One World, One Health™
A WCS Health Programs Report 2016
WCS saves wildlife and wild places worldwide through science, conservation action, education, and inspiring people to value nature.

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

WCS was the first conservation organization with a dedicated team of wildlife veterinarians and other health professionals deployed around the world.

Our Health Programs Progress Report provides updates and insights on core health contributions to conservation. Together, we are securing a future for wildlife and wild places.

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PROGRAM UPDATES

New WHP Executive Director

Dr. Chris Walzer has been hired as our new Wildlife Health Program Executive Director. Chris graduated from the University of Veterinary Medicine, Vienna, Austria, where he subsequently also received his Dr. med. vet. degree. He has worked in private practice, as a zoo veterinarian, Vice-Director for the Salzburg Zoo, and Vice-Director of the University of Veterinary Medicine, Vienna’s Research Institute of Wildlife Ecology. He is a Diplomate in the European College of Zoological Medicine (Wildlife Population Health), recognized as a Certified Specialist in Zoo and Wildlife Medicine and Animal Welfare and Husbandry by the Austrian Chamber of Veterinary Surgeons, and a Member of the IUCN’s Conservation Breeding Specialist and Wildlife Health Specialist Groups. Chris is an endowed professor at the University of Veterinary Medicine, Vienna, Austria, and Chair for Zoological Medicine and In-situ Conservation.

Chris is trilingual (English, German, French) and is particularly interested in conservation in challenging remote and hostile montane ecosystems and throughout Asia where he has worked extensively with the WCS. He has published widely and has received complex EU funding for collaborative work throughout the Alps, Iran, and Mongolia. He received the Distinguished Environmentalist Award from the Mongolian Ministry of Nature and Environment in recognition of his contributions to Mongolian conservation. Chris has served as a consultant in wildlife matters for various organizations such as WWF, UNDP, World Bank, WCS,
Panthera, OIKOS, SOS Rhino, German Ministry of Environment, ALPARC and other GOs, NGOs and universities, and international zoological institutions. We are thrilled to welcome Chris to WCS and look forward to exciting new opportunities, accomplishments, and health contributions to conservation by the Wildlife Health Program under his leadership.

Celebrating 100th anniversary of the First Animal Hospital at the Bronx Zoo

The Bronx Zoo has been a trailblazer in animal care and welfare throughout its history. In 2016, WCS’s Zoological Health Program celebrated the 100th anniversary of the opening of one of the first on-site zoo animal hospitals in the world. The original 2,111-square-foot facility included a surgical suite, animal holding areas, and a morgue. As the animal health program expanded, its needs outgrew the original facility. A new animal hospital, the Wildlife Health
Center, opened in 1985 with 10 times the space and all the original functionality plus updated capacities. A separate Quarantine Facility was later constructed. The Wildlife Health Center is a renowned teaching and research hospital in which veterinary students train as part of their course work, and veterinary residents in clinical medicine and pathology receive advanced training, all learning from WCS’s outstanding medical, surgical, and pathology staff. WCS’s commitment to wildlife health has expanded from the care of zoo and aquarium animals to wildlife across the globe. From the Grand Cayman Islands to Congo to the Russian Far East, WCS field based health staff are investigating and diagnosing a variety of illnesses threatening wildlife, and in some cases people as well.
CUTTING EDGE CARE

Gorilla Glaucoma Treatment

Our zoo veterinary clinicians are the ultimate general practitioners. We provide care for all species and all their medical problems. On occasion we also utilize the services of expert veterinary, medical, or dental specialists for particularly unusual or challenging cases. Ophthalmology is one of the specialties for which we’ve most frequently enlisted such expertise. Dr. John Sapienza, a board certified veterinary ophthalmologist, is one of our longest serving consultants, having helped us whenever called upon for over 20 years. When one of our silverback Western lowland gorillas (Gorilla gorilla gorilla) “Ntondo” developed significant visual loss, he was immobilized for evaluation. John diagnosed glaucoma with markedly elevated intra-ocular pressure and optic nerve degeneration. Our consulting MD cardiologist Dr. Lori Croft also performed an opportunistic cardiac evaluation while Ntondo was anesthetized, since heart disease is a significant cause of illness and death in mature male gorillas. Although mild cardiac changes were identified, they were not clinically significant. John later performed laser surgery to treat the glaucoma using a new model laser surgery unit designed for this purpose, kindly provided by the IRIDEX Company. The surgery was successful, and although he has significant vision loss, Ntondo is more comfortable and the progression of the disease has been halted, preserving his vision.
RESPONDING TO WILDLIFE CONFISCATIONS

Myanmar Turtle Confiscation Care

The big-headed turtle (*Platysternon megacephalum*) is an endangered freshwater turtle with a limited range in Southeast Asia and China. Big-headed turtles are disappearing from the wild due to factors including sale for human consumption, the pet trade, and habitat loss.

In November 2016, the Myanmar Forestry Department confiscated nearly 900 big-headed turtles from the illegal trade. The WCS Myanmar program, in conjunction with the Turtle Survival Alliance (TSA) managed the confiscation. TSA’s Director of Turtle Conservation, Kalyar Platt, led the response efforts along with WCS in-country staff veterinarian Dr. Tint Lwin and turtle conservation researcher Me Me Soe. The Zoological Health Program responders included clinical veterinarian Dr. Susie Bartlett, pathologist Dr. Charlotte Hollinger, and veterinary technician Ihsaan Sebro. They brought with them much needed medical supplies, treated ill turtles, collected samples for disease testing, and performed necropsies on those that died. Over the course of a week, the turtles responded well to therapy, with a dramatic decline in mortality. The team also trained local forestry scientists in animal care and diagnostic procedures to support future turtle health work. More than 300 samples have been exported to the US for further evaluation by histology and ancillary testing at the Wildlife Health Center.
Madagascar Confiscated Tortoise Disease Testing

Zoological Health Program staff partnered with the Turtle Survival Alliance for disease testing of confiscated endemic radiated (*Astrochelys radiata*), plowshare (*Astrochelys yniphora*), and spider (*Pyxis arachnoides*) tortoises in Madagascar. When animals are confiscated, especially when they have left their native range and are confiscated in other countries and returned, disease risks have to be addressed as part of the decisions regarding appropriate placement of those animals. This recent response was to specifically test critically endangered plowshare tortoises, the wild population of which has experienced a recent catastrophic and precipitous decline due to poaching, and may now number less than 100. These Malagasy tortoises had been confiscated in India and were returned to Madagascar. Dr. Robert Moore performed and coordinated sampling the tortoises and disease testing will be conducted in our Molecular Laboratory at the Wildlife Health Center.

Dr. Robert Moore (L) and TSA-Madagascar Project Director Herilala Randriamahazo (R) examining a confiscated radiated tortoise in Madagascar. Robert P. Moore © WCS
US Fish & Wildlife Turtle Confiscation

The USFWS confiscated 136 turtles of 20 species in New York City as part of a multi-state, multi-country enforcement action. WCS was asked, and agreed, to hold these turtles and tortoises while the case is in litigation. The turtles arrived in May and are housed in the Quarantine Facility occupying one ward for aquatic species and one for terrestrial species. The resolution of the case may take considerable time so we are prepared for long term housing. Although the turtles overall were in good condition, some illnesses and deaths have occurred which is not surprising considering the large number of turtles, the variety of species, and the uncertain origin and sub-optimal care provided before arrival at WCS. Our veterinarians, veterinary technicians, and animal care staff, along with the staff of the Department of Herpetology, are dedicated to providing the best care to these species for the duration of their stay.
DISEASE SURVEILLANCE

High Altitude Amphibian Disease Screening

Dr. Tracie Seimon continued her long-term study of high altitude amphibian “chytrid” disease in the Andes as part of ongoing research on amphibian health, infection, and climate change. This year was especially important due to the very strong El Niño resulting in warmer temperatures that accelerated the melting of glaciers and even caused creation of new high altitude lakes. Despite the warmer temperatures, snow storms and hail (and lightning) occurred almost every day. The study identified mostly marbled four-eyed frogs (*Pleurodema marmoratum*) and some marbled water frog tadpoles (*Telmatobius marmoratus*) which were sampled. Water samples were also collected by Tracie’s husband Anton (a climate scientist formerly with WCS) as were precipitation measurements from several alpaca (*Vicuna pacos*) herders participating in a citizen science program through Appalachian State University. One observer, Pedro, who
lives above 5,000m (16,400 ft.), recorded rain on 6 days over a three week period. He and his family have lived there for over 3 generations, and reported that until recently liquid precipitation never occurred. It is also suspected that rain and warmer temperatures are factors in diarrhea outbreaks that have led to the death of young alpacas over the past few months. Andean condors (Vultur gryphus), which have been almost totally absent the past decade, are now being seen frequently, perhaps due to the more widespread camelid die-offs providing a food source for the condors.

Western North American Bats Threatened by WNS

WCS-Canada biologist Dr. Cori Lausen and Dr. Sarah Olson from the Wildlife Health Program have teamed up to address the threat of white-nose syndrome to western North American bats.

White-nose syndrome (WNS) is a disease of hibernating bats that has caused unprecedented mortality (>90% for some species) in eastern North American bats. The fungal pathogen, Pseudogymnoascus destructans, has spread from a single site in New York in 2006 to 29 states and five Canadian provinces and continues to spread westward. Western North America has greater bat species diversity than the East (19 species in the East, 31 species in the West) emphasizing the importance of understanding the potential impacts of the disease in the West.
Cori and Sarah are working with a team of scientists to use a bioenergetics model to address WNS species susceptibility. The model was developed from data about the northeastern populations. Presently, little is known about western bats due to their mountainous, less accessible and less urbanized habitats. We currently lack in-depth physiological and behavioral information on hibernation of western species and populations because there are few known large hibernacula as are typically found in the East. The team is working diligently to address these gaps in order to proactively strengthen bat conservation and mitigate WNS threats.

Molecular Testing for Canine Distemper Virus in Russia

Dr. Nadya Sulikhan, our collaborator at the Institute for Biology and Soil Sciences in the Russian Far East, has been testing samples from a young, wild, critically endangered Amur leopard (Panthera pardus orientalis) found beside a dirt road by inspectors of Land of the Leopard National Park. The leopard was able to walk, but was thin and exhibited abnormal behavior, including allowing close approach by people. She was immobilized by WCS staff Sasha Rybin, cared for at a rehabilitation facility, and later euthanized because of the severity of her illness. Molecular analysis of brain and lung tissue confirmed canine distemper virus (CDV) with a DNA sequence demonstrating a 99-100% match with several arctic CDV strains identified from Russian carnivores. This is the first time Dr. Nadya Sulikhan performing molecular testing at the Institute for Biology and Soil Sciences in the Russian Far East. Tracie Seimon © WCS
CDV has been diagnosed as a medical problem and cause of death in a wild, free-ranging Amur leopard. It’s particularly rewarding that Nadya is involved in this pioneering work, as she has had the benefit of training from WCS’s Drs. Tracie Seimon and Martin Gilbert, both in the field in Russia and at the Wildlife Health Center in New York.

Mass Mortality of Saiga Antelope

During the 2015 spring calving season over half the world’s critically endangered saiga antelope (*Saiga tatarica*) died in Kazakhstan (>200,000 animals; mostly females and calves).

In response to this massive die-off, the international community came together in Tashkent, Uzbekistan to focus on ways to save the species from the pressures that threaten its survival. Disease is suspected as the cause of the die-off, perhaps coupled with external factors, but the exact cause remains a mystery. Under the auspices of the International Convention on Migratory Species, delegates participated from all the countries in which saiga remain (Russia, Kazakhstan, Uzbekistan, and Mongolia) as well as China where they used to exist but no longer...
do. All are signatories to a Memorandum of Understanding for Saiga Conservation. The focus of the meeting was to address disease and other threats to saiga, including poaching and development. The WCS delegation included staff from our Asia, Mongolia, Zoological and Wildlife Health Programs. Dr. D McAloose gave an overview of large-scale mortality events in other species, and WCS’s role in previous wildlife disease investigations. Other WCS presentations were given by Mr. Peter Zahler who spoke about significant infrastructure projects that compromise saiga conservation, with construction of roads, railroads, and border fences, threatening to block the great migrations that saiga undertake in the region’s harsh steppe; Dr. Dale Miquelle discussed the application of SMART software for their conservation; and our Mongolian colleagues reported on the species’ population status in Mongolia. The group agreed upon a five-year work plan that includes the need to more closely monitor and ramp up research on saiga health and to determine if there is a way to prevent future die-offs of this endangered species, increase anti-poaching efforts, and address the rapid increase in regional development.

The LACANET ‘One Health’ Project in Lao PDR & Cambodia

WCS has completed the second year of the European Union-funded LACANET (Lao PDR-Cambodia One Health Surveillance and Laboratory Network) project in Cambodia and Lao PDR. Significant progress has been made to establish wildlife disease surveillance mechanisms in both countries, with the surveillance network structured around protected areas co-managed by WCS. The team, led by Wildlife Health’s Dr. Mathieu Pruvot, has grown and includes university students and government forestry and animal health staff. Existing field capacity (wildlife monitoring teams and forest rangers) contribute to the reporting and submission of samples from confiscated wildlife or dead animals.
The network also collaborates with wildlife rescue centers that take in confiscated, rescued, or sick wild animals. The surveillance system was piloted in WCS managed landscapes, and has now expanded in collaboration with other conservation NGOs. In Lao PDR, close collaboration with forestry and animal health authorities also enables health surveillance in wildlife markets during routine enforcement activities. The project has led to significant progress in highlighting regional health and conservation issues. For instance, wildlife deaths investigated in Cambodia revealed that poisoning of forest waterholes with pesticides was responsible for the deaths of wildlife, as well as the poisoning of humans and domestic animals. Although this practice has been suspected for a long time to be a significant threat to regional conservation, this was the first confirmed and fully documented case, putting this issue at the forefront of health and conservation policy discussions.

In addition to surveillance, the project also focuses on research of high significance for health and conservation. In Cambodia, a land-use change study is looking at the effect of deforestation on the ecology of rodents, vectors and pathogens, and the potential impact on key priority zoonotic diseases. In Lao PDR, the team is focused on the zoonotic risk posed by wildlife trade and continues to generate important information on the volume of wildlife traded in markets and the potential health risks. Finally, capacity building is an integral part of these activities, particularly for maintaining a strong surveillance network and this has included 10 training sessions in Cambodia and Lao PDR.
PREDICT-2 in Vietnam and Mongolia

PREDICT, a project of USAID’s Emerging Pandemic Threats (EPT) program, was initiated in 2009 to strengthen global capacity for detection and discovery of zoonotic viruses with pandemic potential. Now working with partners in 31 countries, PREDICT is continuing to build platforms for disease surveillance and for identifying and monitoring zoonotic pathogens. Using the One Health approach, the project is investigating the behaviors, practices, and ecological and biological factors driving disease emergence, transmission, and spread. Through these efforts, PREDICT aims to improve global disease recognition and develop strategies and policy recommendations to minimize pandemic risk.

PREDICT held its first global kick-off meeting in Dubai, with 120 attendees from 30 countries including USAID, CDC, and FAO representing the wildlife, domestic animal, and human health sectors. WCS was well represented, led by Dr. Amanda Fine our program lead, and joined by our partners from the Mongolian State Central Veterinary Laboratory, and the Vietnamese Department of Animal Health, National Institute of Hygiene and Epidemiology, Vietnam National University of Agriculture, and Regional Animal Health Office No. 6. Participants discussed animal and human surveillance, laboratory development, capacity development, and information management. The meeting was also a valuable opportunity for participants within the same region to identify and discuss priorities and challenges.

In Vietnam, the Wildlife Health team has continued conducting surveillance and holding partner meetings. The team has collected samples from confiscated pangolins at the Save Vietnam’s Wildlife/Carnivore and Pangolin Conservation Program rescue center in Cuc Phuong National Park and from animals confiscated at a restaurant and warehouse at a major transit point for wildlife moving between Cambodia and Vietnam, an important node in the wildlife trade value chain in the region.
The Vietnamese National Institute of Hygiene and Epidemiology joined PREDICT thereby formalizing WCS’s engagement with the Ministry of Health in Vietnam. This is the premier public health research institute in Vietnam, a national reference laboratory, and one of two National Influenza Centers in the country. This partnership is an important step as our team begins conducting site assessments and triangulated surveillance at high-risk interfaces for zoonotic disease transmission.

In Mongolia, the PREDICT Project Launch Workshop was conducted in April. This is the first time PREDICT activities will be conducted in Mongolia, and the work will focus on avian influenza in wild birds, led by WCS’s Dr. Enkhtuvshin Shiilegdamba. National and international organizations in attendance at the launch included the Veterinary and Animal Breeding Agency of the Ministry of Food and Agriculture, Ministry of Environment, Green Development and Tourism, National Center for Communicable Diseases and National Human Influenza Center, Institute of Biology, National University of Mongolia, Field Epidemiology Center, National Center for Zoonotic Diseases, Veterinary and Biotechnology School of the National Agricultural University, WHO, FAO, the U.S. Embassy, and the USAID Mission. Project activities planned include wild bird surveillance in Central, Northern and Eastern Mongolia informed by input from key avian influenza surveillance stakeholders in the environmental, agricultural and public health sectors. During the launch meeting,
stakeholders also explored additional opportunities for collaboration with the National Human Influenza Center at the National Center for Communicable Diseases within the Ministry of Health and Sports. During the workshop, participants also prepared necessary plans for responding to a potential morbidity or mortality event in wild birds and conducting an outbreak investigation, in advance of the spring bird migration season.
SPECIES CONSERVATION

Free-ranging Shark Research

As part of the New York Aquarium’s NY Seascape initiative, we conduct our own local marine conservation initiatives and partner with others to do so. These activities advance our understanding of the conservation status and priorities of species and their environment in and around the NY Bight, which extends from Cape May Inlet in New Jersey to Montauk Point on the eastern tip of Long Island.

Among recent interesting activities and accomplishments was the identification of a nursery area for sand tiger sharks (*Carcharias taurus*) in Long Island’s Great South Bay where we have caught and acoustically tagged 39 juvenile sand tiger sharks. An acoustic receiver array in the Great South Bay detects the presence and habitat use of these sharks. During examination we collect morphometrics and biologic samples. Sharks ranged from young of the year to 4 years old.
old. Fifteen of the sharks have returned multiple years to the Great South Bay, supporting the premise that the area is an important juvenile nursery ground, and allowing collection of growth data and health samples over time.

We also joined the Atlantic Acoustic Cooperative Telemetry network, which allows researchers along the Atlantic coast to share information about animals that are not in their own studies. This lets researchers know when and where their study animals have shown up on other researchers’ acoustic receiver arrays and thus allows researchers to track their study animals along the entire Atlantic US coast from which we learned that 20 of the sharks we tagged were spending significant time in Delaware Bay.

Identification of critical habitat such as shark nursery areas is integral to their protection and conservation. This priority was recently advanced through partnering with OCEARCH – a leader in generating scientific data related to studies of keystone marine species such as the white or Atlantic white shark, commonly referred to as the great white shark (*Carcharodon carcharias*). The scientific team included representatives of the National Oceanic and Atmospheric Administration, Florida Atlantic University, New Jersey Institute of Technology, Stony Brook University, the Long Island Shark Collaborative, and WCS. The expedition off the Long Island coast exceeded all expectations with the tagging and examination of nine white sharks born this year, each only 4 to 5 feet long. Each received satellite and acoustic tags to track habitat use and movements patterns during this critical life stage. The animals also had measurements and samples collected for aging, morphometrics, population genetics, isotope and health analysis. WCS Aquatic Health Veterinarian Dr. Harley Newton collected the blood samples from each shark and ran an onboard laboratory to perform testing to assess shark health and physiological changes associated with the procedures. This is the first time young white sharks have been tagged off the Atlantic coast. This study is expected to reveal previously unknown and critically important life history characteristics of great white sharks, the apex predators of the oceans, so that they can be better protected and preserved.
Zoological Health Program in Grand Cayman, Cayman Islands

Dr. Paul P. Calle, accompanied by New York Aquarium veterinary technician Dalia Ferguson, led a medical team to Grand Cayman, Cayman Islands to join volunteers and staff from the National Trust for the Cayman Islands Blue Iguana Recovery Programme and the Cayman Islands Department of the Environment. Since 2001 WCS has provided veterinary support for the program. Activities have included pre-release evaluations, health assessments, and annual examinations of Grand Cayman iguanas (*Cyclura lewisi*) at the breeding facility and free-ranging iguanas. Project accomplishments include determining baseline health parameters and medical care as necessary. Saint Mathew’s University Veterinary School (SMU) generously provides their laboratory for sample processing in Grand Cayman, and samples are also exported to the US for additional testing.
Last year dogs killed most of the wild breeding adults in the Queen Elizabeth II Botanic Park at the same time as wild iguanas died of a disease outbreak. Unfortunately this year the disease recurred and spread to animals in the captive colony. This has resulted in a serious setback to the recovery of the wild population. Ongoing analyses to determine the source of the infection will enable better management of this infectious disease risk to the species recovery. While we believe all these obstacles can be overcome and resolved in time, the events of the last two years have postponed achievement of the species population recovery goals. Currently construction of a fence around the park to protect from dogs is ongoing and samples imported to the Wildlife Health Center will aid in determining the cause of the infectious disease.

Yangtze Giant Softshell Turtle Artificial Insemination

The Yangtze giant softshell turtle (*Rafetus swinhoei*) is the most critically endangered turtle in the world, listed at the top of the World Conservation Union’s Red List. There are only three known individuals left in the world, one in Vietnam (of uncertain sex) and a breeding pair at the Suzhou Zoo in China, with both of these believed to be more than 100 years old.

WCS has contributed to the conservation of this species for over ten years, with Dr. Lu Shunqing (WCS China, coordinator of the *Rafetus swinhoei*...
breeding program) serving a key role working with Dr. Gerald Kuchling, (the Turtle Survival Alliance (TSA) Rafetus breeding program leader, in establishing breeding agreements between the turtle owners, the Changsha and Suzhou Zoos, the China Zoo Association, and the TSA.

A reproductive evaluation was conducted in the spring of 2015 by a team led by Gerald, which included staff from the Changsha and Suzhou Zoos, San Diego Zoo Global, the TSA, and WCS. The examination determined that the cause of the infertility was due to a penile abnormality that prevents normal breeding, so the team performed artificial insemination which unfortunately did not produce fertile eggs, and an additional attempt in 2016 was also not successful. With natural breeding unlikely, artificial insemination continues to be the last and best hope for this species survival, and we will continue our efforts to achieve success.

**Bengal Tiger Health in India**

India is home to more than 50% of the global tiger population, yet almost nothing is known of the health of free-ranging Bengal tigers (*Panthera tigris tigris*). To address this, we have recruited Dr. Dharmaveer Shetty (Dharma), an Indian veterinarian and PhD student with the University of California, Davis, to perform the first holistic study of large carnivore health in India. Following the recognition of the threat that canine distemper virus (CDV) represents for Russia’s tigers, there have been several unconfirmed reports of CDV cases in India. To thoroughly assess the status of CDV in India, Dharma has been building a network of collaborating tiger researchers who have agreed to contribute archived samples for laboratory testing. Dharma is now proceeding with these analyses at a laboratory within India.
But just as the ecology of tigers in India is quite different from those found in Russia, so too might be the panoply of infectious pathogens. To assess this, Dharma has prioritized a list of five additional potential pathogens of tigers in India and will be analyzing his samples to determine their presence and assess their impact. These include carnivore protoparvovirus 1, rabies, *Toxoplasma*, *Babesia* and *Trypanosoma*. In the longer term, our objective will be to work with Dharma’s network of tiger researchers to develop an ongoing surveillance program focused on the health of India’s tigers and other large carnivores.

**Snow Leopards and Saiga in Kazakhstan and Afghanistan**

In June 2016, Dr. Stephane Ostrowski traveled to Kazakhstan for a consultancy mission commissioned by the Frankfurt Zoological Society. The main objectives were to evaluate the Altyn Dala Conservation Initiative on disease risk for the critically endangered saiga antelope
(Saiga tatarica), specifically: (1) determine reasons for decline of saiga antelopes; (2) that the causes of the mass die off of ca. 200,000 saiga antelopes in May 2015 has been addressed sufficiently; and (3) have the right measures (e.g. appropriate research) been undertaken regarding the mass die-offs. Stephane conducted a series of principal stakeholder interviews with those involved in Kazakhstan saiga health monitoring. His evaluation will also be informed by reports, documents and e-interviews with saiga conservation and health experts in Europe.

In 2016 WCS initiated snow leopard (Panthera uncia) captures in the Wakhan National Park in Afghanistan, sponsored by a grant from the National Geographic Society. The objectives are to capture 1-2 adult snow leopards and fit them with satellite radio-collars to study their range use, predator habits, and behavior. Data from these two collared individuals should add to the dataset already collected from four snow leopards collared from 2012-2014. Ultimately the study will enable us to develop geospatial models of snow leopard preferred habitats in the Hindu Kush mountain range. Stephane and Dr. Ali Madad Rajabi are leading the operation.

Building Capacity in Iran: Wildlife Health Work on Cheetahs and Leopards

WCS is committed to saving the highly endangered Asiatic cheetah (Acinonyx jubatus venaticus) in Iran, of which only 60 to 100 remain. Iran considers the cheetah an important part of its natural and cultural heritage, and the species has become a symbol of the country’s conservation efforts. Since 2001, WCS, at the invitation of the Government of Iran, has been working to gain a sound understanding of the ecology, behavior, and health of the cheetah and associated carnivore species in Iran through advanced research, capacity building, and monitoring initiatives.

Previous work by our staff in Iran included Asiatic cheetah capture and radio-collaring, during which two were successfully captured, anesthetized and collared, providing the first
comprehensive information on movements and habitat use ever collected for this species. A series of workshops were organized for Iranian veterinarians and biologists on wildlife immobilization, field necropsy, and disease risk assessment at the wildlife-livestock interface. WCS also provided the Department of Environment (DoE) with expertise and technical assistance to investigate and manage disease outbreaks in wild goats, health screening of translocated gazelles, control of infectious diseases in captive wildlife (glanders in tigers), and necropsies of cheetahs and prey. These activities were all developed to build the capacity of Iranian wildlife health professionals. Recently, WCS has worked on the production of the first Persian language manual on wildlife diseases for dissemination among local wildlife health experts, biologists, and students.

![Dr. Stephane Ostrowski with colleagues in Iran preparing to necropsy a Persian leopard © Dr. Iman Memarian](image)

Dr. Stephane Ostrowski has been implementing WCS wildlife health work in Iran since 2007. During a recent visit, Stephane was invited by the Central Bureau of the DoE to carry out an ‘independent expert’ necropsy of a radio-collared Persian leopard (*Panthera pardus saxicolor*).
Because this study was one of the first telemetry studies ever carried out in Iran, the leopard’s death triggered wide interest from the local news agencies and initiated a passionate debate via blogs and the web on whether telemetry was safe for use in wildlife studies. The result of the necropsy was expected to have a significant impact on whether the DoE would allow any further telemetry studies in the country. The necropsy found that the female leopard had been killed by a carnivore of larger size, such as a male leopard, and did not support that the capture episode or the radio-collar itself caused the animal’s death.

Wildlife disease is an emerging animal health discipline in Iran, one of increasing interest to health professionals and the public. Through our efforts to save the last remaining population of cheetahs in Asia, WCS also contributes to highlighting the importance of an integrative approach to health and the environment, and reinforces standards of ethically responsible conservation science across Iranian society.

Thank you for helping us save wildlife and wild places around the globe
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