WILD NATURE INSTITUTE

2015

ANNUAL REPORT

Cover: Giraffe in Tarangire National Park/ Inside cover: Dr. Derek Lee collecting photographic data in Tarangire

From the Founders

In 2015, the Wild Nature Institute celebrated its 5th year working to save wildlife in savannas of East Africa, and conifer forests of the western U.S.A. Both regions are biologically rich but threatened by human impacts. Our studies of imperiled species and their habitats in these regions help us to develop and implement effective conservation actions that protect wild nature and the life that depends upon it.

This year, we published two studies demonstrating the resilience of Spotted Owls to intense forest fires in California, and presented these data at an international wildlife conference in Canada. We contributed to a new scientific book about the ecological value of intense fire. We submitted four papers about giraffes to scientific journals, on topics ranging from skin disease to calf survival, and also presented these data at the wildlife conference. We mapped wildlife and livestock in the Northern Plains for land-use plans, and collected indigenous ecological knowledge to protect people and habitat.

Read on to learn more about our 2015 accomplishments in our four program areas: Masai Giraffe Conservation, Tarangire Ungulate Observatory, Northern Plains Campaign, and Snag Forest Campaign.

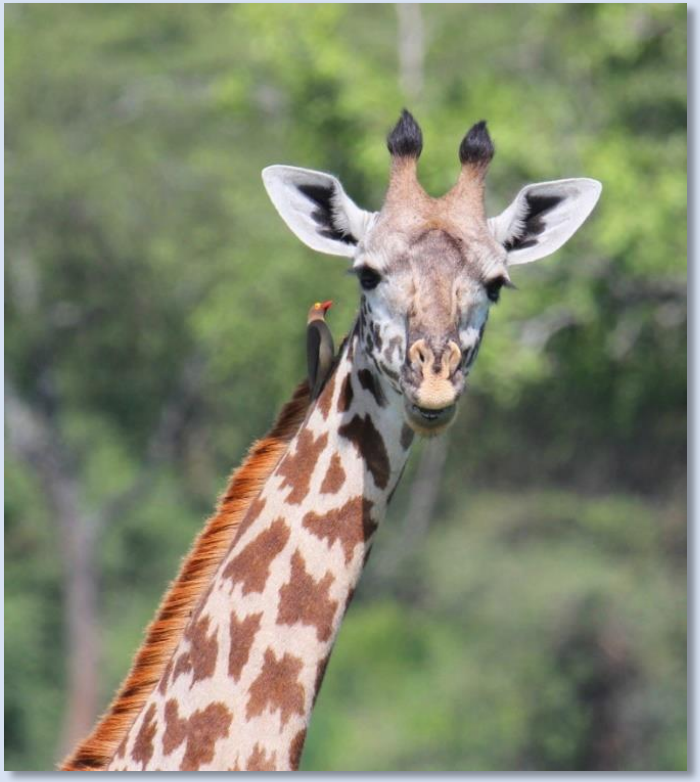
In all of this, you have our deepest thanks for your support.

Dr. Derek E. Lee and Monica L. Bond

Founders and Principal Scientists

Masai Giraffe Conservation

The goal of the Masai Giraffe Conservation Project is to estimate population size, survival, reproductive success, and movement within the fragmented Tarangire Ecosystem of Tanzania, so places with high survival and reproduction can be identified, protected, and connected. We call this *Project GIRAFFE* for *GIRAaffe Facing Fragmentation Effects*.



The Wild Nature Institute is conducting a major study of Masai giraffe, the national animal of Tanzania and an indicator species for the health of savanna ecosystems. This is one of the largest individual-based demographic studies of a large mammal ever undertaken.

We use pattern-recognition software to track >2,100 individuals in a 1,500-km^2 area to understand births, deaths, and movements in the fragmented Tarangire Ecosystem. We use our results to inform conservation and land management, and to ensure a future for giraffe in this region.

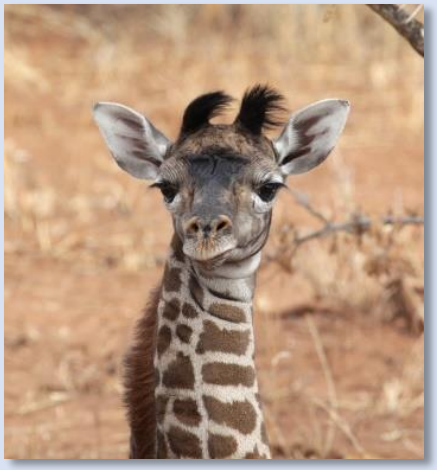
Demography of Giraffe in the Fragmented Tarangire Ecosystem

Human population, agricultural development, and illegal poaching in the Tarangire Ecosystem—a hotspot of large-mammal diversity and abundance—have caused wildlife populations, including giraffe, to decline.

Our research to date has revealed the giraffe population at Lake Manyara National Park was nearly isolated as a result of habitat fragmentation. Tarangire National Park was identified as the 'engine' of growth for the metapopulation, acting as a 'source' by rescuing the other 4 'sink' sub-populations from local extinction over the long term, but at the cost of depleting its own sub-population.

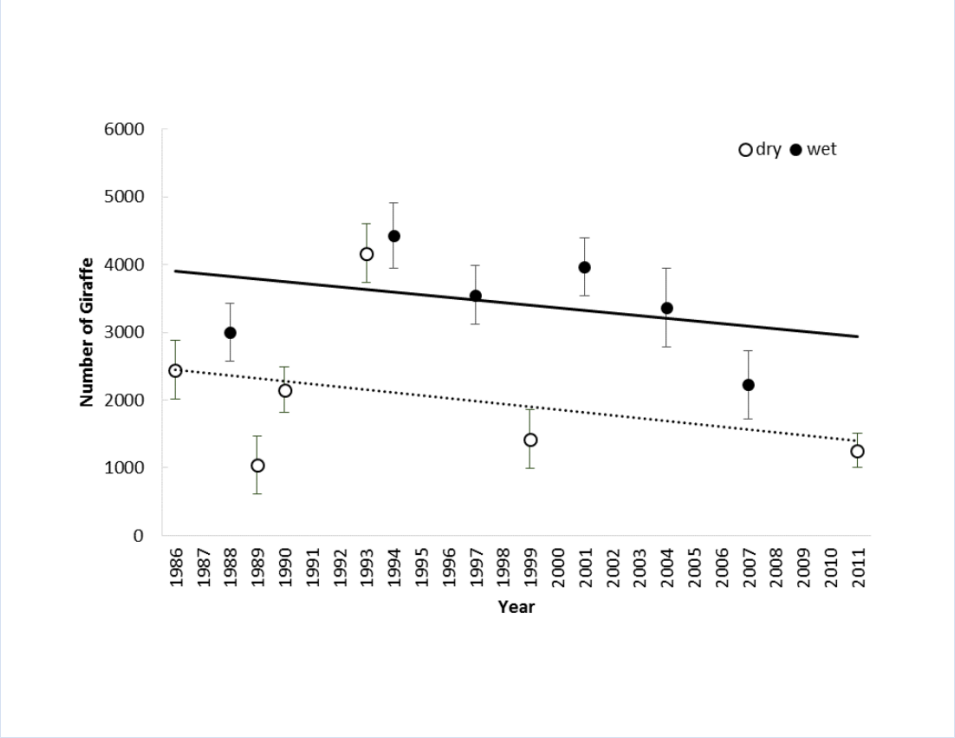
We presented our findings at the Wildlife Society's scientific conference in Winnipeg, Canada, and at the Tanzania Wildlife Research Institute's scientific conference in Arusha, Tanzania. These meetings are attended by many government land managers and wildlife scientists from around the world.

Our results underscore the critical importance of maintaining habitat linkages between protected areas while simultaneously reducing poaching and other causes of adult giraffe mortality. These recommendations have been shared with Tanzanian wildlife authorities, and we are continuing our work on land-use planning and anti-poaching to protect vital linkages for giraffe movement.



Aerial surveys are the main tool used for Tanzanian wildlife monitoring. This year we conducted an analysis comparing giraffe population estimates in the Tarangire Ecosystem using 3 different methods. We calculated a correction factor to improve the estimates obtained from aerial surveys, which are less accurate but can cover more area than ground-based sampling.

In our analysis we suggest ways to improve aerial surveys, so Tanzania can collect the best possible information about giraffe population trends throughout the country.

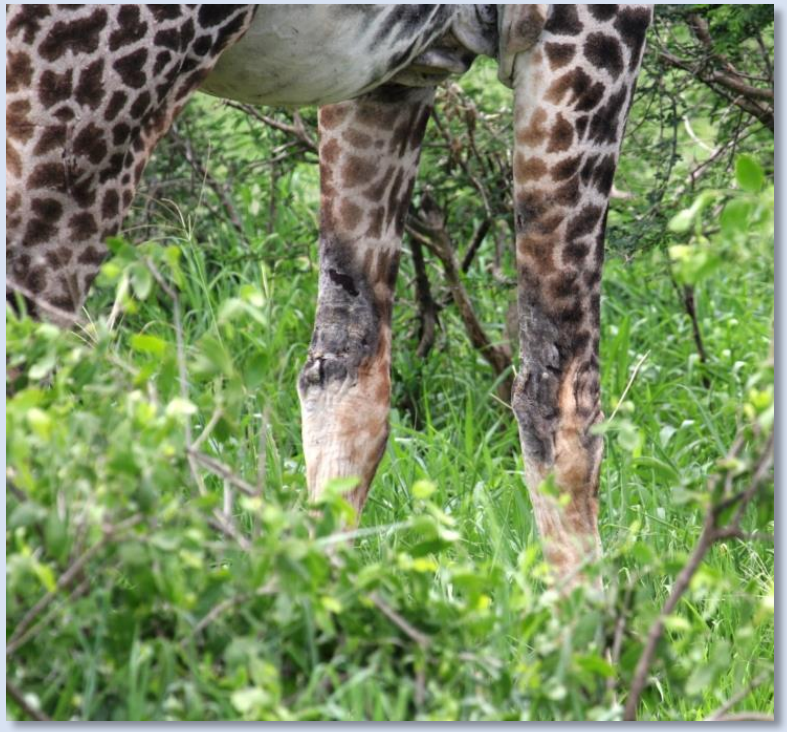


Data from aerial surveys in the Tarangire Ecosystem by the Tanzanian Wildlife Research Institute and compiled by Wild Nature Institute

Giraffe Skin Disease (GSD) causes lesions on the forelegs of Masai giraffe (see photo). The disease was first recorded in 2000 in Ruaha National Park in central Tanzania, but no information existed on the disease outside of Ruaha. This year we reported site-specific occurrence and prevalence of GSD in 6 wildlife conservation areas throughout northern Tanzania using data from road-transect surveys we conducted in 2014.

We are currently mapping hotspots where the disease is most severe. We are also using our 4 years of photo-identification data from individual giraffe in Tarangire National Park to determine if GSD increases mortality. The goal of this research is to determine where and why the disease is most severe, and whether veterinary action might be required.

We are also partnering with fellow giraffe biologist Dr. Megan Strauss to map occurrence and prevalence of GSD throughout Serengeti National Park.

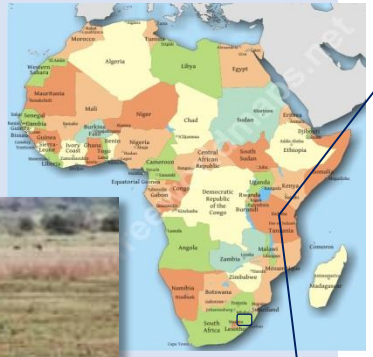


Tarangire Ungulate Observatory "TUNGO"

The Wild Nature Institute's TUNGO Project is a landscape-level population research program for 22 species of ungulates (hoofed mammals) in the Tarangire Ecosystem.

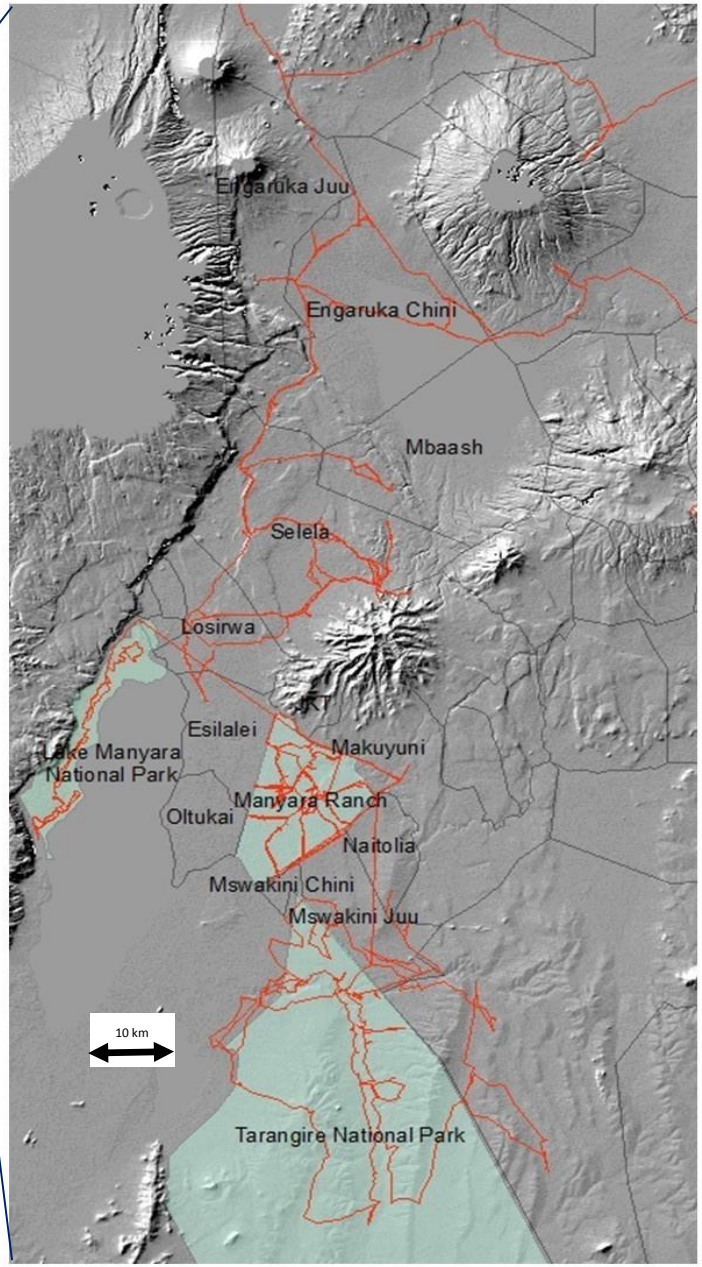
The savanna habitat of the Tarangire Ecosystem is one of the richest areas on the planet for large mammal diversity and abundance, and is a global hotspot for ungulates. The goal of TUNGO is to gather population parameters for all ungulates in this ecosystem, and to provide the scientific means to reverse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

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



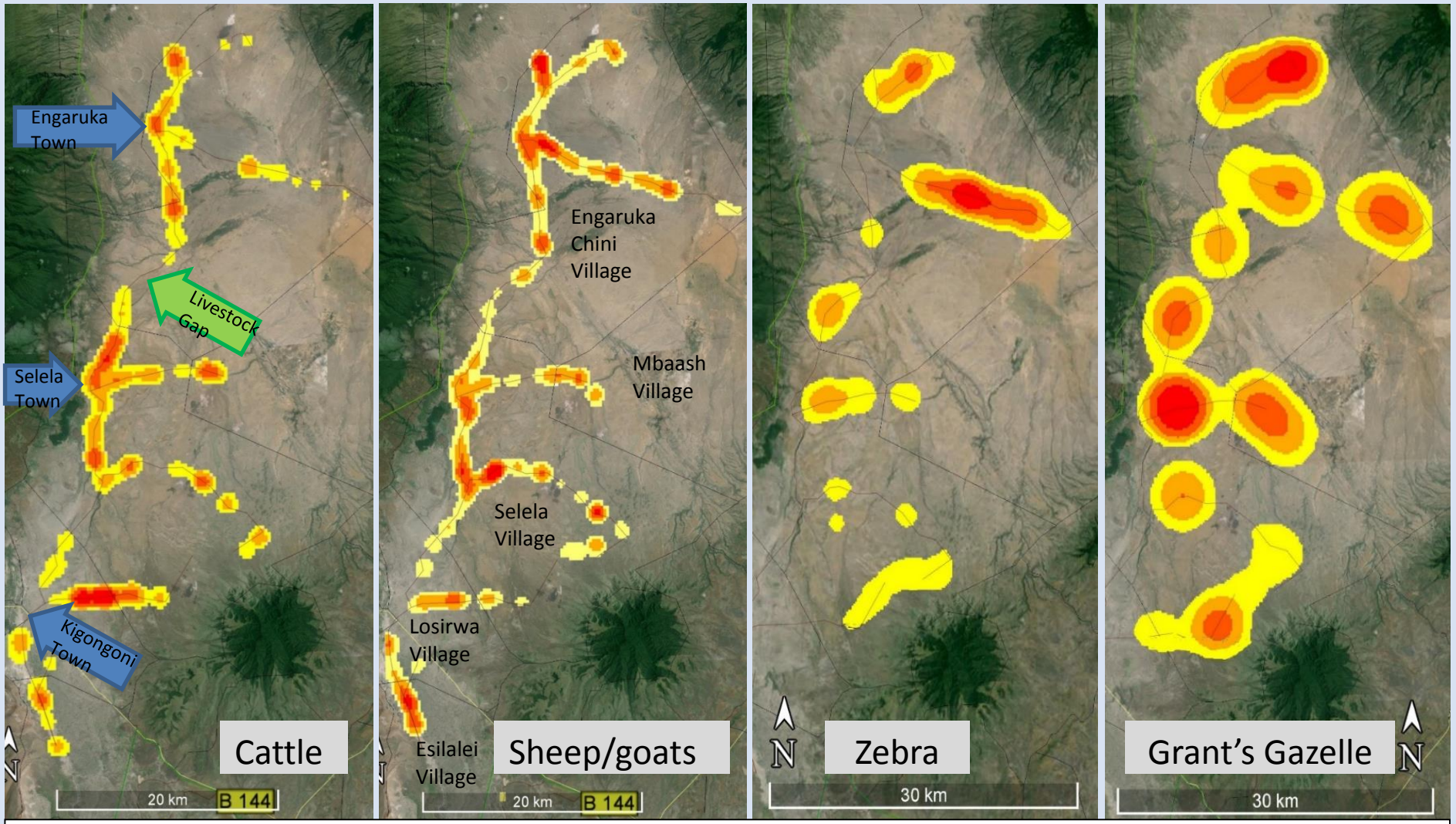
We record the following species in our TUNGO surveys:

Masai Giraffe	Greater Kudu	Gerenuk
Eland	Lesser Kudu	Bush Duiker
African Buffalo	Steenbok	Klipspringer
Fringe-eared Oryx	Bushbuck	Impala
Coke's Hartebeest	Thomson's Gazelle	Cow
Burchell's Zebra	Grant's Gazelle	Goat
Bohor Reedbuck	Common Waterbuck	
Kirk's Dik-Dik	Eastern White-bearded Wildebeest	



Red roads indicate survey routes, gray lines delineate village boundaries, and green is protected areas.

Our TUNGO data are being used to inform land-use planning in the Northern Plains. This year we completed TUNGO surveys in the northern plains villages, and recorded distribution and abundance of all hoofed mammal species, including livestock.



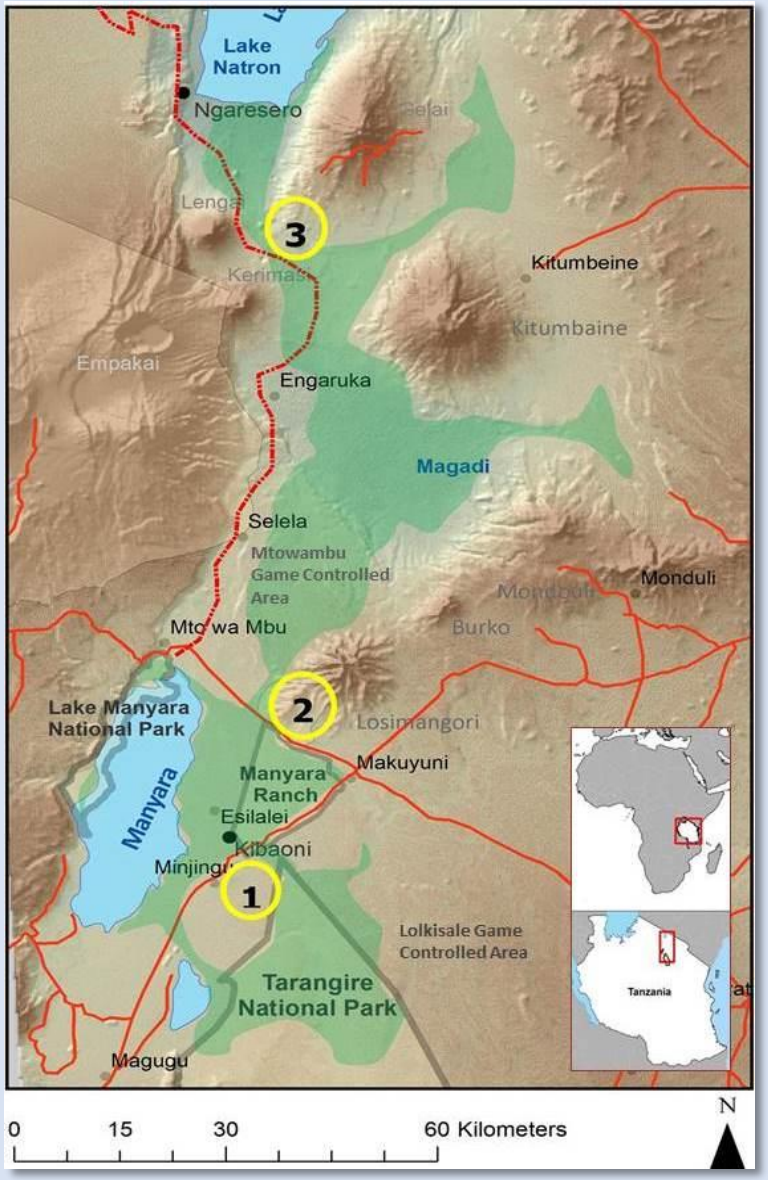
Density distribution of livestock, zebra, and Grant's Gazelle along transects in the Northern Plains. Zebra distribution appears smaller than Grant's gazelle due to zebra's much higher abundance and density in the landscape, resulting in tighter spatial confidence intervals.

Northern Plains Campaign

The Wild Nature Institute is not only collecting scientific data on African hoofed mammals—we are putting our results 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.

Severe poaching and lack of land management has reduced the wildebeest population in the Tarangire Ecosystem by 88% in the last 20 years. Eight migratory corridors for wildebeest, zebra, gazelle, eland, and oryx in the Ecosystem have been lost due to habitat conversion and permanent settlements. Only 2 linkages remain and neither are protected. A timely intervention over the next few years will make a huge difference in saving Tarangire's genetically unique population of wildebeest and other savanna wildlife, and will allow continued access to forage and water for traditional Masai pastoralists as they roam this landscape with their cattle.

Northern Plains Land-Use Planning



Green area depicts potential migratory linkage between Tarangire National Park and the Northern Plains. Circled numbers are pinch-points. Map courtesy of Tom Morrison.

We are supporting land-use planning in 10 Masai villages in the migration linkage between Tarangire National Park and the Northern Plains near Lake Natron. This community-based conservation campaign will protect wildlife and pastoralist culture, and create a grassroots ecotourism economy.

The aim of this campaign is to give control over tourism and wildlife protection to the local villagers, and the villagers in turn earn money from the ecotourism businesses.

This year land-use plans were developed in 3 villages covering more than 166,000 acres, and human-wildlife conflict reduction activities began. Our wildlife monitoring over the next few years will quantify whether these community conservation efforts are effectively protecting wildlife in the Tarangire Ecosystem.

Traditional Ecological Knowledge

This year we began a project to document traditional Masai ecological knowledge of seasonal wildlife and livestock movements, traditional rangeland management practices, and drought-coping strategies in the Tarangire Ecosystem, for use in land-use planning.

In October 2015, we began to collect traditional ecological knowledge in the linkage area between Tarangire National Park and Manyara Ranch Conservancy. We recorded Masai traditional ecological knowledge about wildebeest and giraffe locations, season and time of day animals were observed, and locations of human-wildebeest conflict. We also documented important water sources for livestock and wildlife.

We will continue our interviews with Masai in the Northern Plains in 2016. These data are geo-referenced and will be incorporated into a comprehensive map depicting important water sources, rangelands, and movement routes. This map will provide the best possible information on areas to protect from land- and water-grabs by farmers and mining operations, to protect people and wildlife.

Environmental Education in the Tarangire Ecosystem

As part of our Northern Plains Campaign, last year we published a tri-lingual children's book educating young and old about migration, wildlife, and the ecological and economic benefits of conservation in the Tarangire Ecosystem. By presenting a fun story simultaneously in Masai, Swahili, and English, ***The Amazing Migration of Lucky the Wildebeest*** promotes literacy and instills conservation values in Masai people to provide greater understanding of ecology, economy, and culture.

This year, our partners PAMS Foundation delivered books to children in 3 primary schools in the Burunge Wildlife Management Area adjacent to Tarangire National Park. Wild Nature Institute also made an Kindle e-book version available on Amazon.com.

Snag Forest Campaign

Wild Nature Institute scientists are studying fire impacts to Spotted Owls in California, and applying the findings to prevent harmful and unnecessary commercial logging in habitat for this imperiled raptor.

Spotted Owls are icons of dense, old-growth forests in the western United States. However, these birds of prey evolved with hot fires occasionally burning through their territories. The 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 we found owls hunt in severely burned forests when it is available to them. 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.

This year, Wild Nature Institute scientists co-authored the following:

- Bond ML 2015. Mammals and mixed- and high-severity fire. Pages 55-88 in The Ecological Importance of Mixed-Severity Fires: Nature's Phoenix. Elsevier Press, Amsterdam, The Netherlands.
- Hutto, RL, Bond ML, DellaSala, DA 2015. Using bird ecology to learn about the benefits of severe fire. Pages 89-117 in The Ecological Importance of Mixed-Severity Fires: Nature's Phoenix. Elsevier Press, Amsterdam, The Netherlands.
- Lee DE, Bond ML 2015. Previous year's reproductive state affects Spotted Owl site occupancy and reproduction responses to natural and anthropogenic disturbances. The Condor 117:307-319.
- Lee DE, Bond ML 2015. Occupancy of California Spotted Owl sites following a large fire in the Sierra Nevada, California. The Condor 117:228-236.
- Expert declarations to help stop logging of Spotted Owl habitat in the Rim and King fires in the Sierra Nevada California, and in burned forests of the Shasta-Trinity National Forest in northern California.

Snag Forest Education

Wild Nature Institute's scientists attended the Wildlife Society annual conference in Winnipeg, Canada to present our research on Spotted Owls and forest fire. Our presentation was very well attended by professional wildlife biologists from around the world.

We also staffed an exhibitor's booth to promote Nature's Phoenix, the new academic book about the ecological value of large and severe fires.

We published an opinion piece in the *Sacramento Bee* newspaper, *CounterPunch*, and *The Ecologist* explaining why post-fire logging of occupied Spotted Owl territories in the King Fire in the Sierra Nevada will harm owls and their foraging habitat. We will continue with our educational efforts urging people to embrace high-severity fire as creator of critical wildlife habitat.

PAMS Foundation

The Wild Nature Institute is proud to act as U.S. fiscal sponsor for our Tanzanian partner PAMS Foundation. This year PAMS received $28,025 through the Wild Nature Institute to support the Tarangire-Manyara Protection Project, which aims to improve wildlife and natural resource law enforcement systems in the Tarangire Ecosystem, with a particular focus on elephants and giraffes. The project supports wildlife protection and anti-poaching operations by Village Game Scouts, and funds from Wild Nature Institute were used to implement patrols, purchase field equipment, and provide financial rewards to scouts for good performance and arrests.

During just the first 6 months of project implementation, 35 people were arrested and fined for such offenses as illegal charcoal making, illegal timber harvesting, illegal farming, and setting of snares. Nine people also were arrested for more serious crimes including illegal bushmeat harvesting, illegal fishing, and illegal possession of hippo tusks and python skin. These cases are still at a Hearing stage.

Thank you PAMS Foundation for doing such critical work to protect giraffes, elephants, and other wildlife in Tanzania. We are honored to support your efforts.

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Manyara Ranch Conservancy

Tanzania National Parks

Tanzania Wildlife Research Institute

Tarangire Lion Project

TRIAS

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Statement of Activities 2015

INCOME		
	Grants from Foundations	$29,130
	Individual Donations/Family Trusts	$73,040
Total Income		**$102,170**
EXPENSES		
	Field Research (Permits, Vehicle, Equipment, Food and Fuel, Tanzanian Field Assistants)	$29,627
	Travel (Including Conferences)	$19,448
	Conferences/Meetings/Membership Fees	$4,569
	Services (Land-use Planning, Human-Wildlife Conflict Resolution, Anti-poaching Activities, Science Journal Page Charges)	$46,229
	Mailing and Tanzania Office (Rent, Phone, Utilities)	$4,125
Total Expenses		**$103,998**
Starting Balance (carryover from 2014)		**$25,996**
Income - Expenses		**(-$1,828)**
Ending Balance		**$24,168**

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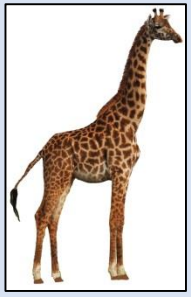

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