



New aerial walkway in Penang Malaysia, which garnered UNESCO World Heritage status in 2021 due to the high biodiversity found in its tropical rain forest canopy.

TREE Foundation

Annual Report 2021

Dr. Meg Lowman, CEO & Elizabeth Moore, President

15 November 2021

Sarasota Florida

Tree Foundation is thrilled to pass our 20th anniversary with significant growth, innovative programs and expanded global reach in our mission for tree research, education, and exploration. We are increasingly viewed both locally and globally as a voice for big tree conservation, whole tree research (including the treetops), and as a leader in canopy walkway construction for ecotourism and conservation outcomes. Our highlights of 2021 are described in our three mission pillars: **research, education, and exploration.**

RESEARCH

1. Student intern TJ Watkins from Williams College worked diligently all summer on canopy videos and an interactive map of global canopy hotspots.
2. New research publications by our Executive Director, Meg Lowman, that directly link to our mission include:
 - a. The Arbornaut – a life exploring the eighth continent in the trees above us (Farrar, Straus & Giroux 2021)
 - b. Herbivory in the Malaysia Rain Forest Canopy, Penang Hill - Margaret Lowman, Leon Kagonovskiy, and Caroline Haley In: The Bioblitz Volume, 2021, The Habitat Penang.
 - c. Life in the Treetops—An overview of forest canopy science and future directions. Plants, People, Planet.
3. Grant applications for research and education include a proposed international collaboration with SwedBio to expand the conservation walls in Ethiopia, serving to save their last 4% forests. Unfortunately, this was turned down in favor of dedicating their funds to peace-seeking efforts due to the recent uprisings in northeastern Ethiopia. Grant-writer and Board member Vanessa Wassenar worked diligently on several local grants to augment our Myakka canopy walkway:
 - a. IMPACT100SRQ was a finalist but did not receive funding.
 - b. Florida State Parks Foundation – application for ADA amenities at the Myakka canopy walkway
 - c. Selby Foundation – in process to apply for additional Myakka funding
 - d. Sarasota Community Foundation – in process to seek funding for teachers/field trips to Myakka

A new partnership to conserve Baobab trees in Tanzania was initiated with Serengeti ECO Protection and Development Alliance (SEPDA TANZANIA). Seed funds were obtained from a local donor to provide 200 tee-shirts to regional farmers to save large baobab trees on their farms. Watch for photos of these magnificent big trees on our website, alongside the farmer who is stewarding his/her tree.

EDUCATION

1. **A postdoctoral researcher, Dr. Pamela Montero**, is our first Education Director for the new project, Mission Green. Pamela is funded by a collaboration between TREE Foundation and University of Florida. She will spend extensive time in her home region of the upper Amazon, Peru, developing a canopy curriculum for our Amazon walkway and training indigenous people (especially women and families) to gain employment through the ecotourism provided by the canopy walkway. Dr. Montero's work will serve as a model and be adapted to other walkways around the world, allowing Mission Green to grow its programs of training local people who will then receive sustainable income from ecotourism, not from logging.
2. **School talks via Zoom** have ramped up throughout the COVID pandemic, with Meg Lowman featured as a meet-the-scientist lecturer to many middle school classes and co-featuring Victor von Klemperer who volunteers for TREE by speaking about financing conservation. The duo presented over 30 talks to schools around the country, plus a few overseas venues during 2021.
3. **Lowman's book, *The Arbornaut***, was published by Farrar, Straus & Giroux in August 2021. Reviews have been wonderfully enthusiastic, with highlights as follows:
"Equal parts memoir, scientific reporting, love letter to the trees and a call to action in the face of the climate crisis . . . Most charming of all is Lowman's joy and wonder at the natural world . . . By the time you reach the last page of this book, you'll either want to climb a tree, hug a tree or both."
—Rachel Zarrow, *The San Francisco Chronicle*

"[Written] not just to instruct, but to reorient and inspire . . . If a tree was once understood as a mostly static living object, [through *The Arbornaut*] we see it rippling with change."
—Rebecca Giggs, *The Atlantic*

"[Lowman] excels at bringing the natural world to life in language. . . [Her] research is full of life, energy, intelligence and determination . . . *The Arbornaut* is a book to reach for if you, like Lowman, love the natural world and want to live in it fully."
—Kelly Blewett, *BookPage* (starred review)

"[Lowman] vividly describes the ways she has learned from people and the natural world across the span of her life. She brings readers into the scene as she floats atop a Cameroonian forest canopy in a dirigible and when she teaches wheelchair-bound science students to hoist themselves up into the California Redwoods."
—Cathy Corman, *The Provincetown Independent*

4. Lectures – Rotary Club, Arizona State University, Wilmington Library, Elmira College, Sarasota Sustainability Conference, Mariner Museum and many other national venues; and the 10th International Canopy Conference in Kunming, China.
5. Upcoming college course at Elmira College scheduled for spring 2022, called Nature's Clothing, about sustainable natural resources, and held in conjunction with the new Tommy Hilfiger Fashion Design Institute.
6. Community tree outreach championed by Alan Winston and Michael Dexter as follows:

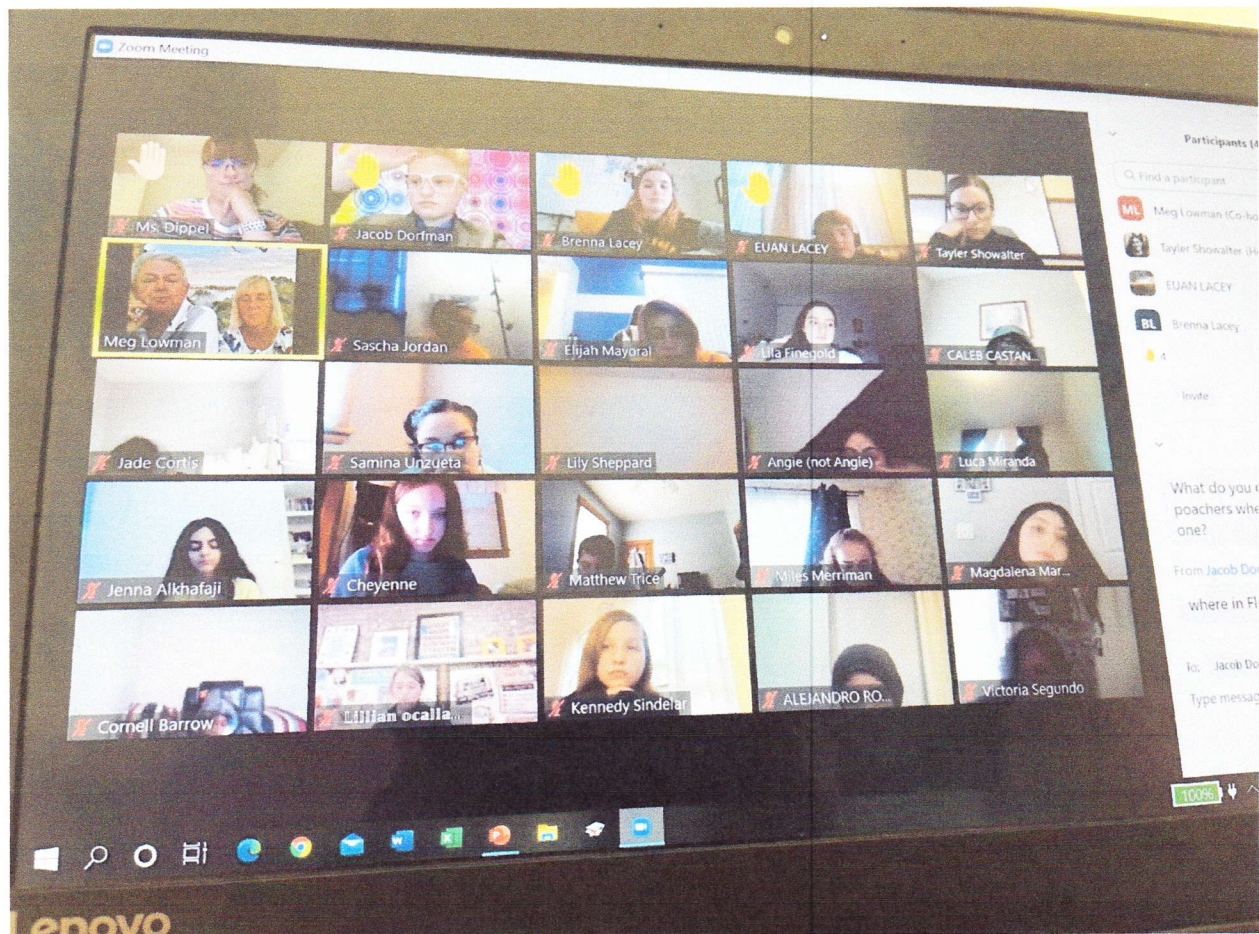
The TREE Foundation and the Environmental Management Council of Chemung County, New York, are engaged in a joint initiative studying Urban Green Equity. The goal of this project is to assess the environment and implications of insufficient green space and/or shade provided by trees. This pilot effort, in the city of Elmira NY, is an examination of fair, equitable access to and distribution of trees and a variety of green spaces. Many neighborhoods, in urban centers particularly, that are home to the disadvantaged and underserved, experience the deficits associated with inadequate availability of parks, trees, and gardens. Recently, researchers have documented the positive impacts that trees and green infrastructure provide, including environmental, social, and psychological benefits to residents by improving air quality, reducing urban heat stress, and improving public health outcomes. The TREE Foundation and the Council hope to survey local communities and impress upon local municipalities the many benefits of a planned program of surveillance of tree health and sponsored planting programs. Once complete, our goal is to replicate this survey process in other localities and states.

EXPLORATION

Our biggest achievement for 2021 is the launch of our newest program, Mission Green, which incorporates all aspects of our mission: exploration of global forests, research on treetop biodiversity, education of ecotourists, and an essential economic impetus for conservation of the world's most endangered forests. Based on the successful model of Mission Blue, founded by Sylvia Earle to conserve Hope Spots in global oceans, Mission Green aims to conserve hot spots of highest biodiversity in the world's most threatened forests. The following pages summarize the story and goals of this new flagship program, with an ambitious goal to raise \$10 million in ten years to augment 10 canopy walkways. Already, three are funded but more urgent efforts are needed. Throughout this COVID year, Lowman worked tirelessly with an amazing team of volunteers and professionals to undertake a professional website, logo, graphics, and text to launch Mission Green. A huge thanks to Jim Follett, Lowman's Kitchen Cabinet committee (Bob Woods, Harland Chun, Susan Walker, Mary Mountcastle, Deborah Heineman, and intermittent others), KMAC public relations team from NYC, Stephen Weil from Macmillan publishers, and our in-house duo of David Martin and MC Coolidge for incredible progress to prepare Mission Green materials and outreach. The last chapter of Lowman's new

book, *The Arbournaut*, discusses Mission Green; so for each of her Book talks, CanopyMeg is able to market Mission Green to diverse audiences.

Based on the success of our local Myakka canopy walkway, Mission Green will ramp up this model to create global ecotourism opportunities in ten forests around the globe. Stay tuned, as TREE ramps up this important forest program that integrates conservation, environmental justice, and student research. Several attachments illustrate the scope of Mission Green including its prospectus and the global canopy walkways proposed.



Meg Lowman and Victor von Klemperer speak about the importance of forest conservation to fifth graders around the country.

TREE Foundation Website Report 2021

by David Martin with Brighter Technologies

2021 Stats - Comparison to 2020

 **Website**  **435%** Website Clicks

 **e-Newsletter**  **32%** Subscribers

 **Facebook**  **14%** Followers

 **Twitter**  **7%** Followers @canopymeg

 **YouTube**  **53%** Followers

 **PayPal**  **119%** 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



Celebrating our 2021 Summer Intern - T. J. Watkins

The MISSION GREEN team was pleased to welcome T. J. Watkins for a summer third-year Williams College Geoscience and French with a passion for videography. He joined the team in May and worked remotely from his home in Oklahoma City through early August.

The learning goals were to give the science and business of importance of biodiversity to business management; donor branding/marketing program



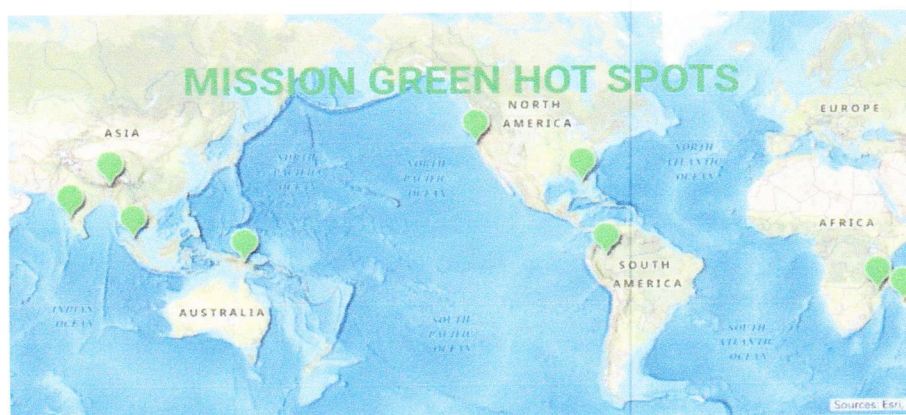
pleased to welcome T. J. internship experience. TJ is a student majoring in passion for videography. He worked remotely from his through early August.

TJ a better understanding of forest conservation; the global health; non-profit database development; and development.

TJ is a quick learner and went straight to work attending MISSION GREEN team meetings and independently working on a series of projects. The signature project he delivered was developing a custom ArcGIS interactive global map highlighting the MISSION GREEN “hot spots” or canopy locations (see below). This will become the centerpiece of the new MISSION GREEN website - to be released soon. One of the cool features is that the viewer can click on a “hot spot” location which links to a one-page summary highlighting relevant conservation important facts for that location. TJ also created a video summary that can be used promotionally highlighting all “hot spot” sites as well.

TJ also edited the one-hour video - A WOMAN WHO CLIMBS TREES - directed by Puja Kolluru which highlights Meg’s career and created two shorter promotional videos that can be used to build awareness of Meg and her work.

He was a great addition, brought a great attitude, and made some real contributions.



TRAINING/EDUCATION for Baobab Conservation, Tanzania

Site Name: Msowero Group

Village: Msowero

District: Kilosa

GPS Coordinates:

Latitude: -6.5086553

Longitude: 37.2314923

No. of Baobab trees: 139

No. of Group Members: 12

Short story about the Project site/village

Msowero village is located Southern of Kilosa district in Morogoro region. The district has 869,263 Hectares of forests. These forests are source of various products such as timber, bee wax, honey, charcoal, and fuel wood. The District covers a total area of 12,393.7 square kilometers which is equivalent to 17% of Morogoro Region. Agriculture is the main economic activity and most of the people engage in farming of both subsistence and cash crops where the major food crops are paddy, maize, beans, cassava and bananas and major cash crops are Sisal, sugar cane, cotton, simsim and sunflower. However, crops like rice, maize and beans can fall into both categories. The district has 536,590 hectares suitable for agriculture in cultivation of cash and food crops. Approximately 93% of land used for farming is under subsistence crop production, while 7% is used for cash crop.

The district is blessed with tourism resources which contribute to the district economy. Mikumi National Park is one of the most popular national parks in Tanzania for visitors on a tight schedule. Mikumi National Park is easily accessible from Dar es Salaam and ideal for someone with less time for safaris as you are certain to see some of the big five (Lions, Elephants, Rhinos, Leopards and buffalos).

The main tribe in the area are Kaguru followed by small tribes (migrants) such as Nyiramba, Sukuma, Chaga, etc.

Baobab Trees in the area

Before this training, communities in the project knew nothing about the importance of these trees. They used to buy the processed baobab fruits

commonly known as Ubuyu but didn't know are from the same trees they have at home.

Reason for death of Baobab Trees (*Adansonia digitata*)

During the training, participants explained the reasons for death of Baobab trees as outlined below here;

- Climate change – affects the ability of the Baobab to survive
- Natural death - Older Baobab trees die
- Man-made climate change is a likely suspect
- Increased temperature and drought are the primary threats
- Increased population and high demand for fuel wood, timber and slash and burn agricultural system has caused the decrease of Baobab trees

Conservation Efforts

In 2021, the Tanzanian government has passed a new national forest policy which transferred power over forest resources back to the community level and involved citizens in forest conservation.

As part of its environmental strategy, the government requested that every district council plant and care for at least 1.5 million trees every year. However, the rate of reforestation still seriously lags behind the deforestation rate.

“Millions of trees are planted every year, but with growing demands from expanding population and poverty, harsh growing conditions and lack of tending of planted trees – these disqualify the efforts to restore the degraded forest land but Baobab trees are not a priority in spite of its economic and biological importance.

Msowero Group have agreed to conserve and plant new Baobab trees after they have realized its importance economically. They will form a conservation committee in collaboration with the village government.





MISSION GREEN

Prospectus: MISSION GREEN

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



Purpose

This Prospectus proudly introduces MISSION GREEN, a bold endeavor to globally promote 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 arborealist — 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 in 1999 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 of other scientists developed the toolkit to become arborealists 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 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 serve as a major carbon sink.
- **Housing the genetic origins of many foods and sources of 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!



Atlantic Forest in Brazil

The Opportunity – MISSION GREEN

Vision:

To conserve important forests, 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 join a global conservation team.

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: Finalize design, build, staffing, and marketing to be completed by 2024.	Note: 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 walkway 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 Years of Experience 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 of mankind.



Meg and E. O. Wilson

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 appropriate for a canopy project.



Meg and Sylvia Earle

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.

“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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Deb Heineman

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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 *The Wall Street Journal* for her achievements and passion for trees and forest conservation over more than three decades. Recognizing the need 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, and a leading advocate for women in science.

Alemayehu Wassie Eshete

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

Dr. Patricia Wright

Patricia is one of the world’s foremost experts on lemurs, and 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



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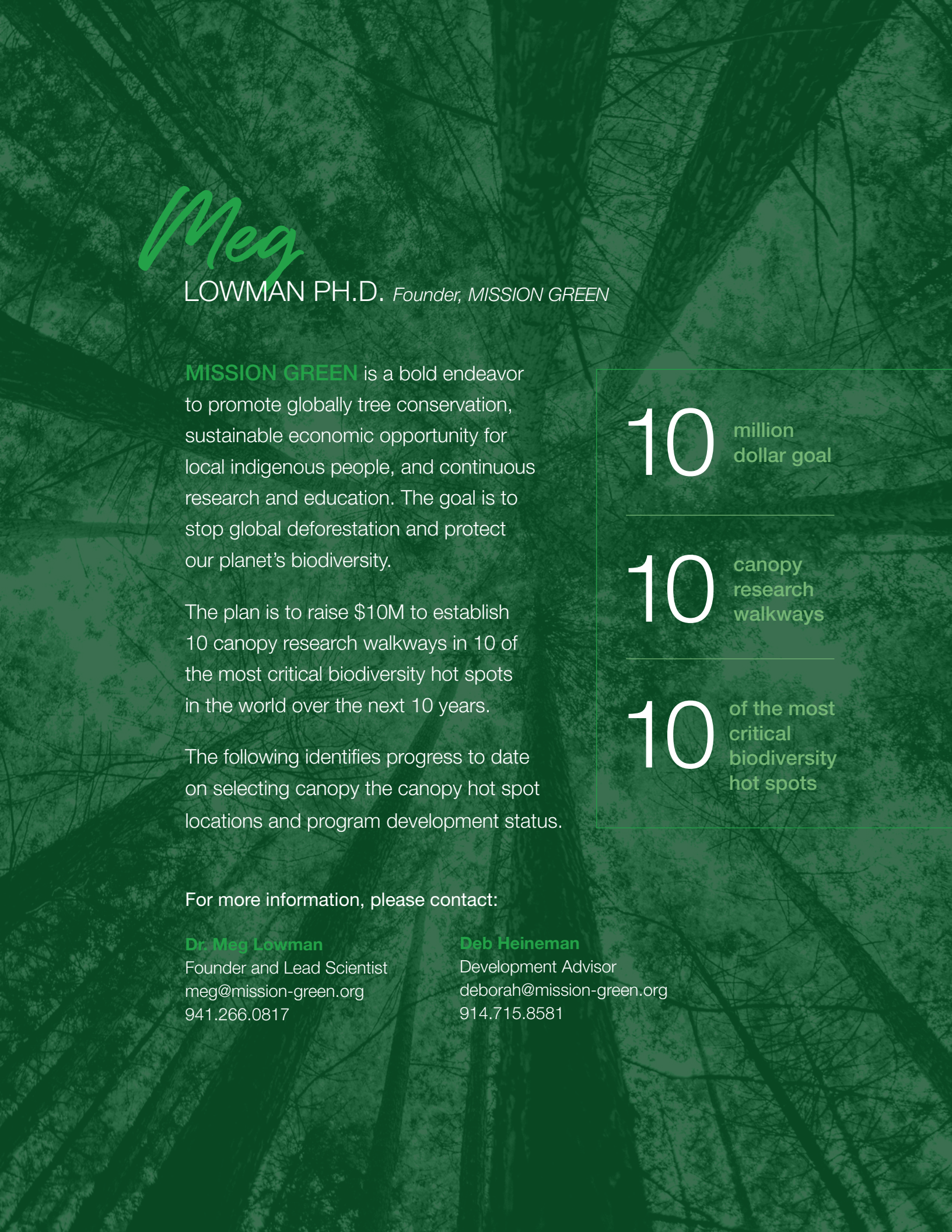


treefoundation.org
mission-green.org



Canopy
WALKWAYS
PROGRAM DEVELOPMENT STATUS

FALL 2021



Meg

LOWMAN PH.D. *Founder, MISSION GREEN*

MISSION GREEN is a bold endeavor to promote globally tree conservation, sustainable economic opportunity for local indigenous people, and continuous research and education. The goal is to stop global deforestation and protect our planet's biodiversity.

The plan is to raise \$10M to establish 10 canopy research walkways in 10 of the most critical biodiversity hot spots in the world over the next 10 years.

The following identifies progress to date on selecting canopy the canopy hot spot locations and program development status.

10 million
dollar goal

10 canopy
research
walkways

10 of the most
critical
biodiversity
hot spots

For more information, please contact:

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► COMPLETED: ADDITIONAL FUNDING REQUIRED

Amazonian Peru Canopy Walkway

Amazon Conservatory for Tropical Studies (ACTS), NE Peru

Height: 115 feet (tower) | **Length:** 1/3 mile**Built:** 1994 | **Engineer:** Illar Muul

Threat/Opportunity:

- Approximately 50,000 square miles of tropical forest, primarily in the Amazon, is lost per year.
- Explorama Ecotourist Lodges (EEL), local environmentalists and scientists wanted to increase ecotourism numbers to prevent further deforestation, give the indigenous population employment opportunities, and protect endangered species like the harpy eagle, scarlet macaws, and jaguars.

Solution:

- Approximately \$500,000 was earmarked from tourism revenues.
- Illar Muul, a medical ecologist, rain forest advocate and engineer, and local construction supervisor Don Antonio hired a team of indigenous people to construct 11 platforms linked by rope and wood-slot walkways: First platform took 3 months to build; the next 10 platforms took only 3 months more – thanks to the purchase of a battery-operated drill!

Results:

- Initial 3.9 square miles of protected land has grown to 3,900 square miles as local politicians, businesses, and population realized the sustainable income provided by increased ecotourism.
- Over 120 indigenous families employed to drive boats, maintain walkway, act as chefs, guides, cashiers, and guards.
- In 1999, virtual fieldtrips were broadcast from the walkway to over 3 million schoolchildren, in over 20 countries, by The Jason Project.
- Numerous scientists have published research from the walkway: plant surveys by Al Gentry, herbivory by Lowman, katydids by Dave Nichols.
- Walkway has made NE Peru a prime tropical rain forest ecotourism destination.

Broader Impact/Next Steps:

- Amazon Peru Walkway now recognized as “gateway” to world’s highest biodiversity site.
- EEL has embraced the walkway as a mission vs. a business: establishing an NGO and Board of Advisors to consult on permit issues, maintenance, research protocols, and education/advocacy for local people.
- Plan for 2022: Hire Pamela Montero – the fifth grader who was school liaison for the Jason Project in 1999 and went on to earn scholarships and her PhD in Conservation and Ecotourism at University of Florida under Lowman’s guidance – as Scientist/Educator in Residence to develop canopy curriculum and train local educators.



Amazonian Peru - a Biodiversity “Hot Spot”

The Peruvian Amazon jungle comprises 60% of Peru, which represents the second-largest portion of the Amazon rainforest after the Brazilian Amazon. This jungle is one of the most biologically diverse areas on earth. Peru has the largest number of bird species in the world and the third-largest number of mammal species. Peru also has a very high number of species of butterflies, orchids, and other organisms.



MISSION GREEN Global “Hot Spots”*

(Canopy Walkways and Walkway Prospect Locations)

1. Amazonian Peru (1994)	7. Western Ghats, India
2. Myakka River State Park, Florida (2000)	8. Royal Manas National Park, Bhutan
3. ☒ The Habitat Penang Hill, Malaysia (2017)**	9. Baiyer River Rainforest Reserve, Papua New Guinea
4. ☒ Sequoia Park Zoo, Eureka, California (2021)**	10. TBD
5. Ranomafana State Park, Madagascar	11. TBD
6. Gorongosa National Park, Mozambique	12. TBD

* World’s highest bio-diversity, most critical forests that would significantly benefit from a canopy walkway conservation program

** Built and funded

www.mission-green.org

reach out to: Dr. Meg Lowman meg@mission-green.org or Deb Heineman deborah@mission-green.com

► COMPLETED: ADDITIONAL FUNDING REQUIRED

Myakka River Canopy Walkway

Myakka River State Park, Sarasota, Florida

Height: 92 feet (tower) | **Length:** 100 feet

Built: 2000 | **Engineering firm:** Phoenix Design, NC

Threat/Opportunity:

- Florida has experienced extreme deforestation due to development, roads, and other tourist destinations.
- Create North America's first public canopy walkway to enhance educational opportunities within Myakka River State Park.
- Devise a way to meet Park Department ADA requirements.

Solution:

- Established partnership team of Florida Park Service, Friends of Myakka River, the TREE Foundation, and local sponsors to raise \$170,000.
- Worked with ADA representatives to plan alternative, on-site experience, including live webcam/kiosk for a "virtual" walk.

Results:

- Myakka attracts 500,000+ visitors per year and was the first public canopy walkway in North America!
- Walkway generates \$24 million in ecotourism revenue for Sarasota County.
- 27 paid park staff, roughly 50 seasonal volunteer staff, and about 30 concessionaire staff work at the state park.
- Invasive weevil species that was decimating air plants discovered by local elementary school children.
- Myakka model copied in Ohio, New York, Vermont, and California – with additional walkways in planning stages.
- Excitement and support of Walkway and environmental science programs led to local sponsorship of a "trip-of-a-lifetime" to the Amazon Walkway for 25 underserved high school students from the local Boys & Girls Club.
- 100s of field trips for local schools over the past 20 years; frequent guided walks of the canopy hosted by CanopyMeg, sometimes attracting up to 300 attendees!
- Research opportunities and grants for New College (local higher education institution) science students, including a Community Foundation grant of \$15,000 written by the students to train middle school teachers in canopy biology.

Broader Impact/Next Steps:

- Considered the "ambassador" or model walkway upon which future global MISSION GREEN walkways will be built.
- Needs additional signage.
- ADA kiosk needs to be funded and built.



Myakka River - a Biodiversity “Hot Spot”

The Myakka River (a name derived from a Native-American word for “Big Waters”) has been a rich, diverse, and important ecosystem since shortly after the subsiding seas exposed peninsular Florida and the Myakka River valley at the end of the Pleistocene Period, approximately 10,000 years ago. The southerly location, abundant natural resources, and high annual rainfall contribute to the development of a complex association of flora and fauna.



MISSION GREEN Global “Hot Spots”*

(Canopy Walkways and Walkway Prospect Locations)

1. Amazonian Peru (1994)	7. Western Ghats, India
2. Myakka River State Park, Florida (2000)	8. Royal Manas National Park, Bhutan
3. ✓ The Habitat Penang Hill, Malaysia (2017)**	9. Baiyer River Rainforest Reserve, Papua New Guinea
4. ✓ Sequoia Park Zoo, Eureka, California (2021)**	10. TBD
5. Ranomafana State Park, Madagascar	11. TBD
6. Gorongosa National Park, Mozambique	12. TBD

* World’s highest bio-diversity, most critical forests that would significantly benefit from a canopy walkway conservation program

** Built and funded

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reach out to: Dr. Meg Lowman meg@mission-green.org or Deb Heineman deborah@mission-green.com

► COMPLETED: BUILT AND FUNDED

Langur Way Canopy Walk

The Habitat Penang Hill, Taman Negara National Park, **Malaysia**

Height: 130 feet from Forest Floor | **Length:** 750 feet

Built: 2017 | **Engineering firm:** Creative Quest Sdn Bhd

Threat/Opportunity:

- Protect Taman Negara National Park – 1,677 square miles of 130 million-year-old deciduous rainforest – the second oldest forest in the world.
- Overcome the site's construction challenge, which required getting materials to the top of a steep hill.
- Entice local Penang residents and Asian travelers to visit the jungle and experience its wonders — instilling them with a conservation ethic.

Solution:

- Build an architecturally imaginative walkway comprised of two ribbon bridges that can hold hundreds of people at once vs. just a few – as is the case with traditional walkways.
- Create a luxury eco-park around the walkway to provide upscale food, beverage, trails, and an immersive environmental education experience.
- Secure sponsorship of the project from one local family: \$3 million for walkway; \$20 million to create the surrounding park named “The Habitat.”

Results:

- 2 million people travel to visit The Habitat and the walkway every year.
- 3 million local Penang residents have access to the park via a 15-minute tram ride.
- 25 local people employed fulltime to run The Habitat.
- Foundation created by sponsor to fund student research in the forest canopy.
- Site nominated as UNESCO World Heritage Biological Site.

Broader Impact/Next Steps:

- Goal of the Cockrell family (sponsors) was to give back to their hometown of Penang. They saw canopy access as an exciting and critical way to inspire both local residents, including school children, and foreign travelers to protect a vital and vulnerable natural resource.
- A graduate of Thunderbird Business School, Harry Cockrell sponsored Lowman to speak at several alumni events, in hopes that his model of corporate sponsorship of an eco-park might be adopted by fellow business school graduates/businessmen from other countries.



Malaysia - a Biodiversity "Hot Spot"

Penang Hill virgin jungle reserve area, on the fringe of which The Habitat sits, is believed to be part of Malaysia's treasure trove of prehistoric rainforests dating back 130-million years, and pre-dating the Amazonian rainforests by 50+ million years. Besides its rich biodiversity, this rainforest plays an important role as a primary water catchment area for Penang island, and also provides essential ecosystem services for the sustenance of life, including climate regulation, water and nutrient recycling, air purification, carbon storage, and soil stability.



MISSION GREEN Global "Hot Spots"*

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► COMPLETED: BUILT AND FUNDED

Redwood Sky Walk

Redwood Sky Walk at Sequoia Park Zoo, Eureka, California

Height: 100 feet | **Length:** 1,100 feet | **Built:** 2021

Project Manager: Greenway Partners

Engineer/Builder: Synergo

Threat/Opportunity:

- Redwoods have been around for about 240 million years and in California for at least 20 million years. In the last 150 years, the impact of humans has reduced the number of these ancient trees to a mere 5% of their former number through clear-cut logging and development.
- The local Coast Redwood tree can grow to 300 feet tall or more, yet its root system is only 6 to 12 feet deep. Redwoods need the support and protection of other tree species in the forest as well as time to grow tall – and in return, they provide plant and wildlife habitat and the strength to withstand powerful winds and floods by extending their roots more than 50 feet from the trunk and living in groves where their roots can intertwine, fuse, and share resources.

Solution:

- The sky walk is an ADA compliant ramp that leads to walkways, connected by catenary bridges composed of 1/3 walkways, 1/3 “adventure walkways” and a dynamic bridge, where they can see this old-growth redwood grove from a new perspective.
- Located in the city of Eureka and adjacent to Redwood National Park where more than 45 percent of California’s remaining protected old-growth redwoods forests grow.
- Redwood National Park is one of four neighboring state parks that together constitute an International Biosphere Reserve and World Heritage Site.



Results:

- Opened to the public in June 2021
- \$4,000,000 project made possible through local lodging alliances, the Land and Water Conservation Fund, Outdoor Environmental Education Facilities, Habitat Conservation Grant, and local donations.

Broader Impact/Next Steps:

- This will be the longest sky walk in the Western US.
- Fund a sister walkway in another section of the old growth stand

California - a Biodiversity “Hot Spot”

Located within the Redwood National and State Parks (RNSP), the ancient and preserved Coast Redwood ecosystem contains some of the planet’s most majestic forests. These trees are not only some of the world’s tallest and oldest, but also the widest – sometimes reaching over 20 feet in diameter. The average lifespan of a Coastal Redwood is 600 years – with some surviving close to 2,000 years. Old-growth forests like the Coastal Redwoods exhibit unique ecological features, such that groves of smaller trees, hidden from the ground, can grow out of the soil that accumulates on the immense branches, creating a new layer of life.



MISSION GREEN Global “Hot Spots”*

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► PLANNING STAGE

Ranomafana State Park

Ranomafana State Park, Madagascar

Height: TBD | **Length:** TBD

Built: TBD | **Engineer:** TBD

Threat/Opportunity:

The Ranomafana area of Madagascar has long been a key area of concern for environmentalists because of the rapid deforestation rate since colonial times. Starting in the late 1980s, USAID partnered with WWF and other groups on several conservation projects, but in 1990, Dr. Patricia Wright spearheaded an integrated conservation effort at Ranomafana to both protect unique endemic flora and fauna and address rural development, education and health services in the Park's peripheral zone. Ranomafana was designated a National Park in 1991, and Dr. Wright, a MISSION GREEN Scientific Advisory Board Member and the world's leading authority on lemurs, remains active as an advocate for a healthy Madagascar.

Goals:

1. Work with Dr. Wright and her network of local and global partners to create a sustainable, economically sound business plan for healthy ecotourism in this remote island tropical rain forest.
2. Build an aesthetic, state-of-the-art canopy walkway in Ranomafana State Park to attract both ecotourists and scientists.
3. Preserve Madagascar's remaining 5% of indigenous forest.
4. Save lemurs – which are only found in Madagascar!



Madagascar - a Biodiversity “Hot Spot”

Ranomafana National Park is Madagascar’s premier nature reserve, and is comprised of 161 square miles of tropical rain forest located in the southeastern area of the country. Ranomafana means “hot water” in Malagasy, and the Park is an important example of cloud forest (characterized by low clouds at canopy level, and an abundance of moss cover on the ground and vegetation), with very high levels of biodiversity. In fact, 70% of Madagascar’s species are found nowhere else in the world, including its many lemur species (which live chiefly in trees and are nocturnal), the Milne-Edwards sifaka, and over 130 species of frogs! Many bird species, including ground rollers, blue vangas and brown mesites also make the Madagascar cloud forest their home.



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► PLANNING STAGE

Gorongosa National Park

Gorongosa National Park, Mozambique

Height: TBD | **Length:** TBD

Built: TBD | **Engineer:** TBD

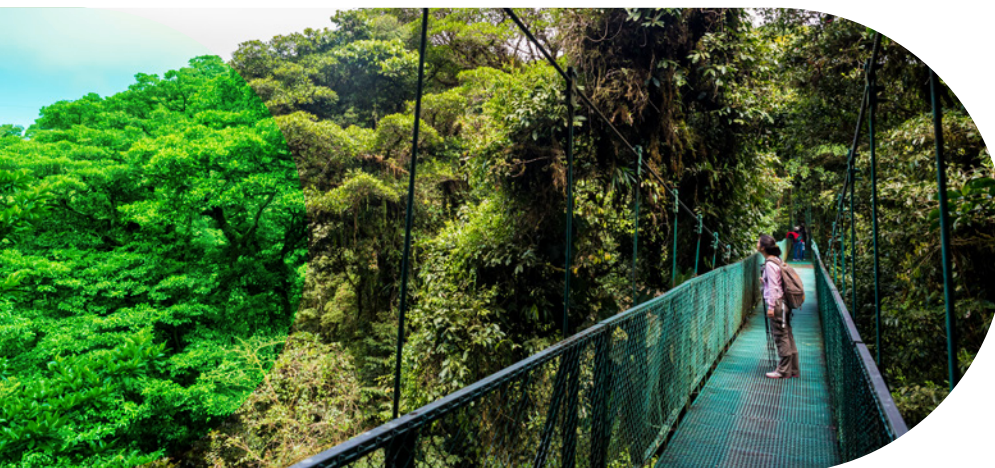
Threat/Opportunity:

Mozambique once had one of the densest wildlife populations in Africa, including carnivores, herbivores and over 500 bird species. But, during long civil conflict at the end of the 20th Century, large mammal numbers were reduced by as much as 95% and ecosystems were stressed. Although over 20% of its land is now under protection, Mozambique remains one of the least biologically explored countries in Africa.

Until 2006, when the Carr Foundation and E.O. Wilson Biodiversity Foundation stepped in, GNP was like the rest of Mozambique, but now ranks as one of the best-studied protected areas in Africa and is now known to be home to at least 75,000 species -- many of which are new to science, endemic, and threatened — so continued scientific exploration and documentation is an immediate need.

Goals:

1. Enhance canopy access in a global biodiversity hotspot that has minimal canopy access or research.
2. Work with universities (especially Harvard, which has a research station nearby) to create innovative and effective student research opportunities.
3. Focus on educating and training local schoolchildren – especially girls – as canopy guides and forest ambassadors.



Mozambique - a Biodiversity “Hot Spot”

Located at the southern end of the Great African Rift Valley in the heart of central Mozambique, Southeast Africa, Gorongosa National Park is comprised of 1,500 square miles including the valley floor and parts of surrounding plateaus. Rivers originate on nearby Mt. Gorongosa (6,112 ft.), and water the valleys below – with seasonal flooding and waterlogging creating a variety of distinct ecosystems; grasslands dotted with patches of acacia trees, savannah, dry forest on sands, seasonally rain-filled pans, and termite-hill thickets. The plateaus contain miombo and montane forests, and a spectacular rain forest at the base of a series of limestone gorges.

The E.O. Wilson Biodiversity Lab, BioEx, has recorded 6,300+ species of animals and plants and documented many of their interactions. E.O. Wilson is the Chairman of the MISSION GREEN Scientific Advisory Board.



MISSION GREEN Global “Hot Spots”*

(Canopy Walkways and Walkway Prospect Locations)

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► PLANNING STAGE

Western Ghats

Western Ghats, India

Height: TBD | **Length:** TBD

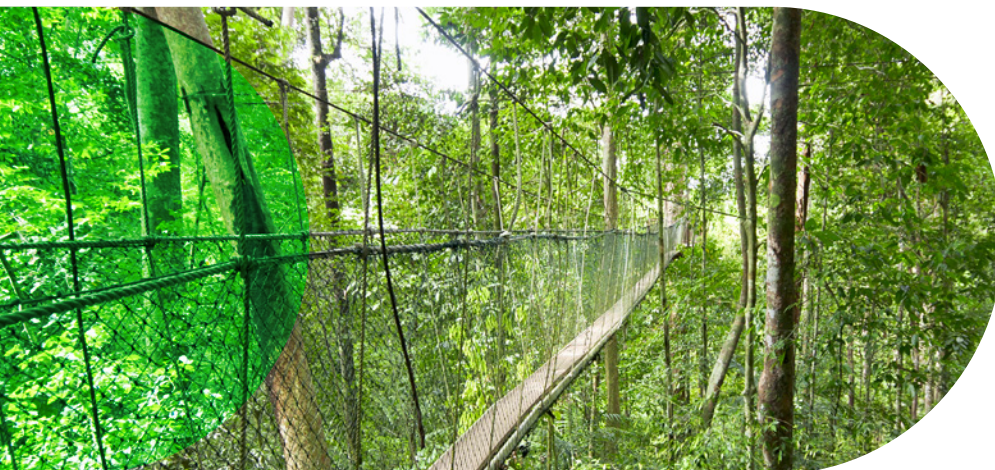
Built: TBD | **Engineer:** TBD

Threat/Opportunity:

The forests of this eco-region are now highly fragmented due to clearing for human settlement, reservoirs, various cash-crop agriculture, coffee, tea, rubber, and cardamom plantations, and forestry plantations of acacia and introduced eucalyptus. Still, because of the high endemism in these mountains, conservation of even the fragments is important. The priority conservation actions for the next decade are to: 1) integrate the remnant forest patches into a landscape-scale conservation plan for protection and necessary restoration; 2) enhance habitat connectivity for wildlife by establishing corridors between forest fragments; and 3) build conservation partnerships with local landowners and stakeholders through innovative land-use policy and incentives.

Goals:

1. Create a plan to share forests with 1.2 billion Indian citizens without degrading the ecosystem.
2. Give local people a sense of pride in their region's wealth of biodiversity, and an understanding of how its conservation is crucial to their own wellbeing, working closely with indigenous religious values that view elements of nature as sacred.
3. Build a canopy to create both local and international ecotourism and a demand for conservation in a region where biodiversity is increasingly at risk.



India - a Biodiversity “Hot Spot”

The Western Ghats are considered to be the abrupt edges of the continental plate that broke away from the Gondwanaland supercontinent. This area extends along India’s West coast and represents one of the world’s great tropical forests and biodiversity hotspots. This eco-region represents the upper montane forests along the Western Ghats mountain range, from North of Mumbai to the Wyand evergreen forests in the South.

About 90 mammal and 325 bird species are endemic to the Western Ghats, including several threatened species, and India’s large charismatic species -- especially tigers and elephants. Some of the important endemic birds in the region include the Nilgiri woodpigeon, Malabar grey hornbill, grey-headed bulbul, and the Malabar parakeet. These fruit-eating birds, or frugivores, perform the important role of spreading seeds and maintaining forest architecture. In partnership with ATREE (Ashoka Trust for Research on Ecology and the Environment), TREE Foundation collaborated to initiate canopy research in the Western Ghats almost twenty years ago; but to date, public access to these unique forests is almost nonexistent.



MISSION GREEN Global “Hot Spots”*

(Canopy Walkways and Walkway Prospect Locations)

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► PLANNING STAGE

Royal Manas National Park

Royal Manas National Park, Bhutan

Height: TBD | **Length:** TBD

Built: TBD | **Engineer:** TBD

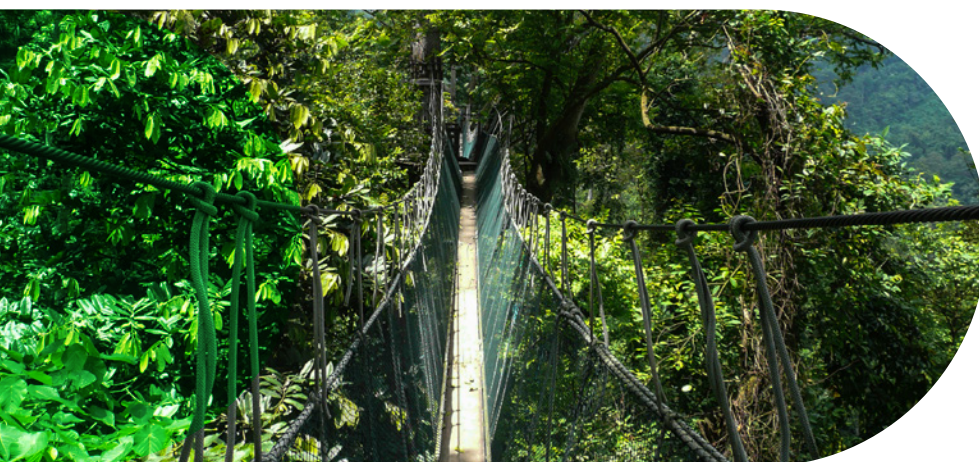
Threat/Opportunity:

The RMNP was established in 1966 by the Wangchuk Royal Family to preserve the sacred Himalayan Mountains and avoid the desecration climbers had wreaked on Mt. Everest in neighboring Nepal. The protected area is blessed with a tropical as well as subtropical ecosystem that favors the growth of a plethora of flora and fauna, and is flanked by the Assam Park to the South in India, and the Jigme Singye Wangchuk National Park to the North.

The 5-year Park Preservation Plan seeks to protect and study the rare and endangered list of fauna in the Park, ranging from the Golden Langur to the Rufous-Necked Hornbill, along with over 900 plant species. The Nature Conservation Division of Bhutan and the World Wildlife Fund have collaborated to sustain the biological balance of the Park while developing its infrastructure, conducting various surveys on local socio-economic levels and training local Park officials.

Goals:

1. Conserve a critical global hotspot for tigers, elephants and other charismatic megafauna.
2. Partner with a government and predominant culture/religion (Buddhism) that both revere nature and embrace sustainable ecotourism, setting an example for future walkways in underdeveloped countries.
3. Create opportunities for scientists to do research in an unexplored canopy with enormous biodiversity.



Bhutan - a Biodiversity “Hot Spot”

The Park has an area of 408 square miles and is known for its rare and endangered endemic wildlife such as the Assam roofed turtle, hispid hare, golden langur, and pygmy hog. Manas is also famous for its population of wild water buffalo. The 5,000 known species of plants include 46 rhododendrons and 600 orchids. Bhutan also has many hot-water springs, which have medicinal properties to cure diseases.

In Bhutan, 70% of the land is covered by forest representing the three principal zones: tropical, temperate, and alpine. Bhutan is also one of the few biodiversity hot spots in the world where forest coverage has actually increased – now comprising above 72% of the country’s total area.



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► PLANNING STAGE

Baiyer River Rainforest Reserve

Baiyer River Rainforest Reserve, Papua, New Guinea

Height: TBD | **Length:** TBD

Built: TBD | **Engineer:** TBD

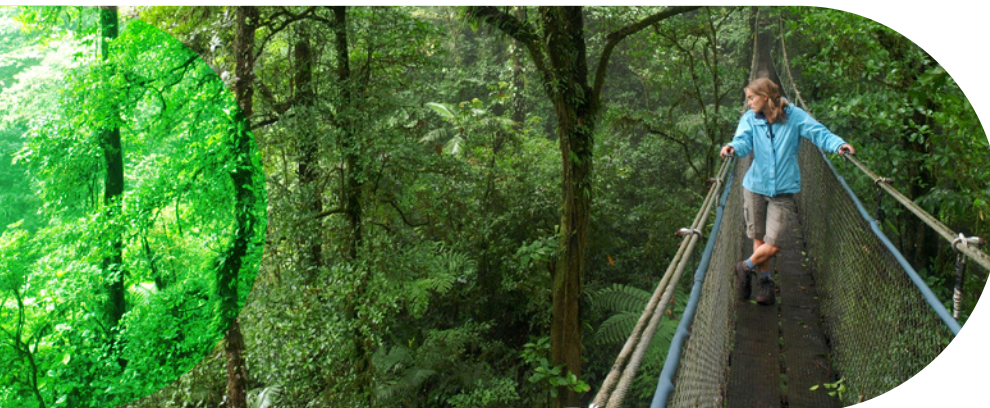
Threat/Opportunity:

The Baiyer River Sanctuary opened in 1968 and covers 2.9 square miles of the island of Papua, New Guinea. The island has lost a substantial portion of its rain forest due to wildfires, settlement, and conversion to oil palm farms. The sanctuary was established to protect endangered wildlife species and encourage breeding while in captivity.

Approximately 11,200 square miles of New Guinea rainforest (about 15% of the total) are currently degraded, with a similar number lost since 1972 (when forests were first accurately mapped). The forest is currently shrinking 1.4% per year, and significant tracts of accessible forests have been degraded as a result of the mining, timber, oil, natural gas, and fisheries industries, the production of palm oil, coffee, cocoa, coconut, tea and vanilla, and the rapidly expanding human population.

Goals:

1. Figure out how to work in a country where crime and corruption are rampant, but the forest may hold the solution to creating alternative, sound economic opportunities through ecotourism and scientific exploration.
2. Build a walkway to inspire canopy research in a forest that is almost entirely unexplored, enlisting the aid of local government/people/industry.
3. Save, discover and share PNG's biodiversity with the world, to create a steady stream of ecotourism as an alternative to environmental destruction.



Papua, New Guinea - a Biodiversity “Hot Spot”

The Baiyer River Sanctuary is a nature reserve along the Baiyer River in the Western Highlands Province of Papua, New Guinea. New Guinea is the second-largest island in the world (after Australia), and is home to the world’s third-largest rainforest (after the Amazon and the Congo). Forests cover 71% of the New Guinea landmass: 80% of those forests are rainforests, the remaining 20% are a combination of dry evergreen forest, swamp forest, and mangroves. Scientists estimate that Papua, New Guinea is home to over 20,000 species of animals and plants – half of which are yet to be scientifically named, and half of which are unique to the island.



MISSION GREEN Global “Hot Spots”*

(Canopy Walkways and Walkway Prospect Locations)

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THE MOORE METHOD

Meet the Woman Who Wants to Save Florida

Elizabeth Moore has decided to use her wealth to keep the planet healthy—starting with her 1,143-acre Triangle Ranch in Myakka.

By [Isaac Eger](#) • September 20, 2021 • Published in the [September-October 2021](#) issue of *Sarasota Magazine*

The very same afternoon that billionaire Amazon CEO Jeff Bezos shot himself into space, Elizabeth Moore was down here on earth checking in on her 165 head of cattle at [Triangle Ranch in Myakka](#). Moore is a wealthy woman. She doesn't have Bezos money, but she could probably play around with rockets or invest in experimental technologies that are supposed to make you live forever. Instead, she's decided to use her wealth to keep the planet healthy, and she's emerged in a

few short years to become one of Sarasota's most significant philanthropic conservationists.

I met Moore earlier this year when a friend invited me to have a drink at Waterworks, a swanky private social club in an old brick building on 10th Street just north of downtown Sarasota. Moore was sitting in one of the lounge areas, chatting with some people. My friend, who works in the environmental field and is a big outdoorsperson, pointed her out and told me she'd purchased a place called Triangle Ranch—not to develop into subdivisions like so many other land-hungry developers in Sarasota have been doing with alarming frequency [as of late](#)—but to prevent that from happening.

Triangle Ranch is a 1,143-acre slice of natural Florida where three miles of the Myakka River coil through its wetlands and under hammocks of oak and palm. The land it sits on has immense environmental value. Not only does the ranch protect the quality of water and life around the Myakka River, but these undeveloped acres also maintain the integrity of an entire wetland system. The Florida peninsula is a big spigot that empties into the Everglades. Triangle Ranch is a small but vital part of that whole and the connecting piece between the Myakka River and Tatum Sawgrass marsh, the most vulnerable of the four depression marshes of the Myakka River valley. Its undeveloped acres keep the Myakka flowing the way nature intended, protecting water quality and land for humans and 120 species of wildlife, including threatened species like the crested caracara, the gopher tortoise and the indigo snake.

At Waterworks, I introduced myself to Moore. She's athletic (I found out later she's an avid tennis player), with long blond hair and a quick smile. She wasn't at all annoyed that I'd interrupted her conversation. In fact, she was friendly and eager to talk about Triangle Ranch. "Come and see it for yourself," she said, and she invited me to one of her "Marsh Madness" events at the ranch that weekend.

The ranch is out there. From U.S. 41, I drove about 20 miles to the end of Fruitville Road and hung a right on Myakka Road and drove a few miles farther. Only an inconspicuous gate off Clay Gully Road showed me where to turn, since no sign proclaiming Triangle Ranch says that you've arrived. I passed a barn and went over a loud metal bridge with no guardrails that crossed the Myakka River. A long dirt road wound through pastures where cows behind barbed wire eyed me suspiciously.



Environmental leaders gather under a chickee hut for Moore's Marsh Madness event.

IMAGE: GARETH ROCKLIFE

Eventually I saw an old home and a group of 20 people gathered around a chickee hut, where an extravagant buffet of oysters and [mullet](#)—all sustainable—was spread out. The guests were longtime local environmentalists: former New College instructor, author and activist Jono Miller; John Lambie of The Florida House; and David Tomasko, the executive director of the Sarasota Bay Estuary Program. These people rarely meet up as a group, and that was the point. "Marsh Madness" is an event meant to bring them together, sort of like a river camp think tank.

As we downed oysters, Moore stood up. "Thank you all for coming," she began. "We all know water is life, and all the water that feeds into the coast starts right here." She talked about the importance of protecting upland water quality and how everything we do out east impacts the health of the Gulf coast. She then, without notes, named every single person, first and last name, and the ways in which each individual standing in her back yard was working to save Sarasota's nature.

What Moore is doing is unique—and even more impressive when you consider she's only been at it for the past seven years. For all of Sarasota's significant philanthropy—and it is significant—only a handful of individuals, people like the late Mary and Allen Jelks, who have a local preserve named in their honor, have focused on preserving Sarasota's natural systems. Donors give to important environmental causes, but they aren't purchasing large plots of land for watershed protection—especially land that they will personally manage as a nonprofit conservation area and as a for-profit working ranch. That's why Jon Thaxton calls Moore a unicorn.

"None of us knew what to think when we first met Elizabeth," says the former Sarasota County commissioner, now senior vice president for community investment at Gulf Coast Community Foundation. "She comes out of nowhere, didn't know much about this natural environment, the cultural history or watershed preservation. This might get me in trouble for saying it, but in terms of outright philanthropy, we have very few people who have the capacity or interest to invest large donor contributions to environmental efforts. That's why I call her a unicorn."





Part of the land is a working cattle ranch.

IMAGE: EVERETT DENNISON

Moore didn't move to Sarasota to save it. Born in Syracuse, New York, and raised on the North Shore of Massachusetts, Moore went to a liberal arts school in Ohio and then earned a master's degree in international affairs from American University. She first visited Sarasota in the late 1960s because her grandparents had a house on Longboat Key, but it wasn't until 2007 that she and her now ex-husband, Stuart Moore, packed up their five kids and headed south.

Her husband, one of the co-founders of Sapiient Corp, an Internet services consultancy, had retired just a year earlier. He had been enormously successful. A Forbes article estimated his net worth in 2000 at "well past \$1 billion." Stuart might not have remained on the billionaire list in the years after that, but when Sapiient was sold in 2014, he, as a shareholder, made \$259 million, according to another Forbes article.

"We decided that we would just spend a year in Florida," Moore says about that time. "The kids were already familiar with IMG Academy, and they'd attended Saint Stephens [Episcopal School]. But in just a couple of months, we decided to look for a house for a more permanent move, we loved it so much."

By 2014, Moore found herself divorced. She had another passion, though—the environment.





Moore with one of her calves

IMAGE: EVERETT DENNISON

She inherited her interest in conservation from her family. “My family were supporters of the National Audubon Society, and I remember hearing them curse politicians who had anti-environmental policies,” she says. Moore describes an idyllic childhood growing up outside. “The woods were such a magical place when I was a kid. Running in and out of the willow trees, birds and butterflies, picking blueberries and blowing dandelions. I used to lie down on the grass and just listen to the songbirds.”

Moore and her ex-husband had been deeply involved in philanthropy in Massachusetts, giving to the Boys & Girls Clubs of Boston, the arts, museums and education. But perhaps more than anything, Moore was influenced by the culture of conservation philanthropy from Massachusetts. “There’s a whole history of saving land in Massachusetts,” she says. “From The Trust for Public Land to green belts to the Manchester Essex Conservation Trust.” In 2004, the Moores and two other families bought rugged, uninhabited House Island off the coast of Massachusetts’ North Shore and donated it to Audubon.

Now a resident of Sarasota, Moore has transferred much of her attention to Florida’s environment. In the past seven years, she’s donated millions to local nonprofits and sits on multiple local boards.

[Meg Lowman](#), the co-founder and executive director of the TREE Foundation, a nonprofit that focuses on tree research and education, where Moore is currently president, says that working with Moore is unlike most experiences she’s had with philanthropists.

“She’s not an armchair conservationist,” Lowman says. “She doesn’t just send money to a government or organization; she wants to get her boots muddy and be involved with innovative and creative solutions.” Lowman also spoke of Moore’s capacity for listening. “She absorbs information from experts. I’m a scientist, and she would always listen and ask questions. In my experience, she’s a breath of fresh air.”

But Moore’s purchase of Triangle Ranch might be her most significant work yet—both to her and Sarasota.



Triangle Ranch protects the quality and flow of water around the Myakka River.

IMAGE: RYAN GAMMA COURTESY OF JOSH WYNNE CONSTRUCTION

Triangle Ranch had been owned by Tony and Lela Carlton, who were finally ready to retire after decades of farming and ranching. Tony was part of the Carlton clan, a ranching family in Sarasota for more than 100 years. The couple had the ranch on the market for three years, and developers were circling. But Tony and Lela cherished the country life and didn't want to see the place get chopped up like so many other ranches in the middle of Florida. "I hate to see this country turn into subdivisions," Tony Carlton told the Bradenton Herald back in 2016.

The Conservation Foundation of the Gulf Coast, a nonprofit that works to protect local land and water, often by buying key parcels, knew just how vital the ranch was to the ecological system. The foundation had been working with the Carltons since 2013 to negotiate a purchase price and put together funders.

"The Carltons gave us the gift of time," says Christine Johnson, president of the foundation. The foundation was also talking to private donors and the Southwest Florida Water Management District (SWFWMD) about buying the land for conservation. But they hadn't been able to reach the \$5.5 million figure the Carltons wanted. Then Mickey Davis, a board member of the Conservation Foundation, brought Elizabeth Moore to the table in 2014. Moore looked around and saw how complicated any transaction would be if individual donors, a foundation and a state agency needed to find money and agree on how best to purchase the land.

"Before I went out to the ranch in 2014, I didn't even know where Myakka was," says Moore. "I mostly just went up and down U.S. 41. But when I first saw it, it was just so beautiful. I knew I had to keep it the way it was. So I wrote a check for \$3 million."



The restored Cracker cottage

IMAGE: RYAN GAMMA COURTESY OF JOSH WYNNE CONSTRUCTION

SWFWMD agreed to pay \$2 million out of the Florida Forever fund, and the foundation raised the remaining \$550,000 from The William G. and Marie Selby Foundation, and The Morton and Spapperi Family Foundation. The deal was finalized in 2016, and Moore became the new owner of Triangle Ranch.

The purchase requires that 1,105 acres out of the 1,143 total acres remain a conservation easement. Legally, no future owner of the land may negatively affect the conservation requirements written into the easement. No mining of resources, no selling of trees, no digging of dikes or building of structures. The easement allows that Moore can responsibly utilize the property with either cattle ranching, agri-business and eco-tourism on 37 acres. She was also allowed to put residential buildings on those acres. That's where Moore built her "Cracker village."

Moore became captivated by Florida Cracker culture after reading *A Land Remembered* by Patrick D. Smith. “The book inspired me,” she says. “I had a vision in my head: a whole Florida Cracker culture architecture that recreates a little Florida Cracker experience.”



The second-floor bedroom overlooks the Myakka River.

IMAGE: RYAN GAMMA COURTESY OF JOSH WYNNE CONSTRUCTION

Her Cracker village consists of two new cabins and a two-bedroom 1936 Cracker home of pecky cypress that used to sit on Siesta Key, where it was set to be demolished and replaced by a waterfront mansion. Moore bought the house (called Little Siesta), hired a specialized moving company to cut it into three pieces, got permission from three different local governments, hired a police escort and moved it to Triangle Ranch in the dead of night.

She restored the pecky cypress exterior and interior using Josh Wynne Construction and kept the footprint of the home the same. “I love my bedroom most,” she says. The master bedroom takes up the whole of the second story, with windows on all sides. Outside the bedroom is a second porch that overlooks the Myakka River and the birds and wildlife that visit the land. Moore has a penthouse condo in downtown Sarasota, but she spends many of her nights out on the ranch in that house when she's in Florida.

Moore hired Jerry Sparkman of Sweet Sparkman Architecture and Interiors and Josh Wynne Construction to build two 12-by-12-foot cottages on the property. The cottages are decorated in period style--complete with antique chamber pots at the foot of the beds. Fortunately, she's also built bathrooms equipped with fancy Toto toilets that have bidets, seat warmers and deodorizers. Moore rents out the main house and cabins for weddings and group events through Airbnb. Guests can enjoy ranch-raised beef, local vegetables, wine, electric bikes, kayaks and more.

Jason McKendree, Triangle's land manager and rancher, lives in a farmhouse at the ranch with his wife Lee Ann and two sons. McKendree once managed more than 30,000 acres of land at Schroeder-Manatee Ranch (SMR), the parent company of Lakewood Ranch. “I went from being a corporate cowboy to a kayak cowboy,” he says. Instead of wearing cowboy boots and jeans, he had on crocs and roomy shorts. “You want to wear something you can get wet,” he says.

McKendree drives through the property every day, checking up on the cows and making sure they're doing fine. Two calves were missing a front leg from a troublesome alligator.

“We're gonna get him,” he says. Noisy sandhill cranes are everywhere.

Managing the water and protecting the health of the river is the other part of his job. The ranch is a bathtub, he explains: “It gets so wet so fast—80 percent of all you see will be covered with water in the rainy season. But then the water disappears like you pulled a plug out of the tub.”





Jason McKendree herds a calf

IMAGE: GARETH ROCKLIFE

The ranch breaks even after selling cattle and gator tags, and Moore watches over everything, making sure nothing is wasted. “She’ll see an old two-foot board and ask me to find a way to reuse it,” McKendree says. “She’s no BS. She understands.”

Moore is direct—in a nice way. “My nature is to be very activist, social,” she says. “I don’t want to be used just for my money. I don’t want to micromanage by any means, either. [It’s] this balance between giving and somewhat controlling it. Give it and guide it. I want my money to be well stewarded by others. I’m not a scientist. I’m not a builder. But I want to guide it. If I’m going to give them money, they better spend it well.”

Moore is part of a rare breed of philanthropists interested in conservation, acknowledges Johnson of the Conservation Foundation.

“We need more Elizabeth Moores,” Thaxton says. “We are the last generation of human beings in Sarasota to have a conscious decision of whether we preserve a natural landscape or we destroy it. People like Elizabeth have demonstrated that it is possible to save these places and demonstrate commercial viability, food production alongside clean water and air and protecting endangered species habitat.”

Moore is still learning the ropes out at Triangle—she kayaks among the alligators and is riding a horse on a cattle drive across the state soon—and she hopes to find more people like her as board members to preserve natural Florida. “It’s a race against time,” she says. “There’s a lot of joy out of saving land. Just knowing that the land is going to be saved in perpetuity for wildlife—and humans. We share this earth with so many other creatures, it’s critical to our own survival to ensure we save these places.”

I thought about billionaires Bezos, Richard Branson and Elon Musk, who are living out childhood fantasies of star trekking, believing that they are saving humanity by leaving us behind. Elizabeth Moore is staying down here with the rest of us.

“I never thought I’d own a cow,” she laughs.

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The Arbornaut – A Life Discovering the Eighth Continent in the Trees Above Us



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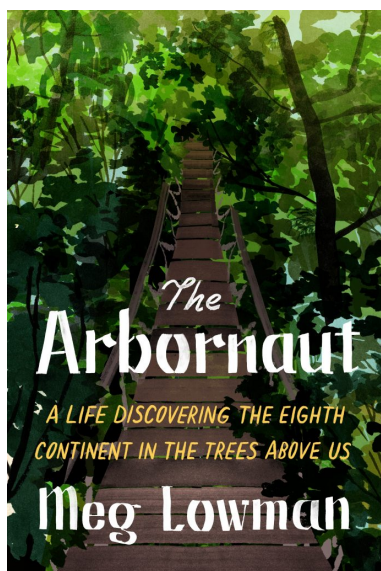


Author, conservation biologist and explorer **Meg Lowman** is one of the world's first arbornauts. Whereas astronauts explore outer space, arbornauts make discoveries in the tops of trees. Lowman takes us on a global journey into forest canopies, tracing her geek-childhood as a nature nut into adulthood where she works tirelessly to conserve some of the world's most biodiverse, yet endangered, forests. Formerly the Chief of Science and Sustainability for the California Academy of Science and the Director of the Nature Research Center, North Carolina, Canopy Meg (as kids affectionately call her) is the Director of the TREE Foundation (<http://www.treefoundation.org>), heading up her newest program, Mission Green, to build canopy walkways that will hire indigenous people for ecotourism, an action that in turn will conserve their high-biodiversity forests through economic sustainability.

Meg Lowman

In this excerpt from her brand new book *The Arbornaut: A Life Discovering the Eighth Continent in the Trees Above Us* (<https://bookshop.org/books/the-arbornaut-a-life-discovering-the-eighth-continent-in-the-trees-above-us/9780374162696?aid=6693&listref=books-featured-on-bioneers-org>) (<https://bookshop.org/books/the-arbornaut-a-life-discovering-the-eighth-continent-in-the-trees-above-us/9780374162696?aid=6693&listref=books-featured-on-bioneers-org>) (2021), Meg writes about exploring the water bears often overhead in the canopy and developing access to the outdoors for mobility-limited students.

The following excerpt is from Meg Lowman's "The Arbornaut: A Life Discovering the Eighth Continent in the Trees Above Us" (Macmillan Publishers, 2021) and is reprinted with permission from the publisher.



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The question I hear more often than any other from elementary schoolkids: “What is the most common species living in the canopy?” Unfortunately, there are not yet enough arbornauts to have figured the correct answer. But if I were to wager a guess, my response would be tardigrades, commonly called water bears or moss piglets. “Tardi-what?” most people ask. This relatively unknown phylum, Tardigrada, literally means “slow walker.” These sluggish microscopic creatures don’t really walk at all, but essentially float in a water droplet. They thrive in almost any moist substrate, fresh and saltwater, so they can thrive in dry deserts with occasional downpours, moist tropical forests, and even the extremes of hot springs or Antarctica’s icy cliffs. Any moist bit of moss, lichen, bark, or leaf surface provides the required film of water to coat their tiny cylindrical bodies plus four pairs of telescoping legs with claws or adhesive disks. And if their watery habitat evaporates, they transform into a dormant state to await rainfall, sometimes for decades, or they drift in the air above the treetops to a new location, seeking moisture. Neither drought nor flood nor extreme temperatures will kill them. About 0.2 to 0.5 millimeter in length (the size of a particle of dust), they dominate their Lilliputian kingdoms of soil, leaves, and water droplet along with other small creatures such as nematodes, collembola, rotifers, and mites. It sounds like a science-fiction invasion – billions of miniature bearlike creatures crawling across our suburban lawns and shrubbery while we sleep.

As a scientist, as an explorer – or really as any ordinary person living in this world – you never know what will bring you to your next discovery. Tardigrades came into my life because I was determined to provide opportunities in field biology for underserved youth. I have passionately pursued inclusivity in science for many decades, probably because I did not always feel welcome into my profession by the white-male network that dominated it.... I’ve made it part of my mission to take every opportunity to work with minorities in science – teaching girls from economically challenged families to climb trees at a summer camp, training female arbornauts donned in traditional garb in the jungles of India, hiring qualified candidates from minority backgrounds throughout every leadership position, sponsoring girls and boys from underserved communities for scholarships and research opportunities, and advising large numbers of minority students at the universities where I taught.

One group continually overlooked in field biology is mobility-limited students. Nearly 25 percent of Americans live with a disability, yet they comprise only 9 percent of the scientific workforce and 7 percent of PhDs in science, according to a 2019 report in Science magazine. What better way for them to become excited about field biology than discovering a new species? It is unlikely to find that new species of birds or beetles exist in temperate trees because those larger creatures have already been documented, but what about water bears? ...

So that was how I ended up partnering with Randy Miller (aka Dr. Water Bear), a tardigrade taxonomist who himself has mobility limitations. With a combination of my canopy skills plus his water bear expertise, we made a great team. Those are the unexpected and circuitous pathways by which collaborations in field biology are born. We never overlapped at a conference because our disciplines are so different, but we knew of each other's expertise and reputation, which formed the basis of a trust partnership. ...

Our students addressed questions new to science: What is the density of water bears in different canopies? Are there hundreds per tree, or millions? Of the same species, or different? Over five summers, we collected 28,234 samples representing 37 species from 58 forests in 4 states, ranging from zero to 4,500 feet in elevation and from zero to 200-foot-high trees. Our students climbed 492 crowns and discovered 8 new species, plus set 26 new distribution records. What was especially amazing (called an "OH WOW factor" in field biology) is that 80 percent of every sample of lichen, moss, bark, or foliage collected contained at least one water bear! And it is likely the other 20 percent also had a water bear, but our microscopic techniques were not so exacting with amateur eyes.

A star student named Rebecca who was shy and reminded me of myself, later accompanied me to the Amazon jungles, where she undertook research in tropical trees. Loading and unlading her wheelchair from small dugout canoes was not easy, but the trip fulfilled a lifelong dream for her to experience the Amazonian rain forests – and she is now a seasoned arbornaut! Not bad for a reticent young lady with limited mobility working alongside her treetop supervisor, who still sometimes acts like a wallflower, even in adulthood.

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Four books on why protecting trees is a matter of survival — ours and the planet's

EMILY DONALDSON

SPECIAL TO THE GLOBE AND MAIL

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The study of trees requires a temperament that's comfortable skewing toward the long game, which is perhaps why three of the following recently published or forthcoming books are also memoirs. Identifying arboreal patterns can take a lifetime – a tree's or a human's (which are sometimes of similar duration). But as the world's forests increasingly become front lines in the battle over climate change – and the west burns and towns are literally bursting into flames – protecting trees has taken on global urgency. None of these authors entered their field with the intention of becoming an activist, but each has been forced to jump into the fray in some way.

Even a decade ago, the notion that trees communicate with each other would have struck many as a fringe, if not completely crackpot idea. That it's now well established is thanks in no small part to Suzanne Simard, who can draw a straight line from the observations she made about the forests near her childhood home in British Columbia to the experiments she conducted as a professor of forest ecology. Those showed that trees of different species share resources, and even warn one another, through a subterranean “wood wide web” of fungi.

Simard, who comes from an impressively long line of loggers, got her first jobs in silviculture in the early 1980s, one of her first assignments being to determine why replanted clear-cuts were faring so poorly. Her discovery – that commercially valuable pine performs better when grown alongside native species such as birch – landed like a lead balloon with her bosses, who

had gone all in on their belief that herbicides were necessary to give money crops the room they needed to thrive. That she was a woman critiquing the entrenched methods of a predominantly male industry didn't help her cause either. Like so many who find irrefutable evidence only to have it ignored, she eventually became disillusioned and left for academia, a move that led, indirectly, to the implosion of her marriage.



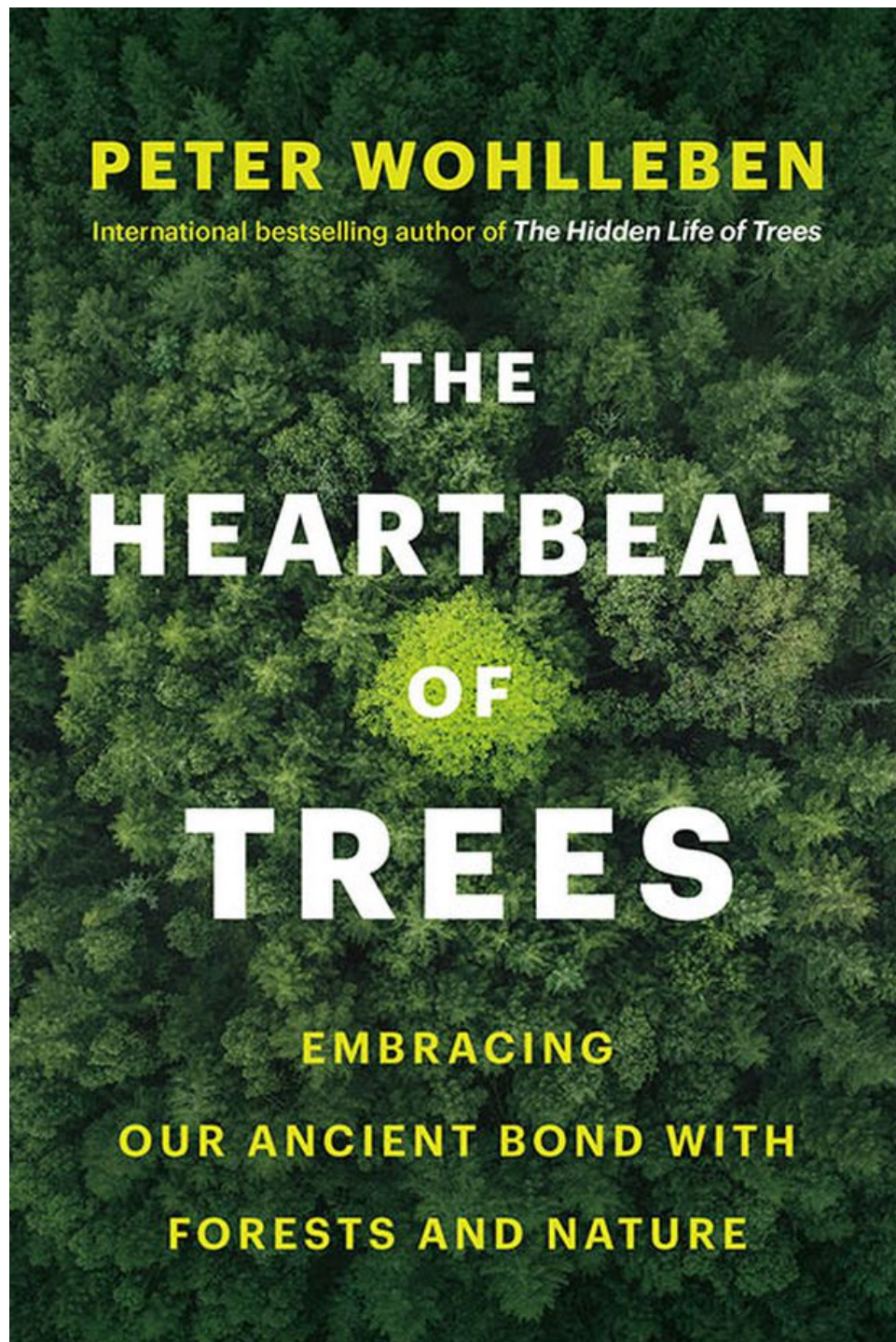
FINDING THE MOTHER TREE

Discovering the
Wisdom of the Forest

SUZANNE SIMARD

HANDOUT

***Finding the Mother Tree* (Allen Lane, 368 pages)** artfully unspools what Simard herself sees as the uncanny interweaving of her personal and professional lives. A falling out with her beloved bull-riding brother went unresolved before tragedy struck. Later, there was a cancer diagnosis, possibly related to the pesticides and radiation she handled in the field. Readers will no doubt see a poignant parallel between Simard and the so-called mother trees that have been the focus of her recent work on forest regeneration: matriarchs whose role is to pass on wisdom to their offspring before they die (though Simard, to be clear, is still relatively young and vigorous). The book doesn't shy away from hard science, and those who come to it ready to learn a little ecology will find themselves richly rewarded.





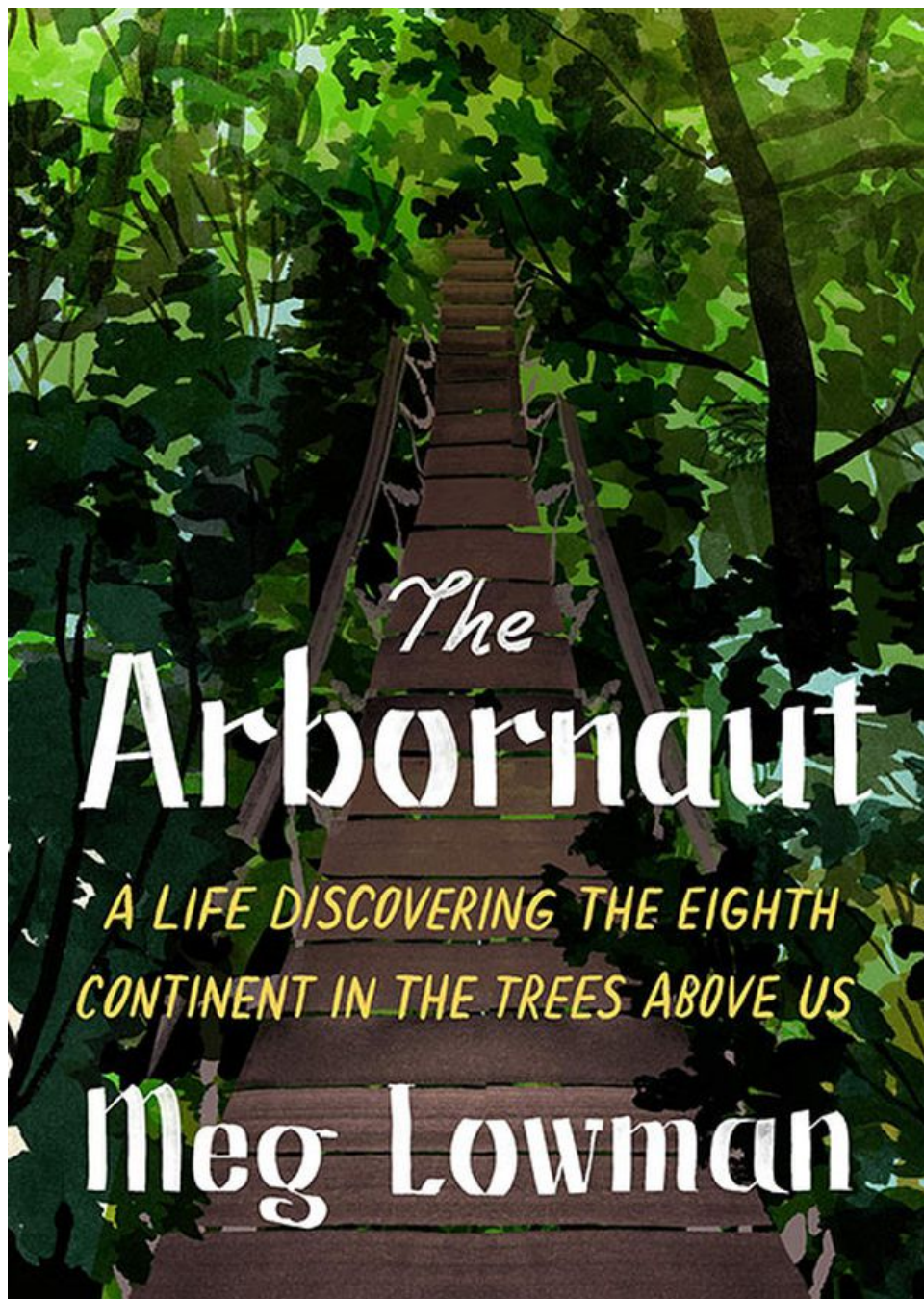
HANDOUT

As a rare tree book to sell in the millions, Peter Wohlleben's *The Hidden Life of Trees* (2015) became a phenomenon. With success, though, came criticism. While the German forester often says similar-sounding things about tree sentience as experts such as Simard, or Diana Beresford-Kroeger, some view his relationship with science as less fully committed and more friends-with-benefits. (In *The New Yorker*, Simard recently confessed she found his anthropomorphizing “over the top.”) Sensitive, clearly, to such critiques, Wohlleben points to his rationalist bona fides early on in this follow-up volume, ***The Heartbeat of Trees* (Greystone, 264 pages)**, noting that, as a child, he consciously eschewed church for science. And yet the title essay could be taken as a doubling down, asking, as it does, whether trees can be said to have heartbeats (not really), and whether they can feel our hugs (the answer, basically, is no, but the query does allow Wohlleben – future Scripps Spelling Bee participants take note – to work in the term “thigmomorphogenesis”).

The book reads as a kind of sampler, its brief chapters exploring, in the author's relentlessly earnest tone, tree-related topics including forest-bathing therapy, the medicinal value of plants, how the destruction of old-growth forests fuels climate change, and Wohlleben's visit with B.C.'s Kwakwaka'wakw First Nation, who contacted him about their struggles with the logging industry in their traditional territory. Some will find the limbs he goes out on a little long. The contention that dogs' sense of smell might not really be that much better than humans', say, or that walking in forests at night heightens the senses (in Ontario, that sense being the insatiable itch from a thousand mosquito bites). But it's hard to dispute the book's overall message; namely, that time spent in nature can serve as both a balm for anxiety and a bulwark against despair.

As an undergraduate biologist in the early 1970s, Meg Lowman spent most of her time at ground level, measuring trees with a dendrometre in Massachusetts' temperate forests. When she moved to Australia to do her graduate work on that country's rainforest, however, her adviser told her that to get the data she wanted she'd need to go up. Way up. Thus goes the origin story of Canopy Meg, who fashioned herself one of the world's first “arbornauts” when she jury-rigged a harness and, using a homemade slingshot, hoisted herself into a place she would come to call the “eighth continent” – a world of mind-blowing din, brimming with insect and bird activity completely different from that below.



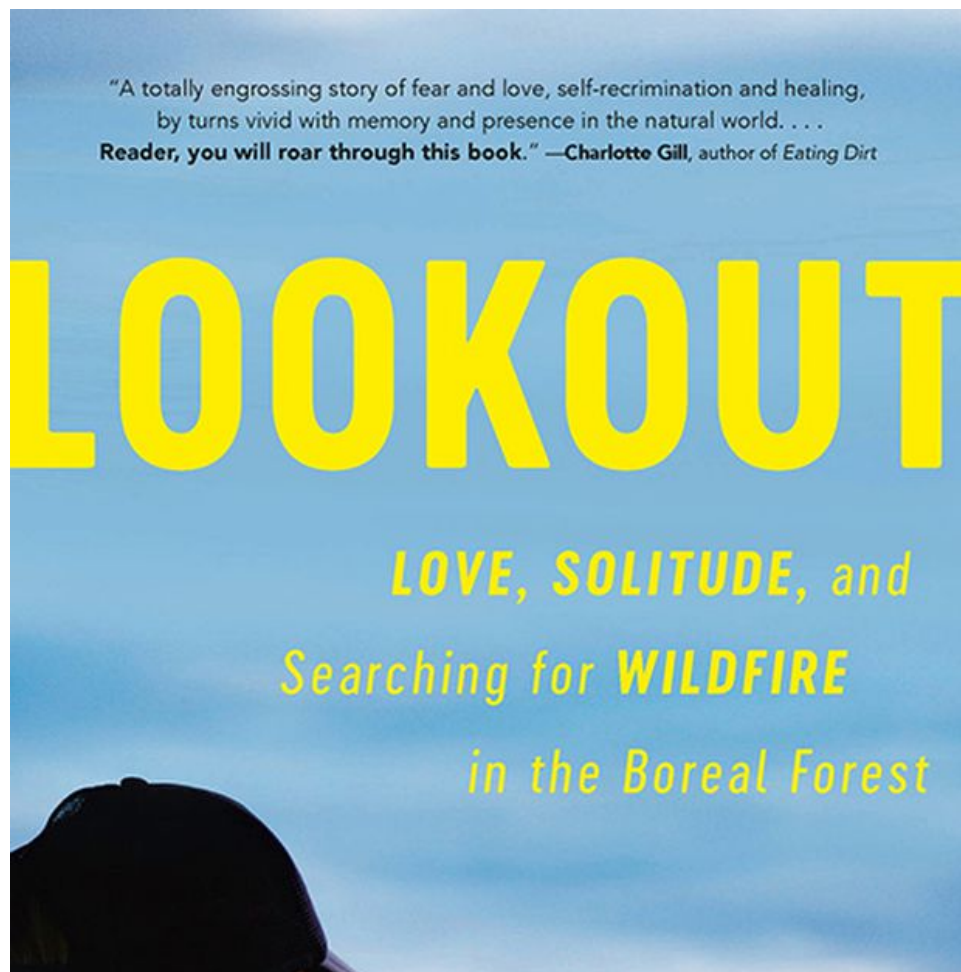


HANDOUT

In *The Arbornaut* (Farrar, Straus and Giroux, 368 pages), Lowman details a career that embodies the word “trail-blazing,” both in terms of the science (when she started out, only spelunkers and sea divers had experience relevant to hers), and gender-wise, in her breaking of what she class “the glass canopy.” Frequently the sole female in her various pursuits, Lowman endured, seemingly, even more sexism than Simard (not to mention the gropings of a creepy taxidermist and an attempted assault), 1980s Australia not being known as a feminist Xanadu. And it wasn’t just men. After she and her sheep-farmer husband had children, Lowman’s mother-in-law (from whom she hid her copies of *Ecology* inside *Woman’s Weekly*) echoed her academic colleagues by insisting that mother and professor were

mutually exclusive roles. The marriage, like Simard's, eventually fell apart under the weight of these tensions, but it wasn't until one of her boys told her that girls couldn't be doctors that she decided she needed to bring them with her to the United States. From start to finish, the word that best describes *The Arbornaut* (forthcoming in August) is "spirited": Lowman, who built North America's first canopy walkways, partly to educate the public about the importance of forest preservation, is as unafraid of heights as she is of exclamation marks. She's earned each one.

In her job as a lookout observer, Trina Moyles works a few elevator stops up from Lowman, in the cramped steel cupola of a fire tower 100 feet above Canada's vast boreal forest. Moyles applied for the work when her life hit an impasse. She'd spent much of her 20s doing international development work, partly in Uganda, where she'd gotten engaged to a local man but reluctantly broken things off when the reality of a long sponsorship process sunk in. Despite growing up the daughter of a wildlife biologist in Peace River, Alta., nothing in Moyles's past prepared her for the reality of living alone for months in a modest cabin, inaccessible by road, with only her rescue dog and the odd crew of on-call firefighters for company. Her daily interactions with neighbouring lookouts through radio and text became a lifeline.





HANDOUT

In her engrossing – at times raw – memoir, Moyles elegantly unfurls an unanticipated personal evolution: After the humiliation of early false alarms that send crews scrambling unnecessarily, she slowly gains confidence in her smoke-spotting ability and, after alternating bouts of exhilaration and depression, comes to embrace her solitude. She surprises herself by returning to the job the next year, then again the one after. ***Lookout* (Random House Canada, 328 pages)** can feel novelistic in its combination of evocative descriptions of jaw-dropping nature and Jack London-esque touches: a lightning strike that hits the tower, a spine-chilling close encounter with a black wolf, and another with a mother grizzly that compels Moyles to grab her rifle (she used rubber slugs, the bear was fine). Most fearsome, though, are the fires themselves. Fire, Moyles notes, is as necessary to the boreal's regeneration as rain is to the Amazon, but what's happening now in dry-as-matchsticks forests is of a different order. Indeed, rarely has the term “baptism by fire” seemed so apt: In her first few days on the job, Moyles bears witness to the massive Horse River Fire south of Fort McMurray, Alta. That, before most of us learned what a “heat dome” was.

In some way, Simard, Lowman and Moyles bring to mind the so-called “Trimates” – Jane Goodall, Dian Fossey and Canadian Biruté Galdikas – three women who worked in isolation with primates in different parts of the globe, and whose passion eventually transitioned into activism (in the case of Fossey and Galdikas, with tragic results). What unites them all is their dedication to protecting the natural world from human-caused loss of habitat and diversity. What's different now, of course, is the scope of the problem, and the fact that one of the species now facing its reckoning is us.

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