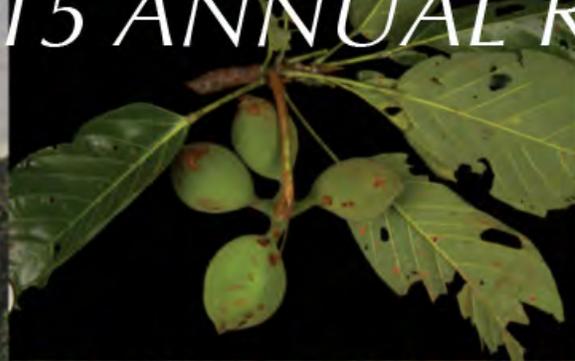




FINDING SPECIES
2015 ANNUAL REPORT





Finding Species 2015 Annual Report

www.findingspecies.org

OUR MISSION & APPROACH

Finding Species' Mission is to:

Uniquely contribute to the resolution of critical environmental, conservation and biodiversity concerns through aesthetically beautiful, scientifically significant photographs. Finding Species approaches these large-scale challenges building from four cornerstones: photography, science, technology and partnerships.

Photography: We photograph species that need to be accurately identified because they are endangered, new to science, native to unique regions, or invasive and therefore harmful to other species. We photograph habitats that need to be seen due to human encroachment. Finding Species ensures that each photographic portrait is of the highest aesthetic quality.

Science: We write profiles of species to accompany our photographs. We also write articles about biodiversity science. We use non-technical language to make field identifications easier and ultimately encouraging science accessible for all.

Technology: We pioneer standardized methods and use professional equipment to make our photographs a permanent archive for humanity. We employ digital technologies and printed media in innovative ways reaching diverse and world-wide audiences. Our projects reconnect the public with their local and global biodiversity, some even creating citizen scientists data sets that can tell a story about climate change.

Partnerships: The combined creativity and knowledge of interdisciplinary teams is essential to our success. Finding Species' board, staff, and volunteers come from different disciplines in biology, photography, policy and finance. We actively build partnerships with government agencies, conservation organizations, museums, research scientists and universities, communities and schools.

From these four cornerstones, Finding Species undertakes educational projects, conservation campaigns, and scientific research. Through all our programs, Finding Species makes the natural world and its species and habitats uniquely compelling, and threats to them undeniable, so that each person is inspired to learn about and help protect them.

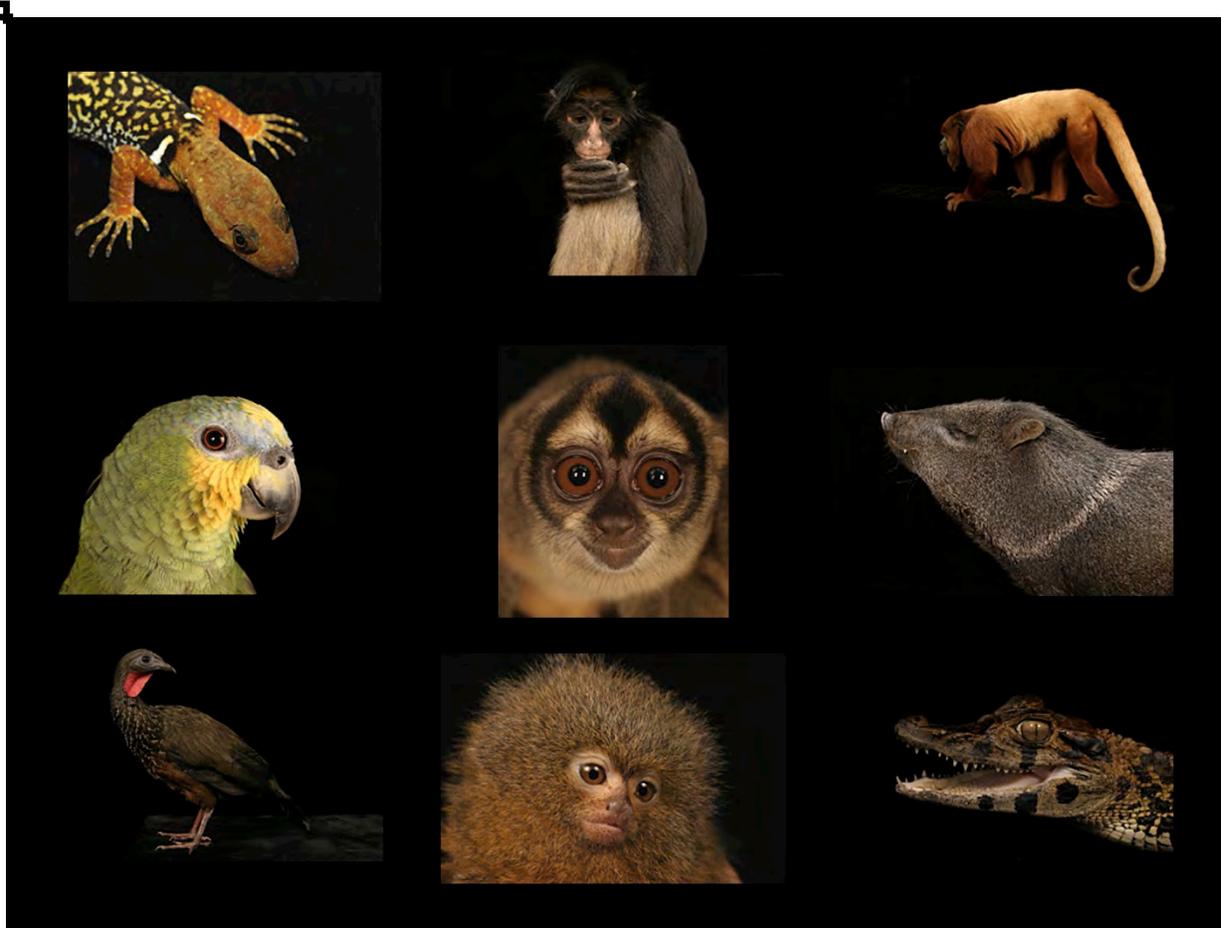
Institutional History & Current Personnel Strengths



Finding Species (www.findingspecies.org) was founded as a project in 1996 and formally incorporated in the United States as a 501(c)3 non-profit organization in 2003. We had an office space in Takoma Park, Maryland 2003-2009, and a South American office in Quito, Ecuador 2003-2012. We incorporated our Quito office with the Ecuador government in 2007, a very lengthy process, with the Quito office officially designated as a non-profit branch of Finding Species. In 2009, the Board of Directors decided to expand our South American operation, and run all of our projects and operations, and most of our fundraising effort, from our Quito office. The Board made this decision for several compelling reasons: a) the extremely high biological richness in and density of threatened species and imperiled eco-regions in South America; b) the degree of conservation threat there from deforestation and climate change; c) the extent of conservation need, in terms of more conservation focus/effort being required; d) the extent and diversity of financial support that we are garnering and foresee as very likely for our projects in this region; and e) the highly successful leadership and intense productivity of our Quito personnel. The



Ecuador office was closed in 2012 due to a changing and seemingly inhospitable environment growing towards international non-profits in Ecuador. Finding Species previous Ecuadorian ED finalized the closure of paperwork filed with the Ecuadorian government in 2013.



SmugMug Galleries: [Photographs of Ecuadorian Biodiversity](#) by Finding Species.

In July 2013, the Board of Directors promoted Bejat McCracken from Director of Photography to the position of Executive Director of Finding Species. The Board of Directors considers her to be a very dynamic leader who has the background, interdisciplinary skills and perseverance to take Finding Species into this new era. The US based organization is now focusing on building core projects. Bejat has been instrumental in her work as a photographer and director with Finding Species LeafSnap project that is expanding across North America. Finding Species works closely with the Smithsonian Institution and Columbia University to continue development of the LeafSnap tree identification application and online field guide.

Currently, the organization has 2 part-full time staff and several volunteers and associates of photographers, scientists, policy analysts, and financial experts, and operates with an annual budget of approximately \$100,000. Our diverse members serving on the Board of Directors bring expertise in a broad range of areas critical to the organization's success. With the combined knowledge and experience of our staff and Board, Finding Species is able to form partnerships with conservation organizations, scientists, research institutions, and government agencies to foster multi-faceted initiatives to stem the tide of species extinctions.

Institutional Description

Finding Species is a respected organization which operates in mega-diverse countries; a sought-after partner for conservation initiatives that values open communication; works with partners ranging from federal and local governments, local communities, in country government to non-government organizations, scientists, and United Nations institutions such as UNESCO and UNDP. Finding Species operates with minimal overhead, prioritizing key areas of program investment.

The organization employs a diverse staff and core of independent contractors, each of whom are well-known experts in their academic fields. Finding Species is responsible for effectively maintaining and training them, building their capacities both in country and internationally. Finding Species is unlike many other conservation organizations with its strong ties to science and photography we literally “give a face to biodiversity”. Finding Species continues to work in Ecuador parallel with the United States because it ranks among the ten most biologically diverse countries in the world and its diversity is critically threatened, with the highest deforestation rate in Latin America. We are legally recognized as a non-profit in the United States with minimal projects in Ecuador and the core projects in the United States. Finding Species views government agencies as important partners for achieving our mission, therefore find it necessary to work closely with Ecuadorian organizations and institutions to develop projects and provide photographic aid to other NGO’s, agencies, books, publications, and articles for conservation efforts.

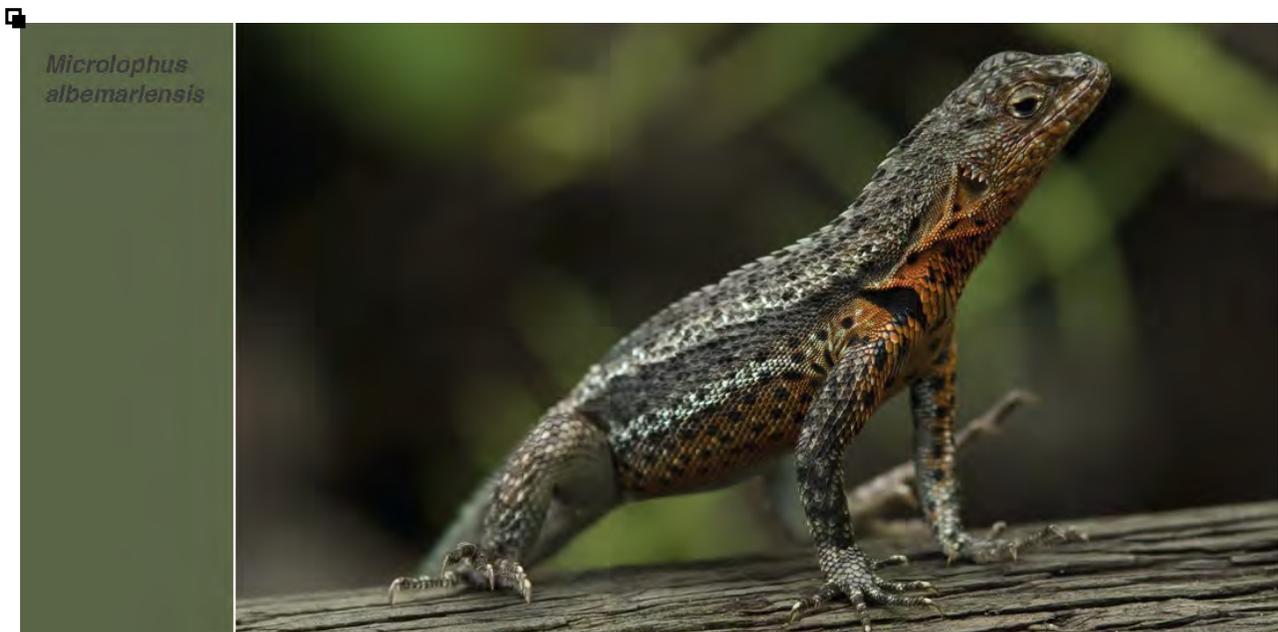


INSTITUTIONAL OVERVIEW

Issue that Finding Species is Addressing: Species extinction is occurring on an unprecedented scale—on every continent and at rates 1,000 times greater than in the past. From 1970 to 2005, tracked populations of mammals, birds, fish, amphibians, and reptiles—from around the world—dropped by more than 25%. Published in [Conservation Biology](#), the current extinction rate is approximately 100 extinctions per million species per year, or 1,000 times higher than natural background rates. They also predict that future rates may be as much as 10,000 times higher. “This reinforces the urgency to conserve what is left and try to reduce our impacts. It was very, very different before humans entered the scene,” lead author [Jurriaan de Vos](#) said.

Our phenomenal biodiversity is under siege from human activities—habitat destruction, global climate change, and introduction of invasive species, pollution, and unsustainable harvesting of natural resources. Stemming this trend is among the world’s most critical environmental challenges.

Finding Species documents species methodically with beautiful high-resolution digital images and accompanying data, pressed specimens (when applicable) and DNA. Working closely with the Smithsonian Institution and Canadian Wildlife Federation we are implementing Canadian tree species into the North American [LeafSnap Project](#) (free digital online field guide and app).



The Need for Bringing Species, Habitats, and Parks to the People: Images are indispensable in capturing attention, communicating conservation needs, and catalyzing action. A book of photographs by Ansel Adams of Kings Canyon, California, was shown to President Franklin Roosevelt, and turned him into a key supporter of designating the area as a national park. Photographs showing the beauty of the species and habitats of the Tongass National Forest, and threats from ongoing clear cutting, were exhibited for members of Congress, and given to them in books. These were essential in spurring changes to logging regulations and in the creation of untouchable zones. Photographs of polar bears in distress have generated widespread public concern about loss of Arctic ice and have generated demand for an endangered species listing for these bears. And now photographers like James Balog are depicting climate change with time lapse photography detailed in the [Extreme Ice Survey](#) and the documentary, [Chasing Ice](#). Photographs are truly worth a thousand words.

Given the quantity of visual information that surrounds us today, it is even more important that biodiversity images can stand out and be easily shared with the public. There is a critical role for an organization that integrates science and photographic art—and that takes strategic advantage of emerging web technology—to produce and disseminate captivating biodiversity images that catalyze action for threatened areas and endangered species. Finding Species has responded to this need, developing a unique approach that contributes to the resolution of critical environmental, conservation and biodiversity concerns through aesthetically beautiful, scientifically significant photographs.

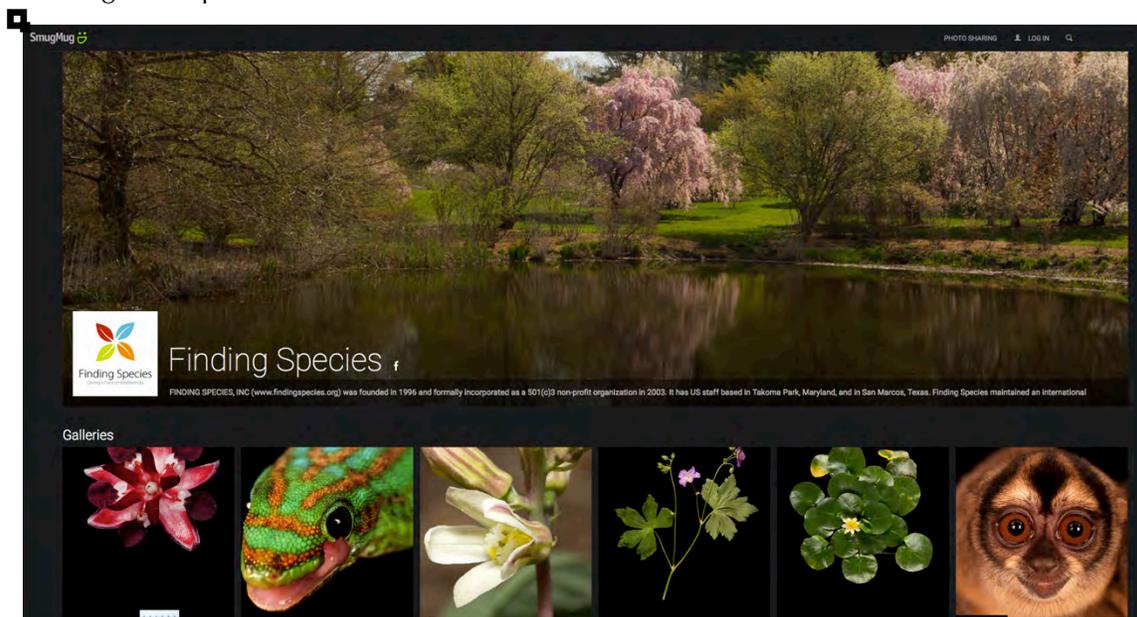


A Solution—Finding Species and Its Mission: Creating compelling photographs of imperiled species and habitats, we work through partnerships, science and environmental education to:

- Conserve the planet's biodiversity,
- Share photos and document species and climate change to better the environment,
- Encourage people out into nature with technology, citizen science and education.

We protect endangered species and habitats, using unique photographs and scientific information to develop and undertake projects that advance science, empower conservation, and foster education. Finding Species brings the natural world to a broad audience so that each person feels a part of that world and is compelled to understand and conserve it.

The [Finding Species SmugMug](#) website houses the [Indiana Dunes National Lakeshore species gallery](#) that was originally created for the Encyclopedia of Life website. FS intends to continue to share popular galleries of species that are scientifically significant and charismatic via the Internet. Finding Species ongoing efforts are to share photos from all possible projects. FS maintains over 140,000 photos taken from 2003-2012 throughout the ecosystems of Ecuador, FS is seeking financial support to make these photos available to Ecuadorian NGO's, newspapers, scientific publications, magazines, books, and online for the general public.



FS has an especially large collection taken within the Amazon rainforest and Yasuni National Park, detailing the plants and animals of one of the most biodiverse places on Earth. The natural areas across Ecuador are undergoing continued and serious threat from oil, gas, mining, and logging as the country finds ways to stay financially stable. Resource extraction threatens not only the natural areas but also indigenous inhabitants. FS has an opportunity to support the campaign to save Yasuni National Park, along with other critical habitats, by providing edited photos and descriptions of species to Quito's national Paper, La Hora and begin the process of publishing additional copies of the forthcoming book, [The Common Trees of Yasuni](#). FS photos and their descriptions will also be uploaded to the Encyclopedia of Life website to make them available to the world. These funds will be used to aid in the conservation efforts to ensure the preservation of Yasuni and other critical habitats of Ecuador through our iconic photographs.

FINDING SPECIES PROGRAMS LIST

Finding Species^{ID}

Signature Species

Faces of Sustainable Development and Climate Change

FINDING SPECIES PROGRAM: FINDING SPECIES^{ID}

In *Finding Species*^{ID}, we collaborate with partners to develop unique and innovative technologies to identify species. In our role, we focus on taking standardized photographs and writing species descriptions that are at once scientifically accurate, archival quality, and accessible to the general public. These photographs and profiles document key taxonomic characteristics of each species, speed the accurate identification of species, and help build regional and global catalogue of species. In turn, this program promotes advances in both science and conservation.

Finding Species^{ID}

Goals: Reconnecting people with the natural world, by making it easy and fun to identify and learn about species. Advancing scientific field research.

Featured Project & Accomplishment: In our *Native Plant Project*, Finding Species seeks to enable everyone to identify, learn about, and plant with native species. As part of this, we are collaborating with Columbia University, Smithsonian Institution, and University of Maryland on [LeafSnap](#). We have photo-documented and written profiles for trees of Washington, DC, and New York's Central Park. The photographs and profiles were launched in 2011 in the LeafSnap app, allowing users to identify and learn about regional trees and be citizen scientists by documenting tree distributions. Finding Species has advanced the range of LeafSnap as we document the most common tree species of Canada.

Additional unfunded work: We now intend to document all the trees of the US, to expand LeafSnap into the southern states and species, specifically Texas. We are currently seeking funding to build on this project detailing more species, providing better tree IDs and more opportunity to encourage citizen scientists.



LeafSnap Project

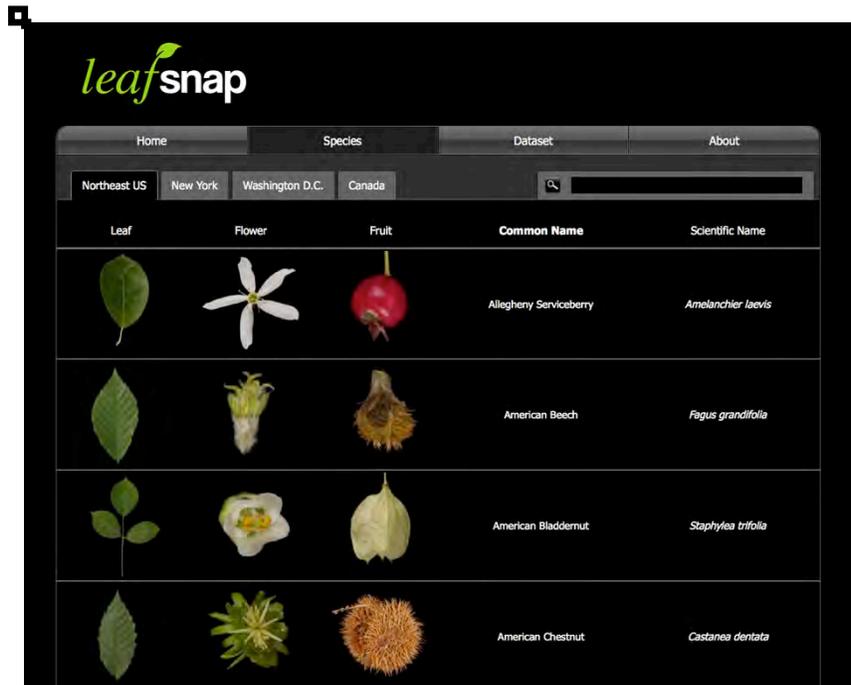
Guide to Trees of the Northeastern US & Canada



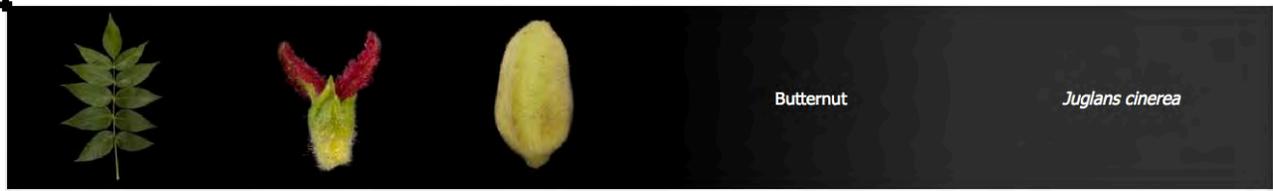
The interactive LeafSnap website and application, www.leafsnap.com, is incredibly successful and within the first six months of its release on Earth Day, April 22, the iPhone application was downloaded by half a million people. It is now used across the world. It is a free, interactive guide to trees, and currently features trees of the Northeast and Canada. LeafSnap intends to cover the trees of the entire continental United States. The application is available for iPhone and iPad. LeafSnap continues to obtain major media coverage, please refer to list of articles on Finding Species [webpage](#). LeafSnap is the first in a series of electronic field guides being developed that demonstrate use of digital recognition technology. The LeafSnap electronic field guides aim to influence digital applications and mobile devices to build an increased understanding of and appreciation for biodiversity.

Finding Species is working directly with the Smithsonian Institution, Canadian Wildlife Federation (CWF) and Columbia University, with a generous grant from TD Bank. Columbia University spearheads the visual recognition software to help identify tree species from iPhone photographs based on their leaves. Finding Species produces the professional scientific photographs seen in the application and electronic field guide. The photos depict each species leaves, flowers, fruit, petiole, seeds, and bark. LeafSnap turns users into citizen scientists, automatically sharing images, species identifications, and geo-coded stamps of species locations with a community of scientists who will use the stream of data to map and monitor the population growth and decline of trees nationwide, and possibly world wide. Users of LeafSnap will not only be learning about the trees in their communities on their hikes, they will also be contributing to science.

The application is simple to use, yet a complex algorithm that identifies a leaf by its shape and features is defines each species. To identify a tree, it works best if users place a leaf on a white background to photograph.



The image is uploaded to a server, within seconds returning a ranking of the most likely tree species a user has found, along with other characteristics to help confirm the tree's identity. Users, who now become citizen scientists, make the final identification. The iPad version also includes a feature called "Nearby Species" to map all the trees that have been labeled by others near a user's location.



LeafSnap Project Details

From 2007–2012, Finding Species created sets of its Standardized Plant Photographs of Botanical Field Characters, corresponding metadata, and Plant Profiles (descriptive texts) for over 315 species for the woody plants of the DC area and the trees and shrubs of Central Park, New York City. These species included natives and non-natives (whether introduced, invasive, naturalized, or cultivated exotics), and represented trees, sub-shrubs, vines, and herbs.

In the summer of 2010, Finding Species documented over 20 of the tree and shrub species, including native and introduced trees, of the northeastern United States. For this phase, Finding Species increased documenting work to include iPhone photographs and DNA collection. Throughout the years, Finding Species has pressed herbarium voucher specimens, whenever logistically feasible. These specimens have complete metadata delivered to the Smithsonian Institution to be ticketed, mounted, or accessioned.

In 2011, Finding Species worked to finalize documentation of 185 tree and shrub species in the northeastern United States, through additional standardized plant photographs, iPhone photographs, DNA, and the input of metadata and creation of photographic thumbnails for the application. These 185 species were successfully launched to the public in the iPhone app on Earth Day, April 22, 2011.

Example images and segmentations
 This table shows example images and their segmentations for a few species. Click on any image to see the full-sized version in a new window.

Species	Example lab image	Example lab segmentation	Example field image	Example field segmentation
<i>Halesia tetraptera</i>				
<i>Ostrya virginiana</i>				
<i>Nyssa sylvatica</i>				

List of Species and Image Counts
 The following table shows the image counts for all species in the Leafsnap dataset:

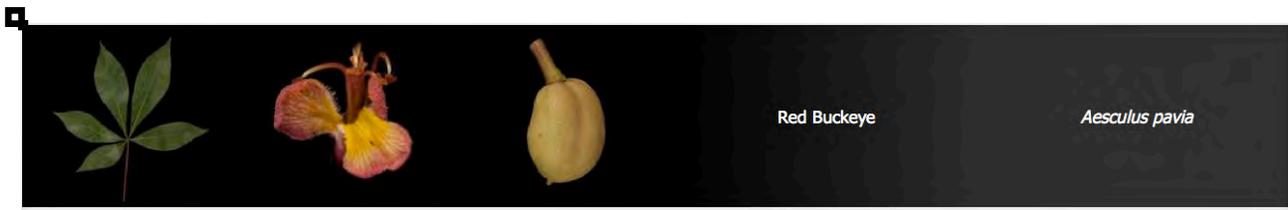
#	Species	Lab image count	Field image count	Total image count
1	<i>Abies concolor</i>	200	51	251
2	<i>Abies nordmanniana</i>	124	35	159
3	<i>Acer campestre</i>	108	36	144
4	<i>Acer glabrum</i>	120	31	151
5	<i>Acer griseum</i>	80	46	126
6	<i>Acer negundo</i>	196	33	229
7	<i>Acer palmatum</i>	120	92	212
8	<i>Acer pensylvanicum</i>	120	35	155

In 2012, Finding Species worked to finalize documentation of 25 tree and shrub species in the northeastern United States, creating 98 of its unique high-resolution photographs and 599 iPhone photographs. Finding Species uploaded these images along with the ~300 photographs delivered to the Smithsonian Institution in 2010 and 2011, Finding Species carried out the input of corresponding metadata, and created photographic thumbnails.

In 2013 Finding Species advanced documentation of 17 tree and shrub species in the northeastern United States, creating 63 of its unique high-resolution photographs and 462 iPhone photographs. Year to date Finding Species has identified 277 species for the LeafSnap Project.

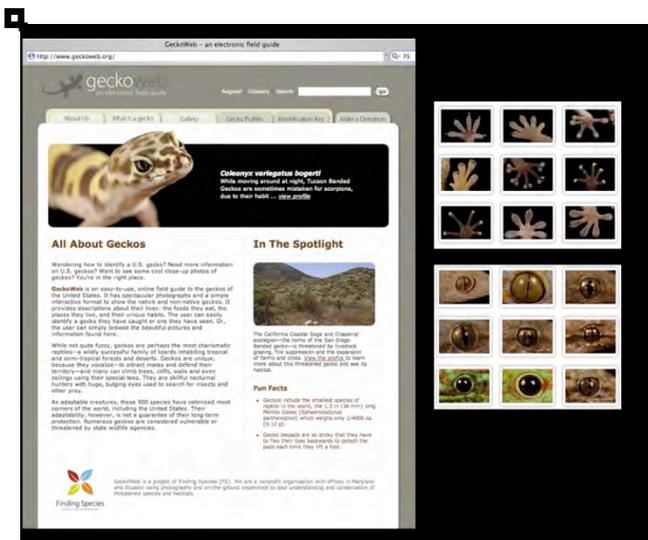
An online dataset for 185 species exists for LeafSnap.

2014 - 2015, Finding Species advanced the documentation of 50 tree species for the Canada LeafSnap phase of the project. Species were drawn from the list of shrubs and trees of Canada provided by the Canadian Wildlife Federation. A total of 500 high-resolution images were delivered, and approximately 1,000 iPhone photographs.



LeafSnap would not be possible without our collaborations with local arboretums and gardens. Finding Species collaborates with the U.S. National Arboretum, Washington, D.C.; Central Park, New York, NY; Arnold Arboretum in Boston, Massachusetts; Blandy Experimental Farm and State Arboretum of Virginia, Virginia; The Scott Arboretum of Swarthmore College; SCBI plot in CRC, Virginia; Mount Desert Island, Maine; San Antonio Botanical Gardens in San Antonio, Texas; Mercer Arboretum and Houston Arboretum in Houston, Texas; Morton Arboretum, Isle, IL.

GeckoWeb A Guide to the Geckos of North America



Finding Species created an educational, interactive website on the Geckos of the United States (www.GeckoWeb.org), in collaboration with scientists and researchers, with the support USGS National Biological Information Infrastructure (NBII), and individual donors. GeckoWeb has provided scientists and naturalists with a high-quality website to identify and study geckos and their threatened habitats in the United States. Finding Species located and documented species throughout the country, taking some of the most up-close, detailed images ever captured of these elusive species. Finding Species added 5 new species to the GeckoWeb website in 2015. An ongoing effort to funding GeckoWeb continues in order to photograph 3 more species, to produce

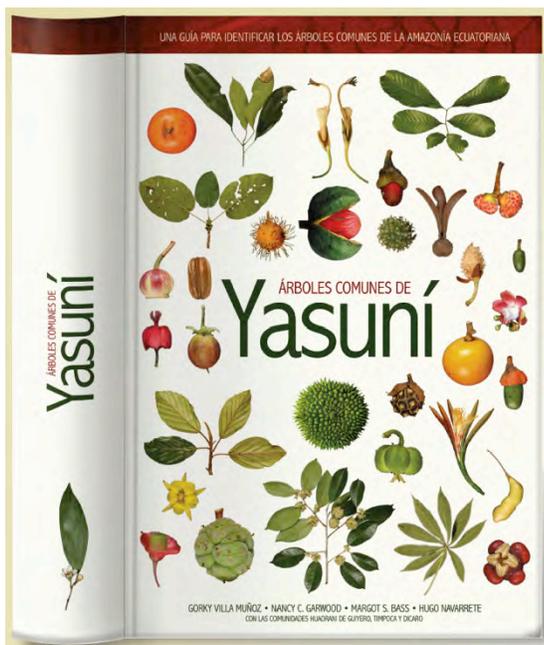
promotional stickers for distributing to parks, zoos, and natural areas, and ultimately convert into an app.

A crowd funding campaign will enable Finding Species to photograph the remaining more elusive species, to design, produce, and distribute stickers. Further funding will be needed to transfer GeckoWeb into an application. GeckoWeb is an education tool for the general public and Finding Species seeks to make it more user friendly when taking it with you on a portable electronic device. GeckoWeb has many opportunities to also develop more detail within the website's searching functions and potentially include datasets where people have seen geckos. In parks and natural areas this would be vital information for these elusive species.



Common and Conspicuous Trees of Yasuní

Common Trees of Yasuní, 1st edition in Spanish, *Arboles Comunes del Yasuní*



"This book is destined to be a classic of tropical botany, as much for the very high quality of the production as for the enormous need that exists for guides of this kind in terms of the mega-diverse flora of Amazonia. The authors – two Ecuadorians, Gorky Villa Munoz and Hugo Navarrete, and two foreigners, Margot Bass and Nancy C. Garwood – are recognized worldwide as experts in the field and have years of experience in scientific research in the Yasuní National Park. Therefore it is no surprise that the book possesses an impeccable academic and educational quality, as well as an attractive and efficient design. It is also worth mentioning one aspect that sets this manuscript above many others of this kind: the inclusion of ecological and cultural information gathered in the field with the indigenous inhabitants of the area. The result is a rich blend of knowledge from two worlds: of western science and of the centuries-long coexistence of the Amazonian people with their environment."

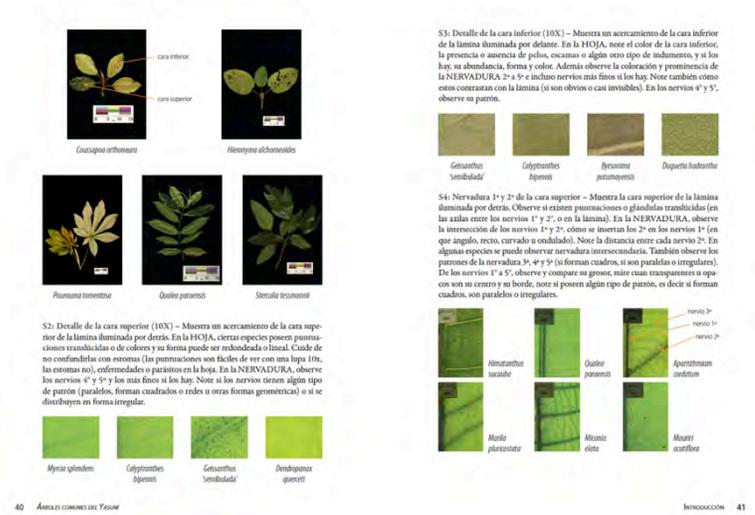
-Nigel C.A. Pitman, Ph.D.

Field Museum of Natural History, Science & Education

Finding Species was founded on this photographic body of work documenting the countless species in Yasuní Biosphere Reserve. Located in the Ecuadorian Amazon, Yasuní is known to be the most biodiverse place on Earth ([Global Conservation Significance of Ecuador's Yasuní National Park](#) published in PlosOne, 2010). More trees grow in a single hectare (2.47 acres) of upland rainforest in Yasuní—655 species—than in the continental US and Canada combined. In 25 hectares, the number of

tree species rises to 1,100. "In just one hectare in Yasuní, there are more tree, shrub, and liana (woody vines) species than anywhere else in the world," said Gorky Villa.

The Common Trees of Ecuador classifies trees simply by leaf structure providing an easy to use field guide in a complex environment. It will be published in Spanish, English and the indigenous language of Yasuní's Huaorani. Botanists, photographers and Huaorani have collaborated to find, identify, photograph and document this first edition of trees. Finding Species is pursuing the funding necessary to print the following editions. Finding Species maintains the photos for several more editions to the Common and Conspicuous Trees of Yasuní.



Descripción de los iconos de características específicas

Descripción de los iconos de características específicas (continuación)

1) Fotografías – El objetivo de las fotografías es indicar al usuario en qué debe enfocarse cuando está observando un árbol tropical y proporcionarle una comparación rápida de todas las partes de un árbol (se utilizó una regla para tener una referencia del tamaño real de lo que se mira), lo que es útil para su identificación en el campo.

Uso de las escalas

Las escalas permiten conocer la dimensión de las partes de la planta en las fotografías, y con el cuadro de colores estandarizado se pueden saber los colores reales de la planta —para mayor detalle, véase Métodos—.

5 mm: se utiliza para mostrar detalles de las hojas en las secciones Hojas simples y Hojas compuestas.

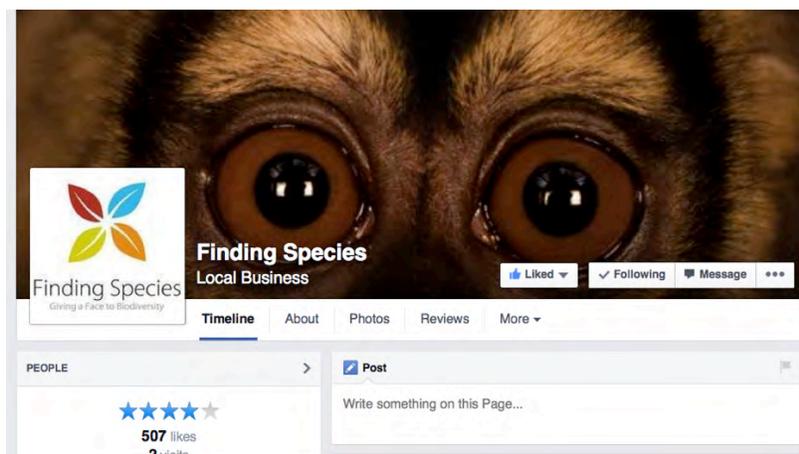
1 cm, 3 cm y 15 cm: se utilizan en las tres secciones del libro. Poseen rectángulos con colores estandarizados para poder interpretar los colores reales de las características del árbol.

The Common Trees of Yasuní pages represented here detail the layout of this easy to use guidebook in a complex and extremely biodiverse ecosystem of the Ecuadorian Amazon.



Finding Species Online:

- [Finding Species Official website](#), refer to articles page for a listing of publications and articles.
- Social Media: [Finding Species Non-Profit Organization FaceBook Page](#), [Finding Species Ecuador legacy FaceBook Page](#) (as like) [Finding Species Ecuador Legacy Facebook Page](#) (as friend)
- [Finding Species SmugMug Galleries](#): Photographs of Ecuadorian & US Biodiversity. All funds/proceeds go directly back into projects like creating these photo galleries to share with Encyclopedia of Life, other NGO's, scientists, for articles, publications, and books.
- [LeafSnap](#), interactive field guide to the trees of northeastern US and Canada.
- [GeckoWeb](#), online, educational, and interactive website on the Geckos of the United States.



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