

# FENCED OUT

## WILDLIFE IMPACTS OF THE U.S.-MEXICO BORDER FENCE



**I**mpermeable concrete walls, 20-foot-high steel fences, and earthen levees stretch intermittently across the nearly 2,000-mile U.S.-Mexico border. They're meant to deter the hundreds of immigrants who illegally cross the Southwest border daily and to hamper violent drug cartels that operate in the region. Some dispute the effectiveness of the barriers: A 2009 GAO report revealed that there had been 3,363 breaches in the fence by May of that year (GAO 2009). Yet few deny that the border fence prevents the free movement of borderland wildlife species including the rare and endangered jaguar (*Panthera onca*), ocelot (*Leopardus pardalis*), and Sonoran pronghorn (*Antilocapra americana sonoriensis*). Such impacts have wildlife professionals worried.

By Divya Abhat

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## Political Wrangling

For roughly two decades, lawmakers and environmentalists have tussled over what are often mutually exclusive priorities—cracking down on illegal immigrants versus protecting natural resources. The battle began in 1990, when U.S. Customs and Border Protection (CBP) erected the first line of barriers along the border south of San Diego. Among the key events since then:

- In 1996, the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) mandated the construction of 14 miles of triple-layered “reinforced fencing” consisting of parallel concrete and steel walls with a graded road between them ([CRS Report for Congress 2007](#)). The Act also required 50 feet on either side of the fence to be cleared of all vegetation.
- In 2004, the California Coastal Commission ruled that if a plan to construct five miles of border wall in southern California were completed, it would violate the federal Coastal Zone Management Act by damaging the Tijuana River National Estuarine Research Reserve and other sensitive lands as well as the threatened and endangered species found there. As a result, construction was halted.

- In 2005, the Real ID Act was passed, with a provision that authorized the waiver of any laws that might delay construction of barriers and roads along the California border. Over the years, Michael Chertoff, Department of Homeland Security (DHS) Secretary under President George W. Bush, waived numerous federal conservation laws—including the Coastal Zone Management Act, the Endangered Species Act (ESA), the National Environmental Policy Act, and the Migratory Bird Treaty Act—allowing construction of the last few miles of California’s border wall to resume.
- In 2006, Congress passed the Secure Fence Act, which amended the IIRIRA to expand the original miles of U.S.-Mexico border fencing from 14 to more than 700 miles. Since then, more than 30 federal laws, including the Clean Water Act and the Wilderness Act, have been waived ([Sierra Club](#)).

This year, Arizona Senator John McCain introduced an amendment to the fiscal 2012 Homeland Security spending bill that would allow Border Patrol officers unlimited access to all public lands within 100 miles of the U.S.-Mexico border. In one critical sense, this bill expanded the Real ID Act that authorized the Secretary of Homeland Security to waive any laws that impeded construction of walls and roads in the vicinity of the border. But “other activities that the Border Patrol might want to carry out were not covered by the waiver,” says Scott Nicol, a co-chair of the Sierra Club Borderlands Team. “The McCain amendment covers a much larger area ... and any activity that CBP wants to carry out.”

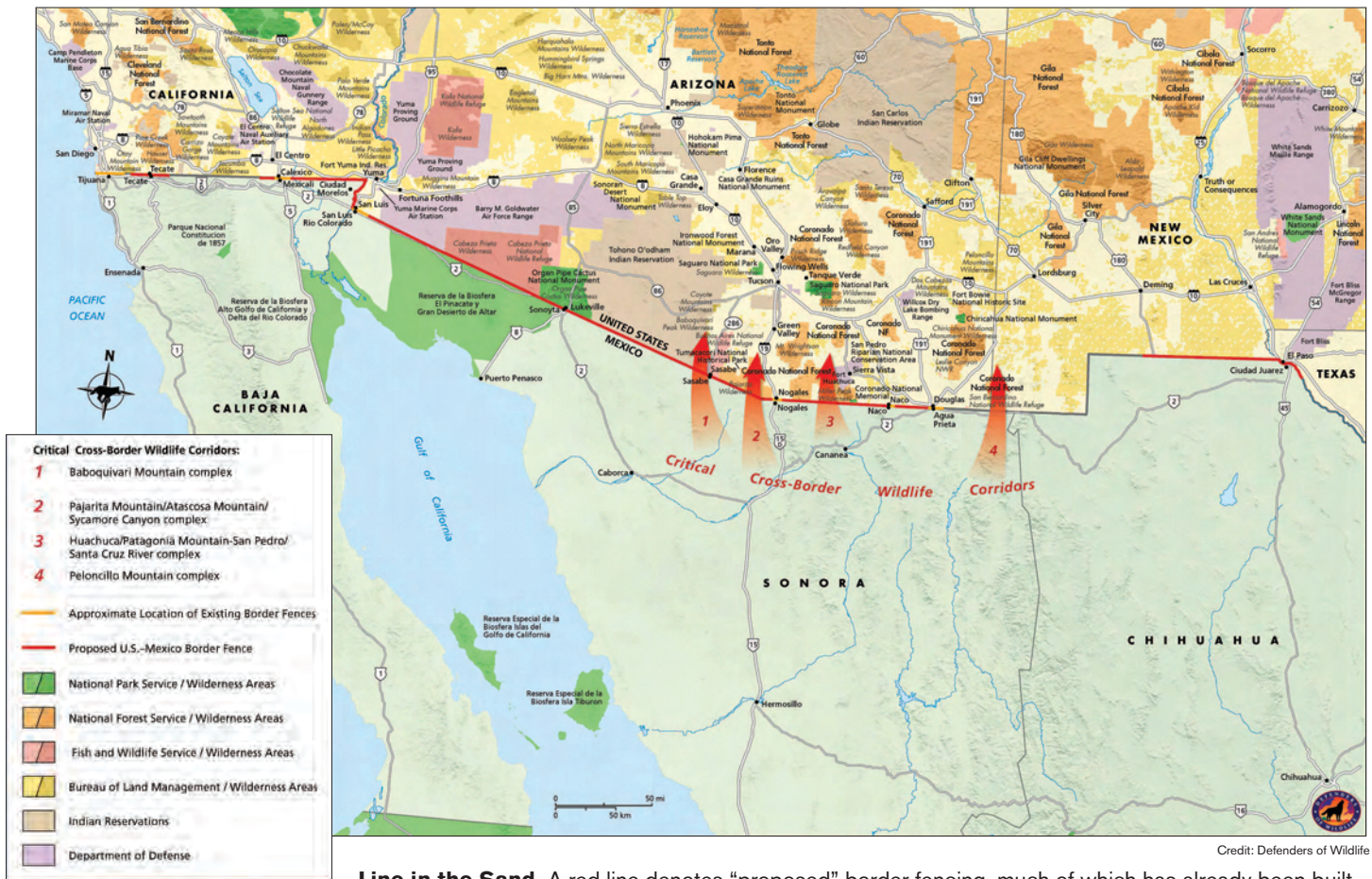
## Impacts and Answers

Though it’s too early to assess all definitive impacts of the border fence on wildlife, scientists are identifying some signs of disruption. In South Texas, for example, some 70 miles of the border barrier—built as a pedestrian fence and flood protection concrete wall, inaccessible to vehicles—cuts through ocelot (*Leopardus pardalis*), gulf coast jaguarundi (*Herpailurus yagouaroundi cacomitli*) and bobcat (*Lynx rufus*) habitat. Mitch Sternberg, lead biologist for the South Texas

A desert cottontail faces a daunting stretch of border wall in Arizona’s San Pedro River Corridor along the U.S.-Mexico border. The wall has impacted wildlife species by fragmenting habitat and blocking movement.

Credit: Krista Schlyer/enviro-pic.org





**Line in the Sand.** A red line denotes “proposed” border fencing, much of which has already been built. Running intermittently across the U.S.-Mexico border, the fence slices through critical wildlife corridors (arrows) between Sonora and U.S. federal and tribal lands.

## Cabeza Prieta National Wildlife Refuge

Straddling 56 miles of the U.S.-Mexico border between southwestern Arizona and Sonora, Mexico, Cabeza Prieta National Wildlife Refuge is part of the largest remaining undeveloped swath of the Sonoran Desert. It is also the largest refuge in the lower 48 states, more than 90 percent of which is federally designated as wilderness. Yet satellite and survey data show that this wilderness is sliced by nearly 8,000 miles of off-road tracks attributed to illegal migrant activity, and up to 12,000 additional miles of tracks caused by law enforcement activity to curb illegal immigration and border violence. Environmentalists fear that the lacework of tracks, as well as permanent Border Patrol camps scattered throughout Cabeza Prieta, are detrimental to the refuge’s fragile populations of endangered Sonoran pronghorn, which have dwindled to as few as 68 animals.



Credit: David McNew/Stockphoto

Refuge Complex, has been studying the area’s wild cats, using pre- and post-construction data to assess the fence’s impact. Using cameras and radio collars, his team tracked the movements of several bobcats and discovered that when fence construction began, the cats began to move in search of new habitat. One pair of bobcats trapped in stringers of habitat on the north side of the fence died after being hit on a highway as they attempted to cross to the remainder. They no longer had access to the Rio Grande River and its habitat corridors. Another pair appeared to abandon their territory once construction began, while another bobcat was killed by a car when the animal ventured into an urban area—a rare occurrence and possibly the result of having been forced out of shared territory by another displaced bobcat. In situations like this, the cats’ stress levels are quite high, Sternberg says, and “these disturbances led to intraspecific aggression and mortalities.”

Connectivity is critical for wildlife species to maintain movement that helps facilitate gene





flow and fosters immigration and dispersal into vacant habitat patches or in those areas where abundance is low. Yet miles of barriers that bisect wildlife habitat across diverse border landscapes—ranging from the deserts of the Colorado River Valley to the forests of the Sierra Madre Occidental—may threaten that movement (Flesch 2010). Researchers found that stopping trans-boundary movements among subpopulations in mountain ranges near the border could impact the persistence of these populations on either side of the fence (Flesch 2010).

Limited connectivity is especially serious for species that are already at risk or threatened. The CBP has estimated that 39 species in Arizona that are or will soon be protected are starting to feel the impact of border operations (Defenders of Wildlife). Jaguars and ocelots, for example, listed as endangered under the ESA, are likely to be seriously impacted. “There are very few jaguars in the U.S., and with the border fence they’re cut off from the rest of the population that’s found in northern Mexico,” says Juan Carlos Cantu, director of the Defenders of Wildlife Mexico Program. The same goes for the endangered Sonoran pronghorn, with approximately 70 individuals found in the U.S. and fewer still in Mexico. “If they have no communication with the rest of the population in the U.S., they’re going to suffer,” Cantu says.

Research has also established a close genetic link of ocelots found in Texas to ocelots found in Tamaulipas. In fact, one female ocelot captured at Santa Ana National Wildlife Refuge was more closely related to populations in Mexico than either of the two populations in Texas (Walker 1997). “Maintaining and restoring wildlife corridors between the U.S. and Mexico is critical to the long-term survival of ocelots in the U.S.,” says Mitch Sternberg.

Likewise, fewer than 50 ocelots remain in Texas, where sightings are extremely rare. The U.S. Fish and Wildlife Service (FWS) and its partners have been studying the endangered ocelot for more than three decades and are relying on a number of factors to assist in its recovery, including protection of suitable habitat. “Our criterion that’s most feasible is a connection between U.S.-Mexican populations,” FWS’ Sternberg says. “If the wall was expanded, that would probably lead to the extirpation of ocelots in the U.S.”

Jesse Lasky, Ph.D. candidate in the Ecology, Evolution and Behavior Graduate Program at the University of Texas at Austin and author of a study that identifies species and regions most impacted by the border fence, finds that species with smaller populations and specialized habitats face the greatest risk (Lasky *et al.* 2011). For example, the Arroyo toad (*Bufo californicus*), the San Diego pocket mouse (*Chaetodipus fallax*), and the California red-legged frog (*Rana draytonii*)—all of which have significant portions of their range along the border—run the risk of having 50 percent of that range blocked by border fences.

Birds are less obvious, but no less vulnerable, victims of border barriers. Cactus ferruginous pygmy-owls (*Glauucidium brasilianum cactorum*), for example, tend to fly at about four feet above the ground—well below the height of most fences—and species like quail prefer to walk rather than fly (Flesch 2010). In addition, Cantu notes that “it’s not only the fence” that’s causing problems, but also the destruction of vegetation flanking the fence. “Quail don’t like that,” he says. “They like to have some cover for them to be able to move.”

Concerned about such impacts—and hesitant to wait for political solutions—wildlife managers have begun to explore adaptive measures to help prevent or mitigate the wall’s impact on wildlife.

**Connecting the Gap.** One potential solution is to make up for loss of connectivity between habitats by linking fragmented areas with neighboring refuges and conservation areas. In Texas, for example, approximately 60 to 70 percent of the Lower Rio Grande National Wildlife Refuge has been directly or indirectly impacted by the area’s border wall. As a result, FWS has planned to



Credit: Scott Nicol

Seemingly endless miles of border fence run through the federally designated Otay Mountain Wilderness Area in California. A law protecting the area—and 36 other federal conservation laws—were waived to allow for construction of this section of the wall.



Credit: Steve Hillebrand/USFWS

U.S. Fish and Wildlife officers at the Rio Grande National Wildlife Refuge inspect a raft abandoned by immigrants who most likely entered the U.S. illegally through the wildlife refuge.

connect this National Wildlife Refuge with nearby Laguna Atascosa National Wildlife Refuge. According to Sternberg, connecting the two refuges was always part of a long-term FWS plan. “Now that we’re losing practically half the value of the Lower Rio Grande NWR, it’s even more important that we have functional corridors between these refuges,” he says. Unfortunately, funding for this effort has been tough to acquire. In 2009, CBP allocated \$50 million for border-fence mitigation projects like this one, but after doling out only \$6.8 million, it

rescinded the \$22 million allotted for 2011—and the budget ax is only getting sharper.

**Moving the Players.** Wildlife managers have considered reintroducing and relocating dwindling wildlife populations affected by the fence. “The reality of reintroduction is that most of the projects aren’t successful because it’s very difficult ... and incredibly expensive,” says Defenders’ Cantu. “But, in the end, it’s probably the only way to go.” Such efforts first began in 1998, when the U.S. government released about 11 Mexican wolves

(*Canis lupus baileyi*) into a four-million-acre swath near the Arizona-New Mexico border with Mexico. Although biologists had hoped to see at least 100 wolves in the region by now, a recent survey reveals that only about half that number populate the area. Nevertheless, in a recent effort this past October, the government of Mexico released five captive-bred Mexican wolves in the Sierra San Luis mountain range in northeastern Sonora, in hopes that they will reproduce and spread across their former Mexican range.

### Buenos Aires National Wildlife Refuge

Buenos Aires National Wildlife Refuge’s 118,000 acres provide critical habitat to several endangered species including the cactus ferruginous pygmy-owl, Pima pineapple cactus, Kearney bluestar, peregrine falcon, southwest willow flycatcher, and razorback sucker. The refuge also runs a captive-breeding program for endangered masked bobwhite quail, supporting the only known wild population of the species in the country. In 2006, 3 percent (3,500 acres) of the refuge was closed to public access due to border violence involving human and drug trafficking and assaults on law enforcement officers. Such border shut-downs are funneling more immigrant traffic into the refuge’s remote desert regions. Law enforcement officers have counted as many as 1,000 migrants on just one foot trail in the refuge in a 24-hour period, and some experts estimate that 1.2 million people cross through the southwestern border each year. Apart from ecological damage caused by foot traffic, Border Patrol officials have free rein to drive off-road vehicles throughout the refuge and its fragile habitat, and some environmentalists worry that the border walls near the refuge (right) disrupt the movements of sensitive species like jaguars and pygmy-owls.



Credit: Steve Hillebrand/USFWS

### Identifying Critical Habitat.

Researchers have been identifying areas that are critical movement corridors for borderland populations as well as regions rich in biodiversity that they hope will become off limits to border-fence construction. For example, in their recent study, Lasky and his colleagues identified three key areas that host a high number of vulnerable species: the Sky Island Madrean archipelago habitat in southeastern Arizona, and coastal areas of Texas and California. As a result, researchers noted that these regions are especially critical for maintaining connectivity of fragmented areas, and pinpointed these areas as high priorities for mitigation of the impacts of current border fencing. “Whenever the CBP wants to build more barriers,” says Lasky, “we can point to





### Lower Rio Grande Valley National Wildlife Refuge

Lower Rio Grande Valley National Wildlife Refuge is one of the most biologically diverse regions in the country. At the confluence of the Mississippi and Central flyways, the refuge's 90,000 acres house 513 bird species that help to maintain a nearly \$150-million local ecotourism industry. The refuge also fosters 11 different biotic communities—including one of the last remaining sabal palm forests in the country—and these habitats support more than 300 species of butterflies, 1,100 species of plants, and 700 vertebrate species, including the endangered ocelot and jaguarondi. Border wall construction throughout the South Texas Wildlife Refuge Complex—comprising the Laguna Atascosa, Lower Rio Grande Valley, and Santa Ana National Wildlife Refuges—affects 60 to 70 percent of the area's habitat, some of which is cut by migrants' foot trails (right). Although the refuge's border fencing includes approximately 100 openings for wildlife, some argue that the openings are impassable for larger animals like bobcats and coyotes, and that the barrier also separates wildlife from crucial access to the waters of the nearby Rio Grande.



Credit: Steve Hillebrand/USFWS

that area and say this is one of the worst possible places to do this.”

Unfortunately, anything that's built to be permeable for animals is almost always permeable for humans too, which may doom such mitigation efforts. Without a solution, “both countries could lose some of their biodiversity,” says Cantu. “The U.S. could forever lose the jaguar and Mexico could lose the pronghorn or bighorn sheep.” Furthermore, wildlife managers have put in decades of work to

restore dwindling populations, says Cantu: “If you cut off the free movement of wildlife, then all your work goes for nothing”—one more potentially tragic consequence of the troubled border region. ■

*This article has been reviewed by subject-matter experts.*



For a full bibliography and additional resources, go to [www.wildlife.org](http://www.wildlife.org).



## ANNOUNCEMENT AND CALL FOR PAPERS 7th International Conference on Fertility Control in Wildlife

**August 29-September 1, 2012  
Jackson Hole, Wyoming, USA**

The 7th International Conference on Fertility Control in Wildlife will be held in Jackson Hole, WY, August 29-September 1, 2012. This conference is a continuation of the international forum for research into the management of wildlife populations through contraception. The conference will be preceded, on the 28th of August, by a separate and one day conference on wild horse fertility control.

The intended audience includes scientists, wildlife agency managers, animal welfare organizations and the interested general public.

For registration and abstract submission details visit the conference website [www.wildlifeconference7.org](http://www.wildlifeconference7.org).