

Panthera

2021 Annual Report



PANTHERA

Panthera's mission is to ensure a future for wild cats and the vast landscapes on which they depend.

Our vision is a world where wild cats thrive in healthy, natural and developed landscapes that sustain people and biodiversity.

Cover: A mother and her cubs resting in Patagonia, Chile

Panthera

2021 Annual Report

THE NEXT GENERATION OF WILD CATS



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Adapting as Wild Cats Do

REBALANCING OUR RELATIONSHIP WITH NATURE FOR THE NEXT GENERATION OF WILD CATS

Science has long warned us about disrupting our relationship with nature. The pandemic has brought into focus just how precarious the balance between humans and nature is. In dwelling on this subject, many have willingly (or not so willingly) acknowledged that for future generations to thrive, equilibrium must be reached.

In the past year, the world started to recognize the critical importance of the next generation of wild cats. From our project sites on the Olympic Peninsula in the United States, to Angola's Luengue-Luiana National Park, to the arid dunes of the Arabian Peninsula and the lush rainforests of South America, wild cats are controlling prey species and creating healthy ecosystems for our and the next generation's benefit.

Despite the challenges of 2021, we forged ahead to shape a world for the current and next generation of these ecosystem-shapers. We had no choice; the threats facing wild cats — poaching, habitat loss and fragmentation and human-wildlife conflict — were more acute than ever before. We fought harder. Guided by science, we tackled head-on the issues threatening wild felines big and small. And the results are already apparent: in 2021, Panthera put the first-ever GPS

collars on lions in Senegal and oversaw the birth of a healthy female Arabian leopard cub in Saudi Arabia.

We amplified the voices of our scientists, especially female scientists and younger scientists, who continue to make an enormous impact. Leading female scientist Wai Yee Lam spent 2021 helping to strengthen coexistence between tigers and cattle farmers in Malaysian Forest Reserves. In 2021, we celebrated board member Razan Al Mubarak on her election as President of the International Union for Conservation of Nature (IUCN) and welcomed Dr. Kristine Maciejewski to our team. We share more about their stories in the next few pages. Our supporters also inspired and encouraged us. And thanks to your commitment, we grew as an organization — not only in size, but also in capacity and strength. We strengthened a future for wild cats.

By fortifying our ability to reconnect with nature, we can solve the most urgent threats facing wild cats. While we don't need to change our spots to find balance with nature, we do need to adapt. Buttressed by tremendous leadership growth in the Board of Directors in 2021 — with Jon Ayers assuming the role of chairman and Thomas Kaplan, our co-founder and

chairman of 15 years, now helping the Global Alliance of Wild Cats — the future of Panthera's leadership is inspiring. These changes, among others, resulted in tremendous growth that has bolstered the organization's foundation, which is critical to growing our capacity and programs and, ultimately, our impact on wild cats.

In the pages that follow, you'll read about our efforts to protect and ensure a future for the next generation of wild cats. Together, we can protect wild cats and the vast landscapes on which we all depend. Together, we can repair our relationship with nature for our descendants. That work has already begun.

Warm Regards,



FRED LAUNAY, Ph.D.
CEO and President

Two cheetahs survey the plains in Maasai Mara National Park, Kenya

It Starts with Cats

Lion brothers roam through Kenya's
Massai Mara National Park

IT ALL BEGAN WITH A CAT'S PAWPRINT.

Is that not how it begins for everyone? The mark of a jaguar, the glimpse of a tiger, an encounter with a Pallas's cat — and our love for felines ignites. And when learning of their dire circumstances, we are inspired and galvanized to fight for them.

Growing up in Florida, I, Tom Kaplan, established a natural connection with wildlife early on and initially sought to become a wildlife biologist. Although my career path ultimately led me to pursue the study of history and investing instead, cats have remained my *raison d'être*. In fact, it was the pawprint of a Florida panther (aka puma) that set ablaze my lifelong passion for conservation. And to this day, the sight of this cat — a portrait of strength — fills me with sheer euphoria. That very spirit drove me and my soulmate, the late Dr. Alan Rabinowitz, to establish Panthera in 2006. It was the fire of genesis, the excitement of discovering one's true purpose. Panthera's first generation rose.

This flame ignited in us a step-function advancement of Alan's iconic Jaguar Corridor Initiative, now the world's most comprehensive and transformative carnivore conservation strategy. Across the Americas, conservation programs in Belize, Brazil and other key jaguar territories set in motion a ripple effect. Our targeted conservation initiatives also led to the rebounding of other cats, as tiger numbers began to recover within our project sites in Asia, and Critically Endangered lion populations started increasing in Senegal. As our successes accrued, our confidence grew, and wild cats reaped the rewards.

Today, we are riding waves in southern Africa, working alongside communities to design and manufacture realistic synthetic furs to replace cat skins as part of our Furs for Life campaign. In Saudi Arabia, the ebbs of heat from the Middle Eastern sun illuminates a path for the future of Critically Endangered Arabian leopards. Our Leopard Spotted Initiative is shining an essential spotlight on the most persecuted of the world's big cats. Around the globe, the next generation of cats, defended by a rising cohort of Panthera's leaders, is opening its eyes and peering into an exciting new world.

They awaken to an environment that is stronger, safer and better suited for wild cats than in 2005. Wild cats are better off because of Panthera, as are we. Our work has helped protect the ecosystems of wild cats by mitigating wildfires in the Pantanal, a crucial jaguar habitat, protecting female tigers who are now consistently breeding and clamping down on the illegal wildlife trade through our sophisticated counter wildlife crime program, among myriad other interventions.

Such ripples in the tide of hope have bred a revived vision for Panthera, a second genesis, a new generation. Just as wild cats generate positive effects throughout their ecosystems, so do our successes in the world of conservation. And in 2021, an entirely new epoch was born.

For me, Jon Ayers, it also began with a cat — I grew up with a calico (and a dog), who had a significant impact on me. During trips to the zoo, my sole focus was wild cats. I enjoyed seeing tigers and lions, yet the small cats captivated me the most. Cats even played a role in my career path; as the CEO of IDEXX Laboratories, I helped advance the standard of veterinary care for pets using the three cats in my family as case studies of how pets benefit from our company's innovations.

My lifelong love for both cats and nature made me wonder what kind of cats I could find in the wild, and the answer led me to Panthera. Just four years after my initial donation of \$150 to the organization in 2017, I was named Chairman of Panthera's Board of Directors. Today, I am proud to be recognized as one of the world's foremost supporters of wild cat conservation. I see wild cats as charismatic creatures of nature to rally the world around biodiversity and its preservation. In 2021, a new generation of conservation began, building on lessons from the past but always looking toward the future.

Thanks to Panthera's strong leadership, our Small Cats Program is expanding, with world-class initiatives to study bobcats, fishing cats and more. In Borneo, for instance, we will soon conduct critical research to better understand the island's five species of small wild cats, including flat-headed cats. Only three years into the Small Cats Program, we've unearthed how much these species contribute to their broader environments. When we measure outcomes for cats, we can measure the biodiversity outcomes of entire ecosystems.

The new generation of Panthera's leaders and programs have given wild cats a pool of strength. A strong presence of wild cats indicate healthy biodiversity. Strong cats are evidence of healthy human communities. For both of us, it might have begun with a cat, but Panthera has now grown into an unstoppable global guardian of these wondrous creatures. A new generation of wild cats is emerging, and with it, a fortified planet embraces the future.



THOMAS S. KAPLAN, Ph.D.
Founder, Global Alliance Chair



JON AYERS
Chairman of the Board





Eye of the Tigress

Since its inception 16 years ago, women have been core to the success of Panthera. Daphne Recanati Kaplan, wife of co-founder Dr. Thomas Kaplan, was integral to the organization's founding. This year, Panthera celebrated the many accomplishments of its female scientists and staff members. Although it was difficult to choose only three women colleagues to highlight, we're showcasing Razan Al Mubarak, Dr. Kristine Maciejewski and Wai Yee Lam — three extraordinary role models in the fight to protect wild cats.

Above: Female Bengal tiger in India's Bandhavgarh Tiger Reserve.



H.E. Razan Khalifa Al Mubarak

Razan Al Mubarak is an integral member of the Panthera Board and Global Alliance for Wild Cats. Last year, we celebrated her election as President of the International Union for Conservation of Nature (IUCN), an organization widely recognized as the global authority on the state of the natural world and the measures needed to safeguard the planet. Ms. Al Mubarak is the first IUCN president from West Asia and the second woman to take the helm since the organization's founding 72 years ago.

Ms. Al Mubarak quickly outlined a bold vision for the organization during her four-year term; she plans to work closely with all constituencies — youth and local communities especially — to tackle the twin crises of biodiversity loss and climate change. She is also committed to addressing gender equality and indigenous rights within the conservation world. Panthera is grateful to count Razan among its valued board members and looks forward to witnessing what will undoubtedly be her profound impact on the IUCN.

This appointment builds on a distinguished career in conservation. In 2001, Ms. Al Mubarak, who hails from the United Arab Emirates, helped establish Emirates Nature World Wildlife Fund (WWF), where she still serves as Managing Director. In 2010, she was appointed as the Secretary-General of the Environment Agency — Abu Dhabi (EAD), becoming the youngest person to lead an Abu Dhabi government entity. She later became the agency's Managing Director. Ms. Al Mubarak is also the founding Managing Director of the Mohamed bin Zayed Species Conservation Fund (MBZ Fund), an organization dedicated to conserving the world's most endangered species.

The MBZ Fund has been a critical partner for Panthera since 2014, when they teamed up with three other organizations to pledge \$80 million over ten years to Panthera's initiatives to save wild cats. In 2021, as part of a separate initiative, the MBZ Fund partnered with Mubadala Investment Company to generously support Panthera's three-year project to establish the baseline population of Sumatran tigers and other wild cats in Indonesia.



Wai Yee Lam

Wai Yee Lam, Country Director of Panthera Malaysia, helped establish our Malaysian entity in 2020 to protect the country's wild cats in support of and in partnership with the Government of Malaysia. Home to eight species of wild cats, including the critically endangered Malayan Tiger, Malaysia is an essential biodiversity hotspot for wild cat conservation.

Ms. Lam now runs one of the most sophisticated wildlife monitoring and anti-poaching teams in South East Asia. In 2021, the 15-person Kenyir team covered a total distance of 2,416 km on foot patrols over 1,738 total patrol hours. Their efforts helped maintain zero snaring status in the core area for the second year in a row. Replicating this model, Ms. Lam also guides the Dupot team — which includes two female rangers, the first in Panthera Malaysia — to protect the small cat species of Borneo. Ms. Lam is proud of the team and sees this as a positive signal for the future of representation in anti-poaching.

In 2018, Ms. Lam and fellow Panthera colleagues and seasoned rangers from the Department of Wildlife and National Parks Malaysia developed a comprehensive scenario-based training program for countering poaching in the deep tropical forest landscape. She was also integral in developing the first-ever Deep Forest Counter-Poaching Guide, which will soon serve as a critical teaching aid for ranger training in the region.

Enthusiastic about building the capacity of patrol teams to better mitigate illegal poaching, Ms. Lam also sits on the Gender Steering Committee of the [Universal Ranger Support Alliance \(URSA\)](#). The organization, co-founded by Panthera, advocates for better working conditions and develops policies and resources for rangers. In early July, together with International Ranger Federation (IRF), URSA launched the first comprehensive and global [analysis](#) of the challenges and opportunities for bringing gender equality into the ranger workforce.



Kristine Maciejewski, Ph.D.

Dr. Kristine Maciejewski joined the Panthera pride in April of 2021 and quickly established herself as a leader in the organization. As the Regional Director of Southern and East Africa, she oversees Panthera's largest region, comprising 10 projects extending over six countries. One of these projects is Panthera's first 'continent-wide' grant, funded by the Lion Recovery Fund and the Wildlife Conservation Network.

Dr. Maciejewski helped secure this first continent-wide grant and now leads the project, which aims to unlock the potential for lion populations to recover and thrive in four wilderness habitats: Luengue-Luiana National Park in Angola, the Greater Kafue Ecosystem in Zambia, Bateke National Park in Gabon and Niokolo-Koba National Park in Senegal.


Maciejewski is also a Research Associate at the FitzPatrick Institute of African Ornithology at the University of Cape Town and the Centre for Complex Systems at Stellenbosch University in South Africa. Passionate about inspiring the next generation of wildlife biologists, in 2021 she co-edited "The Routledge Handbook of Research Methods for Social-Ecological Systems," which aims to guide graduate students, lecturers and researchers in social-ecological systems research, or the study of the complex, intertwined relationship between humans and natural systems.

Dr. Maciejewski has worked closely with Dr. Guy Balme, Panthera's Deputy Executive Director of Conservation Science, to establish Panthera's new Cape Town office, now the regional hub for Southern and East Africa.


A World of Wild Cats

The 40 species of wild cats reside on five different continents. Explore Panthera's global project sites in real-time at panthera.org/where-we-work.

BIG CATS



Puma
Puma concolor



Jaguar
Panthera onca

SMALL CATS


Andean Mountain Cat <i>Leopardus jacobita</i>	Jaguarundi <i>Herpailurus yagouaroundi</i>	Oncilla <i>Leopardus tigrinus</i>
Bobcat <i>Lynx rufus</i>	Güiña <i>Leopardus guigna</i>	Pampas Cat <i>Leopardus colocola</i>
Canada Lynx <i>Lynx canadensis</i>	Margay <i>Leopardus wiedii</i>	Southern Tiger Cat <i>Leopardus guttulus</i>
Geoffroy's Cat <i>Leopardus geoffroyi</i>	Ocelot <i>Leopardus pardalis</i>	

Europe


SMALL CATS

Eurasian Lynx <i>Lynx lynx</i>
European Wildcat <i>Felis silvestris</i>
Iberian Lynx <i>Lynx pardinus</i>


BIG CATS



Lion
Panthera leo



Leopard
Panthera pardus



Cheetah
Acinonyx jubatus

SMALL CATS


African Golden Cat <i>Caracal aurata</i>	Black-footed Cat <i>Felis nigripes</i>	Sand Cat <i>Felis margarita</i>
African Wildcat <i>Felis lybica lybica</i> <i>Felis lybica cafra</i>	Caracal <i>Caracal caracal</i>	Serval <i>Leptailurus serval</i>
	Jungle Cat <i>Felis chaus</i>	

Africa

BIG CATS



Tiger
Panthera tigris



Snow Leopard
Panthera uncia



Leopard
Panthera pardus

SMALL CATS

Asian Golden Cat <i>Catopuma temminckii</i>	Eurasian Lynx <i>Lynx lynx</i>	Pallas's Cat <i>Otocolobus manul</i>
Asiatic Wildcat <i>Felis lybica ornata</i>	European Wildcat <i>Felis silvestris</i>	Marbled Cat <i>Pardofelis marmorata</i>
Bornean Bay Cat <i>Pardofelis badia</i>	Fishing Cat <i>Prionailurus viverrinus</i>	Rusty-spotted Cat <i>Prionailurus rubiginosus</i>
Caracal <i>Caracal caracal</i>	Flat-headed Cat <i>Prionailurus planiceps</i>	Sunda Clouded Leopard <i>Neofelis diardi</i>
Chinese Mountain Cat <i>Felis bieti</i>	Jungle Cat <i>Felis chaus</i>	Sunda Leopard Cat <i>Prionailurus javanensis</i>
Clouded Leopard <i>Neofelis nebulosa</i>	Leopard Cat <i>Prionailurus bengalensis</i>	

Asia

Americas



“If you’re conserving leopards in an arid desert landscape, you are also conserving other species and the ecosystem in which they occur, including the Arabian oryx, Nubian ibex, Idmi gazelle, Blanford’s fox, Red Fox and the Arabian wolf.”

DR. GARETH MANN
Director, Leopard Program

Project Spotlight: Leopards of Arabia

FIELD NOTES: IN SEARCH OF ARABIAN LEOPARDS

Panthera is partnering with Saudi Arabia’s [Royal Commission for AlUla](#) to study the existing Arabian leopard population in the Sarawat mountain range. Today, less than 200 Arabian leopards live in the wild, meaning the species is classified as Critically Endangered on the IUCN Red List of Threatened Species™.

Temperatures regularly reach over 90 degrees Fahrenheit during the day in the Sarawat range. The ground is uneven, the wadis are rocky, and the slopes are full of unstable scree, making progress slow. The relatively inaccessible rocky slopes provide a potential haven for Arabian leopards — which means it’s a particularly tricky place for humans to navigate. But the team treks on, hiking up to 20 miles a day to set up multiple camera traps in locations that they hope will yield photographs of an Arabian leopard.

There are fewer prey in arid climates like this one, so a leopard’s home range needs to be large enough to encompass plenty of watering holes and hunting grounds. This means that an individual leopard may pass a particular spot only once or twice a month, making capturing a camera trap image that much more of a challenge. But these images are essential; they help the team gauge the size and health of the population.

Like all of Panthera’s work, the impact of introducing the next generation of Arabian leopards will have a ripple effect on the entire habitat. “If you’re conserving leopards in an arid desert landscape, you are also conserving other species and the ecosystem in which they occur,” Dr. Gareth Mann, Director of Panthera’s Leopard Program explains, referring to species such as the Arabian oryx, Nubian ibex, Idmi gazelle, Blanford’s fox, Red Fox and the Arabian wolf.

THE RETURN OF ARABIAN LEOPARDS

On April 23, a healthy female cub was born at the National Wildlife Research Center in Taif, Saudi Arabia, bringing the program’s total of leopards to 16 — a significant milestone.

The Center aims to breed Arabian healthy leopards who can supplement or restore wild populations in Saudi Arabia. This is a centerpiece of the conservation efforts undertaken by the Royal Commission for AlUla, the agency undertaking the regeneration of a 22,561 km swath of land in northwest Saudi Arabia. This breathtaking area includes a lush oasis valley, towering sandstone mountains, and ancient cultural heritage sites dating back thousands of years. Eventually, the program will begin reintroducing leopards into these wild habitats to establish self-sustaining, thriving populations.

These 16 leopards represent the region’s deep commitment to saving Arabian leopards. Leopards once roamed large parts of the Arabian Peninsula, so it’s no wonder their beautiful, fearless, and tranquil likenesses can be found in ancient rock art, long-told myths and stories, and even in colloquial expressions.

Today, Arabian leopards are found only in Saudi Arabia, Oman and Yemen. Ideally, we hope to re-establish connectivity across the entire historical range in the Arabian Peninsula. And with the continued dedication of the RCU, Panthera, ICUC and other organizations — and the birth of more cubs — that goal feels increasingly within reach.

CAMPAIGN GOALS

Key project benchmarks are as follows:

- 2024** Target date for the opening of a state-of-the-art breeding center
- 1560** Number of square kilometers of the Sharaan Nature Reserve that will be restored and conserved, including indigenous flora and fauna
- 80%** Percent of the AlUla project’s land converted into nature reserves, in line with the Saudi Green Initiative
- 25** Amount, in millions of dollars, allocated by the RCU for the establishment of the Arabian Leopard Fund

Above (left to right): Philip Faure, who leads Panthera’s Saudi Arabia field team, installing a camera trap in Asir National Park, Saudi Arabia; Gareth Mann, Director of Panthera’s Leopard Program, stands in a smaller wadi in one of the Asir Mountain study sites.

Next Page: An Arabian leopard that’s part of the breeding program at the National Wildlife Research Center in Taif, Saudi Arabia

Africa

Africa's national parks saw more ecotourism in 2021 than the previous year — but not nearly enough to adequately fund the land management of these wildlife havens. A rise in poaching met with depleted funding for anti-poaching efforts is a dangerous combination — but Panthera teams across the continent worked with local communities, governments and other organizations to reinvigorate population monitoring and anti-poaching patrols, establish ecotourism economies and condemn captive breeding and legal wildlife trade.



Niokolo Koba National Park, Senegal

Above: Marine Drouilly, P.h.D., Regional Monitoring Coordinator, collects lion scat in Niokolo Koba National Park, Senegal

Opposite: Philipp Henschel, Panthera's Regional Director of West and Central Africa, and Kristoffer Everatt, Conservation Scientist, and members of Senegal's Department of National Parks with a collared, anaesthetized lion

Senegal's Niokolo Koba National Park, 9,130 km² of protected area, is home to lions, leopards and hundreds of other species. Together with the Directorate of National Parks (DNP), Panthera Senegal and members of our Leopard Program have undertaken an ambitious camera trap survey. Spanning a large swath of the park, the survey aims to collect population data for multiple imperiled species: leopards, lions, wild dogs, and elephants. Combined with scat collection and DNA testing, this work in Niokolo Koba will help establish a meaningful population baseline for the park's carnivores and other wildlife, in addition to valuable information about their hunting patterns and diet.

Lions are classified by the IUCN Red List as Critically Endangered in West Africa, with only 250 adult individuals remaining. However, Panthera's interventions over the past decade have proven successful. In 2011, Panthera's initial baseline survey identified 10-15 lions in the park. Today, the number of lions is estimated to have doubled to 30-40. In 2021, Panthera put GPS collars on three lions alone, representing the first lions ever collared in Senegal. Wildlife population surveys, environmental monitoring, and GPS collars are just some of the tools we deploy to understand lions' behavior and dispersal patterns better.

The greatest threat to the park's wildlife is poaching. However, recent anti-poaching efforts by Panthera Senegal in collaboration with DNP enabled populations of buffalo and multiple antelope species to rebound. With more abundant prey, it's no surprise that our camera traps have detected a slight uptick in the occurrence of healthy male and female adult leopards and Critically Endangered wild dogs.

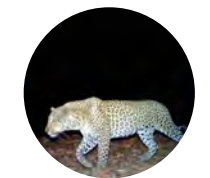
SPECIES SPOTTED IN CAMERA TRAP SURVEY



Lions



Caracals



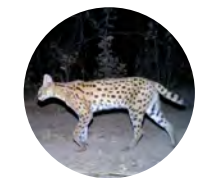
Leopards



Wild Dogs



Derby Elands



Servals



Luengue-Luiana National Park, Angola

Previously home to large numbers of lions, leopards, cheetahs, caracals, African golden cats, African wildcats and servals, Luengue-Luiana National Park in southeast Angola is a critical wild cat habitat. After three decades of civil war and rampant bushmeat poaching, however, wildlife numbers have severely declined. Lions, in particular, have been decimated; it appears that only a small pocket of lions remain along the Cuando River south of the Luiana River.

The effort to restore threatened carnivores and depleted ungulate (hoofed mammal) populations in the park focuses on engaging with communities, as businesses and conservation partners. In 2021, Panthera, with the support of local partners, worked closely with park authorities to identify and secure high-priority conservation areas in core areas of the park. Subsequently demarcated as intensive protection zones, these areas were actively patrolled by community game guards employed from the surrounding villages.

The game guards, who remove illegal hunting equipment such as gin traps and snares, are proving to be an extremely successful intervention; there has been a significant decrease in the amount of illegal hunting equipment found in the park.

Panthera also worked with local communities, park authorities and the national government to determine the feasibility of establishing a community conservancy in the designated important habitat zone. The resulting roadmap outlines the steps required to develop a community-owned and operated wildlife venture and tourism route, associated activities and accommodations, as well as detailed business and implementation plans. This community-centered conservation approach will help safeguard succeeding generations of lion and leopard cubs in Angola.

120 Number of camera traps installed in Luengue-Luiana National Park, Angola for a 2021 survey

Servals in Sub-Saharan Africa

The serval is a medium-sized cat species native to sub-Saharan Africa with a broad distribution across Africa. Although listed as Least Concern in the Red List, serval numbers have been declining across the species' historical range. Servals are absent from the dense rain forests of Central Africa but can be found in all types of savannas and are highly associated with wetlands and grasslands primarily due to the high abundance of rodents – their staple prey – in those habitats.

In 2021, Panthera established a partnership and data sharing agreement with the Research Centre in Biodiversity and Genetic Resources at the University of Portugal for a project that will investigate drivers of coexistence between the serval and sympatric (overlapping) large mammalian apex predators across Africa. For this purpose, we will use collections of camera trap data from multiple study areas to investigate serval dispersal patterns across a gradient of habitats and predator communities.

Joleen Broadfield, Small Cat Data Scientist, is working closely with our survey coordinators to process and analyze data across the serval range. To date, serval data from 14 surveys across four countries — Namibia, South Africa, Zambia and Zimbabwe — contribute to the overall study.

Above: A serval photographed on a camera trap

Above (left to right): Rangers display deactivated snares removed from the landscape in Luengue-Luiana National Park, Angola; Community game guards patrol the park

Opposite: Luengue-Luiana rangers form ranks during training exercises



The Black-Footed Cat Working Group, South Africa

One of the smallest cat species globally, the black-footed cat is endemic to semi-arid regions of southern Africa. The latest IUCN Red List assessment, which classified the black-footed cat as Vulnerable, was conducted in 2016. Given their rarity, small size, camouflage and secretive nocturnal nature, the paucity of information on the species elsewhere within its range is unsurprising.

In 2020, Panthera began working with the Black-Footed Cat Working Group with the shared goal of assessing a potential non-invasive and cost-effective technique for studying black-footed cat populations: scat detection dogs and fecal DNA analysis. In 2021, Panthera Small Cat Action Fund grantee Michelle Schroeder focused on setting the groundwork for a new long-term monitoring project, and developing an effective detection dog team was the first and most imperative project activity. Ms. Schroeder is training a new generation of highly intelligent search dogs to detect the scat of black-footed cats. Next, she will conduct systematic scat surveys across the study site and then use DNA analysis to confirm species and individual identifications to inform population estimates.

While population estimates for black-footed cats across their geographic range would be considered the gold standard, genetic analyses are costly, and the effort and investment



needed to establish reliable population estimates may not be feasible. Upon completion, however, this project will yield a detailed evaluation and a suggested protocol for combining scat detection dogs and genetic analysis for further research of black-footed cats.



Bone Trade & Captive Breeding

In May of 2021, the South African government adopted the recommendations of a high-level panel to end the country's commercial captive lion breeding industry and bone trade. In addition, the panel urged Parliament to enact legislation that establishes an irreversible ban on the industry.

It was estimated that at least 8,000 lions were held in captivity at 366 private facilities across South Africa. Most facilities earn revenue through tourism: cub feeding, selfie opportunities and more. Although many of these facilities claim to support conservation, there's no evidence that commercial breeding benefits wild lions. Lions that are commercially bred can't later be introduced into the wild to recover those populations, and the industry does not provide meaningful financial support to wild lion conservation.

The legal trade of captive-bred cats often parallels the illegal wildlife trade, providing a channel to launder cat parts poached from the wild. In fact, the legal trade legitimizes the use of wild cat parts for traditional medicine and luxury items, frustrating efforts to curb demand for illegally sourced products and confusing consumers who may not know the difference. Policies like this one are monumental in protecting future generations of wild cats.

Above: Two lion cubs in a commercial breeding facility

Above (left to right): Scat detection dog Lyka Lilly and Panthera grantee Michelle Schroeder in the field in southern Africa; Radio-collared adult black-footed cat

Asia

Panthera recognizes that it will take an all-paws-on-deck approach to save the world's wild cats. We view collaboration with partners as central to the success of our programs, especially in Asia. Across this vast continent, we partner with other NGOs, government agencies, universities, local communities and other key stakeholders to coordinate targeted interventions, share knowledge and ultimately increase our collective impact. Working together, we can ensure a future for new generations of tiger stripes and snow leopard rosettes.



Securing a Future for the Tiger

Above: Rangers and Panthera staff inspect tracks in Thailand's Huai Kha Khaeng Wildlife Sanctuary

Opposite: Panthera staff inspect anti-poaching gear before a patrol

Our scientists have determined that recovering and connecting core breeding tiger populations is the most impactful range-wide conservation strategy for tigers and that increased efforts are needed in Southeast Asia (SE), where tigers are most threatened with extinction. In response, Panthera strengthened its commitment to SE Asia by establishing offices in both Thailand and Malaysia. Additionally, we instituted intensive annual population monitoring to chart the rise in wild cat numbers within all of our tiger sites. However, understanding population trends is not always enough, so we also track annual survival and land tenure. These are essential indicators of population health, as long-term tenure, especially for females, signals low poaching, higher recruitment rates and faster population growth.

Thailand's Western Forest Complex (WEFCOM), comprised of 17 contiguous protected areas spanning 18,000 km², is home to more than 100 tigers, the largest population in mainland Southeast Asia. Tigers frequently immigrate south from the Thung Yai-Huai Kha Khaeng World Heritage Site (WHS) in the core of the landscape to our site in the southern portion of WEFCOM. Panthera has supported the Thai Government's Department of National Parks (DNP) to step up protection efforts and secure protected status for the corridor connecting the WHS with southern WEFCOM. For the latter, we secured a commitment from government partners and donors to improve and formalize connectivity within these crucial tiger landscapes.

Panthera Thailand is also supporting the DNP with planning and analysis of wildlife crime data. A select group of over 50 rangers representing several protected areas in Thailand was trained to use PoacherCams, directly leading to a dozen poacher arrests. In addition, specialized waterborne patrol training delivered by our Counter Wildlife Crime specialists contributed to a 288 percent increase in arrests across the WEFCOM landscape.

Nearby, the Panthera Malaysia team also made great leaps in 2021. The Panthera Malaysia team has pioneered developments in patrol planning and analysis of wildlife crime data; we've trained over 100 rangers in optimal patrolling tactics. In the Kenyir-Taman Negara Terengganu Core Area, Panthera's team did not detect any snares for the second year in a row. While COVID-19 travel restrictions have hindered poaching operations, the fact that poaching incursions have been detected just outside of our site suggests that Panthera's patrols are a strong deterrent. We are sharing our learnings with our network and other regional conservation organizations to ensure sustained impact.

The Global Recovery Program (GTRP), which involved the World Bank and tiger range state governments, began wrapping up in 2021. The goal of the GTRP was to double tiger numbers between the Years of the Tiger in 2010 and 2022. However, progress across the 13 tiger range countries has been inconsistent, with populations likely increasing in only a few countries.

Our vision is for a longterm presence of viable and ecologically functional populations of wild tigers secure in protected habitats, with representation and links across their indigenous range, respected and valued by neighboring human communities and beyond, a magnificent symbol of nature in all its beauty, complexity and wonder for future generations.

VISION STATEMENT FROM THE COALITION OF NGOs BEHIND THE PUBLICATION, "SECURING A VIABLE FUTURE FOR THE TIGER."

In the hopes of influencing the Global and National Tiger Recovery Plans that will be developed in 2022 for the next cycle of the GTRP, Panthera joined forces with five other conservation organizations — Fauna & Flora International, IUCN, TRAFFIC, Wildlife Conservation Society (WCS) and World Wide Fund for Nature (WWF) — to develop "Securing a Viable Future for the Tiger: Our Vision," a publication outlining goals and high-level strategic approaches for this critical next phase of tiger conservation. The vision document includes proposed strategies and tactics for implementation at the local, national and international levels. In addition, the trade in tigers and their parts is addressed, as are recommendations for long-term financing and coalition management.

This coalition of conservation NGOs has also undertaken three other initiatives. First, Panthera led a reassessment of tigers for the International Union for the Conservation of Nature (IUCN) Red List, in which we affirmed the tiger's status as Endangered. The assessment will be published in the Red List in 2022. The second is the IUCN Green Status Assessment, and the third is the WCS-led Tiger Conservation Landscape 3.0 analysis. This level of collaboration among international NGOs working on tigers is unparalleled.



Small Cats of Asia

Above: Patrol team with Sabah Forestry Department

Opposite: (left to right) Azlan bin Sulaiman, Patrol Captain, Azrie Petrus, Patrol Lead, Jaffly Jubili, Data Officer, Jasrin Kuntagil, Patroller and Sylvester Gimil, Senior Patroller

BUILDING A WILD CAT CONSERVATION MODEL IN SUMATRA

In partnership with a local Indonesian NGO, Sintas, Panthera plans to build and implement a sustainable wild cat conservation model in human-dominated landscapes in Sumatra. Sumatra has a network of protected areas of critical importance to the wild felids on the island — Sumatran tigers, the Sunda clouded leopard, marbled cat, leopard cat, flat-headed cat and the Asian golden cat. However, many populations of wild cats extend beyond the boundaries of these protected areas and move throughout a network of intervening corridors.

Due mainly to the global palm oil market, Sumatra has some of the highest deforestation rates globally, detrimentally impacting its biodiversity. Despite a logging moratorium running for 13 years in Aceh, illegal logging and oil palm encroachment persist. Shrinking and increasingly fragmented habitats make survival challenging, let alone coexistence among species. Decreasing the buffer zone between humans and wildlife can quickly lead to increased human-wildlife conflicts.

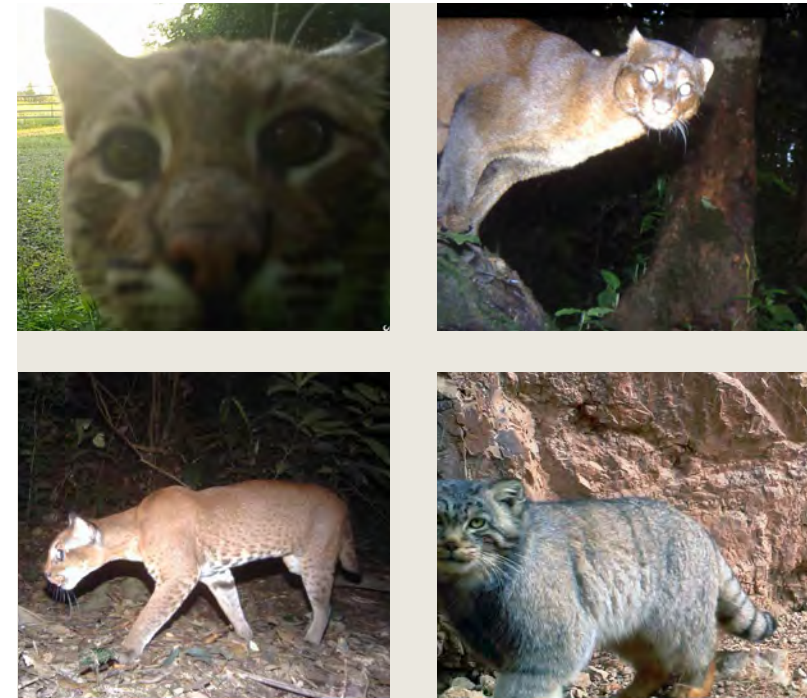
This project aims to determine the baseline population parameters of Sumatra's wild cats in production landscapes and identify and mitigate critical threats to their survival. Information gathered from the project can inform effective conservation management plans for endangered wild cat species in human-dominated landscapes.

BIODIVERSITY IN BORNEO

The third-largest island in the world, Borneo, is a hotspot of biodiversity — it's home to a unique guild of five wild cat species: the Sunda clouded leopard, marbled cat, leopard cat, flat-headed cat and the Bornean bay cat. The island's biodiversity is in jeopardy, however, ranking among the most vulnerable regions in the world.

In 2021, the Panthera team in Borneo worked with local scientists, scouts and communities in the Malaysian state of Sabah and the Indonesian territory of Kalimantan to establish baseline data for the region's wild cats. This study area is unique because, unlike many similar habitats, the small wild cats here do not need to compete with big cats for prey.

They must, however, contend with poachers. From previous patrols conducted by the Panthera team in one part of Sabah, we learned that poachers primarily target clouded leopards, Sunda pangolins and sun bears. In developing countries like Malaysia, the threat to biodiversity is high, and the resources devoted to protecting them are not commensurate. While Panthera does not presume to do the job of government agencies, the team seeks to assist and support them. Working alongside the Sabah Forestry Department's elite Protect unit, Panthera collected intelligence on, disrupted and arrested poachers in Borneo.



Big Data on Small Cats

Panthera is revolutionizing how small cat data is analyzed and categorized. We're building on the success of camera traps by using machine learning and pattern recognition to automatically identify wild cat species and their behavior, and, in the process, code millions of photos from camera traps in 38 countries. Small Cat Data Scientist Joleen Broadfield spent much of 2021 identifying and analyzing over 16 years' worth of photos from 20,000 Panthera camera traps to advance the knowledge base on small cat species. This initiative will help inform the population size and distribution of small cat species, promote knowledge sharing and increase the capacity of Panthera's partners.

Small and big cats often have overlapping ranges and distributions, enabling small cat scientists like Joleen to work closely with colleagues studying big cats. By leveraging our existing programs, we can maximize our resources to efficiently collect vital data on wild cat species. For example, in Latin America, ocelots and margays are studied alongside jaguars, while snow leopards share Central Asian habitats with the Eurasian lynx and Pallas's cat.

Above (clockwise): A bobcat in upstate New York, United States; A jaguarundi in Costa Rica; An African Golden Cat in Gabon; A Pallas's Cat in China



Snow Leopards in Kyrgyzstan

Kyrgyzstan is home to five species of wild cats, including the snow leopard, Eurasian lynx, Pallas's cat or manul, Asiatic wildcat, and jungle cat. The mountainous terrain where many of these cats dwell is often remote and rugged, which can provide refuge from all but the most steadfast poachers, but also complicates access for Panthera's scientists and conservation partners. Nevertheless, Panthera and its partners endure challenging conditions in pursuit of wild cat conservation.

In 2021, Panthera initiated long-awaited projects previously put on hold due to challenges associated with the COVID-19 pandemic. Chief among them was a project funded by Critical Ecosystem Partnership Fund (CEPF) to cultivate conservation partnerships by engaging communities in Kyrgyzstan and safeguarding rural livelihoods. The project is co-led by two female conservationists, Sabin Snow Leopard grantee Fatima Mannapbekova and CEPF project lead Altnai Adabaeva.

In September 2021, Fatima and Altnai, in collaboration with partners at the Ilbirs Foundation, made introductory visits to communities in the Osh Oblast of Kyrgyzstan to introduce themselves and the project to establish relationships with local stakeholders and communities. Later, they led a team of surveyors to conduct the preliminary survey work via household interviews. Over 23 days, 639 interviews were conducted in 37 villages.

Although the data are still being compiled and analyzed, these community engagements will establish a baseline knowledge of carnivore and prey species distributions and a shared understanding that fosters future conservation efforts. The results are expected to inform the creation of species threats and distribution maps across roughly 2.3 million hectares and elucidate how the human social landscape may affect wildlife distributions and the nature and severity of human-wildlife interactions. In the early spring of 2022, several workshops will follow up on the findings and build the foundational relationships and conditions for future conservation collaboration between communities, protected areas and civil society organizations.

23	Days spent visiting rural communities
37	Villages visited in the region
639	Household interviews conducted in the Osh region of Kyrgyzstan

Above (left to right): Panthera staff members surveyed 35 villages on a 21-day journey to the edges and crevices of the Osh Oblast in Kyrgyzstan; Well-known hunter Khushtarbek Baeke welcomed the Panthera survey team to star the trip

Opposite: Surveyor Iliiaz Imanaliev with a local herder from Akart Village in the Nookat District, Kyrgyzstan

Tigers in the United States

Occupying a mere shadow of their former range, wild tigers today are found in India, Nepal, Bhutan, Bangladesh, Myanmar, Russia, China, Thailand, Malaysia and Indonesia. However, the range of captive tigers is much broader. Tiger farms are widespread; however, they are especially prevalent in Asia and the United States, where thousands of tigers are bred in captivity. These tigers are bred for profit — not for conservation or education. In fact, 95 percent of the estimated 10,000 captive tigers in the U.S. are privately owned.

Unfortunately, commercially captive-bred tigers cannot be used to restore dwindling wild tiger populations. They are genetically unfit for reintroduction, often because they are hybrids of the five extant wild tiger subspecies. Further, after a tiger is born in captivity and handled by humans, they are unlikely to survive in the wild. The United States Congress is weighing a bipartisan bill to end commercial captive breeding and exploitation of wild cats; the “Big Cat Public Safety Act” is awaiting action by the House of the Representatives and the Senate. Panthera fully supports this bill to protect succeeding generations of big cats in the United States.

Above: A captive-bred tiger puts on a show in a “tiger temple” in Thailand. Despite being called a temple, it is registered as a zoo. Panthera advocates against the captive breeding of wild cats for commercial trade and exploitation.

Americas

Successful conservation efforts often hinge on innovation — and nowhere is this more evident today than in the Americas. In the Brazilian Pantanal, jaguar ecotourism diversifies the local economy and creates new livelihood opportunities. And in Guatemala and Honduras, acoustic monitoring devices identify and target poaching hot spots. Further north, in the United States, our scientists are using the revolutionary EarthRanger technology to gather and analyze the best data available on pumas. Finally, Panthera's Small Cats team is utilizing genetics research and GPS collars to develop a replicable monitoring protocol to inform bobcat management plans on the East Coast of the United States.



Recovery in the Pantanal

In 2020, while humans were grappling with an unrelenting global pandemic, a different kind of disaster plundered the animal kingdom as wildfires ravaged one of the most diverse ecosystems globally: the Brazilian Pantanal.

While fire is a natural phenomenon in the tropical savannas of the Pantanal, these fires were unusually catastrophic; a long dry season in 2019 was followed by a short rainy season that did not fill the rivers with enough water to form natural fire barriers. It's estimated that the fires burned up to 40 percent of the region's land.

A team of researchers led by Dr. Fernando R. Tortato of Panthera Brasil aimed to determine the impact of these wildfires on jaguar populations. Using deforestation data and a previous jaguar population study, the team estimated that 1,422, nearly two percent of the population, were displaced or killed from August 2016 to December 2019. In 2021 alone, we estimated that at least 600 jaguars were affected by the fires — including Gloria, a jaguar who stumbled into a home in the northern Pantanal, her paws blackened from excruciating burns. Locals, supported by Panthera and other NGOs, provided her with the lifesaving care she needed to survive.

Wildfires are just one existential threat to jaguars. A lack of connectivity between populations and human-wildlife conflict

pose even more significant threats to jaguars in the area — but there are reasons to be hopeful.

Last year was one of regrowth in the Pantanal. Thanks to support from the Pantanal Relief Fund, created by Climb for Conservation and the Jaguar Identification Project, Panthera's Jofre Velho Ranch was one of the few in the area that managed to protect some of its surrounding lands with new fire-fighting equipment. We are also hosting Brigada Alto Pantanal-Jofre, a fire brigade tasked with fighting active fires and taking preventative measures, like creating and clearing roads and firebreaks of dead foliage and debris.

Another partner, SOS Pantanal, donated a 5,000-liter water tank, training from local fire departments and a warehouse for fire equipment. Panthera Brazil is now more ready than ever to protect the habitats of the new generation of jaguars, ocelots and tapirs from the devastating effects of wildfires. In fact, in June, the team quickly extinguished a fire on Transpantaneira road. Fortunately, 2021 was less disastrous, thanks to more rain and a unified effort to mitigate the effects of climate change.

The Pantanal is also recovering in other ways. Over the past decade and a half, jaguar-centric ecotourism has expanded significantly. And while cattle ranching is still the economic foundation in the area, ecotourism has helped change the face

of conservation and the dynamics of many local communities. In addition to adding new value to the protection of jaguars, ecotourism has also provided for a more diverse economy, in which men and women are employed more equitably. Ecotourism took a dramatic hit in the wake of COVID-19, essentially disappearing in 2020. Panthera engaged in community support programs to help smaller communities survive. Ecotourism increased slightly in 2021, and the hope is that it will almost fully rebound in 2022.

Although exceptionally devastating fires are an inevitable consequence of climate change, unpredictable global events are always a possibility — the united front presented by Panthera's scientists, supporters, and community members are building resilience to better protect and defend the Pantanal and future generations of jaguars for years to come.

Above: A fire brigade being hosted by Panthera, Brigada Alto Pantanal-Jofre, gladly accepts a donation of a water tank from SOS Pantanal.

Opposite: Community members are being trained to use fire swatters to safely extinguish flames



American Bobcats

The bobcat is a cryptic, mid-sized carnivore prevalent in North America. Widely exploited for their pelts, typically sourced to international markets, bobcats today are legally hunted in 39 U.S. states, eight Canadian provinces, and Mexico. Trapping is somewhat monitored; thirty-two states and six provinces require mandatory reporting of legal bobcat kills. The remaining states and provinces require state- or province-issued Convention on International Trade in Endangered Species (CITES) tags to export bobcat pelts. Thirteen states and four provinces limit bobcat harvest, although the limits are generous. There is also bobcat trophy hunting in some areas of Mexico, although their status in the country is largely unknown. To date, bobcats have received limited conservation resources and, therefore, effective conservation initiatives are limited.

Panthera is involved in two separate bobcat projects on both coasts of the United States.

The Olympic Peninsula Bobcat Project in Washington studies what appears to be a robust bobcat population. But Panthera's ongoing work with the Lower Elwha Klallam Tribe has illuminated a dark underbelly of active poaching for bobcats and cougars. For these reasons, Panthera has begun undertaking baseline ecological studies of bobcats to build the monitoring data needed to assess the impact of illegal poaching and legal trapping on the local bobcat population. As part of this effort, Panthera plans to expand the Olympic Cougar Project by including bobcats, creating the first multi-species project within its new American Cats Program. Building upon an existing Panthera project enables the team to expand its research efficiently and cost-effectively.

Meanwhile, the Millfarm Bobcat Project takes place in the northern part of the Hudson Valley in New York. In partnership with the Columbia Land Conservancy and more than 15 local landowners, the project aims to examine bobcats' spatial ecology in an eastern rural landscape. The project will develop a replicable monitor protocol to inform bobcat management plans in New York and other states along the eastern seaboard by monitoring bobcat populations using camera traps, GPS collars and genetics.

Olympic Cougar Project

Developed with the Lower Elwha Klallam Tribe, the Olympic Cougar Project studies wild cat movements in Washington's Olympic Peninsula, where cougar populations are increasingly isolated by an interstate highway and the rapidly growing communities nearby.

This year, the Olympic Cougar Project was revolutionized by EarthRanger software, which allows scientists and research teams from six First Nations (the Lower Elwha Klallam, Makah, Jamestown S'Klallam, Port Gamble S'Klallam, Skokomish and Quinault Tribes) to gather a host of information about the area's cougars. Last year, EarthRanger signaled the mating of two collared cats and hope for a new generation — several puma kittens were subsequently born.

EarthRanger builds a visual, analytical display by integrating multiple data types, including live GPS data of pumas wearing collars, Garmin devices carried by project staff, and geofences ranging from Tribal lands to the Olympic National Park to the major highways. Perhaps more importantly, it enables equitable, easy access to all shared information for all project partners, which has resulted in greater involvement and collaborations.

In October 2021, CBS Mornings joined Panthera scientists to recollar a male puma, Omar, using EarthRanger. The segment highlights this remarkable technology, which records the

location of collared pumas every few hours, enabling the team to visualize pumas' migratory paths on top of an area map. Puma Program Director Dr. Mark Elbroch explained to CBS News that GPS collars provide the best data available to determine the health of wild cats. He adds, "we essentially want to know that the Olympic Peninsula is healthy...We live in this ecosystem, and it is healthier, stronger, and more resilient because of the presence of these animals."

Together with the Washington Department of Transportation, the Olympic Cougar Project is working quickly to identify which bridges, underpasses and other infrastructure can be built to enable the safe migration of not only pumas but all wildlife. This project is integral to the larger Olympic ecosystem's ability to remain resilient, beautiful, and healthy long into the future.

100+

Estimated number of common names for the puma — earning the species a World Record — including cougar, mountain lion and panther.

Above: Sara Cendejas-Zarelli, Lower Elwha Klallam Tribe Project Biologist, conducts a small group lesson on camera trap installation and management.

Opposite: Panthera Project Coordinator for Panthera's Small Cat Program Laurel Serieys weighs an anesthetized bobcat as part of the Millfarm Bobcat Project in the Hudson Valley in New York, United States



Publications and Science

PUBLICATIONS OF NOTE

In 2021, Panthera scientists authored over 50 different scientific publications. Some highlights are included here.

COST-EFFECTIVE LION MONITORING IN WEST AFRICA

The W-Arly-Pendjari complex (WAP) protected area in West Africa is the last stronghold for the region's critically endangered lions. A [study](#) published in *Wildlife Biology* and led by Dr. Philipp Henschel, Panthera's Regional Director in West and Central Africa, used animal tracks and scents (a spoor-based survey), combined with prey occupancy data to help establish distribution and identify the threats facing lions and their prey. The results demonstrate that this is both a cost-effective and scalable study design to effectively identify the factors that limit the distribution and abundance of large carnivores and their prey in transboundary protected areas.

SUPPORTING THE FRONT LINES OF CONSERVATION

The men and women on the front lines of conservation — the rangers patrolling the world's remaining protected and conserved areas — are often unrecognized, underappreciated, and under-resourced. They frequently work in dangerous work environments without adequate employment conditions. In two studies published in *Park Stewardship Forum*, researcher Camilla Fritze, Chair of Panthera's Counter Wildlife Crime Unit, and others offer a range of recommendations for building a global professional framework that can be adopted at the national and organizational levels. The ultimate goal is to [develop a ranger sector](#) that is ready to meet the growing coverage of protected and conserved areas, the diversification of the ranger workforce and the increasingly complex demands of this important work.

FACTORS IN LANDSCAPE CORRIDOR EFFECTIVENESS

In an effort to inform local land acquisition and restoration efforts, a [study](#) published in *Biological Conservation* and led by Dr. Laurel Serieys, Project Coordinator for Panthera's Small Cat Program, examined wildlife corridors used by bobcats in California. Specifically, the researchers examined how the natural and man-made features of the landscape impacted the movements of 36 bobcats in a rapidly urbanizing area of central California. The study found that road crossings, vegetative cover, land use and poisons all influence how effective a given corridor is. These factors must be considered and accounted for in overarching efforts to maintain landscape connectivity and conserve critical habitats.

SMALL WILD CATS IN THE PANTANAL

Little is known about the famously cryptic species of small wild cats. A [study](#) published in *Mammalia* and led by Panthera's Dr. Fernando R. Tortato and Rafael Hoogestiejn, documented occurrence information and capture rates on four small wild cat species found in the Brazilian Pantanal: the ocelot, Pampas cat, jaguarundi, southern tiger cat. Ocelots were the most commonly recorded species, while the southern tiger cat was not recorded at all. The researchers suggest that these species' relative rarity may be a result of competition and the practical implications of camera trap surveys, which are typically designed with larger cats in mind.

Genetics

STUDYING THE GENETICS OF LYNX AND PALLAS'S CAT IN KYRGYZSTAN

Rare species management is a conservation priority worldwide, but this task is made difficult by detection errors in population surveys. Both misidentification and missed detections are prevalent in surveys for rare species and, as a result, rare species have uncertain distributions.

Conservation practitioners traditionally use interviews, camera traps, scat collections and GPS collars to estimate wild cat populations and distributions. Yet, for small cat species in remote, rugged habitats, an incredible amount of effort is required to get reliable results. Plus, that level of effort range-wide is logistically unrealistic and prohibitively expensive.

Environmental DNA (eDNA) — or DNA shed from an organism in its environment — coupled with quantitative PCR (qPCR) analyses, has become a reliable and extremely sensitive method for identifying rare species in aquatic and terrestrial ecosystems. Species-specific eDNA assays are highly sensitive and can detect even a few copies of DNA with high reliability, making this an effective method for addressing missed detections and delineating the distributions for rare species. The Small Cat Program is collaborating with Panthera's Snow Leopard and Conservation Genetics Programs to develop and test an eDNA assay (chemical assessment) for Pallas's cats, Eurasian lynxes, and snow leopards; this tool could revolutionize wild cat conservation by improving the quantity and quality of data available.

Above: A Pallas's cat takes note of a camera trap in the Issyk Kul region of Kyrgyzstan

Above (left to right): Panthera scientists measure a lion pugmark (footprint) found in Senegal; Rangers trek through dense undergrowth in Thailand

Opposite: Panthera Conservation Scientist Fernando Tortato and team collect data and safely put a GPS collar on an ocelot in Brazil's Pantanal



Wild Cat Comeback

ADAPTING A POLICE STRATEGY

In April, Panthera partnered with the Netherlands Institute for the Study of Crime and Law Enforcement (NSCR) to publish a guide that outlines how authorities can prevent wildlife crimes by adapting and utilizing problem-oriented policing (POP). The POP approach, which has been successfully used to deter crime by police agencies worldwide, centers on analyzing a crime to identify weak points and then using those weak points to tailor specific interventions. The guide from Panthera and NSCR adapts this approach into a step-by-step process tailored to conservation efforts, showing how a wildlife authority can utilize a problem-and-solution-oriented wildlife protection project.

DISNEY CONSERVATION HERO

Tsewang Namgail, Director and Senior Scientist of our partner organization Snow Leopard Conservancy - India Trust, was honored with a Disney Conservation Hero Award for his crucial work to protect snow leopards in the northern Indian region Ladakh. Like many snow leopard populations, the animals here are threatened primarily by conflict with farmers. Tsewang and his team work closely with students and volunteers to mitigate conflict by building snow leopard-proof corrals to protect livestock, expanding local food production with micro-cafes and establishing community-based tourism like homestays. Tsewang's passion for positively impacting this special place where he grew up has helped grow a community-based

conservation and education program into a model that has been emulated not just in India but across the entire snow leopard range in Asia.

CATMOSPHERE

In 2021, a new kind of nonprofit came on the scene. Founded by Ambassador Reema Bandar Al Saud, Catmosphere aims to raise awareness of Panthera's ongoing work in big cat conservation through inspiring storytelling campaigns. The organization's inaugural campaign, Catwalk, took place in November. More than 27,000 participants of all ages worldwide — including the new generation of young wild cat conservationists — walked or ran up to 7 km in honor of their favorite big cat. Cat lovers worldwide logged more than 150,000 kmf.

2021 IUCN WORLD CONSERVATION CONGRESS

Panthera's attendance at the 2021 IUCN World Conservation Congress. The organization attended in person, and it was the first Congress that Panthera attended as an IUCN member. Dr. Fred Launay, Karen Wood, Fernanda Riberio, Gregory Breton and Alex Godfrey attended and voted as IUCN members on 40 or more motions. Panthera recognizes that we must create an enabling environment and create favorable policies that allow wild cats to thrive to enact lasting change.

#WILDCATCOMEBACK CAMPAIGN LEADS TO THE NEXT GENERATION

\$200K Total raised between December 15 and December 31, 2021

\$150K Generous match from a Panthera board member

80 Percent of gifts made by existing Panthera supporters

25K Total post engagement across all platforms during the campaign

Above: A corral built to protect local livestock in the northern region of Ladakh, India

Opposite: Panthera staff members battling the wildfires encroaching upon Panthera's Jofre Velho Ranch

Investing in the Next Generation

A bobcat investigates a camera trap in the Olympic Peninsula, Washington State, United States

PANTHERA'S GRANT PROGRAMS

WINSTON COBB MEMORIAL FELLOWSHIP

Supports field-based internships for early-career conservationists on projects led by Panthera or partners

Allison Flores
Assisted with projects for Panthera Belize & Panthera Honduras

SMALL CAT ACTION FUND (SCAF)

Supports conservation and research on many of the 33 small cat species

Erin Phillips
Population status, interactions, and conservation of three sympatric small cats in a recovering African savanna

Délagnon Assou
Establishing the presence, distribution, and current status of the African golden cat in Togo

Amaia Autor Cortés
Assessing the impact of a 70-year-old highway on oncilla's spatial ecology

Buyandelger Suuri
Assessing Pallas's cat density using camera trap data in the eastern Mongolian steppe

Jan Schipper
The end of the road: assessing impacts of US/MX border infrastructure on the northernmost populations of ocelot.

Yonten Jamtsho
Using occupancy model to understand Asiatic golden cat *Catopuma temminckii* distribution in Bhutan's Jigme Dorji National Park

Ilara Agostini
Environmental and anthropogenic factors affecting occupancy and habitat use of the elusive kodkod, the smallest cat in the Neotropics: a preliminary study in southwestern Argentina.

Nadine Josie Holmes
Quantitative and qualitative methods for modelling occupancy of margay (*Leopardus wiedii*) and other mesopredators in agricultural-lowland rainforest landscapes, with applications for community education in migrant communities, Las Piedras, Madre de Dios, Peru

Michelle Marie Schroeder (renewal)
Efficacy of Scat Detection Dogs and Fecal DNA Techniques for Black-Footed Cat (*Felis nigripes*) Research

Torrey Rodgers (carryover from 2020)
Investigation of Central American oncilla distribution, population, conservation, and taxonomic status

SABIN SNOW LEOPARD GRANT

Supports conservation efforts on the snow leopard in Asia

Madhu Chetri
Human land-use impacts on snow leopards in the central Himalayas, Nepal

Rishi Kumar Sharma
Securing the foundation: developing a comprehensive rangelands conservation framework for people and wildlife in Ladakh

Sherry Young
Mountain Ecosystem Resilience: Impacts of climate change on the ecology of the Naryn State Reserve, Kyrgyzstan.

Jiahui Wang
Impacts of human activities on distribution and abundance of snow leopard in eastern Tibetan Plateau: a case study in Mount Bujia

Tommy Franklin
Developing eDNA Tools for Snow Leopard Conservation

KAPLAN GRADUATE AWARDS

Supports conservation efforts of outstanding, early career biology graduate students working on all wild felids in situ, with a particular focus on threatened species

Anna Kusler
Connectivity, conservation, and ecology of cheetahs in the KAZA TFCA

Charlotte Krag
Lions and rangers - The effect of increased protection and predator reintroduction on prey species

Connor O'Malley
Predicting mountain lion resource selection and abundance in North America

Elias José Gordillo Chávez
Conservation preferences of ranchers: Use of choice models in ranching areas with jaguar and puma presence in southwestern Campeche, Mexico.

Fleur Visser
The conservation of the critically endangered lion *Panthera leo* (Linnaeus, 1758) of West Africa: population status and management recommendations.

Rocio Quimey Gomez
The jaguar is back: success, trophic ecology and cascading effects of the very first reintroduced jaguars of the world

Travis King
Camera trapping as a basis for multi-carnivore connectivity and corridor assessment in Honduras

Tsyon Asfaw Gizaw
Conservation of Large Carnivores (lion (*Panthera leo*), leopard (*Panthera pardus*), cheetahs (*Acinonyx jubatus*), African wild dog (*Lycaon pictus*), and spotted hyaena (*Crocuta crocuta*) in Ethiopia.





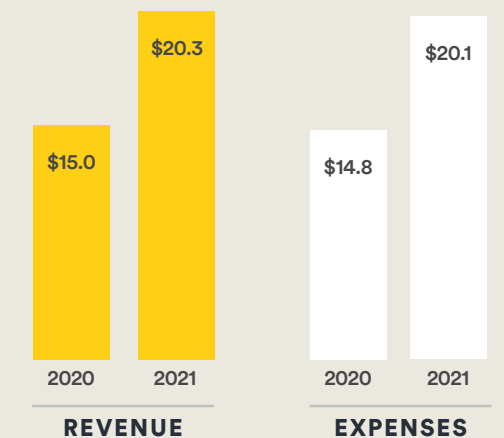
2021 Financial Summary

In 2021, the organization's total revenue grew by nearly one-third, ushering in a period of expansion and impact for our programs.

Furthermore, after advancing core systems, including financial management and human resources, Panthera is even stronger than before. Our culture of ongoing continuous improvement entails a constant evaluation of organizational tools, from management to administration, to ensure that we maximize donor dollars. We're poised for continued significant growth in 2022 in our fundraising and our impact, and we have you to thank.

Your unwavering support advances our vision of creating a world in which wild cats and their cubs thrive in healthy, natural and developed landscapes that sustain people and biodiversity. We are also grateful to our foundation, government and corporate funders whose support sustains our targeted conservation projects around the globe.

KEY FINANCIAL FIGURES* (\$ millions)



* Unaudited numbers

Ways to Give

TOGETHER WE CAN SAVE WILD CATS

Wild cats need your help to ensure their long-term survival and the health of their habitats. Your support funds ranger patrols to protect targeted wild cat species; disrupts the illegal wildlife trade and poaching; and innovates new conservation solutions to combat emerging threats like wildfires and extreme weather events. Please consider making a gift, setting up a recurring donation or including Panthera in your estate plan.

MAKE A GIFT

Panthera is a 501(c)(3) non-profit organization. Your donation is tax-deductible in the United States to the fullest extent of the law.

- Visit panthera.org/donate to make a secure online gift, set up a recurring donation or check if your employer will match your gift.
- In the United Kingdom, give to us at justgiving.com/panthera/donate.
- If you are in France, give to us at panthera.org/donate/france.
- For all other countries, please contact us at donate@panthera.org.

To give by check, please make it payable to 'Panthera Corporation' and mail to:

Panthera c/o Development
8 West 40th Street, 18th Floor
New York, NY 10018

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Above (left to right): Bárbara Escobar, Panthera Guatemala's Country Coordinator, collects data in the field; Xia Stevens, Panthera's SMART Program Manager, with a female lion wearing a GPS collar.

Opposite: Wai Yee Lam, Panthera's Country Director, Malaysia, conducts a training session for rangers in the Taman Negara National Park



A female jaguar and her cub hunting in the reeds of the Brazilian Pantanal

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A curious ocelot inspects a camera trap in Costa Rica

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