

Wildlife Conservation Society

ANNUAL REPORT

2013



SAVING WILDLIFE AND WILD PLACES



[COVER] A group of forest elephants moves through the Central African Republic's Dzanga Bai clearing. For nearly 20 years, WCS's Andrea Turkalo has conducted elephant research at the site, which witnessed a brutal elephant slaughter in May 2013.

[INSIDE COVER] Researchers from WCS helped to discover a new species of humpback dolphin off the coast of Australia in 2013 by using genetic and physical data.

[BACK COVER] In 2013, Bronx Zoo curators worked to reintroduce 38 eastern hellbenders – one of the world's largest salamander species – to streams in western New York state.



VISION:

WCS envisions a world where wildlife thrives in healthy lands and seas, valued by societies that embrace and benefit from the diversity and integrity of life on earth.

MISSION:

WCS saves wildlife and wild places worldwide through science, conservation action, education, and inspiring people to value nature.



[THIS PAGE] The mountainous terrain of Afghanistan is home to argali sheep, snow leopards, and other wide-ranging wildlife species.

TABLE OF CONTENTS

President/CEO & Chair Letter	3
Our Conservation Footprint	4
Q&A: Kimio Honda	6
Board of Trustees	8
Discover · Protect · Inspire	10
Q&A: Mariana Montoya	12
Chapter 1: 2013 WCS Story	14
Q&A: Todd Comstock	34
Chapter 2: 2013 Financial Report	36
Q&A: D McAloose	42
Chapter 3: Contributors	44
Q&A: Samba Kumar	62
Chapter 4: Conservation Partners	64
Q&A: Yvetta Pokorny	80
WCS Staff	82
Q&A: Simon Hedges	96
WCS By the Numbers	98
Animal Census	100



DEAR FRIENDS,

If you visit the Bronx Zoo or Central Park Zoo, there is a good chance you will meet the latest additions to our family: three snow leopard cubs – one at the Bronx Zoo and two at the Central Park Zoo. The cubs were instant media stars when they debuted in 2013. Their births gave us the opportunity to share a conservation message about our work in Afghanistan with millions of visitors to our parks (see p. 26).

Snow leopards are among the world's most endangered big cats, with an estimated 3,500–6,500 remaining in the wild. WCS has worked for decades on snow leopard conservation in the field. The cubs at our zoos help educate millions about why as a society we need to save them from going extinct. Our zoos and aquarium act as windows to the globe. Together, our parks in New York City, working in conjunction with our conservation field programs, tackle the world's conservation challenges from all angles.

Snow Leopards are just one of the species that we are working to save. The cover of this annual report features the forest elephants at Dzanga Bai, in the Central African Republic. WCS has been studying this population for two decades. But the pressure on elephants in Africa is increasing due to growing demand for ivory. To combat this crisis, we stepped up our game and designed a three-pronged strategy to stop the killing, stop the trafficking, and stop the demand for ivory.

We convened 17 conservation groups and developed a new partnership to save African forest elephants, announced at the Clinton Global Initiative in September (p. 19). In addition, we launched an advocacy campaign called 96 Elephants to end the poaching of nearly 35,000 elephants every year in Africa. We were pleased to announce that the Association of Zoos and Aquariums (AZA) joined as a partner in this effort. We know partnerships

lead to measurable outcomes and definitive results.

In 2013, we developed WCS:2020, our new strategy designed to ensure that all of WCS is having a clear impact on saving the world's biodiversity. In a world with more than 7 billion people, the human footprint grows larger every day. We are winning some battles, but we are losing the war on wildlife.

Through the strategic planning process, we:

- **Established a vision:** WCS envisions a world where wildlife thrives in healthy lands and seas, valued by societies that embrace and benefit from the diversity and integrity of life on earth.
- **Refined our mission:** WCS saves wildlife and wild places worldwide through science, conservation action, education, and inspiring people to value nature.
- **Defined a clear goal:** The conservation of more than 50 percent of the world's biological diversity while ensuring a positive impact on millions of people globally.

We identified five core strategies to achieve our mission:

- We will use science to **discover**;
- We will **protect** species, landscapes, and seascapes, focusing on 15 priority regions and 15 priority species;
- We will **inspire** people to care about animals and nature through education and outreach, our zoological parks in New York, and our field programs across the world;
- We will **build a stronger platform** by strengthening vital aspects of our business – from human capital to technology;
- We will **leverage** our resources through partnerships and greater involvement in public policy.

This year's report documents progress across all areas of WCS. A few examples:



- We partially re-opened the New York Aquarium after it was devastated by Hurricane Sandy and are rebuilding a world class aquarium (p. 24);
- With The Nature Conservancy and the National Center for Ecological Analysis and Synthesis, we co-founded SNAP (Science for Nature and People), a groundbreaking partnership aimed at solving the world's most pressing conservation challenges (p. 68);
- We helped to achieve an historic listing by CITES to protect five new shark species, freshwater sawfish, and two ray species (p. 29); and
- We helped to identify an unknown species of humpback dolphin off the coast of Australia and a new bird species in Cambodia's capital city, Phnom Penh (p. 17).

We work across 5.8 million square kilometers (3.6 million square miles), both land and sea, protecting 40 percent of the world's terrestrial biodiversity and 55 percent of its marine biodiversity.

We invite you on this journey, as we did our friends Art Ortenberg and Bob Wilson – longtime champions of conservation who died this year – and so many others over the past century.

Ward W. Woods
Chair of the Board

Cristián Samper
President & CEO

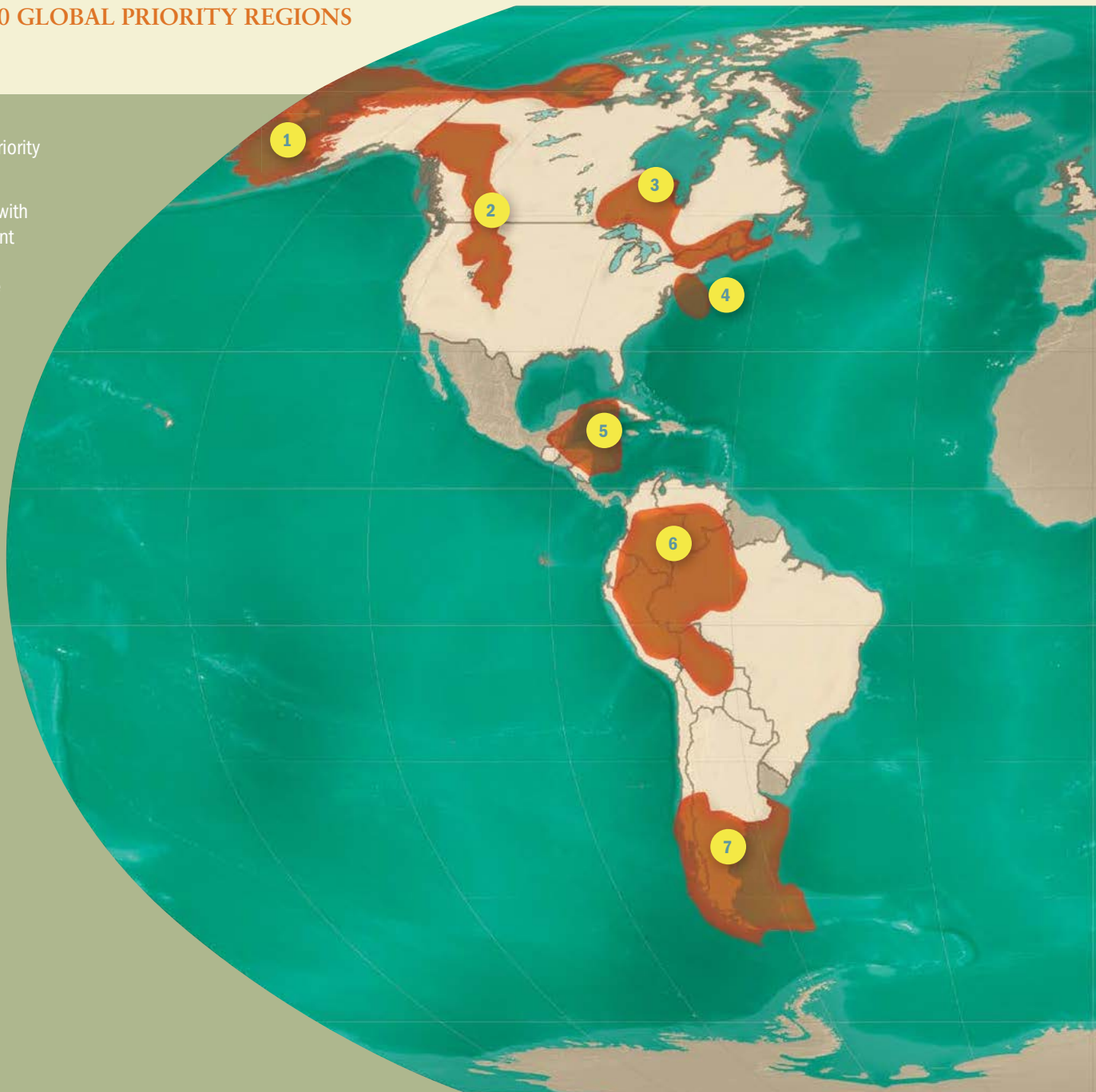
[ABOVE] Cristián Samper and Ward Woods at a research station in Myanmar, where WCS has been working to bring two Critically Endangered red turtle species – threatened by wildlife trafficking, illegal hunting, and egg collection – back from the brink of extinction.



OUR CONSERVATION FOOTPRINT

WCS:2020 GLOBAL PRIORITY REGIONS

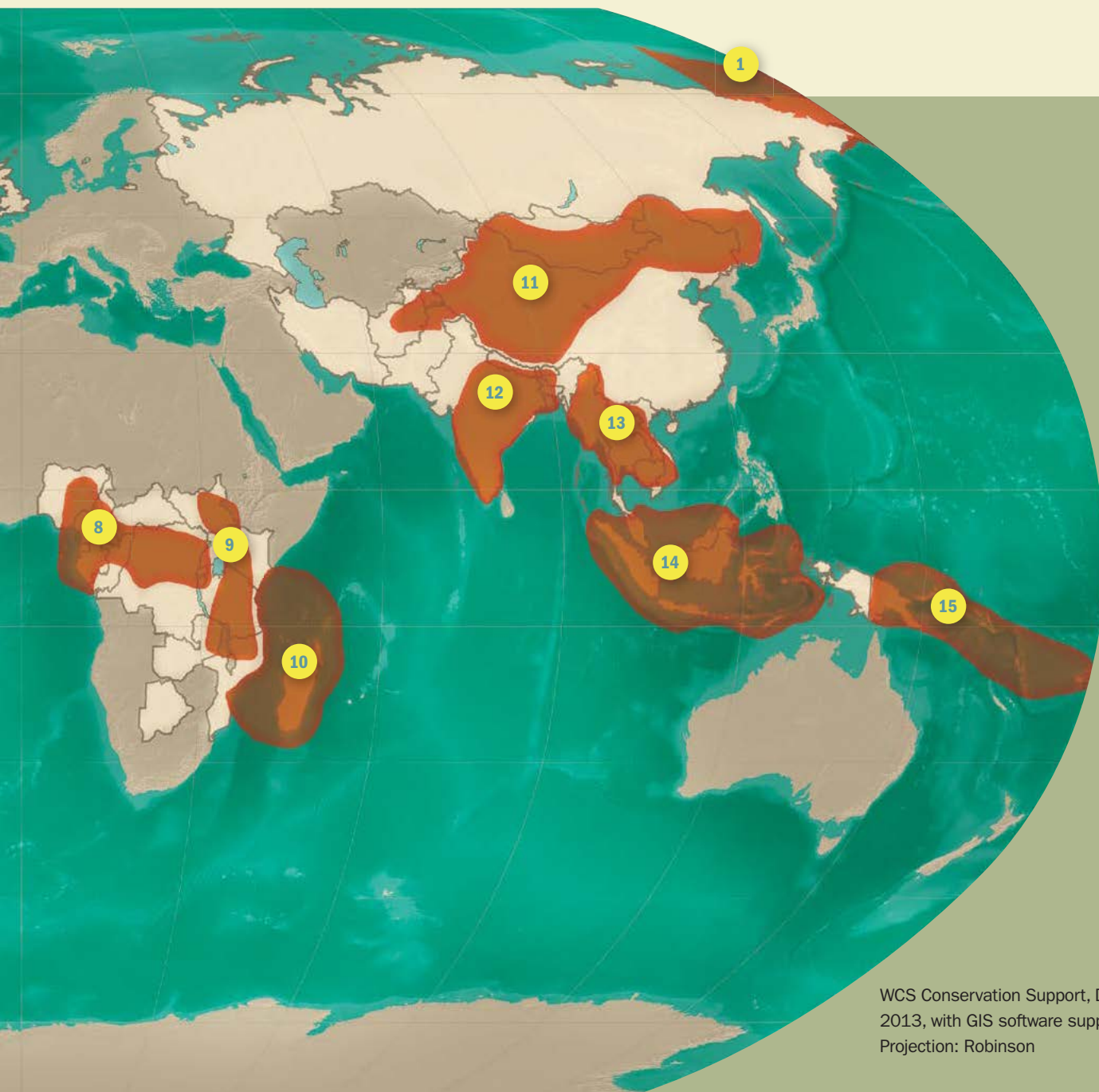
- Global Priority Region
- Country with Permanent WCS Presence



BY 2020, WCS WILL LEVERAGE OUR BEST SCIENCE, CONSERVATION, AND EDUCATION TO SCALE IMPACT ACROSS THESE 15 PRIORITY REGIONS:

1. **ARCTIC BERINGIA** Arctic coasts and seas of Alaska, Western Canada, and Russia
2. **ROCKY MOUNTAINS** North American coniferous forests
3. **EAST-CENTRAL BOREAL** Adirondacks, Northern Ontario, and boreal forests
4. **NEW YORK SEASCAPE** Coasts and seas of the Mid-Atlantic
5. **WESTERN CARIBBEAN AND MESOMERICA** Forests, coasts, and coral reefs in Belize, Cuba, Guatemala, Honduras, and Nicaragua
6. **ANDES AMAZON** Forests, grasslands, and wetlands of Bolivia, Brazil, Colombia, Ecuador, Peru, and Venezuela
7. **PATAGONIA COAST AND STEPPE** Coast and steppe of Argentina and Chile





WCS Conservation Support, December 2013, with GIS software support from Esri.
Projection: Robinson

8. **CONGO BASIN AND COAST** Forests and coast, including Burundi, Cameroon, Democratic Republic of Congo, Equatorial Guinea, Gabon, Nigeria, Republic of Congo, Rwanda, and Uganda
9. **EASTERN AFRICAN FORESTS AND SAVANNAS** Savanna, woodland, and forest including Kenya, Mozambique, South Sudan, Tanzania, and Zambia
10. **WESTERN INDIAN OCEAN** Coral reefs and island forests of Kenya, Madagascar, Mozambique, and Tanzania
11. **TEMPERATE ASIA** Grasslands, forests, and mountains of central and northeast Asia
12. **SOUTH ASIA** Bangladesh, Bhutan, India, and Nepal
13. **INDOCHINESE FORESTS AND COASTS** Cambodia, Laos, Myanmar, Thailand, and Vietnam
14. **MALAYSIA AND INDONESIA** Forests, coasts, and reefs of Indonesia and Malaysia
15. **MELANESIA** “Ridge to Reef” in Fiji, Papua New Guinea, Solomon Islands, and Vanuatu



Kimio Honda



“ I get excited when I see visitors using our exhibit features exactly the way we had hoped.

As a schoolchild in Tokyo, Kimio Honda devoured books on wildlife. While he devoted his free time to volunteering at Tokyo's zoos, however, he studied marketing in college and started a career in printing sales. Here Kimio describes how his transfer to New York set him on a path back to his childhood passion and explains the challenge of designing for zoos.

HOW LONG HAVE YOU BEEN WITH WCS AND WHAT IS YOUR ASSIGNMENT?

I started working at WCS in 2000. My title is Creative Director, Graphics, in the Exhibition and Graphic Arts Department, or EGAD as we call it. My task is to work with the team and stakeholders to design, produce, and maintain exhibits for all our parks – primarily through graphic components. The ultimate goal is to make the visitor experience beautiful, enjoyable, and meaningful while reinforcing the WCS brand and inspiring our visitors to care for nature and wildlife.

WERE YOU DRAWN TO WILDLIFE AS A CHILD?

I was born in Nagasaki, Japan and grew up in Tokyo. I've always loved zoos and aquariums. I started reading books about wildlife very early and couldn't get enough. I read *Serengeti Shall Not Die* by Bernhard and Michael Grzimek before I was a teenager. I would frequent a couple of foreign bookstores in downtown Tokyo when I had barely started learning English in school because they had things that couldn't be found elsewhere. By then I was a zoo member, attending monthly events and making friends with the zoo staff.

YOU WORKED AS A ZOO DOCENT IN JAPAN. CAN YOU DESCRIBE THAT EXPERIENCE?

I joined Tokyo Zoo Volunteers (TZV) as a college student because I was frustrated that the zoos were not doing enough to inform visitors about the animals. I tried to expand the interpretive guide programs at the

Ueno and Tama Zoos. For TZV I served as vice secretary for a few years until I was transferred to New York for business. TZV was the center of my personal life and most of my closest relationships stem from that time, including my marriage. I think I'm still pursuing the same things I did as a docent, just in a little different way.

HAD YOU HEARD OF THE BRONX ZOO AS A KID OR TEENAGER?

Zoo staff would share slide shows describing their overseas trips. I was fully aware of the Bronx Zoo, the New York Zoological Society, and George Schaller. Shiro Nakagawa, who conceived TZV while General Curator of Ueno Zoo, translated the book *Doctor in the Zoo*, about Dr. Emil Dolensek of the Bronx Zoo. It was one of my dream places. As a child I imagined becoming a zoologist or a zoo professional, but in Japan both academic and professional career paths in these areas are extremely limited. So I abandoned the idea while in high school and studied marketing. I still thought I'd get involved with wildlife somehow.

WHAT DREW YOU TO GRAPHIC DESIGN?

I was always interested in photography, art, cinema, and design. My mother studied fashion design and loved art, so that must have played some role. I had my first toy camera when I was perhaps five or six and I have remained a shutterbug since. I would go to the foreign book stores not only for wildlife books but for photography and art books. By the time I was in college I was doing



illustrations and design for TZV, zoo publications, and even books. I worked for a printing company in international sales and I think I did reasonably well because I knew art, graphic design, and photography. It gave me a shared language with our clients. That experience in production and the intellectual property business directly helps me today.

WHEN DID YOU FIRST THINK YOU MIGHT WORK FOR WCS?

When I was transferred to New York for business, some zoo associates in Tokyo arranged for an introduction to [former WCS president and Bronx Zoo director] Bill Conway. He and [former EGAD director] John Gwynn agreed to meet me. This was shortly after JungleWorld opened. That exhibit blew my mind and planted the seed of an idea that I might one day work with EGAD. By the time that happened years later, Dr. Conway had retired. He repeatedly broke new ground in exhibit design. His strong emphasis on an exhibit's aesthetics and emotional impact is always close to my heart.

WHAT ARE SOME CHALLENGES UNIQUE TO DESIGNING GRAPHICS FOR ZOOS?

People often are not focused on learning when they visit zoos. They're not prepared to read long texts. Graphics need to convey our message viscerally through visual story telling. We incorporate touchable objects, sounds, smells, and other experiential elements. This approach engages multiple parts of the brain, leaves a stronger impression, and offers more for people with disabilities. These elements must be a harmonious part of the exhibit environment created by landscape designers and architects. We strive to tell the story through the exhibit experience as a whole. The Bronx Zoo is unique in this approach, integrating these disciplines throughout the design process.

ARE ADJUSTMENTS TO EXHIBITS SOMETIMES NECESSARY ONCE YOU SEE HOW THE PUBLIC INTERACTS WITH THEM?

What? Never! I get excited when I see our visitors using our exhibit features exactly the way we had hoped, because in truth there are always possibilities for something to go wrong. We have been trying to minimize the surprises through various measures. EGAD has been using visitor evaluations to learn what zoo guests already know and care about, to test design prototypes, and to find out if visitors are getting the messages we intended. The evaluation process helps us to try new things with less risk.

WHO OR WHAT HAS BEEN YOUR GREATEST DESIGN INSPIRATION AND WHY?

Hmmm. It's hard to specify who or what. So many bits and pieces. If anything, it may be nature. And there are two sentences that are always in my mind: "God is in the details" and "The devil is in the details."

WHAT MAKES YOU PASSIONATE ABOUT YOUR JOB?

We are eliminating so many habitats so fast, driving so many species to the brink, and threatening our own future. Zoos aren't the natural world, but for many urban dwellers zoos are the last vestige of something

close to it. Many parks like the Bronx Zoo also harbor a bit of nature on their own grounds. In the 21st century I think zoos must become a portal to the natural world beyond animal exhibits. Otherwise nature exists more as a concept rather than a reality. It's a formidable challenge but I think we can do it.

WHAT IS YOUR PROUDEST ACHIEVEMENT?

Because I changed careers in midlife, my career is still very much a work in progress. The day is short and there is still a long road ahead. Working for WCS is quite an achievement in itself. Someone at the Tokyo Zoological Park Society told me that when he heard that I got a job at WCS, he told his team, "Do you understand the significance of this? This is like Ichiro Suzuki being hired by a Major League baseball team!" It's that big for my Japanese colleagues. I need to keep working very hard to achieve something that remotely resembles Ichiro's accomplishment. And to hurry up before the sun sets.

[BELOW] Kimio Honda was an active participant in the Tokyo Zoo Volunteers program, but as a marketing student he didn't know exactly how he would fulfill his dream of a career that involved wildlife.



BOARD OF TRUSTEES

(December 31, 2013)



[RIGHT] WCS Trustees traveled to a multitude of WCS field sites in 2013 to see firsthand how our scientists are working to protect wildlife and wild places. These images capture trips to the Congo Basin (January), Bolivia's Madidi National Park (August), and coastal Argentina (November).

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THE UNPARALLELED STRENGTH OF WCS

In order to achieve our mission, WCS follows three core strategies in its work:

- We **DISCOVER** and understand priority wildlife and wild places through science;
- We **PROTECT** priority wildlife and wild places through conservation action; and
- We **INSPIRE** people to care about wildlife and wild places through education and public engagement.

Unique among conservation NGOs, WCS manages a diverse wildlife collection in its NYC parks while simultaneously engaging in a robust global program of site-based conservation. Discoveries in the field have generated new thinking on how animals are cared for and presented in our zoos and aquarium. In turn, innovations for the treatment and protection of animals developed at WCS's zoos and aquarium have changed conservation practices in the field.

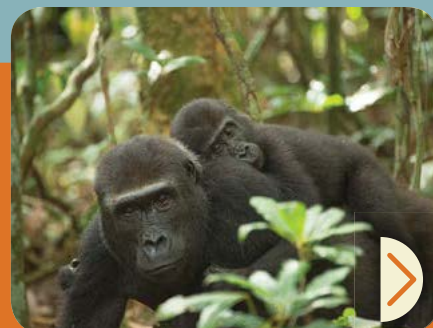
WCS's turtle conservation plan provides a powerful illustration of how we are combining zoo and aquarium expertise with global conservation action to inform and inspire more than four million park visitors each year as they learn of our efforts to discover and protect wildlife and wild places across the globe.

The international trade in wild-caught turtles is driving more than half of the world's 330 species of turtles or tortoises close to extinction. With the goal of preserving wild turtle populations, the Wildlife Conservation Society has made an institutional commitment to reduce the illegal trade of these animals while breeding assurance colonies of endangered turtles at the Bronx Zoo and our other New York City parks. Husbandry efforts there will help identify successful strategies to apply in the field.

DISCOVER



PROTECT

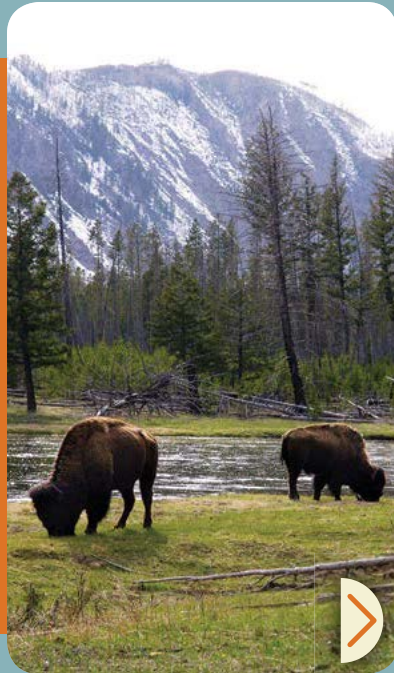


INSPIRE





DISCOVER



PROTECT

11



INSPIRE



DISCOVER • PROTECT • INSPIRE



Mariana Montoya



“Hundreds of people live along the Amazon tributaries where we work. They depend upon wildlife and other natural resources for their livelihoods.”

In her three years working for WCS, Peru Country Director Mariana Montoya has endeavored to combine protection of biodiversity with attention to the needs of local people as Peru's economic infrastructure develops. Here she discusses ecological challenges in the Amazon Basin, the rich biodiversity of the Yavari-Samiria landscape, and how radio dramas and dance could help conserve Bahuaja Sonene National Park.

HOW DID YOU COME TO WORK WITH WCS?

When I first started working for WCS in 2010, I was greatly impressed by its science-based field work. I became a consultant on the development of the monitoring system for Tambopata National Reserve, a key stronghold for flora and fauna such as jaguars. I was happy to learn that WCS used an integrated approach to conservation and natural resource and landscape management – something I have always been interested in and had past experience with. I joined WCS's staff as the Science Director for Peru in January 2012. A year later I gratefully accepted the position of Peru Country Director.

HAVE YOU ALWAYS BEEN INTERESTED IN NATURE?

I was raised in Lima, but my family lived in the countryside and we traveled within Peru a lot. My enjoyment of the outdoors made me familiar with the diversity of places and cultures in our country. I was not drawn specifically to wildlife but to the mechanisms that support all life, both wild and “civilized.” My friends claim they had to remind me not to talk about biology all the time. By the time I was in high school, it was clear that I wanted a career that would exercise my curiosity for the human-nature connection.

WHAT CHALLENGES ARE DRIVING WCS'S WORK IN THE AMAZON BASIN?

In the last decade, Peru has experienced continued economic growth – a situation that will not change in the short term. This

growth attracts major international investments, especially from Brazil, the United States, and China in the mining, energy, and other infrastructure sectors. These activities pose unprecedented challenges to the region. Little has been done to assess, prevent, and mitigate impacts from large-scale projects like dams, roads, railroads, and waterways.

HOW DOES WCS SAFEGUARD WILDLIFE AND WILD HABITATS ALONG AMAZON TRIBUTARIES WHILE PROTECTING HUMAN NEEDS AND LIVELIHOODS?

Hundreds of people live along the Amazon tributaries where we work. They depend upon wildlife – including peccaries, capybaras, and migratory fish – and other natural resources for their livelihoods. We are safeguarding these resources in different ways. At a local level – for example, the Tamshiyacu-Tahuayo Communal Regional Conservation Area – we assist hunters and protected area staff in determining sustainable hunting quotas. Regionally, we are working to improve fisheries management and maintain fish abundance. Both approaches help local people access resources for themselves and to sell at market.

DESCRIBE THE IMPORTANCE OF OUR WORK IN THE YAVARI-SAMIRIA LANDSCAPE OF PERU.

The Yavari-Samiria landscape is a seasonal flooded forest that harbors one of the richest examples of terrestrial and aquatic biodiversity on the planet. A large portion remains very well conserved, despite the subsistence and commercial human



activities of approximately 97,000 people from over 200 riverine and indigenous communities. Our work in this landscape focuses on improving and empowering the participation of local people in the management of three protected areas to assure its long-term conservation. Community-based conservation and co-management are fundamental to our work.

HAS THE GOVERNMENT OF PERU BEEN RESPONSIVE TO WCS INITIATIVES?

Weaknesses in Peruvian law make it difficult to prevent or mitigate the ecological impacts from all the new infrastructure projects. To address these gaps, WCS has been using science and field data to work closely with the Ministry of Environment and other civil society partners to strengthen the national processes over the last two years. This has led to an improvement of the Environmental Impact Assessment system and development of a mitigation/compensation legal framework that is pending final approval. We are very proud of the progress made on these issues.

DOES CONSERVATION SOMETIMES REQUIRE THINKING OUTSIDE THE BOX?

Oh, yes. The two main threats to Bahuaja Sonene National Park are the unsustainable land use practices of migrant farmers and the interest of oil companies and the government in exploiting gas reserves there. A new approach we're using to address both issues is the use of "edutainment" that includes interactive theatrical plays, radio dramas, dance, and other creative forms to encourage greater environmental awareness. We organized a visit of photographers, visual artists, chefs, and musicians to the park to see some of the threats it faces first-hand. The group has created art shows, music compositions, and new restaurant dishes that are helping us to connect with a broader audience.

WHAT FIRST DREW YOU TO CONSERVATION?

As a biology undergrad in Lima, I was asked by my ecology professor to assist in a national vicuña survey in the Peruvian Andes for the Ministry of Agriculture. They needed to know whether poaching had stopped and what the size of the wild population was in order to negotiate with local communities the number of animals that could be caught for fiber extraction. After following herds of vicuña on horseback for weeks, I had an opportunity to provide information that would benefit local people. I realized that sustainable natural resource management and conservation was something I wanted to do.

WHERE DID YOU STUDY?

My bachelor's degree is from the Agrarian University of La Molina, where my thesis focused on parrot habitat in northern Peru. For my master's degree in ecosystem management, I developed a model to estimate the bighorn sheep populations in a given hunting area in Baja California, Mexico. My doctoral work – at the University of Texas at Austin's Geography and the Environment program – looked at how access, values, and history can shape the sustainability of a social-ecological system in the Peruvian Amazon. This background in biology, ecology, and geography gave me a more integrated approach to conservation.

WHAT IS YOUR GREATEST WILDLIFE MOMENT DURING YOUR TIME WITH WCS?

In my last trip to the Yavari-Samiria landscape, I saw a family of three giant river otters hunting and playing just a 15-minute walk from a local community. Seeing them led me to think about how both otters and humans depend on the fish, fruits, and resources of the forest and the connections we share in this ecosystem that supports us all. Having been violently scared off by fishermen wary of stolen fish, giant otters can be extremely shy. Their playful demeanor so close to people reinforced my belief that humans and wildlife can have positive, sustainable relationships.

WHAT IS YOUR PROUDEST ACHIEVEMENT?

Between 2002 and 2006 the Abanico del Pastaza Wetlands Complex, covering some three million hectares, was seriously polluted due to oil exploitation. I was part of the team that helped the local Achuar people reduce the contamination. Waste water pumped out of the ground during crude oil extraction is three or four times saltier than ocean water and contains significant amounts of heavy metals and other toxins like benzene. If it drains into rivers, it can cause sickness in wildlife and people. We pushed successfully for new national regulations obligating oil companies to re-inject production waters back underground. It was a perfect example how local action can have a big impact.

[BELOW] In the Tamshiyacu-Tahuayo Communal Regional Conservation Area in Loreto, WCS Peru Country Director Mariana Montoya speaks with a man making crafts from the seeds of the "tahuá," a palm tree found in local forests.



2013 WCS STORY

THE POWER OF CONSERVATION

CHAPTER

1

ACHIEVEMENTS:
DISCOVER

17

ACHIEVEMENTS:
PROTECT

21

ACHIEVEMENTS:
INSPIRE

27

In March 2013, the journal *PLOS ONE* published a study led by WCS's Samantha Strindberg and Fiona Maisels documenting a staggering 62 percent loss of all African forest elephants due to poaching in the last decade. With possible extinction looming, the study immediately generated both an editorial and op-ed in *The New York Times*, followed by tens of thousands of dollars in donations to WCS to protect elephants. By year's end a global coalition had been mobilized to confront the crisis – demonstrating the power of conservation to inspire people, institutions, and governments to action for the protection of wildlife. This and other stories presented here from 2013 demonstrate how WCS employs its NYC-based parks and field science to achieve results.





CONFRONTING WILDLIFE CRIME IN MOZAMBIQUE'S NIASSA NATIONAL RESERVE

Since the signing of a co-management agreement for the Niassa National Reserve between WCS and the government of Mozambique in October of 2012, WCS has been working with the government and park staff to rebuild the infrastructure and re-train and re-equip the guard force – deploying them more effectively to end the elephant poaching crisis of the past few years.

Niassa boasts the nation's largest wildlife populations, providing sanctuary for some 70 percent of Mozambique's 20,000 elephants as well as large populations of lions, wild dog, buffalo, antelope, and other wildlife. The reserve is part of one of Africa's wildest and most spectacular landscapes, with isolated, forested mountains towering over river plains and savanna woodlands.

The reserve was previously managed by a Mozambique organization that made significant progress in setting up tourism concessions. Little progress was made, however, toward working with the reserve's communities to agree on rational land-use plans and ensure the sustainability of livelihood activities such as fishing.

As the elephant poaching and ivory trafficking crisis broke across Africa, Niassa was not spared. Reports suggest that since 2009 the number of elephants killed by poachers in Niassa has tripled, with an average of three elephants slaughtered each day and more than 1,000 killed per year. This led the government of Mozambique and other stakeholders in the reserve to seek WCS's assistance.

WCS's immediate objective in Niassa is to end the current elephant poaching crisis by improving protection through the park guards, maintaining surveillance by air, and developing informant networks across the reserve to gather intelligence on illegal poaching activities. Over time, WCS will work with local communities to improve their livelihoods, the sustainability of their activities, and the development of rational land-use plans. WCS has begun working with the reserve's tourism operators to create a world-class destination while supporting local people and the national economy.



IDENTIFYING A NEW HUMPBAC DOLPHIN SPECIES IN AUSTRALIAN WATERS

A team of researchers from WCS, the American Museum of Natural History, and other institutions in 2013 identified a previously unknown species of humpback dolphin in the waters off northern Australia. While the Atlantic humpback dolphin is a recognized species, the team's work provides the best case for splitting the Indo-Pacific humpback dolphin into three separate species, one completely new to science. The discovery will inform the understanding of the species' distinct evolutionary histories and help contribute to conservation policies and actions that help protect them.

The humpback dolphin grows up to eight feet in length and ranges from dark gray to pink or white in color. The species generally inhabits coastal waters, deltas, and estuaries. It occurs throughout the eastern Atlantic, Indian, and Pacific oceans all the way to the coasts of Australia.

The IUCN Red List considers the Atlantic humpback dolphin Vulnerable, whereas the Indo-Pacific dolphin species *Sousa chinensis* is listed as Near Threatened. The greatest threats to these marine mammals are associated with interactions with fisheries (incidental catches from net entanglement and even direct hunting in some areas) and loss or degradation of important coastal habitats.

Led by Drs. Martin Mendez and Howard Rosenbaum of WCS, the team discovered the new humpback dolphin species after examining skulls from 180 beached dolphins and museum specimens and 235 tissue samples from live humpback dolphins. They analyzed both mitochondrial and nuclear DNA and detected the distinct patterns among humpback dolphins (named for a peculiar hump just below the dorsal fin), coupled with anatomical comparisons, to determine the number of distinct species.

In the journal *Molecular Ecology*, the team proposed that at least four species in the humpback dolphin family be recognized. Three have (or once had) names: the Atlantic humpback dolphin (*Sousa teuszii*), which occurs in the eastern Atlantic off West Africa; the Indian Ocean humpback dolphin (*Sousa plumbea*), which ranges from the central to the western Indian Ocean; and a separate Indo-Pacific species (*Sousa chinensis*). The new unnamed dolphin found off Australia would be the fourth *Sousa* species. The discovery attracted worldwide media attention, including in *The Washington Post*, *The Economist*, *The New York Times*, the BBC, and a mention by David Letterman on his late night talk show.

[OPPOSITE] After some 35,000 African elephants were killed for their ivory in 2012, WCS helped lead a global effort in 2013 to address the poaching crisis.



[RIGHT] A WCS-led effort to create a database for all large mammals in Bolivia documented 116 species, including the obscure Count Branickii's terrible mouse.



PUBLISHING A SCIENTIFIC DATABASE OF MAMMALS IN BOLIVIA

WCS played a key role in this year's creation of a massive database for medium- and large-sized mammal species in Bolivia. The compendium represents a major contribution to future conservation decision-making for South America's most threatened and charismatic wildlife. The number of records for the featured species range from just one, for the newly registered red-nosed bearded saki monkey, to 2,370, for the white-lipped peccary.

More than two-thirds of the 31,380 distributional records compiled were registered by WCS-supported research. By sharing this data with fellow scientists and conservationists, as well as decision-makers and the public, the Bolivian mammal research community is helping to ensure that the needs of these wonderful creatures can be incorporated into the country's sustainable development vision.

The database includes records for 116 species – from the obscure 30-pound nocturnal rodent Count

Branickii's terrible mouse (also known as a pacarana) to better-known wildlife such as the jaguar. Other species include bush dog, black spider monkey, vicuña, giant anteater, water opossum, and the mysterious Chacoan fairy armadillo. Scientists gathered information for the database over the past five years through existing published records as well as unpublished reports.

The database summarizes what biologists in Bolivia have determined about mammal distributions to date and points to some of the information gaps, both in terms of species and geographic areas. For example, a small spotted cat called the oncilla is expected to occur across at least 50 percent of the country but only has 19 confirmed records to date.

REINTRODUCING EASTERN HELLBENDERS TO THE WILD

For more than four years, WCS's Bronx Zoo has collaborated with the New York State Department of Environmental Conservation (DEC) and the Buffalo Zoo to save one of the

largest (and increasingly rare) salamander species in the world, the eastern hellbender.

New York State lists the hellbender as a species of special concern. Also known as the devil dog, Allegheny alligator, and snot otter, hellbenders are usually found in rocky, swift-flowing streams. They hide under large rocks, have flattened heads and bodies, small eyes, and mucous-covered, wrinkly skin. Populations are declining due to several factors, including disease, pollution, and habitat destruction.

The DEC collected hellbender eggs from the Allegheny River drainage. Hatched at the Buffalo Zoo in October 2009, a subset of the animals was raised at the Bronx Zoo's Amphibian Propagation Center, an off-exhibit, bio-secure facility. In August 2013, 38 Bronx-raised salamanders were released near where their eggs had been collected.

Before being returned to the wild, each hellbender was tagged under the skin with a tiny chip that can be used to identify individuals during future surveys and health assessments. Headstarting young hellbenders helps them get to a size where



WCS Achievements Discover

- WCS's China Program captures [first camera trap images](#) indicating the Critically Endangered Amur leopard – the rarest of all big cats in the wild – is breeding in China.
- Researchers from WCS, the American Museum of Natural History, and other institutions identify a previously unknown species of [humpback dolphin](#) in the waters off northern Australia.
- WCS and partners show how ecological changes related to climate change and deforestation are leading to [increased parasitism](#) of young nesting birds by fly larvae.
- A team of scientists led by WCS and the National University of Singapore reveals for the first time the presence of the pathogenic chytrid fungus in [amphibians sampled in Singapore](#).
- WCS and Panthera release [camera trap footage](#) from Uganda's Kibale National Park showing a rarely seen African golden cat.

they can't be preyed upon by trout and most other aquatic predators.

This project highlights an important priority of WCS and its New York City zoos and aquarium. Even as we enhance the public's appreciation of nature, we hope to provide a technically and scientifically appropriate environment for species propagation when needed.

The researchers announced their discovery in the Oriental Bird Club's journal *Forktail*. Authors included WCS's Simon Mahood, Ashish John, Hong Chamnan, and Colin Poole. The tailorbird's scientific name, *chaktomuk*, is an old Khmer word meaning four-faces, reflecting where the bird

is found: the area centered in Phnom Penh where the Tonlé Sap, Mekong, and Bassac Rivers come together. It is one of only two bird species found solely in Cambodia. The other, the Cambodian laughing thrush, is restricted to the remote Cardamom Mountains.

[BELOW] WCS researchers working on the outskirts of Phnom Penh discovered an avian species new to science: the Cambodian tailorbird.

HIDING IN PLAIN SIGHT: NEW BIRD SPECIES DISCOVERED IN PHNOM PENH

In 2013 a team of scientists led by WCS discovered a previously unknown Cambodian bird species called the tailorbird – the size of a wren, with distinct gray plumage, and a loud call. Surprisingly, the bird was found not in a remote jungle but in Phnom Penh, Cambodia's capital city of 1.5 million people, and several other locations just outside of the city (including an active construction site).



[OPPOSITE] Hillary and Chelsea Clinton pose with WCS president and CEO Cristián Samper (center), other global NGO reps, and leaders of seven African elephant range states (seated) as the Clinton Global Initiative unveils a 3-year, \$80 million commitment to protect elephants.

The tailorbird does occur in the Baray Bengal Florican Conservation Area, where WCS is working with local communities and the Forestry Administration to protect the Bengal florican and other threatened birds. However, because much of the new species' habitat is shrinking in the face of agricultural and urban expansion, the authors recommend that the tailorbird be classified as Near Threatened under the IUCN's Red List.

This discovery indicates that bird species may still be found in unexpected as well as familiar places. The last two decades have seen a sharp increase in the number of new avian species emerging from Indochina, mostly due to exploration of remote areas. Newly described birds include various babbler species from isolated mountains

in Vietnam, the bizarre bare-faced bulbul from Lao PDR, and the Mekong wagtail – first described in 2001 by WCS and other partners.

WELCOMING SEA LIONS AT THREE WCS ZOOS

WCS welcomed five new California sea lions in the summer of 2013: four rescued from the wild and a fifth born at the Bronx Zoo.

The Prospect Park Zoo is now home to two female sea lion pups orphaned and stranded off the coast of Point Hueneme, California. The pups were brought to Six Flags Vallejo in Ventura County for initial care and rehabilitation. After it was determined that they were unlikely to survive in the wild, the pups were then

sent to the Prospect Park Zoo on a recommendation from the U.S. Fish and Wildlife Service. They are now on exhibit in the zoo's sea lion pool, joining two other females, Stella and Beebe. One of the pups will eventually be moved to the Central Park Zoo.

At the Queens Zoo, two adult male California sea lions have joined Butch and Taylor to create a bachelor group of four in the zoo's sea lion pool. The male sea lions came from the Oregon Department of Fish and Wildlife as part of a local wildlife management project in Bonneville, Oregon. Animal staff from the WCS Zoological Health Program traveled to the Pacific Northwest and worked closely with the two bulls for nearly a month before transporting them to their new home.

FOZ: FRIENDS OF THE ZOO

For over 40 years, the Bronx Zoo's Friends of the Zoo (FOZ) volunteer explainer program has supported WCS's mission through informal educational outreach in the park. Drawn from across the tri-state area, FOZ volunteers bring skills and knowledge from a wide variety of backgrounds and experiences. All FOZ must first complete a six-month training program that combines in-park observation days with classroom study.

Their role takes on many guises. First and foremost, FOZ offer guided tours to school groups, scout and senior groups, and families – including the Conservation Membership Tours, which are given 14 times a year and attract an average of 30–40 members. This year alone, FOZ provided tours to over 6,000 guests.

FOZ volunteers work as exhibit interpreters throughout the Bronx Zoo, providing visitors with valuable lessons that promote wildlife conservation. They conduct chats at events such as Boo at the Zoo and Members Evenings. They also assist with special events such as Patron breakfasts, the Explorer's Party at the Central Park Zoo, and the 5K Run for the Wild, and regularly assist with Education Department programs, including the Family Safari Overnights and birthday parties.

This year FOZ volunteers were an integral part of visitors' experience of the new *Dinosaur Safari!* ride. Six themed carts were set up throughout the Zoo. This gave FOZ the opportunity to link the dinosaur exhibit with our living collection. The most popular cart compared the long neck of the giraffe with that of the brachiosaurus.

FOZ are here seven days a week. Currently this unique cadre of individuals is over 160 strong and volunteer over 20,000 hours of service each year. Fifty percent have served for 10 years or more. We are extremely lucky to have this passionate and dedicated troop of educators in our midst. We hope to see the program continue to thrive as the goal of conservation education becomes further integrated into the WCS mission.



The sea lion pup was born at the Bronx Zoo to mother Indy in June. This is the third pup for Indy and the sixth offspring for its father, Kiani, who was later transferred to be the breeding bull at the New York Aquarium. The still unnamed pup joined Halftime (rescued during the 2012 Super Bowl), McCabe, Nav, and Indy in the pool on the zoo's historic Astor Court. California sea lions are exhibited at all five WCS facilities. The addition of these animals to our parks will go a long way to making our sea lion population sustainable. California sea lions live in healthy populations along the west coast of North America from Mexico to Alaska.

PROTECTING ARGENTINA'S COASTAL AND OPEN-OCEAN AREAS

With WCS's help, Argentina created two new marine protected areas in 2013 that safeguard the coastline and extend 12 miles seaward into previously vulnerable waters. Established by the country's National Congress, the Isla Pingüino Coastal Marine Park and Makenke Coastal Marine Park boast some of the largest colonies of imperial and red-legged cormorants, as well as breeding colonies of the dolphin gull and pods of the spectacular black and white Commerson's dolphin.

WCS has been involved in the conservation of coastal Patagonia since the 1970s, beginning with Roger Payne's behavioral work on southern right whales that continues to this day with research by WCS's Global Health Program on new threats to their survival. In working to

mitigate the loss of biodiversity and promote environmentally sustainable practices, WCS has increasingly had a partner in the Argentine government.

It was just over a decade ago that oil tankers off Argentina's coast were first required to stay 30 miles from the mainland

and forbidden to dump tainted ballast water. With that simple act, Magellanic penguin deaths from chronic oiling dropped from roughly 41,000 birds a year to less than 1,000. More recently, Argentina designated Burdwood Bank as the region's first open ocean no-fishing zone

INSPIRING THE GLOBAL COMMUNITY TO SAVE AFRICAN FOREST ELEPHANTS

In July 2013, WCS hosted a meeting of global conservation NGOs with former U.S. Secretary of State Hillary Clinton at the Central Park Zoo. Out of those discussions a plan developed to bring the conservation community together around a Clinton Global Initiative (CGI) commitment to save Africa's elephants.

At CGI's annual meeting in New York City in September, the leaders of Botswana, Burkina Faso, Cote D'Ivoire, Gabon, Kenya, Liberia, Malawi, South Sudan, Tanzania, Uganda, and Zambia called upon other countries around the world to join them in halting the ivory trade. They laid out a plan for domestic moratoria on all imports, exports, and domestic sales and purchases of all elephant ivory and ivory products until elephants are no longer threatened by poaching.

To support the Clinton Global Initiative commitment on wildlife trafficking, WCS announced a new campaign that same month called 96 Elephants. Named for the average number of African elephants slaughtered daily by poachers in 2012 and led by WCS Executive Vice President for Public Affairs John Calvelli, the WCS campaign focuses on securing U.S. moratorium laws, bolstering elephant protection, and educating the public about the link between ivory consumption and the elephant poaching crisis.

The CGI and 96 Elephants campaigns both benefited from the creation of President Obama's Presidential Task Force on Wildlife Trafficking and its Advisory Council (upon which Dr. Samper sits), to promote U.S. government policy engagement in anti-poaching, anti-trafficking, and demand reduction efforts. With WCS Executive Director for Conservation Policy Susan Lieberman serving as an alternate member of the Council, WCS is well-represented.

In November, WCS staff were pleased to attend an important milestone event near Denver, Colorado, where the majority of illegal ivory confiscated by the U.S. Fish and Wildlife Service – some six tons – was destroyed. WCS is now working with other NGOs and Congressional champions to introduce bipartisan legislation that would place a moratorium on the ivory trade in the U.S. WCS has worked to include a similar provision in a wildlife crime resolution that is now moving through the European Parliament and is expected to pass in January 2014.



[BELOW] WCS wildlife health experts are working on solutions for controlling the movements of diseases between livestock and wildlife through the AHEAD (Animal & Human Health for the Environment and Development) program in Southern Africa.

that considers the ecosystem as a whole, including protection of marine birds and mammals. This action represents the culmination of an idea first proposed in 2005 as part of WCS's *Sea and Sky* initiative, led by Dr. Claudio Campagna. Burdwood Bank's submerged plateau covers nearly 11,000 square miles and will protect whales, penguins, and rare cold corals.

While the new marine protected areas signal greater commitment to the conservation of this extraordinary coastal zone, more work to protect Patagonia's vast seascape remains. Rapid, poorly-planned development along South America's Southern Cone threatens coastal wildlife through pollution, habitat loss, and breeding ground disturbances. Nevertheless, by extending the reach of Patagonia's coastal protected areas into the sea, the new Isla Pingüino and Makenke parks help secure spectacular species and their habitats for generations to come.

DOCUMENTING THE IMPACT OF RURAL HOMES ON ADIRONDACK BIRDS

The presence of rural residences can impact bird communities up to 200 meters into the surrounding forest, according to a study by WCS published in early 2013. The study found that sensitive bird species such as the hermit thrush and scarlet tanager prefer unbroken forests with no houses, while birds like the blue jay and black-capped chickadee seem to prefer, and often thrive with, human neighbors.

Rural, sprawling residential developments outside of cities and towns change the environment by bringing vehicles, noise, lights, pets, people, and food sources into the forest, as well as by physically altering and fragmenting habitat. Scientists sampled the presence of 20 bird species near and far from 30 rural residences in the Adirondack Park. They found that "human-adapted" species are 36 percent more likely

to be found near the homes than in the surrounding mixed hardwood-conifer forests, and that "human-sensitive" species were 26 percent less likely.

This means that a development's ecological footprint can be greater than its physical footprint. Changes to that footprint can have countless impacts, including altered species behavior and composition, increased human-wildlife conflicts, and new predator-prey dynamics.

By learning how birds and other wildlife react to particular kinds of human activities, WCS is now working to ensure that this science is considered by park managers and land-use planners in future developments. WCS seeks to understand whether we can minimize these impacts in current developments and, if so, what concrete changes landowners could make to keep their properties wildlife-friendly so that native birds can continue to thrive in the region.



WCS Achievements

Protect

- WCS and five other conservation organizations develop a free, open-source Spatial Monitoring and Reporting Tool – or [SMART](#) – to help rangers curb the illegal trade in wildlife.
- WCS Bronx Zoo health experts and partners produce the [first-ever published study](#) to genetically characterize canine distemper virus (CDV) in tigers and confirm its role in the death of Amur tigers in the Russian Far East.
- Scientists from WCS and the Kenya Marine and Fisheries Research Institute (KMFRI) help to design a [better fish trap](#), reducing the impact of fishing on coastal reef systems.
- A white-cheeked gibbon baby – the [first born at the Bronx Zoo](#) since 2000 – debuts at JungleWorld in January 2013. A Critically Endangered species, the white-cheeked gibbon is native to Vietnam, Lao PDR, and China.
- WCS and partners inventory all [27 primate species](#) in Tanzania to create roadmap for conservation in the most primate-diverse country in mainland Africa.

FINDING SOLUTIONS TO LIVESTOCK-WILDLIFE CONFLICTS

Since the late 1950s, management of foot-and-mouth disease (FMD) across much of southern Africa has been dominated by fences. The fences serve to control animal movements (i.e., separate wildlife that harbor FMD from cattle) and so create and maintain FMD-free areas to meet the requirements of a subsidized beef export industry. Over decades, these fences have contributed to the collapse of populations of wild ungulates by interfering with their seasonal movements and blocking access to water in dry years.

For example, between 1978 and 2003, formerly abundant mobile populations of wildebeest and red hartebeest declined from 315,000 to 16,000 and from 293,000 to 45,000 respectively as a result of fragmentation of their range by game fences. Similar impacts occurred in the Makgadikgadi system as a result of cordon fencing. Fencing around

the western, southern, and southeastern edges of the Okavango delta presently constrains seasonal dispersal of wild ungulates from the delta at the onset of the rainy season.

The WCS Animal & Human Health for the Environment and Development (AHEAD) program is working to revamp more than half a century of international policy when it comes to the trade in beef, with a new approach based on the way beef is processed (instead of where it is raised). We consider this potentially groundbreaking in terms of its potential implications for sustainable land use and wildlife conservation in southern Africa. We are now poised to help reverse historically prevailing fence-based policies that have had significant negative repercussions for free-ranging wildlife, including for the world's largest population of elephants (the 450,000 square kilometer Kavango-Zambezi Transfrontier Conservation Area – shared by Angola, Botswana, Namibia, Zambia and Zimbabwe – is home to 250,000 elephants).

Given the importance of both the livestock and wildlife sectors to many countries across Africa, it is time to reevaluate how best to manage risks from diseases like foot-and-mouth in ways that help Africa's pastoralists and farmers, while at the same time protecting free-ranging wildlife and providing confidence to beef-importing countries that the products they are buying pose minimal threats to their own agricultural sector.

INVESTIGATING THE LARGEST MORTALITY EVENT AMONG SOUTHERN RIGHT WHALES

Scientists from WCS and other leading organizations have been investigating why hundreds of southern right whale calves are turning up dead in Península Valdés, a World Heritage Site on the Atlantic coast of Patagonia, Argentina. At least 605 right whales have died since 2003 (116 in 2012 alone), including 538 newborn calves. This is arguably the largest mortality event ever recorded for a large whale. Despite extensive



[RIGHT] WCS has lobbied for the conservation and protection of the American bison for more than a century.

[OPPOSITE, RIGHT] Current New York City Mayor Bill de Blasio at a 2013 mayoral candidates forum on city cultural funding moderated by public radio hosts Leonard Lopate and Kurt Andersen.



investigations, a cause for the massive die-offs has not yet been found.

Hundreds of tissue samples have been collected by Marcela Uhart, Co-Director of the Southern Right Whale Health Monitoring Program (SRWHMP) and a veterinarian formerly with WCS; Virginia Rago, Field Veterinarian for WCS Argentina; and local and international partners. D McAloose, Head of the WCS Pathology Department and a member of the SRWHMP, has been the lead pathologist in the mortality investigation (*see Q&A, p. 42*). So far, there is no evidence of deadly toxins or infectious disease.

One unusual phenomenon is being considered as a contributing factor in some of the whale deaths. At Península Valdés, kelp gulls land on the backs of southern right whale calves to eat their skin and blubber. Pecking by the birds causes painful, deep lesions.

Researchers explain that right whale mothers and their calves expend great energy in avoiding attacks from gulls, which can last several hours. The attacks could compromise the health of the whales at a time of year when mothers are fasting and at a site where there is little food available to replenish fat reserves.

Until recently, scientists believed the population of southern right whales in the Valdés area to be healthy and growing after being depleted by commercial whaling over the past 200 years. A rigorous analysis of these unusual whale mortalities has been published in *Marine Ecology Progress Series*. The paper summarizes a decade of findings and puts the deaths into context within the 40-plus years since WCS started studying this population.

The work by WCS and its partners provides critical results for engaging local and international stakeholders,

increasing international awareness, and leveraging support for the continuation of efforts to unravel the mystery surrounding the ongoing right whale mortalities.

HONORING AN AMERICAN ICON WITH NATIONAL BISON DAY

At a time when lawmakers rarely agree on much, a quintessentially American mammal – the bison – drew support from both sides of the aisle in Congress in the fall of 2013 in a rare example of bipartisan collaboration. By unanimous consent, the U.S. Senate passed a resolution officially designating November 2, 2013 as National Bison Day. In passing the resolution, 25 Democratic and Republican senators teamed up with close to 50 diverse groups comprising the Vote Bison Coalition



and representing bison producers, Native Americans, conservationists, educational institutions, recreationists, zoological institutions, health organizations, and businesses.

U.S. Senators Michael Enzi (R-WY) and Tim Johnson (D-SD) – representing two states with significant bison populations – introduced the resolution with an emphasis on the historical, cultural, ecological, and economic role bison have played in our nation’s history. The bison, or buffalo as it is popularly called, once roamed the Western plains of the U.S. by the millions. Slaughtered to the brink of extinction with the settlement of the American west, bison recovered in the twentieth century due in large part to efforts by WCS’s Bronx Zoo, which sent over 70 animals west by rail beginning in 1907. Today, there are hundreds of thousands of bison in state and national parks, wildlife refuges, and on tribal and private lands.

North America’s largest mammal has deservedly achieved iconic status in the United States, appearing on currency and two state flags, and depicted on the seal of the U.S. Department of the Interior. The unique place of buffalo in American history helps to explain why 2013 also saw the reintroduction, with WCS’s help, of the National Bison Legacy Act, which would establish the American bison as the National Mammal of the United States. Few bison today remain truly wild. Developing pride and awareness around these magnificent animals will help us to restore them (and their critical ecological functions) to key parts of their former range.

Additional information about the Vote Bison campaign can be found at www.votebison.org.

BREAKING GROUND IN ZOOLOGICAL HEALTH

In the fall of 2013 a team of doctors from Mt. Sinai Medical Center traveled to the Bronx Zoo’s Wildlife Health Center to perform surgery on Holli, a 23-year-old gorilla with a severe abdominal abscess. Born at the zoo in 1989, Holli faced surgery after exhibiting a loss of energy and appetite, eventually shedding 30 pounds. The source of the problem was identified through X-rays, blood tests, and an ultrasound exam.

The Bronx Zoo veterinary team, lead by senior veterinarian Dr. John Sykes, was joined by vascular and gastrointestinal surgery teams from Mt. Sinai Medical Center, who, due to the close similarity of gorilla and human anatomy, and their experience treating similar conditions in humans, were well prepared to perform her surgery. On September 6, the surgery took place at the Bronx Zoo’s 30,000-square-foot Wildlife Health Center, one of the nation’s most technologically advanced animal medical facilities.

Before the surgery, the Zoological Health Program’s Clinical Department Head, Dr. Bonnie Raphael, shared a book on gorilla anatomy with the physicians, but she needn’t have worried. “Once we got inside,” one surgeon told *The New York Times*, “it was all the same. You’d think it was a human.” The surgery was a success, but Holli’s recovery at the Health Center was slow and required intensive round-the-clock care by veterinarians, keepers, and curators. She was treated with IV medications that required continuous care for the next month.

ONE PERCENT FOR CULTURE



The New York City nonprofit cultural sector, of which WCS’s zoos and aquarium are a part, today receives only 0.22 percent of the City’s expense budget

despite the fact that it spurs local economic activity and draws tourists from around the world. As of 2011, more than 24 million tourists attended cultural events and venues and this number continues to grow. Out of this data arose the *One Percent for Culture* campaign. The initiative worked to gain support from 2013 NYC office-seekers for a commitment of one percent of the municipal budget to arts and culture.

One Percent for Culture achieved many of its major goals this year. Having amassed 554 coalition partners in all 51 City Council districts and 60 advisory council members – including celebrities Sigourney Weaver, John Turturro, Hakeem Nicks, Steve Buscemi, Annabella Sciorra, and Bernadette Peters – the campaign held town hall meetings in all five boroughs, eventually securing pledges of support from 69 percent of the candidates that succeeded in winning election or re-election.

In July the campaign co-hosted a mayoral forum moderated by popular radio hosts Leonard Lopate of WNYC and Kurt Andersen of PRI’s *Studio 360*, which resulted in subsequent coverage of the campaign on the *Leonard Lopate Show* in August and Lopate’s moderation of a New York City Council Speaker candidate forum in December. The focus in 2014 will be to ensure that the coalition’s concerns are represented in the priorities of New York City’s newly-elected mayor, Bill de Blasio, and that the message continues into the Fiscal Year 2015 budget process.



[RIGHT] WCS conservationists determined that Blakiston's fish owl – the world's largest owl species – survives on salmon microhabitats found in old growth forests of the Russian Far East.

Four weeks after her surgery, Holli had recovered sufficiently to be allowed to return to her home in the *Congo Gorilla Forest* exhibit, where she is one of 18 gorillas. Holli was initially re-introduced to her silverback (the dominant male of her troop) before being eventually reunited with her entire troop.

DOCUMENTING THE CONNECTION BETWEEN SALMON MICROHABITATS AND OWL PREDATION

In October 2013, a study spearheaded by WCS's Jonathan Slaght showed that the world's largest owl relies on giant old growth forest trees in the Russian Far East for feeding – on fish. Slaght and colleagues discovered that when the massive trees



topple into adjacent streams, they disrupt water flow, generating a combination of deep, slow-moving backwaters and shallow, fast-moving channels that provide important microhabitats

critical to salmon in different developmental stages.

The enormous Blakiston's fish owl, a predatory bird, boasts a six-foot wingspan. Restricted to riverine areas in Russia, China, Japan and possibly North

THE NEW YORK AQUARIUM — A YEAR AFTER SANDY

On the first anniversary of Hurricane Sandy in October 2013, WCS announced it had moved from recovery to rebuilding and transforming its New York Aquarium.

Since partially re-opening in May, the aquarium has welcomed more than 350,000 guests. Its comeback will help our community become more vibrant than ever. The aquarium is important to the economy of New York City, to the education of our city's school children, and to the conservation of the nearby ocean and waterways. Annually, the aquarium has contributed more than \$58 million worth of economic activity into the community, and traditionally has served 750,000 guests each year. As WCS Vice President and New York Aquarium Director Jon Forrest Dohlin said, "The WCS New York Aquarium is important to the economy and culture in New York City, to the education of our city's children, and to the conservation of the New York seascape."

Sandy hit on Oct. 29, 2012. WCS has worked closely with federal, state and local officials to ensure that government support is in place to allow the Aquarium to fully rebuild by 2016. Last January, Congress passed a \$60 billion emergency spending measure to provide relief to storm-affected areas. At the same time, WCS

emergency online appeals for the aquarium in the wake of Hurricane Sandy raised more than \$463,000 and almost 41,000 e-mails were sent to Congress in support of recovery aid for the aquarium and the region. While the New York Aquarium was dealing with its own crisis, it also supported local recovery efforts through Coney Recovers, an initiative of the Alliance for Coney Island to provide essential aid to the community in the wake of the storm.

Hurricane Sandy came just days before the much anticipated groundbreaking of a new shark exhibit, *Ocean Wonders: Sharks!* Damage was significant to the aquarium's infrastructure and life support systems. The partnership between WCS and the City of New York for the planned expansion continues to move forward while we simultaneously rebuild. WCS also launched an innovative online fundraising effort in late October to give New Yorkers an opportunity to help the New York Aquarium. Virtual tiles of a shimmer wall, which will surround the new *Ocean Wonders: Sharks!* exhibit, are being sold for \$100 at www.nyaquarium.com. Each virtual tile can be customized by using colors and animal themes and can include messages of support that will be displayed on the aquarium's website.



Korea, this voracious devourer of salmon relies on old-growth forests along streams for breeding and to support healthy populations of its favorite prey.

Slaght and his co-authors from the University of Minnesota and the Russian Academy of Sciences studied the foraging and nesting characteristics of Blakiston's fish owl in Primorye, Russia, where they looked at nesting habitat over 20,213 square kilometers. Their study, appearing in the journal *Oryx*, suggests that large old trees and old-growth forest near rivers and streams were the primary distinguishing characteristics of both nest and foraging sites. Retaining habitat for fish owls will also maintain habitat for many other species.

LAUNCHING FIRST GOVERNMENT-BACKED CARBON CREDITS

The Government of Madagascar and WCS announced in 2013 that 710,589 carbon credits had been certified for sale from the Makira Forest REDD+ (Reducing Emissions from Deforestation and Forest Degradation "plus" conservation) project. It is hoped that the sale of the credits will prevent the release of more than 33 million tons of carbon dioxide (CO₂) over the next 30 years (each carbon credit is equal to one ton of CO₂ emissions). WCS, which has worked in Makira since 2001, is the delegated manager of the park and responsible for implementing the REDD+ project.

REDD+ is an international framework that assigns a financial value to the carbon

stored in forests, offering compensation to developing countries for reducing emissions from deforestation and forest degradation while investing in low-carbon paths to sustainable development. REDD+ additionally includes the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks.

The Makira Forest spans more than 1,500 square miles, making it the largest remaining intact block of rainforest in Madagascar. It contains an estimated one percent of the world's biodiversity, including 20 lemur species, hundreds of bird species, and thousands of plant varieties – most found nowhere else on earth. In addition, Makira's forests serve as a zone of watershed protection, providing clean water to over 250,000 people in the surrounding landscape.

The Makira REDD+ Project will be the first sale of government-owned, government-led REDD+ credits in Africa. Through carbon credit sales from avoided deforestation, the Makira REDD+ Project will directly benefit local communities around the

protected area by allocating 50 percent of the net revenues of carbon sales to improve local infrastructure; provide health and education services; and support training, inputs, and technical assistance for sustainable agriculture.

REVEALING THE DANGERS OF THE CASHMERE INDUSTRY TO WILDLIFE

A new study published in August 2013 by WCS and the Snow Leopard Trust indicated that people caught wearing last year's styles aren't the only fashion victims. The study, appearing in the August issue of *Conservation Biology* and led by WCS's Joel Berger, documents how the cashmere garment industry poses dangers to Asian wildlife, including snow leopards, wild yak, Tibetan antelope, gazelles, and kiang.

Ninety percent of the world's cashmere comes from China and Mongolia. According to Berger and his colleagues, as goat-herding pastoralists seek to increase profits for the cashmere trade in Western markets, ecosystems supporting iconic wildlife from the Tibetan Plateau to Mongolia have been

[BELOW] The Boulenger's giant treefrog is one of the myriad species thriving in Madagascar's Makira Forest, home of the Makira REDD+ carbon credit project.



[BELOW] **Left:** WCS provided technical expertise in the creation of a human-bear conflict map, part of a larger effort to maintain healthy populations of large carnivores in the Northern U.S. Rocky Mountains.

Center: A study by WCS conservationist Joel Berger and the Snow Leopard Trust found that the garment industry is having an adverse effect on kiang and other wildlife of Central Asia. **Right:** Leo, an orphaned snow leopard from Pakistan brought to the Bronx Zoo in 2006, sired his first cub in 2013, pictured here at the zoo's *Himalayan Highlands* exhibit.

compromised as endangered snow leopards and other species increasingly share their turf with cashmere goats.

The researchers found that goats and other livestock now comprise 95 percent of the large mammal biomass within key protected areas from the Tibetan Plateau to Mongolia, with only five percent comprised of wild species. In Mongolia alone, livestock herds have increased from 5 million in 1990 to almost 14 million in 2010. The scientists hope their study raises awareness among Western consumers about the origins of cashmere and its growing impact on wildlife.

Changing this unsustainable cycle will require solutions that engage all stakeholders in production of cashmere – from the fashion industry and consumers to conservationists, economists, and the governments of cashmere-producing regions. It is hoped that cashmere producers can be incentivized to conduct their business sustainably. Successful efforts in the past have included paying bonuses for cashmere produced without the killing of snow leopards and other wild animals, or placing goats in predator-proof corrals.

BUILDING COMMUNITY COLLABORATIONS IN THE NORTHERN ROCKIES

For wide-ranging animals like wolverine and grizzly bear to survive in the lower 48 states, they need to move among the core areas of the Northern U.S. Rockies, which include private lands: chiefly the Greater Yellowstone, Salmon-Selway, and Crown of the Continent regions. Because ranching communities predominate there, WCS is working hard to provide tools and information to enhance co-existence between local people and wildlife – particularly carnivores.

In 2013, WCS facilitated nine wildlife talks in small rural communities. More than 700 individuals attended, suggesting that local residents are hungry to know more about living in proximity to wildlife. WCS also held community exchange days to demonstrate the use of working dogs and community livestock carcass composting programs to minimize wildlife-livestock conflicts. The demonstration at the carcass composting facility generated enough interest to support the development of a local program

for the three valleys important to carnivore connectivity in the Rockies.

In addition, WCS was invited to Big Sky, Montana to facilitate, organize, and provide technical expertise for a Bear Smart program. A map of human-bear conflicts in the community will guide prioritization of bear-proofing efforts and serve as a tool for tracking success. All these efforts contribute to WCS's long-term goal of ensuring that large carnivores can sustain a healthy connected population through the northern U.S. Rocky Mountains while maintaining local livelihoods and positive perceptions of wildlife.

CELEBRATING NEW SNOW LEOPARD CUBS

In 2006, a team of WCS wildlife experts was deployed to Pakistan's remote Naltar Valley to retrieve a young, orphaned snow leopard. Leo, as he was named, could not be returned to the wild because he had not had the opportunity to learn essential survival skills from his mother. A transfer to the Bronx Zoo was facilitated through an agreement between the Government of



WCS Achievements Inspire

- [Nam Nern Night Safari](#), an ecotour developed by WCS and Lao partners, wins prestigious World Responsible Tourism Award at the World Travel Mart in London, England.
- WCS Education receives funding from the National Center for Civic Engagement for a tiered mentor program that pairs teens with WCS Education staff and a [Fordham Univ. PhD candidate](#) to conduct urban ecology research at the Bronx Zoo.
- WCS [Run for the Wild](#) draws more than 5,250 participants to run and walk, increasing awareness of the plight of elephants globally while raising more than \$860,000 for conservation.
- WCS and Esri develop an [online story map](#) that combines spatial data, cartography, and web mapping tools to visually tell the story of the elephant poaching crisis.
- The [WCS Education Department's programs](#) for children five years old and under expands to 300 separate programs in 2013, further nurturing lifelong appreciation for conservation among New York City youth.

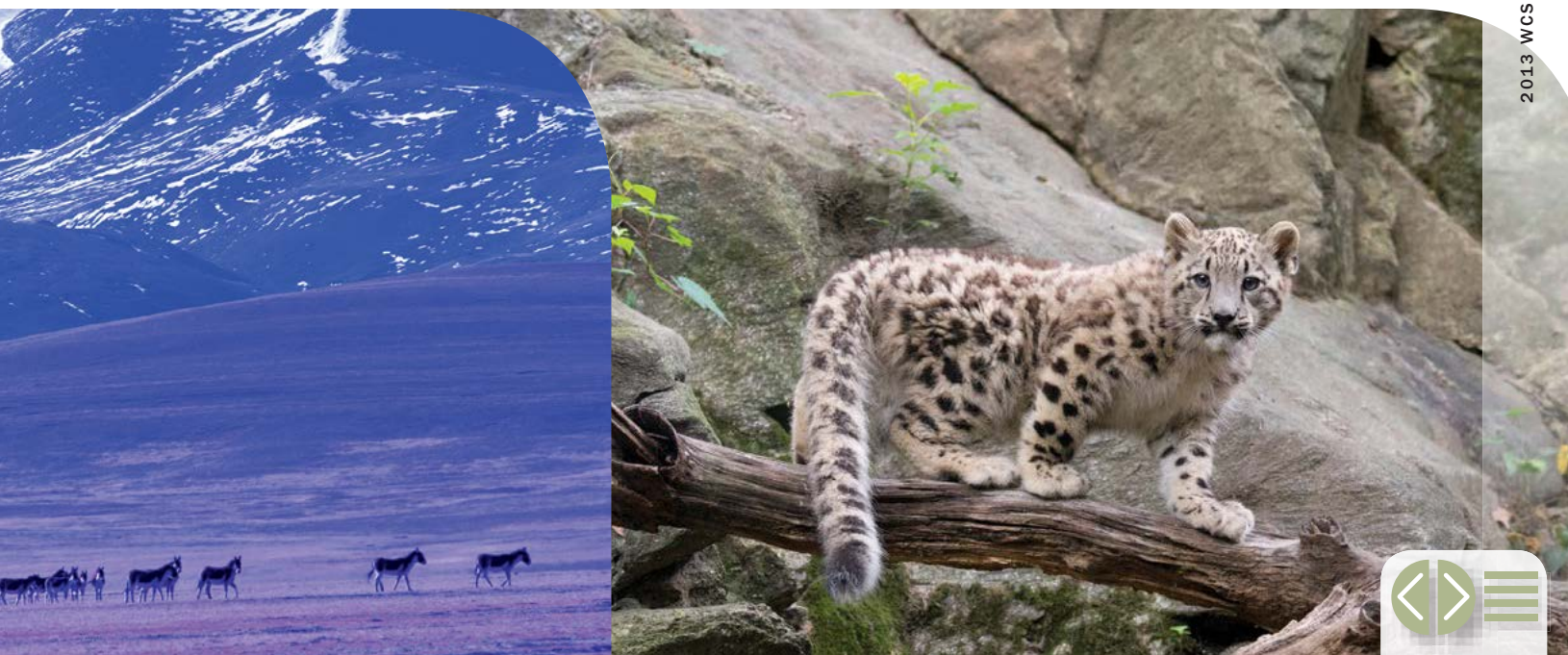
Pakistan and the U.S. State Department because there are no suitable facilities for snow leopards in Pakistan.

This past April, WCS was thrilled to announce that a cub sired by Leo was born to his mate Maya at the Bronx Zoo, an internationally recognized leader in snow leopard care and husbandry. The Bronx Zoo has had more snow leopard births (over 70) than any other zoo in North America and was the first zoo in the United States to exhibit these big cats in 1903.

Leo's cub wasn't the only snow leopard birth at a WCS zoo this year. The Central Park Zoo debuted a pair of snow leopard cubs – the first born at that zoo. The twin cubs, expected to reach between 65–120 pounds when fully grown, can be seen at the Allison Maher Stern Snow Leopard Exhibit.

The litter is the result of the successful pairing of, Zoe, the mother, with Askai, a male sent to the

Central Park Zoo from the Bronx Zoo. Both adults are first-time parents. Snow leopards at the Central Park and Bronx Zoos are a part of the Species Survival Plan – a cooperative breeding program administered by the Association of Zoos and Aquariums (AZA) designed to enhance the genetic diversity and demographic stability of animal populations in AZA-accredited zoos.



[BELOW] Executive Vice President for Conservation and Science John Robinson, WCS Asia Program Science Director Ullas Karanth, WCS President & CEO Cristián Samper, and WCS India Program staff member B. M. Akarsha in India's Western Ghats, where WCS has been working on tiger conservation for nearly two decades.

[OPPOSITE] **Top:** WCS Marine Policy Advisor Amie Bräutigam (2nd from right) participates in March 2013 CITES panel in Bangkok, Thailand. **Bottom:** On the conference jumbotron, Bräutigam and WCS New York Seascape Director Merry Camhi present the (successful) case for listing threatened shark and ray species by CITES.

EXAMINING THE LINK BETWEEN SYNTHETIC BIOLOGY AND CONSERVATION

Conservation experts and synthetic biologists met at Cambridge University in April 2013 to discuss the ecological and ethical challenges raised by a new area of study in the effort to save iconic and endangered wildlife and wild places. Synthetic biology is a young discipline that utilizes chemically synthesized DNA to create organisms – including, potentially, once-extinct species. The field is developing rapidly, with billions of dollars being invested annually.

The Synthetic Biology and Conservation Conference was sponsored by WCS, along with our Trustee Katie Dolan, The Nature Conservancy, and the Osborn Memorial Lecture Fund, and chaired by Kent Redford of WCS and Archipelago Consulting.

Scientists from several continents gathered to discuss the impact synthetic biology could and should have on the natural world. Redford and four colleagues presented a paper appearing in the journal *PLOS Biology* that highlighted

several emerging issues in the field: the recreation of once-extinct species; the interaction of synthetic organisms with existing species; the definition of what “natural” is; and the production of natural services like carbon sequestration and pollution control with synthetic biology.

WCS president and CEO Cristián Samper addressed the conference, as did his predecessor at WCS, Steve Sanderson, who contributed to Redford's paper.

Proponents of synthetic biology argue it could provide potential solutions to human health problems, food security, and energy needs. While critics warn that genetically modified organisms could pose a danger to native species and natural ecosystems, Redford and his co-authors observe that, in any scenario, a dialogue on how to use and restrict synthetic biology methods and products must be initiated for the benefit of society and decision makers across the globe.

John Robinson, WCS Chief Conservation Officer, noted at the time of the conference: “Synthetic biology is an extremely important

and burgeoning field, but its consequences to biodiversity and conservation are currently poorly understood. By bringing together the best thinkers in these two disciplines we hope to gain a better understanding of the opportunities offered by – and potential impacts of – this new field of conservation.”

UNVEILING A NEW WORLD MAP FOR OVERCOMING CLIMATE CHANGE CHALLENGES

Combining data from the world's ecosystems with climate change predictions, scientists from WCS, the University of Queensland, and Stanford University in 2013 produced an unprecedented new map identifying the world's least and most vulnerable areas in the Age of Climate Change. The map was featured in a study led by WCS climate change scientist James Watson and published in the online version of the journal *Nature Climate Change*. It is expected to help governments, environmental agencies, and donors identify where best to invest in protected area establishment, restoration efforts, and other conservation activities.

Watson and his colleagues argued that almost all climate change assessments to date are incomplete because they evaluate future climate change impact on landscapes and seascapes without considering how human activities could render them more or less vulnerable. Southern and southeastern Asia, Western and central Europe, eastern South America, and southern Australia are some of the most vulnerable regions in the new map. Least vulnerable are intact regions in North and



southwestern Africa, northern Australia, and southern South America. Previous assessments based only on climate change exposure suggested that the most vulnerable regions were central Africa, northern South America, and northern Australia.

The study's vulnerability map suggests that ecosystems with highly intact vegetation and high relative climate stability are the best locations for future protected areas because they have the best chance of retaining species. Ecosystems with low levels of vegetation and high relative climate stability, on the other hand, could merit efforts at habitat restoration. Increasingly it seems clear that human intervention can play a critical role in identifying and protecting wild places best suited for climate change adaptation.

PROTECTING GORILLAS IN THE REPUBLIC OF CONGO

In 2008, WCS announced the discovery of more than 125,000 western lowland gorillas living in northern Republic of Congo. Many of these gorillas inhabited unprotected areas of the country, and the Congolese government pledged its commitment to protect them through the creation of a new national park. In 2013, they followed through on that commitment by establishing Ntokou-Pikounda National Park, which provides secure habitat for this critical gorilla population and for hundreds of elephants and chimpanzees.

Ntokou-Pikounda National Park adds to Congo's impressive list of protected areas – including Nouabalé-Ndoki National Park and Odzala-Kokou National Park – that safeguard large populations of gorillas and wide

ADDRESSING THE WILDLIFE TRADE THROUGH INTERGOVERNMENTAL POLICY

In 2013, WCS worked through multiple governments and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Secretariat to ensure that several species were included in the appropriate CITES

Appendix and that international trade restrictions are being implemented and enforced for our priority species threatened by international trade – notably elephants, tigers, birds, reptiles, and sharks.

In partnership with multiple governments, we led an NGO coalition that worked successfully to include seven species of sharks and rays (along with several species of endangered tortoises) in the appendices to the March 2013 meeting of the CITES Conference of the Parties. For the sharks, this represents the first time species subject to commercially valuable fisheries will now come under the purview and authority of CITES, a major step forward. It should also lead to significant changes in the international shark fin trade.

WCS also worked with governments and NGO partners to use the CITES Standing Committee and Conference of the Parties processes to regulate international wildlife trade, particularly ivory trafficking – with a focus on the eight countries identified as those with the weakest enforcement of international ivory trafficking. We continue to provide technical advice to the CITES Secretariat, governments, IUCN, and NGO partners on both the MIKE (Monitoring Illegal Killing of Elephants) and ETIS (Elephant Trade Information System) programs, to promote sound science-based policies and processes to protect elephants.

Also at CITES, WCS worked to ensure that the convention continues to recognize the important value and non-commercial nature of zoos, which enables our breeding partnerships with other zoos to remain feasible and sustainable.

Finally, WCS led and collaborated with partners in the effective implementation of intergovernmental initiatives to address wildlife trade (both illegal and unsustainable but legal). We work with multilateral institutions and government aid agencies as they develop approaches to address the wildlife poaching and trafficking crisis.



[RIGHT] WCS's Amazon Waters initiative recognizes the value of wildlife, aquatic habitat, and fishing livelihoods to the millions of people who live along the Amazon and its many tributaries.



expanses of pristine habitat. The new protected area spans 4,572 square kilometers (1,765 square miles) and contains an estimated 800 elephants, 950 chimpanzees, and 15,000 gorillas, especially in the gorilla-rich remote swamp dubbed the “Green Abyss” by WCS researchers who conducted wildlife surveys there.

Western lowland gorillas are one of three gorilla sub-species listed as Critically Endangered by the International Union for Conservation of Nature (IUCN). A fourth gorilla subspecies is Endangered. Gorillas across Central Africa face threats from hunting for bushmeat and the spread of the Ebola virus, which is lethal to gorillas as well as humans. WCS works with partners to combat Ebola, find alternatives to gorilla meat as a source of food, promote gorilla-tourism, and secure this last stronghold for Africa’s apes.

WCS’s Bronx Zoo opened its *Congo Gorilla Forest* exhibit in 1999 to draw attention to the plight of the greater Congo Basin rainforest. In the past 14 years, the exhibit has raised over \$11 million from admission fees to support WCS conservation work in Central Africa. The Congolese government has been

an extraordinary conservation partner with WCS over the years. With the new park, the Republic of Congo shows its continued commitment to protecting the largest population of gorillas in the world.

> GAINING GROUND IN TURTLE CONSERVATION

More than half of the world’s approximately 330 species of freshwater turtles and tortoises are threatened with extinction due to illegal trade and habitat loss. In 2012, WCS unveiled a strategy to save the 25 most endangered of these turtles. WCS’s leadership on turtle conservation combines the creation of assurance colonies at its zoos with in-country field work. On World Turtle Day last May, WCS announced progress in its effort to restore some of the world’s most threatened turtles to their former habitat.

WCS’s zoos are equipped to help turtles and tortoises through captive breeding and husbandry. More than a dozen turtle and tortoise species from around the world are being raised at the Bronx and Prospect Park Zoos in an effort

to prevent their extinction. In addition to these zoo-based efforts, the Bronx Zoo currently maintains an assurance colony of seven Roti Island snake-necked turtles, discovered in 1994 and subsequently hunted to near-extinction (with only a few remaining individuals in the wild). The Bronx Zoo also maintains a population of eight Sulawesi forest turtles, a species found only in Indonesia. In addition, five Chinese yellow-headed box turtles were hatched this year at the Bronx Zoo. Fewer than 150 of these Critically Endangered animals remain in the wild.

Other threatened turtle species in assurance colonies at WCS’s zoos include the painted river terrapin, black-breasted leaf turtle, McCord’s box turtle, flower-backed box turtle, three-striped box turtle, and Chinese big-headed turtle, among others.

> PROTECTING AMAZON WATERS

In 2013, WCS launched its *Amazon Waters* initiative, a multi-stakeholder effort to develop a shared vision for the Amazon that recognizes



the value of fisheries, wildlife, and aquatic habitat, as well as the need to manage these resources sustainably. The largest river system in the world, the Amazon and its tributaries nourish millions of people and innumerable diverse species of wildlife.

Threats to the Amazon come from deforestation and from dams, roads, human-induced climate change, gold mining, petroleum extraction, shipping, and the unplanned growth of cities. From rural fishermen and indigenous people to villagers and urban inhabitants of cities like Iquitos, Peru and Manaus, Brazil, as many as 20 million people depend on the Amazon for clean drinking water, transportation, fisheries, and agriculture.

Fish are the critical link between the environmental

health of rivers and wetlands and the livelihoods of millions of people. Because they are highly sensitive to changes in water levels and chemistry, fish are the best indicators of the overall health of the Amazon River system and link its habitats ecologically. As go fish and fish habitats (including flooded forests and floating meadows), so go pink river dolphins, black caiman, and other aquatic animals.

As infrastructure development and climate change threaten to disrupt the habitats upon which migratory fish depend, the time is right for a dedicated focus on the Amazon's waters and the future of millions of people who depend on them. In 2013, WCS formed a partnership with The Nature Conservancy and the National Center for Ecological Analysis and Synthesis (NCEAS)

called SNAP, or Science for Nature and People. *Amazon Waters* is one of the two first working groups of the broader SNAP initiative.

EXTOLLING THE VIRTUES OF A NON-PETROLEUM ECONOMY

Eric W. Sanderson, senior ecologist with WCS and author of the critically acclaimed *Mannahatta*, released a new book in 2013 that will help Americans think differently about the way they live. In *Terra Nova: The New World After Oil, Cars, and Suburbs*, Sanderson proposes solutions to our oil-dependent economy that can be achieved through a self-reinforcing cycle of tax reform, retrofitting of towns and cities,



REMEMBERING PATTYCAKE AND GUS: TWO ICONS FOR CONSERVATION

2013 marked the death of two iconic animals in our zoos. Pattycake, the most famous Bronx Zoo gorilla, died in the spring and Gus, the Central Park Zoo's ever popular polar bear, passed away in the summer. Pattycake became a permanent fixture at WCS's Bronx Zoo in 1983. A respected female in her troop, she produced 10 offspring, including a rare set of twins, and helped care for many of the 59 gorillas born at the Bronx Zoo.

Pattycake was born at the Central Park Zoo on Sept. 3, 1972. Her 40-year life spanned the giant revolution in the role of zoos. Once intended solely for the amusement of their visitors, zoos began to see their mission change in the 1970s, and have continued to evolve. In addition to providing the highest quality of care to the animals they house and exhibiting species in naturalistic settings with species-appropriate social groups, many modern zoos now also support the conservation of animals in the wild.

Gus, 27, also served as an ambassador for his species. He brought attention to the problems polar bears face in the wild due to a changing environment. Polar bears rest on floating platforms of ice between dives for seals, fish and other food. As summer ice has disappeared at



unprecedented levels, floes increasingly occur far from land and it has become difficult for polar bears – particularly females and their cubs – to use sea ice as a resting platform between hunting forays.

A media favorite, Gus appeared in many local and national newspapers and television newscasts as the face of the Central Park Zoo. More than 20 million people visited Gus since he arrived at the zoo in 1988.



[RIGHT] In 2013, WCS helped to document the first known marine mammal mass stranding event – of 100 melon-headed whales – to be closely associated with high-frequency mapping sonar systems.



PROMOTING WOMEN IN CONSERVATION IN AFGHANISTAN

With support from the U.S. Agency for International Development (USAID), WCS has played a lead role in helping Afghanistan protect its natural resources since 2006. In 2009, WCS helped establish the nation's first national park, Band-e-Amir. One of the world's most beautiful landscapes, the park – boasting six deep-blue, crystal clear lakes – has been nominated as a World Heritage site. In 2013 a groundbreaking decision was made to hire four women rangers for Band-e-Amir, representing the first women ever employed as park rangers in Afghanistan.

The Ministry of Agriculture, Irrigation, and Livestock (MAIL) took pioneering action to recruit and hire the women rangers after park managers and representatives from the 14 villages in the park, as well as provincial and district governments, unanimously endorsed the concept. The four women rangers represent a significant milestone both for Afghanistan's law enforcement and for women's employment in the nation. According to NATO less than one percent of Afghanistan National Police are female. In the United States fully a third of all uniformed rangers in the National Park Service are women.

Band-e-Amir provides a home to a number of rare and endangered species. Since its establishment, the park has become a critical tourist draw in the country. More than 4,000 guests a month visit the lakes during the summer season, with some summer holidays seeing that many in one weekend. The

walking, bicycles and streetcars, and economies of scale for renewable energy.

In this landmark book, Sanderson uses myriad disciplines to demonstrate how our current economic model evolved and ways in which a new one ("Terra Nova") may arise in the future. Along the way, he presents a detailed analysis of how cheap oil drove the nation's expansion into the suburbs during the 20th century. The underlying conditions for the oil-cars-suburbs economy, argues Sanderson, no longer exist. Critical to breaking our dependence on petroleum is

an investment in the least-developed source of energy America has: renewable power.

To that end, *Terra Nova* offers a path to a 21st century American dream based on unleashing solar, wind, and geothermal heat to drive the nation and improve our lives. While exploring those themes, Sanderson continued working on his *Mannahatta 2409* project, which imagines the natural resource features of a future Manhattan by controlling for a variety of planning decisions today. A web application will enable the public to develop and crowd-source its own climate-resilient designs.



park is particularly popular among Afghani women as a recreational area and for the reputed therapeutic properties of the water.

STRANDING OF WHALES ATTRIBUTED TO SONAR MAPPING FOR THE FIRST TIME

In the fall of 2013, an independent scientific review panel concluded that the mass stranding of about 100 melon-headed whales in northwest Madagascar in 2008 was primarily triggered by acoustic stimuli – more specifically, a multi-beam echosounder system operated by a survey vessel contracted by ExxonMobil Exploration and Production (Northern Madagascar) Limited.

The International Whaling Commission and other U.S. government agencies facilitated the independent review, and the government of Madagascar authorized the work. The resulting report is a watershed event and documents the first known marine mammal mass stranding event of this nature to be closely associated with high-frequency mapping sonar systems. The impact of noise on marine mammals that encounter these systems is a growing concern throughout the world's oceans. Various stakeholders, including the hydrocarbon industry, research vessels, and the military, use these high-frequency mapping sonar systems.

Much of the data used in the report were collected and produced by an international stranding response team organized by WCS scientists, veterinary staff, and key partners. In 2008, with

collaboration from the International Fund for Animal Welfare (IFAW), WCS led an international team to assist in the return of live whales from the Loza Lagoon system to the open sea, and to conduct necropsies on dead whales to determine the cause of death. It is critical to understand what causes mass strandings of marine mammals in order to help prevent them in the future.

As the new report concludes, the possible behavioral response to – and indirect injury or death from – devices like the multi-beam echosounder should be considered in future environmental assessments, plans, and regulations that aim to benefit whales, dolphins, and other marine life. From the initial response in Madagascar to the completion of the review panel report, WCS provided truly collective and collaborative leadership, led by Howard Rosenbaum, Tim Collins, D McAloose, Paul Calle, Salvatore Cerchio, Bemahafaly Randriamanantsoa, Norbert Andrianivelo, Catherine McClave, and Christopher Holmes.

PROTECTING ALBERTA'S HEADWATER HAVENS

WCS Canada senior scientist John Weaver assessed the conservation value of Crown lands in southwest Alberta in 2013. His third and final report completes an overall analysis of the Crown of the Continent region, which encompasses more than 72,843 square kilometers. His latest analysis focused on a suite of iconic species – bull trout, westslope cutthroat trout, grizzly bear, wolverine, mountain goat and bighorn sheep. Half a

century ago, wildlife roamed the mountains in security. But over the past 50 years, expanding resource extraction and associated roads have penetrated most of the remote valleys. Once-abundant populations have been diminished, habitat security breached, connectivity fractured, and genetic integrity compromised.

The Alberta government is developing strategic direction for managing land and natural resources in various regions across the province. In the fall of 2013, it released a draft Regional Plan for the South Saskatchewan. Unfortunately, the draft plan fell far short of protecting vulnerable fish and wildlife populations and headwater sources of precious water that are cherished by southern Albertans. The plan would establish new wildland parks in about 25 percent of the area. WCS is encouraging the government and citizens to reconsider and strengthen this plan to ensure that more of their natural heritage and treasured headwaters are protected.

WCS Canada identified an area over 2,500 square kilometers that provides two-thirds of the most important habitats for vulnerable species on just 40 percent of the land base. This remaining stronghold occurs in the headwaters of major rivers along the Eastern Slopes – the Castle, Crowsnest, Oldman, and Highwood Rivers. While these “Headwater Havens” comprise the best remaining habitat security and could provide safe passage for wildlife movement in the wake of changing climate, only eight percent of these lands are currently protected. It is now up to the Alberta government to heed the call before it is too late.



Todd Comstock



“The plant life in our exhibits has to add to that feeling of being somewhere else on the planet while also providing an enriching environment for the animals.”

The son of a successful New England landscaper, Todd Comstock never intended to enter the family business. But after attending law school, he felt the familiar tug of nature. Here, WCS's Curator of Horticulture for its five New York City parks describes the challenge of using exhibit plants to transport guests to far-away habitats, the impact to zoo vegetation from Hurricane Sandy, and the thriving Connecticut eagle population occupying land conserved by his family.

HOW LONG HAVE YOU BEEN WITH WCS AND WHAT IS YOUR ASSIGNMENT?

I've been at WCS 13 years. I am Curator of Horticulture and responsible for all five of WCS's New York City parks.

WERE YOU INTERESTED IN PLANTS OR GARDENING AS A KID?

I grew up in the industry. My maternal grandfather owned a large retail nursery in Connecticut where my father worked after graduating from college. He later ran one of the largest commercial landscape contractors in New England during the 1980s.

SO YOU NATURALLY FOLLOWED IN HIS FOOTSTEPS?

Actually I was always dead set against being involved in any sort of agriculture-oriented business. After a stint in law school, I worked for my father for a few years before going on to be the general manager of two large wholesale tree-growing operations.

ARE THERE DIFFERENT GOALS FOR ZOO HORTICULTURE AND PARK LANDSCAPING AT WCS'S ZOOS?

I see park landscaping as being particularly geared toward the recreation and relaxation of the park visitor whereas zoo horticulture is more geared toward creating environments that transport the visitor to the natural habitat of the species being exhibited.

HOW CLOSELY DO YOU WORK WITH OUR EXHIBITION GRAPHICS AND DESIGN (EGAD) STAFF?

I work very closely with EGAD and have been happy to have excellent working relationships with their creative staff and leadership since I began working for WCS – from John Gwynne during his tenure to Sue Chin today.

HOW DOES THE VEGETATION PLANTED IN OR NEAR EXHIBIT AREAS COMPARE TO SPECIES' HABITATS IN THE WILD?

In conjunction with EGAD, we try to create habitats that closely resemble those of the animal species being exhibited. Very often we do need to substitute plant species that have a similar appearance, or as similar an appearance as possible, to those of the plant species native to that particular habitat.

HOW WOULD YOU SAY THE FUNCTION OF HORTICULTURE AT ZOOS HAS CHANGED IN THE PAST 10-20 YEARS?

I think the change has been dramatic, certainly in the last 40 or so years. I think this is most visible when looking at new approaches to the architectural design of our own buildings. Compare the World of Birds, which opened in the early '70s, to JungleWorld, which opened in the mid '80s. The exhibits have become much more immersive. With that in mind, the plant life has to add to that feeling of being somewhere else on the planet while also providing an enriching environment for the animals.



OUR ZOOLOGICAL PARKS DOUBLE AS BEAUTIFUL NATURE PRESERVES. IS THAT A CONSCIOUS DECISION?

It is and has been through the years. Each park is quite unique and very different in its layout, collections and history: so much so that what will work at one park – say the formality and symmetry at Central Park Zoo – certainly wouldn't work at the Bronx Zoo or Queens Zoo. The beachfront location of the New York Aquarium allows for an entirely different palette of plants than would be used at any of the other facilities. The common thread, though, is that each facility needs to be an enjoyable refuge for our visitors.

WHAT IS THE MIX OF PERENNIAL VS. ANNUAL PLANTS AND FLOWERS AT THE CENTRAL PARK ZOO?

With the exception of a few planting beds near the entrance, most flowering plants at the Central Park Zoo are perennial.

WHAT ASPECTS OF YOUR WORK ARE THE MOST CHALLENGING?

Five years ago, I would have said the public's interaction with our plantings; but in that time we have had a tornado at Queens Zoo, October snowstorms two years in a row, hurricanes Irene and Sandy, microbursts at both Central Park Zoo and the Bronx Zoo, a flood at Prospect Park Zoo, plus other smaller storm events at each of the facilities. So weather and/or the changing climate is definitely the most challenging aspect.

WHAT MAKES YOU PASSIONATE ABOUT YOUR JOB?

I really enjoy pushing the hardiness envelope and finding microclimates within our zoos – introducing plants that shouldn't or traditionally wouldn't thrive there.

WHAT WOULD SURPRISE PEOPLE MOST TO KNOW ABOUT THE WORK THAT OUR HORTICULTURE STAFF DOES?

I think the most surprising thing about WCS horticulture is how few people

we have on staff. At the Bronx Zoo, I work with only five full-time gardeners; and for the three city zoos and New York Aquarium, I work with one horticulturalist who is assisted in season with temporary labor.

FROM YOUR VARIOUS TRAVELS, CAN YOU SHARE SOME OF THE CLASSIC FORMAL GARDENS THAT HAVE REALLY LEFT YOU IN AWE?

Central Park is a great inspiration and I'm very fortunate to maintain an office there. The Fairchild Tropical Botanic Garden in Miami and the Antonio Borges Botanical Garden on Sao Miguel in the Azores are my favorite tropical gardens. Longwood Gardens outside of Philadelphia are amazing and the University of Copenhagen Botanic Garden is a small but very beautiful temperate garden. My favorite gardens, though, are at Versailles; they are incredibly over-the-top and really speak to my love of symmetry.

WHAT WAS YOUR LEVEL OF CONTACT WITH ANIMALS OR WILDLIFE AS A CHILD?

I grew up in Lyme and Essex, Connecticut. Our home in Lyme was actually a small dairy farm, and in addition to the cows we had a Morgan horse, Shetland pony, pigs, goats, and chickens.

SO IT'S SAFE TO SAY YOUR FAMILY HAD A CONSERVATION AWARENESS?

Well, my father has always been very concerned about the preservation of open spaces in the lower Connecticut River Valley. Our family has been based in that area since the 1650s! In the late 1980s, when the overwintering population of bald eagles was just beginning to increase, my father arranged with the state of Connecticut to set aside some 100 acres of hills and cliffs on our land above the Connecticut River as public conservation land. Since that time, the bald – and recently golden eagle – populations have soared, so much so



that the state has created a new park, Eagle Landing State Park, along the river just below those parcels of land.

WHAT IS YOUR GREATEST ZOO OR WILDLIFE MOMENT DURING YOUR TIME WITH WCS?

Probably the opening of the Central Park Zoo's *Allison Maher Stern Snow Leopard Exhibit*, which I was fortunate to work on with Tonya Edwards, Sue Chin, and John Gwynne.

WHAT IS YOUR PROUDEST ACHIEVEMENT?

I am quite proud of the plantings associated with Dinosaur Safari experience this year. I think they really helped create the illusion of the geological time periods represented. We had ginkgo trees and cycads from the Permian period; ferns from the Jurassic period; and magnolias, palms, and laurel from the Cretaceous period. Our guests had a lot of fun while learning about the ecology of the environments where dinosaurs once roamed.

[ABOVE] WCS Horticulture Curator Todd Comstock takes inspiration for WCS's gardens from botanical parks across the globe, including the University of Copenhagen Botanic Garden and Versailles.



2013 FINANCIAL REPORT

CHAPTER

2

2013 OPERATING
REVENUE 38

2013 OPERATING
EXPENSES AND PLANT
RENEWAL FUNDING 38

OPERATING REVENUE
GROWTH 38

OPERATING
REVENUES AND
EXPENSES 39

CONSOLIDATED
BALANCE SHEETS 40

Fiscal Year 2013 (2012-13) was challenging for the Wildlife Conservation Society as the organization coped with the flood damage sustained by the New York Aquarium from Hurricane Sandy, the super storm that devastated the Northeast on October 29, 2012. Flood waters significantly damaged the aquarium's heating, air conditioning, electrical power and distribution systems, and animal life support equipment. While the flooding damaged the interiors of most buildings, there was little structural damage and losses in the animal collection were minimal. The aquarium closed for seven months while a detailed damage assessment was completed and initial repairs were made.



While much restoration work remains, the aquarium was partially reopened to the public on May 25, 2013, along with most of the adjacent Coney Island amusement district and boardwalk. WCS management is working with the City of New York, New York State, and the Federal Emergency Management Agency (FEMA) to quantify the scope of work needed to fully restore the aquarium, including flood mitigation measures to limit damage from future storms.

Solely as a consequence of the aquarium closure and partial reopening, WCS ended the fiscal year with a small operating deficit of \$1 million, the first negative bottom line after nine consecutive years of positive operating results. Operating revenues totaled \$220.9 million, slightly lower (one percent) than the prior year. However, programmatic support from private contributions, U.S. federal agencies, and other bilateral and multilateral funding reached a record \$97.7 million, providing 44 percent of total revenue. Our investments in programmatic and fundraising leadership and capacity building in species, landscapes, science, and wildlife health are achieving returns such as greater measurable conservation results and more diversified funding streams. The establishment of WCS-Europe and the opening of a Brussels office have opened up new opportunities with European donors and agencies. For example, in Fiscal Year 2013 WCS was awarded three multi-year grants totaling \$1 million from the UK Darwin Initiative for projects in Guatemala, the Kenya Coast, and Cambodia. WCS also received an award of nearly \$3.5 million from the Norway International Climate and Forest Initiative (NICFI) to

address drivers of deforestation in the Mekong Region.

Visitation to our zoos and aquarium totaled 3.98 million visitors in Fiscal Year 2013, which is 489,000 (11 percent) lower than Fiscal Year 2012, which was marked by exceptionally high attendance. Nearly 300,000 of the attendance decline was due to the seven-month closure and partial reopening of the aquarium following Hurricane Sandy, which also led to several days of closures across WCS facilities. The balance reflected a return to more typical attendance patterns.

Attendance-driven revenues, gate and exhibit admissions fees, and visitor services income (food, merchandise and parking) totaled \$57.6 million in Fiscal Year 2013, a six percent decline caused by the aquarium closure and partial reopening. It is noteworthy that despite the continued weak economic picture, visitor spending at WCS's Bronx Zoo continues to grow, increasing by five percent to \$18.56 per visitor in Fiscal Year 2013 thanks to management's effort to focus the park operating model around visitors and their experiences. Membership income is an important part of this financial picture. Membership revenue totaled \$14.2 million, growing two percent over the previous year. The combination of revenues from gate admissions and exhibits, membership, and visitor services provided approximately one-third (\$71.8 million) of total revenue and is the largest source of unrestricted, flexible funding for operations, which is essential to WCS's continued financial health.

In the aggregate, the City of New York provided \$22.1 million for zoo and

aquarium operations. This is a combination of operating support and the cost of utilities provided to the Bronx Zoo and the New York Aquarium through the Department of Cultural Affairs, as well as reimbursement from the Department of Parks and Recreation for WCS operation of the Central Park, Prospect Park, and Queens Zoos. WCS was fortunate again this year to receive \$3.2 million in operating grants from the State of New York.

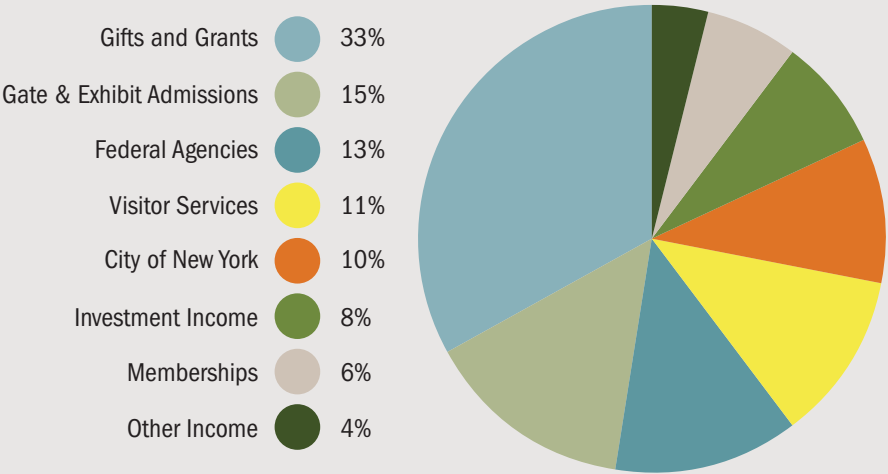
Investment income utilized for operations totaled \$17.2 million in Fiscal Year 2013. The variance from the prior year is the result of lower utilization of balances and the sunsetting of subventions for certain strategic investments, as those activities mature and successfully establish alternative funding sources or were concluded.

WCS operating expenses reached \$221.9 million in Fiscal Year 2013, slightly more than the previous year. Programmatic activity at our zoos and aquarium and in our global programs totaled \$171.5 million, or 77 percent of total operating expenses, which were about evenly shared between global conservation and health programs and zoo and aquarium activities. Spending on global conservation and health totaled \$86 million, funded by a combination of restricted gifts, grants, and contracts from individuals, foundations, U.S. governmental agencies, foreign aid, and other non-governmental organizations. This spending was lower than Fiscal Year 2012 because of the spinoff of Community Markets for Conservation Limited (COMACO) into an independent, not-for-profit corporation in Zambia.

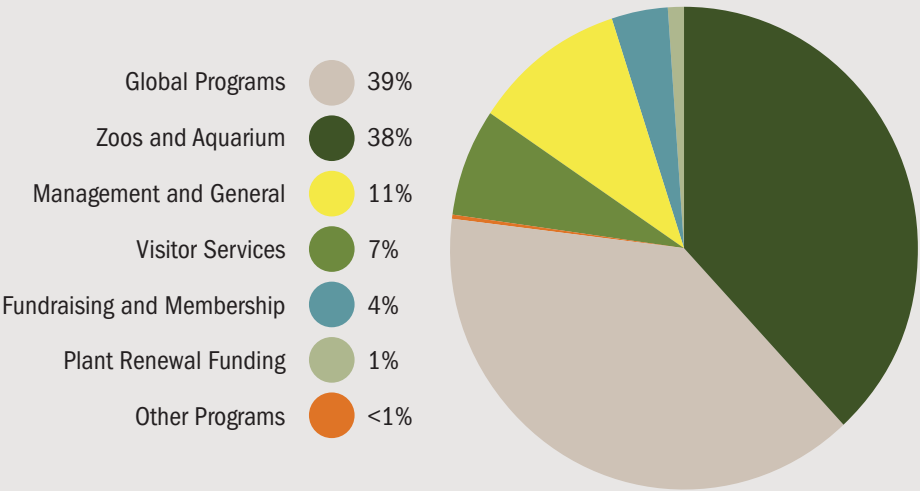
[OPPOSITE] WCS conservationists monitor road impacts and the effects of climate change on mountain goats in Glacier National Park.



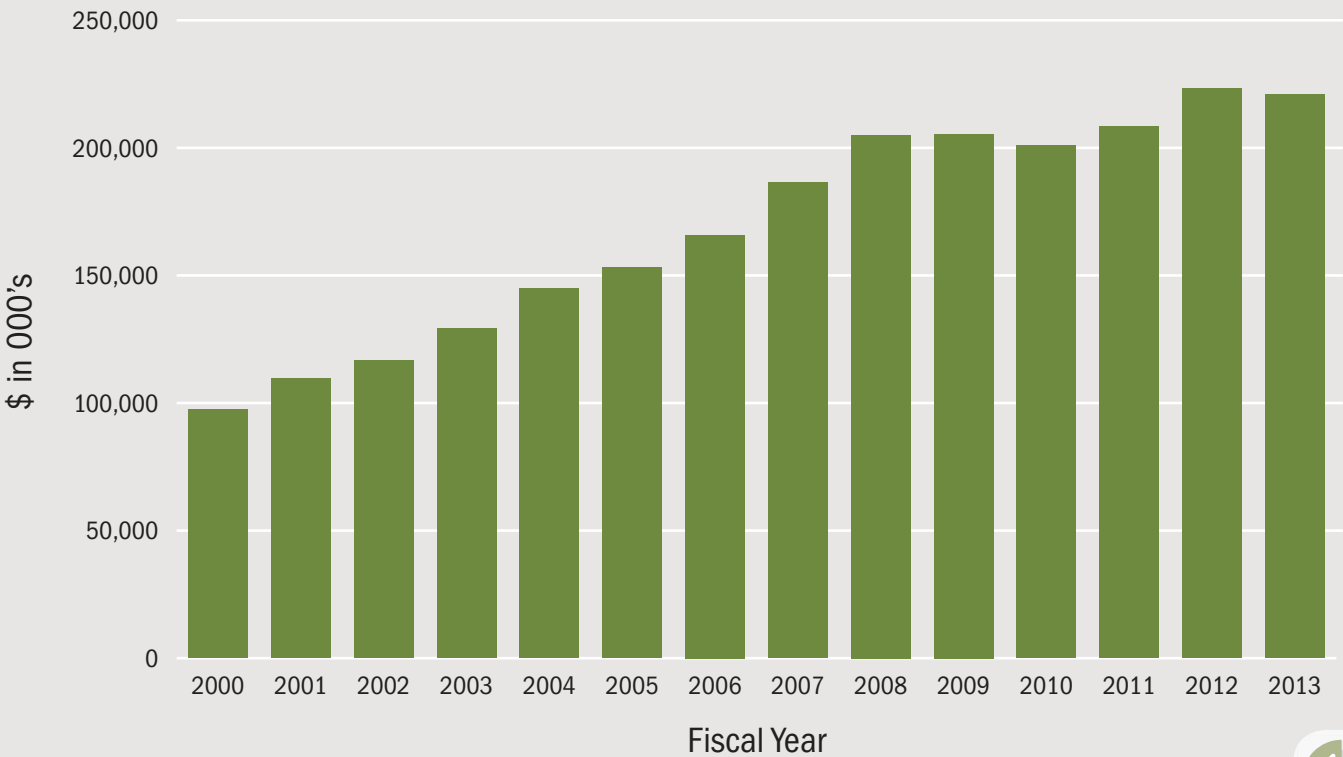
2013 OPERATING REVENUE (\$220.9 million)



2013 OPERATING EXPENSES AND PLANT RENEWAL FUNDING (\$221.9 million)



OPERATING REVENUE GROWTH



COMACO operates to promote food security, rural income, and sustainable land use practices and development in areas affected by the need for wildlife and habitat conservation.

Zoo and aquarium expenses increased as a result of the provision of staff raises and higher fringe benefit expenses. Aquarium operating costs also included over \$2 million in one-time extraordinary expenses for storm clean-up and initial repairs.

Management and fundraising expenses totaled \$32.3 million in Fiscal Year 2013, a lean 14.6 percent of total expenses. Growth in that area is primarily due to the implementation of WCS's multi-year program to replace outdated financial and administrative systems. The first two phases of this \$13 million, five-year effort were successfully completed this year, with the installation of new financial, purchasing, and human resources systems for domestic operations. On tap for Fiscal Year 2014 are the installation of a new payroll system and the roll-out of these new systems across WCS's global programs. When this project is complete the entire organization will function on a single platform managed at WCS's New York headquarters. We believe that this investment will lead to significant efficiencies and savings, provide better business intelligence, and foster organizational integration.

Capital expenditures totaled \$24 million in Fiscal Year 2013, including: \$15.8 million in spending on capital projects at the Bronx Zoo and City Zoo campuses and certain aquarium projects underway prior to Hurricane Sandy; \$5 million in aquarium restoration work required to stabilize the facility

OPERATING REVENUES AND EXPENSES

June 30, 2013 and 2012, in thousands

REVENUE	2013	2012
Contributed	\$58,325	\$50,369
Membership Dues	14,182	13,887
Investment Income Utilized	17,234	19,271
City of New York	22,073	22,131
New York State	3,275	3,103
Federal Agencies	28,297	31,624
Non Governmental Organization Grants	11,096	13,391
Gate and Exhibit Admissions	32,153	34,849
Visitor Services	25,430	26,560
Education Programs	2,206	2,525
Sponsorship, Licensing, and Royalties	745	1,665
Other	5,885	3,886
Total Revenue	\$220,901	\$223,261
EXPENDITURES	2013	2012
PROGRAM SERVICES:		
Bronx Zoo	51,859	49,323
New York Aquarium	13,393	11,710
City Zoos	19,612	19,291
Global Programs	86,018	89,896
Lower Bronx River Habitat Conservation	604	1,027
Total Program Services	\$171,486	\$171,247
Visitor Services	\$16,053	\$16,660
SUPPORTING SERVICES:		
Management and General	23,466	22,160
Membership	2,707	2,505
Fundraising	6,166	6,147
Total Supporting Services	\$32,339	\$30,812
PLANT RENEWAL FUNDING	\$2,056	\$2,820
TOTAL EXPENSES AND PLANT RENEWAL FUNDING	\$221,934	\$221,539
EXCESS OF REVENUES OVER EXPENSES AND PLANT RENEWAL FUNDING	\$(1,033)	\$1,722



CONSOLIDATED BALANCE SHEETS

June 30, 2013 and 2012, in thousands

ASSETS	2013	2012
Cash and Cash Equivalents	57,151	67,149
Accounts Receivable	5,920	3,704
Receivable from the City of New York	12,366	11,947
Receivable from the State of New York	5,290	5,048
Receivable from Federal Sources	23,615	28,810
Grants and Pledges Receivable	57,904	60,342
Inventories	2,166	2,067
Prepaid Expenses and Deferred Charges	4,401	4,383
Investments	420,636	381,466
Amounts Held In Trust by Others	2,032	2,030
Funds Held by Bond Trustee	21,435	10
Property and Equipment	229,687	231,305
Total Assets	\$842,603	\$798,261
LIABILITIES AND NET ASSETS	2013	2012
Liabilities:		
Accounts Payable and Accrued Expenses	32,889	33,485
Annuity Liability	3,986	3,565
Bonds Payable	92,447	66,520
Post-retirement Benefit Obligation	29,989	35,383
Total Liabilities	\$159,311	\$138,953
Net Assets:		
Unrestricted:		
General Operating	0	1,741
Designated for Long-Term Investment	122,818	114,105
Net Investment In Property and Equipment	158,675	164,795
Total Unrestricted	281,493	280,641
Temporarily Restricted	173,841	150,600
Permanently Restricted	227,958	228,067
Total Net Assets	\$683,292	\$659,308
TOTAL LIABILITIES AND NET ASSETS	\$842,603	\$798,261

and reopen in the wake of the storm; and \$3 million for the aquarium expansion, *Ocean Wonders: Sharks!* The aquarium expansion is a set of projects totaling approximately \$158 million, with \$112 million in capital appropriations from the City of New York. The expansion was put on hold after Hurricane Sandy but was reactivated in the fall of 2013, with construction commencing in November. WCS expects to reopen a fully restored aquarium and the new *Ocean Wonders* exhibit for the summer 2016 season.

Turning to WCS's balance sheet, total assets for Fiscal Year 2013 increased to \$842.6 million from \$798.3 million the previous year. This \$44.3 million rise is a consequence of investment return and the Series 2013A bond issue which raised a \$20 million construction fund for capital projects at the Bronx Zoo. At the end of Fiscal Year 2013 the investment portfolio market value was \$420.6 million, an increase of \$39.2 million. This increase resulted from \$24.5 million in gifts, bequests, and transfers (including an initial \$20 million distribution from the endowment bequest of William B. Lloyd to support wildlife conservation, recorded as a receivable in the prior year) and \$32.5 million in positive investment returns less \$17.8 million in budgeted endowment spending transfers to operations in accordance with WCS's endowment spending policy.

For Fiscal Year 2013, the long-term investment portfolio had a return of 8.4 percent.





WCS's investment performance benchmark was 9.1 percent over the same period. Our investment return was burdened by the poor performance of legacy investments, which were down 19.4 percent for Fiscal Year 2013. Excluding the legacy investments, the actively managed portfolio earned a return of 9.3 percent, beating the benchmark.

Liabilities grew by \$20.4 million to \$159.3 million on June 30, 2013, a result of higher long-term debt, partially offset by lower post-retirement benefit liabilities from a restructuring of that program. In March 2013, WCS entered into a loan agreement with The Trust for Cultural Resources of The City of New York to finance a portion of the costs of capital improvements at the Bronx Zoo and the refunding of the \$65.5 million in Series 2004 bonds. The Trust issued \$79.2 million in revenue bonds,

and including an original issue premium of \$13.7 million, proceeds totaled \$92.9 million. Upon issuance of the Series 2013A bonds, the Series 2004 bonds were refunded and legally defeased. The refunding of the Series 2004 debt at a lower interest rate means that WCS will realize \$12.3 million of cash flow savings through 2034. WCS retained its AA-/Aa3 bond ratings with stable outlook from both Standard and Poor's and Moody's.

Looking forward, WCS faces a complex set of opportunities and challenges. Our near-term challenge is the restoration and expansion of the New York Aquarium. We are confident that in working with our partners in the city, state, and federal governments, we will meet our goal of reopening a transformed aquarium in 2016. Our long-term financial challenge is delivering the revenue diversification

and growth required to support core operations, administrative functions and expanded conservation mission priorities. WCS 2020, the recent strategic planning effort undertaken by management and the Board of Trustees, addresses both mission goals and revenue growth, building on our history and strengths, focusing our work and leveraging our resources to have a bigger conservation impact and support the successful business model we have built over the last decade.

[ABOVE] WCS researchers monitor the migration of flamingos throughout the Caribbean.



D McAloose



“Over the past four years we’ve discovered a dozen previously undescribed viruses in animals — including gorillas, tigers, birds, and turtles.

Dr. Seuss’s environmental allegory *The Lorax* set WCS Pathology Head D McAloose on a course to protect nature at a young age. Here she discusses how graduate studies in infectious disease awakened her to the relationship between animal health and the health of ecosystems, and how the use of microscopy and molecular diagnostic tools are assisting in disease investigations at our New York City parks and global field sites.

HOW LONG HAVE YOU BEEN WITH WCS AND WHAT IS YOUR ASSIGNMENT?

I have been with WCS for 12 years and am the Head of the Department of Pathology. My role is to develop and oversee programs for the identification, and in some cases, the discovery, of diseases of conservation concern in our New York City-based animal collections and free-ranging wildlife in our field projects.

WHAT FIRST DREW YOU TO WILDLIFE HEALTH?

As a kid growing up in Allentown, Pennsylvania in the 1960s, the environment was a major topic in the news. Despite being pretty young, I was struck by the devastating effects humans were having on the planet. That captured my attention and ultimately guided my future. The defining moment was reading Dr. Seuss’s *The Lorax*, which provided a clear view to a little kid of how we lived in a world in which, unless someone cared, we might lose the amazing places and animals that share our planet. Someone had to speak for the trees.

DID THAT INFLUENCE YOUR DECISION TO BECOME A VET?

I think it did. I entered veterinary school in my mid-20s. After a few courses on infectious disease, it became clear not only how important understanding animal health is, but also the significant role disease plays in the survival or extinction of species and how animal health relates to the overall health and balance of ecosystems. That was the final and

most significant in a series of eureka moments. Wildlife health and the study of disease in the context of conservation were to be my path.

DESCRIBE SOME CHALLENGES OF DISEASE INVESTIGATION IN A ZOOLOGICAL CONTEXT.

One of the greatest challenges in diagnosing wildlife diseases is having the expertise and tools to find not only what you’re looking for, but also what you don’t expect to find. In 2007, a close colleague at the Albert Einstein College of Medicine suggested we create a molecular diagnostics lab at the Bronx Zoo to identify and discover wildlife diseases using genetic testing. Such tests were common in human but not wildlife medicine. With his encouragement and collaboration, the program took off and in 2010 we hired our first molecular scientist. Over the years, we’ve worked together on tests for a variety of significant wildlife diseases including West Nile virus, amphibian chytrid fungus, avian malaria, and canine distemper virus.

WHAT OPPORTUNITIES DOES ZOO-BASED DISEASE INVESTIGATION PRESENT?

Discovery! From William Beebe’s first glimpses in 1934 of life half a mile below the surface of the ocean (the deepest anyone had ever gone) to the discovery of more than a dozen new animal species over the past decade, WCS has an illustrious history of exploration and discovery. Finding and characterizing microscopic organisms that play a significant role



in animal health (viruses, for example) is as exciting to me as finding a new primate species might be to our field biologists. And it's equally important to conservation!

WHAT ARE SOME EXAMPLES OF VIRUSES YOU'VE DISCOVERED?

Using both microscopy and molecular tools, over the past four years we've discovered a dozen previously undescribed viruses in animals including gorillas, tigers, birds, and turtles. Some of these cause significant disease. For example, we've identified a strain of canine distemper virus that's killing wild tigers. And while we'll continue to investigate pathogens and disease in terrestrial animals, another huge opportunity for discovery is in the marine environment, where health and disease in coral and other invertebrates in large part remains to be defined.

HOW DO BRONX ZOO WILDLIFE STAFF CONTRIBUTE TO FIELD DIAGNOSES?

At the Bronx Zoo we're lucky to have a necropsy suite where we do animal autopsies, a histology lab to prepare tissues for microscopic examination, and a molecular diagnostics lab to identify microorganisms through their DNA (sort of like a paternity test for disease causing microbes). We're one of only about a dozen AZA-accredited zoos (out of more than 200) with an in-house pathology program and one of only three or four with histology or molecular diagnostic labs. Having all of this under one roof allows us to rapidly diagnose and characterize diseases that impact animal health.

WHY HAVE A MOBILE DIAGNOSTIC LAB?

The transfer of tissue samples to New York from countries where we work but don't yet have advanced diagnostics for wildlife is challenging. To address this problem, we built our molecular lab to be mobile. It can be packed into several crates and shipped anywhere in the world where we work. This year, for instance, we used it

to screen Burmese star tortoises in Myanmar for disease agents as part of a long-term species recovery and reintroduction program.

HOW DID WCS IDENTIFY CANINE DISTEMPER IN WILD AMUR TIGER POPULATIONS?

In 2001, WCS Amur (Siberian) tiger researcher Dale Miquelle and his Russian team noticed that dazed and unresponsive tigers were wandering fearlessly into villages and dying. Tissue samples sent to our lab for microscopic examination and molecular testing allowed us to determine that canine distemper virus was killing the tigers. This is important because now we know that infectious disease, in addition to threats like poaching, poses a threat to Amur tiger survival in the wild. We're currently working to identify the animals that harbor the virus, such as domestic dogs or raccoon dogs. This information will help us understand disease transmission, risk factors, and prevention options.

WHAT HAS BEEN CAUSING SOUTHERN RIGHT WHALE DIE-OFFS IN COASTAL PATAGONIA?

WCS helped found the Southern Right Whale Monitoring Program in 2003 to better understand why right whales strand and die. Since 2007, we've seen annual deaths at higher rates than have ever been recorded for any baleen whale species. Of particular concern is that the majority of afflicted animals are less than four months old. In examining their tissues, signs of infectious diseases are notably absent. That leaves other possibilities like biological or chemical toxins and food availability for pregnant dams. These must be ruled in or out.

WHAT IS YOUR GREATEST ZOO OR WILDLIFE MOMENT DURING YOUR TIME WITH WCS?

In 2009, Tanzania's Kihansi spray toads went extinct in the wild after mist from a waterfall they

depended upon was disrupted by a dam. Fortunately, 499 animals collected a decade earlier were bred in captivity at the Bronx and Toledo Zoos. These heroic efforts ultimately led to the release of their descendants back into their original home in 2012! Our role in pathology was to diagnose diseases, which contributed to maintaining a healthy captive population. It also helped us reduce the risk of unintended disease transmission from Kihansi spray toads to native amphibians through reintroduction. The toads' release into the Kihansi Gorge was the first time an amphibian species declared extinct in the wild was reintroduced into its native habitat. It was humbling to be a part of that effort.

WHAT IS YOUR PROUDEST ACHIEVEMENT?

I've had the great opportunity to assemble and work with an amazing group of people in the Pathology Department, each of whom has incredible skills and often goes way above and beyond to support our departmental goals, programmatic growth, and WCS's conservation mission. Their dedication is what makes WCS great.

[BELOW] For WCS Pathology Head D McAloose, finding and characterizing microscopic organisms that play a significant role in animal health is as exciting as identifying a new primate species would be to a field biologist.



CITY AND STATE SUPPORT

WCS is grateful to the City of New York, which provides operating and capital funds through the Department of Cultural Affairs and the Department of Parks and Recreation. We thank Mayor Michael R. Bloomberg; New York City Council Speaker Christine C. Quinn; Bronx Borough President Ruben Diaz, Jr.; Brooklyn Borough President Marty Markowitz; Council Member Domenic M. Recchia, Jr., Chair, Finance Committee; and the Bronx and Brooklyn New York City Council delegations. The City of New York is vital to the

public/private partnership on which rests WCS's service to the people of New York.

WCS is grateful to Governor Andrew M. Cuomo and the New York State Legislature for increasing support for both the Environmental Protection Fund and the Zoos, Botanical Gardens and Aquariums (ZBGA) program, which is administered by the New York State Office of Parks, Recreation and Historic Preservation. This program provides crucial funding for collections care needs at more than 80 living museums across the state.

[RIGHT] WCS Executive Vice President for Public Affairs John Calvelli (**left**), with U.S. Rep. Ed Royce (R-CA), Chairman of the House Foreign Affairs Committee (**middle**), and Dan Ashe, Director of the U.S. Fish and Wildlife Service (**right**), at a 2013 briefing for Congress members on wildlife trafficking.



GOVERNMENT AND AGENCY SUPPORT TO WCS GLOBAL PROGRAMS

In FY 2013, the U.S. Agency for International Development (USAID) was the leading government donor to WCS field programs, including for activities in Central Africa (Central Africa Regional Program for the Environment) and the Andean Amazon (Initiative for Conservation in the Andean Amazon), as well as South Sudan, Afghanistan, Ecuador and others. USAID also supports the WCS-lead SCAPES program (Sustainable Conservation Approaches in Priority Ecosystems) and the PREDICT program in partnership with the University of California, Davis.

The US Fish and Wildlife Service (USFWS) continues to provide significant core support to the WCS marine and terrestrial species conservation and capacity building programs throughout Africa, Asia, and the Americas.

WCS continues to leverage its science to garner increasingly wider international support for our programs. In FY 2013, WCS programs received significant support from the Australian Agency for International Development; the German Government; the Global Environment Facility (GEF); Norwegian Aid Agency (Norad) International Climate and Forest Initiative and the Royal Norwegian Ministry of Foreign Affairs. WCS also welcomes as new donors the Save Our Species (SOS) fund (founding partners IUCN, GEF and the World Bank), the UK Darwin Initiative, and through the LifeWeb Initiative of the Convention on Biological Diversity, the Austrian Federal Ministry for Agriculture, Forestry, Environment and Water Management.



SUPPORTING GOVERNMENTS

In 2013, WCS field conservation, education, and zoo and aquarium programs benefited from significant government and agency support. We are grateful for their partnership and confidence in our programs:

New York City Agencies

Department of Cultural Affairs
Department of Design and Construction
Department of Parks and Recreation
Economic Development Corporation

U.S. State Agencies

California Department of Fish and Game
Idaho Department of Transportation
New York State Department of Environmental Conservation
New York State Dormitory Authority
New York State Energy Research and Development Authority (NYSERDA)
New York State Office of Parks, Recreation and Historic Preservation
New York State Division of Homeland Security and Emergency Services
Northeast States Research Cooperative

U.S. Federal Agencies

Agency for International Development
Bureau of Land Management
Centers for Disease Control & Prevention
Department of Defense
Department of Education
Department of Energy
Department of the Interior
Department of State
Environmental Protection Agency

Federal Emergency Management Agency
Forest Service
Fish & Wildlife Service
Geological Survey
Institute of Museum and Library Services
National Institutes of Health
National Oceanic and Atmospheric Administration
National Parks Service
National Science Foundation
Postal Service

Other National Government Agencies And Initiatives

Agence Francaise de Développement (AFD), France
AusAID, Australia
Australian Antarctic Division, Department of Sustainability, Environment, Water, Population and Communities
Austrian Federal Ministry for Agriculture, Forestry, Environment and Water Management through the LifeWeb Initiative
Darwin Initiative, a joint DFID/DEFRA fund, United Kingdom
Department for International Development (DFID), United Kingdom
Economic and Social Research Council (ESRC), United Kingdom
Fonds Français pour l'Environnement Mondial (FFEM)

German Development Bank (KfW Entwicklungsbank)
German Federal Ministry for Economic Cooperation and Development (BMZ)
Japan Ministry of Foreign Affairs
Japan International Cooperation Agency (JICA)
Ministry for Foreign Affairs of Finland
Ministry of Environment, Nature Conservation, and Tourism, Democratic Republic of Congo
Ministry of Foreign Affairs, Norway
Natural Environment Research Council (NERC), United Kingdom
Norway International Climate and Forest Initiative (NICFI)
Singapore Economic Development Board
Switzerland Aid Agency (SDC)

International Agencies and Initiatives

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
Global Environmental Facility
International Whaling Commission
International Union for Conservation of Nature (IUCN)
Save our Species (SOS) Fund (IUCN, Global Environment Facility, and the World Bank)
United Nations Children's Fund
United Nations Development Program
United Nations Environment Program
United Nations Educational, Scientific & Cultural Organization
Western Indian Ocean Marine Science Association
The World Bank

[THIS PAGE]

WCS works with government and local partners to help conserve the Changtang Nature Reserve (pictured), half a million square kilometers of land on the northern plains of the Tibetan plateau, containing a variety of large mammal species such as the Tibetan antelope, kiang, Tibetan gazelle, wild yak, snow leopard, and Tibetan brown bear.



Samba Kumar



“Tolerance and reverence for all living creatures is ingrained in Indian society, which creates tremendous opportunities to protect biodiversity in India.”

Samba Kumar was part of a government team to launch India's first communication satellite when a chance encounter on a nature-exploration trip to Nagarahole led him to WCS India Program Director and pre-eminent tiger conservationist Ullas Karanth. After assisting in a country-wide population assessment, Samba pursued his PhD in wildlife ecology. Today he leads some of WCS's most successful monitoring programs for tigers and their prey.

WHAT FIRST DREW YOU TO CONSERVATION?

I was born and brought up in Mysore, South India. For 14 years before joining WCS, I worked to help launch India's first communications satellite through the Indian Space Research Organization. I was an avid hiker and formed a club to sensitize space scientists to nature conservation. Some of us joined the Wildlife Preservation Group, an NGO that conducted nature camps for kids. In 1988, I met KM Chinnappa, the warden for Nagarahole Park, known for his extraordinary protection work. Sensing my interest, he referred me to WCS's Ullas Karanth, who was looking for volunteers for a prey estimation project.

SO THAT'S WHEN YOU BEGAN WORKING WITH WCS?

From 1989 to 1994, I volunteered with Ullas. With each passing year I felt I'd found my dream profession. But with no formal training at age 33, I wondered how to pursue a wildlife career. Then Ullas invited me to assist in a country-wide tiger and prey population assessment. The rest, as they say, is history. For six years, I conducted field surveys across 12 tiger reserves. At the “ripe” age of 40, I did graduate work in ecology, followed by a PhD ten years later! Today I co-direct all WCS-India research and conservation projects.

WHAT ARE THE MOST CRITICAL CONSERVATION PRIORITIES IN INDIA TODAY?

With India's human population expanding and the rate of economic growth increasing, the nation's forests and wildlife face unprecedented pressures. Out of a million square kilometers of surviving forest land, only one percent is under effective protection. Safeguarding wildlife from both organized poaching and incidental hunting and securing the remaining wild lands from fragmentation, encroachment, and habitat manipulation are the most immediate priorities in India today.

WHAT WERE YOUR MAIN PROJECTS IN 2013?

In 2013, our tiger monitoring work in Karnataka expanded to include the neighboring states of Kerala and Goa. We are now monitoring 6,000 square kilometers of prime habitat that supports perhaps the largest population of tigers in the world. We hope to add another 3,000 square kilometers of contiguous tiger habitat in the state of Tamil Nadu. This year we also conducted an international workshop for 30 researchers from major wildlife research and conservation institutions within India, exposing them to state-of-the-art monitoring techniques that enable better-informed conservation.

ARE LOCAL PEOPLE IN INDIA ADAPTABLE TO LIVING CLOSE TO TIGER HABITAT?

Simultaneously maintaining the integrity of ecosystems and the



socio-economic aspirations of a billion people is India's biggest challenge. Rather than viewing nature as a resource to be exploited, Indian culture recognizes nature as home to all forms of life. Tolerance and reverence for all living creatures is ingrained in Indian society, which creates tremendous opportunities to protect biodiversity in India.

Local people are not averse to living alongside dangerous beasts as long as their interests and welfare are well protected.

RELOCATION SEEMS TO BE ANOTHER STRATEGY. CAN YOU EXPLAIN WHY?

Caring for marginalized members of our society living in the deep interiors of India's forests has been the hallmark of our conservation work here. More than 1,000 families who never would have imagined fitting into society's mainstream are today living in pride due to efforts by WCS conservation partners. The Indian government's relocation program provided compensation, benefits, and entrepreneurial training. Inspired by that success, another 2,000 families now seek the government's relocation package.

HOW HAS WCS'S WORK IN NAGARAHOLE BEEN A MODEL FOR TIGER SOURCE SITES?

Nagarahole has been a "nursery" for developing many innovative conservation monitoring approaches, which today have become a part of the tiger conservation toolkit globally. The camera trapping technique, line transect method, and occupancy survey protocols were all developed and refined at Nagarahole. These have become gold standards for assessing conservation effectiveness for tigers and other elusive species across the globe.

WHY MUST TIGER CONSERVATIONISTS STUDY AND PRESERVE TIGER PREY?

Most top predators are "obligate meat-eaters." A tiger needs at least one deer-sized animal every week to survive. Our studies have shown that every tiger requires a yearly prey

population of at least 500 animals, from which the tiger "crops" about 10 percent of the prey population to meet its body-energy demands. Unless you study the prey population, you will never know the carrying capacity of any forest to hold tigers.

IS THE ILLEGAL WILDLIFE TRADE A BIG PROBLEM IN INDIA?

A gigantic problem, yes. But the focus of illegal trade in India seems to be shifting away from big "eye-catching" species to seemingly innocuous ones, threatening the functional integrity of our forest ecosystems. Our conservation teams recently worked in tandem with police across two states to track a network of pangolin poachers. We need coordinated team effort across multiple enforcement agencies to crack these networks.

DESCRIBE THE IMPORTANCE OF WCS INDIA'S ANIMAL MONITORING TRAINING PROGRAM.

The training program has three goals: 1) to engage a large constituency from diverse sections of society to support conservation; 2) to bring credibility and transparency to monitoring; and 3) to invest in sampling efforts at the scale required for effective large mammal conservation monitoring. Practically any able-bodied wildlife enthusiast can participate in animal monitoring. Trainees are drawn from a diverse group of students, teachers, lawyers, local community youth, and software industry staff, among others.

WERE YOU DRAWN TO WILDLIFE AT A YOUNG AGE?

I explored natural landscapes as a hiker. By 1986, I had covered most wild places within my birth-state of Karnataka and even had ventured into the Himalayan forests. But in 6,000 kilometers over five years, I had hardly seen a large mammal – a lone sighting of a black sambar stag. Yet

when I visited protected areas, I saw large mammals in numbers hard to imagine. Only then did I realize the importance of protected areas like Nagarahole, Bandipur, and BRT, and that we have a chance to save wildlife there.

WHAT IS YOUR GREATEST WILDLIFE MOMENT DURING YOUR TIME WITH WCS?

A tigress approaching me to as close as 30 meters while I was setting a camera trap in Nagarahole; a leopard in Pench (Maharashtra) driving off a troupe of langurs I was counting along a transect, leaving with one in its mouth and forcing me to reduce my count by one; a group of sambar does chasing off a pack of wild dogs to protect a fawn in Bandipur...Oh, the moments I cherish are countless!

WHAT IS YOUR PROUDEST ACHIEVEMENT?

When I began working full-time with Ullas, I had six transects to cover and 20 camera trap locations to set across 100 square kilometers in Nagarahole to monitor tigers and their prey. Twenty years later I cover 234 transects and 727 camera trap locations in nearly 6,000 square kilometers of prime tiger habitat in Western Ghats, where we track the fate of nearly 350 tigers. I believe the scale and intensity of our monitoring operations in India to secure a future for tigers are unparalleled.

[BELOW] Samba Kumar is training India's next generation of tiger conservationists with the latest state-of-the-art monitoring techniques.



WCS CONSERVATION PARTNERS

CHAPTER

4

OUR PARTNERS 65

SNAP: SCIENCE FOR NATURE AND PEOPLE 68

UNITED FOR WILDLIFE 76

With leadership and results dating back to 1895, WCS has evolved into the world's most comprehensive wildlife conservation organization. The additive strength derived from our parks, our field conservation work, and our global health network is unparalleled. Yet we could never do this work and achieve these results without the collaboration and support of hundreds of partners. With offices across the globe, WCS is well positioned to engage with representatives of government and civil society whose goals align with our science-based conservation mission.



This year those partnerships included conservation NGOs like The Nature Conservancy and the National Center for Ecological Analysis and Synthesis (NCEAS), with whom we developed the SNAP initiative to maintain species and ecosystems while improving the welfare of people. They included The Royal Foundation of the Duke and Duchess of Cambridge and Prince Harry, which brought together an impressive range of global partners to confront the illegal wildlife trade. WCS also worked with the Clinton Global Initiative, which assembled more than a dozen conservation groups and the heads of eight African elephant range states to confront the global crisis of elephant poaching. While we cannot feature all of the organizations, institutions, and government bodies with whom we maintain a collaborative strategy, many of our partners are listed below. We remain grateful for the assistance from all those who share in our work to conserve our last wild places, and the animals that live there, for future generations.

OUR PARTNERS

ABRAMS Books
Academy of Agricultural Sciences
Aceh Barat Daya District Police
Action for Wildlife Organization
Adirondack Association of Towns and Villages, and numerous local communities
Adirondack Climate & Energy Action Planning
Adirondack Common Ground Alliance
Adirondack Community Trust
Adirondack Council
Adirondack Economic Development Corporation
Adirondack Land Trust
Adirondack Mountain Club
Adirondack North Country Association
Adirondack Park Agency
Adirondack Park Invasive Plant Program
Adirondack to Algonquin Conservation Association
Administración de Parques Nacionales (Argentina)
Administración Nacional de Laboratorios e Institutos de Salud (ANLIS)
Administración Técnica Forestal y de Fauna Silvestre
Administration Bureau of Anhui Chinese Alligator National Nature Reserve

Administration Bureau of Hunchun Amur Tiger National Nature Reserve
Administration Bureau of Zhejiang Changxing Chinese Alligator National Nature Reserve
Advanced Conservation Strategies
Afghanistan Conservation Corps (ACC)
Afghanistan Ministry of Agriculture, Irrigation and Livestock (MAIL)
Afghanistan Ministry of Economy
Afghanistan Ministry of Education
Afghanistan Ministry of Information and Culture
Afghanistan Ministry of Justice
Afghanistan Ministry of Transport
Africa Nature Organization (ANO)
African Alliance for Development Action (AADA)
African Conservation Fund
African Development Bank (ADB)
African Elephant Fund (UNEP)
African Parks Network
African Union – Interafrican Bureau for Animal Resources (AU-IBAR)
African Wildlife Foundation
AfriCapacity
Aga Khan Development
Aga Khan Rural Support Programme (AKRSP)

Agence Congolaise de la Faune et des Aires Protégées (ACFAP)
Agence Française de Développement (AFD)
Agence National des Parcs Nationaux (ANPN)
Agence pour la Recherche et la Valorisation Marines (ARVAM)
Agencia Felicidad
Agriculture Department, Gilgit-Baltistan
Agroecológicos Tumupasa
Agropecuarias – INIA
Ailan Awareness
Ailan Foundation
Akron Zoo
Alaska Beluga Whale Committee
Alaska Department of Fish and Game
Alaska Eskimo Whaling Commission
Alaska Marine Exchange
Alaska Nanuuq Commission
Alaska Wilderness League
Albatross Task Force/BirdLife
Albert Einstein College of Medicine of Yeshiva University
Alberta Conservation Association
Alberta Wilderness Association
Alcaldía de Laguna de Perlas
Alcaldía de San Juan de Nicaragua
Alianza Gato Andino
Alianza para la Conservación del Jaguarate
All Russia Research Institute of Wildlife Management, Hunting, and Farming
All Russian Research Institute for Nature Protection
Alliance for Coney Island
Amazon Conservation Association (ACA)
American Association of Zookeepers – Bronx Zoo Chapter
American Association of Zookeepers – Columbus Chapter
American Association of Zookeepers – Honolulu Chapter
American Association of Zookeepers – Milwaukee Chapter
American Association of Zookeepers – Tulsa Chapter
American Association of Zookeepers – Tulsa Chapter
American Association of Commerce (AMCHAM)
American Association of Zoo Veterinarians

American Farmland Trust
American Fisheries Society
American International University
American Legion – Post 213
American Museum of Natural History (AMNH)
American Prairie Reserve
American Veterinary Medical Association
Amicale des Ressortissants de Dibwa (AREDI)
AMSA
Amur Leopard and Tiger Alliance (ALTA)
Amur-Ussuri Center of Avian Biodiversity
Anchor Club – NYPD
Andra Coral Project Andre Vellay
Angkor Centre for Biodiversity Conservation
Animal and Plant Health Inspection Service
Animal and Plant Health Inspection Service of Environment-Argentina
Animal Friend Jog Jakarta (AFJ)
Animal Medical Center
Animal Sanctuary Trust Indonesia (ASTI)
Animal Specialty Center
Anti-smuggling Unit of the Vietnam Customs Department (Ministry of Finance)
Anyuak Recovery Trust (ART)
AP Instituto Nacional de Desarrollo Forestal y Gestión del Sistema de Áreas Protegidas, Ministerio de Agricultura y Bosques (INDEFOR)
Apolobamba National Natural Area of Integrated Management
Aquatic Wildlife Conservation Office of Ministry of Agriculture of the PRC
ARC – Onderstepoort Veterinary Institute
ARC Centre of Excellence for Coral Reef Studies, James Cook University
ARC Centre of Excellence for Environmental Decisions, University of Queensland
Archie Carr Center for Sea Turtle Research (ACCSTR), University of Florida
Arctic Council
Arctic Institute of North America
Área de Conservación Regional Comunal Tamshiyacu Tahuayo
Arizona Game and Fish Department

[OPPOSITE]
Hamadryas baboons, like this mother and infant at the Prospect Park Zoo, can be found in the wild across the Horn of Africa and the southwestern tip of the Arabian peninsula.





[ABOVE] Two Andean bears at the Queens Zoo. WCS also examines the ecological needs of the Andean bear where it occurs in Latin America.

Arizona Zoological Society/
Phoenix Zoo
Agence pour la Recherche et
la Valorisation Marines
(ARVAM)
Asian Turtle Program
Asociación Accidental
Comunitaria
Paiche Takana II
Asociación Balam
Asociación Boliviana de
Agentes de Conservación
(ABOLAC)
Asociación Civil Armonía
Asociación Colombiana
Parques Zoológicos y
Acuarios -ACOPAZOA-
Asociación de Canopy
de Villa Alcira
Asociación de Comunidades
Forestales de Petén
Asociación de Mujeres Waorani
del Ecuador
Asociación de Productores
Agroecológicos Tumupasa
Asociación de Productores de
Cacao Nativo Ecológico
del Municipio de Mapiiri
Asociación de Productores de
Cacao Nativo Ecológico del
Pueblo Leco de Larecacha
Asociación de Productores
de Café Ecológico
Regional Larecacha

Asociación Faunagua
Asociación Forestal Integral
Asociación Forestal Integral
San Andrés Petén
Asociación Guyra Paraguay
Asociación para la
Conservación de la Cuenca
Amazonica (ACCA)
Asociación para la
Investigación y el Desarrollo
Integral (AIDER)
Aspinall Foundation
Associação de Proprietários de
Reservas Particulares do
Patrimônio Natural de Mato
Grosso do Sul Association
Belko'o de Deng Deng
(ABDD)
Association Megaptera
Association of Campesinos
Protectors of Bosawás
ACAPROBO, Nicaragua
Association of Fish and Wildlife
Agencies
Association of Traditional
Marine Mammal Hunters,
Chukotka (ChAZTO)
Association of Zoos &
Aquariums (AZA)
Association Ondighi de Kessala
Association pour la Promotion
de l'Elevage en Savane et
au Sahel (APESS)

Association pour la protection
des mammifères marins
autour de Madagascar
(CETAMADA)
Association Rwandaise des
Ecologistes (ARECO)
Astella Development
Corporation
Audubon
Audubon Alaska
Audubon New York
Australian Marine Mammal
Commission
Aventures Sans Frontières
Aves Argentinas
AZA Tiger Species Survival
Plan Tiger Conservation
Campaign
AZUL
Badan Pengelola Pesisir dan
Laut Terpadu (BPPLT SULUT)
Bahamas National Trust
Balai Kawasan Konservasi
Perairan Nasional, Kupang
Balai Taman Nasional
Karimunjawa
Band-e-Amir Community
Association (BACA)
Bangladesh Ministry of
Environment and Forests
Bappeda Kabupaten Lombok
Utara, Nusa Tenggara
Barat Bappeda Kota Sabang,
Aceh

Barnard College, Columbia
University, New York
Bat Conservation International
Bay Islands Conservation
Association
Bay of Bengal Large Marine
Ecosystem (BOBLME)
BC Hydro
Bear Trust International
Beardsley Zoo
Belize Audubon Society
Belize Coast Guard
Belize Fisheries Department
Belize Fisherman Federation
Belize Fishermen Cooperative
Association
Belize Tourism Board
Belizean Agriculture Department
Belize Zoo
Belmont Business Improvement
District
Beneath the Sea
Bengkulu Provincial Police
Berggorilla and Regenwald
Direkthilfe
Bethany College
Better-U Foundation
Biblioteca de Puerto Natales
Big Sky Community Corporation
Big Sky Natural Resource
Council
Bighole Watershed Committee



Biodiversity Conservation Agency (Ministry of Natural Resources and Environment)	Burung Indonesia	Centre International de Recherches Medicales de Franceville (CIRMF)	Citecamp de la Universidad de Santiago de Chile
Biodiversity Research Institute	Busch Gardens	Centre National de la Recherche Scientifique et Technologique (CENAREST)	CITES Elephant Trade Information System (ETIS)
Biomimicry 3.8 Institute	Cakaudrove Provincial Office	Centre National de Recherche Oceanographiques (CNRO)	CITES/Monitoring the Illegal Killing of Elephants (MIKE) Program
Biota	Cala Consultores	Centre National des Données et Informations Océanographiques (CNDIO)	Citizens Campaign for the Environment
BirdLife International	California Department of Fish and Game	Centre National des Inventaires d'Aménagement Forestière (CNIAF)	City Atlas
Birmingham Zoo	Cambodia Rural Development Team	Centro Aclimatación Zoológica (CAZ)	City of Fort Collins
Black Kettle Farm	Cambridge University	Centro Austral de Investigaciones Científicas (CADIC)	City University of New York (CUNY)
Blackfeet Tribe	Cambridge University (Protected areas CCI initiative)	Centro Ballena Azul, Chile	City University of New York (CUNY), Institute for Sustainable Cities
Blackfoot Challenge	Canadian Boreal Initiative	Centro Chaqueño para la Conservación e Investigación	Clark's Fork Coalition
Blank Park Zoo	Canadian Parks and Wilderness Society	Centro COPAS Sur-Austral de la Universidad de Concepción	Clark University
BLM	Canadian Wildlife Federation	Centro de Acción Legal Ambiental y Social de Guatemala	Cleveland Metroparks Zoo and the Cleveland Zoological Society
Blood Tribe	Canopy	Centro de Conservación Marina de la Pontificia Universidad Católica de Chile	Clifton Fine Economic Development Corporation
Blue Ocean Institute	CARE International	Centro de Ecología Aplicada de Neuquen (CEAN)	Clinton Global Initiative (CGI)
Blue Pearl Veterinary Specialists	Caritas	Centro de Estudios Avanzados en Zonas Áridas (CEAZA)	Coastal Development Partnership
Blue Ventures	Carnegie Hall	Centro de Estudios Conservacionistas (CECON), Guatemala	Coastal Zone Management Authority and Institute, Belize
Bluefields Indian & Caribbean University	Cary Institute of Ecosystem Studies	Centro de Estudios de Conservación	Colegio María Auxiliadora
Bogani Nani Wartabone National Park Authority	Centro Nacional Patagónico (CENPAT) CONICET	Centro de Estudios del Cuaternario (CEQUA)	Colombian Foundation for Studies on Parasites (FUNCEP)
Bolivian Bat Conservation Program (PCMB – BIOTA)	Center for Collaborative Conservation	Centro de Estudios del Hombre Austral	Colorado Parks and Wildlife Department
Bolshe-Khekhtsirski State Zapovednik	Center for Elephant Conservation	Centro de Investigaciones de Ecosistemas Costeros	Colorado State University
Bonobo Conservation Initiative	Center for International Earth Science Information Network (CIESIN)	Centro de Investigaciones Marinas – Universidad de la Havana	Columbia University Center for Infection and Immunity
Border Police of Badakhshan, Ministry of Interior	Center for International Forestry (CIFOR)	Centro Oriental de Ecosistemas y Biodiversidad	Columbia University, New York
Born Free USA	Center for Large Landscape Conservation	Cheetah Conservation Fund (CCF)	Columbia University, Pediatric Gastroenterology, Hepatology, and Nutrition
Botchinski State Zapovednik	Center for the Understanding of Nature (CEN), Nicaragua	Chester Zoo, UK	Columbus Zoo & Aquarium
Botswana, Department of Wildlife and National Parks	Central Adirondack Partnership for the 21st Century	Chicago Field Museum	Comisión Nacional de Áreas Naturales Protegidas (CONANP)
Bramble Park Zoo	Central African Forests Commission (COMIFAC)	Chicago Zoological Society	Comité de Gestion des Ressources Naturelles de Conkouati
Brandywine Zoo	Central Cooperativa del Valle Sandia (CECOVASA)	Chimpanzee Sanctuary and Wildlife Conservation Trust (CSWCT), Uganda	Comité Français de l'UICN
Brazil's TAMAR Sea Turtle Project	Central Indígena del Pueblo Leco de Apolo	China Environmental Protection Foundation	Committee for Environmental Protection under the Government of the Republic of Tajikistan
Breeze Radio	Central Veterinary Diagnostic and Research Laboratory	China Wildlife Conservation Association	Communal Government of Kakhkabila
British Broadcasting Corporation (BBC)	Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD)	Chittagong University	Community Empowerment for Progress Organization (CEPO)
Bronx County Historical Society	Centre de Recherche en Sciences Naturelles (CRSN)	Chukot – TINRO	Community Markets for Conservation (COMACO) Ltd
Bronx Institute	Centre de Transfer de Technologies (CTTB)	Cibola Farms (VA)	Community Mayors, Inc.
Bronx Museum of the Arts	Centre for Applied Social Sciences (CASS), Faculty of Social Sciences, University of Zimbabwe		Competing Claims on Natural Resources Program
Bronx River Alliance	Centre for Development Orientated Research into Agricultural Systems		
Bronx Science Consortium	Centre for Spatial Environmental Research, University of Queensland		
Brooklyn Academy of Music	Centre for Wildlife Studies		
Brooklyn Aquarium Society			
Brooklyn Botanic Garden			
Brooklyn Children's Museum			
Brooklyn College			
Brooklyn Cyclones			
Brooklyn Museum			
Brooklyn Public Library			
Brooklyn V.A. Community Club House			
BP International			
Bua Provincial Office			
Buffalo Wool Company			
Bukit Barisan Selatan National Park Authority			
Bunaken Marine National Park Authority			



Comunidad Andina de Naciones – Programa BioCAN	Conseil pour la Défense des Droits des Communautés et la Protection de l'Environnement	Consejo Regional Autónomo del Atlántico Sur	Consortio de Gobiernos Provinciales del Ecuador
Comunidad Marka Copacabana De Antaquilla	Conseil pour la Défense Environnementale par la Légalité et la Traçabilité (CODELT)	Consejo Regional Tsimane-Moseten	Convention on Migratory Species
Coney Island Beach Shop	Consejo Asesor Karukinka Indígena del Pueblo Tacana	Conservation Association of the Mbe Mountains	Cool Culture
Coney Island Brighton Beach Open Swimmers (CIBBOWS)	Consejo Nacional de Áreas Protegidas (CONAP-Guatemala)	Conservation Development Centre	Coopera
Coney Island History Project	Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET)	Conservation Farming Union	Cooperativa Carmelita
Coney Island Polar Bear Club USA		Conservation Fund	Cooperativa Payun Matru
Coney Island USA		Conservation International	Co-operative Department of Belize
Confederated Salish and Kootenai Tribes		Conservation Justice (Gabon)	Cooperazione e Sviluppo (Cooperation and Development) (CESVI)
		Conservation Strategy Fund	CORFO-Innova
		Conservation Through Public Health, Uganda	Cornell Cooperative Extension
			Cornell Lab of Ornithology

> SNAP: SCIENCE FOR NATURE AND PEOPLE

SNAP

There is an urgent need today to develop strategies that maintain wild species and ecosystems while improving the lives of people across the globe who are most negatively affected by environmental degradation. Yet identifying solutions for maintaining natural systems and supporting vulnerable communities is not enough. To have a lasting impact, information must be palatable and useful to decision makers, who are charged with developing and implementing effective policies and sustainable natural resource management practices.

Out of these ideas emerged an exciting new WCS partnership in 2013. SNAP, or Science for Nature and People, seeks to tackle the world's most pressing challenges at the nexus of conservation and development. The founding institutions behind SNAP are the Wildlife Conservation Society, The Nature Conservancy, and the National Center for Ecological Analysis and Synthesis (NCEAS) of the University of California at Santa Barbara.

For years our respective organizations tackled high-profile problems affecting the natural world as the Earth's critical species and ecosystems grew increasingly compromised in their ability to function ecologically and generate critical benefits for humanity. By working together we hope to increase our effectiveness by engaging broad, diverse constituencies and by marshaling top scientists to be part of the solutions.

There are significant reasons to be hopeful. Some values of nature are captured and enhanced through

carbon, biodiversity, and water markets, which now exist and in some places are growing. Many Fortune 500 companies now have Chief Sustainability Officers. Governments are recognizing the power of green economies that are supported by maintaining "natural capital."

Never before has technology allowed us to monitor the earth's surface, processes, and resources as we can now. Our world is a very different place than it was even 10 years ago. We must adopt new, innovative approaches to conserving nature and supporting human welfare that work in harmony amidst a rapidly changing globalized economy.

SNAP will bring together diverse groups of researchers, practitioners, and policy makers from academia, conservation and development organizations, the private sector, multilateral and donor agencies, and government to identify key questions and generate lasting solutions that can foster equitable human development and maintenance of the planet's species and ecosystems.

For example, SNAP will ask how food security can be achieved without degrading water resources or expanding into natural habitats. It will explore how ecosystems can protect local communities and infrastructure from destructive natural hazards like Hurricane Sandy. Perhaps most critically, SNAP participants will be in positions to implement these solutions. That's the power of working in partnership.

The Nature Conservancy
Protecting nature. Preserving life.®



NCEAS
National Center for Ecological Analysis and Synthesis



Cornell University College of Veterinary Medicine
 Cornell University Press
 Cornell University Sustainable Development Institute
 Corporación Nacional Forestal (CONAF)
 Corporación Autónoma Regional de Caldas (COPORCALDAS)
 Corporación Autónoma Regional de Tolima (CORTOLIMA)
 Corporación Autónoma Regional de los Valles del Sinú y del San Jorge (CVS)
 Corporación Autónoma Regional de Risaralda (CARDER)
 Council of Jewish Émigré Community Organization
 CPAWS – Wildlands League
 Craighead Institute
 Criminal Investigation Department, Indonesia National Police
 Christian Rossell & Romano Pizzeria
 Cronulla Fisheries Research Centre
 Cross River State Forestry Commission
 Crown of the Continent Conservation Initiative
 Dakota Territory Buffalo Association
 Dallas Zoo
 Dangriga Fisherman Association
 Daniel Kopulus & Fauna, NYC
 Darwin Initiative/DEFRA, UK
 David H. Koch Theater
 Defenders of Wildlife
 Defensores de la Naturaleza
 Delaware State University
 Deno's Wonder Wheel
 Denver Mountain Parks
 Denver Zoo
 Department for International Development (DFID), United Kingdom
 Department of Animal Health (Ministry of Agriculture and Rural Development)
 Department of Anthropology, Washington University
 Department of Civil & Environmental Engineering, Massachusetts Institute of Technology
 Department of Education, Badakhshan
 Department of Education, Bamyán
 Department of Environment, Iran
 Department of Environment, Bangladesh
 Department of Environment and Conservation, PNG
 Department of Environmental Science, Policy, and Management, University of California, Berkeley
 Department of Environmental Sciences, Emory University
 Department of Fisheries, Ministry of Livestock and Fisheries, Myanmar
 Department of Forests and Non- Renewable Natural Resources Zanzibar (DFNRNR)
 Department of Geography, Simon Fraser University
 Department of Manus Province
 Department of Ministry of Agriculture, Irrigation and Livestock, Badakhshan
 Department of Ministry of Agriculture, Irrigation and Livestock, Bamyán
 Department of Municipality of Wakhan, Badakhshan
 Department of Municipality of Yakawlang, Bamyán
 Department of National Environmental Protection Agency, Badakhshan
 Department of National Environmental Protection Agency, Bamyán
 Department of New Ireland
 Department of Pathology & Immunology Center for Genome Sciences & Systems Biology, Washington University School of Medicine
 Department of Public Health Badakhshan, Ministry of Public Health
 Department of Public Health Bamyán, Ministry of Public Health
 Department of Town and Country Planning (DTCP), Malaysia
 Department of Veterinary and Livestock Development, Zambia
 Department of Veterinary Services, Botswana
 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
 Development and Environmental Law Center (DELC)
 Dewan Pengelola Taman Nasional Bunaken
 Dialogo Florestal
 Diamer Poverty Alleviation Programme
 Dian Fossey Gorilla Foundation- International
 DINAP-Unidade de Epidemiologica Veterinaria
 Dinas Kelautan dan Perikanan, Kabupaten Aceh Besar
 Dinas Kelautan dan Perikanan Kabupaten Lombok Utara, Nusa Tenggara Barat
 Dinas Kelautan dan Perikanan Kota Sabang
 Dinas Kelautan dan Perikanan Provinsi Aceh
 Dirección de Fauna Silvestre (Argentina)
 Dirección de Vialidad Magallanes
 Dirección Forestal y de Fauna Silvestre (DGFFS)
 Dirección General de Epidemiología (DGE)
 Dirección Regional de Salud de Loreto (DIRESA)
 Dirección Regional de la Producción de Loreto
 Dirección Regional de Comercio Exterior Turismo y Artesanía (DIRCETURA Loreto)
 Direction for Biodiversity Conservation, System of Protected Areas (DCBSAP)
 Direction Générale des Pêches, Gabon
 Directorate General of Rural Community Empowerment, Ministry of Home Affairs, Indonesia
 Directorate of Biodiversity and Conservation, Ministry of Forestry, Indonesia
 Directorate of Forest Protection and Nature Conservation (PHK A), Ministry of Forestry
 Directorate of Investigation and Forest Protection, Ministry of Forestry, Indonesia
 Directorate of Veterinary Services, Namibia
 Directorate-General for Maritime Affairs and Fisheries, Gabon
 Direktorat Konservasi Kawasan dan Jenis Ikan, Ditjen KP3K, Kementerian Kelautan dan Perikanan Republik Indonesia
 Disabled American Veterans – Fort Hamilton Chapter 28
 Disney Wildlife Conservation Fund
 District Administration, Astor
 District Administration, Diamer
 District Administration, Ghizer
 District Administration, Gilgit
 District Administration, Hunza-Nagar
 Ditjen Perlindungan Hutan dan Konservasi Alam, Kementerian Kehutanan Republik Indonesia
 Dogwood Alliance
 Dornod Province Environmental Protection Agency
 Ducks Unlimited Canada
 Duke-NUS Graduate Medical School Singapore
 Dunbarton Equine Specialist
 Durham University (Mongolia Darwin and Tibet grants)
 Durrell Institute of Conservation and Ecology (DICE)
 Dynatec Company-Sheritt (BBOP)
 Earth Institute at Columbia University
 Earthjustice
 East African Community Department of Environment and Natural Resources (EAC)
 East African Wildlife Society
 Eastern Mongolia Protected Areas Administration
 Eastern Mongolian Community Conservation Association (EMCCA)
 EcoAdapt
 EcoAgriculture Partners
 EcoHealth Alliance
 Ecojustice
 Ecología y Biodiversidad-CASEB
 Economic Development Board, Singapore
 Ecosystèmes Forestiers d'Afrique Centrale – ECOFAC – EU
 Ecuadorian Ministry of the Environment
 Eijkman Institute for Molecular Biology
 Eijkman Institute, Jakarta, Indonesia
 El Museo del Barrio
 Elephant Care International
 Elephant Conservation Network
 Elephant Livelihood Initiative Environment
 Embajada de EEUU (U.S. Embassy, Chile)
 Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA)
 Empresa De Ecoturismo De San Miguel Del Bala
 Empresa Nacional del Petróleo (ENAP)
 Endangered Wildlife Trust
 Energy Smart Park Initiative
 Enterprise Works/VITAE
 Entreprise HOLCIM



Environment and Rural Development Foundation (ERuDeF)	Fiji Locally Managed Marine Area Network	Free the Bears Fund, Inc.	Fundación Terram
Environment Canada	FISHBIO	Freedom to Roam	Fundación Vida Silvestre Argentina (FVSA)
Environment Society of Oman: Whale and Dolphin Research Group	Fisheries Administration, Ministry of Agriculture, Forestry and Fisheries, Cambodia	Freeland Foundation	Fundamazonia
Environmental Advocates of NY	Fisheries Department, Gilgit-Baltistan	Fresno Chafee Zoo	Fundo Brasileiro para a Biodiversidade – FUNBIO
Environmental Conservation Trust (ECOTRUST)	Flint Hills Discovery Center (KS)	Friends for Conservation and Development	Future West
Environmental Crime Division, National Police, Mongolia	Flora y Fauna	Friends for Conservation and Development, Guatemala	GalvMed
Environmental Defense Fund	Flora y Fauna, Cuba	Friends of Masoala	Gargiulos
Environmental Investigation Agency	Flushing Town Hall	Friends of Nature and Environment (WATALA)	GEA de la Universidad de Magallanes
EnviroVet	Fondation pour les Aires Protégées et Biodiversité de Madagascar	Friends of the Earth	Gigi Lend Me a Hand Band
Erasmus Medical Center, Rotterdam	Fondo de las Americas (FONDAM)	Fundação Vitória Amazônica	Gilgit-Baltistan Environmental Protection Agency
Erie Zoological Society	Fondo para la Acción Ambiental y la Niñez	Fundación Añihué	Gili Ecotrust
Escuela Agrícola Panamericana Zamorano	Fonds Française pour l'Environnement Mondial (FFEM), Congo	Fundación Ambiente y Recursos Naturales	Gilman International Conservation
Escuela Agrícola Panamericana Zamorano, Honduras	Food and Agriculture Organization (FAO)	Fundación Aquamarinandacion Biodiversidad (Argentina)	GiproRybFlot
Escuela Baudilia Avendaño	Food and Rural Development (FORUDEV)	Fundación Cambio Democrático	Glacier Two Medicine Alliance
Escuela Bernardo O'Higgins	Fordham University	Fundación CEQUA – Chile	Global Environmental Facility (GEF)
Escuela Ignacio Carrera Pinto	Forest Department, Belize	Fundación Chile	Global Ocean Biodiversity Initiative (GOBI)
Escuela Patagonia	Forest, Wildlife and Environment Department, Gilgit-Baltistan	Fundación Defensores de la Naturaleza, Guatemala	Global Viral
Escuela Santiago Bueras	Forest Department, Wildlife Circle	Fundación Ecosistemas de Chaco Oriental – ECO (Argentina)	Global Vision International (GVI)
Escuela Villa Las Nieves	Forest Resources and People (FOREP)	Fundación Ecológica	Global Wallace
Eskimo Walrus Commission	Forestry Administration of Anhui Province	Fundación FUNGI	Gobernación de Alto Paraguay
ESRI	Forestry Administration of Guangdong Province	Fundación La Salle de Ciencias Naturales	Gobernación de Tierra del Fuego
Estación Costera de Investigaciones Marinas	Forestry Administration of Heilongjiang Province	Fundación La Salle de Ciencias Naturales, Venezuela	Gobierno Comunal Kriol
Etablissement d'Enseignement Supérieur des Sciences Agronomiques, Université d'Antananarivo	Forestry Administration of Jilin	Fundación Las Mellizas	Gobierno Regional de Cuzco
European Association of Zoos and Aquaria (EAZA)	Forestry Administration of Qinghai Province	Fundación Loro Parque	Gobierno Regional de Loreto
Ex-Comisión Nacional del Medio Ambiente	Forestry Administration of Tibet Autonomous Region	Fundación Moisés Bertoni	Gobierno Regional de Puno
Exelis	Forestry Administration of Zhejiang Province	Fundación OMORA	Gobierno Territorial Rama y Kriol
Explora-CONICYT	Forestry Administration, Ministry of Agriculture, Forestry and Fisheries, Cambodia	Fundación Para De Desarrollo Del Sistema Nacional De Areas Protegidas	Good Shepherd Services
Ex-Prisoners of War – Key Chapter	Forest Protection Department (FPD), Forestry Directorate, Vietnam	Fundación para la Autonomía y el Desarrollo de la Costa Atlántica de Nicaragua	Gorilla Organization
Faculty of Veterinary Science, University of Pretoria	Forina (Indonesian Orangutan Forum)	Fundación para la Conservación de los Recursos Naturales y Ambiente en Guatemala	Goulougo Triangle Ape Project (GTAP)
Fauna and Flora International (FFI)	Fort Peck Tribe	Fundación para el Ecodesarrollo y Conservación (FUNDAECO), Guatemala	Grace Dodge Career & Technical High School
Fazenda Ecológica	Fort Wayne Zoological Society	Fundación Patagonia Natural (FPN)	Great Ape Survival Programme (GRASP)
Federación Comunas Kichwas del Río Napo	Foundation for the Americas	Fundación Patagonia Sur – Centro MERI	Greater Yellowstone Association
Federal Departments and Ministries in Malaysia	Foundation Tri-National de la Sanga (FTNS)	Fundación Patrimonio Cultural y Natural Maya (PACUNAM)	Greater Yellowstone Coalition
Fédération des Associations du Parc National de la Lopé (FAPNL)	Foundations of Success	Fundación Simón I Patiño, Centro de Ecología y Difusión	Green Action Environmental Association of Guangdong University of Technology
FEGS Health and Human Services System	FPT Corporation	Fundación San Ignacio de Huinay	Green Beagle Environment Institute
FHI 360	Frankfurt Zoological Society (FZS)	Fundación Senda Darwin	Green Reef
FICAMS		Fundación Suiza en Puerto Yartou	Greenpeace
Fiji Department of Environment			GRET – Professionnels du développement solidaire
Fiji Department of Fisheries			Grupo de Estudios Ambientales – GEA
Fiji Department of Forestry			Guangdong the Best



Guangzhou Office of the State
Endangered Species Import
and Export Management
Office

Gunung Gede Pangrango
National Park Authority

Gunung Halimun Salak
National Park Authority

Gunung Leuser National Park
Authority

Habitat Ecologique et Liberté
des Primates (HELP), Congo

Hanoi University of Agriculture

HarimauKita – The Sumatran
Tiger Conservation Forum

Harvard Medical School

Harvard School of Public Health

Harvard University Center for
the Environment

Health Map

Healthy Reefs Initiative

Heart of Brooklyn

Heilongjiang Forest Industry
Bureau

Henry Vilas Zoo

Henry's Fork Legacy Project

Herbario Nacional De Bolivia

Hifadhi ya Mazingira na Utalii
Rungwe (HIMARU)

HIVE NYC Learning Network

Hofstra University

Hopkins Fisherman Association

Hornbill Research Foundation

Houston Zoo

Huai Kha Khaeng Foundation

Human Nature Projects

Humane Society International

Humane Society of US

Hunchun Border Army

Hunchun City Government

Hunchun Forest Public Security
Bureau

Hunchun Tianhe Amur Tiger
Conservation Association

Hunter College

Hunting the Rez

Ibonga

Ice Seal Committee

Idaho Fish and Game

Idaho Transportation
Department

Independent University

IDEXX Laboratories

IEB

Indianapolis Zoological Society,
Inc.

Indonesian Institute of
Sciences (LIPI)

Indonesian Veterinary Research
Center (Balitvet) Bogor

InsideRSE

Inspection Tiger

Institut Congolais pour la
Conservation de la Nature
(ICCN)

Institut Halieutique et des
Sciences Marines (IHSM)

Institut de recherche pour
le développement (IRD),
Gabon

Institut Pasteur

Institute of Applied Science,
University of the South
Pacific

Institute of Biology and Soils,
Far Eastern Branch of
the Russian Academy of
Sciences

Institute of Biology, Mongolian
Academy of Sciences

Institute of Geography, Far
Eastern Branch of the
Russian Academy of
Sciences

Institute of Marine Biology

Institute of Marine Sciences of
the University of California-
Santa Cruz

Institute of Natural Resources
of the University of Natal

Institute of Tropical Forest
Conservation, Mbarara
University of Science and
Technology, Uganda

Institute of Zoology, Academy of
Sciences

Instituto Antártico Chileno –
INACH

Instituto Baleia Jubarte/
Humpback Whale Institute,
Brazil

Instituto de Antropología e
Historia, Guatemala

[BELOW] The wild
population of
ostriches like this
one in Makgadikgadi
Pans National Park,
Botswana, has
declined drastically
in the past 200
years but its range
remains large.



[RIGHT] The wolverine is one of several species requiring enormous ranges across the western U.S. WCS works with several partners and stakeholders to protect wolverines from trapping, development, and climate change.



Instituto de Biología
Molecular Biotecnología
de La Universidad Mayor
de San Andrés
Instituto de Conservación de
Ballenas (ICB)
Instituto de Derecho y
Economía Ambiental
Instituto de Desenvolvimento
Sustentável Mamirauá
Instituto de Ecología de la
Universidad Mayor de San
Andrés
Instituto de Ecología y
Biodiversidad (IEB)
Instituto de Investigaciones
Agropecuarias, Chile
Instituto de Investigaciones
Técnicas Científicas (IIT CUP)
Instituto de Investigación en
Ciencia Animal y Ecosalud,
Facultad de Medicina
Veterinaria y Zootecnia,
USAC, Guatemala
Instituto de la Patagonia
Instituto de Pesquisas
Ecológicas - IPE
Instituto Fomento Pesquero-
IFOP
Instituto Forestal Nacional
(INFONA)
Instituto Nacional de Pesquisas
da Amazônia
Instituto Nacional de Salud,
Gobierno Regional de Cuzco
Instituto Nacional de Salud,
Peru
Instituto Nacional de Tecnología
Agropecuaria (INTA)
Instituto Piagaçu
Instituto Quinta do Sol
Instituto Socioambiental, Brazil
InterAction

Interagency Grizzly Bear Study
Team
International Animal Rescue
(IAR)
International Centre for
Research in Agro-Forestry
(ICRAF)
International Centre for
Tropical Agriculture (Centro
Internacional Agricultura
Tropical - CIAT)
International Conservation and
Education Fund (INCEF)
International Conservation
Caucus Foundation
International Elephant
Foundation
International Forestry
Resources and Institutions
(IFRI)
International Fund for Animal
Welfare (IFAW)
International Gorilla
Conservation Programme
(IGCP)
International Institute for
Sustainable Development
International Livestock
Research Institute
International Polar Year
(Canadian Federal
Government Program)
International Rural Poultry
Centre (IRPC)/KYEEMA
Foundation
International Society for
Infectious Disease
International Union for
Conservation of Nature and
Natural Resources (IUCN)
International Whaling
Commission (IWC)
International YMCA
Intertribal Buffalo Council
Inuit Circumpolar Council (ICC)

Iranian Cheetah Society (ICS)
Iringa District Council
Island Conservation
Island Conservation Chile
Islands Foundation
iTaukei Affairs Board
iTaukei Land Trust Board
IUCN (Rio Tinto NPI, CCI
initiative)
IUCN Primate Specialist Group,
Great Apes Section
IUCN/SSC African Elephant
Specialist Group -
Africa-wide
IUCN/SSC Asian Elephant
Specialist Group
IUCN/SSC Asian Wild Cattle
Specialist Group - Saola
Working Group in Laos and
Vietnam
IUCN/SSC Cat Specialist Group
IUCN/SSC Crocodile Specialist
Group
IUCN/SSC Iguana Specialist
Group
IUCN/SSC Shark Specialist
Group
IUCN/SSC Tortoise and
Freshwater Turtle Specialist
Group
Ixiamas Municipality
Izaak Walton League of America
Jackson Hole Conservation
Alliance
Jackson Hole Wildlife
Federation
Jackson Zoo
Jacobi Medical Center
Jagannath University
JAGWOOD+, Nicaragua
Jahangirnagar University
Jakarta Animal Aid Network
(JAAN)

Jakarta Provincial Police
Jamaica Center for Arts &
Learning
James Cook University
Jane Goodall Institute
Jardín Caperucita Roja
Jardín Infantil Papelucho
Janice Dinegar Boyd
Jaringan KuALA
Jilin Wildlife Conservation
Association
John Jay College
Joseph Vance Architects
Kaa-lya del Gran Chaco
National Park and Natural
Area of Integrated
Management
Kabul Municipality
Kabul University
Kabul Zoo
Kadoorie Farm & Botanic
Garden
Kansas Buffalo Association
Karnataka State Forest
Department, Government of
Karnataka
Kasetsart University Faculty of
Forestry
Kavango Zambezi Transfrontier
Conservation Area (KAZA
TFCA) Secretariat
Kelompok Pencinta Laut
Kélonia (The Observatory of
Marine Turtles)
Kenya Coast Development
Authority
Kenya Marine & Fisheries
Research Institute (KMFRI)
Kenya Sea Turtle Conservation
Trust (KESCOM)
Kenya Wildlife Service (KWS)
Khabarovsk Fund for Wildlife



Khabarovskii Krai Society of Hunters and Fishermen
 Khentii Province Environmental Protection Agency
 Khulna University
 King's College London
 Kingsborough Community College
 Kreditanstalt für Wiederaufbau (KfW)
 L'École Nationale Vétérinaire d'Alfort (ENVA)
 La Empresa Urrá S.A. E.S.P.
 La Guardia College
 La Paz Zoo
 Lake Champlain Basin Program
 Lamont Doherty Earth Observatory – Columbia University
 Lampung Provincial Police
 Land of the Leopard National Park
 Landscape Management and Development (LAMDEV)
 Land Tenure Center at the University of Wisconsin
 Landcare Research (NZ)
 Last Great Ape Organization (LAGA), Cameroon
 Lazovskii Zapovednik
 Le Silo National des Graines Forestières (SNGF)
 Leadership for Conservation in Africa
 Lefebre Conservation
 Lehgh Valley Zoo
 Lehman College
 Leuser International Foundation
 Liceo Hernando de Magallanes, Porvenir
 Liceo Polivalente Hernando de Magallanes
 LightHawk
 Lincoln Center for the Performing Arts, Inc.
 Lincoln Institute of Land Policy
 Lincoln Park Zoo
 Literacy Inc. (LINC)
 Livestock and Dairy Development Department, Gilgit-Baltistan
 Local Level Government in PNG
 Lola Star Boutique
 Lola Ya Bonobo, Amis des Bonobos au Congo (ABC)
 Long Island Veterinary Specialists
 Lukuru Wildlife Research Project
 Luna Park – Central Amusement International (CAI)
 Lundin for Africa
 Lutheran Relief Service

Madagascar Ministry of Development and Land Use Planning
 Madagascar National Parks (MNP)
 Madidi Natural Area of Integrated Management and National Park
 Madison Valley Ranchlands Group
 Maharashtra State Forest Department, Government of Maharashtra
 Malaysia Nature Society
 Maliasili Initiatives
 Management and Ecology of Malaysian Elephants (MEME)
 Manaus Center for Zoonosis Control (CCZ)
 Mancomunidad De Municipios Del Norte Paceño Tropical
 Mancomunidad Municipal de la Amazonía de Puno
 Manga
 Manhattan College
 Manomet Center for Conservation Science
 Manta Marine Pvt Ltd
 Manus Civil Society Forum
 Marine and Coastal Management, Republic of South Africa
 Marine and Coastal Management, Rogge Bay, South Africa
 Marine and Fisheries Office, Minahasa Utara
 Marine Conservation Institute
 Marine Ecology Group, University of Western Australia
 Marine Mammal Commission
 Marine Science Association of Myanmar (MSAM)
 Mary Miss/City as Living Laboratory
 Max Planck Institute for Evolutionary Anthropology
 Maya Lin / What is Missing Project
 Mcal. Antonio Jose de Sucre Institute of Technical Scientific Research of the Police University
 MedAir
 Mentoring USA
 Mercy Corps
 Metropolitan Museum of Art
 Microsoft Research (CCI initiative)
 MidAtlantic Regional Council on the Ocean (MARCO)
 Miller Park Zoo
 Milwaukee County Zoo
 Mining Watch Canada

Ministère de l'Éducation Nationale, de l'Enseignement Supérieur, de la Recherche Scientifique, de l'Innovation et de la Culture
 Ministère de l'Environnement, Conservation de la Nature et Tourisme, Democratic Republic of Congo
 Ministère de la Pêche et des Ressources Halieutiques, Madagascar
 Ministère de l'Enseignement Supérieur et de la Recherche, Madagascar
 Ministère des Eaux et Forêts (MINEF), Madagascar
 Ministère de l'Economie Forestière et du Développement Durable (MEFDD)
 Ministerio de Agricultura, Ganadería y Alimentación (MAGA), Guatemala.
 Ministerio de Ambiente y Desarrollo Sostenible (MADS), Colombia
 Ministerio de Ambiente y Recursos Naturales, Guatemala.
 Ministerio de Ciencia, Tecnología y Medio Ambiente, Cuba
 Ministerio de Medio Ambiente, Chile
 Ministerio de Obras Públicas
 Ministerio del Ambiente y los Recursos Naturales (MARENA), Nicaragua
 Ministerio del Ambiente, Peru
 Ministerio del Medio Ambiente de Chile
 Ministerio Público, Guatemala
 Ministry Coordination of Public Welfare (Menkokesra)
 Ministry for the Coordination of Environmental Affairs, Mozambique
 Ministry of Agriculture, Madagascar
 Ministry of Agriculture and Forestry, Laos
 Ministry of Agriculture, Forestry and Fisheries (MAFF), Cambodia
 Ministry of Agriculture and Rural Development (MARD), Vietnam
 Ministry of Animal Production, Republic of Congo
 Ministry of Climate Change, Pakistan
 Ministry of Defense, Laos
 Ministry of Defense, Mozambique
 Ministry of Education, Laos

Ministry of Environment & Forests, Government of India
 Ministry of Environment and Green Development, Mongolia
 Ministry of Environment and Tourism, Namibia
 Ministry of Environment, Bauchi State
 Ministry of Environment, Cambodia
 Ministry of Environment, Direction General Forests, Madagascar
 Ministry of Environment, Uganda
 Ministry of Finance, Afghanistan
 Ministry of Fisheries Development, Kenya
 Ministry of Foreign Affairs, Afghanistan
 Ministry of Foreign Affairs, Laos
 Ministry of Foreign Affairs, Madagascar
 Ministry of Forest Economy, Republic of Congo
 Ministry of Forestry and Wildlife (MINFOF), Botswana
 Ministry of Forestry, Fisheries and Sustainable Development, Belize
 Ministry of Health, Republic of Congo
 Ministry of Higher Education, Afghanistan
 Ministry of Interior (Provincial & District Police), Mozambique
 Ministry of Labour, Thailand
 Ministry of Natural Resources and Agriculture, Belize
 Ministry of Natural Resources and Environment, Laos
 · Department of Forest Resource Conservation
 Ministry of Natural Resources and Environment, Thailand
 · Department of Environmental Quality Promotion
 · Department of National Parks, Wildlife and Plant Conservation
 · Office of Natural Resources and Environmental Policy and Planning
 Ministry of Public Health and Sports, Bolivia
 Ministry of Research and Education, Academy of Sciences, Tajikistan
 Ministry of Science, Argentina
 Ministry of Sustainable Development, Forest Economy and Environment, Gabon



Ministry of the Attorney General, Belize	Nacional de Áreas Protégidas, Bolivia Servicio Nacional de Áreas Naturales Protegidas, Perú	National Maritime and Safety Authority, Papua New Guinea	Natural Resources Conservation Agency (BKSDA Yogyakarta)
Ministry of Tourism, Belize	Nacionalidad Sápara del Ecuador	National Ministry of Health, Peru	Natural Resources Defense Council (NRDC)
Ministry of Tourism, Mozambique	Nacionalidad Waorani del Ecuador	National Oceanic and Atmospheric Administration (NOAA)	Naturaleza y Cultura Internacional
Ministry of Tourism, Environment and Natural Resources, Zambia	Nagqu Management Sub-Bureau, Chang Tang National Reserve of Tibet Autonomous Region	National Office for the Environment (ONE), Madagascar	Nature and Wildlife Conservation Division, Forest Department, Ministry of Environmental Conservation and Forestry, Myanmar
Ministry of Tourism, Uganda	Naples Zoo at Caribbean Gardens	National Parks Board, Singapore	Nature Conservancy Canada
Ministry of Wildlife Conservation and Tourism in South Sudan	Nashville Zoo	National Parks Conservation Association	Nature Harness Initiatives (NAHI), Uganda
Minnesota Buffalo Association	National Aeronautics and Space Administration	National Parks Service Chile and Argentina	Nature Protection Team (NPT)
Minnesota Zoological Society	National Agricultural Research Institute, Papua New Guinea	National Research Institute, Papua New Guinea	Nature Uganda
Missouri Botanical Gardens	National Animal Health Laboratory, Laos	National Science and Engineering Research Council of Canada (NSERC)	Nature Fiji-Mareqeti Viti
Mongol-American Cultural Association (MACA)	National Audubon Society	National Science Foundation	NatureServe
Mongolian Customs Agency	National Bison Association	National Service of Animal Health and Food Safety (SENASAG)	Network (AKDN)
Mongolian General Agency for Specialized Inspection	National Botanical Garden of Belgium (Meise)	National Service of Protected Areas (SERNAP)	Nevada Department of Wildlife
Mongolian State Border Defense Agency	National Center for Ecological Analysis and Synthesis (NCEAS)	National Tiger Conservation Authority, Ministry of Environment & Forests, Government of India	New Ireland Province Learning and Training Network
Mongolian State Central Veterinary Laboratory	National Center of Tropical Diseases (CENETROP)	National University of Laos	New York Blood Center
Montana Bison Association	National Center of Veterinary Diagnostic, Ministry of Agriculture, Tajikistan	National University of Mongolia	New York Botanical Garden
Montana Department of Environmental Quality	National Centre for Biological Sciences	National University of Singapore	New York City Ballet
Montana Department of Transportation	National Directorate of Veterinary Services (DNSV)	National Wildlife Federation	New York City Center
Montana Fish, Wildlife and Parks	National Emerging Infectious Disease Coordination Office (NEIDCO), Laos	National Wildlife Refuge Association	New York City Department for the Aging
Montana State University	National Environment Management Agency, Uganda	Natural Areas Conservancy	New York City Department of City Planning
Montana Wilderness Association	National Environment Management Authority (NEMA), Rwanda	Natural History Museum of the Adirondacks/The Wild Center	New York City Department of Education
Montana Wildlife Federation	National Environmental Education Foundation	Natural Resources Conservation Agency (BKSDA Aceh)	New York City Department of Parks and Recreation, Natural Resources Group
Montefiore Medical Center	National Environmental Protection Agency (NEPA), Afghanistan	Natural Resources Conservation Agency (BKSDA Bengkulu)	New York City Museum Educator's Roundtable
Moscow State University	National Fisheries Authority, Papua New Guinea	Natural Resources Conservation Agency (BKSDA Central Java)	New York City Natural Areas Conservancy
Mote Marine Laboratory	National Fisheries College	Natural Resources Conservation Agency (BKSDA Kalimantan)	New York City Opera
Mount Sinai Medical Center	National Forest Authority (NFA), Rwanda	Natural Resources Conservation Agency (BKSDA Jakarta)	New York City Urban Field Station
Mountain Conservation and Development Programme (MCDP)	National Forestry Authority, Papua New Guinea	Natural Resources Conservation Agency (BKSDA Jambi)	New York Hall of Science
Mouvement des Indigènes, Autochtones et Pygmées du Gabon (MINAPYGA)	National Forestry Authority (NFA), Uganda	Natural Resources Conservation Agency (BKSDA Lampung)	New York League of Conservation Voters
Mpala Research Centre	National Geographic Society	Natural Resources Conservation Agency (BKSDA West Java)	New York Natural Heritage Program
Municipal Art Society of New York	National Indian Health Board	Natural Resources Conservation Agency (BKSDA West Kalimantan)	New York State Adirondack Park Agency
Municipal Government of Orellana	National Institute for Oceanographic Data (CNDIO/CENAREST)	Natural Resources Conservation Agency (BKSDA West Sumatra)	New York State Department of Education
Municipalidad de Porvenir			New York State Department of Environmental Conservation
Municipalidad de Primavera			New York State Department of State
Municipalidad de Puerto Casado			New York State Department of Transportation
Mural, Mural on the Wall			New York State Energy Research and Development Authority
Museo de Porvenir			New York State Marine Educators Association
Museo delle Scienze, Trento			New York State Museum
Museum of Jewish Heritage			
Museum of the City of New York			
Museum of the Moving Image			
Museum of Natural History: Noel Kempff Mercado, Bolivia			
Muyissi Environnement			



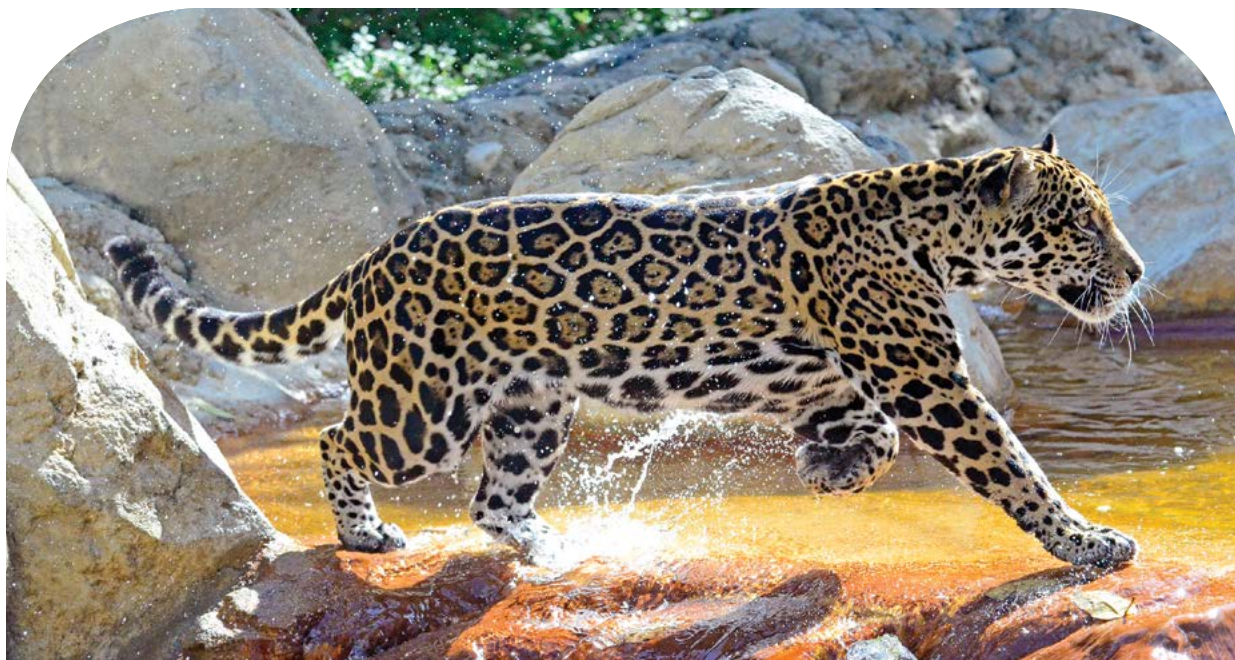
New York State Olympic Regional Development Agency
New York University
New Zealand Nature Institute/ Initiative for People Centered Conservation (NZNI-IPECON)
Newcastle University
Newcourse
Ngari Management Sub-Bureau, Chang Tang National Reserve of Tibet Autonomous Region
Nicaragua Armed Forces
Nicaragua National Police
Nigeria Conservation Foundation
Nigerian Federal Ministry of Environment
Nigerian National Park Service
Nigerian Police Service Veterinary Division
NOAA, Atlantic States Marine Fisheries Commission (ASMFC)
NOAA, Bureau of Ocean Energy Management (BOEM)
NOAA, Mid Atlantic Fisheries Management Council (MAFMC)
NOAA, National Marine Fisheries Service (NMFS)
NOAA, Office of National Marine Sanctuaries
Nomadic Nature Conservation (NNC)
Nomrog Strictly Protected Area Administration
North Carolina Museum of Natural Sciences
North Carolina Zoological Society
North Dakota State University
North Sumatra Military Police

North Sumatra Provincial Police
Northeast Equine Center
Northeastern States Research Consortium
Northern New York Audubon
North-South University
Norwegian Agency for Development Cooperation (NORAD)
NY/NJ Baykeeper
Nyanga Tour
Oakland Zoo
Ocean Conservancy
Ocean Diving Club, Syiah Kuala University
Oceana
Oceana Chile
Oceanic Society
Office National de la Chasse et de la Faune Sauvage et Direction de l'Agriculture et de la Forêt, Mayotte (France)
Office National des Forêts (ONFI)
Office of Climate Change and Development, Papua New Guinea
Office of the District Governor of Wakhan (Badakhshan)
Office of the District Governor of Yakawlang/Band-e-Amir (Bamyan)
Office of the Governor, Badakhshan
Office of the Governor, Bamyan
Office of US Foreign Disaster Assistance for Latin America and the Caribbean USAID / OFD
Oglala Lakota Sioux Tribes
Okapi Conservation Project
Oklahoma Bison Association

Omaha's Henry Doorly Zoo and Aquarium
Oman Ministry of Environment and Climate Affairs
Onon Balj National Park Protected Area Administration
Ontario Ministry of Natural Resource
Ontario Nature
Open Space Institute
Oregon State University
Organisation Concertee des Ecologistes et Amis de la Nature
Organisation d'Accompagnement et d'Appui aux Pygmées
Organización Indígena de la Cuenca del Caura KUYUJANI, Venezuela
Organización, Manejo y Conservación (OMYC), Guatemala
Osmose
OSPESCA (La Organización del Sector Pesquero y Acuicola del Istmo Centroamericano)
Oxfam International PNG
Oxford University Clinical Research Unit (OUCRU)
P.S. 1 Contemporary Art Center
P.S. 188
P.S. 205 Fiorello LaGuardia
P.S. 329
Pacific Institute of Geography
Pact
Palung Foundation
Pamir Biological Institute
PAMS Foundation
Pan- American Health Organization (PAHO), Bolivia
Panthera

Papua New Guinea Centre for Locally Managed Areas
Parachute Festival
Parks Canada
Parque "Acero Marka Rancho Resort"
Parque Nacional Bahuaja Sonene
Parque Nacional del Manu
Parques Naturales Nacionales de Colombia
Parque Pingüino Rey
Partenariat Tortue
Partners in Food Solutions
Partners of the Forum for the Conservation of the Patagonian Sea and Areas of Influence
Partnership for the East Asian-Australasia Flyway (EAAFP)
Patagonia Wildlife
Patrimonio Natural
PCI Media Impact
Peace Parks Foundation
People and Carnivores
People Centered Conservation Mongolia (PCC)
Peoria Zoo
Percy FitzPatrick Institute of African Ornithology, University of Cape Town
Perkumpulan Celebio
Perkumpulan PETRA
Persian Wildlife Heritage Foundation (PWHF)
Petén Guatemala
Pew Charitable Trusts
Phoenix Fund
Pilon Lajas Biosphere Reserve
Pittsburgh Zoo
Plan4theLand
Planning and Development Department, Gilgit-Baltistan

[BELOW] WCS researchers in Guatemala have established 50 stations of paired camera traps over a 500-square kilometer area of community-managed forest to learn more about the elusive jaguar.



PNG Eco-Forestry Forum	Project Dragonfly at Miami University	RARE	Reserva Nacional de Calipuy
PNG Sustainable Development Program	Projet de l'Application de la Loi Faunique (PALF)	Ratel Trust	Reserva Nacional Matsés
Point Defiance Zoo and Aquarium	Projet Protection des Gorilles (PPG), Aspinall Foundation	Red Alta Dirección	Reserva Nacional Pacaya Samiria
Police Athletic League	Projeto Saium de Coleira (Universidade Federal do Amazonas)	Red de Alta Dirección-Universidad del Desarrollo	Reserva Nacional Tambopata
Pontificia Universidade Católica do Rio Grande do Sul, Brazil	ProNaturaleza	Regional Executive Units of Environmental Health (DGFFS)	Resource Africa
Pontificia Universidad Católica de Chile	Prospect Park Alliance	Regional Program for Forest and Wildlife Resource Management – Loreto (PRMRFFS – Loreto)	Reyes Municipality
Potawatomi Zoological Society	Protect the Adirondacks	Regulations Department of Guangzhou Customs	Rhino Protection Unit / International Rhino Foundation in Indonesia
Prairie Island Indian Community	Protected Areas Conservation Trust, Belize	Reid Park Zoo	Rhode Island Zoological Society
Primate Conservation	Protected Areas Secretariat, Belize	Relief International	RINDRA
Primorskaya State Agricultural Academy	Provincial Administration Offices of Laos	Rénatura	Riquelme, Porvenir
Primorskii Krai Society of Hunters and Fishermen	Provincial Government of Orellana	Research and Conservation Foundation of PNG	Rocky Mountain Bird Observatory
Princeton University	Provincial Government of Pastaza	Research and Production Agency for Biological Preparations, Academy of Agricultural Sciences	Rocky Mountain Land Use Initiative
Prodipán	Public Health Agency of Canada	State Veterinary Inspection Services, Ministry of Agriculture, Tajikistan	Rocky Mountain Wild
ProFauna	Public Theater/New York Shakespeare Festival	Réseau d'Initiatives pour la Nature et le Développement Regional et Africain	Royal Botanical Gardens (Kew)
Professionals for Fair Development (GRET)	Queens Botanical Garden	Réseau des Aires Protégées d'Afrique Centrale (RAPAC)	Rukwa Environmental Youth Organization (REYO)
Program Konservasi Harimau Sumatera (The Sumatran Tiger Conservation Programme)	Queens College, SUNY	Réseau des Organisation Locales du Lom et Djerem (ROLOM)	Rungwe District Council
Programa de Conservación, Gestión y Uso Sostenible de la Diversidad Biológica de Loreto	Queens Museum of Art	Reserva Añihue	Rupantar
Programa de Naciones Unidas para el Medio Ambiente (PNUMA)	Queens Theatre in the Park		Rurrenabaque Municipality
	Rachel Carson High School for Coastal Studies		Russian Marine Mammal Council
	RACOMI		Russian Ministry of Natural Resources
	Rainforest Foundation		Ruta Fuego
	Rajshahi University		

UNITED FOR WILDLIFE

WCS was honored in 2013 to join Prince William, the Duke of Cambridge, and six other global conservation organizations in the establishment of United for Wildlife. The collaboration aims to substantially increase the global response to major conservation crises, including an effective campaign to confront the disturbing rise in illegal wildlife trafficking worldwide.

With the Duke of Cambridge as President, United for Wildlife partners include: Conservation International, Fauna & Flora International, International Union for Conservation of Nature, The Nature Conservancy, Wildlife Conservation Society, WWF-UK, the Zoological Society of London (ZSL), and The Royal Foundation of The Duke and Duchess of Cambridge and Prince Harry.

At the pivotal inaugural meeting at the Zoological Society of London hosted by the Prince of Wales and the Duke of Cambridge, the discussion focused in part on SMART (Spatial Monitoring And Reporting Tool), a law enforcement-based initiative designed to blend capacity-building and cutting-edge technologies to support front-line

staff and their managers in the fight against poachers.

SMART was itself developed by a global consortium of non-governmental organizations (NGOs) and conservation agencies that includes WCS, CITES-MIKE, the Frankfurt Zoological Society, the North Carolina Zoo, ZSL, and WWF. WCS is a leader in the development and use of SMART worldwide in Asia, Latin America, and Africa, as we work closely with government partners, particularly protected-area agencies, and forest and wildlife departments.

We thank The Royal Foundation for its dedication and commitment to: increasing anti-poaching support for the most effective programs on the ground; testing new solutions; building a solid body of evidence for effective, scalable solutions; and enabling the next generation to take a lead in protecting our world's natural resources.



THE ROYAL FOUNDATION
of The Duke and Duchess of Cambridge
and Prince Harry



Rwanda Development Board (RDB)	Servicio Nacional de Sanidad y Calidad Agroalimentaria (SENASA)	State University of New York College of Environmental Science and Forestry	The Center for Tropical Forest Science of the Smithsonian Tropical Research Institute
Rwanda Environment and Development Organization (REDO)	Servicio Nacional de Sanidad Agropecuaria e Inocuidad Alimentaria (SENASAG)	Staten Island Children's Museum	The Civil Society Coalition for Oil
Sacramento Zoo	Shan Shui Conservation Center	Staten Island Historical Society	The Congolese Center of Environmental Data Collection
Safari Club International	Shanghai Administration Department of Afforestation and City Appearance	Staten Island Museum	The Environmental Conservation Trust Fund of Uganda (ECOTrust)
Saint Louis Zoo	Shark Advocates International	Staten Island Zoological Society	The Green Club Green Group of Afghanistan (GGA)
Sam Veasna Center	Shark Legacy	Staying Connected Initiative Partners	The Heart of the Rockies Initiative
San Andrés	Shark Trust (UK)	Steppe Forward Programme (SFP)	The Madagascar Protected Areas and Biodiversity Foundation
San Francisco Estuary Institute	Shingle Shanty Preserve and Research Station	Stevens Institute of Technology	The Natural Capital Project
San Francisco Zoological Society	Shorefront YM-YWCA	Stockholm University	The Nature Conservancy (TNC)
Sanctuaire des Bonobos du Congo-Lola Ya Bonobo	Siberut National Park Authority	Stony Brook University	The Nature Conservancy of New York
Sand County Foundation	Sierra Club	Studio Museum in Harlem	The North Sulawesi Watersports Association (NSWA)
Sansom Mlup Prey	Sikhote-Alin Zapovednik	Suaka Elang (Raptor Sanctuary)	The Picture House of Pelham, NY
Santa Rosa de Yacuma Municipality	SMART	Sueb Nakasatien Foundation	The Royal Foundation of The Duke and Duchess of Cambridge and Prince Harry
Santuario Nacional de Calipuy	Simon Fraser University	Sukhbaatar Province Environmental Protection Agency	The Southern Institute for Ecology
Saola Working Group	SIMPONA	Sumatran Elephant Forum	The University of Hong Kong
Sapienza Università di Roma, Rome (CCI initiative)	Smithsonian Institution	Summit Institute of Development	The University of Vermont's Gund Institute of Ecological Economics
Sarasota Marine Laboratory	Snow Leopard Foundation (SLF)	Supreme People's Procuracy Sustainable Development & Biodiversity Conservation in Coastal Protection Forest (SDBC-Sundarbans, German Development Cooperation (GIZ)	The Vital Ground Foundation
Sarteneja Association for Conservation and Development	Snow Leopard Trust (SLT)	Swiss Agency for Development and Cooperation	The Wild Center
Sarteneja Fisherman Association	Snug Harbor Cultural Center & Botanical Garden	Switzerland Embassy	The Wilderness Society
Save Our Species	Sociedad Peruana de Derecho Ambiental (SPDA)	Tanah Karo District Police	The Wildlands Network
SAVE PNG Inc	Society for Conservation Biology	TANY MEVA Foundation	The Wildlife Society
Save the Elephants	Society for Marine Mammalogy	Tanzania National Parks (TANAPA)	The World Bank
Save the Environment of Afghanistan (SEA)	Socio Bosque Program	Tanzania Natural Resources Forum (TNRf)	The World Bank's Corazón del Corredor Project, Nicaragua
Saving Asia's Vultures from Extinction (SAVE)	SOCIP (Sumatran Orangutan Conservation Program)	Tanzania Wildlife Research Institute (TAWIRI)	Theodore Roosevelt Conservation Partnership
Scenic Hudson	Soekarno-Hatta Airport Quarantine	Temaiken	Tibet Wildlife Conservation Association
School of Global Environmental Sustainability	Soekarno-Hatta International Airport Customs	Terrapin Bright Green	Tiger Research and Conservation Trust
Science and Resilience Institute at Jamaica Bay	Solicitor General's Office, Belize	Territorial Authority of Ten Indigenous and Afro-Descendant Communities of the Pearl Lagoon Basin	Titian Foundation
Science for Nature and People (SNAP)	Sonoran Institute	Teton Regional Land Trust	Toledo Institute for Development and Environment (TIDE)
Scientists from the Alaska Department of Fish and Game	South African National Parks (SANParks)	Texas Bison Association	Toledo Zoo
Scientists of the North Slope Borough	South African Veterinary Foundation	The Adirondack Forty-Sixers	Tom's Diner
Sea to Shore Alliance	South Brooklyn Youth Consortium	The Anti-Smuggling Criminal Investigation Bureau of the General Administration of Customs, China	Total S.A.
Sea Turtle Conservancy	Southern African Development Community (SADC)	The Biomimicry Institute	Towns of Clifton and Fine
Seatuck Environmental Association	Southern Environmental Association	The Center for Biodiversity and Conservation of the American Museum of Natural History (CBC-AMNH)	TRAFFIC
Secretaría de Ambiente y Desarrollo Sustentable, Argentina	Spectrum		Transportation Security Administration (TSA)
Secretaria de Estado do Meio Ambiente e Desenvolvimento- Centro Estadual de Unidades de Conservação (SDS-CEUC)	Squalus (German Elasmobranch Society)		Travesía
Secretaría de los Recursos Naturales (SERENA)	Stanford University		Tree Talk Foundation
Sedgwick County Zoo	State Departments of Johor, Pahang and Sarawak		Trento Science Museum
Servicio Agrícola y Ganadero-SAG	State Endangered Species Import and Export Management Office		Tropenbos International
	State Forestry Administration, PR China		Trout Unlimited



[RIGHT] WCS's COMACO business model rewards farmers in Zambia's Luangawa Valley with increased commodity prices for adopting improved farming practices that can sustain higher food crop yields while reducing natural resource conflicts.



Trust for Public Land
Tug Hill Commission
Tug Hill Tomorrow Land Trust
Tullow Oil
Tulsa Zoo
Turner Construction
Turner Endangered Species Fund
Turtle Conservancy
Turtle Conservation Fund
Turtle Survival Alliance
Two Countries, One Forest
Uganda Wildlife Authority (UWA)
Ujamaa Community Resource Trust (UCRT)
Ulaanbaatar City Agency for Specialized Inspection
Ulayat Foundation
UMPKY Patrol
UNEP Convention on Migratory Species
UNEP WCMC (CCI Initiative)
UNICEF
Unidad De Limnología del Instituto De Ecología de la Universidad Mayor De San Andres

Union of Beekeepers' Cooperatives of Nyungwe National Park (UBWIZA BWA NYUNGWE)
Union of Concerned Scientists
Unique Forest and Land Use
United for Wildlife
United Nations Development Program (UNDP)
United Nations Educational, Scientific and Cultural Organization (UNESCO)
United Nations Environment Program (UNEP)
United Nations Food and Agricultural Organization
Emergency Centre for Transboundary Animal Diseases Regional Office for Southern Africa (FAO-ECTAD)
United States Africa Command, Headquarters, U.S. Armed Forces, Africa (AfriCom)
United States Agency for International Development (USAID)
United States Bureau of Land Management (BLM)
United States Centers for Disease Control (CDC)

United States Coast Guard (USCG)
United States Department of Agriculture
United States Department of Defense
United States Department of Interior
United States Environmental Protection Agency
United States Fish and Wildlife Service (USFWS)
United States Fish and Wildlife Service - Marine Turtle Conservation Fund
United States Fish and Wildlife Service, Wildlife Without Borders Program
United States Fish and Wildlife Service Northeast
United States Forest Service (USFS)
United States Marine Mammal Commission (MMC)
United States National Marine Fisheries Center
United States National Park Services (NPS)
United States Geological Survey (USGS)
Universidad Austral de Chile

Universidad Autónoma Gabriel René Moreno (UAGRM)
Universidad Católica del Ecuador
Universidad Católica del Norte
Universidad de Buenos Aires (UBA)
Universidad de Magallanes
Universidad del Rosario, Colombia
Universidad del Valle, Colombia
Universidade do Algarve, Portugal
Universidad Federico Santa Maria
Universidad Nacional de Guinea Ecuatorial in Spanish -National University of Equatorial Guinea (UNGE)
Universidad Nacional de Córdoba (Argentina)
Universidad Nacional de Misiones (Argentina)
Universidad Nacional del Litoral
Universidad Nacional Mayor de San Marcos, Facultad de Medicina Veterinaria
Universidad Nacional de Tumbes



Universidad Peruana Cayetano Heredia (UPCH)	University of Texas at El Paso	Western Indian Ocean Marine Science Association (WIOMSA)	Yayasan Orangutan Sumatera Lestari – Orangutan Information Centre
Universidad Pública El Alto	University of Veterinary and Animal Sciences, Lahore	Western Resource Advocates	Yayasan PUGAR
Universidad San Francisco	University of Virginia	Wetlands International	Yayasan SEMANK
Universidad Santo Tomás	University of Wageningen Herbarium	Whale and Dolphin Conservation Society	Yayasan Swara Perempuan
Universidade de Lisboa, Portugal	University of Wisconsin	Whale Conservation Institute	Yayasan Terangi
Universidade de São Paulo	University of Wyoming	Argentina (ICB)	Yayasan Wahana Liar
Universidade Eduardo Mondlane, Mozambique	Upper Green River Alliance	Wild Team (formerly Wildlife Trust of Bangladesh)	Yellowstone Ecological Research Center
Universidade Estadual de São Paulo – Rio Claro	Uragus, Russia	Wild4Ever Foundation	Yellowstone Safari Company
Universidade Federal ABC	Urban Assembly School for Wildlife Conservation	Wild4Life	Yellowstone to Yukon Initiative
Universidade Federal de Mato Grosso do Sul	Urban Neighborhood Services	WildAid	You Gotta Believe
Universidade Federal do Amazonas	US Climate Action Network	WildCane	Youth Muse
Universidade Federal do Rio Grande do Norte	US National Institute of Allergic and Infectious Diseases	Wildcat Service Corporation	Yukon Environment
Universitas Negeri Papua	US Naval Medical Research Unit Six	Wildlands Network	YWCA Coney Island
Universite de La Rochelle, France	Ussuriski State Zapovednik	Wildlife Alliance	Zambia Wildlife Authority (ZAWA)
Universiti Malaysia Sarawak: Institute of Biodiversity and Conservation	Utah's Hogel Zoo	Wildlife Clubs of Uganda	Zanzibar Animal Affection Society (ZAASO)
University of Antananarivo, Faculty of Sciences	Vermont Center for Ecostudies	Wildlife Department of Khabarovskii Krai	Zoo Atlanta
University of Belize	Vermont Natural Resources Council	Wildlife Department of Primorskii Krai	Zoo Boise
University of California, Berkeley School of Public Health	VESSWIC (Veterinary Society for Sumatran Wildlife Conservation)	WildLife Direct	Zoo New England
University of California, Davis Wildlife Health Center	Veterinarios sin Fronteras Canada	Wildlife Division (WD)	Zoo Zürich
University of California, San Diego: Scripps Institution of Oceanography	Veterinary and Animal Breeding Agency, Ministry of Industry and Agriculture	Wildlife Institute of India	Zoological Society of London
University of California, Santa Barbara	Veterinary Medical Center of Long Island	Wildlife Reserves Singapore Pte Ltd	Zoological Society of San Diego
University of California, Santa Cruz	Veterinary Research and Diagnostic Laboratory Cochabamba (LIDIVECO)	Wildlife Trust Alliance	Zoológico Municipal Vesty Pakos
University of Cape Town	Viceministry of Environment, Bolivia	Wildtracks	Zov Taiga
University of Colorado, Boulder	Vietnam CITES Management Authority (Ministry of Agriculture and Rural Development)	Wind River Ranch Foundation	Zov Tigra National Park
University of Dar es Salaam	Village Focus International	Winter Wildlands Alliance	Zshuk Art Initiative
University of East Anglia	Virginia Polytechnic Institute and State University	Woodland Park Zoo	
University of Exeter's Marine Turtle Research Group UK	Virginia Zoo	WorkAC	
University of Florence, Italy	Wageningen University – Plant Production Systems Group	Working Dogs for Conservation	
University of Florida, Center for African Studies	Wakhan Pamir Association (WPA)	World Food Organization	
University of Glasgow	Washington Avenue Merchants Association	World Organization for Animal Health Sub-Regional Representation for Southern Africa (OIE)	
University of Goroka	Watamu Turtle Watch (WTW)	World Resources Institute	
University of Kent (CCI initiative)	Wave Hill	World Wide Fund for Nature	
University of KwaZulu-Natal	Way Kambas National Park Authority	World Wildlife Fund	
University of Miami	Wellcome Trust Sanger Institute	Wyoming Department of Transportation	
University of Michigan	Western Environmental Law Center	Wyoming Game and Fish Department	
University of Minnesota	Western Forest Complex Conservation Foundation	Wyoming Land Trust	
University of Montana	Western Governors Association	Yale University	
University of Nevada-Reno	Western Indian Ocean – Consortium (WIO-C)	Yale University's Occupational and Environmental Medicine Program	
University of Papua New Guinea		YAPEK A (Nature Conservation Education Foundation)	
University of Pretoria		Yayasan Apiculata Manado	
University of Queensland		Yayasan Badak Indonesia (Rhino Foundation of Indonesia)	
University of Rhode Island		Yayasan Lam Jabat	
University of Stirling (UK)		Yayasan Lembaga Analisis Sosial dan Pembangunan (LASP)	



Yvetta Pokorny



“The Bronx Zoo is the only AZA-accredited institution that has hatched and raised a generation of lesser adjutant storks outside of their native habitat.”

Yvetta Pokorny's two-decade tenure as an animal keeper in the Bronx Zoo Ornithology Department followed a childhood in her native Czechoslovakia caring for a multitude of family pets, including chickens, rabbits, and a pair of mourning doves. Here she discusses the field guide on lesser adjutant storks she developed for Cambodian rangers, how our flamingos stay pink, and whether the birds for which the Bronx Zoo's Dancing Crane Café are named really can dance.

HOW LONG HAVE YOU BEEN WITH WCS AND WHAT IS YOUR ASSIGNMENT?

I have had the privilege of working as a Wild Animal Keeper in the Ornithology Department at the Bronx Zoo for 19 years. Fourteen years ago, I was promoted to Senior Wild Animal Keeper in the Ornithology department. Each day we care for the areas that house the ostriches, pheasants, birds of prey, Chilean flamingos and lesser adjutant storks.

DID YOU GROW UP AROUND ANIMALS?

I was born and raised in a small town in the south of modern-day Czech Republic. As was common in Czech households, we had many animals: chickens, ducks, geese, rabbits, dogs, cats, pigeons, and a pair of mourning doves. I remember feeding all the animals in the morning, but nobody ever had to ask me to do so. Many times I forgot to feed myself before I went to school! My father commonly brought home sick animals that we nursed to health and released, including foxes, squirrels, crows, hedgehogs, and many bird species. It was a saying in my family: “Where is Yvetta? In the chicken coop, still in her pajamas, and covered again with flies.”

WERE YOU ALWAYS INTERESTED IN BIRDS?

Since I can remember, I have always been surrounded by many different kinds of animals, from pets to farm animals and even wild forest creatures. While I truly enjoy working

with birds, I can honestly say that I do not have any preference for one type of animal. No matter what group of animals I am working with I make sure that they receive the best possible care. This comes from the passion that I have for all wildlife.

HOW DID YOU BECOME INTERESTED IN ORNITHOLOGY?

I came to the United States with my family 22 years ago to escape the communist regime in Czechoslovakia. In my old country I worked as a veterinary technician. I majored in biology, mathematics, and history of art, all of which I believe combined to help me better understand and provide for animals. When I first started at the Bronx Zoo, we underwent keeper training and I have learned a great deal from zoo staff over the years. Our former Ornithology department curator Dr. Christine Sheppard supported my enthusiasm and gave me the opportunity to study lesser adjutant storks. She supported and guided me on a daily basis and through my field study.

CAN YOU TELL US A LITTLE BIT ABOUT YOUR DAILY ROUTINE?

In addition to feeding and cleaning the birds, I work with others in the department to observe and study animal behaviors to collect data that helps us create the best possible conditions for the birds. I closely monitor the birds and assess their health, condition, food consumption, and breeding needs. We design,



maintain and adjust exhibits based on the needs of each animal. We clean pools and streams for wading birds and install high perching for birds of prey and storks.

WHAT DO YOU FIND MOST CHALLENGING?

I like to work with new species. It challenges me to understand their needs so I can provide the best care for them and create living conditions similar to what they would experience in the wild. I enjoy learning about our connection to nature. We are all dependent on healthy habitats to survive.

ZOO GUESTS ARE FASCINATED BY FLAMINGOS. ARE THEY NATURALLY PINK?

In the wild, flamingos eat brine shrimp, which contains beta-carotene that is absorbed by the birds as pigment in their feathers. In order to keep our flamingos pink, we supplement their diet with canthaxanthin.

THE BRONX ZOO CAFÉ IS CALLED THE DANCING CRANE. DO THE CRANES ON EXHIBIT DANCE?

All of our cranes dance! Most often, you can see these birds dance during the breeding season. This is a form of communication between mating cranes, advertising that this is their territory. Sometimes they seem to dance just to be playful. Our department is developing a plan to exhibit a pair of cranes close to the Dancing Crane Café for our visitors to experience these birds dancing.

DO YOU SEE A LOT OF MIGRATING BIRDS ON THE ZOO'S GROUNDS?

There's an amazing abundance and diversity of birds in our parks during the spring and fall that birders from all over come to see. Research by our department has shown that the Bronx Zoo and other parks in the city are actually high-quality stopover habitats for migrating songbirds.

WHAT MAKES YOU PASSIONATE ABOUT YOUR JOB?

I enjoy every aspect of my work. I am very proud to have the opportunity to contribute to WCS's field conservation programs and that my work at the Bronx Zoo is helping to save species all over the world. Whether it is figuring out what material a ground dove uses to build a nest or creating a field guide on lesser adjutant storks for Cambodian rangers, it is all very rewarding. The best part of my day is in the morning and late afternoon when the zoo is quiet and I check on all the birds under my care. I also enjoy sharing experiences with interns that may inspire them toward a career in conservation or veterinary medicine. Many have established careers in the sciences — including my own daughter, who is a practicing small animal veterinarian.

DO YOU HAVE A FAVORITE BIRD?

For 15 years, I have been caring for a group of lesser adjutant storks, a species on the decline in the wild. Lesser adjutants rarely breed in captivity. WCS's Bronx Zoo is the only institution accredited by the Association of Zoos & Aquariums that has hatched and raised a generation of lesser adjutant storks outside of their native habitat. To date, we have raised 18 offspring. In an effort to protect their nesting sites in the wild, I traveled to Cambodia in 2006 to

pass my knowledge of the species to rangers in the field. We must save this bird from extinction.

WHAT IS YOUR GREATEST ZOO OR WILDLIFE MOMENT DURING YOUR TIME WITH WCS?

My knees start shaking every spring when we open the door for the birds that were in holding areas during the winter. I love to watch them take their first cautious steps outside, look around, then fly to the highest perch. I feel butterflies in my stomach every time I see chicks leave the nest or spread their wings for the first time.

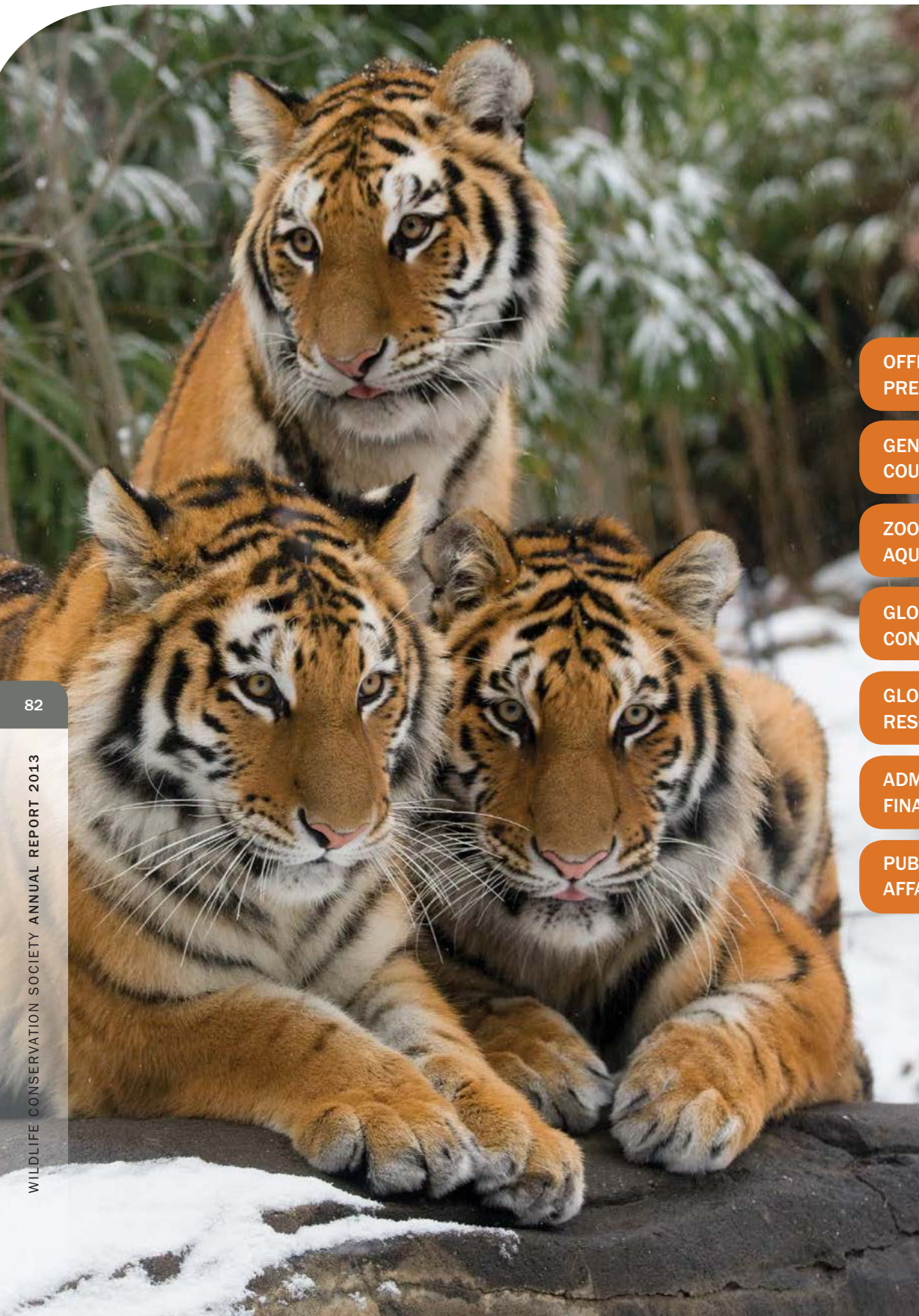
WHAT IS YOUR PROUDEST PROFESSIONAL ACHIEVEMENT?

My work with lesser adjutant storks. With the help of Ornithology Curator David Oehler I have begun collecting and organizing a more concise database on this species' husbandry, diet, and behavior in captivity. This will allow other facilities to care for the storks and ensure their long-term survival in captivity. We've sent some of our offspring to different zoos around the world in order to establish a larger population of these birds in captivity and have now tripled the number of our original "founder" group of birds that came to the Bronx Zoo in 1986. Having these wonderful animals in a zoo setting will remind our visitors that wild birds need protection.

[BELOW] For 15 years, Bronx Zoo Wild Animal Keeper Yvetta Pokorny has been caring for a group of lesser adjutant storks, a bird species on decline in the wild.



WCS STAFF



OFFICE OF THE PRESIDENT	83
GENERAL COUNSEL	83
ZOOS AND AQUARIUM	83
GLOBAL CONSERVATION	86
GLOBAL RESOURCES	92
ADMINISTRATIVE AND FINANCIAL SERVICES	93
PUBLIC AFFAIRS	94



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Krysten Marchese, *Senior Veterinary Technician*

Ihsaan Sebro, *Associate Veterinary Technician*

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Penny Kalk, Claudia Wilson: *Collection Managers*

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[OPPOSITE] Amur tigers enjoy a fresh snow at the Bronx Zoo's Tiger Mountain exhibit. WCS works to protect tigers across their existing range in Asia.



[RIGHT] A southern pudu – the world's smallest deer – was born at the WCS's Queens Zoo in the summer of 2013.



Mary Gremler, Carol Henger, Rebecca Huth, Liana Kabrel, Kaitlyn Keys, Sara Koplish, Ashley Kulbacki, Matthew LeBron, Melissa Liggio, Jennifer Loveless, Jennifer Macina, Kathryn Markisz, Kelly Marcoux, Caitlin Mason, Cindy Maur, Joanne McGillicuddy, Kathleen McMahon, Elizabeth Mills, Douglas Morea, Erin Mowatt, Joseph Nappi, Kristin Nielsen, Keri Nugent, Sara Parisi, Jonathan Perez, Daphne Revie, Chris Salemi, Jay Schoen, Adam Segal, Cristiano Silva, Danielle Steele, Monika Stroeber, Heather Tassler, Nate Thompson, Christine Vela, Patricia-Ann Vierling, Lisa Walker, Tiffany Warno, Mike Wrubel, Rebecca Yee: *Wild Animal Keepers*

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Aleida Baez, Noel Martinez, Maribel Perez,



Robert Rosario, Donald Thompson: *Assistant Zoological Park Maintainers*

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Niurka Ramos, Williams Sochor, Pedro Velez, Eduardo Vidal, Jordan Williams, Raymond Zelenka: *Attendants*

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Joel Annunziato, Michael Locascio, Anthony Petrone: *Motor Vehicle Operators*

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Michael Henry, *Manager of Electric Services and Cogeneration*

Mark Anderson, *Supervisor*
Steve Amatrudo, Dave Bailey, Farouk Baksh, Hervin Brown, Parman and Kesraj, Keith Reynolds, Sanjeev Seodas, Justin William: *Zoological Park Maintainers*

Horticulture

James Coelho, Robert Herkommer, David Hyde: *Gardeners*

Paul Fialkovic, David Rosenthal: *Zoological Park Maintainers*

Kevin Bermeo, Ivonne Lopez, Lloyd Pearson: *Assistant Zoological Park Maintainers*

CENTRAL PARK ZOO

Craig Piper, *Director of City Zoos and Director of Central Park Zoo*

Stephen Carey, *Assistant Facility Director*

Karyn Arnold, *Executive Assistant*

Noemi Medina, *Receptionist/ Department Assistant*

Animal Programs

Susan Cardillo, *Curator of Animals*

Mary Iorizzo, *Collection Manager*

Dave Autry, *Animal Supervisor*

Elias Venetsanos, *Assistant Animal Supervisor*

Bernadine Leahy, *Senior Veterinary Technician*

Nora Berine, Robert Gramzay, Melissa Mason: *Senior Wild Animal Keepers*

Celia Ackerman, Kelly Boghossian, Veronica Correa, Kyle Germano, Tumea Gittens, Luis Jimenez, Brian Lassegard,

Nicolas Newman, Angel Ocasio, Karen Pedevillano, Gretchen Stoddard, Veronica Thomas, Elizabeth Wetherhold: *Wild Animal Keepers*

Operations & Maintenance

Igor Laboutov, *Director of Operations, City Zoos*

Edwina Jackson, *Administrative Assistant*

Mong Lee, *Assistant Manager/ Systems Specialist*

Michael Nedd, Marlon Ragbir: *Supervisors*

Richard Deonarine, Arkady Gutman, NasrAli Hosein, Alistair Johnson, Rabindranath Lowtoo, Rucaldeau Renondeau, Jose Torres: *Zoo Park Maintainers*

Robert Brinson, Wayne Martin: *Attendant Supervisors*

Eusebia Alvarez, Joshua Doval, Ramdhannie Dwarka, Francis Francisco, Crystal Kinlaw, Jeremy Lloyd, Angela Rodriguez, Leighton Stone, Lakisha Terry, Robert Veerapen: *Attendants*

Horticulture

Todd John Comstock, *Curator of Horticulture, City Zoos*

John McBride, *Horticulturist for City Zoos*

Security

John Geist, *Manager of Security, Admissions & Membership*

Fitzroy Neufville, *Maintainer*

John Bohan, Carlton Davidson, Alberto Gonzalez, John Joseph, Marilyn Maldonado, Frederick Miller, Nestor Morera, Nixon Nedd, Antonio Nunez, Jaime Pagan, Everton Pearson, Ramanen Veerapen: *Assistant Zoo Park Maintainers*

Admissions & Membership

Beth Stoltling, *Manager*

Jamie Pinero, *Assistant Manager*

Sonia Colon, Joanne Kittler, Sookiah Maharaj: *Ticket Agents/Cashiers*

NEW YORK AQUARIUM

Jon Forrest Dohlin, *Vice President and Director*

Joan Shovlin, *Executive Assistant to Director*

Animal Programs

David DeNardo, *General Curator and Director of Animal Operations*

Richard Blankfein, *Dive Safety Officer, Volunteer Dive Program and Animal Husbandry Volunteer Coordinator*

Martha Hiatt, *Supervisor, Behavioral Husbandry*

Guenter Skammel, *Senior Trainer*

Angela Coccoma, Cristina Mendonca: *Trainers*

Michael Morgano, Hans Walters: *Supervisors, Animal Department*

Frank Greco, Leslie Leffler, Ellen Spencer, Wayne Stempler: *Senior Keepers*

Kayla Bergman, Nicole Ethier, Stephanie Mitchell, Lora Murphy, Nicole Pisciotta, Sal Puglia, Andrea Reimold, Veronica Smith, Karen Wallack: *Keepers*

Miranda Feldmann, *Administrative Assistant*

Aquatic Health and Living Systems

Catherine McClave, *Curator of Aquatic Health Science and Living Systems*

Marisa Ostek, Patricia Toledo: *Veterinary Technicians*

Mary Messing, *Project Assistant*

Plant Engineering

Dennis Ethier, *Director of Plant Engineering*

Melvin Pettit, *Manager of Facilities*

Kenneth Prichett, Ralph Ramos, David Scheurich, William Sheehan, Michael Tine: *Supervising Park Maintainers*

Richard Bullen, Richard DiStefano, Alfred Escalera, Rucaldeau Renodeau, Tony Vargas: *Park Maintainers*

Christopher Hackett, *Project Assistant*



Park Services

Rodney Rollins, *Director of Park Services*
Carlos Martinez, *Security Supervisor*
Samuel Black, Richard Jarus, Owen Mayhew: *Park Security Maintainers*
Diana Barreto, Carlos Emiliano, Christopher Quiles, Hector Weir: *Assistant Park Security Maintainers*
Patti Blydenburgh, *Supervisor, Buildings*
Raul Domenech, José Gonzalez, William Green, Peter Inesti, Raquel Jimenez, Jonathon Jules, Eldwin Lebron, Alicia Shannon, Keith Trowell, David Williams: *Attendants*

PROSPECT PARK ZOO

Denise McClean, *Facility Director*
Ann Soobrian, *Administrative Assistant*

Animal Programs

Peter Laline, *Curator of Animals*
Hulya Israfil, Katelyn Massarone, Nicole Shelmidine: *Assistant Supervisors*
Vacant, *Veterinary Technician*
Gwen Cruz, Jennifer Greig, Brittany Murphy, Frances Verna: *Senior Wild Animal Keepers*
Thomas Anderson, Juan Choy, James Gottlieb, Astra Kalodukas, Atu Marshall, Denielle Muoio, Andrea Reimold, Allison Shaw, Brandon Waldron, Justine Wilber: *Wild Animal Keepers*

Operations & Maintenance

Anthony Boodoo, *Manager*
Vacant, *Assistant Manager*
Oscar Ceron, *Supervising Maintainer*
Terrie Francis, Reginald McKenzie, Chaitram Singh, Shivanand Sookdeo: *Zoological Park Maintainers*
Selwyn Ramnaidu, *Assistant Zoological Park Maintainer*
Jamaal Bedeau, *Senior Attendant*

Luis Cruz, Stacey Cummings, Eisha Johnson, Takquan McGill, Angelita Rivera, James Savastano: *Park Attendants*

Security & Admissions

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Eddie Wright, *Assistant Manager*
Joanne Carrillo, *Supervisor*
Kadeshia Brown, Rosa Ellis, Michael Fazzino, Vincent Ferguson, David McPhearson, Yolanda Smith, Jennifer Soto, Marvin Toribio, Romualdo Vasquez, Milton Williams: *Assistant Zoological Park Maintainers*
Lola Chung, Brenda Martinez, Nicole Smith, Suheilee Vasquez: *Ticket Agents*

QUEENS ZOO

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Animal Programs

Craig Gibbs, *Assistant Curator of Animals*
Monica Negron-Cottle, *Administrative Assistant and Volunteer Coordinator*
Donna-Mae Graffam, *Supervisor*
Mark Hall, *Assistant Supervisor*
Marcy Wartell Brown, Marcos Garcia, Dana Vasquez, Raul Vasquez: *Senior Wild Animal Keepers*
Kelly Carmen, Margaret Doutre, Barbara Fung, Soshia Fusco, Ira Goldman, Susan Makower, David Morales, Erin Rosebrock, Christopher Scoufaras, Thomas Seals, Robin Sutker, Melanie Weber: *Wild Animal Keepers*
Melissa Ortiz, *Veterinary Technician*

Operations & Maintenance

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James Wohlmaker, *Supervisor*
Rafael Genao, Bo Yang Tian: *Zoo Park Maintainers*
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Ivy Baremore, Salvatore Cerchio, Rodolpho Chang Bennett, Tim Collins, Elisabeth Fahrni-Mansur, Angela Formia, Rachel Graham, Cecilia Guerrero, Victor Huertas, Cynthia Lagueux, Rubiyat Mansur Mowgli, William McCoy, Sarah Pacyna, Melinda Rekdahl, Hilmar Salazar, Brian Smith

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Andrea Turkalo

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Kenya

Margaret Kinnaird (seconded to Mpala Research Station)

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Solofo Andriamaharavo, Valina Lalavola Andriamaholy, Lantoniaina Andriamampianiana, Razafimpahanana Andriamandimbisoa, Abdoul Andriamiravo Santisy, Aristide Andrianarimisa, Vonjy Andrianjakarivelo, Ambroise Brenier, Christian Burren, Rabenirina Dokolahy, **Christopher Holmes**, Olga Horace, Ranariniaina Johnnah, Jean Jacques Jaozandry, Tiana Rahagalala, Nantenaina Raharison, Stevens Ramarason, Césaire Ramilison, Bemahafaly Randriamanantsoa, Nalisoa Randriambololona, Mireille Randriankina, Luccianie Raonison, Félix Ratelolahy, Judicael Zafindrandalana

[BELOW] The Grand Canyon of the Yellowstone River runs 20 miles at depths of up to 1200 feet and hosts elk and bison in the summer, along with bald eagles, osprey, and great blue herons.



[RIGHT] A southern rockhopper penguin in one of the seabird colonies of Steeple Jason Island in the South Atlantic.

Mozambique

Tomas Buruwate, Nilton Cuna, Justino Davane, Dave Lawson, Rogerio Lobo, Carlos Lopes Pereira, **Alastair Nelson**, Darren Potgieter, Morven Santana Afonso, Anabela Uaticela

Nigeria

Peter Abanyam, Emmanuel Bassey, **Andrew Dunn**, Jonathan Eban, Inaoyom Imong, Celestine Mengnjo, Louis Nkonyu, Ogechi Nwachukwu, Gilbert Nyanganji, Francis Okeke

Republic of Congo

Rene Aleba, Patrick Boundja, Thomas Breuer, Ange Doubis, Hilde van Leeuwe, Richard Malonga, Nazaire Massamba, Jerome Mokoko, David Morgan, Aline Ndombi, Tomo Nishihara, Jean-Robert Onononga, Nirina Rakotomahefa, Tim Rayden, Crickette Sanz, Vince Smith, **Paul Telfer**, Felin Twagirashyaka, Moise Zoniaba

Rwanda

Rebecca Ashwood, Mediatrice Bana, Chloe Cipolletta, Vincent Hakizimana, Charles Karangwa, Eugene Lusweti, **Michel Masozera**, Félix Mulindahabi, Joel Musaasizi, Joseph Nkango, Nicolas Ntare, Madeleine Nyiratuza, Fidele Ruzigandekwe, Celestin Sebashyitsi, Védaste Sentama, Geri Skeens, Claudine Tuyishime

South Sudan

Ben Dominic Akoi, Susan Amal, Paul Peter Awol, Rhiannon Bramer, Robert Craig, Amal Daniel, Harriet Drici, **Paul Elkan**, Betty Gune, Peter Guya, Dave Henson, Christine Ifuho, Atia Joseph, Juan Juliet, Thomas Kamau, Joshua Kibutha, Joyce Kilonzi, Dominic Lotubai, Michael Lopidia, Soqui Mendiguetti, Alex Modi, Nyombe Mohamed, Margaret Muokie, Joseph Nylim, John Oboch, Opap Agwa Ojany, Bush Oling, Martin Ojja, Angelo Tongun Wani,



Charles Tiba, John Moi Venus, Thomas Vincent

Tanzania

Claire Bracebridge, Edmund Chota, **Tim Davenport**, Daniela De Luca, Sarah Durant, Said Fakihi, Charles Foley, Lara Foley, Machaku Geni, Ayubu Kajigili, Niwaeli Kimambo, Sylvanos Kimiti, Alex Lobora, Elizabeth Luvanga, Annzikar Joseph Lyimo, Sophy Machaga, Nuru Mbano, Vicky Mbofu, Ali Mbugi, Fredy Mdemu, Linus Mgohamwende, Antony Minaza, Clara Mjinja, George Mkorongo, Grayson Mlugale, Noah Mpunga, Rogasian Mtana, Michael Munisi, Obadia Mwaipungu, Lusajo Mwakalinga, Willy Mwalwengele, Boniface Osujaki, Guy Picton Philipps, Hamisi Sadallah, Haruna Sauko

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Zambia

Dale Lewis

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Regional Conservation Hub-Singapore

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Cambodia

Hong Chamnan, Phou Chandy, **Tom Clements**, Alex Diment, Ashish John, Long Kheng, Simon Mahood, Nut Menghor, Hing Mesa, Daniel Morawska, Karen Nielsen, Tao Sarath, Phien Sayon, Tan Setha, Ea Sokha, Tim Solita, Men Soriyun, Heng Sovannara, Sun Visal

China

Cirenbaizhen, Cirenbaizhen, Minfang Gan, Jianming Huang, **Aili Kang**, Dan Li, Fengliang Li, Ying Li, Xingyan Li, Xuchang Liang, Zhiying Liang, Bin Liu, Chunhua Liu, Jing Liu, Peiqi Liu, Tong Liu, Shunqing Lu, Yi Ren, Fuping Sun, Zhikang Wan, Weijun Wen, Ramacandra Wong, Yi Xiaohua, Mingxia Zhang, Huaidong Zhao, Xiaoyan Zhao, Zhiwen Zhu, Linreng Zuo

India

B. M. Akarsha, Mrunmayee Amarnath, Vidya Athreya, Prerna Bindra, Shashank Dalvi, Ganashree Kedlaya, Ajith Kumar,



N. Samba Kumar, M.C.
Vinay Kumar, P. M.
Muthanna, Narendra Patil,
K. V. Phaniraj, Killivalavan
Rayar, Vishnupriya
Sankararaman, Arjun
Srivathsa

Rudianto Surbakti, Yonata
M. Syarief, Tabah, Irsan
SZ. Thayeb, Usmijuka,
Endang Widodo, Blower
Wijaya, Deni Sukri Wijaya,
Agustinus Widjayanto, Ferry
Wilantara, Wirotto

Soukdavanh Thilakhoun,
Oudomxay Thongsavath,
Maikain Vilayvanh,
Sithon Vongphavanh,
Sithone Vongphothong,
Vad Vongphothong,
Muas Yachithor

Ann Edwards, Amanda
Fine, Bat-Erdene
Gombosuren, Losolmaa
Jambal, Ochirkhuyag
Lkhamjav, Kina Murphy,
Odonchimeg Nyamtseren,
Tsend-Ayush Perenlei,
Bolortsetseg Sanjaa,
Enkhtuvshin Shiilegdamba,
Tuvshin Unenbat,
Narantsatsral Urtnasan

[BELOW] An Indian
rhino and calf, born
this year at the
Bronx Zoo, appear in
the park's Wild Asia
Monorail exhibit.

Indonesia

Dwi Nugroho Adhiasto, Aan
Afrianto, Rahma Dewi
Akbari, M. Makmun
Almahdi, Putra Amanta,
Noviar Andayani, Big
Antono, Darma Bakti,
Rahmad Adi Ronsyah
Batubara, Agus W. Boyce,
Hardi Damanik, Akbar
Ario Digdo, Patih Fahlapie,
Giyanto, Donny Gunaryadi,
Novi Hardianto, Irma
Hermawati, Ian M.
Hilman, Iwan Hunowu,
Ismail, Silfi Iriyani, Ratna
Kania, Widyaningsih Peni
Lestari, Leswarawati,
Lusiana, Marthin Luther
Makarunggala, Edyson
Maneasa, Marino, Koen
Meyers, Muslim, Imam
Najib, Meyner Nusalawo,
Cep Dedi Permadi, Agus
Teguh Prihartono, Musir
Riswan, Amir Hamzah
Ritonga, Danny Albert Rogi,
Edward E. Rumaepa, Frida
Mindasari Saanin, Rudy
Safrizal, Indra Sakti, Adnun
Salampessy, Silvia, Ester
Situmorang, Synthia P. S.
Soputan, Sugiyo, Rahman
Sudrajat, Sukarman,

Lao PDR

Anita Bousa, Phaivone
Chanlaunphome,
Mattiphib Douangmyxay,
Sivilay Duangdala,
Khamdee Ernthavanh, Paul
Eshoo, Jeremy Ferrand,
John Goodrich, Zoe
Greatorex, Chris Hallam,
Troy Hansel, Kongsy
Khammavong, Xaisavanh
Khiewwongphanchan,
Phonphasong
Louangaphaiyalath,
Alex McWilliam,
Singkeo Milasack,
Colin Moore, Phakham
Outhanekhone, Maipheng
Phangkounphen, Soudalath
Phasavath, Bounthavy
Phommachanh, Sinthone
Phoumkanouane,
Sengphet Pinsouvanh,
Steve Platt, Akchousanh
Rasaphone, Daovanh
Senghalath, Sisomphone
Sengthavideth, Soubanh
Silithammavong,
Sinphakhone Singhalath,
Bouavanh Sinpaseuth,
Phouthone Sisavath,
Ben Swanepoel, Phet
Sysanavongxay, Khamkeo
Syxaiyakhathor,

Malaysia

Lukmann Haqem bin Alen,
Yugees a/p Anandarao,
Melissa Bilong, Francis
Cheong, Eunice Chia,
Melvin Gumal, Mohd
Amir Hashimi bin
Hashim, Muhammad
Munir bin Idris, Hirzi
Luqman Bin Jalaluddin,
Saidatul Nadiah binti
Jalaluddin, Norolhuda binti
Jamaluddin, Ngumbang
anak Juat, Norhidayati
Khalid, Khing Su Li, Song
Horng Liang, Tey Kiat
Loong, Chee Pheng Low,
Noraisah binti Majri,
Wegess anak Midok, Eling
Ng, Sylvia Ng, Zahratul
Akmar binti Noordin,
Joshua Pandong, Rozaini
binti Abd Rahman, Nur
Iadiah binti Mohd Saat,
Now anak Sidu, Lam Kai
Sin, Mufeng Voon, Thai Poh
Yen, Liew Lee Ying, Zulaika
binti Zamzuri, Nurul Aida
binti Zawakhir

Mongolia

Buuveibaatar Bayarbaatar,
Tanyatuya Demberel,

Myanmar

Daw San San Htay, U Saw
Htun, U Gumring JungKum,
U Win Ko Ko, U Kyaw
Thinn Latt, U Naing Lin,
U Kyaw Moe, **U Than
Myint**, Daw Khin Myo
Myo, U Thet Zaw Naing,
Daw Myint Myint Oo, U
Saw Htoo Tha Po, U Kyaw
Hla Thein, Robert Tizard,
Daw Nan San San Win,
U Than Zaw

Pakistan

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Syed Tajdar Hussain,
Mohammad Jamil, Ishfaq
Karim, **Mayoor Khan**, Sher
Muhammad, Tashfeen
Rafiq, Khurshid Ali Shah,
Muhammad Shuaib

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Arison Arihafa, Daniel Charles,
Grace Dom, Stanley
Jacob, John Par Karl,
Bensolo Ken, John Kuange,



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Martin Robards

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Gabon-Congo

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Aubin Aoemba, Huyghènes Rock Behanarina, Ludovic Betsiahilika, Ambroise Brenier, Raoul Olivier Jaonazandry, José Maro, Bebe Jean Furoze Raharinosy, Francisco Ramananjatovo, Bemahafaly Jean De Dieu Randriamanantsoa, Irindray Nambinina Jean Forunat Razafindretsity, Moana Roland, Jean Wilfrid Velonantenaina, Toky Nirimamy Voajanahary

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[BELOW] A boy gathers livestock dung for use as cooking fuel in the Chapdara valley of Badakhshan province, Afghanistan, where WCS has collected livestock blood samples for health assessments.





MAMABAY ENVIRONMENTAL CAMPUS

WCS designed and constructed the new MaMaBay Environmental Campus, inaugurated in December 2013, in collaboration with Madagascar National Parks. The campus will help implement conservation

programs in the epicenter of Madagascar biodiversity, promoting an integrative approach to securing the protection of this great wilderness.

—Yellowstone Rockies

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Fran Sorge, *Supervisor,
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Shane LeClair, *Creative
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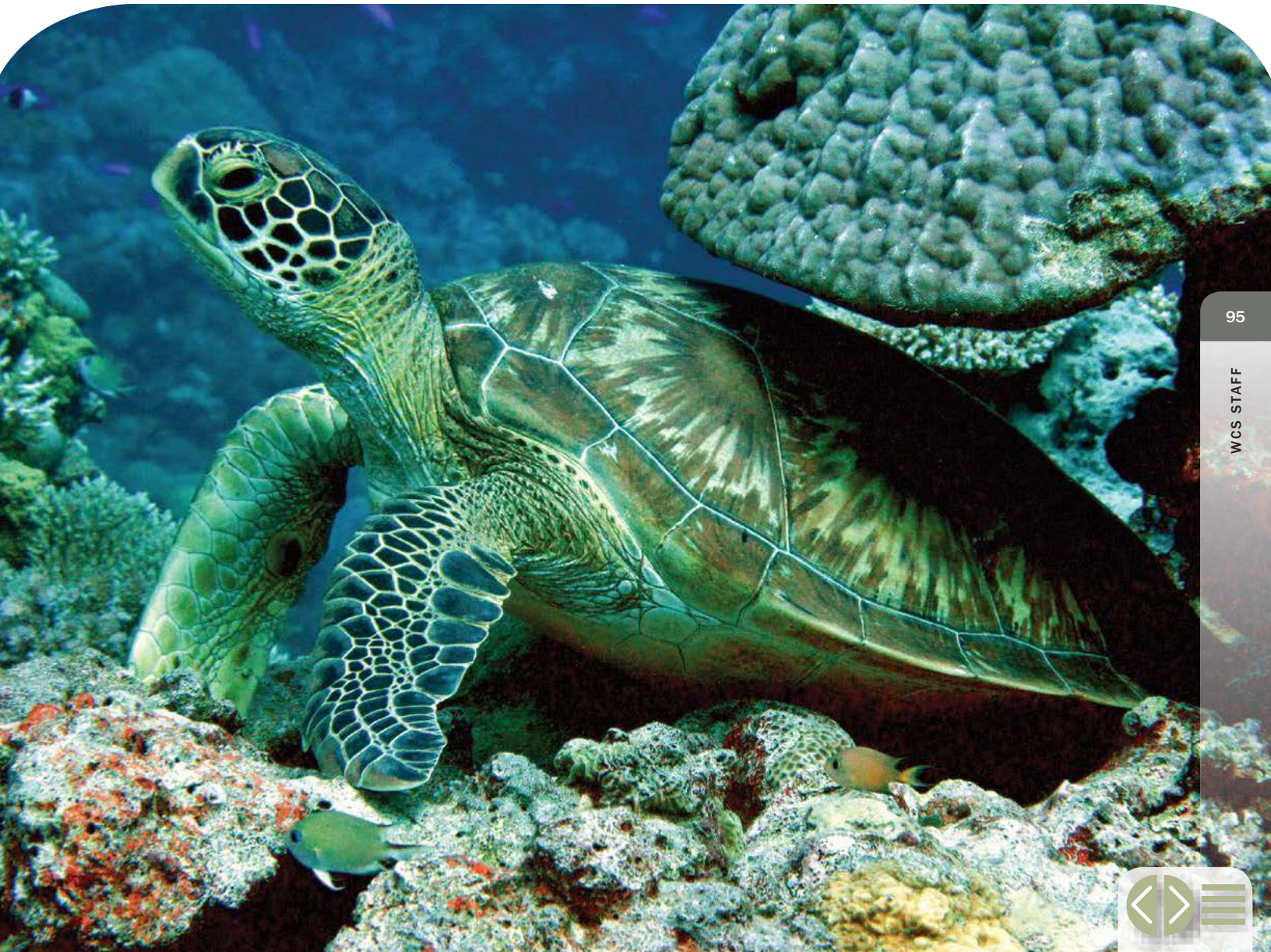
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Leilani Dawson, *Processing Archivist*

[BELOW] A green sea turtle hides amidst the coral of a reef in the waters off Fiji's Mago Island.



Simon Hedges



“We are seeing the worst mass slaughter since the international trade in ivory was banned in 1989.”

Simon Hedges first encountered wild elephants in significant numbers while studying primates in Sumatra in the 1980s. Now as one of the WCS team coordinating elephant conservation, Simon is helping to lead WCS's push to protect Africa's elephant populations, which are increasingly threatened by global poaching syndicates. Here he discusses that work, the ecological role of elephants as nature's gardeners, and the time he was tickled awake by a trunk gently brushing his face.

WHAT IS YOUR ASSIGNMENT AND TITLE WITH WCS?

I am WCS's Asian Elephant Coordinator as well as its Ivory Trade Policy Analyst. In those roles I provide technical advice, as well as fundraising and planning support, to WCS's elephant conservation projects across Asia. My work is focused on the development of reliable monitoring methods, habitat protection, human–elephant conflict assessment and mitigation work, and – since 2004 – the illegal killing of elephants in Africa and Asia for the ivory trade.

WHAT DREW YOU TO WCS AND WHEN DID YOU BEGIN?

I began working for WCS in January 2000. What drew me here? If I'm honest it was probably dung! In late 1999, WCS was looking for someone to run a new elephant conservation project in the forests of Sumatra, in Indonesia. Our Indonesia Program directors knew I'd spent the previous decade refining dung-count-based methods for studying large, if elusive, mammals in Asia's forests. They asked me to lead what became WCS's first Asian elephant project. I've since written two books on monitoring elephants using dung, so some things don't change!

HOW DID YOU FIRST BECOME INTERESTED IN ELEPHANTS?

When I was studying primates in Sumatra in the late 1980s, I encountered a lot of elephants. I was fascinated by their complex

social lives, their intelligence, and the very significant ecological role they play in many ecosystems. I also became increasingly interested in the challenges of saving functioning populations of such large – and sometimes destructive and dangerous – animals alongside growing human populations.

WHAT ARE THE MOST CRITICAL CONSERVATION PRIORITIES FOR ELEPHANTS TODAY?

For Asian elephants the top priority is habitat protection in almost all of the 13 countries where the species occurs. But habitat protection alone isn't sufficient. We also need to protect against poachers who target Asia's elephants for their ivory and other body parts or angry farmers who kill elephants in retaliation for raiding crops. For African elephants the top priority is the ivory poaching crisis, although habitat protection in Africa is a priority, too.

HOW IS POACHING IMPACTING WILD ELEPHANT POPULATIONS?

The illegal killing of elephants for the international ivory trade now threatens elephant populations across Africa and is leading to a collapse of elephant range and even local extinctions. In 2012, poachers killed some 35,000 African elephants for their ivory. This is the worst mass slaughter since the international trade in ivory was banned in 1989. The main reasons for the crisis are inadequate protection of elephants at



key sites, insufficient efforts to halt ivory trafficking, and skyrocketing demand, primarily in Asia.

WHAT WERE YOUR MAIN PROJECTS IN 2013?

Three stand out. First, WCS was invited to help the Malaysian Government prepare a 10-year conservation plan for elephants that I was heavily involved in. The plan launched in December and we'll be helping in its implementation. The second would be our work with the Clinton Global Initiative (CGI) to create a partnership of NGOs and governments to protect Africa's elephants, which rolled out at CGI's annual meeting in September. Finally, we partnered with the group "Working Dogs for Conservation" for a Myanmar project using "detection dogs" to monitor and protect elephant populations in remote jungles. Getting the dogs into the jungle on the backs of baggage elephants provided interesting challenges!

TELL US MORE ABOUT THE CGI EFFORT.

Through CGI, the Wildlife Conservation Society, World Wildlife Fund, African Wildlife Foundation, International Fund for Animal Welfare, and Conservation International have partnered with African governments and a dozen other NGOs. By the end of 2016, we hope to halt the slaughter of African elephants for the ivory trade using a three-prong strategy: 1) Stop the killing; 2) Stop the trafficking; and 3) Stop the demand.

IS ONE PRONG MORE DIFFICULT THAN THE OTHERS? IF SO, WHY?

I think "Stop the Demand" is the most difficult because to effectively reduce demand for ivory, we have not only to raise awareness of the links between buying ivory and elephant poaching, but also use that awareness to effect behavioral change in societies – particularly in Asia – that are sensitive about outside influences. Supply-side measures are essential but insufficient. Elephants will never be

safe until demand for ivory falls to sustainable levels.

YOU MENTIONED THAT ELEPHANTS PLAY AN IMPORTANT ECOLOGICAL ROLE. WHAT IS THAT?

We call elephants "gardeners of the forest." By dropping prodigious quantities of dung as they range over large areas, elephants play an important role in ecosystems' nutrient cycles. Seeds in the dung have a ready-made bed of compost in which to germinate and in fact some tree species depend on this ecological service for their survival. Elephants also help keep mineral-rich forest clearings accessible for other species.

WHAT FIRST INTERESTED YOU IN SPECIES CONSERVATION?

I was drawn by a love of nature and wild places and the realization that so much was being lost. I also felt that species conservation is one of the great intellectual challenges of our time: How can we maintain functioning ecological systems while equitably meeting the needs and aspirations of people? How can we use science to influence government policies to save species?

WHAT MAKES YOU PASSIONATE ABOUT YOUR JOB?

What drives me is the awe-inspiring richness and complexity of the natural world and the fact that there are still so many battles worth fighting – and that can be won – for species and wild places, even in those places under tremendous pressure from human activities.

WERE YOU DRAWN TO ANIMALS OR WILDLIFE AS A CHILD?

I was raised on the edge of London and spent much of my childhood in the surrounding woodlands and fields, rolling logs to look for beetles and building aquaria to watch pond life. I read many books by naturalists like Gerald Durrell and was envious of those who'd grown up in Africa and had exotic wildlife in their backyards

(particularly lizards!). So I'm very pleased to be raising my two small sons in Africa for much of each year.

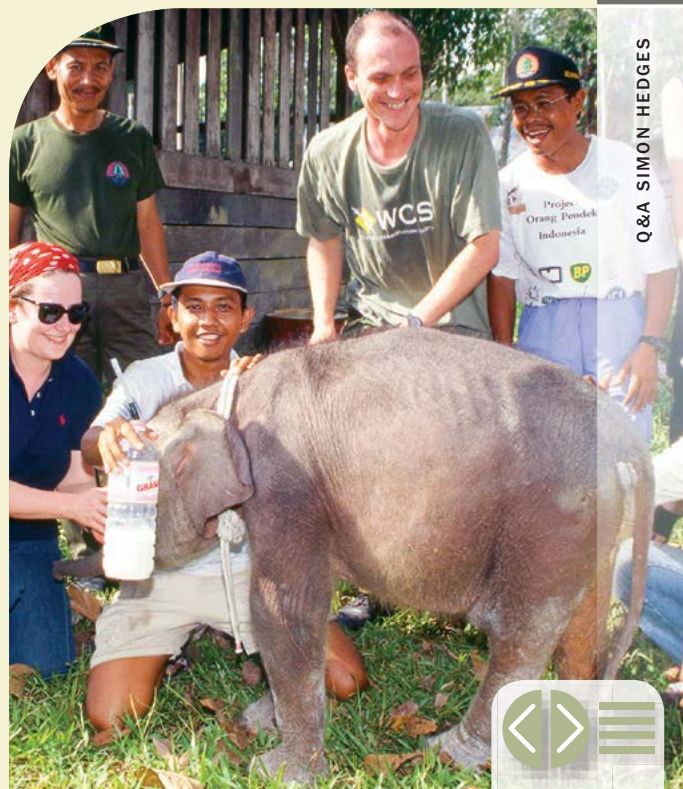
WHAT IS YOUR GREATEST WILDLIFE MOMENT DURING YOUR TIME WITH WCS?

I'll never forget the time I awoke in a field station in a Sumatran national park to find an elephant's trunk gently brushing my face. The room had no glass in the windows thanks to earlier visits by the park's elephants. Another time I was lucky to be standing in a forest glade as a pack of dholes (Asian wild dogs) streamed past me on either side in hot pursuit of a Javan deer.

WHAT IS YOUR PROUDEST ACHIEVEMENT?

Helping build WCS's Asian elephant conservation program from one project in one country to more than 24 projects in nine countries. WCS now has the largest Asian elephant conservation program of any NGO and is one of the few organizations to explicitly focus on an evidence-based approach, seeing monitoring as an essential part of conservation. As someone who has pushed evidence-based methods for many years that is especially gratifying.

[BELOW] WCS elephant expert Simon Hedges with an orphaned elephant calf on the Indonesian island of Sumatra.



WCS BY THE NUMBERS



333

Globally threatened bird species being protected in the land and seascapes where WCS works

326

Globally threatened mammal species being protected in the land and seascapes where WCS works

308.5

Acres of wildlife parks managed by WCS in NYC



4 million

Total visitors to WCS zoos and aquarium in 2013

545,685

E-mails sent to Members of Congress, President Obama, and other senior U.S. officials in support of WCS campaigns in 2013

6.77 million

Total channel views on WCSMedia, WCS's YouTube channel, since November 2006

119,000+

WCS Facebook "likes" around the globe

301

AZA conservation programs (Green and Yellow SSPs and Red Programs) that WCS's zoos and aquarium participate in



6 tons

U.S. Fish and Wildlife Service stockpiles of confiscated illegal elephant ivory crushed in 2013

6 tons

Amount of ivory destroyed by the Chinese government

1 million

Social media hits from WCS China's ivory campaign in just one week



98

WILDLIFE CONSERVATION SOCIETY ANNUAL REPORT 2013

96 ELEPHANTS

INCREASING DEMAND FOR IVORY IS FUELING A BRUTAL SLAUGHTER OF AFRICAN ELEPHANTS

EXPLORE THE CRISIS



62

Percentage of all African forest elephants killed in past decade due to the illegal ivory trade

96

Elephants killed by poachers every day in Africa in 2012

26,000

Number of African elephants occurring in the sites where WCS works

18

Number of countries where WCS works to protect elephants (11 in Africa; 7 in Asia)

1,450

Number of park and wildlife ecoguards trained, equipped, and supported by WCS across Asia and Africa





25

Number of Southern River terrapins, once believed extirpated from Cambodia, released back to the wild in that country this year



85,033

New York City students accessed WCS's education programs in 2013

2,006

Number of children enrolled in zoo and aquarium summer camp programs in 2013 – the most ever

1,470

Number of species managed in WCS's zoos and aquarium



2,176

Television stories that aired in 2013 mentioning WCS

\$9.8 million+

Value of all WCS-related television stories placed in 2013

84 million+

Viewers reached by these stories



5,346

Jaguars WCS is working to protect across 8 Latin American landscapes covering more than 400,000km²

33 million

Tons of CO₂ emissions that WCS's Madagascar-based Makira REDD+ project will prevent from 2005–2035

710,589

Tons of Makira REDD+ project CO₂ certified for sale as of December 2013

50

Percent of Makira REDD+ project net sales allocated to local communities



0

Fish caught by illegal foreign trawlers off Gabon in three months following government-imposed moratorium to protect local fishers and biodiversity

1,800

Journal articles, book chapters, and books generated by WCS scientists over the last 10 years

42,960

Number of times scientific articles authored or co-authored by WCS conservationists have been cited

76,000

Farming households benefiting from conservation farming support and access to markets through COMACO in Zambia's Luangwa Valley



23,000

Number of kilometers Southern humpback whales move and migrate over the course of a year as tracked by WCS using satellite telemetry



45

Percentage of species managed in our zoos and aquarium that have native ranges that occur in one or more of WCS's Global Conservation operational land- or seascapes

100

Species managed in our zoos and aquarium that are classified by IUCN as Endangered or Critically Endangered

CLINTON GLOBAL INITIATIVE



ANIMAL CENSUS

(01 July 2012 through 30 June 2013)

Facility/Class	Species (On-site and In-on-loan)	Births (Includes non-viable)	Specimens (On-site and In-on-loan)
BRONX ZOO			
Mammals	177	583	1,659
Birds	300	101	1,504
Reptiles	172	89	577
Amphibians	50	2,172	2,102
Invertebrates	34	1,642	5,417*
Fish	62	46	1,064
TOTAL	795	4,633	12,323
CENTRAL PARK ZOO			
Mammals	28	1,032	777
Birds	103	81	477
Reptiles	35	2	591
Amphibians	16	6	192
Invertebrates	6		163
Fish	7		328
TOTAL	195	1,121	2,528
QUEENS ZOO			
Mammals	32	11	88
Birds	52	31	352
Reptiles	9		56
Amphibians	1		8
Invertebrates	1		25
Fish	5		12
TOTAL	100	42	541
PROSPECT PARK ZOO			
Mammals	46	40	149
Birds	48	50	131
Reptiles	31		106
Amphibians	22	2	68
Invertebrates	5		222
Fish	27		773
TOTAL	179	92	1,449
NEW YORK AQUARIUM			
Mammals	7	2	17
Birds	1	1	15
Reptiles	9	13	27
Amphibians	4		4
Invertebrates	153	99	3,997
Fish	319	162	3,329
TOTAL	493	277	7,389
GRAND TOTAL (all facilities)	1,470	6,165	24,230*

*Invertebrate numbers do not include approximately 58,000 Madagascar hissing cockroaches

[ABOVE] The Rhesus macaque, seen here in India's Jim Corbett National Park, is the most studied nonhuman primate.



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7 trees preserved for the future



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3,132 gallons of water not consumed



210 lbs solid waste not generated



577 lbs net greenhouse gases prevented



3 Million BTUs of net energy not consumed

* Source: EPN Paper Calculator and Sappi Fine Paper North America.

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For information on how you can support the Wildlife Conservation Society, please call our Global Resources Division at 718-220-5090. A copy of this annual report may be obtained by writing to the Office of the Chairman, Wildlife Conservation Society, 2300 Southern Boulevard, Bronx, New York 10460. In addition, a copy of WCS's annual filing with the Charities Bureau of the Office of the New York State Attorney General may be obtained by writing to the Charities Bureau, New York State Attorney General's Office, 3rd Floor, 120 Broadway, New York, New York 10271.

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RECOMMENDED FORM OF BEQUEST 2013

The Trustees of the Wildlife Conservation Society recommend that, for estate planning purposes, members and friends consider the following language for use in their wills:

"To the Wildlife Conservation Society ("WCS"), a not-for-profit, tax-exempt organization incorporated in the state of New York in 1895, having as its principal address 2300 Southern Boulevard, Bronx, New York 10460, I hereby give and bequeath _____ to be used as determined by WCS for the general purposes of WCS."

In order to help WCS avoid future administration costs, we suggest that the following paragraph be added to any restrictions imposed on a bequest: "If at some future time, in the judgment of the Trustees of the Wildlife Conservation Society, it is no longer practical to use the income and/or principal of this bequest for the purposes intended, the Trustees have the right to use the income and/or principal for whatever purposes they deem necessary and most closely in accord with the intent described herein."

If you wish to discuss the language of your bequest and other planned giving options, please contact the Office of Planned Giving at 718-741-1632.



WCS

WILDLIFE CONSERVATION SOCIETY

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