Threats to Cross-Border Wildlife Linkages in the Sky Islands Wildlands Network

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Abstract—*One of the greatest challenges facing conservationists in the Sky Islands region is finding a realistic means to maintain historic travel routes for wide-ranging species crossing the United States-Mexico border. This challenge is made difficult due to the ongoing efforts by the Federal government to install additional security infrastructure to stem the flood of undocumented immigrants now entering southern Arizona. Existing and proposed fencing, solid steel walls, all-night stadium lighting, vehicle barriers, an immense network of roads, a 24-hour flow of patrol vehicles, and low-level aircraft overflights are creating an impenetrable barrier to trans-border wildlife movement. Creative solutions are needed now.*

Introduction

In 2000, the Wildlands Project and regional partner groups, including the Sky Island Alliance, published a conservation plan covering more than 10 million acres of valuable wildlife habitat in the Sky Islands ecoregion of southeast Arizona and southwest New Mexico. The document, known as the Sky Islands Wildlands Network Conservation Plan (SIWN CP), is based on the basic tenets of conservation biology, and a science-based species protection and landscape recovery strategy known as Rewilding (Wildlands Project et al. 2000). The plan includes a proposed reserve network identifying a linked system of core habitat areas connected by wildlife linkages and surrounded by compatible use areas.

The primary goal of the SIWN CP is to protect a network of prime habitat that ensures long-term survival of native species, especially keystone species and processes. Protecting an appropriate suite of focal species has been shown to also protect numerous other species whose requirements for survival are less dynamic (Soulé and Terborgh 1999). Some examples of focal species identified in the SIWN CP that could benefit from trans-border movement, or connected subpopulations, include Mexican gray wolf, jaguar, cougar, black-footed ferret, ocelot, bighorn sheep, pronghorn, black-tailed prairie dog, Mexican spotted owl, aplomado falcon, and southwestern willow flycatcher.

Although the SIWN network design terminates at the United States-Mexico border across Hidalgo (NM), Cochise, Santa Cruz, and Pima (AZ) Counties, its authors intended that the network design's components would mesh with complimentary components in a future Sierra Madre Occidental Wildlands Network that would cover a similarly sized portion of northern Chihuahua and Sonora, Mexico.

Of particular importance in this vision for cross-border merging of conservation plans is the assumption that the Sky Islands Wildlands Network could not reach its full conservation potential unless wildlife linkages allowing focal species movement between the Sierra Madre Occidental, other ranges in northern Mexico, and the Sky Islands of southeastern Arizona were maintained.

The SIWN CP identified numerous threats to a healthy landscape in the Sky Islands, including fragmentation of habitat by roads, fences, and subdivisions; loss or extirpation of numerous species; loss of natural disturbance regimes such as fire; loss of riparian areas, streams, and watersheds; invasion by exotic species; and loss of native forests to logging and other development.

Many of these threats are being successfully negotiated throughout the Sky Islands ecoregion today by hundreds of individuals, State and Federal agencies, private organizations, conservationists, and conservation-minded private land owners. Classic conservation tools such as land and highway management changes, new land and water protection designations, and protection of private lands via conservation easements and other financial-based habitat protection incentives have provided a strong foundation for these efforts.

However, along the United States-Mexico borderlands in the Sky Islands region, these usually reliable tools have often been rendered ineffective by overriding Federal concerns related to stemming the flow of undocumented immigrants into the United States. In short, an ultimate form of habitat fragmentation across Arizona's borderlands is now being erected. A permanent, impermeable wildlife barrier, that will close key cross-border travel routes to many animals, is a distinct possibility if the current approach to border security continues.

The most endangered of these habitat linkages have likely been relied upon for centuries by numerous Sky Islands focal species for travel and dispersal between the Sierra Madres and the Sky Islands. Significant disruption of wildlife movement between similar habitats in northern Mexico and important Sky Islands landscapes in the United States could mean trouble for jaguar, ocelot, black-footed ferret, southwestern willow flycatcher, and other SIWN focal species that are in decline and already listed as Federal endangered species. Cross-border wildlife linkages with a high potential for use by these

fast-disappearing species include the Peloncillo Mountains, San Pedro River corridor, San Rafael Valley, Coronado National Memorial, Patagonia Mountains, Pajarita Wilderness Area, and Buenos Aires National Wildlife Refuge. Some of these linkages remain highly intact and are largely roadless landscapes, yet lie only short distances from existing border security projects. Some other linkages are already partially or fully barricaded or fenced.

Based on this immediate threat to habitat connectivity between the two nations, the United States-Mexico borderlands region in southeast Arizona and southwest New Mexico was declared in 2003 by the Wildlands Project to be one of the five most endangered wildlife linkages along the chain of the Rocky Mountains from Canada to Mexico (Wildlands Project 2003).

Borderlands Habitat Fragmentation and Degradation

Although various forms of border fencing to control grazing have been in existence in portions of the Sky Islands for decades, it wasn't until the 1990s that serious efforts to halt undocumented immigration with various forms of barriers became more commonplace. During the end of that decade the first solid steel vertical barricades (surplus U.S. Marine amphibian landing mats up to 15 feet high) were constructed through the centers of border sister cities such as Douglas, AZ/Agua Prieta, Sonora and Nogales, AZ/Nogales, Sonora and extensions of those barricades began to creep outward into the surrounding countryside from those locations early in the new century. Following the World Trade Center attacks in September 2001, the Immigration and Naturalization Service (INS) began a concerted effort to more quickly fortify even larger portions of the United States-Mexico international boundary in the Sky Islands ecoregion.

In October 2002, the INS released a Draft Programmatic Environmental Impact Statement (DPEIS) for a massive borderlands security infrastructure project across southern Arizona. Through various means (including up to 200 miles of 15-ft high solid steel fencing, up to 1,000 "stadium-style" all-night lights, and the blading of single and dual 10-ft wide roads along the entire border), that project proposed to impact virtually all the agency's 280-mile Tucson Sector border in southern Arizona (U.S. Immigration and Naturalization Service 2002).

At that time, it became clear that ecological concerns related to that construction were not a priority for the agency. The DPEIS provided little documentation of negative environmental impacts related to the project, and following the public comment period, during which the agency received hundreds of science-based objections from a wide range of parties regarding such ecological deficiencies, the INS withdrew the DPEIS and indicated it would re-start the process from the beginning. Since that time, several separate Environmental Assessments (EA) have been issued for smaller project areas within the Tucson Sector, but most of those projects duplicated proposals included in the original DPEIS, and continued to lack significant scientific documentation of ecological impacts to wildlife. Current EAs, which require less rigorous justification than EISs, are in various stages of public comment, with some ensuing projects in the beginning stages of implementation.

Shortly after the original DPEIS was released, the creation of the Department of Homeland Security (DHS) resulted in the dissolution of the INS, which became the new U.S. Bureau of Customs and Border Protection (CBP), overseeing the activities of the Border Patrol.

To date, neither the CBP nor other public or private entities have completed conclusive scientific research into the effects of border infrastructure on native plant or animal communities in the Sky Islands border region. Despite this lack of biological data, and in response to the Federal government's apparent decision to move forward with completion of border security projects, the CBP continues to implement new border security infrastructure and policy through the use of EAs rather than EISs, and more recently through internal order from the CBP.

The likelihood that these projects will continue to move forward at a relatively rapid pace is evidenced by the Border Patrol's new "Arizona Border Control" (ABC) initiative, scheduled to begin June 1, 2004, only a few weeks after the project was announced by the CBP. The ABC initiative will grant the Border Patrol immunity to a number of existing environmental restrictions in such important Sky Islands habitat areas as Pajarita Wilderness and Miller Peak Wilderness, Baker Canyon, Bunk Robinson and Whitmire Canyon Wilderness Study Areas, and the San Pedro Riparian National Conservation Area. The relaxed restrictions would allow the Border Patrol increased off-road vehicle pursuit of undocumented immigrants on trails within those protected areas—activities that can further fragment key wildlife corridors, and that could also trigger legal challenges relating to the Wilderness Act itself. The $10 million ABC initiative was originally funded through September 2004, but reauthorization is likely.

Construction of "vehicle barriers" is an ongoing effort in several border locations, the most recent barrier being completed along the full international boundary of the Coronado National Memorial. The Border Patrol promotes these "vehicle barriers," which consist of vertically installed beams, posts, or old rail segments, connected horizontally by a second rail, with horizontal strands of barbed wire above and below that rail, as wildlife-friendly because they are not solid walls. Vehicle barrier construction also requires construction of 12-foot-wide access roads alongside the barriers, and often leaves pre-existing secondary barbed-wire fencing in place, creating a double barrier. New roads alone can often fragment a wildlife linkage, and with an estimated 2,000 Border Patrol agents driving hundreds of patrol vehicles along more than 1,000 miles of such roads around the clock, this alone could completely end all cross-border movement for endangered species like jaguar and ocelot.

The number of high-rise, all-night stadium and portable generator-style lighting installations along the border, some up to 1,000-watts each, continues to increase. Although conclusive studies on the effects of all-night artificial lighting on bird, reptile, fish, and other animal behavior are not yet

available, biologists believe that such illumination causes unnatural nocturnal activity including disrupted rest cycles for migrating birds, and increased predation activity by a variety of other species (Fatal Light Awareness Program 2004).

Considering the CBP's expedited approach to policy-making and project implementation, and the attendant consequences for wildlife habitat, conservationists are faced with a disappearing window of opportunity in which to scientifically document the threats to borderlands ecosystems posed by security infrastructure. Without this critical information, much-needed construction guidelines and recommendations for incorporation of wildlife-friendly alternatives in border security projects cannot be easily produced.

Research Recommendations

Clearly, if these threats to cross-border habitat connectivity are to be properly mitigated prior to top priority wildlife linkages along the border being permanently lost, new research must be developed that examines the environmental effects of these proposed border security projects. Research is needed to document:

- Impacts of fencing, walls, and other barriers on the movements and behavior of wide-ranging species such as jaguar, cougar, ocelot, and pronghorn.
- Identification of key cross-border routes currently used by various wildlife species.
- Potential increases in distribution of invasive plant species spread through the blading of previously undisturbed natural areas, and through unintended vehicle transport.
- Environmental impacts and anticipated legal problems resulting from the proposed security infrastructure and operations within national conservation areas, national monuments, national parks, and wildlife refuges.
- Effects on plants, animals and natural fire regimes due to increased access by recreationists and hunters using newly constructed border roads.
- Impacts of all-night stadium lighting near water courses, water bodies, and riparian areas on predation of fish and other aquatic species.
- Impacts of all-night stadium lighting on bird migration.
- Impacts of noise from equipment, regular vehicular traffic, and aircraft overflights on sensitive animal species.
- Effects of immigrant travel, such as trash, water hole encampments, and human waste on habitat quality and focal species.
- Impacts of increased off-road motorized access by Border Patrol in Federal protected areas on plants, wildlife, and associated legal implications of such on the National Wilderness Preservation System.

Socio-Political Recommendations

The dilemma of maintaining undamaged wildlife linkages along the United States-Mexico border is particularly challenging because the long-term solution to borderlands fragmentation depends as much on socio-economics and international politics as on the science of conservation biology. There is little, if any, disagreement between conservationists and the Border Patrol that border security must be maintained. However, there is widespread disagreement over the best means by which to maintain that security. Add to this mix the new challenge of protecting cross-border wildlife movement, and the debate grows exponentially.

Further frustrating the situation is the fact that prevention of undocumented immigration through means other than construction of barricades could be achieved over a relatively reasonable period of time through earnest, creative immigration reform and economic cooperation between the United States and Mexico. However, the juggernaut of terrorism could easily dictate that even if immigration-related problems were eliminated through international diplomacy, political pressure to maintain a physical barrier will likely remain. Considering the extent of current security infrastructure and the rapid pace of new barricade construction, conservationists should logically assume that successful immigration policy reform, if ever enacted, may not occur in time to offer a respite for cross-border wildlife.

The reality of the situation dictates that reforming immigration policies alone cannot be counted on to halt wildlife linkage fragmentation. Rather, focus and action must be placed on a more thorough and more urgent list of linkage protection options:

- Work to legally uphold the provisions of the National Environmental Policy Act, the Wilderness Act of 1964, the Endangered Species Act, the Refuge Improvement Act of 1997, and the Clean Water Act, and oppose suspension of such laws in the borderlands region.
- Submit public comments whenever new environmental assessments or impact statements for border security projects are released by the CBP, Border Patrol, or Department of Homeland Security.
- Encourage expanded use of technology that could help secure the border without fences, including unmanned aerial vehicles, electronic ground sensor systems, remote video cameras, and surveillance aircraft operating at reasonable altitudes.
- Advocate for protection and maintenance of existing roadless areas along the United States-Mexico border, including wilderness areas, national monuments, national parks, national wildlife refuges, and other protected conservation lands.
- Promote wilderness designation for the Tumacacori roadless area, which would extend and dramatically enhance the cross-border wildlife linkage already existing via the Pajarita Wilderness Area.
- Document the effects of border security infrastructure occurring within or across international wildlife linkages on wide-ranging wildlife.
- When reasonable, legally challenge border security activities and policies that violate existing Federal and State environmental laws.
- Determine the scientific compatibility of various fencing structures with wildlife permeability.

- Advocate for vehicle barriers that do not include cross-fencing with barbed wire or horizontal rails, and for elimination of solid barriers wherever practicable.
- Support the U.S. Border Patrol, CBP, and Department of Homeland Security whenever these agencies incorporate wildlife linkage-friendly components in border security construction projects, or refrain from blocking existing wildlife linkages with new infrastructure.
- Support new immigration reform policies that result in the majority of immigration occurring legally through established ports of entries.

Border Ecological Symposium

In an effort to address the serious threats to cross-border wildlife linkages in the Sky Islands and elsewhere, the Wildlands Project announced in January 2004 its intention to organize and convene a "Border Ecological Symposium" in 2005 that would have as its goals: (1) The examination of all scientific evidence relating to the impacts of border security infrastructure and existing immigration policy on established wildlife linkages between the Sky Islands and similar habitat in northern Chihuahua and Sonora, Mexico; and (2) the creation of a science-based "Borderlands Infrastructure Ecological Guidelines" document that can serve as a reference to agencies involved in border security planning and implementation.

Such a Border Ecological Symposium would convene representatives of all involved agencies, including CBP, Border Patrol, Department of Homeland Security, U.S. Fish and Wildlife Service, Arizona Game and Fish Department, New Mexico Department of Game and Fish, and additional participants including Federal, State and local elected officials, conservationists, conservation biologists, private land owners, immigration policy reform groups, and concerned citizens. For more information, contact the Southwest Field Office of the Wildlands Project: kim@wildlandsproject.org or 520-884-0875.

Conclusion

Existing and proposed fencing, solid steel walls, all-night stadium lighting, vehicle barriers, roads, vehicular traffic, and low-level aircraft overflights threaten to create an impenetrable barrier to wildlife movement across the United States-Mexico borderlands region in southeastern Arizona's Sky Islands and elsewhere. Due to the rapid pace of related border security policy and infrastructure development, immediate action is needed to assure that science-based information on expected negative ecological impacts is incorporated in all newly proposed INS or Border Patrol policy and infrastructure projects.

Such science-based ecological information is currently lacking, and efforts need to be made to obtain such data at the earliest possible opportunity. Numerous actions and activities can be undertaken now by the agencies involved, the Federal government, and the private sector to begin the process needed to protect cross-border wildlife linkages while continuing to maintain border security.

Of major importance is the development of immigration reform policy that directs the majority of undocumented immigration through legal ports of entry. One of the first steps in protecting cross-border wildlife linkages should be convening a Border Ecological Symposium that would bring together a wide range of stakeholders to examine scientific evidence relating to border infrastructure impacts on wildlife, and to draw up guidelines to be used as a reference by agencies planning and implementing new border security policy and infrastructure.

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