

A MESSAGE FROM OUR BOARD CHAIR

Whether it be a diminutive bat with a feisty disposition, an under-appreciated plant that controls the fate of one of the world's most beloved butterflies, or a blooming shrub that gives migrating warblers respite, "Each species ... is a masterpiece. It deserves that rank in the fullest sense: a creation assembled with extreme care by genius," as E.O. Wilson famously said.

This year's projects include an ongoing effort to save the monarch butterfly, a new app that helps visitors explore the natural communities at DC's Rock Creek Park and a comprehensive ecosystem profile of the biodiverse Tropical Andes.

We welcomed nearly 200 guests to picturesque Traverse City, MI for this year's Biodiversity Without Boundaries conference. In-depth discussions addressed opportunities, challenges, and best practices for conservation experts and citizen scientists alike.

The impact of our work is always widening. It has been a banner year and one that speaks volumes about the brightness of NatureServe's future. Thank you for your continued support in making possible these science-driven triumphs for biodiversity.

Nicole Firlotte
Chair
Board of Directors



MAKING MOVES TO SAVE THE MONARCH BUTTERFLY

Monarch butterfly migrations were once so vast that they darkened the sky near their wintering grounds in California and Mexico. Numbers have plummeted in recent years, by some counts, more than 90 percent. Widespread efforts are underway to encourage milkweed restoration and create expansive "monarch migration highways" in North America. NatureServe has been at the forefront of this issue, advising a White House initiative to develop the first-ever national strategy on the health of monarch butterflies as well as hundreds of other pollinators.



Monarch found in
Richmond, NC
Photo by
John Flannery

Confronting the Plight of Pollinators

NatureServe, together with our Network Programs, is helping lead the way in monitoring and assessing the conservation status of native pollinators. By creating detailed digital range maps, releasing a crucial report, *Conservation and Management of North American Bumble Bees*, and revealing the declining state of Mason bees, another important pollinator group, NatureServe is playing a major role in confronting the plight of pollinators.

Now, NatureServe is being heard by the White House. The alarming decline in native pollinator populations—most notably, honey bees and monarch butterflies—spurred President Barack Obama to launch a wide-ranging initiative requiring more than a dozen federal agencies to go further to protect and restore these crucial species. NatureServe is making bold science-based recommendations to the White House on how to move forward.

At the White House meeting, NatureServe urged stakeholders to ground future conservation actions in the context that the pollinator crisis reaches far beyond those few iconic species. NatureServe also stressed that the ongoing work by states is irreplaceable. Many states are re-writing their State Wildlife Action Plans (SWAPs) by the end of the year. Having the support from the White House and federal agencies to include invertebrates and plants into SWAPs could leverage existing efforts to better protect these taxa.

MISSION

To provide the scientific basis for effective conservation action

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Mountain laurel (*Kalmia latifolia*) is a blooming shrub found in Rock Creek Park in Washington, DC.

Shining a Spotlight on DC's Rock Creek Park

With the click of a few buttons, visitors to Rock Creek Park in Washington, DC who have long admired its lush vegetation and lovely wildflowers can now enrich their understanding of the park's signature habitats and quirky residents such as skunk cabbage. With the new Explore Natural Communities (ENC) web tool, this is possible.

Never before has there been an online guide to the park's native habitats and plants. ENC is a resource NatureServe built in partnership with the U.S. National Park Service. It is both a guide for park visitors and a means for enhancing park managers' knowledge of Rock Creek to deepen what they are able to teach visitors about its biodiversity.



Our hundreds of new maps include range maps for the 227 species of damselflies (above) | Photo Thomas Shahan

Hundreds of New Maps Guide Conservation

Groundbreaking work by our scientists has yielded a staggering array of maps that shed new light on birds, dragonflies, and bees in North America—showing where thousands of species are located and how that has changed in recent years. Never before have these species' ranges been mapped with such precision, depth, and breadth.

Thanks to funding from the Sarah K. de Coizart Perpetual Charitable Trust, NatureServe has mapped the ranges of 248 species of bumblebees, dragonflies, and damselflies living in the northeastern U.S. These maps are used by state wildlife officials to create management plans, and highlight opportunities to prevent the decline and extinction of these environmentally sensitive pollinators and aquatic species.



Sleeping Bear Dunes National Lakeshore, site of BWB 2015's field session | Photo courtesy of Traverse City Tourism

BWB 2015: Traverse City, MI

Framed by miles of Lake Michigan shoreline, Traverse City is one of the nation's most cherished destinations. The annual Biodiversity Without Boundaries conference, held from April 26-30, 2015, drew hundreds of the world's leading conservationists for nearly a week of field trips, workshops, trainings, and presentations with an emphasis on close-knit collaboration among NatureServe's 80-plus Network Programs, partners and supporters from federal and state agencies. Major topics included Citizen Science and the Great Lakes:

- Citizen Science – Presentations and discussions addressed opportunities, challenges, and best practices for designing, implementing, and effectively using citizen science projects for conservation and biodiversity science.
- The Great Lakes – Just as the Great Lakes dominate the Michigan landscape, so too did they dominate the discussions at this year's BWB, with a symposium that spanned all four days of the conference. The series of presentations and discussions addressed the latest research, ongoing conservation efforts, challenges, and opportunities presented by the Western Hemisphere's largest collection of freshwater ecosystems.

Targeting up to \$10 Million in Investment for the Tropical Andes

NatureServe completed a comprehensive analysis of this biodiversity hotspot, a 30 million acre expanse spanning western Venezuela down to northern Chile and Argentina.

The resulting Ecosystem Profile will be used by the Critical Ecosystem Partnership Fund (CEPF) to steer millions of dollars in grants towards the most urgent conservation priorities over the next five years. *(next page)*



The Bolivian Yungas is a breathtakingly unique ecoregion within the 30 million acres NatureServe analyzed as part of the groundwork for the Critical Ecosystem Partnership Fund's five-year investment strategy in the tropical Andes. | Photo by Bruce Young

IN BRIEF

LandScope Inside Texas

In coordination with Texas Parks and Wildlife and other state partners, NatureServe built LandScope Texas to be a primary resource for guiding conservation and land protection efforts in the state. Results of this project include:

- 74 published web pages describe the conservation context in Texas on themes including conservation priorities, protected areas, ecosystems and habitats, plants and animals, recreation, and threats
- 32 published map layers and associated data description pages
- 105 published place-tagged media content items, including 49 photos, 23 videos, and 33 stories

Alan Weakley Named 2015 Larry Morse Fellow

NatureServe's 2015 Larry Morse Botany Fellowship was awarded to Alan Weakley, a leading botanical expert focused on the southeastern United States, and Associate Professor at the University of North Carolina.

In 2015, Alan reviewed more than 350 conservation status assessments, 206 of which included validating a species' Global rank (Grank).

Conservation Rank Calculator

How does NatureServe track and calculate a species' rank? The Conservation Rank Calculator is a tool that automates the process of assigning a conservation status rank—an evaluation of the level of risk of extinction of species and elimination of ecosystems. It is used extensively by NatureServe and its Network Programs and collaborators that collect and evaluate data for species and ecosystems of concern using a common methodology. The Rank Calculator tool facilitates the accurate application of this methodology and promotes greater accuracy and consistency of the assessments.

LandScope Chesapeake



Elizabeth River, Chesapeake, VA
Photo Chesapeake Bay Program

Built in partnership with dozens of state agencies, non-governmental organizations, and land trusts from across the watershed, LandScope Chesapeake extends an existing platform provided by LandScope America and allows users to identify mutual priorities and track progress against watershed-wide goals for conservation, restoration, and recreation.

A user-friendly mapping interface lets users view multiple sets of conservation priorities in a single map. The same map displays partners’ place-based success stories, photos, and videos, inspiring others about the places that matter most in the Chesapeake watershed.

Goals of the Project

LandScope Chesapeake provides a publicly accessible, watershed-wide land conservation priority system to support and monitor progress toward the goals established under the Chesapeake Bay Executive Order. Signed in 2009, Executive Order 13508 called for a renewed effort to restore and protect the Bay and its watershed.

The resulting multi-agency strategy established several specific conservation and restoration goals for 2025, including two that LandScope Chesapeake will support:

- The protection of an additional two million acres of high- priority conservation lands
- The creation of 300 new public access points

(Continued)

CEPF plans to invest upwards of \$10 million to fund conservation activities and sustainable economic development in the region. But first they needed NatureServe’s help to understand the full range of biological and habitat features that exist throughout the massive and varied expanse, home to the rare spectacled bear and primeval cloud forests. In building the profile for CEPF, NatureServe’s project team:

- Secured broad-based scientific agreement on the biological priorities for conservation
- Described the social and economic factors that drive threats to the natural resources
- Defined the baseline biological indicators that will be used by the CEPF to monitor its grants

Our team for the initiative included species scientists, ecologists, and our Latin American partners. EcoDecision, a nonprofit organization based in Ecuador, led the analysis of the socioeconomic, political, and conservation finance factors.

Together, NatureServe and EcoDecision hosted workshops in seven Andean countries, amassing the perspectives, priorities, and needs of local stakeholders such as grassroots non-governmental organizations and community groups, as well as government agencies, the private sector, donors, and international civic groups.

The Science that Drives Species Conservation

The information developed by NatureServe guides the conservation of rare species and threatened ecosystems around the world. Here are just a few examples of the creatures and special places that your support helps protect.

Habitat maps for awned meadowbeauty (*Rhexia aristosa*) generated by NatureServe will help foresters in South Carolina find this wildflower and consider how to manage the places in which it thrives.

With NatureServe’s help, managers of the Sheldon-Hart Mountain National Wildlife Refuges in Nevada and Oregon are maintaining large migratory herds of pronghorn (*Antilocapra americana*).

NatureServe is updating the estimates of extinction risk for Canadian mussels such as the brook floater (*Alasmidonta varico-sea*). With this update, organizations can more easily avoid or mitigate impacts on the most sensitive species.



Awned meadowbeauty (*Rhexia aristosa*)
Photo by Mike Baker



NatureServe’s scientific information has long been evidence of the importance and relevance of biodiversity. Pictured, the white crab spider (*Misumena vatia*)
Photo by Craig O’Neal

Voices for Biodiversity:
Science at Work in Health

Chief Scientist Dr. Healy Hamilton led a session on the connection between biodiversity and human health at the annual conference of the Global Biodiversity Information Facility (GBIF) held in India.

As the climate changes, species are often forced to move, sometimes bringing them into closer contact with human populations. This can lead to devastating consequences when the species brings diseases with them. Dr. Hamilton’s research informed health professionals about the likely future movements of animal hosts for these pathogens. The results are illuminating a critical link between climate change and increasing disease outbreaks in humans.



Asiatic Dayflower (*Commelina communis*) spotted in Coventry, CT
Photo by Mark Smith

Batty for NatureServe’s Data:
One on One with a New Network Program



Andrew Walker, Executive Director of Bat Conservation International, watches the evening sky at BCI’s Bracken Cave Preserve in Texas.

Bat Conservation International (BCI) is the first of our 80-plus Network Program organizations that focuses on a family of species rather than a specific geography.



A Gambian epauletted fruit bat mother cradles her pup | Merlin D. Tuttle/ BCI

BCI has enjoyed widespread success in enlightening the understanding of the world’s bats. But what they need to make the next leap, said Executive Director Andrew Walker, are the sort of tools that will enable them to focus their conservation efforts.

“One of the top priorities for us is the fact that we’re going to work with NatureServe to create the world’s first global bat database,” Walker told us in a recent interview. “This database will drive bat conservation for decades to come.”

While working with NatureServe, Walker and BCI’s goals will be to protect mega populations, species that congregate by the millions. By working with NatureServe, BCI can make sure they’re gathering population-trend data over the long-term and spotting significant changes in either direction.

WITH GRATITUDE

We wish to extend our sincere appreciation to the patrons and clients whose support helped NatureServe advance our shared mission between July 1, 2014, and June 30, 2015.

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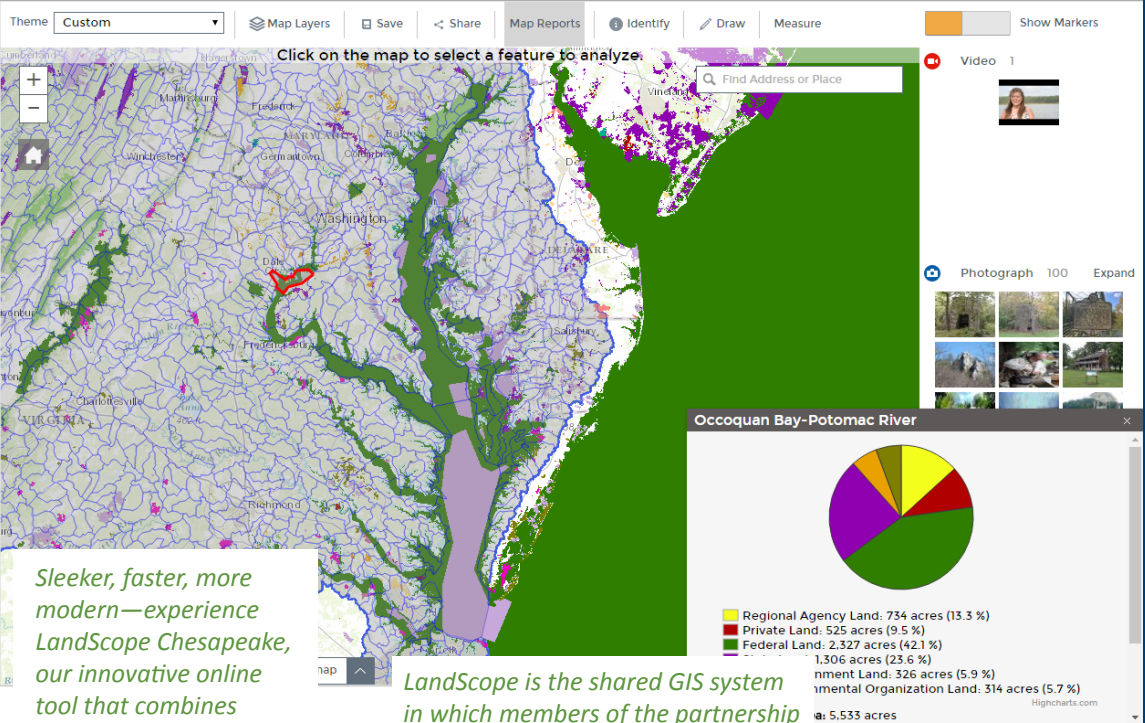
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LandScope Chesapeake (continued)

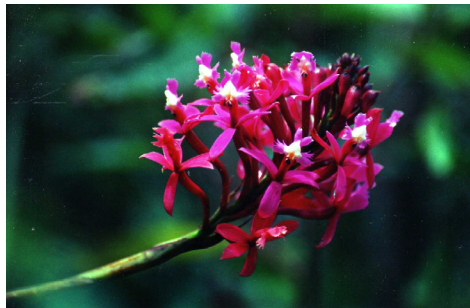
LandScope Chesapeake brings up-to-date conservation priority maps into one, easy-to-access website. View layers such as State Wildlife Action Plans, agricultural priority preservation areas, rural legacy programs, and regional greenprints to help make conservation decisions. Partners can work with LandScope to build organizational pages where they can share place-based narrative content, photos, and videos. Coming in 2017 organizations will use LandScope to log conservation actions, from easements to mitigation projects.



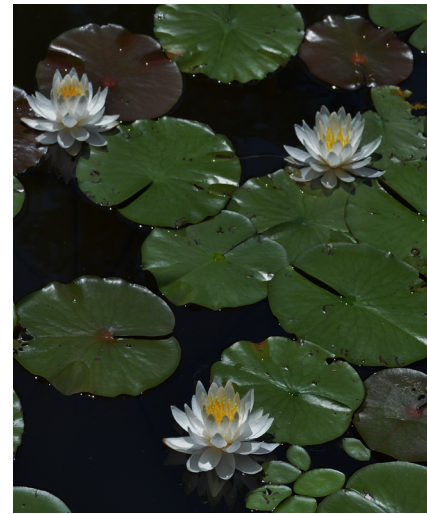
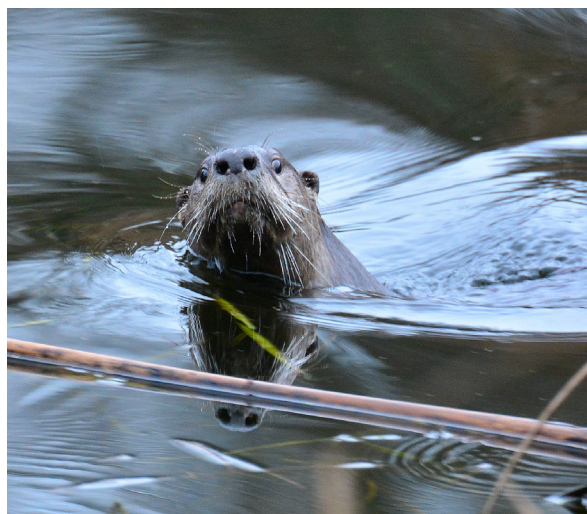
Sleeker, faster, more modern—experience LandScope Chesapeake, our innovative online tool that combines maps, articles, videos and photos to tell the story of the region’s most cherished places.

LandScope is the shared GIS system in which members of the partnership compile data and share updates on priorities and conservation efforts throughout the Chesapeake Bay watershed.

Visit LandScope.org



Piloting the Red List of Ecosystems in the Americas



(Top left) A crucifix orchid (*Epidendrum secundum*) spotted in Peru | Photo by Ellie Enking; (Middle) N. American beaver (*Castor canadensis*) seen in Jericho Park, Vancouver, BC | Photo by David Wong; (Right) One of many lily flowers found in the Patuxent Research Refuge near Ft. Meade, MD | Photo by Matthew Beziat

Accelerating landscape change threatens biological diversity worldwide. Conserving this diversity hinges on our ability to understand changes in the condition of the ecosystems that contain this diversity. The first step is documenting the baseline status of ecosystems. This is where NatureServe is taking action.

With the generous support of the Gordon and Betty Moore Foundation, we are initiating the IUCN Red List of Ecosystems of the Americas.

Like the IUCN Red List of Species, a system that ranks species based on their risk of extinction, the Red List of Ecosystems will rank which upland and wetland ecosystem types should be considered "Vulnerable" "Endangered" or "Critically Endangered".

Using newly developed criteria by IUCN, we will document which forest, savanna, shrub - scrub, grassland, desert, wetland, and riparian types are of greatest conservation concern. This assessment will evaluate each type across its natural range of distribution to score it for risk of rangewide collapse.

By documenting the relative at-risk conservation status of ecosystem types, we provide a key input to conservation priority-setting. Maps indicating the current locations of red-listed ecosystems will be used to target locations for protective action. Newly determined statuses will support resource allocation decisions for ecological restoration.

Side-by-side with species ranking of conservation concern, the Red List of Ecosystems will give a more complete picture of the status of biodiversity in the Western Hemisphere and the health of some of our greatest natural resources.



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Bluejay (*Cyanocitta cristata*) spotted in Hanover, PA | Photo by Henry T. McLin



Ruby milkweed beetle (*Tetraopes tetraphthalmus*) spotted in Montrose Park, outside of Chicago, IL
Photo by John Picken