



TREE Foundation

Annual Report 2020

Dr. Meg Lowman, Director
17 November 2020
Zoom Presentation

Highlights of this past year are described in our three mission pillars: research, education, and exploration. We are humming on all fronts and have a great deal to report. First and foremost, we welcome **Elizabeth Moore** as our new President. Elizabeth is a dedicated environmental leader and philanthropist in southwest Florida and looks forward to increasing her contributions, both local and global. She also serves on the Lemur Conservation Foundation board, so our upcoming project to build a walkway in Madagascar merits her greatest enthusiasm and support.



Prez Elizabeth Moore with a favorite live oak in Myakka River State Park.

We welcome four new Board members:

1. **Alan Winston**, an ardent tree advocate based in New York, and also financial expert for Morgan Stanley;
2. **Michael Dexter**, former environmental student at New College (and one of Meg's star students in his day!) and current finance and grants manager for Sarasota Bay Estuary Program;
3. **Mary Mountcastle**, community and workforce development expert and environmental advocate from Durham, North Carolina; and
4. **Vanessa Wassenar**, a former division leader at Scripps Institution of Oceanography in California and currently consultant to schools and non-profits, who winters in Venice, FL.

Our research associates, staff, and pro bono supporters have expanded to include:

1. Bhaskar Krisnamurthy, an international expert on elephants in India, and author of a recent children's book; and
2. Wendy Baxter and Anthony Ambrose, redwood canopy researchers, as well as arbournauts with Meg in the tall Dipterocarp forests of Malaysia.
3. Finally, we are thrilled to welcome MC Coolidge as our PR liaison, Lisa Dimitrovitch of GreenLink who authored our new canopy walkway prospectus, plus six pro-bono business advisors for our new program, Mission Green. (More on this later!)

Big achievements this year include a. Wildly successful TREEparties to celebrate our 20th anniversary and bring environmental luminaries to southwest Florida; b. Launch of a new Mission Green global canopy walkway conservation plan in partnership with Sylvia Earle (renowned oceanographer who runs a marine conservation program called Mission Blue); c. New goals to expand the educational experience at our flagship walkway, Myakka River State Park; d. New leadership from President Moore and board members who bring both philanthropy and energy to our team; and e. four summer virtual college interns who are doing amazing research and social media activities, including piloting the use of story maps (read below!). **If you are not yet signed up for our newsletter, please do so right away:**

<https://eepurl.com/AFRZX>

1. RESEARCH

a. **Students**—Our former 2019 TREE scholar, Puja Koluru from India and an award-winning graduate of Ringling School of Art and Design, was awarded prizes in two film festivals for her documentary, **A Woman Who Climbs Trees**, the first of her series of films about women in science. Big thanks to the Replogle and the Kluttz families of North Carolina for their support of Puja's art-n-science project. We will announce a showing of this film in Florida next year, once such activities re-open after COVID. Student Dan Greenberg from Simon Frasier

University in Vancouver, Canada, finished his National Geographic research with Meg to survey the herpetology (reptiles and amphibians) in the church forests of Ethiopia. This was a career-maker for Dan, and TREE is proud to be part of his rising career. See his report on the website:

<https://treefoundation.org/2020/04/20/natgeo-report-assessing-the-church-forests-of-ethiopia-as-critical-reservoirs-of-herpetofaunal-diversity/>

TREE is hosting four undergraduate summer interns from Williams College and University of Southern California. With so few students finding employment during COVID, TREE was proud to offer four virtual training programs. Our efforts were showcased in the Florida papers, and the interns' projects can be heard on a webinar scheduled for July 29 at 5 PM EST (register on this site: <https://treefoundation.org/2020/07/10/free-mission-green-environmental-justice-webinar/>)

Check out their activities on <https://treefoundation.org/2020/06/08/tree-foundation-goes-virtual-with-summer-interns/>



b. **Grants** – TREE completed our two-year National Geographic herpetology field project in Ethiopia, and we next hope to work on birds and mammals in the church forest in years to come. This grant funded the first-ever survey of snakes, frogs, toads, and lizards in the church forests, with a major finding that the walls have provided a unique habitat for species refugia! Second, the Carr Foundation will fund a new canopy walkway in Gorongosa National Park, Mozambique. Meg pitched this project to Gregg Carr last year, with a positive outcome. Due to a recent monsoon and then followed along by COVID, this project is on hold until local conditions allow us to resume construction. A major grant was submitted for Myakka improvements including more ADA actions: a Webcam to share views from the tower, more signage in an accessible kiosk, and plans for Virtual Reality segments to use in classrooms and at home. In

addition, TREE is thrilled to receive \$24,175.93 from the Sarasota Community Foundation Giving Challenge, combined with an in-house match from our inspirational President Moore.

c. **Research Publications** – TREE is proud to be the host institute for two publications produced by National Geographic, as part of symposia where Dr. Lowman was an invited participant. One publication uses models to predict the future of tropical rainforests, and another summarizes the value of forest canopies. Once published, these links will be included on our website. Lowman's forthcoming book, **The Arbornaut** (Farrar, Straus & Giroux) is due out in August 2021. Our children's book, **Beza – who saved the forests of Ethiopia, one church at a time**, continues to sell briskly, with each English language-sold volume funding a copy printed in Amharic (Ethiopia's native language) and distributed free to rural kids in Ethiopia. What a joy to see young faces, receiving their first-ever book in their lifetime. The Brethren Foundation also made additional copies available from a grant!

2. EDUCATION

a. **Film – A Woman Who Climbs Trees** (documentary by our student scholar, Puja Kolluru) won coveted showings in the Sarasota Film Festival and also in the Delhi (India) Film Festival. It features Lowman's story and hurdles as a woman in field biology. Puja will enter her woman-in-science film next season, as she continues to build her career.

b. **TREE parties plus local InTREEguing Photo Competition** – Watch for news about our upcoming photo competition in southwest Florida, as TREE promotes local trees with our InTREEguing Photo Competition that will inspire kids and families to take a picture of their favorite local tree. The competition will dovetail with our final TREEparty, featuring Dr. Mark Moffett, acclaimed National Geographic photographer and author of his recent best-seller, **The Human Swarm**. COVID-willing, this lively evening event is planned for 2021, with limited ticketing.

c. **Citizen Science Expedition to the Amazon Canopy** – TREE hopes to co-host our 27th annual citizen science expedition to the Amazon forest canopy during late July 2021, taking enthusiastic teachers, students, and families to conduct research and assimilate the culture of this amazing region. Interested in participating? In addition to canopy research benefits, our groups generate local revenues for villagers who find employment in ecotourism (instead of logging). All travelers are blessed by the local shaman, learn about medicinal plants, explore the canopy, and contribute to research on tropical rainforest health by measuring insect damage in the canopies. For anyone interested, please share this with families, teachers, or adventurers! Info on: <https://treefoundation.org/2019/06/08/amazon-rainforest-workshop-summer-2021/>

d. **Virtual nature education** – Meg was invited to join the advisory board of a new Virtual Reality Company, based in Hong Kong, called Voiijeer. Part of their mission includes VR segments in global canopies, bringing many more virtual visitors to some of our amazing walkways in the very near future. National Geographic also featured a redwood climb by two of our research associates, Wendy Baxter and Anthony Ambrose, as part of their trial VR offerings in Washington DC.

Our website has been expanded to offer educational opportunities about forests and forest canopies to diverse audiences both local and global in English, Amharic, Spanish and most recently, some dialects of Chinese language. We have exceeded 3 million hits per year with both of our canopy websites. An increasing number of students, schools, and teachers continue to write emails to TREE seeking information about forests and conservation! Part of this national school outreach has been inspired because many states are required to read **The Most Beautiful Roof** (by Kathryn Lasky), a children's book about Lowman's work in forest canopies, as part of NGSS (Next Generation Science Standards). Some of these classes and student artwork are featured on our website, with several 5th graders from rural schools commenting, "Speaking by Skype to a real scientist was the most exciting day of my entire school year!"

e. **MISSION GREEN** – TREE is proud to launch a new project, in conjunction with Sylvia Earle, a renowned oceanographer who operates Mission Blue, conserving Hope Spots that are high-biodiversity conservation areas in our oceans. **Similarly, Mission Green will focus on conservation of terrestrial hot spots, most notably the highest biodiversity forest canopies in the world.** To this end, Mission Green will create best practices for existing and new canopy walkways in these forests, partnering also with EO Wilson (of biodiversity acclaim), whose book, **Half Earth**, cites ~ fifteen most urgent and important forests to conserve. Mission Green has an all-star Science Advisory committee, and hopes to raise \$4 million to launch the program, including a new canopy walkway in Madagascar, one of the world's most threatened forests. Read more about Mission Green, and how its "bottom-up conservation" mission will employ local women and families to earn income from ecotourism instead of logging:

<https://treefoundation.org/projects/mission-green/>

f. **Training the next generation** – TREE continues to prioritize mentoring the next generation, including our four summer interns. We also have ramped up the virtual "meet-a-scientist" webinars throughout COVID, with Lowman visiting almost a hundred classes this year as part of our "meet a scientist" online field trips. Most notable was her presentation via National Geographic virtual channel, during which over a thousand students from 30 states and 35 countries listened and asked questions.

g. **TREE Advocacy Committee** – At the Annual Tree Foundation Meeting in April, the board formed a new Advocacy Committee. The mission of the Advocacy Committee is to protect, defend, represent, and advocate on behalf of our global tree constituencies through forming partnerships with like-minded environmental organizations and actively engaging with policymakers at the local, state, federal and international levels. Board members Alan Winston, Michael Dexter and Vanessa Wassenar are co-chairing a new committee to explore how to give more rights to trees as sentinels of both urban and wild communities. They are researching different tree conservation groups around the country and will be reporting their findings in the next year.

3. EXPLORATION

a. **International Conservation** – MISSION GREEN, a new project for TREE, aspires to expand our global walkway network with new sites, new virtual school programs about forests,

social media including YouTube videos and Jason Learning to educate youth about forests, activities to inspire girls in science, and expanded local environmental education. Forest canopies have become “the flavor of the year” in many countries, with canopy research and ecotourism providing a recognized economic as well as ecological value for planetary health. **TREE is in a unique position as one of the world’s only nonprofits dedicated to this type of expertise and mission.** Our newly launched Mission Green will bring a new suite of advancements to forest conservation around the world through existing plus new canopy walkway programs. These advancements include science partnerships in partner countries; training programs for local people especially women and families as ecotourism stewards; funding for student fellowships to study canopy biodiversity; collaboration between biodiversity experts and local people to create field guides, virtual reality tours, webcam experiences, and other interpretive ecotourism; links between different canopy ecotourism groups to share best practices; and actual and virtual field trips to global forest canopies. The first walkway to be constructed through Mission Green will be in Madagascar, a country with less than 5% remaining forests and home to a disproportionate number of unique species, including lemurs. In addition, we hope that our plans for a Mozambique walkway in Gorongosa National Park (collaborating with the EO Wilson Foundation) will be re-instated, after being put on hold after a monsoon plus the COVID setbacks.

b. **Ethiopian forest conservation** – TREE continues to be a global force in the conservation of the last remaining forests of Ethiopia, called church forests because they surround the Orthodox churches. The project has been funded so far by contributions totaling \$300,000+ and we only need ~ \$200,000 to complete our overall goal of \$500,000. Over 20 church forests now have beautiful stone conservation walls built by the local church community, meaning that cattle are excluded from eating the seedlings and farmers’ plows will not ring-bark and stress the edge trees. These small plots house the last remaining biodiversity library for Ethiopia, source of freshwater springs, medicinal plants, honey, pollinators, shade, tree roots that conserve soil, and an important spiritual site. Lowman gave the keynote speech at a national conference in Addis Ababa during February, and her conservation message was well received. Check out several new videos on our website that shares our Ethiopia project with the world. We have a pending partnership with Tommy Hilfiger (fashion designer), sustainable Australian woolgrowers, and TREE to empower Ethiopian women to knit shawls and sell them... stay tuned! Another outstanding endorsement of TREE’s Ethiopia project came from National Geographic, which provided two years of funding to survey the church forest frogs, lizards, and snakes.

c. **Canopy Conference** - TREE is an invited co-host for the 10th international canopy conference, recently postponed to October 2021, to be held in Kunming, China.

Announcement for the 8th International Canopy Conference

24th – 27th October 2020

Xishuangbanna Tropical Botanical Garden (XTBG),

Chinese Academy of Sciences

First Announcement



The canopy is the defining component of any forest ecosystem and is known to harbour a large share of global biodiversity. The canopy community is vitally important for the essential roles in ecosystem functions and services. With the development of new technologies and infrastructure, such as remote sensing and global network of canopy cranes, there have been recent advances in canopy science. Canopy science is now undergoing an exciting, radical change of approach from descriptive studies to experimental manipulations. There remain however many challenges in understanding canopy systems in order to make predictions about the consequences of global-scale human disturbances and their impact on forest ecosystems.

International Canopy Conference is organised every four years to showcase latest studies and to discuss future research directions in canopy ecology and other related disciplines. The 8th International Canopy Conference will be held at Xishuangbanna Tropical Botanical Garden (XTBG), Chinese Academy of Sciences, Yunnan Province, China, from the 24th to 27th October 2020 under the theme entitled “Roles of forest canopy in a changing world”.

d. **The Arbornaut** – Lowman’s next book is due out in August 2021, published by Farrar, Straus & Giroux. It is a memoir that documents the adventurous history of canopy research plus the continuing saga of a woman in field biology.

These are some of our 2020 mid-year highlights for TREE Foundation. Thank you for your continued support to foster forest conservation, environmental education, and a strong local-but-global portfolio of activities that inspire people to conserve forest ecosystems, especially big trees. During this tough year of COVID, communities, families, and people like you have recognized the urgent need for natural places – especially forests with their shade and

spiritual qualities – to escape and provide a healthy sanctuary for children and adults We are a unique non-profit, because our dollars do not fund real estate or extensive staffing; we are committed to funding programs that benefit the forest environment and education outreach to youth. We have a proven track record of twenty years of fiscal responsibility – never funding a program before the money is raised, yet accomplishing BHAG (big hairy audacious goals) in all of our efforts.

We look forward to making the world a better place for the next generation, in Florida and beyond.

Yours gratefully,

Meg Lowman

Meg Lowman, PhD
Executive Director

Elizabeth Moore

Elizabeth Moore



Dr. Lowman gives a virtual lecture to science students at National University of Singapore



Young arborist taking his bear into the Florida forest canopy!

TREE Foundation Website Report 2020

by David Martin with Brighter Technologies

2020 Stats - Comparison to 2019



Website



51%

Website Visitors



e-Newsletter



32%

Subscribers



Facebook



15%

Followers



Twitter



3%

Followers @canopymeg



YouTube



25%

Followers



PayPal



99%

Donations

Web - <http://treefoundation.org>

Facebook - <https://www.facebook.com/treefoundation.org>

Twitter - <http://twitter.com/treefoundation>

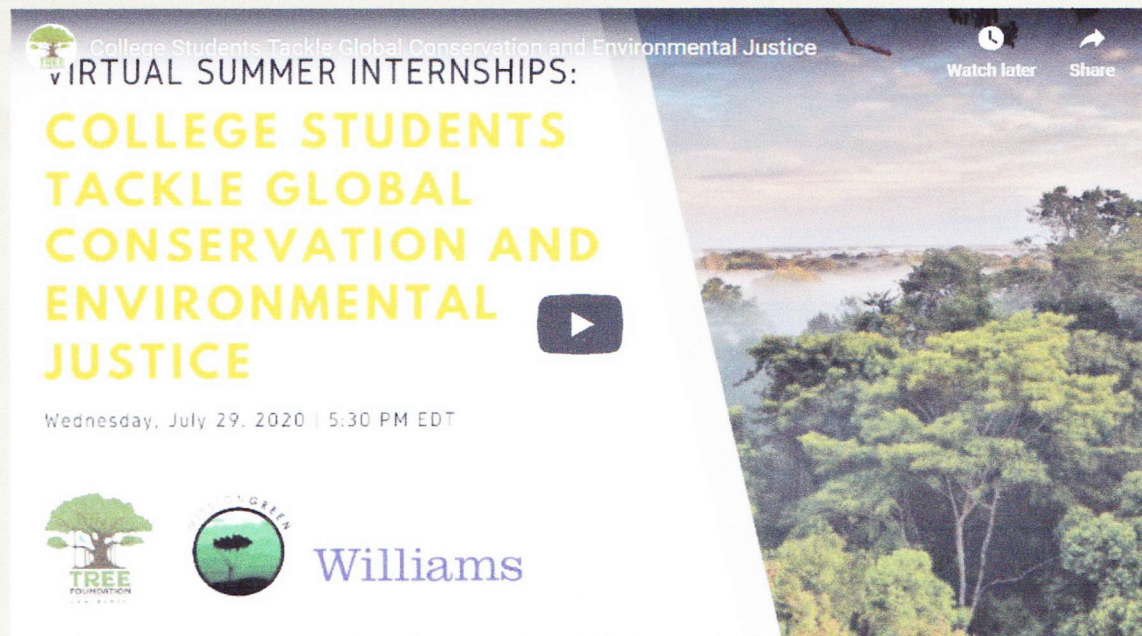
Have any questions? Contact TREE Webmaster, David Martin at david@brightertech.com

Watch this Webinar to Learn What's Being Done to Save Trees & Forests

[Home](#) → [EDUCATION](#) → Watch this Webinar to Learn What's Being Done to Save Trees & Forests

The TREE Foundation had a wonderful webinar with Dr. Margaret Lowman and our four virtual summer interns. Held July 29, the hour-long webinar was hosted by Williams College and open to the public.

Three students from Williams College: Lilia Robinowitz, Eva Castagna, and Evan Wright; and a fourth from the University of Southern California, Merry Moore, presented their research and findings on topics ranging from worldwide canopy walkways, sloths, rainforest preservation, forest conservation, and environmental justice. Click below to watch this webinar and learn!



The image shows a YouTube video player interface. The video title is "College Students Tackle Global Conservation and Environmental Justice". Below the title, it says "VIRTUAL SUMMER INTERSHIPS:". The main title of the video is "COLLEGE STUDENTS TACKLE GLOBAL CONSERVATION AND ENVIRONMENTAL JUSTICE" in large, bold, yellow capital letters. To the right of the title is a play button icon. Below the title, it says "Wednesday, July 29, 2020 | 5:30 PM EDT". At the bottom left, there are two logos: the TREE FOUNDATION logo (a tree with the word "TREE" above it and "FOUNDATION" below it) and the GOING GREEN logo (a circular logo with a tree and the words "GOING GREEN" around it). To the right of these logos is the Williams College logo, which says "Williams" in a purple serif font. The background of the video player is a lush green forest with a body of water in the distance.

College Students Tackle Global Conservation and Environmental Justice

VIRTUAL SUMMER INTERSHIPS:

**COLLEGE STUDENTS
TACKLE GLOBAL
CONSERVATION AND
ENVIRONMENTAL
JUSTICE**

Wednesday, July 29, 2020 | 5:30 PM EDT

  Williams



Tree Research,
Education and
Exploration.

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Sign Up Today: Next-Gen Scientists Research Update in Free July 29 Webinar

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Tamborine Rainforest Skywalk, Australia

Where in the world will you be on July 29? Wherever you'll be, you can still attend our free — and fascinating — Research Update webinar presented by TREE Foundation's virtual summer interns. Sign up for this free one-hour event, which starts at 5:30 p.m., EST and is hosted by Williams College, here: <https://tinyurl.com/yyh5nwq8>.

Due to the Covid-19 pandemic, our summer internships were virtual, with three students from Williams College: Lilia Robinowitz, Eva Castagna, and Evan Wright; and a fourth from the University of Southern California, Merry Moore, working on topics ranging from worldwide canopy walkways, sloths, rainforest preservation, forest conservation, and environmental justice. But being virtual was no impediment to their amazing research efforts.



HOW DO WE LOVE TREES? LET US COUNT THE (10) WAYS

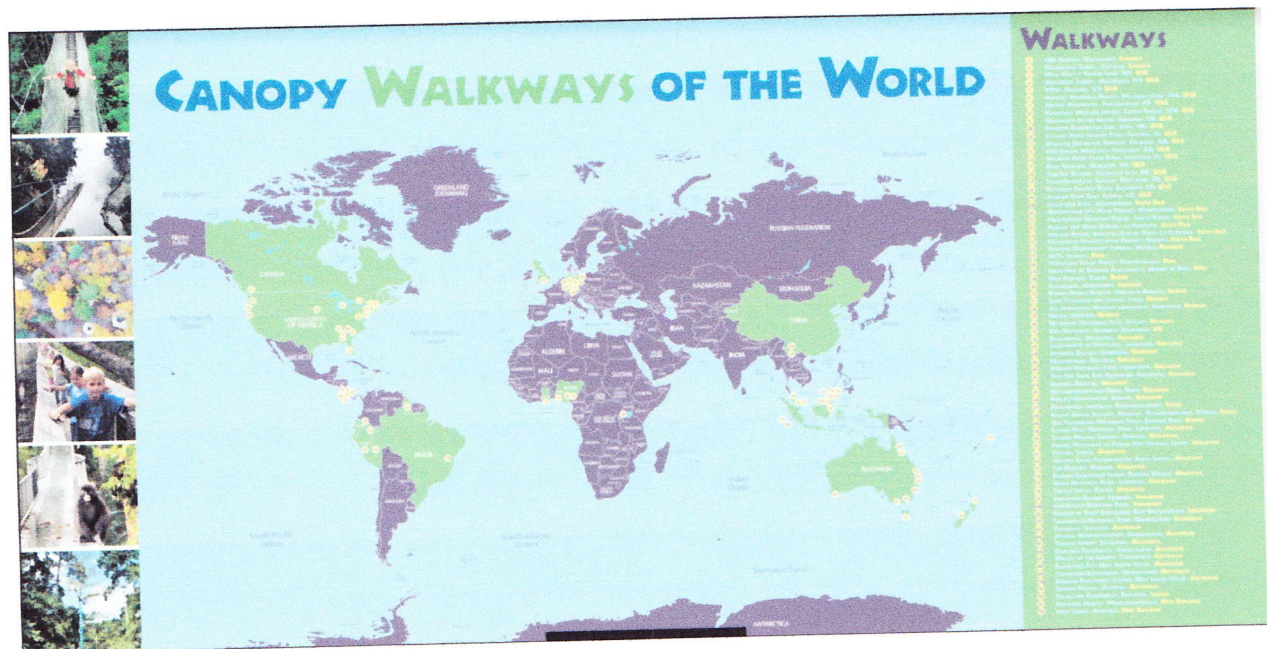
Forests are the lungs of the earth: essential for environmental stability and human health and happiness. These magnificent and ancient ecosystems are home to 50 percent of all terrestrial species on Earth. And yet, especially in tropical regions, forests are under siege. Our planet's forests are being destroyed at an alarming rate, driven by unsustainable agriculture, development, logging, and mining. The sheer scale of the crisis boggles the mind—if current deforestation rates continue, tropical rainforests could be gone within the lifetimes of the young people alive today. Luckily, there are solutions within our reach. ***Read on to discover 10 things you can do to save trees and forests around the world.***

1. Conserve trees and forests in your area.

Forests and trees—especially big trees and mature forests—have many benefits. They provide habitat for a multitude of species, store carbon, maintain water quality, stabilize the climate, and provide places for people to recreate and connect with nature. Encourage your local government to conserve forests, create parks, and oppose destructive suburban sprawl and other developments. Volunteer with a local land trust or parks and recreation department, or consider a conservation easement if you own forested land.

Learn more about what you can do



[View larger map](#)



Mission GREEN

Prospectus: MISSION GREEN

Establish
6 canopy
walkways
globally



- Conserve Forests
- Save Species
- Sustain Indigenous People
- Promote Research

Purpose

This Prospectus proudly introduces MISSION GREEN, a bold endeavor to promote globally tree conservation, economic stewardship, and continuous education with the goal of inspiring philanthropists who care about preserving a healthy world to become "Canopy Angels" to help fund this important initiative.

Dr. Meg Lowman

Founder, MISSION GREEN

*Amazonian tropical forest canopy
walkway, near Iquitos, Peru*



The Inspiration and Why

My name is Dr. Margaret (Meg) Lowman. I am an arbornaut — an explorer who has pioneered the field of forest canopy science and conservation across what I affectionately call the "Eighth Continent" or the treetops. My nickname is CanopyMeg because I climb trees for a living. Building foundational knowledge and awareness of the importance of the biodiversity that lives in the treetops to the existence of mankind

has defined my life and life's work. To that end, I created the TREE Foundation 20 years ago as a non-profit organization dedicated to tree research, exploration, and education.

I am amazed to think that scientists only studied about 5% of trees before I and a handful other scientists developed the toolkit to become arbornauts 40 years ago. Founding a new science, I designed and used

ropes, harnesses, hot-air balloons, and walkways for treetop exploration to solve mysteries in the world's forests, especially insect pests and ecosystem health. This work led to true "whole tree" research and an understanding of the biodiversity that not only lives on the ground but also up in the treetops.

Over the last 40 years of groundbreaking work in 46 countries, we now believe that that 50% of the land-based plants, insects, and animals live in our treetops. We also believe that only 10% of those critters have been discovered to date. What we do know is that the canopy is the essential machine that keeps our planet humming, i.e. it is the source of the pollinators, productivity, medicines, climate control, flowers, fruits, timber, and carbon storage that keep us alive.

I am deeply concerned about the serious threat to our survival posed by accelerating deforestation. As a scientist and a parent, I want to take a stand to ensure that the next generation will inherit a healthy world in which to live.

*"I invite you to join me
to support this crucial
conservation mission."*

Corporate Sponsors

Conservation Philanthropists

Canopy Angels

The Challenge

Forests are critical to a sustainable environment

Trees are the building blocks of our planet. They drive planetary health and services in many ways, including:

- **Maintaining global climate** – Trees stabilize weather systems, serve as a moisture sink and control large amounts of water.
- **Sustaining most major ecological food chains** – Trees are the “factory” that converts sunlight into energy.
- **Keeping our atmosphere healthy** – Trees act as a global producer of oxygen and exchange for other gases.
- **Removing carbon dioxide from the atmosphere** – Trees store it in vegetation and soils.
- **Housing the genetic origins of many foods and sources to cures for diseases** – 50% of all Earth's species – both plant and animal – live in the forest canopy!

Canopy research has led to meaningful advances in *whole forest* research

Tree canopy research over the last 40 years has added significant new findings to traditional forest floor research, including critical information about carbon storage, biodiversity, water cycles, and other essential ecosystem services provided by trees.

The accelerating rate of deforestation represents an existential threat to mankind

We, as a human species, are at a critical inflection point as nearly 50% of our tropical rainforests have been depleted by human hands. In 2019, the world lost 45,946 square miles of tree cover — an area the size of Nicaragua. It will take thousands (not hundreds) of years to restore these ecosystems.

We are on the verge of passing the “tipping point,” meaning, if we lose too many forests, the rest cannot restore or even sustain themselves. We are already seeing the negative effects, i.e. increasingly erratic climate, temperature, and rainfall trends, and the resulting disruption of life and livelihoods.

The facts are clear:

Planet Earth must keep

its remaining forests
intact and healthy to
survive!



(Location Information
Goes here.)

The Opportunity – MISSION GREEN

Vision:

To stop global deforestation, protect our planet's biodiversity, and provide indigenous communities with sustainable economic opportunities!

Strategies

1. **Build canopy walkways in 10 of the world's highest-diversity, most-critical forests in the next 10 years.** Work with leading scientists to select locations and establish scientific, governmental, and construction partnerships in host countries to facilitate best-in-class research, education, conservation, and ecotourism programs.
2. **Train local people, especially women,** to be Canopy Stewards and create income streams from canopy ecotourism, instead of logging or farming.
3. **Leverage collaboration** between the biodiversity experts and indigenous people to create field guides, outreach, tours, and interpretive education about forest canopies.
4. **Fund student fellowships** to document the biodiversity in these hotspots and create a pipeline of experts in the next generation (currently missing from graduate curricula).
5. **Establish a self-sustaining model** by **a)** building alliances with local schools to operate the walkway programs and **b)** collaborating and sharing best practices among the different MISSION GREEN walkway teams globally.

MISSION GREEN is a breakthrough opportunity to become a global conservation leader.

The Call to Action

Canopy Angels

Conservation
Philanthropists

Corporate
Sponsors

FUNDING GOAL: Raise \$7 million by or before the end of 2025*

Total need of \$10 million forecasted to fund 10 canopy walkway programs by 2030.

Canopy Walkway Investment Focus 2020-2025

I. Staffing/Marketing	II. Design/Build/Complete	III. Initial Design/Build
1. Florida	3. Madagascar	5. India
2. Peru	4. Mozambique	6. Bhutan
Note: Construction complete. Hire and train educators and on-site scientists; create marketing materials and signage by 2022.	Note: Complete design, build, staffing, and marketing to be completed by 2024.	Note: Commence design and initial build will be commenced in 2025.

*\$400,000 raised to date

The First Six Walkways – A Closer Look



Myakka River State Park, Florida – an elegant state-of-the-art canopy was completed in 2000 and is the first public treetop trail in North America. It will serve as the “ambassador” for future walkways around the world.

The Ghost Orchid: Pompano Beach, Southwest Florida



Amazonian Peru – this tree canopy walkway is built and currently the longest in the world at 500 meters. This location is home to many endangered species, including the Amazonian Jaguar, the South American Tapir, the Uakari Monkey, the Pink Dolphin and the Hyacinth Macaw.

Hyacinth Macaw: e-bird



Madagascar – considered a top global priority for conservation, this biodiversity-rich island is home to dozens of endemic lemur species, all facing extinction. The recent nearby oil tanker spill makes conservation here now even more critical.

Madagascar's red-bellied and black and white ruffed lemur



Mozambique's Gorongosa National Park – is perhaps Africa's greatest wildlife restoration story, and the home of the highly endangered Selous Zebra, but little is known of the thousands of amphibian, reptile, bat, rodent, insect, microorganism, and plant species inhabiting the treetops.

Selous Zebra: Wikiwand



India's Western Ghats – The mountains here are older than the Himalayas and are a critical biodiversity hotspot containing at least 325 threatened species, including the Lion-tailed Macaque, Nilgiri Tahr, and the Nilgiri Langur.

Lion-Tailed Macaque: The Hindu



Bhutan's Royal Manas National Park – one of the world's top ten biodiversity hotspots, with the largest Tiger population on the planet. A sustainable walkway project has been endorsed by the Royal Family.

Tiger: Savemountaintigersbhutan.nl

MISSION GREEN - All the Elements for Success

① Dr. Lowman's 40-year Experience Base and Success with Global Forest Canopy Conservation

Meg is an "arbornaut" who has pioneered the scientific field of research of the biodiversity that lives in the treetops highlighting its importance to the existence to mankind.

② The World-Class Strength of the Scientific Advisory Board

This group represents a "who's who" in the global scientific, conservation, and biodiversity fields. Their experience will provide great counsel to MISSION GREEN and source to outstanding contacts.

③ A Proven Conservation Model that Works

Select "Hot Spots" that represent the highest global biodiversity locations for tree canopy walkway programs

The model for MISSION GREEN was fashioned after MISSION BLUE, developed by renowned oceanographer, Sylvia Earle. In Earle's model, special places that are scientifically identified as critical to the health of the world's oceans are designated as **Hope Spots**. These Hope Spots are championed by local conservationists whom MISSION BLUE supports with scientific advice and expertise. This focus is yielding very positive results – **127 Hope Spots** have been established since 2010.

Harvard University biologist **E.O. Wilson**, author of "Half Earth" has called MISSION GREEN "one of the best ideas I've ever heard to conserve biodiversity." Wilson surveyed a small group of prominent biologists, including Dr. Lowman, to identify a list of 18 of the world's most important forests. Using this list, Lowman and her team selected the 10 most critical to conservation and most appropriate for a canopy project.

Engage Locals, Especially Women and Girls, with Sustainable Economic opportunities to be Conservation Stewards

The power of "bottom-up" conservation, where scientists work directly with community members to develop local leadership invested in safeguarding forests and biodiversity is one of MISSION GREEN's core values and a proven method for ongoing successful operation.



Meg and E. O. Wilson



Meg and Sylvia Earle

"It is like triage in a hospital emergency room. We must focus on saving the areas that matter most and make the biggest global difference. Starting with 10 critical forests, we can reverse species extinction, and take giant steps towards a truly sustainable planet."

– Dr. Meg Lowman

We welcome your questions, comments, and thoughts about MISSION GREEN!

Dr. Meg Lowman

Founder / Lead Scientist

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Scientific Advisory Board & Partner Organizations

Scientific Advisory Board

Dr. Margaret D. Lowman

Founder of Mission Green

Dr. Margaret D. Lowman, Founder of Mission Green, has been called the “real-life Lorax” by *National Geographic* and “Einstein of the treetops” by *Wall Street Journal* for her achievements and passion for trees and forest conservation over more than three decades. Recognizing the need to for grassroots support to stem forest loss, Meg started the nonprofit TREE Foundation in 1999 to work outside academics and directly with communities.

E.O. Wilson

(Honorary Chair) University Research Professor Emeritus at Harvard.

Wilson’s work has changed the way humans think of nature, and our place in it. He is a thought leader in the fields of entomology, animal behavior and evolutionary psychology, island biogeography, and biodiversity. He authored MG’s list of “must conserve” forest sites.

Sylvia Earle

Founder of Mission Blue

Sylvia Earle is former chief scientist of the National Oceanic and atmospheric Administration (NOAA) and a leading American oceanographer, explorer, and conservationist.

Peter Raven

Emeritus Director, Missouri Botanical Garden

Peter is a botanist and educator concerned with strengthening the worldwide, tropical conservation effort and enhancing biological studies. He most recently co-authored a major study on mass extinction.

Patricia Raven

Patricia is a former Executive Director, Mercer Arboretum and Botanic Garden, advocates for women in science.

Alemayehu Wassie Eshete

Director, Organization for Restoration of Degraded Lands, Ethiopia, and serves as a major voice for African forest conservation.

Dr. Patricia Wright

Patricia is one of the world’s foremost experts on lemurs, is a winner of the National Medal of Honor of Madagascar from the President of Madagascar.

Dr. Wade Davis

Amazon explorer and current professor at University of British Columbia

Wade has written over twenty books on global exploration and conservation.

Partner organizations

E.O. Wilson Biodiversity Foundation

Mission Blue

National Geographic

Global Canopy Programme

IUCN (*International Union for the Conservation of Nature*)

Earthwatch

Esri (*Environmental Systems Research Institute*) – ArcGIS

The Habitat (*Malaysia*)

ACTS (*Peru*)

Williams College



941-266-0817
@MISSIONGREEN
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<https://treefoundation.org>



Want to buy a plank inscribed with your name?
Learn more and fund education and research
in the Myakka canopy!

Name a plank - \$100-\$999
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Fill out an application at
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Become a member of Friends of Myakka River: Call
(941) 361-6512 or visit <http://www.MyakkaRiver.org>

Sponsor research and education efforts at the
walkway; contact TREE Foundation, P.O. Box 48839,
Sarasota, FL 34230 or www.treefoundation.org



Metamasius callizona, an exotic weevil from Central America, was
discovered months after the walkway was opened, and local students
are working with TREE Foundation researchers to monitor them.

RESOURCES

www.treefoundation.org
www.canopymeg.com

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Bruce Rinker, 2004, Elsevier ISBN:
0124575536

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Yale University Press ISBN: 0300084641

Methods in Forest Canopy Research, Margaret
D. Lowman, Timothy D. Schowalter, and Jerry F.
Franklin, 2012, University of California Press
ISBN: 9780520273719

The Arbornaut, Margaret D. Lowman, 2021.

Myakka River State Park

13208 State Road 72
Sarasota, FL 34241
(941) 361-6511

www.friendsofMyakkaRiver.org

www.FloridaStateParks.org/MyakkaRiver

Built in 2000, the Myakka Canopy
walkway is the first public treetop trail
in North America. With the devotion to
both research and education, the
walkway serves as a place for
discovery, inspiration, and innovation.

Suspended 25 feet in the air, but with
a 75-foot tower, the walkway offers
visitors the opportunity to get to know
the inhabitants of forest canopy and
look out across the vast treetops to
the wetlands and prairie. The Myakka
walkway was inspired by canopy
scientist Dr. Margaret Lowman,
Founder of TREE Foundation. It was
built through collaboration of the FL
Park Service, Friends of Myakka River,
TREE Foundation, and local sponsors.

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MYAKKA RIVER STATE PARK CANOPY WALKWAY



In the rain forest, no niche lies unused.
No emptiness goes unfilled.
No gasp of sunlight goes untrapped.
In a million vest pockets, a million life-forms quietly tick.
No other place on earth feels so lush.
Sometimes we picture it as an echo of the
original Garden of Eden — a realm ancient, serene,
and fertile, where pythons slither and jaguars lope.

— Diane Ackerman, *The Rarest of the Rare*, 1995

FOREST CANOPY ACCESS METHODS

Forest canopies are home to 50% of species on Earth, millions of which remain undiscovered. We know very little about life in the treetops due to lack of access to reach these magical and mysterious places. New methods now exist, to explore this "eighth continent" of the treetops. Why not explore yourself!

WALKWAYS: These aerial trails represent lofty laboratories to access specific canopies day or night, rain or shine. Over 80 have been built across 6 continents!

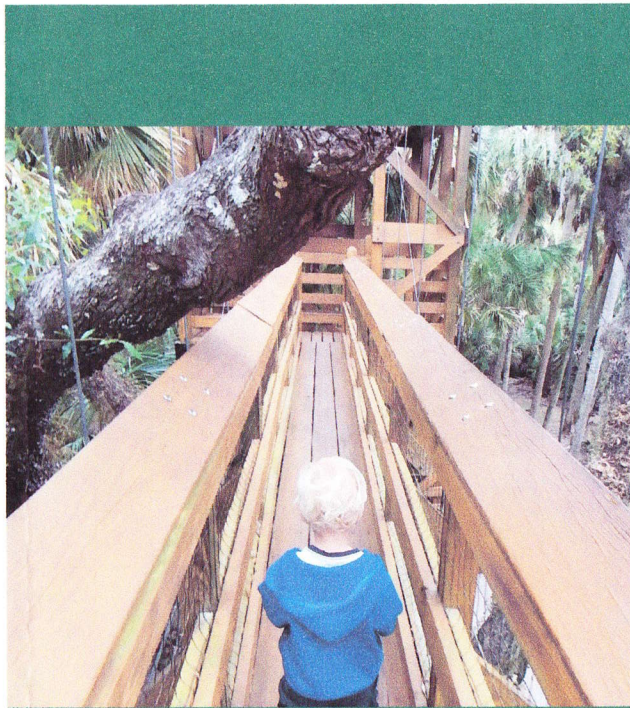
AIRSHIP & INFLATABLES: Soaring through the sky, scientists have traversed across the treetops with dirigibles and treetop rafts in Africa, Asia, and South America.

TOWERS: Tall multi-level platforms facilitate access to the various layers of the canopy.

CRANES: While limited in reach, cranes allow scientists to measure the forest health of the uppermost branches of many different trees.

ROPES: Single-rope technique (SRT) offer scientists the most inexpensive, portable and flexible method to access forest layers!

GROUND: Boats, poles, and ladders offer only a small glimpse of the intricate forest dynamics overhead.



Walkway height: 25'
Walkway length: 85'
Tower: 74'
Built in 2000

Cost: \$150,000
Visitors: 500,000/yr
Note: Tripled visitorship to this state park

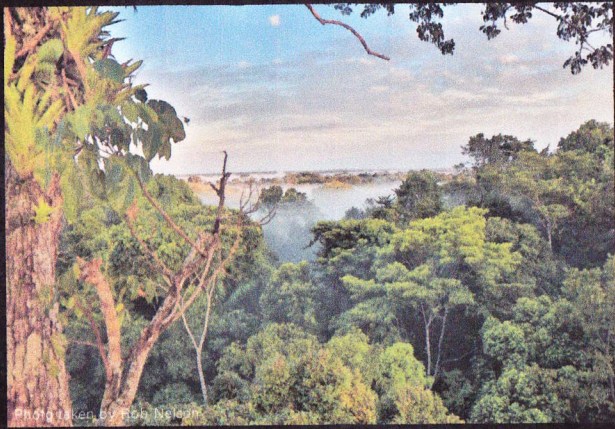
MYAKKA CANOPY FACTS

1. In the subtropical forests of Myakka State Park, grandiose sabal palmettos fan out into the sky and strong live oaks reach out their sturdy limbs to comprise an oak-palm hammock.
2. The symbolic sabal palm was designated Florida's state tree in 1953 and is featured on the state seal, adding a layer of cultural significance to these canopy forests.
3. Sabal palms are one of twelve palms native to Florida, and the most common canopy in Sarasota County. They survive in the harsh Florida environment, without much water or nutrients, reaching up to 70 feet in the air.
4. Over 670 acres of mesic hammock and 6330 acres of hydric hammock exist in Myakka State Park. Mesic hammocks (hardwood and/or palm forests) are built on soil that is rarely flooded, and hydric hammocks are wetland hardwood and/or palm forests that lie in the flat lowlands of parts of the Atlantic Coastal Plain including Florida, Georgia, and Alabama.
5. With a robust canopy extending over 100 feet, live oaks absorb around 92 pounds of carbon every year. (In contrast, sabal palms take up a mere pound or less of carbon per year.)
6. The hammocks are threatened by exotic plant species (eg. air potato, coral ardisia, Australian pine, Brazilian pepper, rosary pea, guava, Japanese climbing fern, punk tree, and tropical soda apple) and by feral hogs which ravage and root the forest floor.
7. 50% of Florida's biodiversity lives in these oak-palm canopies. Epiphytes (or air plants) such as bromeliads and orchids live on trees in the Florida hammocks but are not parasitic (i.e. do not hurt their host species). They collect water and nutrients through rainfall and their flowers, nectar, and fruits create micro-ecosystems to house arthropods and other animals.
8. Contrary to common belief, palms are not actually trees, because they do not grow secondary growth and wood. Instead, palms are technically woody herbs, which strengthen their epidermis through primary thickening and lignification.

THE AMAZON IS IN DANGER

Rainforests face several severe threats—a significant amount of rainforest destruction is directly tied to human activity. Threats include fire, clearing for agriculture, logging, oil extraction, roads, and climate change.

Since 1970 an estimated 173 million acres, or 20% of Brazil's Amazon forest has been cleared, leaving 1.5-2 billion acres to comprise the rainforest.



NOTEWORTHY TREE: INGA

One of the main platform tree species is Inga, commonly known as shimbillo. There are over 300 species in this genus that are found throughout Central and South America. Inga is used as timber, as shade trees for coffee and cacao, to form canoe paddles, produces edible fruit, and is strong enough to support a canopy walkway!

NOTEWORTHY PALM: LEPIDOCARYUM TESSMANII

Locally called irapay, this understory palm is sustainably harvested for roofs. The ACTS lodge used over 500,000 fronds because they are extremely waterproof.

RESOURCES

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The Arbournaut, Margaret D. Lowman, 2021, Farrar, Straus & Giroux

ACTS Canopy Walkway

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Amazon River, Iquitos
16000 Peru

<https://actsperu.wordpress.com>

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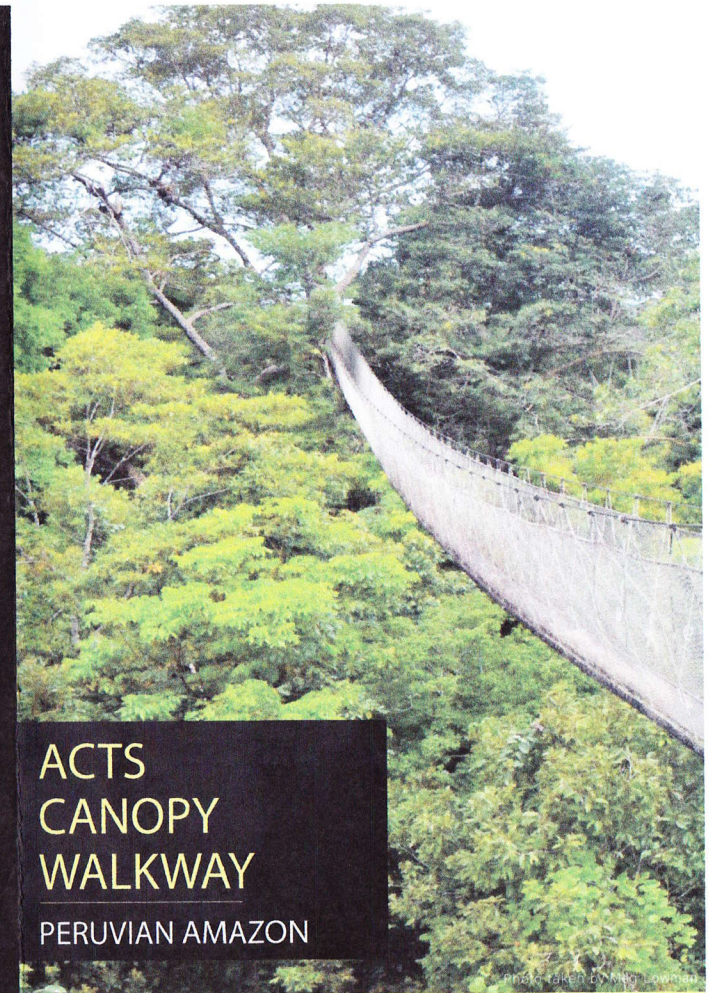
Asociación para la Conservación de la Cuenca Amazónica (ACCA)

info@conservacionamazonica.org
<http://www.acca.org.pe>
Lima: (01) 444-5431
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TREE RESEARCH
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TREE Foundation
P.O. Box 48839
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www.TreeFoundation.org



ACTS CANOPY WALKWAY

PERUVIAN AMAZON

Welcome to the wonder of the magical tropical rainforest canopy in the Peruvian Amazon, one of the most biologically diverse ecosystems. Built in 1996, the walkway is one of the longest canopy walkways in the world, stretching 500 meters across the treetops and reaching a maximum height of almost 36 meters. The system of aerial platforms and pathways provide an access point into the high treetops in the Peruvian Amazon for exploration and discovery by scientists, educators, and students that cannot be done from the rainforest floor. ACTS enables the pursuit of tropical research, educational initiatives, and sustainable development projects.

Tembusu College

Student's Tea



Prof Margaret D. (Meg) Lowman

9.00 p.m., Wednesday

14th October 2020

Zoom

Sign up link: bit.ly/meglowmantea

Hosted by: Dennis Tan

About the Speaker

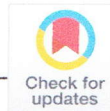
Nicknamed the “real-life Lorax” by National Geographic and “Einstein of the treetops” by the Wall Street Journal, Prof Meg Lowman pioneered the science of canopy ecology. For over 30 years, she has designed hot-air balloons and walkways for treetop exploration to solve mysteries in the world’s forests, especially insect pests and ecosystem health.

Prof Lowman is affectionately called the mother of canopy research as one of the first scientists to explore this eighth continent. She relentlessly works to map canopy biodiversity and to champion forest conservation around the world. Her international network and passion for science have led her into leadership roles where she seeks best practices to solve environmental challenges and serves as a role model to women and minorities in science. Prof Lowman is currently the Director of the TREE Foundation where she leads tree research, education and exploration.

Highlights

With Covid-19, there has been much discourse surrounding the need for interdisciplinary learning and the marriage of science and the humanities. Prof Lowman will be sharing about her work in Ethiopia, and how natural and social sciences are both needed for effective forest conservation.

You will also get to know more about Prof Lowman’s background and research in canopy biodiversity and forest conservation, as well as her role as a champion of women in science.



Life in the treetops—An overview of forest canopy science and its future directions

Margaret Lowman 

Correspondence

Margaret Lowman, Director TREE Foundation, Box 48839, Sarasota FL 34230, USA.
Email: canopymeg@gmail.com

Societal Impact Statement

Forests are currently under global threat from human activities, despite the fact that recent findings confirm trees are critical for the health of humans as well as for the entire planet. Advances in *whole forest* research, which includes the upper reaches and not just the forest floor, are providing critical information about carbon storage, biodiversity, water cycles, and other essential ecosystem services provided by trees. The methods to study forest canopies are relatively new and vastly underfunded, despite our growing recognition of the global importance of trees. In addition to advancing exploration of the treetops, the forest canopy toolkit is also proving instrumental to jumpstart innovative actions to conserve forest ecosystems.

Summary

Forest canopies are home to an estimated 50% of terrestrial biodiversity but remain relatively unexplored until just four decades ago. As one of the first global arbor-nauts, I share an abbreviated history of canopy science, and how treetop access has inspired forest conservation, especially in the tropics where forests remain relatively unexplored. The arboreal toolkit of ropes and harnesses, canopy walkways, dirigible and inflatable rafts, construction cranes, drones, and Light Detection And Ranging (LIDAR) has revealed that forests provide many important ecosystem services, essential for life on earth. Yet despite millions of research dollars, extensive time, and extraordinary intellectual capital, the degradation of tropical rain forests is accelerating and does not correlate with the extent of scientific investments. A few case studies illustrate how canopy access methods can inspire innovative approaches to conservation, especially in tropical forests where deforestation is rampant: (a) Use treetop walkways for education and ecotourism, not just research, so that indigenous communities can earn sustainable income without logging; (b) Incorporate citizen scientists into forest field research through BioBlitzes or virtual technologies that are now relatively inexpensive and far-reaching; (c) Inspire girls, especially in low-income countries, to become stewards of their local forests; and (d) Seek diverse stakeholders in forest conservation actions, including religious and corporate leaders. I summarize how treetop exploration can inspire a renaissance in botany, engaging the public about the importance of trees, especially tropical forests and their biodiversity.

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KEYWORDS

arbornauts, conservation, forest canopy, treetops, tropical rain forests, walkways

1 | SHORT HISTORY OF THE CANOPY RESEARCH TOOLKIT

A few early biologists, including Peter Ashton and Kamal Bawa, created rudimentary methods to study pollinators and flowering in Asian tropical canopies, but their techniques were not easy to replicate in multiple sites (reviewed in Lowman, Schowalter, & Franklin, 2012). The methods to explore the treetops in an affordable and replicable fashion were not well developed until the 1980s, making canopy biology a very infant science (Lowman & Rinker, 2004). Whereas astronauts study outer space, arbornauts explore the canopy. It seems extraordinary that the tops of trees, which exist commonly in backyards and streetscapes around the world, were not part of forestry research until the last few decades. The development of a rudimentary toolkit including single rope techniques (SRT) and canopy walkways allowed forest scientists to engage in whole forest research,

instead of a narrow focus on the forest floor. Over the past several decades, new canopy access tools have facilitated whole-tree research. Concurrent with this chronology, a few seminal studies catapulted the world of canopy research, in particular the ground-based work of Terry Erwin, Smithsonian entomologist, who fogged tropical trees in Panama, causing insects to fall to the forest floor, and generated his astounding estimate of over 30 million species in the world (Erwin, 1982). Those numbers were challenged by Edward O. Wilson, biologist at Harvard University, who has claimed that biodiversity will likely approach 100 million species when organisms in forest canopies and soil are calculated (reviewed in Lowman & Rinker, 2004).

For over 100 years, most American foresters walked through the forest and essentially based all their findings on a narrow view at ground level. Occasionally, a tree was cut down that offered a chance for observations of its upper reaches, but more likely the



FIGURE 1 Single rope techniques (SRT) was the first generally used canopy access technique, beginning in the 1980s. (Credit: Anthony Ambrose)

entire trunk was harvested for profit. Several rudimentary canopy explorations were made during the mid-20th century, including walkways built for Operation Drake from Oxford, England or a few medical towers used to study insect vectors in Asian tropical forests (Mitchell, Secoy, & Jackson, 2002).

The first efficient, affordable, and easy-to-replicate method of SRT to study whole forests came into practice in 1979. At that time, I started asking questions about leaf longevity in the rain forests of Australia, but a half a world away in Costa Rica another student from San Jose State University, California named Don Perry was also studying tropical forest ecology. We both independently determined that accurate tropical forest research required access into the whole tree, not just the forest floor. Don purchased some climbing equipment from American recreational outlets, while I sewed and constructed my own harness because Australia did not have access to those types of gear. In Australia, I also welded a slingshot in the university shop, which ultimately required a permit to maintain and operate. Because there was no internet at that time, neither Don nor I learned about one another until we both published our methods and findings some 3 years later (Lowman, 1984; Perry, 1986). He went on to teach SRT to a handful of neotropical forest students, and I trained a bevy of researchers in the Austral-Asian forest ecosystems. The use of SRT spread quickly around the planet, and became a widely used, inexpensive tool to access the tops of almost

any trees. (Figure 1). This led to amazing discoveries about the critical importance of forests that were not accurately measured from ground level (Lowman & Moffett, 1993; Lowman et al., 2012).

The first canopy walkway for permanent education and research access was opened in Queensland, Australia during 1985. The owner of an ecotourist lodge and I designed this walkway both to educate visitors and as a safer option than training volunteers in vertical rope ascent. This first walkway was constructed in Lamington National Park, but within several months another was completed in Lambir National Park, Malaysia by Maryland engineer, Ilar Muul. These two walkways, ours with pole construction and Muul's using cabled necklaces strung around tall trees, set the stage for future construction of walkways throughout the world. Both designs are useful in different situations, depending on topography, tree height, visitors, and diversity of uses. Increasingly, walkways provide sustainable income from ecotourism to indigenous people who serve as naturalists, boat operators, and lodge operators, instead of earning short-term income from logging (Lowman, 2009). The proliferation of walkways has advanced research in three ways: (a) Allow teams of scientists to work together in the treetops; (b) Facilitate safe observations in the dark or during inclement weather, and (c) Create long-term observations using devices such as camera traps, permanently marked leaves or epiphytes, and executing repeat transects (Figure 2).



FIGURE 2 Canopy walkways facilitate team research and long-term monitoring, as well as to foster conservation by providing income to indigenous people through ecotourism



FIGURE 3 Drones offer easy access to flowering/leafing phenology, or mapping the canopy in this image of a new walkway in Quechee, Vermont. (credit: Vermont Institute of Natural Sciences)

In the early 1990s, Alan Smith of the Smithsonian Institution placed a construction crane amidst tall trees in Panama's tropical forests. This new technique was expensive (approximately a million dollars to establish, plus additional costs for a unionized crane driver), but offered detailed access to every leaf, insect, or reptile found within reach of a crane arm (Parker, Smith, & Hogan, 1992). Cranes now exist in approximately 10 locations around the world but require a significant budget to operate beyond the scope of most students and researchers. Three cranes are forthcoming in China's tropical forests, Panama still houses two, one in Australia, and Europe has several in temperate forests; while Venezuela and Oregon have dismantled their cranes.

A fourth, and perhaps the most innovative canopy access tool, involves inflatables. A team under the direction of Frances Halle of the Institut de Botanique in Montpellier, France pioneered *Radeau des Cimes* (raft on the roof of the world) (Hallé & Pascal, 1991). This includes a combination of canopy raft, hot-air balloon, and sled to facilitate canopy sampling. The inflatables also require approximately a million dollars (US) of funding to launch an expedition, but they historically have hosted approximately 50 scientists to collaborate as a team throughout one expedition. Over time, the inflatables have surveyed the rain forests of Cameroon, Panama, Brazil, Gabon, and Australia (reviewed in Lowman et al., 2012).

Some of the newest canopy access technologies include drones and Light Detection And Ranging (LIDAR). While drones are still in pilot stages, and illegal in some regions, they offer relatively inexpensive overviews of forests, including the documentation of flowering phenologies, mapping of tree species, or

detection of illegal logging. (Figure 3). LIDAR is a sophisticated aerial reconnaissance apparatus that requires a dedicated camera and airplane beyond the budget of most researchers, but offers extraordinary information on canopy health, growth history, and physiology (Asner, Martin, Anderson, & Knapp, 2016). Arizona State University, USA currently houses a major center for LIDAR under the leadership of Greg Asner and Roberta Martin, where they have combined LIDAR with high-fidelity imaging spectroscopy (HiFIS), to quantify the California drought through overflights that accurately calculated tree mortality (Asner et al., 2015). Applications of LIDAR and related aerial imagery almost supersede the need for ground truthing (aka climbing), but not quite. Recent research on redwood transpiration was most successful using a combination of LIDAR and climbing (Ambrose, Baxter, Martin, Francis, Asner, Nydick & Dawson, 2018), where they calculated these tall trees transpire up to 500–800 liters of water daily.

2 | APPLICATIONS OF CANOPY ACCESS TO FOREST CONSERVATION

The ability to study whole forests from bottom to top not only expanded our understanding of trees, but canopy access has more recently inspired innovative approaches to conservation. One important effort is the application of canopy walkways to create income for indigenous people through ecotourism instead of logging. One example is the Amazon Center for Tropical Studies (ACTS)

canopy walkway, located in Amazonian Peru on a tributary of the Napo River, that includes 12 bridges and 13 platforms over a quarter of a mile. This structure provides research access to over 100 species of trees, epiphytes and vines, but perhaps more importantly, employs over 100 families who make a sustainable living from ecotourism. The existing conservation reserve of 4,000 acres has expanded to over one million acres, with indigenous people serving as excellent stewards who prevent poaching because they recognize the importance of keeping the forest intact. Similar links between walkways and local economies exist in other tropical forests, offering an effective bottom-up conservation solution (Lowman, 2009; Tallis et al., 2014).

Other ways to ensure more effective conservation is to engage a broad array of citizens in field science. By educating the public about the importance of forests, successful citizen actions to sustain these ecosystems are more likely to follow. The Jason Project, developed by Bob Ballard of Titanic fame, reached millions of middle school youth who virtually visited different marine and terrestrial landscapes (www.jasonlearning.org). I hosted three seasons of virtual canopy exploration with the Jason project, and still hear from young people who ultimately pursued a career in field biology as a result of these school programs (see also Lasky, 1997). Community-driven engagement via BioBlitzes or expedition travel for aspiring scientists also provide effective public conservation education about forests. Educating the public about the importance of big trees and saving forests can also lead to more sustainable consumption from industrialized countries whose citizens inadvertently buy palm oil, soy, or tropical timber without any knowledge of its source. The engagement of girls, especially in low-income countries where they are often the stewards of pollinators, fresh water and firewood, is especially important; and local conservation benefits by empowering women as stakeholders (Tallis et al., 2014).

In Ethiopia, the Orthodox priests are the stewards of their last remaining primary forests, called church forests (Lowman et al., 2012). By partnering with the religious leaders, I was able to implement effective conservation of the last remaining church forests by building simple conservation walls with the priests' blessing. These walls exclude cattle and goats from eating the seedlings, reduce firewood collection, and keep the farmers from plowing too close to the forest edges. Unique collaborations of community members, such as a partnership of religion and science to conserve local forests, provides more effective bottom-up conservation than the conventional notion of top-down leadership activities (Lowman & Pallatý 2017).

3 | FUTURE OPPORTUNITIES

Canopy research is still in its infant stages, but the arbournaut's toolkit of SRT, walkways, cranes, inflatables, and aerial imaging is now adequate to explore the whole forest, not just the forest floor. Due in part to the last three decades offering new modes of access to the entire tree, forest scientists have quantified the critical importance of forests to global health. This has led to heightened awareness of

the importance of big trees, and especially tropical forests. In summary, trees are now recognized for their role in global carbon storage, controlling rainfall patterns through foliage transpiration, impacts on climate control, soil conservation through healthy root systems, important homes for a large swathe of terrestrial biodiversity, and major hubs of primary productivity. Many forests, especially in the tropics, are currently disappearing at rapid rates, and before scientists can fully explore their canopies or monitor their ecosystem services to provide context for the importance of their conservation. With additional resources, forest canopy access will undoubtedly lead to more discoveries of cryptic biodiversity and quantify the resiliency of tree species with impending climate change. Simple ways to engage locals in bottom-up conservation of global forests include the construction of canopy walkways for ecotourism, the engagement of all ages (and especially girls) in canopy research, which in turn educates them about the value of trees, and conservation partnerships between scientists and diverse stakeholders.

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(/)

Canopy Meg

In the treetops with scientist Margaret Lowman.

(<http://www.printfriendly.com>) ([mailto:?subject=SRQ Magazine | Canopy Meg&body=Hello, I found this article and thought you might like it:](mailto:?subject=SRQ%20Magazine%20Canopy%20Meg&body=Hello,%20I%20found%20this%20article%20and%20thought%20you%20might%20like%20it%3A%20http%3A%2F%2Fwww.srqmagazine.com%2Farticles%2F1330%2FCanopy%2520Meg)
<http://www.srqmagazine.com/articles/1330/Canopy%20Meg>)

|

By Brittany Mattie

In People (/articles/category/People)



Illustration by Chris Leverett.

The elusive arbournaut reps titles such as the director of the TREE Foundation, National Geographic explorer, research professor and science advisor to Earthwatch. An avid rainforest-saving advocate and an eco-conscious mentor for young generations, she shows her love for nature with a sizable tarantula tattoo on her forearm, and by rocking hiking boots over high heels. Find Canopy Meg either cleaning the house to rap music, checking in on her grown boys in Boston and San Francisco, or swinging across canopy bridges in the treetops while devouring Oreo cookies.

A recent day in the life?

Get up early and make strong coffee, sit on the lanai to watch pelicans, eagles, herons and the other birdlife that make Southwest Florida so special. Answer 100 emails that accrue overnight from around the world, many of which are kids wanting to know how to save the rainforests (or currently, Australian wildlife after the bushfires), or schools wanting a “meet the scientist” lecture. Participate in conference calls ranging from designing a new

canopy walkway in Mozambique to writing a cover review for a new book, to seeking funding to save the forests of Ethiopia. Spend time writing, usually about saving forests or inspiring kids about STEM. Pleasure breaks—cook for friends, call my two sons and elderly mom, exercise, and watch a few more birds. End of day consists of reflecting on whether my daily actions made the world a slightly better place for my kids: Eddie, who is 35 and works tirelessly on clean energy policy in the Bay area, and James, who is 33 and has a very successful startup company in Boston.

When you were a kid, you dreamed of . . . Someday meeting a woman scientist.

Your guilty pleasure . . .

Eating Oreo cookies in the treetops while working as an arbonaut (aka, explorer of canopies).

Thought you had driving to work today. Today I “flew” to work, to Singapore, which took 23 hours of flying. My thoughts were twofold: Can I successfully mentor girls in this amazing country? Will I succeed with a Southeast Asian UNESCO world heritage nomination site to conserve an important Malaysian rainforest?

For what fault have you been the most tolerant? American consumerism. It is the biggest and blindest cause of rainforest clearing. Because we do not label our products, most people too often buy products that cause clear-cutting of tropical forests, such as oil palm, soy, beef, tropical timbers and others.

Your favorite virtue . . .

Taking kids into nature, not just my own kids but especially others who are less able to find nature in their daily lives.

In our hometown, we do too much cement and too little tree canopy. Big trees (not small ones) are like gold and very precious in terms of what they do for humans.

Your last supper would include . . . E.O. Wilson, Bob Ballard, Jane Goodall and a handful of other notable friends who have mentored my career. And the guest of honor would be my mom, who gave me my values and sense of loving life.

Your favorite musical artists . . . Queen and Enya. And I actually like rap—I heard Snoop Dogg at a live concert once with my boys, and we laughed all the way through because of his crazy body gesticulations. But it is really great music to clean the house to or exercise. I turn on rap music when I need to be energized, but admittedly I don’t hear the words (ugh!) or usually don’t know the artists, but it sure energizes an otherwise quiet day!

Villains of today . . . Pepsi and Coca-Cola. They are some of the world’s biggest plastic polluters, and they need to do better.

Funniest thing you remember as a kid . . . I still have the same three best friends from age three, so we have endured over six decades of laughing and crying. They are one of my best gifts in life.

Would you rather have a rewind button or a pause button . . . A pause button, to be sure, and to stop and sniff the flowers instead of working tirelessly every minute to save them.

Your talk show would feature . . . Oprah, Rachel Carson and Harriet Tubman.

Your scariest feat? Being the world's first global arbornaut—climbing that first tall tree with my homemade gear was downright terrifying.

Your favorite food of the moment . . . Grilled garlic Brussels sprouts.

Your T-shirt motto? "Climb."

If you could snap your fingers and appear somewhere else . . . I would love to wake up in Bora Bora tomorrow—no trees to study and gorgeous water to swim.

Song that describes your life right now? "We Are the World" by U.S.A for Africa.

Biggest fashion faux pas? Buying too much and too often. Americans use a disproportionate amount of resources, especially clothes, and we need to think harder about our kids. Re-wear and regift and visit the Women's Exchange! SRQ

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