

LINKING PLANTS, HABITATS & CONNECTIVITY TO LARGE LANDSCAPE CONSERVATION





OVERVIEW

Planning for natural resources conservation and management is a critical responsibility of state and federal agencies, environmental NGOs, and many private organizations.

To meet critical management and conservation needs, professionals in these organizations need knowledge on key species and habitats that include comprehensive maps, imperilment status and vulnerability, and areas important for wildlife connectivity.

With support from the Doris Duke Charitable Foundation, NatureServe and its network members have developed a suite of materials—at <u>www.natureserve.org/landscape-planning-resources</u> that can help inform planning and decisionmaking by practitioners, managers, and landowners.

In this 2007 report (also funded by the Doris Duke Charitable Foundation), NatureServe analyzed whether and how all 56 U.S. wildlife action plans considered plant species and addressed their conservation needs.



DORIS DUKE CHARITABLE FOUNDATION

Incorporating Conservation Needs of At-risk Plants

Plants were frequently excluded from many of the initial state wildlife action plans. To inform the broader incorporation of plants into the plan updates now underway, NatureServe facilitated collaboration with five U.S. natural heritage programs and state agencies responsible for managing the plans to:

- Evaluate climate change vulnerability of high-priority plant species
- Identify plant species of greatest conservation need for inclusion in revised wildlife action plans
- Encourage collaboration between network staff and state wildlife agencies

Creating Consistent Habitat Maps for Conservation Focal Areas

By coordinating revisions to habitat classifications and maps for eight Midwestern states, NatureServe ecologists linked disparate state-level habitat types and maps with a standard nationwide vegetation classification. The resulting maps directly benefit wildlife action plans, state and national forest resource plans, and other efforts that rely on vegetation or habitat maps as the foundation for consistently mapped focal areas. Having consistent, high-quality regional and nationwide habitat data also facilitates easier cross-boundary collaboration between land and resource managers and professionals.

Integrating Connectivity for Wildlife Corridors

NatureServe conservation planners—seeking to incorporate landscape connectivity and support climate change resilience—took a two-pronged approach: the creation of a web-based resource that provides conservation practitioners with guidance on assessing landscape connectivity, and piloting an approach for assessing connectivity across large-scale geographies like those used in state wildlife action plans and other regional planning efforts. Working groups from the public, private, and nonprofit sectors contributed to or led these efforts.

RESOURCES

www.natureserve.org/landscape-planning-resources

NatureServe network members have succeeded in advancing state-level plant conservation, producing resources primed for inclusion in SWAP revisions such as:

- New or updated lists and maps of prioritized plants of greatest conservation need (GCN)
- Updated at-risk status ranks for hundreds of plant species
- More than 400 new state-specific climate change vulnerability assessments
- Plants of GCN crosswalked with habitat and landscape features used in the SWAPs
- Important Plant Areas (IPAs) of Colorado
- State-by-state summary reports
- Visit <u>www.natureserve.org/landscape-</u> planning-resources

Analyses such as this one—showing the number of plants that are highly vulnerable to climate change impacts across North Dakota's ecoregions underscore the need for their broader inclusion in wildlife action plans.



Climate Change Vulnerability Index Highly Vulnerable Plant Species of

Sand Deltas and Beach Ridges

NatureServe's Terrestrial Ecological Systems—here showing the Great Lakes beach and dune systems of the Indiana and Michigan coasts—appear on the LandScope map viewer and provide consistent, seamless habitat mapping across state boundaries.



The habitat maps resulting from this effort provide a common ecological framework for assessing regional patterns of biodiversity and communicating about habitats across state and other boundaries through:

- Updated maps of Terrestrial Ecological Systems for eight Midwestern states (USFWS Region 3) added to national map
 - Free download from NatureServe.org
 - Published on LandScope America
- Associated descriptions of Terrestrial Ecological Systems
 - Published on NatureServe Explorer
 - Published on LandScope America
- Final report

Visit www.natureserve.org/landscape-planning-resources



ConnectingLandscapes.org

 Offers step-by-step technical guidance for many different practitioners—including team

members on a wildlife action plan, landscape conservation initiative, or other large-scale projects—on how to conceive and conduct a connectivity assessment

- Highlights new and emerging tools
- Provides a platform for building a community of practice, enabling site users to share links, upload documents, and comments on content, connectivity tools, and related resources

This example of a connectivity model for the Mojave desert tortoise highlights areas that may be desirable for animal movement or dispersal in redder shades.



INCORPORATING CONSERVATION NEEDS OF AT-RISK PLANTS

The interagency settings in Colorado, Michigan, Montana, New Jersey, and North Dakota each presented unique challenges. However, in addition to sparking greater communication and collaboration between the natural heritage programs and the state agencies that manage wildlife action plans, this this initiative effectively positioning numerous plant lists, maps, and analyses for inclusion in upcoming plan updates.

Michigan's dwarf lake iris (Iris lacustris) is one of 24 plants assessed as highly vulnerable to climate change impacts—and one of 76 species assessed by the Michigan Natural Features Inventory.

Highly Vulnerable

Iris lacustris Lycopodiella margueritae Lycopodiella subappressa Aster furcatus Hymenoxys herbacea Platanthera leucophaea Potamogeton hillii Cypripedium arietinum Solidago houghtonii Triphora trianthophora Valerianella umbilicata

Dwarf lake iris

Northern prostrate el Northern appressed e Forked aster Lakeside daisy Eastern prairie fringe Hill's pondweed Ram's head lady's-sli Houghton's goldenro Three birds orchid Corn salad

DEVELOPING CONSISTENT HABITAT MAPPING FOR CONSERVATION FOCAL AREAS

The habitat types used in eight wildlife action plans from Midwestern states were linked to each other through NatureServe's standard national classification of terrestrial ecological systems.

The habitat information used to develop state wildlife action plans varied in scale and complexity, making it hard to work across states—or sometimes even across agencies within a single state.

With additional funding from the Northeastern Area Association of State Forests, NatureServe ecologists documented relationships between SWAP habitat types in the Midwest and standard national Terrestrial Ecological Systems classifications. This information allowed them to update the ecological systems map in eight states and link it to state habitat maps and classifications.

INTEGRATING CONNECTIVITY FOR WILDLIFE CORRIDORS

While research and modeling tools continue to evolve for the emerging discipline of habitat connectivity, practitioners have lacked a consolidated resource that helps them incorporate connectivity assessments into resource conservation and management.

To fill this gap, NatureServe's conservation planners have published step-by-step guidance via <u>ConnectingLandscapes.org</u>. By leveraging the existing LandScope America platform, NatureServe staff worked with other groups to craft it as one of several complementary websites serving the wider connectivity community of practice.





A Practitioner's Resource for Assessing and Planning for Habitat Connectivity

Home = Focus and Plan = Assessing Wildlife Habitat Connectivity

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What and Who is This Web Resource For?

Connectivity for wildlife and blodiversity generally is important for many species' viability. A number of web resource have been developed to provide a range of information relating to habitat connectivity. This web-based guidance is intended for natural resources and conservation practitioners (managers, planners, biologists, ecologists) that need model, assess, and plan for connectivity. While it is geared toward those that are relatively new to connectivity practi experienced practitioners may also find value in this site to learn about new methods, tools, and resources or to con such information to this site; it is designed to be self-populating by the connectivity community of practice.

This resource is also intended to complement <u>Conservation Corridor</u>, North Carolina State University's site on the science of connectivity, as well as connectivity modeling tool websites such as <u>Linkage Mapper</u>, <u>Circuitscape</u>,

B1: Outstanding Biodiversity Significance B2: Very High Biodiversity Significance North Park The Colorado Natural Heritage Program identified Cascade Falls more than 200 Important Plant Areas, which can help guide opportunities for conserving the highest quality nt Vrain allaha locations for plants of greatest conservation need. Han Plant G3 **S**3 T LT Rattlesnak ubmoss G2 S2 Т **S**2 G2 SC lubmoss G3 SI Т G3 E SI LT Half SI E LT d-orchid G3 Platea G3 **S2** Т G3 **S**3 SC pper Mill Creek G3 \$3 Т LT Springs G3G4 S1 Т G3G5 S2 T



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This preliminary assessment of landscape integrity identified areas important for habitat connectivity in the northwestern United States.

WGA Large Intact Blocks & Important Connectivity Zones Level 1Libs C2 Paonty 1 C2 Paonty 2 Level 3Libs C2 Paonty 3

NatureServe's connectivity work also comprised the development of new methods and maps for assessing landscape ecological integrity and connectivity—part of a west-wide effort coordinated by the Western Governors' Association (WGA) that included experts from state and federal agencies, universities, and nongovernmental organizations.

NatureServe contributed to working groups developing consistent approaches for modeling and assessing landscape integrity and permeability. The groups then delivered these resources to state wildlife agencies for use in their web-based Crucial Habitat Assessment Tools (CHATs) and the Western Governors' CHAT, which covers 16 states and will launch in December 2013.



www.natureserve.org/landscape-planning-resources

NatureServe fulfills our mission when decision-makers use our knowledge, tools, and services to:

- Focus scarce resources on the highest priority conservation activities
- Manage working lands to benefit biodiversity
- Improve the environmental quality of infrastructure development
- Support other societal needs in ways that preserve biological diversity

The resources developed through this project help provide the scientific basis for efffective conservation action for large landscape conservation.

NatureServe's science and conservation planning teams enable communities to plan strategically and preserve important natural values within the competing uses of an active landscape. We also seek to build local capacity, knowing that assessing and implementing land use and protection measures happens over long time spans.

Our collaborative approach relies on partnerships, especially within the NatureServe network. These dedicated professionals collect and manage the Hemisphere's most comprehensive source of biodiversity data, and each member adapts consistent methods to local conservation needs and challenges. This resilient, distributed network connects onthe-ground science to policy- and decision-making at all scales.

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PHOTO CREDITS

Cover

Grand Canyon of the Yellowstone | © Michael Menefee <u>flic.kr/p/p1VbS</u>

Western prairie white-fringed orchid (*Platanthera praeclara*) | David McAdoo <u>flic.kr/p/54j6p</u>

Interior

Dwarf lake iris (*Iris lacustris*) | Joshua Mayer <u>flic.kr/p/8c4hAi</u> Marsh and Dunes, Indiana Dunes National Lakeshore | Tom Gill <u>flic.kr/p/7WKEfQ</u>

PROJECT PARTNERS

DORIS DUKE





Michigan Natural Features Inventory





NJ Department of Environmental Protection Division of Parks and Forestry Natural Lands Management



SPECIAL THANKS TO





Northeastern Area Association of State Foresters

WESTERN GOVERNORS' ASSOCIATION