



NatureServe

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Heard from the Field

“NatureServe is a go-to resource for land trusts that want to access scientific data and mapping tools to identify and protect land with significant biodiversity.”

– **Andrew Bowman**
President, Land Trust Alliance

“When it comes to providing biodiversity data for conservation work, no organization does it better than NatureServe. When the forest sector needed an authority on at-risk species and ecological communities, NatureServe stepped up and delivered.”

– **Brian J. Kernohan**
*Director, Policy & Environmental Advocacy,
Hancock Natural Resource Group*

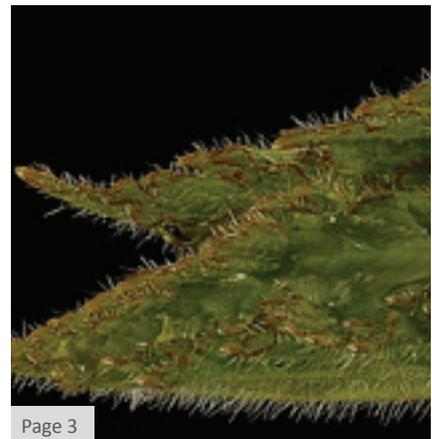
Can you guess these species?



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MILESTONES

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I've been at the helm here at NatureServe for nearly a year, and I am so proud to work alongside our dedicated

staff, Network colleagues and myriad conservation partners. One fundamental truth now guides me—that biodiversity knowledge, whether as data, maps or analysis doesn't help save species and natural habitats unless it is accessed and put to work. And that's where NatureServe and our Network partners come in. Our actionable science helps create win-win solutions by identifying the most positive outcomes for biodiversity. We provide the knowledge used by agencies, corporations, other nonprofit organizations and academic institutions to conserve, manage and sustain biodiversity.

Going forward, NatureServe will focus on our shared vision for positive conservation impact, made possible through scientific discoveries that advance our biodiversity knowledge and the innovations we develop to uncover important trends. This edition of Milestones features several NatureServe Network conservation success stories—none of which would be possible without your support.

Thank you for your contributions to advance science so that together we can understand and protect nature.

Yours in conservation,



Gregory A. Miller, Ph.D.
President & CEO

How Healthy is that Ecosystem? Checking the Pulse of the Planet

The doctor is in! NatureServe Network scientists have developed a “biophysical exam” that assesses how well an ecosystem is doing.



Hood River | Photo: Megan Saunders, Hood River Watershed Group

Called an “Ecological Integrity Assessment,” or EIA, this tool is a standardized methodology to evaluate the health of a landscape compared to its historic natural condition. The ecosystem’s health is measured from A (excellent), B (good), C (fair), to D (poor). The results are changing the way the world understands and responds to the places that need our conservation attention.

Hood River County, Oregon

With its cold, rushing rapids, towering pine trees, and majestic Mount Hood looming above, the Hood River Powerdale property is a sight to behold. Columbia Land Trust, in partnership with NatureServe’s Washington Natural Heritage Program (WNHP), is using NatureServe’s EIA approach to measure the ecological health of its Hood River Powerdale property. Columbia Land Trust and the WNHP are advancing the EIA method for application in upland ecosystems

and to strategically address a complexity of management objectives.

Jen Zarnoch, Land Trust natural area manager, working with senior vegetation ecologist Joe Rocchio from WNHP, can now for the first time answer some complex but critical questions. These include: How healthy are the lands we steward? How effective are our restoration efforts at improving habitat? How should we prioritize our efforts moving forward?

“This is a tool,” says Zarnoch, “that can help us look across all our lands in Washington and Oregon and determine how we’re doing.” The Land Trust plans to conduct EIAs on each of its 95 stewardship units over the next few years. Future EIAs will then allow staff to determine whether a site’s habitat condition is improving, stable, at risk, or declining. “Our stewardship team is optimistic that EIAs, paired with efficient

Predicting Climate Change Impacts in the Golden State

California's Central Valley is truly the breadbasket of America, but this area was once covered with a rich mosaic of oak woodlands, grasslands and marshes.

Fortunately, a new program aims to create a verdant Central Valley that will be rich in both healthy wildlife habitat and farm production, ensuring that the nation's demand for food is met while at the same time protecting and restoring California's natural heritage.

Known as the Central Valley Habitat Exchange, this voluntary program empowers farmers to be paid for wildlife friendly agricultural practices. However, the indicators of "what is working" have become moving targets under a changing climate. NatureServe is helping this program figure out how to structure their incentives for farmers in the face of climate change, using innovative approaches to shed light on what the targets should be. As the climate changes, NatureServe has predicted where species will be located in the future--through the year 2069. NatureServe's Bioclimate Analyst, Stephanie Auer, modeled future habitat for key species including Swainson's hawk, San Joaquin kit fox, burrowing owl, brush rabbit, and the tricolored blackbird. This information will help the program determine future sites for their habitat exchange program.

The result? That smart choices are made to ensure that the right places are targeted for conservation action—now and in the future. These species will have a much better chance for survival, and farmers can generate additional revenue while maintaining control of how they grow their business.



Stephanie Auer



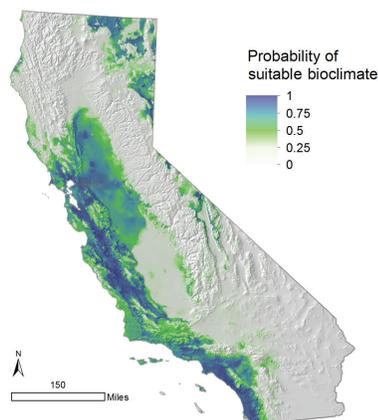
NatureServe predicts future habitat for San Joaquin kit foxes (*Vulpes macrotis mutica*), NatureServe Global Status: Imperiled (T2) and tricolored blackbird (*Agelaius tricolor*), NatureServe Global Status: Critically Imperiled (G1)



Tricolored Blackbird | Photo: Becky Matsubara

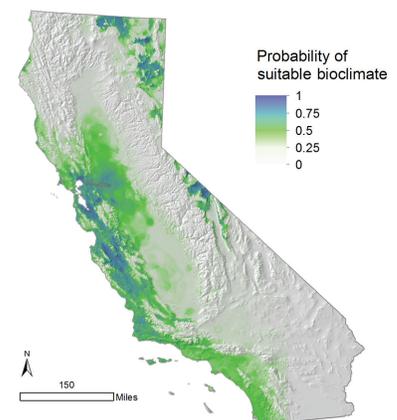
Historic

Tricolored Blackbird Modeled Suitable Bioclimate 1981-2010



Future

Tricolored Blackbird Modeled Suitable Bioclimate 2010-2039



About Milestones

Milestones is a periodic news publication of NatureServe, an international nonprofit conservation organization that develops and provides actionable knowledge to sustain biodiversity.

Editor - Erin Chen

Milestones is available online at www.natureserve.org/news-and-events/newsletters

For more information about how you can help support our mission, contact Erin Chen, Chief Development & Engagement Officer, at erin_chen@natureserve.org or 703-908-1841



Shedding Light on Plants We Love



NatureServe discoveries result in new endangered listings for Carolina Least Trillium (*Trillium pusillum*), NatureServe Global Status: Vulnerable (G3)

Trillium: More than Meets the Eye

From Virginia to Arkansas, and south to Texas and Mississippi, we encounter the ground scattered with delicate white and pink flowers shaped like pinwheels. Known as the Carolina Least Trillium (*Trillium pusillum*), this vulnerable species previously had no recognized varieties. However, Misty Buchanan, NatureServe's North Carolina Natural Heritage Program Director, recently collected and identified plant specimens in Wilson, Raleigh, and Smithfield, North Carolina. This data revealed that the Carolina Least Trillium is not one distinct variety, but actually composed of five to nine varieties, with three of the varieties found in North Carolina. With this new discovery, the North Carolina Plant Conservation Program has listed all 3 varieties as endangered in the state. This Endangered



Goldenseal (*Hydrastis canadensis*) NatureServe Global Status: Vulnerable (G3) Photo: USGS

status allows the Plant Conservation Program to pursue specific conservation actions that will protect this species.

Goldenseal: NatureServe Discovers Medicinal Plant is in Decline

NatureServe recently led an assessment of goldenseal. The result? Vulnerable. This long-lived, perennial plant occurs only in North America (USA and Canada), where it has undergone a decline in its distribution and the quality of its habitat. "Goldenseal, a widespread herb native to eastern North American forests, has long been prized for its medicinal use," says Leah Oliver, Senior Research Botanist with NatureServe. "The main causes of decline are wild

collection combined with habitat loss and degradation. Yet, we are encouraged by a growing international market for cultivated goldenseal, along with a focus on sustainable wild-collection. These activities may slow the decline of the species." Goldenseal's rhizomes have the highest concentration of medicinally-active alkaloids (berberine, hydrastine and canadine) used for the common cold and other upper respiratory tract infections.

Discovering a Species Never Before Documented in Saskatchewan

Moonworts are a group of small, fern-like plants at risk of extinction in Canada. NatureServe's Saskatchewan Conservation Data Centre set out to newly explore moonwort diversity in the Cypress Upland ecoregion. The search effort resulted in a new species record for Saskatchewan—Daisy-leaved Moonwort (*Botrychium matricariifolium*)—and two globally Vulnerable species, (*Botrychium ascendens* and *Botrychium pallidum*), and Michigan Moonwort (*Botrychium michiganense*), a species relatively new to botanical taxonomy. Information generated from this fieldwork is now part of the ever-growing body of biological knowledge available through the international NatureServe Network.

ECOSYSTEM continued from page 1



Jen Zarnoch

monitoring, will result in better data, more time for restoration work, and a tighter feedback loop to get the most out of every dollar spent on managing and improving habitat," says Zarnoch. "Ultimately, we'll be able to move more land toward desired conditions for wildlife."

Alvarado Lagoon, México

Mangrove forests are one of the most productive ecosystems in the world: they protect the coastline, sequester and store carbon, and provide habitat for an exceptional suite of biodiversity. They also provide timber, wood, and medicinal plants. However, mangrove forests are among the most threatened habitats in the world, as more than 35 percent of the world's mangroves have been lost.

In Mexico, Anibal Ramirez, César Lucio, other staff from ProNatura Veracruz, and Don

Faber-Langendoen, from NatureServe, are combining the EIA tool with economics to help local communities sustainably manage mangroves. Working with The Conservation Strategy Fund, the team combined ecological and economic measures for valuing and enhancing the resilience of mangrove forests, with results ranging from excellent (A) to fair (C). Our next step is to combine these findings

with community workshops to better understand how stakeholders currently make land use decisions and identify links between ecological health and human well-being. Our expected outcome will be a model for ensuring the resilience of the mangrove forests, both improving biodiversity and ultimately the lives of the more than 50,000 people living in the Alvarado Lagoon System.



The Alvarado Lagoon community can more sustainably manage mangrove forests thanks to work from our scientists and partners.

