but clearly with the dedication that underscores the respect and regard each of us has toward protecting the resources we cherish. Always remember that each of you stands upon the work of our predecessors, just as future staff will also stand upon the work that you have contributed to, in helping keep these resources “unimpaired for the enjoyment of future generations” (NPS Organic Act 1916). We deeply thank you.

Congratulations to all who contributed to this awesome team effort!



The Tanque Verde Ridge Trail in Saguaro National Park (SODN).
NPS / HANNAH SCHWALBE

2 Inventory and Monitoring Networks

The Servicewide Inventory and Monitoring Program will chart the course and provide the leadership and information resources needed by the National Park Service to preserve and protect the natural resources placed under its trust by the American people into the 21st Century and beyond. Through its accomplishments, the Program will further enhance the National Park Service's stature as an international leader in natural resources management and stewardship.

— *Natural Resources Inventory and Monitoring Guidelines (National Park Service 1992)*

The Inventory and Monitoring Division of the National Park Service (NPS) was launched after Congress passed the National Parks Omnibus Management Act of 1998. The program inventories natural resources, monitors key ecological indicators (“vital signs”), and integrates science into planning and decision-making in partnership with parks and colleagues across the natural resource community. The program’s mission is to provide exceptional ecosystem science to support informed stewardship of our national parks. The five specific Inventory and Monitoring Division (IMD) Program Goals are:

1. Inventory the natural resources under National Park Service stewardship to determine their nature and status.
2. Monitor park ecosystems to better understand their dynamic nature and condition and to provide reference points for comparisons with other, altered environments.
3. Establish natural resource inventory and monitoring as a standard practice throughout the National Park System that transcends traditional program, activity, and funding boundaries.
4. Integrate natural resource inventory and monitoring information into National Park Service planning, management, and decision-making.
5. Share National Park Service accomplishments and information with other natural resource organizations and form partnerships for attaining common goals and objectives.

Upon inception of the program, parks that had “significant natural resources” were grouped into “networks” based on geography and shared physiographical and ecological characteristics. (See Appendix A for Intermountain Region network summaries.) Each network is comprised of a Program Manager, Data Manager, Scientists, Technicians and other support staff who collaborate to meet the program’s core goals of supporting parks.

The Intermountain Region comprises seven networks—CHDN, GRYN, NCPN, ROMN, SCPN, SODN, and SOPN—collectively serving 84 national parks and monuments. These networks vary in size, capacity, and ecological focus. All share a commitment to collecting relevant, high-quality environmental data and translating those findings for park management, partners, and the public to ascertain the current status and trends of those resources. These often are the first indicators of

environmental change and degradation, providing resource managers with the information they need to prepare for or decide on appropriate actions to restore and protect affected natural resources.

When the program was started, network and park staff initially worked together to identify key resources, or “vital signs,” that were the best indicators of the health of ecosystems or of most concern relative to ongoing or perceived future threats in each national park. Called “Vital Signs Monitoring,” these monitoring programs are designed to gather data on the condition and trends of park natural resources within the context of long-term management goals and then have Ecologists and Data Scientists analyze and interpret them. These include but are not limited to:

- **Physical resources and processes**, such as climate, groundwater, water chemistry, and streamflow.
- **Biological attributes**, such as vegetation, amphibians, birds, and aquatic macroinvertebrates.
- **Ecological processes**, such as exotic species spread and phenology.

Networks emphasize three approaches that strengthen direct support for park decision-making:

- **Species inventories and focused datasets** to fill knowledge gaps, such as SODN’s eDNA-based aquatic species recovery project and SOPN’s pollinator-plant association work.
- **Application of long-term monitoring to current management challenges**, such as GRYN’s and SODN’s support for amphibian recovery, or ROMN’s wetlands modeling to support wetland restoration and ungulate management planning.
- **Collaborative research and modeling**, including SCPN’s partnership with USGS to assess pinyon-juniper vulnerability and effects on bird communities under climate change and GRYN’s contribution to national-scale amphibian climate vulnerability assessments.

In this document, Chapter 3 highlights how these efforts help parks make defensible management decisions with the best available science. Chapter 4 provides concrete examples of how networks and long-term monitoring foundations underpin conservation and stewardship across the Intermountain Region.



Elk herd on Kelly Parcel in front of the Teton Range, Grand Teton National Park (GRTE), Wyoming, Greater Yellowstone I&M Network (GRYN).

MARK GOCKE

3 Impactful Science for Park Decision-Making

I&M science must support myriad management decisions, anticipate and help mitigate negative consequences of change, and, ultimately, help promote policies ensuring that resources remain “unimpaired for the enjoyment of future generations” (National Park Service Organic Act 1916).

— Excellent Science in the National Park Service Inventory and Monitoring Division (2016)

Parks routinely face complex decisions about managing natural and cultural resources—decisions shaped by environmental change, increasing visitation causing additional resource pressures, emerging technologies, and evolving public expectations. When resource management choices carry consequences, involve uncertainty, or require accountability among multiple stakeholders, they should be made through a deliberate process—one that draws on credible science, expert input, and a clear understanding of current conditions and resource pressures.

The Inventory & Monitoring (I&M) networks contribute to decision-making processes by providing high-quality data and interpretation that help park managers make defensible, transparent decisions. While core network responsibilities focus on long-term monitoring that identifies problems, and in many cases, acts as an early indicator, some situations demand additional information—such as effectiveness monitoring to evaluate management treatments, predictive modeling to forecast future conditions, or rapid-response inventories to fill knowledge gaps. In these cases, networks collaborate with parks and partners to deliver science that extends beyond long-term monitoring.

In FY2025, the Intermountain Region’s seven I&M networks supported decision-making across a wide range of topics and parks. A small snapshot of projects includes:

- Post-fire vegetation assessments and restoration planning in several SCPN and NCPN parks—including Grand Canyon National Park and Black Canyon of the Gunnison National Park— were supported by rapid supplemental vegetation data collection, post-fire analysis, and reference vegetation communities used to identify restoration targets.
- Water-rights adjudication and hydrologic decision support, using long-term aquatic and riparian datasets as core evidence in ongoing Arizona River streamflow adjudication processes.
- Wetland, stream, and groundwater assessments tied to species recovery, including bull trout (*Salvelinus confluentus*) habitat planning (GRKO), Chiricahua leopard frog (*Rana chiricahuensis*) reintroductions (CHIR, GICL), and threatened stonefly (*Zapada glacier*). evaluations (GLAC).
- Vegetation, fuels, and climate-exposure analyses to support fire-management planning, treatment prioritization, and risk assessment across multiple networks.

- Invasive-plant early detection and treatment readiness, strengthened through regional dashboards, rapid-response mapping, and targeted monitoring that informed Invasive Plant Management Team (IPMT) priorities.
- Collaborative ecological modeling, including pinyon-juniper climate-vulnerability assessments, amphibian climate-risk analyses, and evaluations linking streamflow conditions to ecological responses to guide park-scale and regional decision-making.
- Wildlife inventories and occupancy modeling to support species protection and management, compliance needs, and habitat-based planning.

The many examples that follow illustrate how I&M science is providing critical information to resource managers to translate into action:

Chihuahuan Desert Network (CHDN)

Binational River Monitoring Drives Rio Grande/Bravo Management

CHDN's long-term binational river monitoring at Big Bend National Park (BIBE) uses cross-border coordination to directly inform environmental-flow and water-allocation discussions through the International Boundary and Water Commission, restoration planning, and fuels and flood-risk decisions. Working with U.S. partners and Mexico's National Commission of Natural Protected Areas (Comisión Nacional de Áreas Naturales Protegidas, CONANP), CHDN builds on more than two decades of shared science on the Rio Grande/Río Bravo. As this collaboration continues, partners are moving toward shared data access, common databases, and transferable geomorphology, riparian vegetation, and water quality and quantity monitoring protocols to support coordinated, long-term management of this shared river resource.

Climate and Water Monitoring Strengthens Environmental-Flow Decision Support

Water availability and extreme weather pose ongoing risks to desert park ecosystems, infrastructure, and cultural resources, and CHDN's park-specific climate and water information directly supports resource managers in responding to these challenges. Through automated analyses, web-based reporting, and partnerships such as [Climate Analyzer](#), CHDN provides up-to-date climate and hydrologic information tailored to individual parks. Park management use these data to link drought and extreme precipitation with erosion risk, springs persistence, and impacts to historic adobe structures. By reducing the former reporting lag from multi-year cycles to delivery within months, CHDN has strengthened timely decision support for resource protection and operational planning for parks.

eDNA Monitoring Supports Recovery of the Endangered Big Bend Gambusia

CHDN's advancement of low-impact environmental DNA (eDNA) methods is directly supporting monitoring and recovery planning for the federally endangered Big Bend gambusia (*Gambusia gaigei*) at Big Bend National Park (BIBE). The species persists in only a handful of waters within BIBE and faces ongoing threats from invasive predators, water loss, flooding, and habitat change. By enabling detection of aquatic species without handling organisms or disturbing fragile habitats, CHDN and partners provide resource managers with practical tools for Gambusia monitoring,

evaluating reintroduction sites, identifying invasive species, and coordinating recovery actions. As a result, park management has a science-based pathway for reducing risk and supporting long-term recovery of one of the park's most vulnerable species.

Wildlife Monitoring Informs Fire and Habitat Management Planning

CHDN's wildlife monitoring and subject-matter expertise directly support biological assessments that guide fire and habitat management decisions within the Rio Grande Fire Zone. Managing fire and fuels in desert and riparian systems requires understanding how sensitive species respond to habitat change, and CHDN provides the species data needed for these analyses. This information informs fuels treatments, habitat restoration actions, and compliance decisions involving species of conservation concern. As a result, parks can advance regional fire-management objectives while reducing risk to sensitive habitats and meeting conservation and regulatory requirements.

Data Preservation Efforts Protect Long-Term Value of Monitoring

CHDN's expanded data-preservation work in FY2025 directly safeguards the long-term value and management usefulness of its monitoring program. By publishing, organizing, and preserving network science products—including contributions to more than 50 Integrated Resource Management Applications (IRMA) items in addition to the network "time capsule"—CHDN improved the discoverability of its information and reduced the risk of data loss during staff transitions. These efforts ensure that more than 20 years of monitoring data remain accessible and usable for future management, research, and decision-making.

Greater Yellowstone Network (GRYN)

Wetland and Amphibian Monitoring Guides Planning and Makes Cryptic Wildlife More Accessible

Wetland and amphibian monitoring by GRYN directly informed [fire-management](#) and [construction planning](#) in Yellowstone National Park (YELL) and Grand Teton National Park (GRTE). By surveying wetlands in developed areas and along road-realignment corridors, GRYN identified sites most vulnerable to disturbance and those most critical for amphibians. These data supported fuel-reduction planning led by Fire Management and guided construction design by assessing specific design options and compliance in coordination with the Denver Service Center—at a fraction of the cost of outsourcing. As a result, resource managers can better protect amphibian habitats and maintain healthy wetland ecosystems during infrastructure and fire-risk-reduction work.

Building on this monitoring work, GRYN co-produced a traveling photo exhibit featuring amphibian species and wetland types across the Greater Yellowstone Ecosystem. Displayed in gateway communities to YELL and GRTE, the exhibit makes cryptic wildlife more accessible for enhanced visitor experience and helps deepen public understanding of the resources that park management works to protect.

Climate Monitoring Delivers High-Resolution Data for Park Planning

High-resolution climate datasets developed with support from the Greater Yellowstone (GRYN) and Northern Colorado Plateau (NCPN) networks give resource managers the information they need to anticipate climate-driven changes to vegetation, wildlife, and fire risk. By tracking soil moisture, water use, and drought stress nationwide, these tools help parks plan for emerging conditions and strengthen climate-sensitive management decisions. The datasets were produced through a collaboration among NASA, USGS, and NPS. Parks can access the data via [AppEEARS](#) (Application for Extracting and Exploring Analysis Ready Samples) and learn more through the [NPS Water Balance](#) resource.

Amphibian Monitoring Supports Nationwide Conservation and Compliance Planning

A national-scale amphibian assessment, co-led by scientists at GRYN and North Coast Cascades Network (NCCN), is providing resource managers with more accurate species information for conservation and compliance decisions across the National Park System. This collaborative effort has already produced updated amphibian species lists for more than 300 NPS units and is advancing a [comprehensive vulnerability assessment](#) for 320 native amphibian species in the United States. By integrating multiple threats—including invasive species, emerging diseases, and drought—the assessment helps resource managers anticipate climate- and disturbance-driven risks and plan for long-term species protection. These tools set the stage for identifying potential amphibian refugia and strengthening native-species stewardship on park lands nationwide.

Data Management Monitoring Strengthens Planning and Interagency Decision Support

Improved data-management systems developed by GRYN ensure that park resource managers have reliable access to vegetation and other resource information for compliance reviews, park planning, and national-level analyses. By standardizing how park data are organized, stored, and shared, these systems help parks meet federal requirements for data availability and support cross-agency decision-making, including forestry and landscape-management coordination with the Bureau of Land Management and the U.S. Forest Service. These practices improve data consistency, reduce barriers to collaboration, and help ensure that park resource information contributes effectively to broader stewardship efforts.

Whitebark Pine Monitoring Guides Restoration and Conservation Planning

Since 2004, long-term monitoring by GRYN has informed federal listing decisions for whitebark pine (*Pinus albicaulis*), guided development and implementation of restoration strategies, and provided status-and-trend information for the Greater Yellowstone Ecosystem. This work supports conservation of whitebark pine, a federally threatened keystone species declining from white pine blister rust and periodic mountain pine beetle outbreaks. The network also co-leads the NPS Five Needle Pine Team, bringing managers and scientists together to coordinate conservation actions and share emerging science. GRYN engages the public through outreach, including two films shown in Yellowstone visitor centers ([Hope and Restoration: Saving the Whitebark Pine](#), [The Bird and the Tree](#)) and contributes to [research confirming thinning](#) as a viable restoration technique.

Northern Colorado Plateau Network (NCPN)

Post-Fire Recovery Guided by Vegetation Monitoring at Black Canyon of the Gunnison (BLCA)

Using vegetation maps and years of monitoring data, NCPN gave the Burned Area Emergency Response team the information they needed to prioritize the most invasive species locations and to begin targeting invasive-plant treatments immediately after the South Rim Fire at BLCA burned 4,200 acres in July 2025, including 15 Gambel oak (*Quercus gambelii*) plots. To keep pace, the network shifted its schedule to monitor both burned and unburned plots and worked alongside fire crews to collect post-fire data. Looking ahead, NCPN will collaborate with park staff to update its 2026 plans for expanded invasive-plant monitoring and adjustments to upland plant surveys.

Vegetation Monitoring Leads to Grazing Removal at Capitol Reef National Park (CARE)

Years of vegetation monitoring by NCPN helped end decades of livestock grazing in the 71,000-acre Hartnet allotment, one of the last active grazing areas in CARE. Once numbering 19 allotments, the park had retired most between 1972 and 1995, leaving Hartnet in place since the 1880s. To protect rare plants, native grasslands, water sources, and cultural sites, resource managers relied on 5–8 years of NCPN vegetation data and analyses to evaluate rangeland condition in an environmental impact statement. The findings were clear: grazed lands were in poor condition, while former allotments were recovering. After the results were made public, permit holders sold their grazing rights. As the park’s Chief of Resource noted, “None of this would have happened without the NCPN data—and it was a huge win for protecting tens of thousands of acres in perpetuity.”

Water Quality Monitoring Shows Major Improvements After Moab Wastewater Upgrade

Long-term water quality monitoring by NCPN [revealed chronic contamination](#) in the Colorado River downstream of Moab’s outdated 1950s wastewater treatment plant, linking its effluent to pollutants harmful to aquatic life. The river flows through Canyonlands National Park (CANY) and adjacent to Arches National Park (ARCH), making water quality a critical concern as visitation has grown more than 2,000% since 1960. After Moab opened a modern treatment facility in 2018 in response to NCPN monitoring findings, contaminants dropped sharply and survival of test fish improved from 0% to 100%—every minnow deployed in biomonitoring tests after the upgrade survived. These results confirm the new plant’s effectiveness and help protect river ecosystems and recreation near two of Utah’s most iconic parks.

Big River Monitoring Informs Colorado River Management

NCPN big river monitoring data and analyses guide decisions on dam river discharge operations, invasive plant control, and water withdrawals—and inform Bureau of Reclamation modeling for post-2026 Colorado River management forecasts. Since 2012, the network has tracked big rivers in three Upper Colorado River Basin parks (BLCA, DINO, CANY) to monitor changes affecting endangered fish and riparian habitats. In 2020, the Upper Colorado River Endangered Fish Recovery Program funded an expansion of NCPN monitoring on the Green River, where experimental flows

aim to benefit endangered fish. Early findings from NCPN monitoring show that experimental June flow spikes pose little risk of increasing riparian encroachment, while modified late-summer base flows continue to remain a concern. These results help shape U.S. Fish and Wildlife Service’s annual flow requests to the Bureau of Reclamation and recommendations on whether experimental flows continue, change, or stop, ensuring park priorities are represented in larger multi-agency river-management decisions.

Rocky Mountain Network (ROMN)

Wetland Monitoring Documents Ecosystem Collapse in Rocky Mountain National Park’s Kawuneeche Valley

Long-term wetland monitoring by ROMN provided the data and analyses needed to document extensive ecosystem collapse in the Kawuneeche Valley on the west side of Rocky Mountain National Park (ROMO) and inform park restoration strategies to reverse this collapse. This monitoring formed the foundation of a 2025 [synthesis paper](#) and accompanying [web article](#), which analyzed 15- to 70-year datasets showing that tall willows (*Salix* spp.) and open-water habitats declined by more than 90% between 1999 and 2019 due to heavy browsing by elk and moose. This shifted the historic beaver–willow system into much drier grasslands after beaver were forced to abandon these areas because of overgrazing by elk and moose. ROMN’s monitoring quantified this transformation and guided ROMO’s resource management response, including fencing wetlands to reduce herbivory and building simulated beaver dams to reconnect the river with its former beaver-created floodplain, thereby supporting willow and wetland recovery.

Wetland Monitoring Aids Ungulate Management at Great Sand Dunes National Park and Preserve

Wetland monitoring by ROMN is helping Great Sand Dunes National Park and Preserve (GRSA) evaluate the effects of elk use on wetland health, guiding ungulate management decisions in the park. As elk have increasingly concentrated on the park’s grasslands and shrublands—especially during winter—ROMN has worked with GRSA to identify indicators that show how well park-based elk dispersal efforts are working. In 2025, ROMN published a [report analyzing data](#) from 2016 to 2019, along with a [web article](#) and a brief summarizing the findings. The report proposed indicators to evaluate whether elk management is improving wetland condition. ROMN also developed an ArcGIS Online data visualization of elk movement at GRSA, which highlighted the rise in elk use that stimulated the park’s management planning and showed early signs that elk concentrations may be decreasing since management actions began.

Streams Monitoring at Grant-Kohrs Ranch National Historic Site Supports Management of Threatened Bull Trout

ROMN’s stream-monitoring data are now central to management of bull trout (*Salvelinus confluentus*) habitat in the Clark Fork River at Grant-Kohrs Ranch National Historic Site (GRKO). The reach of the river within GRKO is part of a Superfund site affected by historic mine-tailing contamination deposited during past floods. ROMN monitors one site on the river and has supported two major in-park projects using long-term I&M monitoring data. When contaminated soils were

removed from the river and floodplain between 2018 and 2020, ROMN sampled water and soil chemistry to document pre- and post-remediation conditions as conditions improve. More recently, the network's temperature, water-chemistry, and stream-monitoring data have informed conservation discussions as partners and local landowners push for stronger protections for this threatened species.

Alpine Vegetation Monitoring Tracks Climate Impacts

Alpine vegetation data from ROMN are helping parks understand how climate variability is reshaping high-elevation plant communities across Great Sand Dunes National Park and Preserve (GRSA), Rocky Mountain National Park (ROMO), and Glacier National Park (GLAC). Working with the Greater Yellowstone Network (GRYN) and the Santa Fe National Forest as part of the Global Research Initiative in Alpine Environments (GLORIA), ROMN monitors alpine vegetation every five years and collects continuous soil-temperature data to detect climate- and pollution-related change. [A report by University of Colorado partners](#) found that several climate variables strongly influenced changes in plant cover, with common species responding to patterns in annual precipitation, growing-season precipitation, and growing degree days. The analysis also showed that shrubs and grasses are increasing more than forbs, underscoring the importance of protecting the species that support the alpine wildflower displays these parks are known for. These findings were [summarized in a web article](#), presented to ROMO staff in 2025, and recorded for ongoing staff trainings.

Streams Monitoring at Glacier National Park Reveals Emerging Trends and Provides Information on Threatened Stoneflies

ROMN stream-monitoring data at six sites in Glacier National Park (GLAC) are helping resource managers track emerging water-quality trends and assess habitat for the threatened western glacier stonefly (*Zapada glacier*). Metals in streambed sediments—especially at the alpine Reynolds Creek site—were found to be elevated or increasing between 2007 and 2019, including cadmium and arsenic. GLAC is concerned about the stonefly's status and is working to protect remaining alpine-stream habitat. In 2024, ROMN updated its macroinvertebrate collection protocols to allow genetic testing of samples, which were analyzed in 2025; no western glacier stoneflies were detected. ROMN also learned that individual specimens must be placed in separate vials early in the process for genetic analysis to work effectively. U.S. Geological Survey researchers, in cooperation with ROMN, are now seeking funding to determine the species' distribution in Reynolds Creek and investigate what is driving the increase in metals.

Sonoran Desert Network (SODN)

Springs Monitoring Informs Invasive Bullfrog Control and Amphibian Recovery

Building on extensive springs monitoring and a rare aquatic-animal inventory, SODN now provides the core information guiding a multi-year effort to remove non-native bullfrogs that displace native fauna. This work enables parks across the Southwest to restore native amphibian populations. These long-term data give resource managers the insight they need to detect invasions early, focus control actions, and support recovery planning. SODN leads development of an early detection–rapid response (ED-RR) program to find and eradicate bullfrog incursions and strengthen native aquatic

species recovery, using monitoring results from 15 parks in Arizona, New Mexico, and Texas since the program's foundation. In 2025, the network helped establish an interagency team to coordinate ED-RR efforts across U.S. Department of the Interior (DOI) lands in southern Arizona and assisted Leslie Canyon National Wildlife Refuge with eradication work. SODN also partnered with state, federal, and nonprofit collaborators to initiate reintroductions of Endangered Species Act (ESA)-listed Chiricahua leopard frogs (*Lithobates chiricahuensis*) into Chiricahua National Monument (CHIR) and began assisting non-native bullfrog control efforts in and around Gila Cliff Dwellings National Monument (GICL).

Aquatic Resource River Monitoring Supports Water Rights Claims

Decades of SODN's aquatic resource river monitoring now form the scientific backbone of federal water rights adjudication in Arizona—the first such process in more than 50 years involving DOI, the Department of Justice, and the State of Arizona. Detailed data on water quality, water quantity, riparian vegetation, frogs, and fish give resource managers the evidence they need to support water rights claims for Saguaro National Park (SAGU), Montezuma Castle National Monument (MOCA), Tumacácori National Historical Park (TUMA), and Tuzigoot National Monument (TUZI) in ongoing litigation.

Mammal Monitoring Guides Wildlife Management Decisions

SODN's mammal monitoring program equips resource managers with detailed wildlife information for major planning and habitat assessments in Sonoran Desert parks. Citizen scientists collect these data through remote wildlife cameras used to develop occupancy models, enabling recent applications such as identifying proposed locations for wildlife gates in binational U.S.-Mexico border infrastructure at Organ Pipe Cactus National Monument (ORPI), informing the siting and potential impacts of the new Interstate 11 (I-11) project near Saguaro National Park (SAGU), and evaluating how post-fire vegetation recovery at Chiricahua National Monument (CHIR) affects wildlife habitat.

Exotic Plant Early Detection Supports Rapid Weed Control Across Southwestern Parks

Through the Southwest Network Collaboration, SODN, CHDN, and SOPN monitor emerging invasive and noxious weeds across 28 parks in six states annually and deliver the data quickly to resource managers through an exotic-plant digital dashboard. These data products support rapid and effective treatment by parks, partners, and the NPS Southwest Invasive Plant Management Team as invasive plants are located through surveys.

Vegetation, Soils, and Fuels Monitoring Guides Restoration and Fire Management

SODN's vegetation, soils, and fuels monitoring provides essential information that supports restoration and fire management decisions in Sonoran Desert parks. Recent applications include establishing reference and target conditions for fire management planning at Coronado National Memorial (CORO) and Saguaro National Park (SAGU); informing post-fire landscape restoration projects at Tonto National Monument (TONT) and Chiricahua National Monument (CHIR);

supporting abandoned farmland recovery at Tumacácori National Historical Park (TUMA); and guiding erosion-mitigation efforts at Casa Grande Ruins National Monument (CAGR).

Education and Citizen Science Enrich Park Science and Visitor Engagement

SODN leads education and citizen science programs across its parks and at the Desert Research Learning Center, giving visitors, volunteers, and area youth hands-on opportunities to participate in park science and management. Despite staffing limitations and the FY2025 travel pause, the program hosted more than two dozen events (7–373 visitor contacts per event), and volunteers contributed 2,655 hours to resource monitoring and management projects.

Southern Colorado Plateau Network (SCPN)

Landbird and Vegetation Monitoring Guides Pinyon-Juniper Management Decisions

Long-term landbird and vegetation monitoring by SCPN is helping resource managers evaluate mechanical thinning strategies in pinyon-juniper (PJ) woodlands amid the region’s megadrought and rising wildfire severity. Analyses requested by parks and completed by the Institute for Bird Populations showed that most PJ specialist birds remain relatively resilient to thinning at the microhabitat scale, improving understanding of the importance of unburned PJ woodlands for sustaining landbird populations while allowing park managers to reduce fire severity. This information directly supported Natural Resource Condition Assessments at Mesa Verde National Park (MEVE) and restoration treatment planning at Bandelier National Monument (BAND). Managers at Grand Canyon National Park (GRCA) and El Malpais National Monument (ELMA) used the results to help develop resource management-based Fire Management Plans. These findings indicate that managers seeking to balance habitat protection and fuel reduction should thin moderately and patchily, maintain a mosaic of dense and open stands, and avoid prescribed fire in PJ woodlands.

Landbird and Vegetation Monitoring Informs Post-Disturbance Forest Restoration

SCPN’s long-term landbird and vegetation monitoring is helping resource managers at Bandelier National Monument (BAND) and Grand Canyon National Park (GRCA) evaluate restoration options in mixed-conifer forests affected by drought and high-severity wildfire. At the parks’ request, SCPN and the Institute for Bird Populations analyzed existing I&M data to understand how changes in canopy structure, tree composition, and habitat features relate to avian abundances following drought-related die-off and post-fire disturbance. Results, published in *Forest Ecology & Management*, describe shifts in bird and vegetation communities and key bird-plant relationships, and are now being incorporated into post-fire vegetation restoration plans so managers can select the most effective strategies to restore and protect these resources.

Bat Disease Screening and Monitoring Support Early WNS Management

Southern and Northern Colorado Plateau Networks (SCPN/NCPN) are helping resource managers plan and act before white-nose syndrome (WNS) becomes endemic by combining targeted screening for the causative fungus *Pseudogymnoascus destructans* (Pd) with extensive acoustic monitoring

across Plateau parks. After the first Pd detections in 2024 at Canyonlands National Park (CANY) and Mesa Verde National Park (MEVE), Pd was not detected in 2025 during screenings at 15 sites across seven NPS units. In 2026, IMD networks and partners at Virginia Tech will expand Pd screening to 28 additional sites in eight other NPS units, while 144 acoustic detectors deployed in 20 units document bat species occurrence and ecology to establish robust pre-WNS baselines. Parks use Pd screening results to inform active bat management and will use species-specific temporal occurrence information to assess disease impacts on populations.

Forest Modeling and Monitoring Inform Future Pinyon-Juniper Management at GRCA

Southern and Northern Colorado Plateau networks (SCPN/NCPN) partnered with the U.S. Geological Survey to help Grand Canyon National Park (GRCA) plan for future fire-potential conditions in pinyon-juniper (PJ) woodlands. By assessing projected shifts in PJ distribution and developing a management framework, the team provided resource managers with practical tools to prioritize conservation and climate-adaptation strategies. GRCA is using these analyses to inform Integrated Fire Risk Management and guide post-fire restoration planning in PJ landscapes.

Southern Plains Network (SOPN)

Vegetation Monitoring and Partnerships Support Restoration of Former Agricultural Lands at SAND

In FY2025, SOPN provided monitoring data and helped resource managers at Sand Creek Massacre National Historic Site (SAND) coordinate a structured revegetation effort on newly acquired lands at the park. By coordinating Inflation Reduction Act funding, facilitating partner collaboration, and establishing vegetation monitoring focused on invasive and native plant cover, SOPN helped the park move from a short-term risk control approach to a long-term restoration framework that guides treatment decisions and species restoration selection. These efforts reduced the risk of invasive species establishment and strengthened the park's ability to evaluate restoration investments over time.

Herbarium Digitization Strengthens Plant Records and Management Use Across SOPN Parks

SOPN partnered with park staff, expert botanists, and academic institutions to improve the accuracy and accessibility of plant specimen records across its 11 parks. Through coordinated efforts to update labels, digitize specimens, and ensure proper accessioning at Washita Battlefield National Historic Site (WABA), the network strengthened archival practices and expanded online access to park plant collections. These improvements enhance the reliability of botanical records and support restoration planning, tracking of species of concern, and long-term preservation of plant knowledge for future management and research.

Vegetation Monitoring Supports Sustainable Bison Grazing at CHIC

To help Chickasaw National Recreation Area (CHIC) address overgrazing and declining pasture conditions in its bison program, SOPN collaborated with park staff to design a phased restoration

approach supported by structured vegetation monitoring. The monitoring tracks pasture recovery following management actions and provides a basis for adjusting grazing practices over time. These efforts reduce reliance on supplemental feeding, promote long-term grassland health, and help maintain bison as a culturally and ecologically important park resource.

Invasive Plant Reporting Improves Treatment Readiness Across SOPN Parks

SOPN strengthened invasive plant-control readiness across all network parks by translating monitoring information into concise, treatment-focused summaries paired with clear invasive plant distribution maps. These products provided parks with accessible information on where infestations were located, how they were expanding, and how severe they had become, along with guidance tailored to management strategies for approaching control efforts. With this decision-support in hand, parks were better able to recognize emerging threats, evaluate response options, and prepare for treatment when opportunities arose. Even when actions were deferred, the improved information enhanced planning and reduced the risk of being caught off guard by rapidly growing infestations.



Chesler Park, Needles District, in Canyonlands National Park (NCPN).
NPS / ALICE WONDRAK BIEL

4 Long-Term Monitoring Foundations for Park Management

If we are to keep parks unimpaired, we will have to understand large-scale issues, such as fragmentation of landscapes surrounding parks, the high-stakes losses that invasive plants and animals promise, the decline in migratory species, and the all-pervasive implications of global climate change, in sufficient detail to manage them.

—Michael Soukup (2007)

Resource inventories provide point-in-time information about natural resources such as plants, animals, air, water, soils, and landforms. Monitoring, in contrast, involves repeated measurements over time—tracking the status and trends of key natural resources, or “vital signs,” that reflect changes in ecosystem health. These data help park staff identify resource presence and abundance, understand baseline conditions, detect early signs of ecological change, and evaluate the effectiveness of management actions undertaken by parks.

Although designed for long-term tracking, monitoring data are often used in ways that extend well beyond their original scope. In FY2025, networks applied long-term datasets to support a wide range of management needs, including:

- Wetland and amphibian protection in Yellowstone and Grand Teton, where GRYN’s monitoring informed fire-management planning and construction-compliance decisions.
- Rio Grande/Río Bravo water discharge/delivery and habitat-protection coordination, supported by CHDN’s long-running binational U.S.-Mexico river-monitoring program.
- Restoration planning on former agricultural lands, informed by SOPN vegetation monitoring at Sand Creek Massacre National Historic Site.
- Ungulate-management, and fire-response/climate evaluations, guided by ROMN’s alpine, wetland, upland, and stream baselines.
- Expanded or accelerated sampling designs at the request of parks—such as increased monitoring after wildfires, evaluating endangered-species reintroductions, or conducting resource-condition assessments—to meet emerging park needs across multiple networks.

The value of I&M data and analyses to parks grows over time, providing essential insight into long-term ecological processes and the factors influencing changes in resource condition. The following sections highlight how the Intermountain Region’s seven networks supported park programs in FY2025 through targeted data collection, analysis, collaboration, and responsive science delivery.

Chihuahuan Desert Network (CHDN)

During FY2025, the Chihuahuan Desert Network maintained continuity across its long-term vital signs monitoring despite staffing shortages, travel restrictions, and administrative constraints. The network delivered scheduled fieldwork across all seven parks by coordinating flexible logistics and

shared capacity within the Southwest Network Collaborative (SWNC). These efforts ensured that foundational datasets continued without interruption, preserving the integrity of long-term ecological records essential for future status-and-trend assessments.

Springs and Groundwater Monitoring

CHDN sustained monitoring of desert springs and groundwater systems, adjusting schedules and field operations to maintain sentinel-site continuity during a year of travel limitations. These observations remain central to tracking hydrologic conditions in arid-land ecosystems and detecting long-term changes in spring persistence and groundwater availability.

Upland Vegetation and Soils Monitoring

Across remote grasslands, shrublands, and montane landscapes, CHDN completed its planned vegetation and soils monitoring using a lean field crew and shared SWNC staffing. This work preserved multi-decade datasets that document plant community composition, ground cover, soil condition, and vegetation responses to drought and disturbance.

Early Detection of Exotic Plants (SWNC Collaboration)

Through the Southwest Network Collaborative, CHDN contributed to regional early-detection monitoring of invasive and noxious weeds across multiple southwestern parks. These efforts produced up-to-date distribution information, improving managers' ability to recognize emerging threats before treatment decisions arise.

Binational River Monitoring (Status and Trend Foundation)

CHDN continued its long-running U.S.-Mexico binational monitoring of the Rio Grande/Río Bravo at Big Bend National Park, collaborating with U.S. partners and Mexico's CONANP to maintain shared protocols and data access. This work forms the backbone of long-term hydrologic and ecological trend assessment for one of the most significant river systems in the region.

Dune Dynamics and Geomorphology Monitoring

CHDN's monitoring portfolio includes documentation of geomorphic processes such as dune dynamics at White Sands National Park (WHSA) and channel morphology along the Rio Grande/Bravo. WHSA monitoring, in particular, provides an early warning system to detect dune destabilization which also would affect the adjacent White Sands Missile Range and Holloman Air Force Base. Maintaining these efforts in FY2025 protected critical records that help characterize natural variability and long-term landscape change.

Wildlife and Landbird Occurrence Monitoring

CHDN provided wildlife and landbird monitoring data that supply essential occurrence and habitat-association baselines across desert and riparian ecosystems. These foundational datasets supported biological assessments during FY2025 while also continuing to build the long-term records needed to understand shifts in wildlife communities.

Data Publication and Preservation

To safeguard nearly two decades of monitoring information, CHDN significantly advanced its data-preservation work. Staff published or contributed to more than 50 IRMA (Integrated Resource Management Application) products and continued the network “time capsule” initiative, improving discoverability and reducing the risk of information loss during staffing transitions. These efforts strengthen long-term data accessibility for parks, partners, and researchers.

Greater Yellowstone Network (GRYN)

During FY2025, the Greater Yellowstone Network sustained long-term monitoring across four national park units despite staffing constraints, travel limitations, and several administrative challenges. GRYN completed at least 85% of its routine vital signs monitoring for amphibians and wetlands, upland vegetation, water quality, and whitebark pine, maintaining continuity of core datasets essential for tracking ecosystem condition in one of the most dynamic and iconic landscapes in the National Park System.

Amphibian and Wetland Monitoring

GRYN continued its long-running amphibian and wetland vital signs program, surveying 30 of 31 target catchments along with four verification catchments in FY2025. All data were entered, verified, validated, and certified, and a complete amphibian data package covering 2005–2024 was posted to the DataStore. These ongoing efforts preserve essential baseline information on amphibian occupancy, wetland conditions, and habitat characteristics across the Yellowstone and Grand Teton ecosystems. Routine data summaries and multi-year analyses are underway.

Upland Vegetation Monitoring

The network maintained upland vegetation monitoring across Bighorn Canyon, Grand Teton, and Yellowstone national parks, with surveys completed at most scheduled frames. Data system improvements made FY2025 the most efficient year to date for field data collection, QA/QC, and data sharing with parks. This work provides long-term records on the composition and stability of sagebrush, juniper, and mountain-mahogany communities while supporting ongoing vegetation trend assessments.

Water Quality Monitoring

GRYN sustained its long-term water quality program at eight discrete sites and within the Soda Butte Creek watershed. Nearly all scheduled sampling occurred, with only a few missed sites due to access limitations. All 2024 data were processed and entered into the National Park Service STOrage and RETrieval (NPSTORET) database, with 2025 data to be completed by spring 2026. Water quality data remain current in the national Water Quality Portal and provide a critical baseline for understanding aquatic ecosystem health across the Greater Yellowstone Ecosystem.

Alpine Vegetation (GLORIA) Monitoring

Although no alpine vegetation field sampling occurred in 2025 at the GRYN GLORIA site, substantial progress was made on the North American GLORIA analysis. GRYN worked with the Rocky Mountain Network and GLORIA International to coordinate data gathering, data cleaning,

and structuring for all 28 North American sites. These efforts ensure long-term alpine change detection remains on track and that GRYN’s alpine dataset integrates cleanly into continent-wide analyses of climate-driven vegetation change.

Whitebark Pine Long-Term Monitoring

GRYN continued the second panel of its whitebark pine monitoring cycle, visiting 37 of 45 transects and establishing new BLM transects in Wyoming and Idaho. These long-term data document blister rust infection rates, recruitment patterns, and survivorship trends of a federally threatened keystone species. Two new step-trend analysis reports (2004–2019 and 2004–2023) were published in FY2025, further strengthening the long-term baseline for this high-elevation forest type.

Climate and Land-Use Data Integration

While GRYN does not collect climate or land-use data directly, it collaborates with multiple networks and partners to integrate climate parameters and land-use information into analyses of other vital signs. Climate data are accessed through [Climate Analyzer](#), and land-use data packages were completed and posted to the DataStore. These integrations ensure that vital sign assessments account for external drivers that influence vegetation, hydrology, and wildlife patterns.

Data Management and Publication

GRYN made significant advances in data management during FY2025, establishing systems now used by parks and partners for vegetation and other resource datasets. Approximately 20 reports, publications, and outreach materials were added to the DataStore, and several new data packages (amphibians, landbirds, landscapes, water quality) were successfully published. These efforts ensure long-term monitoring data remain discoverable, standardized, and ready for use in park planning, compliance, and national-scale analyses.

Northern Colorado Plateau Network (NCPN)

Despite a difficult year marked by staffing losses, early-season travel restrictions, and the October shutdown, NCPN prioritized sentinel sites and the highest-value protocols and still completed most planned monitoring across its vital signs. The network kept long-term datasets intact (especially water quality, landbirds, uplands, wadeable streams, and big rivers), advanced data packaging and QA/QC workflows, and formalized data-sharing arrangements to preserve the usefulness of its baselines for parks and partners.

Upland Vegetation & Soils

NCPN completed upland vegetation/soils monitoring at eight parks and maintained the rotating panel design, with work at CARE canceled due to staffing limitations. The network published a comprehensive data package (2009–2023) and the associated processing script, moved QC from “Access” to “R”, and executed MOUs enabling cross-agency analyses with Colorado State University and BLM’s Assessment, Inventory and Monitoring (AIM) program. A trend synthesis (2011–2022) for BLCA and CURE documents community composition and soil-condition baselines that will anchor future resource change detection.

Wadeable Streams

Hydrologic monitoring proceeded at Arches National Park (ARCH) and Capitol Reef National Park (CARE), including re-surveyed well transects, while a full geomorphic survey was completed at ARCH site C-01. NCPN published the 2008–2021 data package and processing script and issued a revised SOP set (v1.06, 2025) that updates sampling design and hydrology/geomorphology metrics, preserving a consistent baseline across parks for riparian condition tracking.

Water Quality

Baseline water-quality sampling was completed at 11 parks, with 2024 data fully certified and 2025 data in process. Network staff continued water quality standard comparisons and trend set-up (CARE, CANY), while a resource brief (2019–2022) summarizes recent baseline conditions. All datasets remain aligned with the National Water Quality Portal workflows, ensuring discoverability and comparability over time.

Landbirds

Field crews surveyed across 12 parks, sustaining a two-decade record for riparian, pinyon-juniper, and sagebrush-shrubland habitats. NCPN published the 2005–2023 data package and processing script, and annual trend work continued (2024 report complete; 2025 in review). These products provide park staff with species-density and occupancy baselines that underpin status/trend assessments and habitat evaluations.

Big Rivers

NCPN sustained hydrology, geomorphology, riparian vegetation, and repeat-photo baselines at CANY (full), DINO and BLCA (partial), and at Green River sentinel sites in partnership with Bureau of Reclamation/Bureau of Land Management. The team built operational R-based QC for vegetation data and advanced analyses on flow spikes vs. modified base flows, while USGS collaborators prepared inundation data for each vegetation plot. This work anchors long-term status/trend baselines that will later inform (but not duplicate) Colorado River water allocation decisions after 2026 used by the Bureau of Reclamation.

Springs, Seeps & Hanging Gardens

NCPN completed spring/seeps work at Hovenweep National Monument (HOVE) and partial work at ARCH; field efforts at CANY and NABR were canceled. The program's goal remains trend detection in water quantity/quality and spring-related vegetation, and 2024 data entry/verification continued to preserve continuity in datasets for these fragile desert systems.

Land Surface Phenology & Landscape Dynamics

MODIS/Landsat-based monitoring continued service-wide, and NCPN published 20-year phenology/vegetation/climate reports (plus supplemental datasets) for multiple parks (e.g., ARCH, BLCA, CEBR, CURE, DINO, FOBU, GOSP, NABR, ZION). Although no new analyses were run in 2025 (lead ecologist took the Deferred Retirement Program), these park-level baselines are now packaged and accessible for managers to track resilience vs. sensitivity across vegetation alliances.

Climate

While NCPN does not collect climate data directly, staff maintain dashboards and integrate climate parameters into all vital-sign protocols, as well as continuing water-balance model development and a pivot-points analysis (continental U.S.) to identify critical water needs and climate sensitivities. These integrations ensure that every baseline dataset is contextualized by exposure and variability, strengthening future status/trend interpretations.

Data Publication, QA/QC & Interoperability

FY2025 saw major data-management advances: a transition to ArcGIS Field Maps for mobile data collection; refactoring legacy Access databases; publication of 26 datasets/scripts/packages spanning multiple vital signs; and MOUs to enable broader analytical use. Collectively, these steps protect the network's long-term baselines and make them discoverable, reproducible, and usable across park programs and partner agencies.

Rocky Mountain Network (ROMN)

FY2025 was a transition year for the Rocky Mountain Network, marked by the loss of long-time wetlands and streams staff, delayed fieldwork due to travel restrictions, and major time commitments to prepare for the upcoming network review. Despite these constraints, ROMN protected continuity across its core monitoring protocols, completed essential field visits, advanced a large volume of data QC and publication work, and strengthened data-management tools that support long-term ecological baselines across six parks.

Alpine Vegetation & Soils (GLORIA)

ROMN maintained participation in the international GLORIA alpine-monitoring network, sampling vegetation at four summit sites in Great Sand Dunes National Park and Preserve (GRSA) and supporting temperature-logger swaps in the Pecos Wilderness. The network continued compiling, cleaning, and uploading historical and recent GLORIA data to the international portal and worked closely with GLORIA partners (GRYN, Great Basin National Park, and international partners,) on the North American alpine vegetation analysis. These efforts preserve a unified, multi-year baseline needed to detect climate- and pollution-driven changes in high-elevation ecosystems.

Climate

ROMN does not collect climate data directly but integrates authoritative regional climate data into all applicable protocols through [Climate Analyzer](#). During FY2025, staff maintained dashboards, supported climate-trend presentations (e.g., ROMO alpine vegetation), and began preparing the climate protocol for network review. Climate context remains a critical layer for interpreting status and trends across all other vital signs.

Landscape Dynamics

ROMN uses national-level Environmental Settings data provided by IMD's Central Support Office to track broad-scale vegetation and land-surface change patterns. No new landscape analyses were conducted in FY2025 due to staffing constraints, but all geospatial data remained certified and

available to support upland, wetland, and alpine assessments. Protocol review preparations ensured continued alignment with service-wide methods.

Snow Chemistry

ROMN continued coordinated snowpack sampling through the USGS Rocky Mountain Regional Snowpack Chemistry Program at Glacier National Park (GLAC), GRSA, and Rocky Mountain National Park (ROMO). Data through 2024 remained certified and available via the USGS portal, and 2025 results will be posted in FY2026. Snow-chemistry baselines support understanding of atmospheric deposition trends affecting water quantity, quality, and ecosystem health.

Stream Ecological Integrity

Due to staffing loss and network-review preparations, ROMN conducted partial monitoring at Grant-Kohrs Ranch National Historic Site (GRKO) and maintained continuous temperature loggers across all stream parks (GLAC, GRKO, Little Bighorn Battlefield National Monument (LIBI), ROMO). The network completed extensive data QC on prior years' stream datasets and published several new streams data packages and R processing scripts to standardize water-chemistry and physical-habitat data. These products secure ROMN's long-term hydrology, chemistry, and macroinvertebrate baselines for trend analysis and future park decision support.

Upland Vegetation & Soils

ROMN maintained upland monitoring at LIBI, collecting reduced-scope data shaped by network-review needs, while completing a full QC of upland datasets from 2009 to 2024 and nearly finalizing a new upland data package. Reduced sampling at Florissant Fossil Beds National Monument (FLFO) and GRKO was offset by improved data-management tools, including annual QC code, new R scripts, and documentation of protocol deviations. These steps strengthen multi-year baselines on understory composition, exotic species, and soil condition.

Wetland Ecological Integrity

ROMN completed full wetland monitoring at GRSA (including 29 CNHP-monitored sites supporting the park's Ungulate Management Plan) and conducted partial well-logger visits at FLFO, GRSA, and ROMO. New Survey123 digital forms and a data-review dashboard were field-tested to replace failing Access databases, improving baseline data integrity. The network entered and verified 2024 data and maintained long-term groundwater, vegetation, and disturbance baselines across key wetland systems.

Data Management, QC, and Publication

FY2025 was a major year for ROMN's data infrastructure. With support from SIP interns and the IMD Data Strike Team, the network:

- completed a full server backup,
- built R packages for water-chemistry QC,
- published streams data packages (physical habitat, macroinvertebrates, site/event),

- advanced upland and wetland data packages toward completion, and
- developed Survey123 tools for wetlands and new draft dashboards for streams.

These upgrades ensure ROMN’s long-term datasets are standardized, reproducible, and ready for publication, preserving monitoring continuity during ongoing staffing transitions.

Sonoran Desert Network (SODN)

FY2025 brought a travel pause from January to May, frozen task agreements, rescinded funds, and shared staffing gaps across the Southwest Network Collaboration. Even so, SODN kept core baselines intact: weather and climate data harvesting and reporting, groundwater measurements at all eligible parks, continuity sampling for springs, targeted stream sampling to complete panels, five-year uplands plot resurveys, and network-wide mammal monitoring supported by partners and volunteers. Data certification, publication pipelines, and dashboarding advanced throughout the year to preserve long-term value and usability for park programs.

Weather & Climate

SODN continued harvesting climate and hydrologic data from NOAA, USGS, and other authoritative providers through [Climate Analyzer](#), producing annual weather and climate summaries for each park. These datasets provide essential baseline context for interpreting trends across other vital signs, including groundwater, streams, and vegetation. Climate data management remained consistent, with reporting to shift to the NPS Science Report Series depending on FY2026 web-publishing guidance.

Groundwater

All monitoring wells were measured in FY2025, using both manual measurement and continuous transducer systems. SODN refined standardized QA/QC and certification procedures in Aquarius, ensuring all historic manual data through FY2024 are published and continuous datasets are moving through verification and certification. Analyses documenting year-over-year and long-term changes were completed for all parks with groundwater wells, and annual groundwater summaries were prepared.

Springs

While early-season travel restrictions delayed some sampling, SODN completed summer fieldwork and portions of the fall field schedule through partner support. All FY2024 tabular springs data were certified, with FY2025 data progressing toward completion. Continuous temperature datasets moved into standardized QA/QC workflows. Park-specific springs data packages were updated, and the network piloted improved methods for mapping wetted extent using high-precision GNSS and 3D scanning technologies to strengthen long-term baselines.

Streams

Although the protocol is undergoing major review as part of the Southwest Network Collaboration’s Water Summit, SODN ensured continuity by collecting targeted stream data at each perennial-stream park, including aquatic macroinvertebrates, discharge, and biological contaminants. This sampling completed necessary panels and supported water-rights documentation for Arizona parks. Riparian

vegetation was resurveyed at Tumacácori NHP. Historic riparian vegetation datasets were packaged and published to make long-term records fully accessible for park use.

Terrestrial Vegetation & Soils (Uplands)

SODN conducted uplands sampling for scheduled parks beginning in August. Fall and winter work was delayed due to the FY2026 lapse in appropriations, but all FY2025 data were certified. Updated R-based QA/QC and data-publication workflows were implemented across parks. Park-specific uplands data packages were updated, trend analysis was initiated for Fort Bowie NHS, and a status report for Tonto NM was drafted. Field summaries were delivered to all parks sampled in 2025.

Exotic Plants—Early Detection

Due to the travel pause, early-detection surveys were canceled at most parks, with Tumacácori NHP the sole park sampled during FY2025. SODN completed targeted surveys for stinknet (*Oncosiphon piluliferum*), an invasive and foul-smelling annual weed, near Casa Grande Ruins NM and Saguaro NP and made the results immediately available through a GIS dashboard. A new agreement with USFWS will allow expanded plant and animal early-detection efforts in FY2026.

Medium-Sized and Large Mammals

Despite travel and staffing challenges, SODN completed all planned camera-based mammal monitoring at Chiricahua NM, Organ Pipe Cactus NM, and Saguaro NP, with extensive support from park staff, partners, and volunteers. All FY2025 mammal data—and Organ Pipe data back to 2016—were fully certified. Multi-season occupancy modeling advanced for several species at Saguaro NP, and single-season models were completed where detection rates allowed. Draft annual reports for each park are prepared for publication when web restrictions are lifted.

Inventories & Vegetation Mapping

The final set of environmental DNA samples from the nine-park aquatic animal and pathogen inventory were processed in late FY2025 and will be analyzed in FY2026. Vegetation mapping inventory products, including full report volumes and spatial datasets, were completed for Chiricahua NM and Organ Pipe Cactus NM, concluding network vegetation-mapping work and establishing authoritative baseline map products for both parks.

Data Management, QA/QC & Interoperability

The network advanced R-based QA/QC tools, certified FY2025 datasets across multiple protocols, streamlined publication workflows, and expanded dashboarding through the Southwest Network Collaboration. These efforts strengthen the integrity, accessibility, and long-term usability of SODN's monitoring baselines for park management and planning.

Southern Colorado Plateau Network (SCPN)

FY2025 brought significant constraints to the network's monitoring capacity. Travel restrictions in March and May, the October government shutdown, and the Dragon Bravo fire (GRCA) reduced access to monitoring sites, while terminated cooperative agreements and a hiring freeze further limited personnel capacity. Even so, SCPN maintained continuity in its core long-term monitoring

programs, including alluvial groundwater, aquatic macroinvertebrates, integrated uplands, landbirds, satellite-based vegetation phenology, surface flow, and water quality. The network also advanced data management workflows and continued preparing long-term datasets for certification, publication, and park use.

Alluvial Groundwater

SCPN continued long-term groundwater monitoring at Canyon de Chelly, Chaco Culture, El Morro, Hubbell Trading Post, Salinas Pueblo Missions, and Wupatki. Manual measurements were intermittently collected due to travel restrictions and the shutdown, while continuous recorders captured 15-minute-interval data across instrumented wells. Most continuous and discrete groundwater datasets from 2008 to 2025 have been entered into Aquarius, with QC nearly complete and a QA/QC script developed. Final approval and data-package publication are forthcoming.

Aquatic Macroinvertebrates

Sampling was completed at Bandelier, Canyon de Chelly, and Grand Canyon (except for a Garden Creek event canceled due to travel restrictions and wildfire). FY2025 data were entered and verified, with QC pending. SCPN continued to maintain its long-term macroinvertebrate database (2007–2024), with data packages updated to include the most recent certified records. No analyses or new reports were completed this year, though a web article for Bandelier’s existing report was published.

Integrated Uplands

Upland vegetation monitoring was completed at El Malpais, Bandelier, Mesa Verde, Wupatki, and Grand Canyon. Fieldwork at Glen Canyon was canceled due to spring travel restrictions, while Petrified Forest, Petroglyph, and Chaco Culture were canceled due to the October shutdown. In total, 75 plots were sampled. Data from sampled plots underwent QA/QC, and historical upland data (2007–2024) remain accessible. Multiple analyses are underway, including assessments of climate drivers on species richness, integration of sampling designs for climate–vegetation modeling, and a multi-network project on climate drivers of C3/C4 grasslands.

Landbird Communities

Point counts were completed at Bandelier, Canyon de Chelly, Grand Canyon, Mesa Verde, Petrified Forest, and Wupatki, totaling 97 transects. QA/QC was completed for 2024 landbird data, and a data package for 2022–2024 was published. Analyses of mixed-conifer forest landbirds and vegetation (Bandelier and Grand Canyon) were completed, and a separate long-term analysis of pinyon-juniper landbirds (Bandelier, Grand Canyon, Mesa Verde) was published. Several survey transects were retired or rerouted at Bandelier and Canyon de Chelly as part of routine protocol adaptation.

Satellite-Based Vegetation Phenology & Condition

SCPN continued processing publicly-available satellite data to track vegetation phenology across the network. A 20-year analysis of NDVI trends in grasslands and shrublands (2003–2022) was completed, and associated Science Reports were produced. This vital sign does not require field data collection; instead, SCPN processes and delivers time-series vegetation condition metrics for use in ecological assessments and park planning.

Surface Water Flow

Continuous 15-minute surface flow data were collected at recording stream-gage sites at Canyon de Chelly, Chaco Culture, El Morro, Hubbell Trading Post, Salinas Pueblo Missions, and Walnut Canyon. Most continuous and discrete flow data (2008–2025) have been entered into Aquarius. QC is nearly complete, and a QA/QC script for discrete data has been developed. Data-package preparation will follow network review and final approvals.

Water Quality of Streams

Water-quality sampling at Bandelier, Canyon de Chelly, Glen Canyon, and Grand Canyon experienced several cancellations due to wildfire, travel restrictions, and the shutdown. Discrete water-quality data for 2024 were entered and verified, and QC scripts were developed for water-quality datasets back to 2008. QC efforts continue with no new analyses or reports completed this year.

Additional Data Management

SCPN advanced multiple data-management efforts, including creation and publication of protected-data memos for each park, porting USGS servers to more stable hosting, and coordinating transfer of historic acoustic bat data (2016–2024) for analysis. The network also requested and prepared historic acoustic datasets (2018–2024) from Virginia Tech for publication in FY2026. These efforts ensure long-term monitoring records remain discoverable, secure, and ready for management use.

Southern Plains Network (SOPN)

FY2025 was a year of limited staffing capacity for the Southern Plains Network, following a Program Manager vacancy early in the fiscal year. To maintain continuity of core monitoring, SOPN relied heavily on collaboration with partner networks through the Southwest Network Collaborative. Despite the compressed field season and reduced staffing, the network sustained baseline monitoring for grasslands, invasive plants, groundwater and water resources, vegetation, and species occurrence. SOPN also advanced data documentation, publication, and stewardship processes essential for long-term dataset integrity.

Grassland and Vegetation Monitoring

SOPN sustained vegetation monitoring across grassland and mixed communities to support long-term condition assessment at multiple parks. Monitoring supported large-scale revegetation efforts at Sand Creek Massacre National Historic Site and Lyndon B. Johnson National Historical Park, as well as pasture recovery assessments at Chickasaw National Recreation Area following bison management actions. The network also completed protocol documentation, QA/QC workflows, and publication of the FY2025 Grasslands data package, laying the foundation for multi-year syntheses and sampling-design evaluation.

Invasive Plant Monitoring

SOPN completed park-specific invasive plant summaries that combined mapped distributions with management-oriented interpretation to help parks prepare for treatment opportunities. The network

continued exploring enhanced access through its invasive plant dashboard and supported invasive-plant monitoring needs across all parks. These products improved readiness for future weed treatments and strengthened parks' ability to anticipate emerging invasive threats.

Climate and Water Resources (Harvested Data)

SOPN produced climate and water resource monitoring summaries for individual parks, delivering park-level decision support using harvested climate datasets and standardized reporting formats. Eleven unpublished FY2025 reports were completed, maintaining continuity of climate context needed for understanding resource conditions across the network.

Groundwater and Water Monitoring

Across the network, groundwater and water-resource datasets were incorporated into climate and resource summaries used by parks. SOPN relied on harvested or partner-generated data for these vital signs, ensuring continuity of reporting for water availability, drought context, and related management considerations. These efforts supported park decision-making despite capacity constraints and the lack of a fully-staffed monitoring team.

Herbarium and Species-Occurrence Data Stewardship

SOPN advanced species-occurrence baselines by assisting with herbarium labeling, accessioning, and digitization across multiple parks. Support from expert botanists improved identification of difficult taxa, documented species of conservation concern, and expanded park species lists. SOPN also contributed to national amphibian-species updates, strengthening long-term biodiversity records and enabling more robust vulnerability assessments.

Exotic Plant Early Detection

Early-detection monitoring supported restoration planning at newly acquired lands and ongoing grassland projects. At Sand Creek Massacre National Historic Site, monitoring paired with restoration coordination helped the park transition from immediate risk management to structured, long-term revegetation. At several parks, SOPN provided mapping, species assessments, and management recommendations, improving overall post-fire treatment readiness.

Grassland Data Publication and QA/QC

SOPN completed standardized data-publication workflows, certifying datasets, updating monitoring documentation, and releasing a comprehensive grasslands monitoring dataset to support analysis and park planning. These efforts increase transparency, accessibility, and reproducibility across SOPN's monitoring programs and improve the network's ability to support future condition assessments.

Workforce Development and Collaborative Field Support

SOPN relied on Scientist in Parks interns for core field tasks, providing training and mentorship to ensure protocol consistency and data quality. Additional support from partner networks and regional experts helped maintain baseline monitoring coverage across the network's 11 parks.



Upland vegetation at Bighorn Canyon National Recreation Area (GRYN).
NPS

5 Announcing Our Findings: Science Communication for the Parks

By communicating the results and practices of science, the NPS can make informed stewardship decisions, and inspire the public's commitment to preserve our nation's heritage through place-based, free-choice science learning.

—NRSS Science Communication Framework (2016)

The IMD Communication Strategy focuses on four key audiences for our science and information:

- Park resource management decision makers
- The broader scientific community
- IMD and other divisions within the Natural Resource Stewardship and Science (NRSS) Directorate
- National Park Service staff and offices, including interpretation and education staff, as well as the public

In 2025, Intermountain Region networks used a variety of tools and venues to share monitoring results and applied science. These included peer-reviewed publications, web briefs, data dashboards, formal reports, presentations, public outreach, and collaborative partnerships with universities and nonprofit organizations. The following entries highlight how I&M staff communicated science to support park stewardship, inform public understanding, and contribute to broader conservation efforts.

Outreach Events

Chihuahuan Desert Network (CHDN)

Campus & community presentations that highlight NPS science and stewardship.

CHDN staff provided outreach and education activities for external audiences—including New Mexico State University, California Northstate University and local elementary school students—through presentations that introduced park science, monitoring work, and the role of stewardship in Chihuahuan Desert parks. Though brief in the FY2025 report, these engagements reflect the network's continued efforts to connect academic and youth audiences with NPS science.

Greater Yellowstone Network (GRYN)

Bringing Greater Yellowstone science to public audiences through immersive exhibits and presentations.

In FY2025, GRYN expanded its public-facing communication by co-developing a traveling photo exhibit showcasing amphibian species and wetland habitats across the Greater Yellowstone Ecosystem. Displayed in multiple gateway communities—and now installed at the Yellowstone Grizzly & Wolf Discovery Center in West Yellowstone—the exhibit brought normally

hard-to-observe wildlife and ecosystems to diverse visitor groups. GRYN also contributed a virtual presentation to the Yellowstone Commercial Use Spring Guide Training, reaching more than 50 guides with updates on amphibian and wetland monitoring and its relevance to park stewardship.

Cultivating the next generation of conservation practitioners through internship, university mentorship, and field-based learning.

The network continued its strong commitment to mentoring and education by hosting Scientists in Parks interns, supporting Montana State University students, and providing training to staff from parks, agencies, and partner organizations. GRYN's Vegetation Ecologist led more than 40 participants from American Conservation Experience and Montana Conservation Corps to whitebark pine monitoring sites, offering hands-on exposure to long-term ecological monitoring and restoration science in the Greater Yellowstone Ecosystem.

Northern Colorado Plateau Network (NCPN)

Engaging students and early-career scientists through field-based learning.

NCPN continued its investment in youth and emerging professionals by participating in Science Moab's School-to-Science Program, hosting a local high school student for a day of hands-on field experience. The network also supervised a Scientists in Parks intern focused on data management, contributing to early-career development while supporting essential monitoring work. These activities reflect NCPN's ongoing role in cultivating meaningful learning opportunities tied directly to park science.

Rocky Mountain Network (ROMN)

Providing hands-on learning opportunities for staff, interns, and partners.

ROMN strengthened field-based learning and professional development by inviting park staff, interns, volunteers, and collaborators to join monitoring activities across alpine, wetland, and stream sites. Field crews from FLFO and GRSA participated in wetland monitoring to learn new Survey123 data-collection workflows and well-inspection methods. Volunteers supported field logistics throughout the season, and interns gained experience across multiple protocols. The ROMN program manager also provided a virtual guest lecture to Utah State University students on inventory, monitoring, and assessment in the National Park Service.

Sonoran Desert Network (SODN)

Connecting the public with desert science through education and citizen engagement.

SODN delivered more than two dozen outreach events in FY2025, including programs at the Desert Research Learning Center, the Tucson Festival of Books, local schools, clubs, and high school career fairs. These events reached between 7 and 373 participants each and provided hands-on opportunities for visitors and local communities to engage directly with park science. Volunteers contributed a total of 2,655 hours supporting monitoring and resource-management activities across the network.

Developing early-career scientists through immersive learning opportunities.

The network also invested in early-career development by hosting multiple Scientist in Parks participants and two International Volunteers-in-Parks interns, who lived on site at the Desert Research Learning Center. These interns received field-based experience across SODN's monitoring programs and contributed to ongoing research and resource stewardship.

Southern Colorado Plateau Network (SCPN)

Connecting visitors with Colorado Plateau science.

SCPN staff participated in the public celebration for Wupatki National Monument's 100th anniversary, presenting a poster that highlighted long-term vegetation and wildlife monitoring at the monument. The event offered visitors a chance to learn directly from network scientists during a major community milestone.

Engaging naturalist and citizen-science communities.

Network staff also presented monitoring findings at the Arizona Native Plant Society annual meeting, sharing updates on vegetation community trends across Colorado Plateau parks with a public audience of naturalists and conservation practitioners.

Southern Plains Network (SOPN)

Supporting early-career development through field-based learning and scientific collaboration.

In FY2025, the Southern Plains Network contributed to workforce development by deploying Scientist in Parks interns who supported vegetation, invasive plant, grassland, and species monitoring across multiple SOPN parks and partner networks. Interns received field mentoring and technical guidance that strengthened their practical skills and ensured consistent protocol implementation. SOPN also partnered with park staff, expert botanists, and academic institutions to improve herbarium documentation and digitization across all network parks—activities that helped expand botanical knowledge and provided collaborative, hands-on learning opportunities tied directly to park science and resource stewardship.

Publications

Journal Articles

Greater Yellowstone Network (GRYN)

Kissell, R. E. Jr., M. T. Tercek, D. P. Thoma, and K. L. Legg. 2025. Predicted distribution of curl-leaf mountain mahogany (*Cercocarpus ledifolius*) in the Bighorn Canyon National Recreation Area. PLOS ONE 20(2):e0317146. <https://doi.org/10.1371/journal.pone.0317146>

Ray, A. M., A. M. Yoder, B. D. Ertel, T. H. Henderson, and C. A. Mebane. 2025. Leveraging historical datasets to quantify the recovery of an impaired stream entering Yellowstone National Park. Discover Conservation 2:9. <https://doi.org/10.1007/s44353-025-00028-0>

Rocky Mountain Network (ROMN)

Cooper, D. J., E. W. Schweiger, J. R. Shaw, C. J. Westbrook, K. Kaczynski, H. Abouelezz, S. M. Esser, K. Nydick, I. de Silva, and R. A. Chimner. 2025. Riparian rapid ecosystem decline in Rocky Mountain National Park. *Conservation Biology* 39:e70053.
<https://doi.org/10.1111/cobi.70053>

Southern Colorado Plateau Network (SCPN)

Jones, H. H., B. D. Merriell, M. C. Swan, M. Johnson, and R. B. Siegel. 2025. Pinyon-juniper specialist birds are resilient to local-scale reduction of canopy cover and pinyon pines, but amount of understory shrub cover determines the composition of the insectivore guild. *Avian Conservation and Ecology* 20(2):13. <https://doi.org/10.5751/ACE-02941-200213>

Miller-Ter Kuile, A., A. Bui, A. Apigo, S. Lamm, M. Swan, J. S. Sanderlin, and K. Ogle. 2025. If you're rare, should I care? How imperfect detection changes relationships between biodiversity and global change drivers. *Global Change Biology* 31(7):e70362.
<https://doi.org/10.1111/gcb.70362>

Noel, A., D. R. Schlaepfer, B. J. Butterfield, M. C. Swan, J. Norris, and colleagues. 2025. Most pinyon–juniper woodland species distributions are projected to shrink rather than shift under climate change. *Rangeland Ecology & Management* 98:454–466.
<https://doi.org/10.1016/j.rama.2024.09.002>

Noel, A., D. R. Schlaepfer, I. P. Barrett, M. C. Duniway, J. Norris, C. T. Domschke, B. J. Butterfield, M. C. Swan, K. Hartwig, M. R. Crist, and J. B. Bradford. 2025. Shifts in suitability of pinyon-juniper communities: A climate adaptation framework for range-wide management of arid woodland resources. *Forest Ecology and Management* 596:123075.
<https://doi.org/10.1016/j.foreco.2025.123075>

NRR Reports, Protocols and Other NPS Publications

Chihuahuan Desert Network (CHDN)

Harrington, M. 2024. Fort Davis National Historic Site: Geologic resources inventory report. Science Report NPS/SR—2024/200. National Park Service, Fort Collins, Colorado.
<https://doi.org/10.36967/2305819>

Muldavin, E., Y. Chauvin, T. Neville, H. Varani, J. Smith, and P. Neville. 2024. A vegetation classification and map: Guadalupe Mountains National Park. Natural Resource Report NPS/CHDN/NRR—2024/2636. National Park Service, Fort Collins, Colorado.
<https://doi.org/10.36967/2302855>

Greater Yellowstone Network (GRYN)

Diehl, L., and K. Legg. 2026. Upland vegetation monitoring in Bighorn Canyon National Recreation Area: 2024 trip report. Science Report NPS/SR—2026/389. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2317253>

Lemly, J. M., L. Laughlin, and G. A. Smith. 2025. Inventory of fens and rare fen-indicator plant occurrences at Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. Science Report NPS/SR—2025/325. National Park Service. <https://doi.org/10.36967/2313526>

Northern Colorado Plateau Network (NCPN)

Bozek, M. 2025. Northern Colorado Plateau Network landbird monitoring protocol science review: A summary of reviewers' responses and recommendations. Science Report NPS/SR—2025/227. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2313929>

Livensperger, C. 2025. Vegetation and soil trends, Black Canyon of the Gunnison National Park and Curecanti National Recreation Area, 2011–2022. Science Report NPS/SR—2025/254. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2309325>

Nash, T. 2025. Invasive exotic plant monitoring at Dinosaur National Monument: 2023 and 2024 field seasons. Science Report NPS/SR—2025/321. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2313969>

Nash, T. 2025. Invasive exotic plant monitoring at Zion National Park: 2023 field season. Science Report NPS/SR—2025/345. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2315109>

Perkins, D. W. 2025. Invasive exotic plant monitoring at Capitol Reef National Park: 2024 field season. Science Report NPS/SR—2025/341. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2314971>

Perkins, D. W. 2025. Invasive exotic plant monitoring at Colorado National Monument: 2024 field season. Science Report NPS/SR—2025/342. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2314972>

Perkins, D. W. 2025. Invasive exotic plant monitoring at Curecanti National Recreation Area: 2023 field season. Science Report NPS/SR—2025/262. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2309926>

Perkins, D. W. 2025. Invasive exotic plant monitoring at Fossil Butte National Monument: 2024 field season. Science Report NPS/SR—2025/350. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2315452>

Perkins, D. W. 2025. Invasive exotic plant monitoring at Golden Spike National Historical Park: 2024 field season. Science Report NPS/SR—2025/352. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2315453>

Thoma, D. 2025. Landscape phenology, vegetation condition, and relations with climate at Arches National Park, 2000–2019. Science Report NPS/SR—2025/284. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2309796>

- Thoma, D. 2025. Landscape phenology, vegetation condition, and relations with climate at Black Canyon of the Gunnison National Park, 2000–2019. Science Report NPS/SR—2025/280. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2309623>
- Thoma, D. 2025. Landscape phenology, vegetation condition, and relations with climate at Cedar Breaks National Monument, 2000–2019. Science Report NPS/SR—2025/313. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2313338>
- Thoma, D. 2025. Landscape phenology, vegetation condition, and relations with climate at Curecanti National Recreation Area, 2000–2019. Science Report NPS/SR—2025/219. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2307122>
- Thoma, D. 2025. Landscape phenology, vegetation condition, and relations with climate at Dinosaur National Monument, 2000–2019. Science Report NPS/SR—2025/309. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2313184>
- Thoma, D. 2025. Landscape phenology, vegetation condition, and relations with climate at Fossil Butte National Monument, 2000–2019. Science Report NPS/SR—2025/304. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2313039>
- Thoma, D. 2025. Landscape phenology, vegetation condition, and relations with climate at Golden Spike National Historical Park, 2000–2019. Science Report NPS/SR—2025/324. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2313756>
- Thoma, D. 2025. Landscape phenology, vegetation condition, and relations with climate at Natural Bridges National Monument, 2000–2019. Science Report NPS/SR—2025/314. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2313610>
- Thoma, D. 2025. Landscape phenology, vegetation condition, and relations with climate at Zion National Park, 2000–2019. Science Report NPS/SR—2025/287. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2309878>
- Weissinger, R., D. Witwicki, H. Thomas, A. Wight, K. Lund, M. Van Grinsven, C. Livensperger, and C. Hackbarth. 2025. Riparian monitoring of wadeable streams protocol for park units in the Northern Colorado Plateau Network: Version 1.06. Science Report NPS/SR—2025/318. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2313818>

Rocky Mountain Network (ROMN)

- Powers, C., E. Borgman, and D. F. Doak. 2024. Climate and species traits shape responses of alpine flora in the US Rocky Mountains to a changing world: Analysis of five GLORIA sites across the southern Rockies. Science Report NPS/SR—2024/221. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2306920>

Schweiger, E. W., L. Zeigenfuss, D. Mosher, K. Sherrill, and D. Witwicki. 2025. Great Sand Dunes National Park and Preserve: Ungulate use and wetland condition in the ungulate management plan baseline period (2016–2019). Science Report NPS/SR—2025/258. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2309023>

Sonoran Desert Network (SODN)

Studd, S. E., J. S. Black, J. A. Hubbard, J. B. Galvin, and B. Fallon. 2025. Vegetation inventory, mapping, and characterization, Chiricahua National Monument: Volume I, main report. Science Report NPS/SR—2025/251. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2308673>

Studd, S. E., J. S. Black, J. A. Hubbard, J. B. Galvin, and B. Fallon. 2025. Vegetation inventory, mapping, and characterization report, Chiricahua National Monument: Volume II, type descriptions. Science Report NPS/SR—2025/252. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2308488>

Studd, S. E., J. B. Galvin, J. S. Black, and J. A. Hubbard. 2025. Vegetation inventory, mapping, and characterization report, Organ Pipe Cactus National Monument: Volume I, main report. Science Report NPS/SR—2025/359. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2316014>

Studd, S. E., J. B. Galvin, J. S. Black, and J. A. Hubbard. 2025. Vegetation inventory, mapping, and characterization report, Organ Pipe Cactus National Monument: Volume II, type descriptions. Science Report NPS/SR—2025/366. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2316015>

Southern Colorado Plateau Network (SCPN)

Norris, J. 2025. Trends in satellite-derived phenology in grasslands and shrublands of Southern Colorado Plateau Network parks. Science Report NPS/SR—2025/319. National Park Service, Fort Collins, Colorado. <https://irma.nps.gov/DataStore/Reference/Profile/2312720>

St. Germain, M. J., E. M. Johnston, and C. A. Diggins. 2025. Determining bat presence and activity in Petroglyph National Monument to inform visitor management. Science Report NPS/SR—2025/316. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2312877>

Stumpf, S. E., and L. W. Ploughe. 2024. Long-term trend in the aquatic macroinvertebrate community of the Mancos River at Mesa Verde National Park, aquatic macroinvertebrate monitoring 2008–2019. Science Report NPS/SR—2024/209. National Park Service, Fort Collins, Colorado. <https://irma.nps.gov/DataStore/Reference/Profile/2306058>

Swan, M. C. 2025. Vegetation trends in pinyon-juniper woodlands in Southern Colorado Plateau Network parks. Science Report NPS/SR—2025/307. National Park Service, Fort Collins, Colorado. <https://irma.nps.gov/DataStore/Reference/Profile/2312771>

Thomas, L. P. 2024. Semi-arid plant communities of the Southern Colorado Plateau in relation to regional climate context and local topoedaphic conditions: comparing species abundance patterns across a network of sites to identify climate-driven vulnerabilities and inform hypotheses about future composition shifts. Science Report NPS/SR—2024/217. National Park Service, Fort Collins, Colorado. <https://irma.nps.gov/DataStore/Reference/Profile/2306569>

Print and Web Briefs

Greater Yellowstone Network (GRYN)

Daw, S., and Greater Yellowstone Network. 2025. Understanding dynamic ecosystems: Science for parks in the Greater Yellowstone Network. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2309725>

Shanahan, E., and S. Daw. 2025. Whitebark pine monitoring in the Greater Yellowstone Ecosystem: 2023 web article series content. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2311508>

Shanahan, E., and S. Daw. 2025. Five-needle pine monitoring on Wyoming Bureau of Land Management forests in the Greater Yellowstone Ecosystem: 2023. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2311521>

Valentine-Darby, P., E. Borgman, D. Witwicki, and K. Legg. 2025. Change in alpine vegetation in the U.S. Rocky Mountains: Analysis of data from five GLORIA sites, 2003–2021. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2311425>

Northern Colorado Plateau Network (NCPN)

Livensperger, C., and E. Rendleman. 2025. Vegetation and soil trends, Black Canyon of the Gunnison National Park and Curecanti National Recreation Area, 2011–2022 [Brief]. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2309490>

Perkins, D., and E. Rendleman. 2025. Invasive exotic plant monitoring at Capitol Reef National Park: 2024 field season [Web Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2315045>

Perkins, D., and E. Rendleman. 2025. Invasive exotic plant monitoring at Colorado National Monument: 2024 field season [Web Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2315075>

Perkins, D., and E. Rendleman. 2025. Invasive exotic plant monitoring at Curecanti National Recreation Area [Web Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2310211>

Perkins, D., and E. Rendleman. 2025. Invasive exotic plant monitoring at Fossil Butte National Monument: 2024 field season [Web Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2315543>

- Perkins, D., and E. Rendleman. 2025. Invasive exotic plant monitoring at Golden Spike National Historical Park: 2024 field season [Web Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2315576>
- Perkins, D. 2025. What we're learning and why it matters: Long-term monitoring on the Northern Colorado Plateau [Web Brief]. Edited and formatted by E. Rendleman. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2311162>
- Nash, T., and E. Rendleman. 2025. Invasive exotic plant monitoring at Dinosaur National Monument: 2023 and 2024 field seasons [Web Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2314076>
- Nash, T., and E. Rendleman. 2025. Invasive exotic plant monitoring at Zion National Park: 2023 field season [Web Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2315208>
- Schmidt, T., E. Tymkiw, G. Shriver, and E. Rendleman. 2025. Landbird population trends in the Northern Colorado Plateau Network, 2025 [Web Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2315708>
- Thoma, D., and J. Gareis. 2025. Vegetation production and phenology at Curecanti National Recreation Area, 2000–2019 [Web Brief]. Edited and formatted by E. Rendleman. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2308956>
- Thoma, D., and E. Rendleman. 2025. Vegetation production and phenology at Arches National Park, 2000–2019 [Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2312603>
- Thoma, D., and E. Rendleman. 2025. Vegetation production and phenology at Black Canyon of the Gunnison National Park, 2000–2019 [Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2312608>
- Thoma, D., and E. Rendleman. 2025. Vegetation production and phenology at Cedar Breaks National Monument, 2000–2019 [Web Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2314335>
- Thoma, D., and E. Rendleman. 2025. Vegetation production and phenology at Dinosaur National Monument, 2000–2019 [Web Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2313843>
- Thoma, D., and E. Rendleman. 2025. Vegetation production and phenology at Fossil Butte National Monument, 2000–2019 [Web Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2313849>

Thoma, D., and E. Rendleman. 2025. Vegetation production and phenology at Golden Spike National Historical Park, 2000–2019 [Web Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2314376>

Thoma, D., and E. Rendleman. 2025. Vegetation production and phenology at Natural Bridges National Monument, 2000–2019 [Web Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2314377>

Thoma, D., and E. Rendleman. 2025. Vegetation production and phenology at Zion National Park, 2000–2019 [Brief]. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2312644>

Rocky Mountain Network (ROMN)

Cooper, D. J., E. W. Schweiger, and E. Rendleman. 2025. Rapid riparian decline in Rocky Mountain National Park: Understanding the loss—and pathways for restoration. Edited and formatted by E. Rendleman. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2315760>

Daw, S., B. Schweiger, and D. Witwicki. 2025. How much is too much: Ungulate use of wetlands in Great Sand Dunes National Park, 2016–2019. National Park Service.
<https://www.nps.gov/articles/000/how-much-is-too-much-ungulate-use-of-wetlands-in-great-sand-dunes-national-park-2016-2019.htm>

Valentine-Darby, P., E. Borgman, D. Witwicki, and K. Legg. 2025. Change in alpine vegetation in the U.S. Rocky Mountains: Analysis of data from five GLORIA sites, 2003–2021. National Park Service. https://www.nps.gov/articles/000/nrca_gloria2025.htm

Southern Colorado Plateau Network (SCPN)

Bailey, J. 2025. Get to Know the Plateau–Black-throated sparrow. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2310914>

Bailey, J. 2025. Get to Know the Plateau–Scaled quail. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2310915>

Doyle, A. S. 2024. Get to Know the Plateau–Cinder phacelia. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2302735>

Doyle, A. S. 2025. Get to Know the Plateau–Hopi tea greenthread. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2310907>

Erlewine, A. 2025. Get to Know the Plateau–*Grimmia anodon*. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2310920>

Erlewine, A. 2025. Get to Know the Plateau–Two-needle pinyon pine. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2311191>

- Gastman, S. 2025. Get to Know the Plateau–Redroot wild buckwheat. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2310909>
- Gastman, S. 2025. Get to Know the Plateau–Utah serviceberry. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2310911>
- Guyton, N. 2025. Get to Know the Plateau–Creeping rushpea. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2310906>
- Johnson, J. 2025. Get to Know the Plateau–North American porcupine. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2314321>
- Reeves, K. 2025. Get to Know the Plateau–Brady’s pincushion cactus. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2313946>
- Southern Colorado Plateau Network. 2025. Publication brief: Stream community response to the 2011 Las Conchas Fire in Bandelier National Monument–Aquatic macroinvertebrate monitoring 2007–2019. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2315876>
- Southern Colorado Plateau Network. 2025. Publication brief: Vegetation trends in pinyon-juniper woodlands in Southern Colorado Plateau Network parks. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2313990>
- Southern Colorado Plateau Network and Conservation Management Institute. 2025. Publication brief: Determining bat presence and activity in Petroglyph National Monument to inform visitor management. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2314200>
- Stewart, K. 2025. Get to Know the Plateau–San Francisco Peaks ragwort. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2315946>
- Stumpf, S., and C. Calvo. 2024. Long-term trend in the aquatic macroinvertebrate community of the Mancos River at Mesa Verde National Park. National Park Service.
<https://irma.nps.gov/DataStore/Reference/Profile/2311311>
- Tercek, M. 2025. Southern Colorado Plateau Network climate resource brief–Mesa Verde National Park. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2313994>

Self-Published on IRMA and Other Publications

Chihuahuan Desert Network (CHDN)

- Hubbard, A., and S. Singley. 2024. Climate and water monitoring at Carlsbad Caverns National Park: Water year 2022. Chihuahuan Desert Network, National Park Service, Las Cruces, New Mexico.
<https://irma.nps.gov/DataStore/Reference/Profile/2309474>

- McIntyre, C. L., K. N. Decker, L. Gommermann, J. R. Mateljak, and I. Rodriguez. 2025. Channel morphology data from selected reaches along the Rio Grande-Bravo, Texas: 2022–2024. National Park Service, Fort Collins, Colorado. <https://doi.org/10.57830/2313361>
- Raymond K., S. Singley, and A. Hubbard. 2024. Climate and water monitoring at Guadalupe Mountains National Park: Water year 2022. Chihuahuan Desert Network, National Park Service, Las Cruces, New Mexico. <https://irma.nps.gov/DataStore/Reference/Profile/2307167>
- Singley, S., K. Raymond, and A. Hubbard. 2024. Climate and water monitoring at Amistad National Recreation Area: Water year 2022. Chihuahuan Desert Network, National Park Service, Las Cruces, New Mexico. <https://irma.nps.gov/DataStore/Reference/Profile/2307168>
- Singley, S., K. Raymond, and A. Hubbard. 2024. Climate and water monitoring at Big Bend National Park: Water year 2022. Chihuahuan Desert Network, National Park Service, Las Cruces, New Mexico. <https://irma.nps.gov/DataStore/Reference/Profile/2307165>
- Greater Yellowstone Network (GRYN)
- Armstrong, A., and T. Funabashi. 2025. Alpine vegetation composition and structure monitoring for Yellowstone National Park: 2022 trip report. National Park Service, Fort Collins, Colorado. <https://irma.nps.gov/DataStore/Reference/Profile/2315942>
- Henderson, T. C., V. Santucci, J. Tweet, T. Connors, N. R. Stamm, R. C. Orndorff, D. R. Soller, and C. Scheland. 2025. The National Park Service stratotype inventory. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2307714>
- Kelso, S. A., and J. R. Brown. 2024. Pilot landbird monitoring at Grand Teton National Park, 2005–2008—Data package. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2305554>
- Kelso, S. A., C. R. Peterson, and R. E. Baum. 2024. Bighorn Canyon National Recreation Area herpetological inventory 2001–2002—Data package. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2303364>
- Kelso, S. A., C. R. Peterson, and D. A. Patla. 2024. Grand Teton and Yellowstone National Parks herpetological inventory 2000–2003—public data package. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2303798>
- Lafrance, B. 2025. Greater Yellowstone Network published water quality data through 2023 from the BICAWQ01, GRTEWQ01, and YELLWQ01 projects as of 2024-04-29. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2314318>
- Lafrance, B. 2025. Greater Yellowstone Network published water quality data through 2024 from the BICAWQ01, GRTEWQ01, and YELLWQ01 projects as of 2025-03-14. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2309576>

- Lafrance, B. 2025. Greater Yellowstone Network water quality data, 2014–2022. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2314312>
- LaFrance, B. J., and R. Daley. 2025. Amphibian monitoring for the Greater Yellowstone Network: 2005–2025—Data package. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2316169>
- Lafrance, B. J., and A. M. Ray. 2024. A dataset of amphibian species in U.S. National Parks, version 1.4. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2306757>
- Shanahan, E., R. Daley, L. Druin, and K. Legg. 2025. Status of whitebark pine in the Greater Yellowstone Ecosystem: A step-trend analysis, 2004–2019. National Park Service. <https://doi.org/10.36967/2306875>
- Shanahan, E., R. Daley, L. Druin, and K. Legg. 2025. Status of whitebark pine in the Greater Yellowstone Ecosystem: A step-trend analysis, 2004–2023. National Park Service. <https://doi.org/10.36967/2313989>
- Shanahan, E., and S. Daw. 2025. Five-needle pine monitoring on Wyoming Bureau of Land Management forests in the Greater Yellowstone Ecosystem: 2023. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2311521>
- Valentine-Darby, P., E. Borgman, D. Witwicki, and K. Legg. 2025. Change in alpine vegetation in the U.S. Rocky Mountains: Analysis of data from five GLORIA sites, 2003–2021. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2311425>
- Northern Colorado Plateau Network (NCPN)
- Beason, J., K. Brodhead, J. Cooper, C. Dexter, G. Giroir, M. Giroir, M. Gracey, K. Hutton, C. Ingwell, G. Joder, G. Reid, J. Rubenstein, S. Schuette, L. Smith, R. Sparks, A. Stemen, S. Daw, P. Pyle, and D. F. DeSante. 2024. Landbird monitoring for the Northern Colorado Plateau Network, 2005–2023—raw data. National Park Service. Northern Colorado Plateau Network, 2282 S. West Resource Blvd, Moab, UT 84532. <https://irma.nps.gov/DataStore/Reference/Profile/2305587>
- Brown, J. R. 2024. Landbird monitoring for the Northern Colorado Plateau Network, 2005–2023—processing script. National Park Service. <https://doi.org/10.57830/2305589>
- Brown, J. R., H. Thomas, J. R. Brehm, D. W. Perkins, M. F. McLaren, S. Daw, M. Beer, S. L. Garman, W. G. Shriver, K. Hutton, J. Rehm-Lorber, G. Giroir, R. Sparks, J. Fog, A. Panjabi, D. Hanni, C. M. White, J. A. Blakesley, S. G. Roberts, E. L. Tymkiw, and Z. S. Ladin. 2024. Landbird monitoring for the Northern Colorado Plateau Network, 2005–2023—data package. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2305588>

- Hobbs, A. 2024. Upland vegetation and soils monitoring for the Northern Colorado Plateau Network: 2009–2023—processing script. National Park Service. <https://doi.org/10.57830/2305080>
- Hobbs, A., A. Wight, C. Livensperger, D. Witwicki, H. Thomas, J. R. Brehm, M. E. Miller, R. Weissinger, S. Topp, S. L. Garman. 2024. Upland vegetation and soils monitoring for the Northern Colorado Plateau Network: 2009–2023—data package. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2305079>
- National Park Service, Northern Colorado Plateau Network. 2025. Exotic plant transect data detected at Curecanti NRA, June 21–27, 2023. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2309745>
- National Park Service, Northern Colorado Plateau Network. 2025. Exotic plant patches detected on monitoring routes at Curecanti NRA, June 21–27, 2023. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2309744>
- National Park Service, Northern Colorado Plateau Network. 2025. Exotic plant patches detected on monitoring routes at Dinosaur NM, August 16–23, 2023 and June 20–26, 2024. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2313819>
- National Park Service, Northern Colorado Plateau Network. 2025. Exotic plant transect data detected at Dinosaur NM, August 16–23, 2023 and June 20–26, 2024. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2313820>
- National Park Service, Northern Colorado Plateau Network. 2025. Exotic plant patches detected on monitoring routes at Fossil Butte National Monument, 2024. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2315133>
- National Park Service, Northern Colorado Plateau Network. 2025. Exotic plant transect data detected at Fossil Butte National Monument, 2024. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2315132>
- National Park Service, Northern Colorado Plateau Network. 2025. Exotic plant patches detected on monitoring routes at Golden Spike National Historical Park, 2024. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2315193>
- National Park Service, Northern Colorado Plateau Network. 2025. Exotic plant transect data detected at Golden Spike National Historical Park, 2024. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2315194>
- National Park Service, Northern Colorado Plateau Network. 2025. Supplemental materials for the report landscape phenology, vegetation condition, and relations with climate at Arches National Park, 2000–2019. National Park Service. Fort Collins, Colorado. <https://irma.nps.gov/DataStore/Reference/Profile/2309754>

- National Park Service, Northern Colorado Plateau Network. 2025. Supplemental materials for the report landscape phenology, vegetation condition, and relations with climate at Black Canyon of the Gunnison National Park, 2000–2019. National Park Service. Fort Collins, Colorado.
<https://irma.nps.gov/DataStore/Reference/Profile/2309749>
- National Park Service, Northern Colorado Plateau Network. 2025. Supplemental materials for the report landscape phenology, vegetation condition, and relations with climate at Cedar Breaks National Monument, 2000–2019. National Park Service. Fort Collins, Colorado.
<https://irma.nps.gov/DataStore/Reference/Profile/2310107>
- National Park Service, Northern Colorado Plateau Network. 2025. Supplemental materials for the report landscape phenology, vegetation condition, and relations with climate at Dinosaur National Monument, 2000–2019. National Park Service. Fort Collins, Colorado.
<https://irma.nps.gov/DataStore/Reference/Profile/2310489>
- National Park Service, Northern Colorado Plateau Network. 2025. Supplemental materials for the report landscape phenology, vegetation condition, and relations with climate at Fossil Butte National Monument, 2000–2019. National Park Service. Fort Collins, Colorado.
<https://irma.nps.gov/DataStore/Reference/Profile/2310649>
- National Park Service, Northern Colorado Plateau Network. 2025. Supplemental materials for the report landscape phenology, vegetation condition, and relations with climate at Golden Spike National Historical Park, 2000–2019. National Park Service. Fort Collins, Colorado.
<https://irma.nps.gov/DataStore/Reference/Profile/2311149>
- National Park Service, Northern Colorado Plateau Network. 2025. Supplemental materials for the report landscape phenology, vegetation condition, and relations with climate at Natural Bridges National Monument, 2000–2019. National Park Service. Fort Collins, Colorado.
<https://irma.nps.gov/DataStore/Reference/Profile/2311151>
- National Park Service, Northern Colorado Plateau Network. 2025. Supplemental materials for the report landscape phenology, vegetation condition, and relations with climate at Zion National Park, 2000–2019. National Park Service. Fort Collins, Colorado.
<https://irma.nps.gov/DataStore/Reference/Profile/2309757>
- Ron, A. 2024. Riparian vegetation structure and composition of wadeable streams monitoring for the Northern Colorado Plateau Network: 2008–2021—processing script. National Park Service.
<https://doi.org/10.57830/2306064>
- Ron, A., A. Wight, C. Livensperger, D. Witwicki, H. Thomas, J. Brehm, K. Lund, M. Van Grinsven, and R. Weissinger. 2024. Riparian vegetation structure and composition of wadeable streams monitoring for the Northern Colorado Plateau Network: 2008–2021—data package. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2305934>

- Thoma, D. 2024. Supplemental materials for landscape phenology, vegetation condition, and relations with climate at Curecanti National Recreation Area, 2000–2019. National Park Service. <https://irma.nps.gov/DataStore/Reference/Profile/2306218>
- Wight, A., C. Livensperger, D. Witwicki, H. Thomas, J. Brehm, K. Lund, M. Van Grinsven, and R. Weissinger. 2024. Riparian vegetation structure and composition of Wadeable Streams Monitoring for the Northern Colorado Plateau Network: 2008–2021—raw data. National Park Service. Northern Colorado Plateau Network, 2282 S. West Resource Blvd., Moab, UT 84532. <https://doi.org/10.57830/2306333>
- Wight, A., C. Livensperger, D. Witwicki, H. Thomas, M. Miller, R. Weissinger, S. Topp, and S. L. Garman. 2024. Upland vegetation and soils monitoring for the Northern Colorado Plateau Network: 2009–2023—raw data. National Park Service. Northern Colorado Plateau Network, 2282 S. West Resource Blvd., Moab, UT 84532. <https://irma.nps.gov/DataStore/Reference/Profile/2305183>
- Rocky Mountain Network (ROMN)
- Nestler, J. H., K. A. Zybko, A. R. Volk, D. L. Witwicki, M. Han, L. W. Smith, K. R. Sherrill, E. W. Schweiger, M. D. Kompella, and I. A. Quevedo. 2025. Streams ecological integrity (SEI) physical habitat data for Rocky Mountain Network (ROMN): 2007–2024—data package. National Park Service. <https://doi.org/10.57830/2309456>
- Serrantes, A. 2025. ROMN uplands vegetation composition, structure, and soils in FLFO, GRKO, and LIBI: 2009–2024—processing script. National Park Service. <https://doi.org/10.57830/2311322>
- Takvorian, M. 2025. Streams ecological integrity (SEI) macroinvertebrate raw data processing for the Rocky Mountain Network (ROMN)—processing script. National Park Service. <https://doi.org/10.57830/2311528>
- Takvorian, M. R., and M. Kompella. 2025. Streams ecological integrity (SEI) site and event data processing for the Rocky Mountain Network (ROMN)—processing script. National Park Service. <https://doi.org/10.57830/2311103>
- Wright, S., and L. Smith. 2025. imd-ccal v1.1.0. National Park Service. <https://doi.org/10.57830/2313386>
- Sonoran Desert Network (SODN)
- McIntyre, C. L., M. Christensen, A. Buckisch, E. Dillingham, T. Atella, and J. McGeeverly. 2025. Mammal data from Chiricahua National Monument, Arizona: 2017–2025 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2314180>

- McIntyre, C. L., M. Christensen, A. Buckisch, E. Dillingham, T. Atella, and J. McGeeverly. 2025. Mammal data from Organ Pipe Cactus National Monument, Arizona: 2016–2025 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2314181>
- McIntyre, C. L., M. Christensen, A. Buckisch, E. Dillingham, T. Atella, and J. McGeeverly. 2025. Mammal data from Saguaro National Park, Tucson Mountain District, Arizona: 2017–2025 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2315510>
- McIntyre, C. L., J. A. Hubbard, and E. L. Gwilliam. 2025. Springs monitoring data for Chiricahua National Monument, Arizona: 2017–2024 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2313872>
- McIntyre, C. L., J. A. Hubbard, and E. L. Gwilliam. 2025. Springs monitoring data for Coronado National Memorial, Arizona: 2017–2024 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2313883>
- McIntyre, C. L., J. A. Hubbard, and E. L. Gwilliam. 2025. Springs monitoring data for Fort Bowie National Historic Site, Arizona: 2017–2024 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2313875>
- McIntyre, C. L., J. A. Hubbard, and E. L. Gwilliam. 2025. Springs monitoring data for Gila Cliff Dwellings National Monument, New Mexico: 2017–2025 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2315898>
- McIntyre, C. L., J. A. Hubbard, and E. L. Gwilliam. 2025. Springs monitoring data for Montezuma Castle National Monument, Arizona: 2017–2025 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2315899>
- McIntyre, C. L., J. A. Hubbard, and E. L. Gwilliam. 2025. Springs monitoring data for Organ Pipe Cactus National Monument, Arizona: 2017–2025 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2315900>
- McIntyre, C. L., J. A. Hubbard, and E. L. Gwilliam. 2025. Springs monitoring data for Saguaro National Park, Arizona: 2017–2024 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2313825>
- McIntyre, C. L., J. A. Hubbard, and E. L. Gwilliam. 2025. Springs monitoring data for Tonto National Monument, Arizona: 2017–2025 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2315901>
- McIntyre, C. L., J. A. Hubbard, and E. L. Gwilliam. 2025. Springs monitoring data for Tuzigoot National Monument, Arizona: 2017–2025 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2315902>

- McIntyre, C. L., J. A. Hubbard, S. E. Studd, and K. A. Bonebrake. 2025. Vegetation and soils monitoring data for Chiricahua National Monument, Arizona: 2007–2024 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2310987>
- McIntyre, C. L., J. A. Hubbard, S. E. Studd, and K. A. Bonebrake. 2025. Vegetation and soils monitoring data for Coronado National Memorial, Arizona: 2009–2024 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2310989>
- McIntyre, C. L., J. A. Hubbard, S. E. Studd, and K. A. Bonebrake. 2025. Vegetation and soils monitoring data for Fort Bowie National Historic Site, Arizona: 2008–2023 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2315765>
- McIntyre, C. L., J. A. Hubbard, S. E. Studd, and K. A. Bonebrake. 2025. Vegetation and soils monitoring data for Gila Cliff Dwellings National Monument, New Mexico: 2009–2023 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2310995>
- McIntyre, C. L., J. A. Hubbard, S. E. Studd, and K. A. Bonebrake. 2025. Vegetation and soils monitoring data for Montezuma Castle National Monument, Arizona: 2010–2021 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2315891>
- McIntyre, C. L., J. A. Hubbard, S. E. Studd, and K. A. Bonebrake. 2025. Vegetation and soils monitoring data for Organ Pipe Cactus National Monument, Arizona: 2009–2023 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2310997>
- McIntyre, C. L., J. A. Hubbard, S. E. Studd, and K. A. Bonebrake. 2025. Vegetation and soils monitoring data for Saguaro National Park, Arizona: 2008–2024 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2315892>
- McIntyre, C. L., J. A. Hubbard, S. E. Studd, and K. A. Bonebrake. 2025. Vegetation and soils monitoring data for Tonto National Monument, Arizona: 2009–2024 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2310258>
- McIntyre, C. L., J. A. Hubbard, S. E. Studd, and K. A. Bonebrake. 2025. Vegetation and soils monitoring data for Tumacácori National Historical Park, Arizona: 2007–2024 - internal. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2311006>
- Southern Colorado Plateau Network (SCPN)
- Ploughe, L. Re: Protected Data Memorandum for Southern Colorado Plateau Network (SCPN) Park Units. <https://irma.nps.gov/DataStore/Reference/Profile/2306156>
- Ploughe, L. W., and H. H. Jones. 2025. Southern Colorado Plateau Network Landbird Monitoring Dataset 2022–2024. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2308128>

Ploughe, L. W., and J. R. Norris. 2025. Data release associated with the report "Trends in satellite-derived phenology in grasslands and shrublands of Southern Colorado Plateau Network parks" (2003–2022). National Park Service. Fort Collins CO. <https://doi.org/10.57830/2302939>

Ploughe, L. W., and S. Stumpf. 2025. SCPN Aquatic Macroinvertebrate Data Package for 2007–2024. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2312997>

Ploughe, L. W., and M. C. Swan. 2025. SCPN Upland Vegetation herbaceous, shrub and tree vegetation and soils 2007–2024 Data Package. National Park Service. Fort Collins CO. <https://doi.org/10.57830/2309581>

Southern Plains Network (SOPN)

Hedberg, S. L., M. L. Owen, H. Sosinski, K. L. Vanderbilt, C. L. McIntyre, and M. D. Kompella. 2025. Grassland Vegetation Monitoring Data for the Southern Plains Network (SOPN): 2022–2024 — Data Package (INTERNAL). National Park Service. Fort Collins CO. <https://doi.org/10.57830/2313048>

Presentations

Northern Colorado Plateau Network (NCPN)

McClure, C. M., J. M. Friedman, E. R. Skaggs, C. L. Holmquist-Johnson, K. D. Enns, L. Gommermann, D. W. Perkins, and R. R. Morrison. 2024. Effects of changing flow regime on riparian plant communities and channel simplification along the Middle Green River, Utah. American Geophysical Union Conference, Washington, DC, December.

McClure, C. M., J. M. Friedman, E. R. Skaggs, C. L. Holmquist-Johnson, K. D. Enns, D. W. Perkins, L. Gommermann, and R. R. Morrison. 2025. Effects of changing flow regime on riparian plant communities and channel simplification along the Yampa and Green Rivers. 45th Researchers Meeting, Upper Colorado River Endangered Fish Recovery Program & San Juan River Basin Recovery Implementation Program, Grand Junction, CO, January.

McClure, C. M., J. M. Friedman, E. R. Skaggs, C. L. Holmquist-Johnson, K. D. Enns, D. W. Perkins, L. Gommermann, and R. R. Morrison. 2025. Effects of flow management on biogeomorphic feedbacks on the Green River in Utah. Post-Doc Symposium, Colorado State University, Fort Collins, CO, March.

McClure, C. M., J. M. Friedman, E. R. Skaggs, C. L. Holmquist-Johnson, K. D. Enns, D. W. Perkins, L. Gommermann, and R. R. Morrison. 2025. Effects of flow management on biogeomorphic feedbacks on the Green and Yampa Rivers in Colorado and Utah. AGU Hydrology Days, Colorado State University, Fort Collins, CO, April.

Schmidt, T. 2024. Habitat factors influencing warbler dynamic occupancy in the Northern Colorado Plateau Network of the National Park Service. MS Thesis Proposal, University of Delaware, DE, November.

Schmidt, T., D. Perkins, and W. G. Shriver. 2025. Local habitat factors influence warbler dynamic occupancy in the National Park Service's Northern Colorado Plateau Network [poster]. Association of Field Ornithologists, Ogden, UT, July 29–August 1.

Rocky Mountain Network (ROMN)

Alpine Vegetation and Soils Monitoring at Rocky Mountain National Park. 2025. Invited presentation for the ROMO Brown Bag Series, June.

Sonoran Desert Network (SODN)

In addition to presentations to park staff, SODN scientists led numerous public education events at the Desert Research Learning Center, Tucson Festival of Books, local schools, clubs, and high school career fairs.

Southern Colorado Plateau Network (SCPN)

Andrascik, H., C. Calvo, H. Jones, J. Norris, and M. Swan. 2025. Plants, satellites, and birds, oh my! Long-term monitoring projects at Wupatki National Monument. Poster, Celebrating 100 Years of Wupatki National Monument and the Museum of Northern Arizona.

Andrascik, H., C. Calvo, and M. Swan. 2025. Taking the pulse of vegetation communities in national parks on the Colorado Plateau. Presentation, Arizona Native Plant Society annual meeting.

Network Annual Technical Committee and Board of Directors' Meetings

Every year, Intermountain Region I&M Networks host Annual Technical Committee and Board of Directors' Meetings with park resource staff and superintendents. Although these meetings did not occur in 2025, they remain excellent discussion forums to communicate current monitoring and inventory updates on the status and trends of critical resources that national parks and monuments themselves had identified as most important to the long-term health of their natural resources. These meetings are critical to helping park staff manage their natural resources by communicating resource condition and adapting ongoing monitoring into other park management challenges, where those opportunities arise.

They also ensure the Inventory and Monitoring program is responsive to park inquiries and aware of the major issues and management challenges or decisions that parks are facing. In most cases, these meetings provide the singular forum for park resource staff in the network to discuss and trouble-shoot problems, bring resource challenges to the table, and discuss potential solutions while seeking support from their resource-management peers and I&M staff.



The Vision Quest site in Rocky Mountain National Park (ROMN).
NPS / BODIE SPINNER

6 Staff & Partnerships

The success of the Intermountain Region’s inventory and monitoring programs rests on the dedication, creativity, and collaboration of its people. This chapter highlights the individuals and teams whose work exemplifies excellence in science, operations, safety, and partnership-building across the region. It also showcases the broad array of university, agency, and community partnerships that expand the networks’ capacity, strengthen scientific rigor, and cultivate the next generation of resource stewards. Together, these staff and partners form the foundation that enables I&M science to thrive and directly support park management needs.

Awards

The following awardees exemplify the Intermountain Region’s commitment to excellence in science, operations, and collaboration across parks and networks.

Delivery of Excellent Science

Luke Gommermann (Northern Colorado Plateau Network)

Operations and Administration

MaryAnne Schrade (Northern and Southern Colorado Plateau Networks, and Central Support Office)

Partnerships and Collaboration (Two Winners)

Megan Swan (Southern Colorado Plateau Network)

Erin Shanahan (Greater Yellowstone Network), Rob Daley (Greater Yellowstone Network), and Interagency Partners

Safety and Wellness

Dusty Perkins (Northern Colorado Plateau Network)

University/Student/International Partnerships

All Intermountain Region networks engage in a variety of partnerships to provide additional support to parks, adding expertise and workforce capabilities through arrangements from university partnerships to Scientists in Parks internships. Creative partnerships enhance I&Ms effectiveness in delivering excellent science to resource managers, particularly where additional expertise is needed in problem-solving.

Chihuahuan Desert Network (CHDN)

See “3 Impactful Science for Park Decision-Making” for a summary of the binational CHDN–CONANP collaboration on Rio Grande/Río Bravo monitoring and joint decision support.

Greater Yellowstone Network (GRYN)

GRYN hosted student interns through the Montana State University Institute on Ecosystems, provided graduate advising on whitebark pine conservation, and served on master's committees, strengthening university partnerships and student mentoring across the region.

Northern Colorado Plateau Network (NCPN)

See “3 Impactful Science for Park Decision-Making” for NCPN’s Green/Yampa/Colorado big-river monitoring that informs interagency management.

NCPN maintained multi-institution collaborations (e.g., Utah State University, University of Arizona, U.S. Geological Survey) to co-produce monitoring science and improve data accessibility for park managers.

Rocky Mountain Network (ROMN)

See “3 Impactful Science for Park Decision-Making” for university-partnered alpine monitoring (GLORIA) with analyses by University of Colorado and training delivered to Rocky Mountain National Park staff.

ROMN’s broader partnerships (e.g., Colorado State University, Colorado Natural Heritage Program, U.S. Geological Survey) continued to support wetland, stream, and upland monitoring programs and student learning opportunities.

Sonoran Desert Network (SODN)

See “3 Impactful Science for Park Decision-Making” for the multi-partner amphibian recovery and bullfrog control effort.

SODN collaborated with universities and agencies to advance springs, streams, and upland monitoring, while student and volunteer engagement through the Desert Research Learning Center provided hands-on experience and significant service hours for park science.

Southern Colorado Plateau Network (SCPN)

See “3 Impactful Science for Park Decision-Making” for SCPN’s partnerships with U.S. Geological Survey and Virginia Tech (bat disease screening/acoustic baselines) and university collaborations on pinyon–juniper modeling and bird–habitat analyses.

SCPN staff also supported student research and mentoring (MS/post-doc advising and collaborative analyses), reinforcing pipeline relationships with Northern Arizona University, Western Colorado University, and the Institute for Bird Populations.

Southern Plains Network (SOPN)

See “3 Impactful Science for Park Decision-Making” for the herbarium digitization collaboration involving park staff, expert botanists, and academic institutions that improved accessioning and online access to collections across SOPN parks.

SOPN also partnered with the Bebb Herbarium (University of Oklahoma) to digitize plant collections and supported student/faculty participation in field monitoring that expanded species lists and strengthened restoration planning.

Literature Cited

National Park Service. 1992. Natural resources inventory and monitoring guidelines. NPS-75.

National Park Service, Washington, D.C.

<https://irma.nps.gov/DataStore/Reference/Profile/622933>

National Park Service. 2016. Science communication framework. Natural Resource Stewardship and Science Directorate. Washington, D.C.

<https://irma.nps.gov/DataStore/Reference/Profile/2231970>

National Parks Omnibus Management Act of 1998. Public Law 105-391; 16 U.S.C. 5934.

<https://www.congress.gov/105/plaws/publ391/PLAW-105publ391.pdf>

NPS Organic Act. 1916. An Act to establish a National Park Service, and for other purposes. Public Law 64-235, Chapter 408, approved August 25, 1916. 39 Stat. 535–536. U.S. Government

Printing Office, Washington, D.C. <https://www.govinfo.gov/app/details/STATUTE-39/STATUTE-39-Pg535>

Omernik, J. M. 1987. Ecoregions of the conterminous United States. Map (scale 1:7,500,000).

Annals of the Association of American Geographers 77(1):118–125.

<https://doi.org/10.1111/j.1467-8306.1987.tb00149.x>

Perkins, D. W., M. Bozek, M. MacCluskie, T. Philippi, A. Ray, W. Route, and D. Thoma. 2016.

Excellent science in the National Park Service Inventory and Monitoring Division: Guiding principles and recommendations. Natural Resource Report. NPS/WASO/NRR-2016/1217. National Park Service, Fort Collins, Colorado.

<https://irma.nps.gov/DataStore/Reference/Profile/2229744>

Soukup, M. 2007. Integrating science and management: Becoming who we thought we were. The

George Wright Forum 24(2):26–29. <http://www.jstor.org/stable/43598032>

Wright, G. M., and B. H. Thompson. 1934. Wildlife management in the national parks. Fauna series No. 2. Fauna of the national parks of the United States series. United States Government Printing

Office, Washington, D.C. <https://irma.nps.gov/DataStore/Reference/Profile/2294631>

National Park Service Inventory and Monitoring Networks of the Intermountain Region

This appendix summarizes the seven Inventory & Monitoring networks of the Intermountain Region, outlining their park groupings, ecological contexts, and core monitoring efforts. Together, these networks provide the foundational science that supports natural resource stewardship across the region.



White Sands National Monument, New Mexico.

NPS

Chihuahuan Desert Network

Overview

The Chihuahuan Desert Network (CHDN) encompasses seven park units in New Mexico and west Texas, spanning over one million acres of desert grasslands, shrublands, and mountain ranges including the Guadalupe, Davis, and Chisos. The parks contain significant natural resources such as major bat colonies, high-quality desert riparian areas, gypsum dunes at White Sands, and the Capitan Reef. Carlsbad Caverns protects 120 caves, including Lechuguilla. The network also includes two specially designated parks: Big Bend (U.S. Biosphere Reserve) and Carlsbad Caverns (World Heritage Site), with White Sands previously nominated for World Heritage status.

CHDN Parks

Amistad National Recreation Area
Big Bend National Park
Carlsbad Caverns National Park
Fort Davis National Historic Site
Guadalupe Mountains National Park
Rio Grande Wild and Scenic River
White Sands National Monument

Habitats

Chihuahuan Desert grasslands and shrublands

Monitoring

Upland vegetation and soils, exotic plants, landbirds, groundwater, springs, river channel morphology

Collaborators

Áreas de Protección de Flora y Fauna Maderas del Carmen; Arizona-Sonora Desert Museum; Auburn Univ.; Cañón de Santa Elena; Comisión Nacional de Áreas Naturales Protegidas; New Mexico State Univ.; Reserva de la Biósfera La Michilía; Sonoran Desert Network; Southern Plains Network; Tucson Audubon Society; Univ. of Arizona; Univ. of New Mexico; Utah State Univ.



Grand Teton National Park, Wyoming.

NPS

Greater Yellowstone Network

Overview

The Greater Yellowstone Network (GRYN) was established in 2000 to support inventory and monitoring across four park units in the Greater Yellowstone Ecosystem of Wyoming, Montana, and Idaho. Bighorn Canyon NRA lies at the convergence of the Great Basin Desert, Rocky Mountains, and northern Great Plains, while Grand Teton NP, the John D. Rockefeller, Jr. Memorial Parkway, and Yellowstone NP anchor one of the largest intact ecosystems in the contiguous United States, encompassing over 23 million acres of largely contiguous federal land.

GRYN Parks

Bighorn Canyon National Recreation Area

Grand Teton National Park

John D. Rockefeller, Jr. Memorial Parkway

Yellowstone National Park

The network actively collaborates with the parks, as well as other agencies and organizations, and seeks to extend its collaborative relationships with governmental and non-governmental partners depending on needs.

Habitats

Montane, alpine, desert

Monitoring

Amphibians, climate, land use, upland vegetation, water resources, whitebark pine

Collaborators

BLM; Great Northern Landscape Conservation Cooperative; Greater Yellowstone Coordinating Committee; Montana State Univ. Institute on Ecosystems; Univ. of Montana; Univ. of Wyoming; USFS; USGS; Yellowstone Center for Resources



Bryce Canyon National Park, Utah.

NPS

Northern Colorado Plateau Network

Overview

The Northern Colorado Plateau Network (NCPN) encompasses 16 parks across Utah, western Colorado, southwest Wyoming, and northern Arizona. These parks span from 40 to more than 337,500 acres and range from 3,600 to 10,500 feet in elevation. NCPN collaborates extensively with parks, other I&M networks, and agency and academic partners, strengthening its ability to address shared resource-management needs.

Habitats

Desert grasslands, shrublands, forests, caves, large rivers, perennial streams, seeps, and springs

Monitoring

Uplands, riparian, big rivers, springs and seeps, invasive plants, landbirds, water quality, climate, air quality, land surface phenology, landscape dynamics

Collaborators

Brigham Young Univ.; EPA (Mid-Continent Ecology Division; National Exposure Research Lab; Region 8 Lab); Institute for Wildlife Studies; NASA Langley Research Center; Northern Rockies LCC; State of Utah Dept. of Water Quality/NPS Water Resources Div.; USDA ARS Southwest Watershed Research Center; USGS (Colorado Plateau Research Station; Colorado Water Science Center; Columbia Environmental Research Center; Grand Canyon Monitoring & Research Center; South Atlantic Water Science Center; Southwest Biological Science Center); Utah State Univ. (CESU); Univ. of Arizona; Univ. of Delaware; Univ. of Montana

NCPN Parks

Arches National Park
Black Canyon of the Gunnison National Park
Bryce Canyon National Park
Canyonlands National Park
Capitol Reef National Park
Cedar Breaks National Monument
Colorado National Monument
Curecanti National Recreation Area
Dinosaur National Monument
Fossil Butte National Monument
Golden Spike National Historic Site
Hovenweep National Monument
Natural Bridges National Monument
Pipe Spring National Monument
Timpanogos Cave National Monument
Zion National Park



Glacier National Park, Montana.

NPS

Rocky Mountain Network

Overview

The Rocky Mountain Network (ROMN) comprises six parks along the central and southern Rocky Mountain Cordillera in Montana and Colorado, spanning about 1.37 million acres. Despite their diversity, these parks share strong ecological connections and a long tradition of collaboration. They protect premier wilderness landscapes, high-elevation alpine communities, and notable wildlife—including the full native carnivore assemblage in Glacier National Park—along with distinctive resources such as the Great Sand Dunes, nationally significant cultural landscapes, and the internationally important fossil beds at Florissant Fossil Beds National Monument.

Habitats

Montane, alpine, dunefield

Monitoring

Snow chemistry, wetland ecological integrity, stream ecological integrity, upland vegetation and soils, alpine vegetation and soils, climate

Collaborators

Colorado Dept. of Public Health & Environment; Colorado Natural Heritage Program; Colorado State Univ.; Crown Managers Partnership; EPA Region 8 Lab; Montana Dept. of Environmental Quality; Northern Rockies Conservation Cooperative; Rhithron Associates; USDA NRCS; USFS; USGS (Colorado Water Science Center; Fort Collins Science Center; National Wetlands Research Center; West Glacier Field Station); Univ. of Calgary; Univ. of Colorado; Univ. of Montana Herbarium

ROMN Parks

Florissant Fossil Beds National Monument

Glacier National Park

Grant-Kohrs Ranch National Historic Site

Great Sand Dunes National Park and Preserve

Little Bighorn Battlefield National Monument

Rocky Mountain National Park



Organ Pipe Cactus National Monument, Arizona.

NPS / CATE BLANCH

Sonoran Desert Network

Overview

The Sonoran Desert Network (SODN) comprises 11 national park units in southern Arizona and western New Mexico. Ranging from 46 to 330,688 acres, these parks span all major biomes of the Sonoran Desert and Apache Highlands, with significant natural and cultural resources. Sites include notable cliff dwellings and other prehistoric locations tied to perennial waters such as the Salt, Gila, Verde, and Santa Cruz rivers. Historic areas include a frontier fort, 17th-century missions, and part of Coronado's route into what would become the United States.

Habitats

Desert, thornscrub, semi-desert grassland, Madrean evergreen woodland, interior chaparral, temperate forest, low-and mid-elevation riparian gallery forests

Monitoring

Integrated rivers and streams, early detection of exotic plants and animals, groundwater, terrestrial vegetation and soils, climate, perennial springs, terrestrial mammals

Collaborators

Arizona Game & Fish Dept.; Arizona-Sonora Desert Museum; CHDN; NM Dept. of Fish & Game; Pima County (AZ); SOPN; Tucson Audubon; Univ. of Arizona; Univ. of Washington; USFWS; USGS; Washington State Univ.

SODN Parks

Casa Grande Ruins National Monument
Chiricahua National Monument
Coronado National Memorial
Fort Bowie National Historic Site
Gila Cliff Dwellings National Monument
Montezuma Castle National Monument
Organ Pipe Cactus National Monument
Saguaro National Park
Tonto National Monument
Tumacácori National Historical Park
Tuzigoot National Monument



Mesa Verde National Park, Colorado.

NPS

Southern Colorado Plateau Network

Overview

The Southern Colorado Plateau Network (SCPN) includes 19 parks across northern Arizona, northwestern New Mexico, southwestern Colorado, and southeastern Utah, spanning the southern Colorado Plateau and adjacent mountain ecoregions. These parks cover ~3 million acres—over half managed as wilderness—and protect exceptional cultural resources linked to Ancestral Puebloan peoples, major geologic features (e.g., Petrified Forest’s Triassic fossils; volcanic landscapes of Sunset Crater and El Malpais), and world-renowned scenery including Grand Canyon NP’s 277-mile stretch of the Colorado River.

Habitats

Montane forests, semi-arid woodlands, semi-arid grasslands and shrublands

Monitoring

Climate, upland vegetation and soils, habitat-based bird communities, aquatic macroinvertebrates, water quality, integrated riparian (stream flow and depth to groundwater, channel morphology, riparian vegetation), spring ecosystems, and land surface phenology

Collaborators

Northern Arizona Univ.; Univ. of New Mexico; U.S. Geological Survey (National Water Quality Laboratory, Flagstaff Science Center); Utah State Univ.

SCPN Parks

Aztec Ruins National Monument
 Bandelier National Monument
 Canyon de Chelly National Monument
 Chaco Culture National Historical Park
 El Malpais National Monument
 El Morro National Monument
 Glen Canyon National Recreation Area
 Grand Canyon National Park
 Hubbell Trading Post National Historic Site
 Mesa Verde National Park
 Navajo National Monument
 Petrified Forest National Park
 Petroglyph National Monument
 Rainbow Bridge National Monument
 Salinas Pueblo Missions National Monument
 Sunset Crater Volcano National Monument
 Walnut Canyon National Monument
 Wupatki National Monument
 Yucca House National Monument



Capulin Volcano National Monument, New Mexico.

NPS

Southern Plains Network

Overview

The Southern Plains Network (SOPN) includes 11 park units in Colorado, Kansas, New Mexico, Oklahoma, and Texas. Together, these parks comprise approximately 74,132 acres. Most network parks were established primarily for cultural and recreational reasons, but all contain significant natural resources. SOPN parks have some of the only representatives of short- and mixed-grass ecosystems in protected status in the National Park System.

Habitats

Shortgrass prairie, mixed-grass prairie, riparian, pinyon-juniper

Monitoring

Grasslands, exotics invasive plants, landbirds, streams, groundwater, climate, grassland fire effects

Collaborators

Auburn Univ.; CHDN; New Mexico State Univ.; Oklahoma State Univ.; SODN; Southern Plains Fire Group; Southwest Exotic Plant Management Team; Tucson Audubon; USFWS; Univ. of Arizona; Washington State Univ.

SOPN Parks

Alibates Flint Quarries National Monument

Bent's Old Fort National Historic Site

Capulin Volcano National Monument

Chickasaw National Recreation Area

Fort Larned National Historic Site

Fort Union National Monument

Lake Meredith National Recreation Area

Lyndon B. Johnson National Historical Park

Pecos National Historical Park

Sand Creek Massacre National Historic Site

Washita Battlefield National Historic Site

National Park Service
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