Boundless

A WCS Field Progress Report

We Stand for Wildlife.℠

Since its founding, WCS has maintained an unwavering commitment to field conservation. More than a century later, we are the preeminent science-based wildlife conservation organization in the world. Our approach is truly boundless. We work with partners of all kinds, as well as indigenous and local communities, to save species in nearly 60 countries and all of the world's oceans. Our veterinary and epidemiological expertise spans 35 countries and we collaborate across countless sectors to craft science-based solutions to wildlife crime, climate change, protected area management, and enterprise development, among others.

This WCS Progress Report provides our generous supporters with updates and insights on core field science and conservation action across the globe.

WCS Team Discovers New Chameleon Species

WCS scientists Tim Davenport and Sophy Machaga were part of a team that discovered a new species of chameleon in Tanzania's montane forests. The brown and green chameleon has distinctive blue spots and is named *Kinyongia msuyae* for Charles A. Msuya, a Tanzanian scientist who collected the first known specimen of this species and is an expert in the study of the country's reptiles and amphibians.

Aside from being a thrilling discovery on its own, the new chameleon also highlights the Southern Highlands as an important site for biodiversity and habitat protection.

Two other recent discoveries by WCS scientists originated in the Southern Highlands of Tanzania. In 2003, WCS discovered a brand new primate called the kipunji; this was the first time a new genus of monkey had been discovered in Africa in almost a century. And in 2012, WCS found a new variety of snake called Matilda's horned viper.

WCS scientists have long argued that a supposed zoological barrier between the Southern Highlands and the Eastern Arc Mountains, which are renowned in Africa for high concentrations of endemic species of animals and plants, does not exist.

Evidence from WCS's recent discoveries makes it clear that the Southern Highlands are every bit as biodiverse and endemic-rich as the Eastern Arc Mountains, and that the entire region's unique fauna and flora warrant protection.

Collaring Elephants in Mozambique

In November 2015, conservationists from WCS, the Government of Mozambique's National Administration for Conservation Areas, and other partners successfully fitted satellite GPS tracking collars on 20 elephants in Mozambique's Niassa National Reserve. This reserve hosts the largest elephant population in the country, but has seen losses of more than 60 percent in the past 3 years. The real-time location data from the collars, combined with aerial surveillance and ground patrols, will strengthen targeted protection efforts and facilitate rapid responses to poaching threats. The collaring data will also inform land-use planning across various sectors, which will help to secure habitat and connectivity to protect elephants over the long term.

INTERVIEW

A Conversation with Andy Plumptre

Andy Plumptre joined WCS in 1997 and is Director of the Albertine Rift Program, which he established in 2000. He has helped undertake nationwide censuses of gorillas and chimpanzees in Uganda, Rwanda, and Tanzania. His most recent study of Grauer's gorilla populations is a groundbreaking wake-up call that this species needs our protection now more than ever.

Why are Grauer's gorillas important?

ANDY PLUMPTRE: The Grauer's gorilla is the largest primate on earth. This animal is only found in eastern Democratic Republic of Congo (DR Congo). Their behavior is so close to us with very similar mannerisms to us. Gorilla females look after their infants for four years before weaning them fully and they mostly produce one infant at a time. Gorillas are becoming threatened wherever they occur and most populations are dwindling. For this and many other reasons, WCS is committed to saving all four subspecies of gorillas across their range.

How did you conduct this recent population study?

AP: About 80 percent of the data we collected for this survey came from SMART (Spatial Monitoring and Reporting Tool). This technology allows rangers and community guards to record where they are finding gorillas and gorilla nests in areas of insecurity where there are rebels, enabling WCS to obtain information from some of the most dangerous parts of DR Congo. We used new statistical methods to rigorously analyze the SMART data we received from these rangers and guards at 11 different sites across Grauer's gorilla range.

What were the results and what do they mean?

AP: Our estimates show a decline of 77 percent in the total Grauer's gorilla population. Such a devastating drop easily qualifies the species for heightening their conservation status to Critically Endangered. Since the Grauer's gorilla is a subspecies of the eastern gorilla, this also means that all eastern gorillas—including the mountain gorilla subspecies—are now Critically Endangered. A revised classification of all gorillas is under way and will be made official by the IUCN Red List in the next few months.

The fact that we're down to 3,800 individuals from 17,000 individuals 20 years ago is a major loss. Effectively, the total number of Grauer's gorillas is now fewer than the total number of people you would see in a small village in DR Congo. When you think of the actual numbers compared to people at any site,

3,800 is very few. In fact, that's fewer than the number of visitors to the Bronx Zoo each day. If the decline continues at its current rate, we would expect to lose all of the remaining Grauer's gorillas in about 5 to 10 years.

What's causing the decline, and what is WCS doing to help?

AP: The main cause has been rebel groups setting up mining camps in some of the most remote parts of the forest, and hunting gorillas around those mining camps to feed themselves because there's no food grown nearby. So we are now looking at ways we can help people explore other options for sustainable income so they're less reliant on the mining.

Other efforts include working to establish more protected areas, as well as strengthening ranger patrols. We're creating mobile patrol posts in the western part of Kahuzi-Biega National Park where the majority of the remaining gorillas seem to be, and we're providing intelligence training to the community guards. Additionally, we plan to educate people about this wildlife crisis via local radio, work with the tribal chiefs to tell everyone how many gorillas are being lost, and raise awareness about why they should not hunt gorillas, chimpanzees, and their orphans in this region.

Are you hopeful that we will see Grauer's gorillas rebound in our lifetime?

AP: The reproductive rate of these apes is about one infant every four years, so the population can't increase quickly. One positive sign is that since 2004, in the highland sector of Kahuzi where we've stepped up protection and ecotourism efforts over several years, there's been a steady increase in gorilla numbers. So I'm hopeful that if we can increase the protection in some of these more problematic areas, we can protect the remaining gorillas living there.

Securing the Last Strongholds for Sumatran Rhinos

ASIA

The Sumatran rhino is one of the most critically endangered mammals on the planet, with less than 100 individuals remaining on the island of Sumatra. Overhunting for its horn and other traditional medicinal products has sadly driven this species to the brink of extinction.

A team led by WCS conservationist Wulan Pusparini surveyed Sumatran rhinos to map the remaining populations, and the subsequent analysis provided urgently needed information about small, scattered populations of rhinos that must be joined to promote viable conservation. The surveys were conducted on foot between 2007 and 2011 by teams who documented signs of rhino presence including footprints and dung, as well as rare direct sightings, to estimate the species' distribution and occupancy rate. Further analysis and mapping determined five "Intensive Protection Zones" that are of unrivaled importance. Having clear priority rhino conservation sites for the first time has allowed WCS and partners to take measures to save Sumatran rhinos in the wild.

WCS is assisting the Government of Indonesia and national park authorities to:

- Implement a SMART law enforcement system in all three of the national parks in Sumatra with rhinos.
- Establish the Intensive Protection Zone in Bukit Barisan Selatan National Park.
- Support government rangers in patrolling key areas to halt threats to rhinos such as poaching and forest clearing.
- Scale up the Wildlife Crimes Unit, which supports government law enforcement agencies to identify and take action against illegal wildlife traffickers.
- Support the National Joint Rhino Secretariat, which coordinates government and NGO action on rhino conservation.

Waterbirds Make Dramatic Comeback to Cambodian Wetlands

The Tonle Sap Great Lake in central Cambodia is the largest freshwater lake in Southeast Asia. One of the most productive freshwater ecosystems in the world, it is also vital to Cambodian people as a source of food and income. Its unique cultural, social, and environmental value was recognized by its designation as a UNESCO Biosphere Reserve. Prek Toal, the most important core area, is the last significant breeding location in mainland Southeast Asia for many globally threatened large waterbird species, and was designated as a Ramsar Site in 2015 in recognition of its importance as a wetland.

WCS and government partners initiated a comprehensive monitoring and protection program in the region in 2001 and, as a result, have seen a dramatic comeback of several waterbird species, otters, and other wildlife. Recent surveys have shown that birds like the lesser and greater adjutant storks, spot-billed pelicans, and Asian openbills are on the rise. Additionally, numbers of silver langurs and two otter species are increasing as a result of the protection of the bird colony.

This long-term trend of recovery is due to the nearly 15 years of WCS-supported bird nest protection by teams of dedicated rangers stationed on tree-top platforms and along rivers providing access to the lake. In 2015, monitoring was expanded to include fish and livelihoods in order to provide a holistic account of protection efforts.

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RECENT SURVEYS HAVE SHOWN THAT BIRDS LIKE THE LESSER AND GREATER ADJUTANT STORKS ARE ON THE RISE.

Effective Protection in Thailand Leads to Tiger Recovery

The largest remaining source population of tigers in mainland Southeast Asia is rebounding, thanks to enhanced protection measures supported by WCS. Working closely with the Thai government, our conservation efforts in Huai Kha Khaeng Wildlife Sanctuary in western Thailand have resulted in a surge in the population of wild tigers by 50 percent over the last 10 years. This is largely because we have supported a 33 percent increase in patrol coverage geographically and a 600 percent boost in patrol effort, measured in ranger days spent patrolling. This steady, measurable success is due in part to a 75 percent increase in government investment in the management, salaries, and infrastructure of the protected area.

Huai Kha Khaeng and the surrounding Western Forest Complex of protected areas in Thailand is the single most important site for recovering wild tigers in Indochina. It provides a contiguous area of tiger habitat of 6,950 square miles covering a whopping 17 protected areas. The number of wild tigers in this entire region is currently estimated at 100 individuals, which is much lower than the 2,000 tigers the vast habitat could potentially support with sufficient protection.

Fully cognizant of the biological importance of this landscape, WCS has been working to protect wild tigers in Huai Kha Khaeng since 2004. To safeguard and grow the park's tiger population, WCS supports and strengthens the effectiveness of ranger patrols in reducing the poaching of tigers and their prey by providing equipment and operational and financial support to patrol missions. We provide technical support through the SMART system, which collects and analyzes patrol data, monitors patrolling performance, and improves the tactical planning of patrols. In 2008, our model for protecting wild tigers was extended to neighboring protected areas.

To assess the impacts of patrols on tiger conservation, WCS has collaborated with the Thai government to complete tiger population surveys in the Huai Kha Khaeng Wildlife Sanctuary every year since 2006. Our 2015 surveys estimated about 60 tigers. These results demonstrate the effectiveness of our approach and the WCS team is confident that even better days are ahead for Thailand's iconic big cat.

WCS's support and training has dramatically increased the extent of ranger patrolling within Huai Kha Khaeng and its neighboring protected areas. These parks are some of the best protected sites in Thailand.

HUAI KHA KHAENG WILDLIFE SANCTUARY
22 patrol teams
1,243 mi covered per month
1,060 mi² sanctuary covered

THUNG YAI EAST & THUNG YAI WEST WILDLIFE SANCTUARIES
28 patrol teams
1,243 mi covered per month
1,430 mi² sanctuaries covered

UMPANG WILDLIFE SANCTUARY
435 mi covered per month

Conserving the World's Sharks and Rays

OCEANS

WCS has launched a collaboration with shark experts from around the world on a 10-year global conservation strategy for sharks and rays, as well as the design of a Global Sharks and Rays Initiative (GSRI) to implement this strategy. The strategy is a product of extensive data analysis and synthesis by experts from GSRI partner organizations: WCS, Shark Advocates International, Shark Trust, TRAFFIC, WWF, and technical advisors from the IUCN Shark Specialist Group.

Priorities for shark and ray conservation identified through the GSRI strategic planning process include:

- Saving shark and ray species
- Managing shark and ray fisheries for sustainability
- Ensuring responsible trade in shark and ray products
- Encouraging responsible consumption of shark and ray products

The GSRI's vision is for sharks and rays throughout the world to fulfill their ecological roles, sustain well-managed fisheries, and be valued by all for their critical contribution to ecosystem health and human well-being. The strategy also includes an overarching goal to improve the conservation status of sharks and rays by 2025—halting declines, preventing extinctions, and increasing global commitments to their conservation.

Sharks and rays are an irreplaceable part of the world's biodiversity and they perform vital ecological roles. However, these animals are at great risk. A recent analysis by the IUCN Shark Specialist Group estimated that one quarter of all species within this group are likely threatened with extinction. This high rate of risk, caused primarily by overfishing, distinguishes this group of fishes as among the most threatened of the world's vertebrate groups. The GSRI's global strategy provides a roadmap for expanding commitments and prompting action to ensure the conservation of these vulnerable and ecologically-valuable fishes. Along with highlighting the need for more attention to rays, the strategy emphasizes that science-based limits on shark and ray fishing and trade are urgently needed to end overfishing and ensure sustainability.

The strategy was released during the Convention on the Conservation of Migratory Species meeting on Shark Conservation in Costa Rica in February 2016. For those shark and ray species listed in the CMS Appendices, WCS and partners called on member countries to ensure that several key steps are taken in line with the convention obligations, including: establishing strict national protections for all five endangered sawfish species and all manta and devil rays; and

One quarter of all species within this group are likely threatened with extinction.

adopting national and regional fishing limits for heavily-fished, highly migratory sharks such as mako, hammerhead, and thresher sharks.

Sharks and rays face a precarious future, with serious consequences for marine and freshwater ecosystems, and the human communities and livelihoods that depend on them. The holistic *Global Priorities for Conserving Sharks and Rays: A 2015–2025 Strategy* (wcs.org/GSRI) represents an unprecedented, coordinated initiative to brighten that future.

Indigenous Partners Reduce Deforestation in the Bolivian Amazon

The Greater Madidi-Tambopata Landscape spans northern Bolivia and southern Peru, climbing from 300 feet in the lowland Amazonian rainforest to nearly 20,000 feet in the high Andes. The 42,500-square-mile region encompasses 5 protected areas and the territories of 6 indigenous groups and is experiencing accelerated deforestation for agriculture and ranching, particularly along roads used as immigration corridors. Since 2001, WCS has been working with the Tacana indigenous group in support of their efforts to secure collective legal tenure over their territory and implement a land-use and natural resource management strategy. After successfully presenting their land claim to the Government of Bolivia, the 20 communities living in the Tacana territory agreed to prioritize sustainable livelihoods, biodiversity conservation, and forest protection.

WCS's technical support of this collective vision resulted in 409 percent less forest clearing along roads within the Tacana Indigenous Terrority between 2005 and 2014 in comparison to forest loss outside Tacana land. This demonstrates that indigenous communities with WCS support are effective at sustainably managing their forestlands, benefiting local livelihoods as well as conservation.

After securing the legal title to their traditional territory, the Tacana decided to set aside 80 percent of the land for activities that maintain forest cover, including watershed conservation, forest product management, and ecotourism. This not only protects corridors that are critical to maintaining a viable population of jaguars; it also secures habitat for another 500 species of birds and 130 species of mammals.

For their successful efforts, the Tacana were awarded the prestigious United Nations Development Program Equator Prize. This is the second Equator Prize for WCS partners in the Madidi landscape. In 2010, the Tsimane Mosetene Regional Council was awarded a prize for the co-management of the Pilon Lajas Protected Area.

WCS Research Helping Conserve the World's Greatest Freshwater System

The Amazon is one of the most biologically diverse places on earth. Yet, most think only of its lush forests, forgetting it is also a massive and masterful aquatic system. The Amazon River is the largest freshwater system in the world, discharging 15 percent of the planet's freshwater. Its basin spans eight countries and holds more species of fish than the entire Atlantic Ocean. Its waters host the longest freshwater fish migration and range from sea level to the high Andes Mountains.

The WCS-led Amazon Waters Initiative is expanding the perception of the Amazon to include a deeper understanding of its crucial rivers and wetlands. As part of this effort, WCS has been collaborating on a long-term study of the Amazon Basin with a diverse group of partners. Years of research and analysis by a team of scientists has yielded a new understanding of this biologically-rich region and its freshwater ecosystems.

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A SIDE-NECKED TURTLE, THE TRACAJÁ, ON THE RIO NEGRO IN BRAZIL.

A newly developed hydrological map of the Amazon, together with new data on economically important migratory fish, is enabling the Amazon Waters Working Group of the Science for Nature & People Partnership (SNAPP) to bring together key stakeholders to consider how to manage the Amazon's water resources at an inter-basin, multinational scale.

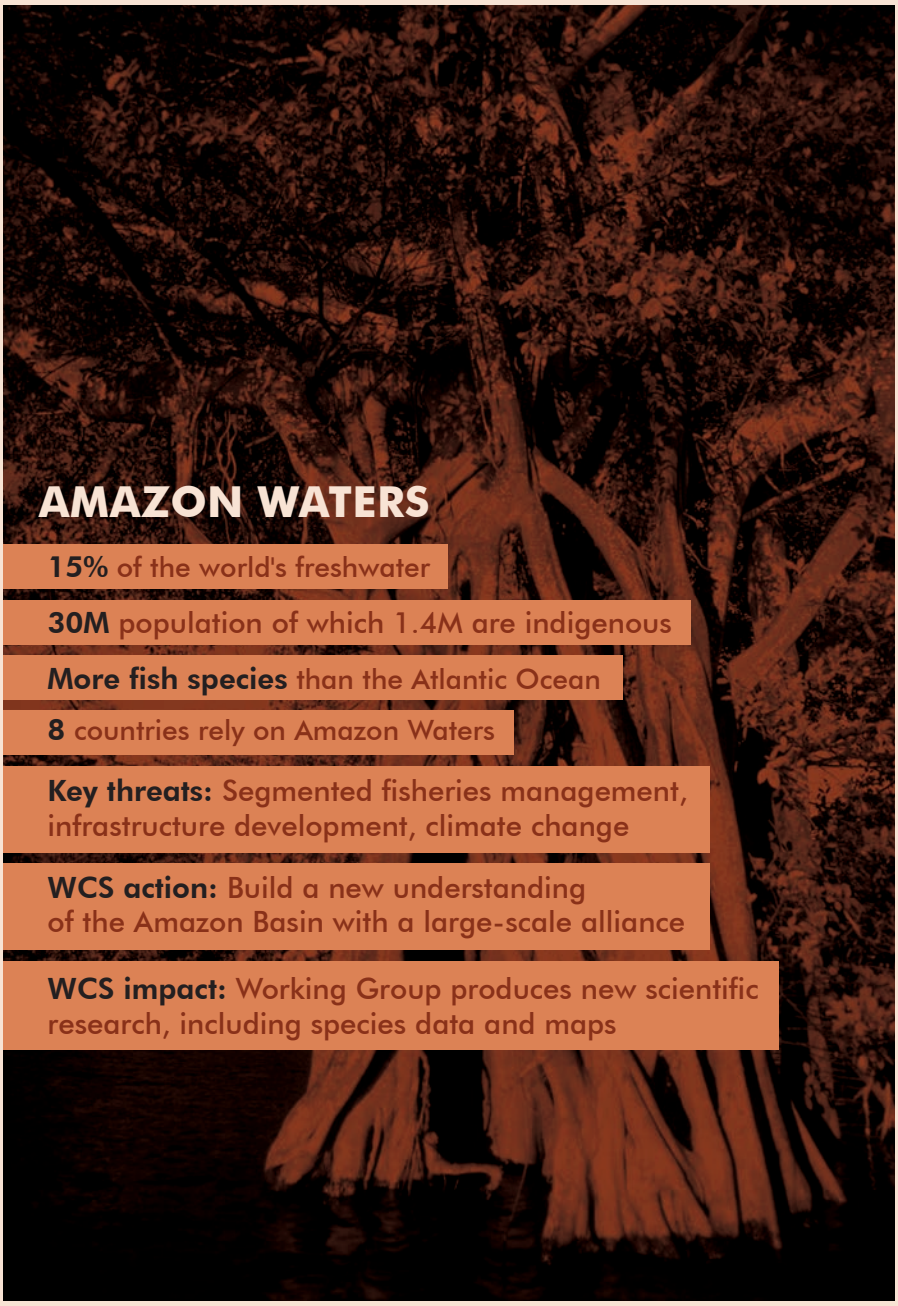
Once thought to cover a mere 4 percent of the Amazon, the team's analysis has shown that flooded forests, rivers, lakes, and other wetlands cover a surprising 14 percent of the vast basin. These aquatic ecosystems are critical to human well-being, supporting major fisheries, water supplies, and other resources for 30 million Amazonian residents across 8 countries, including 1.4 million indigenous people.

The SNAPP Working Group produced first-of-their-kind Amazon Basin datasets, maps, and tools, including data detailing the distribution of more than 30 migratory fish species of the basin. Migratory fish serve as important indicators of ecosystem health and management. Based on this information, the working group aims to support an integrated river basin management approach across ecological and political boundaries.

With a basin-wide approach, decisions about new dams, artificial waterways, and other large infrastructure projects can be evaluated at a broad scale to mitigate impacts on water quantity and quality, biodiversity, and the people who rely on fish and other wetland resources for subsistence and their livelihoods.

The Working Group's results highlight the following priorities for successful management of the Amazon's diverse aquatic ecosystems:

- Climate change adaptation planning
- Critical wetland conservation
- Strengthening management of fisheries
- Minimizing the environmental impacts of infrastructure and extractive industries.



NORTH AMERICA

Bringing Bison Home to Blackfeet Nation

In April, 88 bison were transferred from Elk Island in Alberta, Canada to the reservation of the Blackfeet Nation near Browning, Montana. This is a "homecoming" for these bison, who are descendants of those that were originally captured on Blackfeet land in 1873. This historic event cannot be overstated in its significance, and is a great step forward in restoring this ecologically and culturally important species to native lands.

The story begins in 1873 when Samuel Walking Coyote of the Pend d'Oreille tribe and three Blackfeet companions captured several calves orphaned during a hunt on Blackfeet land. Walking Coyote trailed these calves over the continental divide and placed them on pastures in the beautiful Flathead Valley in western Montana. By 1884, Walking Coyote's herd had grown to 13 bison. He sold ten of the animals to Michel Pablo and Charles Allard, who formed the Pablo-Allard herd on Montana's Flathead Reservation. This herd eventually became the largest in the United States and played a key role in the preservation of bison by restocking and supplementing many public conservation herds, including those at Yellowstone National Park. When the U.S. government initiated plans to open the Flathead Reservation to homesteaders in 1906, Pablo sought a large grant for grazing land for his herd, but was denied. He eventually sold his herd to the government of Canada. The animals were shipped to Elk Island National Park by train with the last shipment sent out in June of 1912.

Fast forward to December 2015 when the Blackfeet Nation and WCS opened a dialogue with Elk Island about returning some of the animals to their ancestral homeland in the Blackfeet Reservation. After thorough health inspections, 88 bison that were considered surplus were transported to the reservation by

truck on April 4. A stop was made during the six-hour journey for ceremonial blessings given by the Blackfeet tribe. Upon arrival, the bison were unloaded at the 9,000-acre ranch known as the Buffalo Calf Winter Ranch on the Two Medicine River in Montana.

This fall, approximately 20 of the bison will be moved again to Oakland Zoo as part of the Zoo's 56-acre "California Trail" expansion. The newly arrived bison will be allowed to breed naturally, and each year offspring will be returned to the tribal lands in Montana. Both Oakland Zoo and Blackfeet Nation will share in educational programs and support their shared interest in promoting bison conservation and culture preservation. The bison herd at the Buffalo Calf Winter Ranch will form the source stock for future restoration efforts on larger landscapes along the Rocky Mountains once final land arrangements are complete.

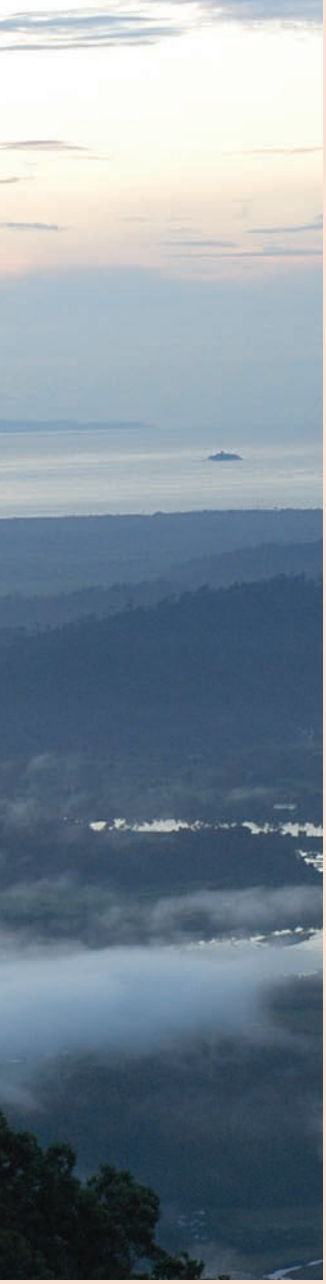
The bison, North America's largest land mammal, once roamed the continent freely, helping sustain plains and prairie ecosystems as a keystone species through grazing, fertilization, trampling, and other activities. Bison shaped the vegetation and landscape as they fed on and dispersed the seeds of grasses, sedges, and forbs. Several bird species adapted to or co-evolved with grasses and vegetation structures that had been, for millennia, grazed by millions of free-ranging bison. Bison remain integrally linked with the spiritual lives of Native Americans through cultural practices, social ceremonies, and religious rituals. More than 60 tribes are now working to restore bison to over 1,000,000 acres of Indian lands in South Dakota, Oklahoma, New Mexico, Montana, and other states. WCS is thrilled to be able to play a role in this initiative, building on our century-long history of bison conservation.

THE TRANSFER OF 88 BISON TO THE RESERVATION OF THE BLACKFEET NATION IS A GREAT STEP FORWARD IN RESTORING BISON TO NATIVE LANDS.

Intact Wild Places, Our Best Defense Against Climate Change

GLOBAL SOLUTIONS

WCS is working tirelessly to protect intact nature—ecosystems like dense forests and thriving coral reefs—which ongoing research by WCS scientist James Watson emphasizes are the best defense against of the consequences of climate change. These ecosystems provide essential environmental services, so their survival is critical. Watson argues that intact, functioning ecosystems like forests, grasslands, wetlands, and coral reefs not only sequester vast amounts of carbon, but also represent our greatest protection against floods and storms.



Since its inception, the Makira Carbon project has prevented 1.7 million tons of carbon dioxide from being released into the atmosphere—about twice the amount of Germany's annual greenhouse gas emissions.

Coral reefs can reduce the power of ocean waves by an average of 97 percent, providing a cost-effective defense from storm surges. Coastal ecosystems such as mangroves and tidal marshes are proving to be a sustainable, cost-effective, and ecologically sound solution for buffering storms. On land, the frequency and severity of floods can be reduced by intact native forests.

The importance of intact, well-functioning ecosystems for carbon sequestration has led to initiatives such as REDD+ (Reducing Emissions from Deforestation and Forest Degradation) to reduce carbon emissions from forest loss and degradation, as well as initiatives to protect the carbon stores contained within coastal and marine ecosystems.

WCS is committed to securing protection for wild, intact ecosystems so that they can offer natural defenses against climate change. In northeastern Madagascar, WCS manages Makira Natural Park on behalf of the government. The park's 1,436 square miles and surrounding community lands constitute the largest block of intact forest remaining in the country, and this habitat supports the highest diversity of lemur species in the world and over 50 percent of Madagascar's plant biodiversity. In partnership with the government, WCS initiated the Makira Carbon Project in 2003 as the first REDD+ project implemented in Madagascar. In December 2013, the project was the first in Africa to sell government-owned forest carbon credits on the voluntary market. Since its inception, the project has prevented 1.7 million tons of carbon dioxide from being released into the atmosphere—about twice the amount of Germany's annual greenhouse gas emissions.

WCS and Wildlife Conservation Network Launch Joint Scholarships

WCS and the San Francisco-based Wildlife Conservation Network (WCN) are developing an exciting new partnership to build the next generation of conservation leaders. Both organizations offer graduate scholarship opportunities aimed at young conservationists from Africa, Asia, Eastern Europe, and Latin America who are committed to doing wildlife conservation in their home countries. Over the past year, WCS and WCN have launched a joint initiative to align scholarship programs with the aim of improving their overall impact and reach.

The WCS Graduate Scholarship Program was established in 1996, and has made advanced study possible for a total of 83 graduate students from 30 countries. WCN's scholarship program was established in 2006 and to date has supported 80 scholars from 28 countries.

WCS and WCN are collaborating to build this partnership, broaden the pool of talented candidates, and expand our impact.

FEATURED SCHOLAR:

Simon Nampindo

University of Massachusetts, Amherst

Simon Nampindo is the Country Director for the WCS Uganda Country Program. He was awarded the WCS Beinecke African Conservation Scholarship and a WCN Sidney Byers Scholarship for Wildlife Conservation to study for a PhD in Environmental Conservation at the University of Massachusetts, Amherst. Simon's areas of expertise are terrestrial ecology, water resources management, ecological economics and sustainability, and climate change. He has spent the past 12 years focused on natural resource management primarily to reduce threats to wildlife within the Albertine Rift. Of late, his work has centered on developing market-based approaches to support conservation, particularly the development of sustainable financing mechanisms.

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