2018 ANNUAL REPORT

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Eastern gray treefrog (*Dryophytes versicolor*) NatureServe Global Status: Secure (G5) Photo by Larry Master NatureServe

Dear Friends, Supporters, and Network Members,

We are writing this letter about six months into Sean's tenure as President and CEO and Jim's tenure as Board Chair. As we reflect on where NatureServe was at the start of 2018 compared to where we are now, we are proud of this crucial organization's successes in the past year and excited about its promising future.

As you know, NatureServe has gone through several changes in the recent past. If you look at the financial information in our past and current annual reports, you will see we have hard work ahead to get back to full strength. There is no point in trying to hide our challenges, and we believe the more you know about our work, the more you will be inspired to help us through our rebuilding stage. As you will see in this annual report, we continue to make meaningful progress on our mission of protecting threatened and endangered species and their habitats.

One of many gratifying accomplishments in 2018 was securing significant financial support to rebuild our flagship database and public education tool, NatureServe Explorer. This in-depth, online encyclopedia is a critical resource for scientists, managers, and practitioners working to protect biodiversity, and the newest version will provide greatly expanded access to the wealth of conservation data NatureServe has to offer. We look forward to unveiling a completely redesigned Explorer later this year.

We also launched an ambitious project with support from Microsoft, Esri, and The Nature Conservancy to create habitat suitability models for approximately 2,500 threatened and endangered species in the United States. This effort, carried out by dozens of scientists across the network using our peer-reviewed and published scientific approach, will provide the most precise and comprehensive information to date on where atrisk species are concentrated. The national map of biodiversity hot spots we create with this data will be a significant tool to guide critical conservation efforts.

NatureServe remains uniquely committed to protecting biodiversity for the sake of conservation itself. We also recognize and value the economic, public health, and ecosystem services the natural world provides us. We are guided by our understanding that every species provides an irreplaceable contribution to human and planetary health, as well as an intangible aesthetic contribution to life on Earth. Our work to protect biodiversity supports a prosperous future for our children and all future generations.

Inside this report you will find an illustrated map of threatened and endangered vertebrate species in the United States and Canada, created from the invaluable information NatureServe and our network programs have collected and analyzed. After you read the updates in this report, we encourage you to put this poster on your wall and enjoy its beauty while gaining insights into the serious biodiversity crises we face. We will share more information online about each of the illustrated species throughout 2019.

We are eager to introduce you to a revitalized NatureServe, and we cannot wait to send you updates about our progress in 2019 and beyond.



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President & CEO

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*Term expired

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Measuring southern open pine habitats

NatureServe released an updated version of the Rapid Assessment Metrics for Southern Open Pine Ecosystems. These metrics help natural resource managers of all backgrounds better understand how their lands contribute to the habitat needs of at-risk wildlife.



Mangrove forest in the Everglades | Chauncey Davis

3

Painted bunting (*Passerina ciris*) NatureServe Global Status: Secure (G5) | Nicholas Moy at NatureServe

Bumblebee-like digger bee (Anthophora bomboides) NatureServe Global Status: Secure (G5) | USGS Bee Inventory and Monitoring Lab

2. Taking the pulse of the Gulf of Mexico

A new report by NatureServe and many partners provides recommendations on how to "take the pulse" of five marine ecosystem types in the northern Gulf of Mexico using ecological resilience indicators and how to assess the services they provide to local communities.

3. Putting citizen science data to work

NatureServe and network programs collaborated to share best practices for accessing the vast data now available from citizen science tools such as eBird and iNaturalist. This has increased the breadth and timeliness of information we use for status assessment, conservation planning, and regulatory review for at-risk species.

4. Assessing the status of digger bees

NatureServe completed the first-ever comprehensive conservation status assessment of digger bees (tribe *Anthophorini*) in the U.S. and Canada, with support from the U.S. Forest Service and Frankenberg Foundation for Animal Welfare.





(Left) Hoary azalea (*Rhododendron canescens*) NatureServe Global Status: Secure (G5). (Right) Yellow pitcherplant (*Sarracenia flava*) NatureServe Global Status: Secure (G5) | Judy Teague at NatureServe

Thurson marines a like Calacter true tithur anneals Martura Series Global Status

Tiburon mariposa lily (Calochortus tiburonensis) NatureServe Global Status: Critically Imperiled (G1) | TJ Gehling



Potomac River at Harpers Ferry National Historical Park | Milo Pyne at NatureServe

5. Monitoring wetlands and longleaf pine in South Carolina's forests

NatureServe ecologists completed a four-year project monitoring, ranking, and conducting ecological assessments of wetlands and longleaf pine natural communities in the national forests of South Carolina.

6. Mapping biodiversity hot spots across the U.S. 7. Understanding climate change in capital

The Map of Biodiversity Importance is an ambitious project by NatureServe, with support from Microsoft, Esri, and The Nature Conservancy, that will identify the most important places for conserving at-risk biodiversity by creating habitat suitability models for 2,500 species.

Understanding climate change in capital region national parks

An analysis by NatureServe evaluates the climate change vulnerability of 11 parks in the National Capital Region of the National Park Service and recommends steps to increase the adaptive capacity of park ecosystems.



Red-eyed leaf frog (Agalychnis callidryas) IUCN Red List Status: Least Concern | Bruce Young at NatureServe

8. Conserving multiple dimensions of biodiversity

NatureServe scientists authored a study funded by the National Science Foundation showing that conservation aimed at protecting species diversity also does a good job at protecting functional and evolutionary diversity.



NatureServe is on the front lines every day for biodiversity. Here are our top eight stories from the field this year.

Around the NatureServe Network

Understanding and protecting the expansive ecological systems and tens of thousands of species that inhabit North and South America requires a colossal effort. The power of the NatureServe network lies in the combined knowledge and expertise of more than 1,000 conservation professionals working tirelessly to gather biodiversity data in their respective geographies. Read on to learn more about the network's achievements and the many exciting ways it grew in 2018.



Allison Gratz NatureServe **Director of Network Relations**



@Northwest Territories Conservation Data Centre

The Northwest Territories Conservation Data Centre has completed its first data exchange with NatureServe. This is the culmination of three years of data collection using NatureServe's core methodology and tools. As a result of this data exchange, the territories' biodiversity data are now available to an international audience.



@Washington Natural Heritage Program

Bogs are rare ecosystems in the Pacific Northwest that provide many benefits to humans and other species, but they appear to be changing—and possibly disappearing. With funding from the U.S. Environmental Protection Agency, the Washington Natural Heritage Program and Colorado State University are studying what is driving the changes in these unique ecosystems.



@Pennsylvania Natural Heritage Program

The Pennsylvania Natural Heritage Program (PHNP) is using NatureServe's Climate Change Vulnerability Index (CCVI) to examine how climate change will alter the distribution and abundance of plant and animal species in the state. To date, PHNP has ranked more than 100 species using the CCVI, and some general vulnerability patterns have already started to emerge as a result.



@NatureServe Network

Network programs from across the country came together in 2018 for three regional heritage conferences. More than 400 participants from 36 member programs and other partner organizations gathered in North Carolina, Pennsylvania, and California to discuss regional conservation issues in the Southeast, Northeast, and West.



@Michigan Natural Features Inventory

A collaboration between the Michigan Natural Features Inventory and Michigan Aerospace Corporation employs deep learning algorithms and drones to monitor for invasive species in rare coastal ecosystems. The monitoring platform demonstrates that artificial intelligence can be a powerful force for advancing conservation and restoration efforts.



@NatureServe Network

NatureServe welcomed eight new member programs in Bolivia, Ecuador, and Peru. Joining forces with these organizations will strengthen the existing relationships among our network programs and open the door for greater opportunities to share data and create innovative tools that advance our shared conservation goals.



@Florida Natural Areas Inventory

Longleaf pine ecosystems are among the most diverse in North America, but they have experienced one of the most drastic reductions of any major natural ecosystem in the United States. A six-year effort by the Florida Natural Areas Inventory and the Florida Forest Service has mapped and assessed millions of acres of this precious ecosystem—a major step in protecting it.







Western hemlock and peatmoss treed bog NatureServe Globa Status: Critically Imperiled (G1) Photo by Washington Natural Heritage



False Solomon's seal (Maianthemum NatureServe Global Status: Secure (G5) Photo by Matt Jones



NatureServe and NatureServe network program staff at the Northeast Natural Heritage Meeting in Somerset County Pennsylvania Photo by NatureServe



Great Lakes marsh as captured by drone Photo by Matthew Aerospace Corporation



Blue-winged mountain-tanager (Anisognathus IUCN Red List Status Least Concern Photo by Judy Teague at NatureServe



Red-cockaded (Picoides borealis) NatureServe Globa Status: Vulnerable (G3) Photo by Andy Wraithmell





A new study led by scientists from NatureServe network programs assessing the state of forests in the Americas found that even in areas as remote as the Amazon, little forest remains unthreatened by human activity. Although the cumulative impact of timber extraction, poaching, wildlife trade, and agricultural expansion compounded by climate change is vast and devastating, the study provides a clear path forward for countries to reverse this disheartening trend. There is still a short window of time remaining to change the fate of the forests we rely on.

Tropical and temperate forests, the types analyzed in the study, are rich in value both tangible and intangible. Not only do they host an immense share of terrestrial and aquatic biodiversity, they also play a critical role in global climate regulation and provide indispensable services to humans by affording us medicinal, commercial, and cultural resources, and perhaps most importantly, clean water. These forests are at risk, and losing the services they provide is not a tenable option.

The study, published in the journal *Conservation Letters*, found that 80% of forest types evaluated and 85% of current forest area in the Western Hemisphere are threatened. "It was our intention to provide a realistic picture of the serious threat the Western Hemisphere faces," said Dr. Carlos Zambrana-Torrelio, a co-author of the

This map shows the optimal combination of conservation strategies for each country analyzed in the paper. Source: Conservation Letters

paper and a NatureServe board member. In light of the daunting findings, the paper offers strategies and solutions forward. "While the threat of deforestation is clear and present," Dr. Zambrana-Torrelio adds, "it's often more difficult to conceptualize an effective solution. This analysis—the first of its kind—will provide governments and other stakeholders with clear guidance as to where to focus their efforts."

The study used an unparalleled dataset, an international ecosystem classification developed by NatureServe ecologists, to categorize forests across the Americas. Using NatureServe's baseline classification standard not only allowed an evaluation of all forest ecosystems in the hemisphere,

Forest restoration
Halting deforestation

Protecting restricted type
 Climate adaptation
 Water protection
 Manage resource use
 Control over-exploitation

but also enabled researchers to compare trends over time and across ecosystem, political, and geographic boundaries. With this dataset, the team then used the flagship Red List of Ecosystems criteria developed by the International Union for Conservation of Nature and partners including NatureServe to assess risks and threats to forest types. Having identified the ecosystems most at risk, the study proposes national investment strategies for forest conservation, reforestation, and restoration that focus on the most critical and cost-effective measures.

Continental-scale studies like this one demonstrate that the NatureServe network is uniquely well positioned to lead the future of strategic conservation in the Americas. Dr. Miguel Fernandez, Director of NatureServe's Latin America and the Caribbean Programs, believes this groundbreaking study will pave the way for national initiatives to define conservation priorities. "This is just the beginning. With the continental-scale groundwork laid, we now call on national initiatives to conduct risk assessments at the country level. NatureServe scientists and the research team behind this study are fully available to guide and assist in that process." The ecosystem classification data are freely available and cover many terrestrial ecosystem types beyond forests. Contact NatureServe to access the data and learn more.

"This analysis—the first of its kind—will provide governments and other stakeholders with clear guidance as to where to focus their efforts."

Carlos Zambrana-Torrelio, Ph.D.
Associate Researcher of Bolivia's National Herbarium
Associate VP at EcoHealth Alliance
NatureServe Board Member



Deforestation in Santa Cruz, Bolivia from 2001 (left) to 2015 (right) Source: Google Maps

NatureServe by the Numbers

NatureServe and our network programs are at the core of virtually every environmental and conservation project in North America. As state and federal governments, conservation groups, corporations, and private citizens work to protect natural resources, NatureServe's reputable, standardized, and unbiased biodiversity data are the critical building blocks guiding their plans.



Whether the goal is to avoid the disruption of an endangered species' habitat as part of a large-scale highway project or to identify which land acquisitions most effectively protect critical migratory corridors, NatureServe's established, high-quality scientific research and planning tools play a vital role in guaranteeing successful outcomes for biodiversity. The numbers below represent just a fraction of the impactful work we do.

259,999

The number of conservation status records for species and ecosystems we updated in NatureServe's central databases in 2018 as a result of exchanging data with our network programs.



This is more than double the number of records we updated just five years ago. Thanks to new technology, we have increased the rate at which we exchange data, ensuring the most current information is used to guide conservation decisions.

284
plant
species
&
289
animal
species

The number of rank assessments conducted using the NatureServe Rank Calculator in 2018.

20



The number of publications that NatureServe staff contributed to in 2018.

95



The number of NatureServe network programs in the United States, Canada, and Latin America—and growing.

Financials

July 1 2017-June 30 2018

Revenue

Total Operating Revenue

Charitable Contributions*

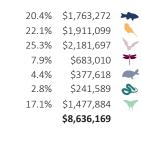
Grants, Contracts, and Program Fees
Government
Non-government
Registrations and Other Income**
Endowment Support

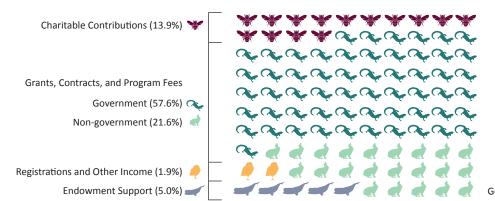
13.9%	\$1,155,698	*
57.6% 21.6% 1.9%	\$4,787,601 \$1,799,656 \$155,809	
5.0%	\$413,422	
	\$8,312,186	

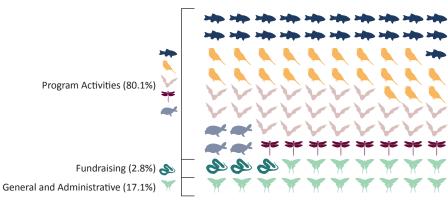
ExpensesProgram Activities

Scientific Data and Methods
Technology Research and Development
Conservation Products and Services
Network Capacity Building
Program Development

Fundraising
General and Administrative
Total Expenses







*Charitable contributions include individual donors, corporate sponsors, and grants from foundations

 $**Other\ income\ includes\ membership\ dues,\ rental\ income,\ investment\ income,\ and\ royalties$

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Alcoa Foundation American Express Foundation American Forest Foundation

Anonymous

Appalachian Trail Conservancy Bat Conservation International Botanic Gardens Conservation International

Carroll Petrie Foundation Center for Biological Diversity Defenders of Wildlife Environmental Defense Fund

John D. and Catherine T. MacArthur Foundation Langar Foundation

Marjorie Sale Arundel Fund for the Farth

Mitsubishi Corporation Foundation for the Americas

National Council for Air and Stream Improvement, Inc.

National Fish and Wildlife

Foundation National Wildlife Federation

Natural Resources Defense Council New River Conservancy Open Space Institute

Sarah K. de Coizart Article TENTH Perpetual Charitable Trust

Save the Redwoods League Sustainable Forestry Initiative The Burt's Bees Greater Good Foundation

The Curtis & Edith Munson Foundation

The Ecological Society of America The Nature Conservancy The Pew Charitable Trusts The Regina Bauer Frankenberg

Foundation for Animal Welfare The Research Foundation for The State University of New York TisBest Philanthropy

Virginia Native Plant Society Voss Charitable Fund

Western Pennsylvania Conservancy World Wildlife Fund

Government Entities

Arizona Game and Fish

Department

Inter-American Development Bank Kentucky State Nature Preserves Commission

Maryland Environmental Trust National Invasive Species Council Secretariat

New England Interstate Water Pollution Control Commission New Hampshire Department of Natural and Cultural Resources North Carolina Department of Agriculture and Consumer

Services North Carolina Wildlife Resources

Commission Pennsylvania Game Commission

South Dakota Department of Game, Fish, and Parks

State of New Jersey Department of **Environmental Protection**

U.S. Bureau of Land Management

U.S. Department of Defense U.S. Department of Transportation

U.S. Forest Service U.S. Geological Survey

U.S. National Oceanic and Atmospheric Administration U.S. National Park Service

U.S. Fish and Wildlife Service Washington State Department of

Natural Resources

Corporations & Universities

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Austin Peay State University Chevron Corporation

Drax Biomass Inc. **Emory University**

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