

WILD NATURE INSTITUTE

2017

ANNUAL REPORT



Cover: Giraffe with young calf, Manyara Ranch, Tanzania

Inside cover: Dr. Derek Lee on the job in Tarangire National Park, Tanzania



From the Founders

In 2017, Wild Nature Institute scientists continued our long-term research and conservation of wildlife in savannas of East Africa and forests of the western U.S.A. Both regions are biologically rich but seriously threatened. We are implementing effective conservation actions that protect wild nature and the life that depends upon it.

This year, we published a scientific paper with colleagues urging forest managers to use mixed-severity fire in California to restore and maintain healthy forest function. Our snag forest video “A New Message for Smokey” was shown at the Wildlife Conservation Film Festival in New York City. We presented on a panel about the ecological importance of mixed-severity fire at the PIELC conference in Oregon. We published 3 scientific papers about our giraffe research and 1 paper modeling a threatened wildebeest migration corridor, and presented our Africa research at Pennsylvania State University, Cincinnati Zoo, Leibniz Institute in Berlin, Germany, and the Centre Nationale de la Recherche Scientifique in Lyon, France. We continued conducting our long-term giraffe demography study and implementing our giraffe-themed educational program to thousands of Tanzanian schoolchildren, and introduced our “Celebrating Africa’s Giants” project to conserve our last terrestrial mega-herbivores: giraffes, elephants, and rhinoceroses.

Learn more about our 2017 accomplishments in our four main program areas: Snag Forest Campaign, Masai Giraffe Conservation, Tarangire Ungulate Observatory (TUNGO), and Northern Plains Campaign.

We could not have accomplished our goals without your support. As always, you have our deepest thanks.

Dr. Derek E. Lee and Monica L. Bond
Founders and Principal Scientists



Snag Forest Campaign

We are studying wildfire and wildlife in California, and applying our findings to protect habitat.



Mexican Spotted Owl Nesting in Burned Snag: Photo by Quentin Hayes

Wild Nature Institute's research has revealed that intense fire usually does not cause California Spotted Owls to abandon their territories or reduce their reproduction as previously believed, and owls hunt in severely burned forests when it is available.

Problems arise for the Spotted Owl when people cut down the trees, living or dead, that owls need for nesting, roosting, and perching while hunting.

We provide scientific data to help scientists, land managers, the media, and the public to embrace the ecological value and necessity of severely burned forests. In 2017, Wild Nature Institute scientists authored:

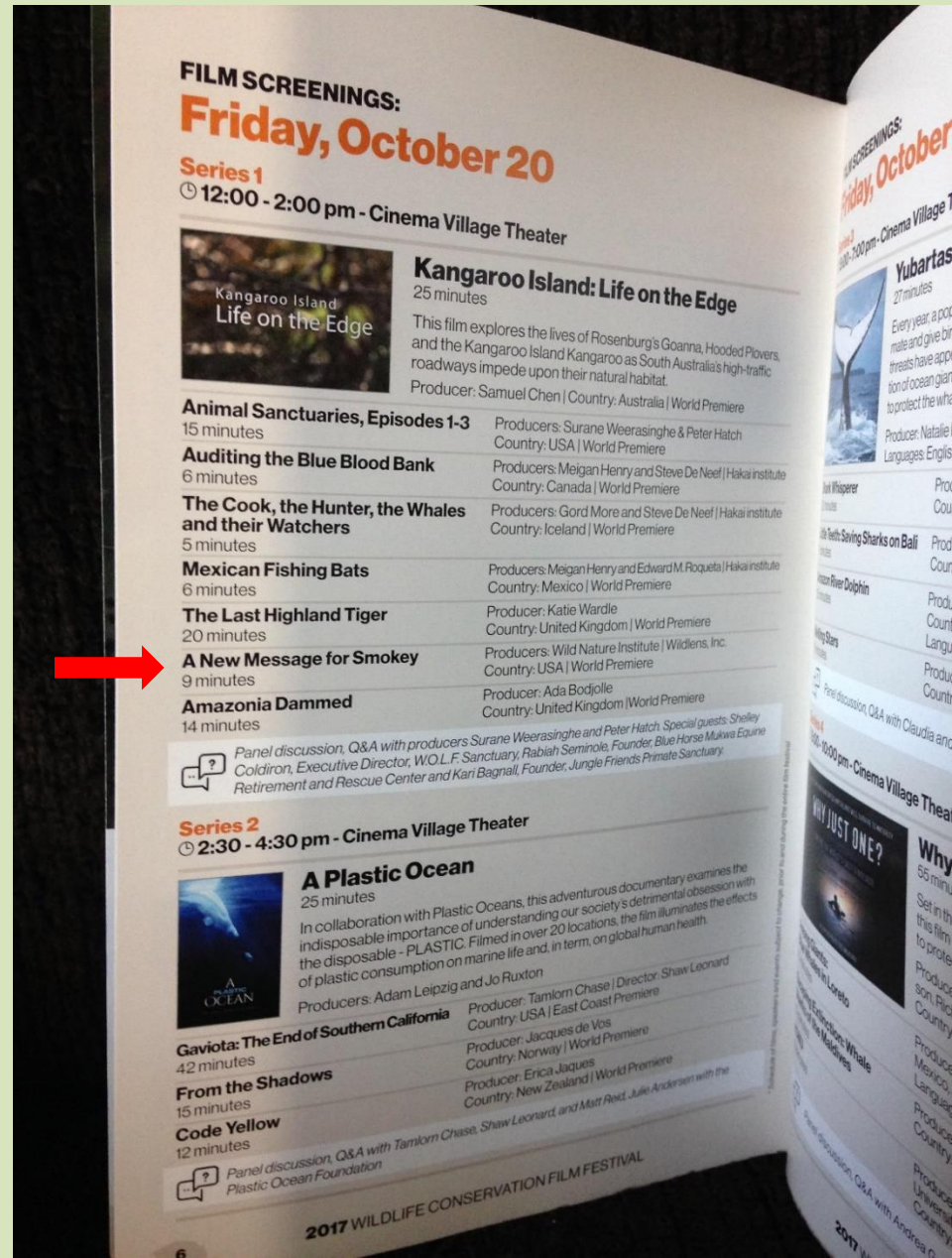
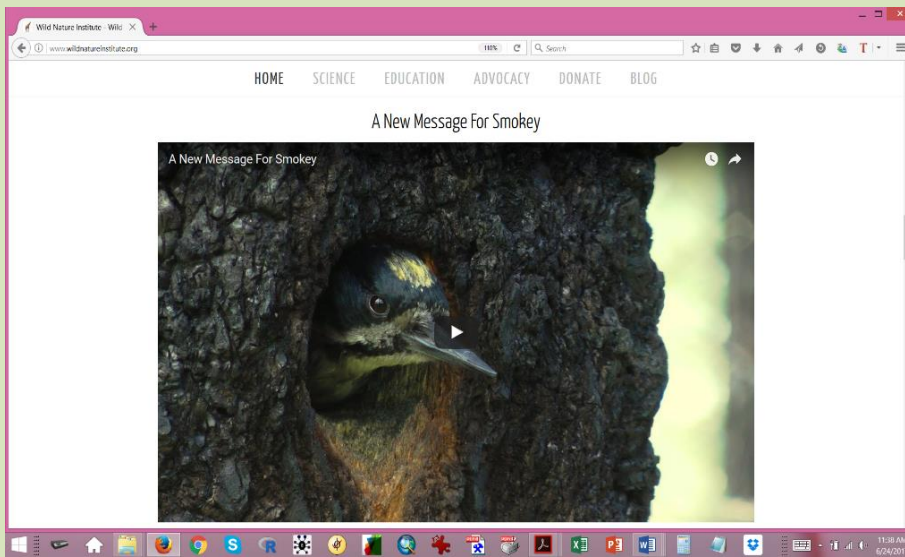


- DellaSala DD, Hutto RL, Hanson CT, Bond ML, Ingalsbee T, Odion D, Baker WL. 2017. “Accommodating mixed-severity fire to restore and maintain ecosystem integrity with a focus on the Sierra Nevada of California, USA.” *Fire Ecology* 13:148-171.
- NEPA comments in opposition to the draft EIS for the Trinity Salvage Sale which would log burned foraging habitat for Northern Spotted Owls in the Mendocino National Forest in northern California.
- An expert declaration for litigation by the Center for Biological Diversity and John Muir Project on the Sunny South logging project that would harm California Spotted Owls in the Tahoe National Forest.
- Scientific peer-review comments on the Draft USFWS Conservation Objectives Report for California Spotted Owls.

A New Message for Smokey

In 2017 we released our 9-minute video “A New Message For Smokey.” The video describes how high-severity fires create important wildlife habitat in western forests of the U.S., and explains the need to protect burned forests from harmful logging.

The video was shown at the Wildlife Conservation Film Festival in New York City in October. Many thanks to our partners and co-producers at WildLens, Inc., especially Joseph Leibrecht.



Masai Giraffe Conservation

The goal of our Masai giraffe conservation science is to understand where giraffes are doing well and where they are not, and why, and to protect and connect the places most important for giraffes.



Wild Nature Institute is conducting the world's largest individual-based study of Masai giraffes. We use pattern-recognition software to track more than 3,000 individuals in a 1,500-square kilometer area to understand births, deaths, and movements in the fragmented Tarangire Ecosystem in northern Tanzania.

This year marked six continuous years of intensively collected photographic data to recognize and monitor individual giraffes.



← We use a state-of-the-art computer program to identify each giraffe.

In 2017, we published these scientific articles about our Africa research:

- M.L. Bond, C.M. Bradley, C. Kiffner, T.A. Morrison & D.E. Lee. 2017. “A multi-method approach to delineate and validate migratory corridors.” *Landscape Ecology* 32:1705-1721.
- D.E. Lee & D.T. Bolger. 2017. “Movements and source-sink dynamics among subpopulations of giraffe.” *Population Ecology* DOI 10.1007/s10144-017-0580-7.
- F.B. Bercovitch, P.S. Berry, A. Dagg, F. Deacon, J.B. Doherty, D.E. Lee, F. Mineur, Z. Muller, R. Ogden, R. Seymour & B. Shorrocks. 2017. “How many species of giraffe are there?” *Current Biology* 27:R136-R137.
- D.E. Lee, M.L. Bond & D.T. Bolger. 2017. “Season of birth affects juvenile survival of giraffe.” *Population Ecology* 59:45-54 DOI 10.1007/s10144-017-0571-8.



Giraffe Science Summary

Agricultural development and illegal killing for meat have caused wildlife populations, including giraffes, to decline. Here is a summary of what we've discovered about giraffes in Tanzania that will help conserve these magnificent mega-herbivores in our study area and throughout Africa:

- The giraffe population in the Tarangire Ecosystem is declining, and the likely culprit is people illegally killing adult giraffes for their meat.
- The different subpopulations of giraffes in the Tarangire Ecosystem are still connected by movements of adult giraffes, including crossing busy tarmac roads and traversing through farmlands.
- Aerial surveys conducted by the Tanzanian government are undercounting giraffes, so we presented a correction factor to make population estimates more accurate.
- Migratory herds of wildebeests and zebras deflect lion predation away from giraffe calves, thus helping giraffe populations.
- Giraffe Skin Disease is associated with infertile soils, but is not causing mortality of giraffes.
- Aspects of giraffe coat spots are heritable from the mother, but do not significantly contribute to variation in juvenile survival.

Our results inform conservation and land management, and help ensure a future for giraffes.

Tarangire Ungulate Observatory

“TUNGO”

The Wild Nature Institute’s landscape-level population research program for 22 species of ungulates (hoofed mammals).



The savanna habitat of the Tarangire Ecosystem is one of the richest areas on the planet for large mammal diversity and abundance, and is a global hotspot for ungulates. The goal of TUNGO is to monitor all ungulate species in this ecosystem, and to provide the scientific means to reverse population declines.

Our TUNGO surveys provide reliable data for scientific management, land-use planning, anti-poaching enforcement, and conservation.

Northern Plains Campaign

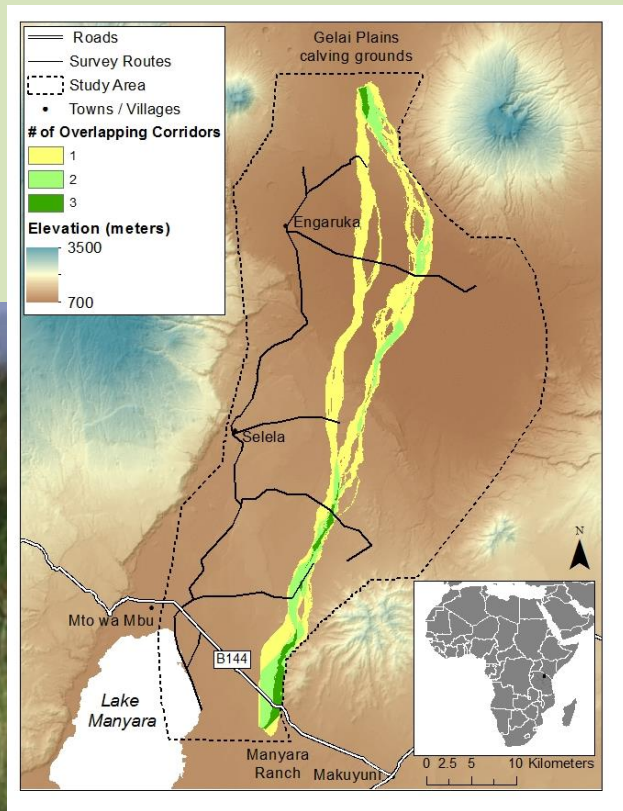
The Wild Nature Institute is putting our science into action to conserve savanna wildlife. Our Northern Plains Campaign is an integrated research, education, and advocacy initiative to catalyze community conservation of threatened wildlife in the fragmented Tarangire Ecosystem.



Illegal hunting and lack of land management in the Tarangire Ecosystem have reduced wildlife populations and eliminated eight migratory corridors for wildebeest, zebra, gazelle, eland, and oryx. Only two corridors remain and neither are protected. A timely intervention over the next few years will save Tarangire's genetically unique population of wildebeest and other savanna wildlife, and will allow Masai pastoralists to maintain their traditional lifestyles.

Northern Plains Campaign

This year we published a study in the scientific journal *Landscape Ecology* describing the threatened long-distance Northern Plains wildebeest migration route.



The sustainability of the Tarangire wildebeest population is important to the ecological function and economic value of Tarangire National Park. We used machine learning and connectivity algorithms to delineate a previously undefined migratory corridor in order to save this vanishing natural phenomenon.

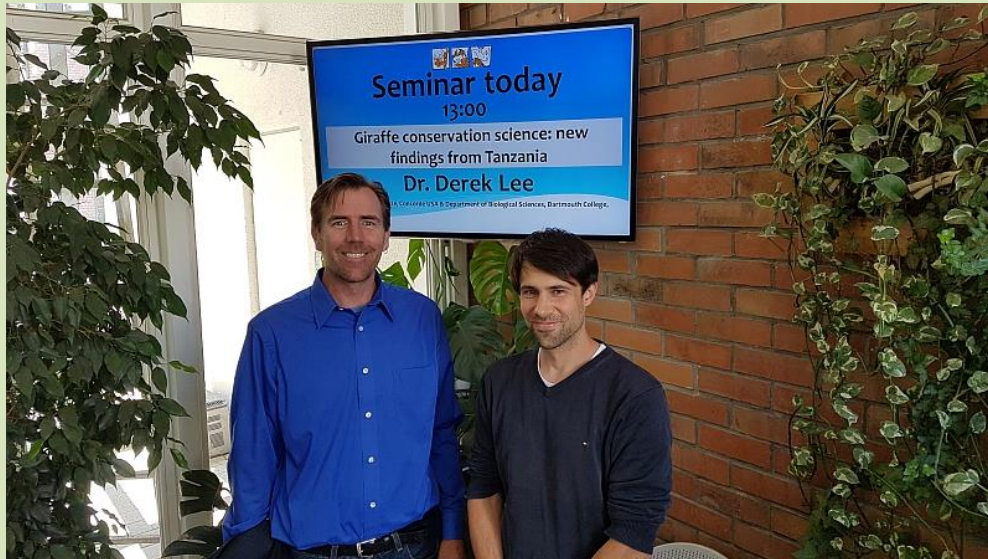
Our work showed how data from multiple sources and the latest analytical techniques could be integrated to identify, connect, and protect this ecologically and economically important migratory corridor.



Education & Advocacy

In 2017 we presented our giraffe research at Pennsylvania State University, the Cincinnati Zoo, the Leibniz Institute in Berlin, Germany, and the Centre Nationale de la Recherche Scientifique in Lyon, France. Derek also took part in a 1-hour discussion broadcast on WBUR's On Point radio show about giraffes.

We presented our spotted owl and wildfire research at the Public Interest Environmental Law Conference in Eugene, Oregon.



Derek Lee with Dr. Florian Sicks, Mammal Curator at the Tierpark Berlin



Derek Lee and Monica Bond with staff from the Cincinnati Zoo

Environmental Education in Tanzania

Giraffes are inspiring the next generation of Tanzanian conservationists. In 2017, Wild Nature Institute and our partners distributed giraffe-themed educational materials to children and teachers throughout the Tarangire region of northern Tanzania. The materials use the giraffe to teach biology, geography, science, math, and language skills.

We created a storybook *Juma the Giraffe*, an activity book *Giraffe and Friends*, a Wonderfully Weird Giraffes poster describing the anatomy and behavior of giraffes, and lesson plans and activity guides for parents and teachers. These materials help teachers meet the Tanzanian government mandate for environmental education.



Very Special Thanks to Chris Barela, David Brown, Kayla Harren, Megan Strauss, and Lise Levy

Environmental Education in Tanzania

Last year Wild Nature Institute hosted workshops for teachers so they could learn our lesson plans and practice the hands-on activities that they will use in the classroom to accompany the giraffe-themed books and posters.

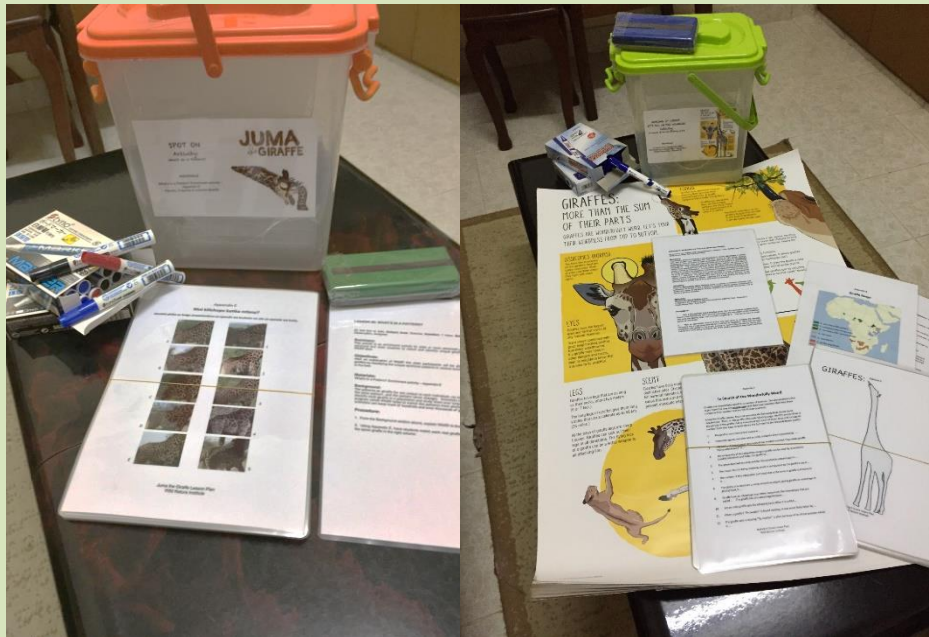
In 2017, together with our partners at Inyuat e Maa and PAMS Foundation, we distributed the books and posters to 12 schools and one community center representing more than 5,000 children around Tarangire and Lake Manyara national parks.



Environmental Education in Tanzania

Our educational consultant Lise Levy also created “Giraffe in a Box,” a mobile education program to provide Tanzanian teachers with all the supplies they need to implement the giraffe-themed lesson plans and activities. The box includes basic items such as scissors, crayons, and paper, as well as laminated worksheets that can be filled in with dry erase markers and then wiped off and reused.

Wild Nature Institute welcomes James Madeli as a volunteer with our environmental education program. James has been accompanying Lise and Lais (from Inyuat e Maa) on school visits, and he will be our local coordinator for the “Giraffe in a Box” mobile education program. Thank you James!



School supplies for giraffe-themed activities



Monica Bond and Derek Lee with James Madeli

Environmental Education in Tanzania

Last year we turned our *Lucky the Wildebeest* and *Juma the Giraffe* children's books into video storybooks. This year these videobooks were used in the classrooms to introduce the stories and lesson plans.

The conservation and social lessons in *Juma* and *Lucky* are now accessible to every Tanzanian in English, Swahili, and Masai.

Maajabu ya Uhamaji wa Mtoto wa Nyumbu Anayeitwa Bahati
Kwa Kiswahili bila Maandishi



Juma Twiga
Kwa Kiswahili bila Maandishi



The video storybooks are part of our Sinema Leo Campaign in rural villages. Sinema Leo is building pride in Tanzania's wildlife resources among an audience that has no access to national parks, very low literacy, and little access to outside entertainment. The videobooks are also available on YouTube.

Environmental Education in Tanzania

CELEBRATING AFRICA'S GIANTS



Our giraffe-themed educational program was so successful that we are expanding to include Africa's other two giants: elephants and rhinoceroses.

Giraffes, elephants, and rhinoceroses are Africa's giants, roaming majestically across savanna landscapes and awing safari-goers and zoo visitors around the world. These large mammals play critical ecological roles in the places where they live, but their numbers are plummeting because of conflicts with humans.

With our new “Celebrating Africa’s Giants” project, our team of researchers, educators, illustrators and designers is developing and distributing innovative, culturally relevant educational materials and activities for Tanzanians and for audiences in the U.S., all while incorporating feedback from educators.



Giraffes are used to teach about adaptations to the environment.

Elephants are used to teach about ecology and social behavior.

Rhinoceroses are used to teach about wildlife conservation.

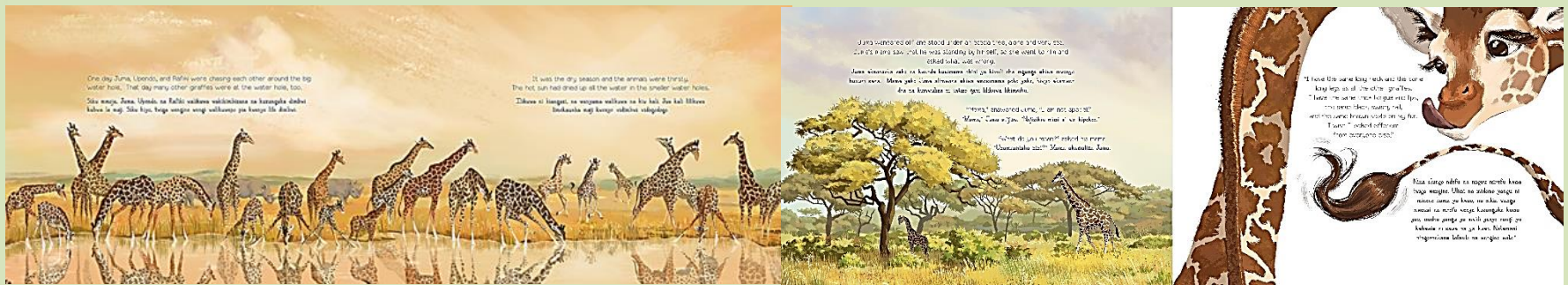
Environmental Education in Tanzania

CELEBRATING AFRICA'S GIANTS



Our program aims to develop, distribute, and implement the following:

- Full-color bi-lingual (Swahili and English) story books about giraffes, elephants, and rhinoceroses;
- A Swahili “Africa’s Giants” activity book for primary school students;
- Giraffe, elephant, and rhinoceros educational posters for secondary school students;
- A conservation career guide, containing interviews and photographs of people involved in conservation-related work in Tanzania (e.g. researchers, safari guides, wildlife rangers, NGO staff, solar technicians, etc.);
- A website—www.AfricasGiants.org—where additional materials, lesson plans, and activities will be freely available;
- Accompanying lesson plans and educator training on how to develop and implement innovative, effective conservation-oriented teaching strategies;
- A mobile education program “Giraffe/Elephant/Rhinoceros in a Box” to implement the lesson plans and activities in the classroom, and provide the necessary supplies.



Environmental Education in the USA

We are delighted that the Living Desert Zoo and Botanical Gardens in Palm Springs, California – a supporter of our “Celebrating Africa’s Giants” project – has been using our giraffe-themed environmental education program with zoo visitors. During their 2017 “Year of the Giraffe” launch, zoo staff gave readings of *Juma the Giraffe* and guests had a great time matching giraffe patterns and doing other fun activities from our program. Celebrating Africa’s Giant’s team member David Brown gave the keynote address.



A “Tanzanian Schoolhouse” at the Living Desert displays our posters

Reading *Juma the Giraffe*

Juma the Giraffe Illustration Wins 2017 Award of Excellence

An illustration from *Juma the Giraffe* was accepted into the 2017 Communication Arts Illustration Annual and won an award of excellence. Communication Arts is a professional journal for designers, art directors, design firms, corporate design departments, agencies, illustrators, photographers, and others involved in visual communications.

For 58 years, Communication Arts has been showcasing the current best in design, advertising, photography, illustration, and typography.

Of the 3,995 entries to the 58th Illustration Annual, only 178 were accepted, representing the work of 159 artists – making the Illustration Annual the most exclusive major illustration competition in the world.

Big congratulations to Kayla Harren, the extremely talented illustrator of *Juma the Giraffe*!



Environmental Education in Tanzania

In 2017 we authored, with Wayne Lotter and Krissie Clark from PAMS Foundation, the first-ever training manuals for Tanzanian safari guides so they can develop a deeper knowledge of ecology, wildlife conservation, botany, and other subjects. The goals are to establish standards and certifications for Tanzanian guides, and ensure a high-quality experience for tourists in one of the most spectacularly wildlife-rich countries on the planet.

Our involvement in creating the training manuals bridges science and public outreach, promotes science-based conservation values in guides and their local communities, and spreads a conservation message to tourists from across the globe.



Monica Bond holds the new training manuals for safari guides

Wild Nature Institute Hosts Ranger Appreciation Day

Wildlife Management Areas (WMAs) are village-run community conservation areas that use proceeds from tourism to fund land-use planning and natural resource protection to conserve important wildlife habitat. The Burunge WMA forms a wildlife corridor and habitat reserve between Tarangire and Lake Manyara national parks.

Village game scouts from Burunge are equipped and trained by our partners at PAMS Foundation. PAMS also plans and funds patrols, prepares for and supports court cases, compiles reports, and maintains a database. The scouts patrol the WMA day and night removing traps and snares set by poachers, and apprehend poachers through evidence gathering. In 2017 their efforts led to the arrest of three giraffe poachers in the area.



In 2017, Wild Nature Institute hosted a barbeque to thank them for their critical work. Their efforts contribute to the sustainability of wildlife populations in the Burunge WMA and the Tarangire region. We are grateful to PAMS and the village game scouts.

Our Major Donors

Sacramento Zoo Columbus Zoo Tierpark Berlin
Living Desert African Wildlife Foundation Environment Now
PAMS Foundation Tulsa Zoo Save the Giraffes
Cincinnati Zoo Safari West World Giraffe Foundation
Google for Non-Profits Microsoft Azure ESRI, Inc.

Thanks also to all the wonderful private donors who supported our work!

Our Partners

PAMS Foundation	John Muir Project
African Wildlife Foundation	Manyara Ranch Conservancy
Asilia Africa	Tanzania National Parks
Center for Biological Diversity	Tanzania Wildlife Research Institute
Conservation Congress	Tarangire Lion Project
Geos Institute	University of Zürich
Inyuat e Maa	Wild Lens, Inc.

Statement of Activities 2017

INCOME

Grants from Foundations	\$ 63,850
Individual Donations/Family Trusts	\$ 47,663
Total Income	\$ 111,663

EXPENSES

Field Research (Permits, Vehicle, Equipment, Food and Fuel, Tanzanian Field Assistants)	\$ 13,952
Travel (Including Conferences)	\$ 21,021
Conferences/Meetings/Membership Fees	\$ 1,879
Services (Educational Activities, Scientific Publication Costs, GIS and Statistical Analyses, Printing Books and Posters)	\$ 46,250
Mailing and Office Expenses (Rent, Phone, Utilities)	\$ 15,442
Total Expenses	\$ 98,545
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Starting Balance (carryover from 2016)	\$ 56,302
Income - Expenses	\$ 13,118
Ending Balance	\$ 69,420



Officers

Dr. Derek Lee, Board
President

Monica Bond, Secretary-
Treasurer

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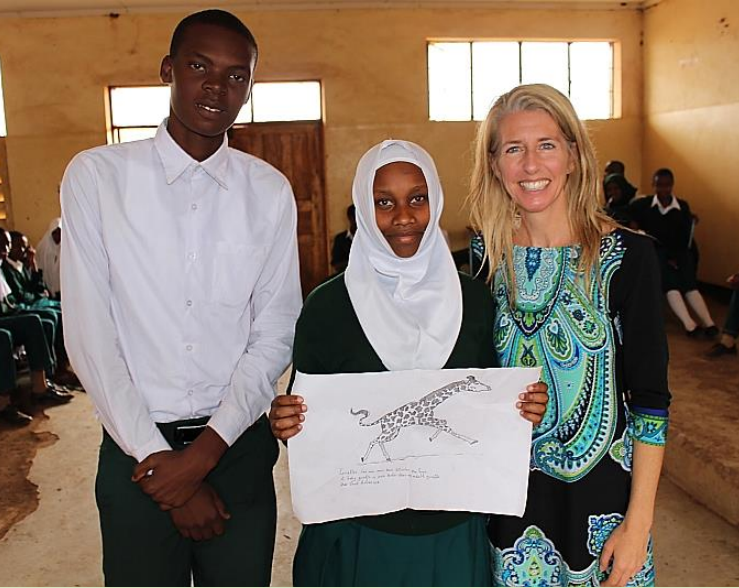
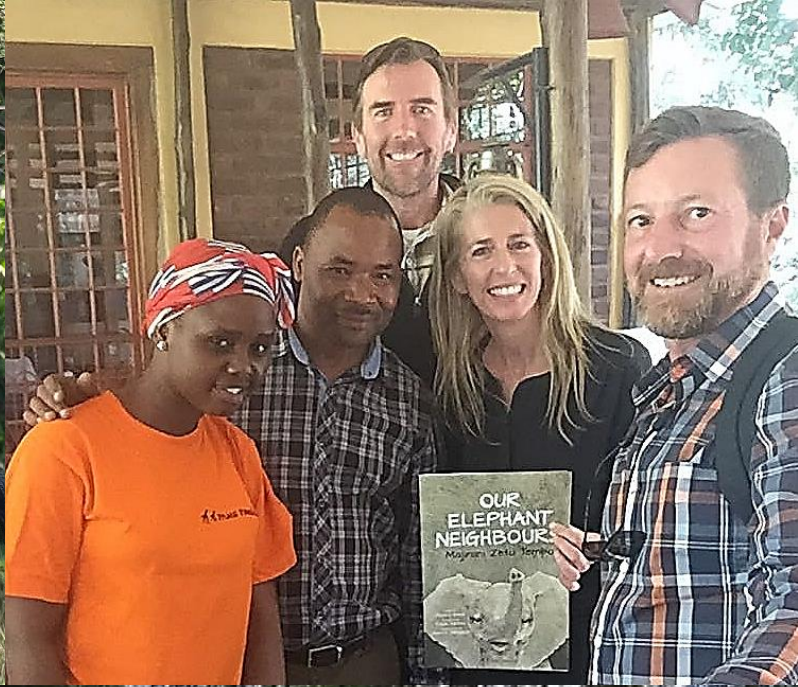
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Wild Nature Institute

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