

# The Jaguar in the Southwest: Borderland or Borderline Conservation?

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## **Abstract**

*In 1997, the domestic listing of the jaguar (Panthera onca) under the Endangered Species Act (ESA) made the killing of wild jaguars in the U.S. a federal crime and helped protect the animals against accidental harm from government predator control activities. Since then, a multi-agency Jaguar Conservation Team (JAGCT) has promoted education and research on the jaguar, but has not fulfilled its promise to address habitat conservation. JAGCT's ambivalence is traced to political ideology and to uncertainty as to whether a recovery effort for the jaguar along the northern periphery of its geographic range is warranted. I argue that the American Southwest is significant to the jaguar from a conservation standpoint. A jaguar restoration strategy should include ESA recovery planning and critical habitat designation; professionally mediated workshops to address locally perceived conflicts between ESA protection, property rights, and ranching interests; and a bi-national campaign to protect a core reserve for the jaguar in northern Mexico, secure habitat corridors leading to the Southwest, and promote predator-friendly management of livestock.*

## **El Jaguar en el Suroeste Norteamericano: ¿Conservación de la Tierra en la Frontera o de la Línea Fronteriza?**

*Resumen. En 1997, el listado local del jaguar (Panthera onca) dentro del 'Endangered Species Act' [Acta de las Especies en Peligro de Extinción (ESA, por sus siglas en inglés)], convirtió en un crimen federal matar jaguares silvestres en los Estados Unidos y ayudó a protegerlos en contra de daño accidental ocasionado por las actividades gubernamentales de control de depredadores. Desde entonces, un equipo de conservación del jaguar conformado por varias agencias (JAGCT por sus siglas en inglés) ha promovido educación e investigación sobre el jaguar, pero no ha cumplido su promesa de dirigir sus esfuerzos al problema de la conservación del habitat. La ambivalencia del JAGCT es debida a ideología política y a la incertidumbre de si la recuperación del jaguar en la periferia norte de su rango geográfico está garantizada. Arguyo que el suroeste norteamericano es significativo para el jaguar desde el punto de vista de la conservación. Una estrategia de la restauración del jaguar debe incluir planeación de recuperación y designación de habitats críticos por el ESA; talleres de mediación llevados a cabo profesionalmente para tratar localmente los conflictos que se perciben entre la protección hecha por ESA, los derechos de la propiedad y los intereses de los ganaderos; una campaña binacional para proteger una reserva central para el jaguar en el norte de México, para asegurar corredores de habitats que conduzcan al suroeste norteamericano y para promover un manejo del ganado que sea amigable hacia los depredadores.*

## **Le Jaguar dans la Conservation du Sud-ouest: quelle Frontière?**

*Résumé: En 1997, le jaguar (Panthera onca) a été nationalement repertorié comme espèce menacée sous le 'Endangered Species Act' (ESA), et rend ainsi criminel le fait de tuer des jaguares sauvages aux Etats-Unis et contribue également à les protéger du mal accidentel causé par des activités prédatrices contrôlées par le gouvernement. Depuis lors, un groupement d'agences en faveur de la conservation du jaguar – Jaguar Conservation Team (JAGCT) – a encouragé*

*l'éducation et la recherche sur le jaguar, mais n'a pas accompli sa promesse de traiter du problème de l'habitat et de la conservation. L'ambivalence de la JAGCT remonte à l'origine de l'idéologie politique et de l'incertitude de savoir si le rétablissement du jaguar le long de la périphérie nordique de son étendue géographique est justifié. Je soutiens que le sud-ouest américain est essentiel pour le jaguar pour ce qui concerne la conservation. Une stratégie de restauration du jaguar devrait inclure la planification de rétablissement de l'ESA et la désignation critique d'habitat; des ateliers de négociations professionnels pour gérer les tensions locales entre la protection de l'ESA, les droits de propriétés et les intérêts du ranching; ainsi qu'une campagne bi-nationale afin de protéger une réserve centrale pour le jaguar au nord du Mexique, fixer des couloirs d'habitat menant au sud-ouest, et favorisant une gestion naturelle du bétail.*

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## Introduction

In 1996 rancher Warner Glenn photographed a jaguar (*Panthera onca*) after his lion hounds chased and cornered it in southwestern New Mexico. "It will take all of our efforts to protect this animal and the wide open country it needs," Glenn said in a vivid photographic essay recalling the event (Glenn 1996).

Glenn's jaguar was one of three distinct individuals recently photographed in the Southwest, the others in 1996 and 2001, both south of Tucson, Arizona. State wildlife officials have been able to confirm only about a dozen additional reports of jaguar in the region over the past 50 years (FWS 1993; Hatten et al. 2002). Most observers believe jaguars that have been recently seen are dispersing individuals or temporary visitors from a population centered some 200 miles south of the Mexico-U.S. Border (Rabinowitz 1999; Johnson and Van Pelt 2000; Brown and López 2001; Sanderson et al. 2002). Nevertheless, jaguars have historically ranged into Arizona, New Mexico, and Texas, and perhaps southern California and Louisiana (Hall 1981; Swank and Teer 1989). Their pattern of decline, based on kill records from 1900-1970, suggests an over-exploited, resident population that once included females and cubs (Brown 1983).

The year 1948 marked the last record of a wild jaguar in Texas (Nowak 1975). With habitat in that state reportedly too fragmented to

help with species recovery, Arizona and New Mexico today are the logical choice for jaguar conservation in the U.S. (Johnson and Van Pelt 1997).

## Threats

Shooting, trapping, and poisoning have taken a heavy toll on the jaguar, with 62 kills recorded for Arizona and New Mexico since 1900 (Brown and López 2001). Today loss of habitat represents an additional threat (Johnson and Van Pelt 1997). Land development, vegetation clearing, road construction, depletion of springs and surface waters, and increased human presence can result in

diminished security for jaguars, heightened risk of disturbance and displacement, blockage of movement corridors, and loss of suitable acreage sufficient to contain individual home ranges. In Arizona and New Mexico, the most favorable habitat for the jaguar involves mountain ranges and canyons interconnected by riparian areas, wash complexes, and shrub-grasslands (Sierra Institute 2000).

Over the past 5 years, the human population of Arizona counties where jaguars have recently been recorded (Cochise, Pima, and Santa Cruz) has risen by over 100,000 people (from



**Loss of habitat caused by human disturbance such as land development is one of the main threats to jaguar survival. Photograph by Claire Dobert. Courtesy of U.S. Fish and Wildlife Service.**

951,964 to 1,055,166; Arizona Department of Economic Security 2002). Areas east and south of Tucson, from Sierra Vista to Benson, and in Sulfur Springs Valley are experiencing urban and exurban sprawl. Heightened land development affecting the San Pedro River corridor, an upsurge in human activity and habitat modification along the Mexico-U.S. border, and heavy night traffic on interstate highways, aggravated by a dearth of wildlife underpasses, are among other specific concerns.

The jaguar is also threatened by a prevailing ideology in government that opposes conservation that may affect hunting, livestock interests, and economic development. Reflective of this view, the Arizona Game and Fish Department has assured its wildlife commissioners, who set wildlife policy for the state, that it does not support reintroduction of the jaguar or designation of critical habitat for the species (Arizona Game and Fish Commission 1999).

### **Endangered Species Act protection**

In 1992, after learning about the recent killing of a jaguar, the Sierra Institute field studies program in the Southwest petitioned the U.S. Fish and Wildlife Service (FWS) to list the species in the U.S. under the Endangered Species Act of 1972 (United States Congress 1972). FWS had listed the jaguar 20 years earlier, but only for Mexico southward (FWS 1972). In 1979 FWS acknowledged the oversight and its intention to rectify the matter as quickly as possible (FWS 1979). Two years after receiving the petition, FWS issued a proposed rule, and, upon legal prodding by the Center for Biodiversity and a subsequent U.S. district court order, completed the listing in 1997 (FWS 1997a). Seeing that FWS did not designate critical habitat (ESA Section 4) for the jaguar at that time, the

Sierra Institute group asked the agency for a determination that would include sizable blocks of mountainous terrain and connecting open space in Arizona and New Mexico (Sierra Institute 1999). The group believed that critical habitat coverage would help ensure measures to protect and restore habitat (Houck 1993). FWS turned down its request, stating that the U.S. cannot be considered "essential to the conservation of the species" as "the key to the species conservation in the northern part of its [global] range lies closer to the core of the species range in Mexico" (FWS 1999a). Moreover, it argued that critical habitat is unnecessary since Section 7 of ESA prohibits agencies from taking actions likely to jeopardize the continued existence of a listed species, including activities which impact habitat. The Sierra Institute group reasoned that this "jeopardy" standard alone would not lead to proactive conservation of habitat in the Southwest given the jaguar's sparse presence, great mobility, and, from a narrow species survival perspective, its "non-essential" status.

Subsequent FWS consultations (ESA Section 7) with other federal agencies seem to validate the group's concerns. FWS "biological opinions" on livestock grazing, prescribed vegetation burning, and campground development on public lands in southeastern Arizona have uniformly stated that these activities are "not likely to jeopardize the continued existence of the jaguar" (FWS 2002). Related agency guidelines have been essentially limited to maintaining vegetation cover for jaguar in some livestock grazing areas (FWS 1997b, USFS 1998) without herd reductions (Harlow 1999; Drennen 2002).

In 1999, FWS issued a biological opinion on predator control activities of the U.S. Department of Agriculture's Wildlife Services program in southern Arizona and

Hildago County, New Mexico (FWS 1999b). The outcome included some restrictions on the use of leghold traps, snares, and M-44 coyote poisoning devices. In addition, the U.S. Bureau of Land Management and the U.S. Forest Service informed public land ranchers in southeastern Arizona that the jaguar is federally protected and that measures are needed to avoid killing or harassing the animals (Drennen 2002; Skinner 2002).

In sum, the 1997 ESA listing made it a federal crime to kill jaguars in the U.S. and helped protect them against harm from federal predator control activities. However, it failed to address the range of threats to jaguar habitat. That task would presumably go to the Jaguar Conservation Team (JAGCT), a new intergovernmental, public involvement group for Arizona and New Mexico.

### **Jaguar Conservation Team (JAGCT)**

Led by the Arizona Game and Fish Department, JAGCT stems from a formal agreement by federal and state agencies and four counties in southern Arizona and New Mexico to adopt the department's jaguar "conservation assessment and strategy" (Johnson and Van Pelt 1997). The agreement was advanced initially in an attempt to convince FWS that ESA protection for the jaguar was not needed (Shroufe 1997; Brown and López 2001). JAGCT was to address threats to the jaguar by providing for conservation "consistent with the intent of the Act" (Johnson and Van Pelt 1997). Member agencies and county governments direct JAGCT activities, while rancher associations, conservation organizations, and private citizens help fill out its "work group" by contributing information and opinions.

JAGCT's accomplishments include education and outreach activities involving, for example, a jaguar



Jaguar (*Panthera onca*). Photograph by John and Karen Hollingsworth. Courtesy of the U.S. Fish and Wildlife Service.

identification brochure for the public and a curriculum for school children. JAGCT also backs a compensation fund for ranchers who might lose livestock to a jaguar (financed through the private Malpai Borderlands Group), and promotes efforts to study jaguars. JAGCT has also conducted a literature review and compilation of jaguar distribution and occurrence data for the Southwest.

JAGCT's promise to tackle habitat conservation has not been fulfilled. Under its conservation agreement, the team was to provide "land management cooperators with guidelines for assessing impacts of current and planned actions on the jaguar and its currently known or suspected habitat" (Johnson and Van Pelt 1997). Cooperators, in turn, were to "evaluate the potential impact on jaguars and jaguar habitat of each new project" while JAGCT would recommend how to address impacts and concerns.

JAGCT would also "encourage public and private land managers to conserve or enhance suitable or potentially suitable jaguar habitat, including corridors connecting those

habitat blocks, to ensure that the jaguar's current and future habitat needs (including natural dispersal and habitat expansion) are appropriately addressed." State wildlife agencies would pursue formal agreements with public land agencies and private landowners to get the job done. These and other habitat objectives, most slated for completion by 1999, have not been met.

JAGCT's failure to carry out its habitat conservation protocol has been blamed on a lack of clarity as to "what is or is not jaguar habitat" (Johnson and Van Pelt 2000). Soon after its inception in 1997, JAGCT had planned to develop a habitat suitability map for the jaguar in the Southwest (Johnson and Van Pelt 1997). Ironically, three and a half years passed before a list of habitat criteria could be finalized, and, as of mid-2002, JAGCT's map remained in draft form (Hatten et al. 2002; Menke and Hayes 2002). From my observations, JAGCT's neglect of its habitat work has been largely in deference to participants who fear that this will ultimately infringe on property rights and ranching interests.

## Conservation science

Is habitat in the U.S. too marginal to support the jaguar? (Rabinowitz 1999; JAGCT 1999). Might conservation resources be better devoted elsewhere? (Peterson 2001). Doubts raised by these questions have dampened interest among conservationists in jaguar recovery for the Southwest. Clearly, the region lies at the northern boundary of the jaguar's geographic range in the Americas (Sanderson et al. 2002). However, peripheral or marginal habitat, while expected to have fewer animals than optimal habitat, does not necessarily mean poor habitat, i.e. habitat not able to support healthy, reproducing individuals. There is no evidence that jaguars in the Southwest are physically disadvantaged or in ill health. In fact, reported body sizes may suggest otherwise. Arizona jaguars, both females and males, tend to be as large or larger than individuals from Mexico (Brown and López 2001). For example, two females, one killed in central Arizona in 1963 and the other in southern Arizona in 1949, were 25-30 lbs (11-14 kg) heavier than an average estimate for females from northwestern Mexico.

Conservation entails saving wild animals and plants in different ecological settings (Povilitis 2001; Sanderson et al. 2002), including along the margins of their geographic ranges (Lesica and Allendorf 1995; Nielsen et al. 2001). It means ensuring evolutionary potential as well as species maintenance. While evolutionary tendencies in the jaguar are unknown, its larger size in the Southwest and in northern Mexico (as compared to Central America but not tropical South America; Brown and López 2001) may hint at re-adaptation to a more open environment. During the Pleistocene, a larger, lankier jaguar was widespread over much of what is now the contiguous U.S. (Kurtén and Anderson 1980).

One thing is certain: jaguars can, if humans allow, inhabit landscapes of comparatively open habitat, as indicated by their presence not only in the American Southwest but in the pampas and llanos of South America (Sanderson et al. 2002). A favorable conservation scenario would see jaguar reproduction in the Southwest as well as in northern Mexico, with regular movement of breeding individuals between the two areas. At the very least, the Southwest should serve as supplemental habitat for what would hopefully be a secure jaguar population in northern Mexico.

Successful conservation of the jaguar in Mexico will not guarantee its presence in the U.S. On the other hand, the jaguar could, despite efforts to the contrary, disappear from northern Mexico making the Southwest potentially the sole northern refugium for the species. As Channel and Lomolino (2000) point out, population persistence depends far more on the intensity of human impacts locally than on geographic location. In fact, endangered species often do better in peripheral areas than elsewhere within their historic ranges. With global climate change and continued deforestation in tropical South America, the American Southwest, inclusive of its heavily timbered central Arizona-New Mexico Mountains, could become vital to the jaguar as a species.

In large measure, conservation resources that might be mustered for the jaguar in the U.S., through state, local, and many national organizations, are not transferable to priority areas for the jaguar elsewhere in the Americas (for a listing, see Sanderson et al. 2002). In the face of increasing development pressures, the U.S. can play an exemplary role by demonstrating its commitment at home to the complex task of ecoregional conservation that is required for large carnivores.

A frequent comment at JAGCT meetings is that jaguars should be studied in northern Mexico before habitat protection measures are undertaken in the U.S. For example, study of territorial jaguars in Sonora, Mexico might suggest specific aspects of habitat (e.g. cover types, topography) important to the species in the Southwest (Miller et al. 2000). On the other hand, such study may not advance knowledge beyond what we already know: jaguars need escape terrain, concealing vegetation, water sources, a prey base, sizable habitat areas, and habitat connectivity. For example, data from northern Mexico suggesting that jaguars prefer thornscrub (a vegetation type that does not occur in the U.S.; Brown and López 2001) might only reveal that, where fearful of humans, the animals select the densest cover available. While encouraging jaguar studies in Mexico, JAGCT's Scientific Advisory Group has recommended broadly identifying habitat in the Southwest that could be occupied by jaguars, and protecting that habitat through a combination of legal and informal means (Miller et al. 2000).

### The future

Our evolving relationship with wildlife and the land will determine the jaguar's future in the U.S. Progress has been made: less killing and less harassment signals a possible comeback for the jaguar. Conversely, habitat loss and fragmentation continue largely unabated. A way must be found to retain "wide open country" for the jaguar and biodiversity in general, and for a host of other reasons related to the quality and meaning of human life (Povilitis 2000).

I suggest several measures to save the borderland jaguar:

1. *Utilize the full power of ESA.* Implement its critical habitat and recovery plan (Section 4) provisions for the jaguar. The Act's purpose is "to

provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved" (ESA Section 2). JAGCT cannot substitute for strong ESA protection (Arizona Daily Star 1997). It is right and just that ranching and hunting traditions, which led the charge to remove the jaguar from the Southwest (FWS 1993; Brown and López 2001), now play a pivotal role in restoring it. In theory, JAGCT affords this opportunity by shifting power and responsibility for conservation to people closest to jaguar habitat. On the other hand, the proximal motivating force behind JAGCT continues to be ESA and its powers of enforcement.

2. *Confront the "fear factor."* Communication workshops led by professional facilitators could help JAGCT address, in a reasoned manner, what ESA protection for the jaguar can and cannot do. Simply allowing participants at meetings to vent their anger about hypothetical land use restrictions, without an improved understanding of ESA, perpetuates misconceptions and diminishes prospects for conservation. Frank discussions on what constitutes "take" (ESA Section 9) would show, for example, that activities such as building a horse corral or an extra house on one's land would not be restricted under ESA because they do not degrade habitat to the point of actually killing or injuring the jaguar "by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering" (Stanford Environmental Law Society 2001). Conversely, the clearing of large acreage for a housing development could be in violation of ESA. In that case, a developer could prepare a Habitat Conservation Plan in order to minimize, monitor, and mitigate adverse effects, and consider alternatives (Hood 1998).

3. *Advance comprehensive con-*

*ervation planning for the Borderland region.* At stake are the jaguar and a plethora of other species in a region whose biodiversity is "globally outstanding" (Ricketts et al. 1999). What is needed is a broad conservation vision and campaign that can be endorsed by U.S. and Mexican governments and attract substantial private investment. Options include the creation of a large Borderlands Conservation Area, drawing on the experience of California's Mojave Desert Conservation Area and Mexico's Biosphere Reserves.

Another model to consider would be Pima County's Sonoran Desert Protection Plan, which addresses multiple-species protection, cultural and ranch land conservation, and other community needs (Pima County Administration 1998).

For the time being at least, jaguar presence in the Southwest is inextricably linked to jaguar survival in northern Mexico. Brown and López (2001) write: "With the translocation of jaguars to the United States off the table...the fate of borderland jaguars depends entirely upon what happens to the Huasabas-Sahuaripa population in Sonora, Mexico. Should this population disappear, there won't be any more jaguars found in the American Southwest."

Jaguars in northern Sonora are the only ones within reasonable dispersal range of the U.S. Border. Ongoing removal of jaguars by local ranchers is compromising the population's future (Brown and López 2001). Additionally, the jaguars in the area may soon be jeopardized by new dams, mines, roads, and other efforts to exploit the region's natural resources.

U.S. and Mexican conservationists must work quickly to protect a core reserve for jaguars in Sonora, secure habitat corridors leading to the Southwest, and help local ranchers adjust livestock practices to reduce

conflict with the jaguar.

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