

NOTES FROM THE FIELD

WCS scientists support jaguar recovery efforts in Arizona and New Mexico

The jaguar has captured the human imagination for ages. In some cultures, it is believed that shamans could transform into jaguars. The ancient Mayans believed the big cat's spotted coat represented the night sky. People of the Amazon saw in the jaguar's shiny, reflective eyes proof of its connection to the spiritual world.

Despite this potent symbolism, humans have directly killed jaguars, depleted their prey, and destroyed their habitat. The result has been a nearly 50 percent reduction in the geographical range of jaguars in the last 100 years. In contemporary times, jaguar populations are found in scattered regions between Northern Argentina and Northern Mexico, but some people imagine jaguars reoccupying their entire historic range: from Southern Argentina to the Southwestern United States. In the Southwestern U.S., this is now more than just a dream: today, the Wildlife Conservation Society (WCS) is applying decades of field experience protecting jaguars in South and Central America to inform and assist with the recovery of this wild cat in Arizona and New Mexico.

WCS scientists have been working with the U.S. Fish and Wildlife Service (FWS) to guide efforts to recover jaguars in Arizona and New Mexico. This collaboration began in 2011 when WCS scientists Dr. Eric Sanderson and Mr. Kim Fisher enabled the FWS Jaguar Recovery Team to develop and utilize the most complete digital database of jaguar observations in Mexico and the U.S., generating habitat models that estimated the potential distribution of jaguars and the carrying capacity of the recovery region. Since then, under the leadership of Dr. John Polisar and Dr. Sean Matthews, WCS has reviewed field survey and monitoring protocols and is developing recommended field monitoring protocols to guide FWS recovery planning efforts. Most recently, WCS scientists with expertise in habitat mapping and the field of "road ecology" were contracted by FWS to conduct a review of mitigation measures to facilitate safe passage of jaguar across roads and critical habitat corridors where these measures can most effectively reduce impacts of transportation infrastructure on jaguars in Arizona, New Mexico, and Northern Mexico.

Having implemented projects to protect jaguars and people living with jaguars in Mexico, Guatemala, Belize, Honduras, Nicaragua, Costa Rica, Panama, Venezuela, Ecuador, Bolivia, and Brazil, WCS brings an array of expertise and understanding to the FWS process of establishing recovery plans for jaguars in the Southwestern U.S. WCS's Jaguar Conservation Program (JCP) establishes priorities for jaguar conservation and advances this work through partnerships with national protected areas, wildlife agency personnel, and local people (ranchers, rural communities, indigenous associations) in 11 countries. Our program emphasizes education and training, field evaluations of jaguar and prey status, and planning for the future. The JCP, led by Dr. John Polisar, has a solid record of successful field work, having completed 84 jaguar surveys in remote and challenging study areas across a diverse range of habitats ranging from 3,000 m above sea level to the Amazonian and Caribbean lowlands. Beyond monitoring populations, the JCP focuses on identifying key core areas and corridors in need of improved protection based on field data obtained with local and national cooperation. WCS is pleased to apply our expertise and experience to support FWS in their efforts to restore this magnificent wild cat to the northern extent of its historic range in the Southwestern U.S.



WCS uses remotely-triggered cameras and statistical procedures to estimate jaguar population sizes in South and Central America. This jaguar was photographed in Guatemala.



WHAT DOES THE FUTURE HOLD FOR THE WILDERNESS OF NORTHERN ONTARIO?

—Reprinted from “On the Wild Side,” WCS Canada’s e-newsletter

WCS Canada is calling for sustainable development planning in Northern Ontario by modeling how wildlife may decline over the next 50 years without appropriate planning. WCS Canada’s Dr. Cheryl Chetkiewicz worked with our land-use planning and modeling partner, ALCES Group, to look 50 years into the future to predict changes to the health of caribou, wolverine, and moose populations along with changes to entire watersheds in Ontario’s James Bay Lowlands region. The beauty of their approach is its ability to demonstrate the combined impacts of many different developments on these species and watersheds, from forestry operations and mine sites to roads and power transmission corridors.

As well as containing globally significant wetlands and peatlands and being home to vulnerable woodland caribou, the James Bay region also encompasses the Ring of Fire, a world-class mineral region believed to contain the world’s largest deposits of chromite, a mineral needed to make stainless steel.

If mineral extraction proceeds as currently expected in this area, the result, according to the ALCES model, would be a three-fold increase in the human footprint, primarily due to road and transmission corridors built to support industrial projects. The effects on wildlife will vary. The model indicates that the expanded human impacts will lead to a decline in the Pagwachuan caribou’s range and a reduction in the quality of wolverine habitat. The development of multiple mines and hydroelectric dams—predicted for certain northern watersheds—is likely to impact aquatic species and their habitats in those watersheds. Because of habitat changes due to climate effects, moose habitat is predicted to increase.

Our results demonstrate the need for planning before development proceeds, as recommended by the Far North Science Advisory Panel, which included WCS Canada Executive Director, Dr. Justina Ray. Unfortunately, to date, the government has not acted on this 2010 recommendation. As such, WCS Canada has undertaken this modeling work in order to directly demonstrate what might happen to one of the world’s most intact areas *without* planning. We are hoping that this time, decision makers and industry will take notice and consider proactive planning for this wild region.



The Pagwachuan caribou range could decline due to the multiple impacts of development.

LOCAL LAND-USE ORDINANCES LACK KEY CONSERVATION VALUES

Do you ever wonder about the ecological conservation value of the “green space” or “open space” incorporated into housing developments? A new study from WCS and Colorado State University (CSU) looks at conservation development regulations in the western U.S. and finds that despite strong economic incentives and widespread implementation, several issues currently limit the effectiveness of these regulations for conserving biological diversity.

Conservation development regulations call for building homes on smaller lots that are clustered together while the remaining portions of the property are protected for conservation purposes. Such purposes include use by endangered wildlife for feeding or nesting habitat, protection of watershed features, and maintaining connectedness with other open land. Reviewing land-use regulations in 414 counties in 11 western states, the study found that 32 percent of local planning jurisdictions have adopted conservation development ordinances, mostly during the last decade.

The authors found that these conservation development green spaces are relatively common and contribute to up to 25 percent of private land conservation in the U.S. However, only 13 percent of the adopted ordinances require an ecological site analysis to ensure that the green space selected actually supports biodiversity conservation goals. Further, few ordinances provided guidance on size or location of protected open space, or required monitoring or oversight after development was completed and, in some cases, the protection was of limited duration.

“Wildlife biologists should be involved in the design, construction, and stewardship phases of development,” said Dr. Sarah Reed, the study’s lead author and an Associate Conservation Scientist with WCS and faculty affiliate in the Fish, Wildlife and Conservation Department at CSU, “Without these important components, conservation development will be conservation in name only.”

In their conclusions, the authors call for conservation scientists to improve effectiveness of these green space requirements by volunteering and sharing their expertise, engaging in land-use policy, and educating and working with local planning staff and government officials. This will enable biological diversity conservation to be more of a focal point in land-use planning.

The study, “Guidelines and Incentives for Conservation Development in Local Land-Use Regulations,” appeared in the February print edition of *Conservation Biology*. Authors include: Sarah E. Reed of WCS and CSU; Jodi A. Hilty of WCS; and David M. Theobald of CSU and Conservation Science Partners. The research was funded by a David H. Smith Conservation Research Fellowship from the Society for Conservation Biology and the Cedar Tree Foundation.



BOREAL BIRD SPECIES IN DECLINE IN THE ADIRONDACKS

Have you seen a gray jay, a boreal chickadee, or a black-backed woodpecker in the Adirondacks? The Adirondack Park is the southern range extent for several species of these rare boreal forest birds within eastern North America. Like any wildlife species at the edge of their range, they face challenges in this environment and geographic isolation from their Canadian brethren. The haunts of these boreal specialists—cool, wet, sphagnum-draped bogs and swampy woods—are thought to be particularly vulnerable to climate change, especially in the Adirondacks where they represent isolated bits of the “true boreal” to our north. Adirondack peatlands are, at the same time, deeply significant in this landscape as homes for icons like moose, loon, and marten, and are the very representation of what makes us feel like we live in a truly northern place.



Boreal chickadees are one of the boreal forest birds that are declining in Adirondack peatlands.

WCS scientists have been studying Adirondack boreal habitat since 2003 to examine the changes to rare birds and plants. We have found that most of the bird species we are monitoring are showing patterns of decline. For some—boreal chickadee and Lincoln’s sparrow—the declines are modest. For others—rusty blackbird, gray jay, yellow-bellied flycatcher, olive-sided flycatcher, and black-backed woodpecker—they are more troubling. The number of boreal peatlands occupied by these 5 species

has declined by 15 percent or more since 2007. Only the palm warbler appears to be increasing in our landscape.

Given these startling numbers, WCS is examining what influences these trends at the landscape scale. Our data tell us that the connectedness and size of wetland habitats that these particular birds use and the amount and proximity of human disturbance are all important factors in the population trends of these species. These birds are much more likely to disappear from smaller, isolated wetlands that are in close proximity to development and infrastructure. In close proximity to development, these birds may also face competition from more cosmopolitan birds like blue jays. This study and WCS’s other long-term boreal research will be released in our upcoming publication, *State of the Adirondack Boreal*, this spring. Follow us on Facebook to stay connected to our work and learn about this and other WCS Adirondack projects.

You can also help by letting scientists know about your findings. Rusty blackbirds are in severe decline. If you see one, let the folks at the Rusty Blackbird Spring Migration Blitz know about it at www.facebook.com/rustyblackbirdspringblitz.

WCS’S DR. JOEL BERGER NAMED A FINALIST FOR 2014 INDIANAPOLIS PRIZE

Six heroes vie for world’s leading award for animal conservation

Dr. Joel Berger, WCS Senior Scientist, is one of six exceptional conservationists advancing as a finalist for the 2014 Indianapolis Prize, the world’s leading award for animal conservation. Selected from a group of 39 nominees, Dr. Berger is in the running for the prestigious award based on his outstanding achievements on behalf of the world’s most endangered species.

“Joel and the other finalists are among the most important wildlife conservationists working in the field today,” said Michael Crowther, President and CEO of the Indianapolis Zoo, which initiated the Indianapolis Prize as part of its core mission. “Joel and the other finalists are achieving real victories in saving animal species, creating hope and outlining a path for generations of conservationists around the world to follow. We are delighted that they are finalists for the Indianapolis Prize, the world’s leading award for animal conservation.”

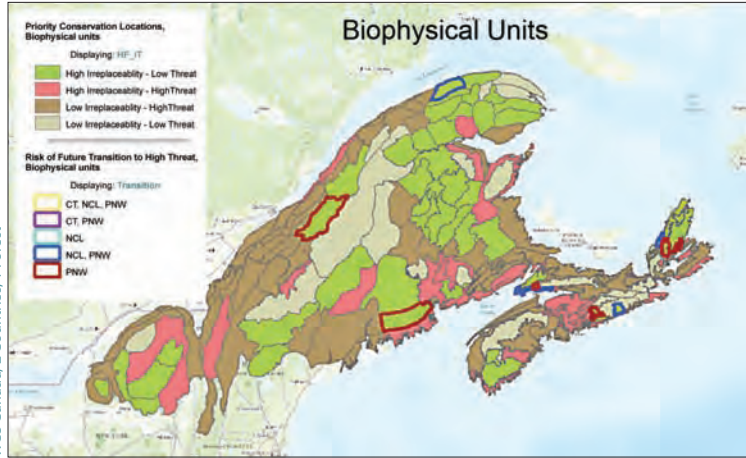


Joel Berger surveying mountain goats in Glacier National Park.

Dr. Berger directs a number of projects for WCS, among these are projects to: create pronghorn migration corridors; assess impacts of energy development on wildlife in Greater Yellowstone; investigate impacts of climate change on musk ox in the Alaskan Arctic; and conserve the saiga antelope in Mongolia. His current research focuses on the conservation of species and intact ecosystems. He has written four books on wild horses, rhinos, bison, and fear in prey species. Dr. Berger is also the John J. Craighead Chair in Wildlife Biology at the University of Montana. To learn more about Dr. Berger and the other finalists, and to learn about how you can support their work and the Indianapolis Prize, please visit indianapolisprize.org.

WCS CANADA STAFF HELPS BRING CONSERVATION MAPS TO THE PUBLIC

WCS Canada's Gillian Woolmer has worked with other members of the 2C1Forest collaborative to pool available information on the flora and fauna in the Northern Appalachian/Acadian Ecoregion into a compilation of maps. The Atlas is now publicly available on the DataBasin platform (2c1forest.databasin.org/), which lets users explore the area through various maps and



One of the conservation maps now available at 2c1forest.databasin.org. Most maps include data for the Adirondack Park and northern New York.

download the data. Having this information publicly available through a user-friendly platform will be invaluable to many conservation organizations, and will facilitate collaboration between organizations, governments, and communities on land-use planning. Have fun clicking through and playing with these interactive maps of the wildlife and wild places in this beautiful ecoregion!

BACK BY POPULAR DEMAND: COMMUNITY SPEAKER SERIES ON WILDLIFE IN SW MONTANA

When people refer to wildlife in Montana, the return and recovery of charismatic yet controversial species tends to overshadow less controversial wildlife species. In the summer of 2013, WCS's Community Partnerships Representative, Kris Inman, collaborated with local partners to bring a series of speakers to talk about lesser-known wildlife species in three rural valleys west of Yellowstone National Park. The highly popular series (>700 people attended 9 talks in 2012!) returns this summer to small Montanan towns including Ennis, Sheridan, Alder, and Dillon. In June, speakers will highlight swans, Arctic grayling, and songbirds; in July, talks will focus on porcupine, owls, and mountain lions; and in August, topics covered will include wildlife of high alpine habitats, bats, and subnivean wildlife species (wildlife that live under snow). For more details about the speaker series, please contact kinman@wcs.org.

SAVING WILDLIFE AND WILD PLACES WORLDWIDE

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The Wildlife Conservation Society 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.

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