Petition to Designate Critical Habitat for the Jaguarundi (*Herpailurus yagouaroundi cacomitli, Herpailurus yagouaroundi tolteca)*

Photo: The Wildcat Sanctuary

Petition Submitted to the U.S. Secretary of Interior
Acting through the U.S. Fish and Wildlife Service

Petitioner:
WildEarth Guardians
312 Montezuma Ave.
Santa Fe, New Mexico 87501
(505) 988-9126

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Executive Summary

WildEarth Guardians requests critical habitat designation under the Endangered Species Act for the Jaguarundi (*Herpailurus yagouaroundi cacomitli & Herpailurus yagouaroundi tolteca*) in the U.S. portion of its historic range. Research has shown that critical habitat is effective in promoting recovery of listed species, but the Jaguarundi has never been granted critical habitat protection.

Habitat protection is the most important way that the Jaguarundi can be safeguarded in the U.S. The Jaguarundi is known to still occur in south Texas, using dense thornscrub habitats also inhabited by the Ocelot (*Leopardus pardalis*) and may also occur in Arizona. There has been, and continues to be, extensive, ongoing habitat destruction occurring in the U.S. portion of the Jaguarundi's range. Human population growth within this wildcat's range is a driver of continued loss of habitat to agriculture and development. Border installations and related activity further degrade and fragment its habitat, as well as dividing small U.S. populations from larger populations in Mexico.

The dense thornscrub habitats upon which the Jaguarundi depends have been reduced by more than 90% in south Texas. The small fragments that remain are isolated. To protect the Jaguarundi from extinction, its suitable habitat must be expanded and connected. Critical habitat can do what mere listing cannot – provide effective protection for unoccupied areas. Occupied and potential Jaguarundi habitat should be acquired, protected, and restored to ensure that this intriguing animal does not perish from the U.S. from being stranded on tiny patches of habitat.

Scientists recommend that the Jaguarundi's ability to migrate northward from Mexico not be impeded. Their calls for trans-border cooperation in recovering this unique and elusive wildcat is a striking and important counter to the current national U.S. drive to separate the people and ecosystems of the two countries. International cooperation between scientists and land managers on both sides of the U.S./Mexico border is imperative for preserving the Jaguarundi in this biodiverse region.

Critical habitat designation for the Jaguarundi could be accomplished in a rule that jointly designates critical habitat for the sympatric Ocelot.

Introduction

WildEarth Guardians requests that the U.S. Fish and Wildlife Service (FWS) designate critical habitat for the Gulf Coast Jaguarundi (*Herpailurus yagouaroundi cacomitli)* and the Sinaloan Jaguarundi (*Herpailurus yagouaroundi tolteca*) under the Endangered Species Act (ESA) and Administrative Procedure Act (APA). FWS listed these two subspecies of Jaguarundi in 1976 (USFWS 1976).[1] FWS considers habitat loss and predator control the main threats to this species (USFWS 2010).[2] The Jaguarundi's numbers in the U.S. may be down to fewer than 15 cats (Klepper 2005; USFWS 2009a).[3]

While the FWS issued a recovery plan for the sympatric Ocelot (*Leopardus pardalis*) in 1990, it has yet to issue a recovery plan for the Jaguarundi. The 1990 Recovery Plan mentions the Jaguarundi, but its focus is on the Ocelot. Regarding the Jaguarundi, FWS writes that, should new information become available on its status, "the recovery plan will be revised to include appropriate recovery actions" (USFWS 1990: 1)[4] and "For the present, plans for recovery of the listed cats of Arizona and Texas will have to be limited largely to ocelot preservation." *Id*. at p. 24. A revised recovery plan has never been issued.[5]

FWS has a tool at its disposal that could give the critically imperiled Jaguarundi the measure that it needs most to survive and recover: increased habitat protection. That tool is critical habitat designation, which provides upgraded safeguards by allowing FWS to restrict any federal actions that may "result in the destruction or adverse modification" of critical habitat, rather than the much less restrictive prohibition on jeopardizing a listed species. 16 U.S.C. § 1536(a)(2). Moreover, critical habitat can safeguard both occupied habitat and unoccupied habitat necessary for the species' survival and recovery. Given that the Jaguarundi is currently likely limited to very small pockets of habitat in Texas, the protection of unoccupied habitat is of paramount importance: both to connect and expand existing suitable habitat. Indeed, species are twice as likely to recover if provided with critical habitat, partly due to the protection of unoccupied areas essential to the recovery of a listed species (Taylor et al. 2005).[6]

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[1]U.S. Fish and Wildlife Service. 1976. Endangered Status for 159 Taxa of Animals. Final Rule. 41 Fed. Reg. 24062-24067. [Attachment 1]

[2]See http://www.fws.gov/southwest/es/arizona/Documents/Redbook/Jaguarundi%20RB.pdf [Accessed January 2010]. [Attachment 2]

[3]Klepper, D.E. 2005. Rarest Cat of All. Article published in Texas *Parks and Wildlife Department Magazine-September 2005, Vol. 63, No. 9.* pp. 55 and 63. Online at: http://www.tpwmagazine.com/archive/2005/sept/legend/ [Accessed January 2010]. [Attachment 3]; U.S. Fish and Wildlife Service. 2009a. Draft Comprehensive Conservation Plan and Assessment for Laguna Atascosa National Wildlife Refuge. Dated August 28, 2009. Online at: http://www.fws.gov/southwest/refuges/texas/STRC/laguna/LagunaAtascosDraftCCP2009.pdf [Accessed January 2010]. [Attachment 4]

[4]U.S. Fish and Wildlife Service. 1990. Listed Cats of Texas and Arizona Recovery Plan (With Emphasis on the Ocelot). U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 131 pp. [Attachment 5]

[5]WildEarth Guardians is currently in litigation over the lack of a Jaguarundi Recovery Plan. *WildEarth Guardians v. Salazar* 4:09-cv-01893 (U.S. Dist. Ct., S. D. TX. 2009).

[6]Taylor, M.F.J., Suckling, K.F., and J.J. Rachlinski. 2005. The Effectiveness of the Endangered Species Act: a Quantitative Analysis. BioScience 55(4): 360-367. [Attachment 6]

Scientists have specifically recommended the designation of critical habitat for the Ocelot in Texas:

> Critical Habitat for Ocelots must be designated in Texas. Once designated, this habitat would be protected and enhanced to promote continued use by Ocelots (U.S. Fish and Wildlife Service, 1990)...Ocelot Critical Habitat designation in the Lower Rio Grande Valley should provide ample cover for Ocelots and their prey in protected areas and in non-protected corridor areas that connect protected refuge tracks. Doing so will provide nocturnal species with movement opportunities associated with foraging, mating, rearing of young, and dispersal. (Grigione and Mrykalo 2004: 75)[7]

This logic extends to the Jaguarundi as well. Relying on small islands of suitable habitat surrounded by vast expanses of agriculture and urban lands is the current condition of both the Ocelot and Jaguarundi. A compounding threat is more frequent and severe droughts and hurricanes resulting from climate change. A driver of anthropogenic threats is human population growth. To protect the Jaguarundi from extinction, its suitable habitat must be expanded and connected.

Scientists also point out that bolstered border walls, fences, and other installations and activities will impede the recovery of transborder cats, including the Jaguarundi (Grigione et al. 2007).[8] Alternatively, international cooperation can help bring these cats back from the brink:

> Cat conservation in the border region presents an opportunity for collaboration that would counterbalance current efforts to make the border impermeable to both people and wildlife. *Id*. at p. 198.

Elsewhere, Grigione et al. (2009)[9] point to the need for more focused inquiry on the status of the Jaguarundi and other cats within 100 km (~60 mi) of the U.S./Mexico border and note that an accompanying synthesis of knowledge "is fundamental to the future protection of threatened and endemic fauna in this or any transnational region" (p. 85).

Critical habitat is a necessary measure to ensure protections of the Jaguarundi from the

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[7]Grigione, M.M., and R. Mrykalo. 2004. Effects of artificial night lighting on endangered ocelots (*Leopardus paradalis*) and nocturnal prey along the United States-Mexico border: A literature review and hypotheses of potential impacts. Urban Ecosystems 7: 65–77. [Accessed January 2010]. [Attachment 7]. *See also* WildEarth Guardians Petition for Critical Habitat for the Ocelot (Leopardus pardalis), submitted to the U.S. Fish and Wildlife Service on January 21, 2010. [Attachment 8]

[8]Grigione, M., Scoville, A., Scoville, G. and K. Crooks. 2007. Neotropical cats in Southeast Arizona and surrounding areas: past and present status of jaguars, ocelots and jaguarundis. Mastozoologia Neotropical 14(2): 189-199. [Attachment 9]

[9]Grigione, M.M., Menke, K., Lopez-Gonzalez, C., List, R., Banda, A., Carrera, J., Carrera, R., Giordano, A.J., Morrison, J., Sternberg, M., Thomas, R., and B. Van Pelt. 2009. Identifying potential conservation areas for felids in the USA and Mexico: integrating reliable knowledge across an international border. Oryx 43(1): 78-86. [Attachment 10]

threats it faces. FWS should therefore designate critical habitat for the Jaguarundi.

Legal Basis for Petition

WildEarth Guardians submits this petition under the ESA's provision to petition for the revision of a critical habitat designation (16 U.S.C. § 1533). The ESA requires a finding by the Secretary of Interior, acting through the FWS, within 90 days of its receipt of this petition, "as to whether the petition presents substantial scientific information indicating that the revision may be warranted." *Id*. at 1533(b)(3)(D)(i). If the 90-day finding is substantial, the ESA requires a finding within 12 months, in which "the Secretary shall determine how he intends to proceed with the requested revision." *Id*. at (ii).

In addition, we submit this petition pursuant to section 553 of the APA. We request that FWS designate critical habitat for the Jaguarundi. Section 553 of the APA provides that "[e]ach agency shall give an interested person the right to petition for the issuance, amendment, or repeal of a rule." 5 U.S.C. § 553(e). The APA defines a rule as the whole or a part of an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy or describing the organization, procedure, or practice requirements of an agency. 5 U.S.C. § 551(4). As such, critical habitat clearly meets the definition of a rule under the APA.

WildEarth Guardians requests critical habitat designation revision or designation for the Jaguarundi because habitat loss is the primary threat to this species, and its habitat in the U.S. has already been severely reduced. Its current habitat in the U.S. is extremely limited and isolated and must receive maximum legal protection, which only critical habitat designation can provide.

While the ESA generally provides that critical habitat should be designated for listed animals and plants, the importance of critical habitat is especially apparent in the case of the Jaguarundi. Its listing in 1976 was a crucial step in safeguarding this wildcat. However, critical habitat is imperative for not only preventing the extinction, but effecting the recovery of this exceedingly rare species.

Critical habitat designation is necessary to *conserve* this species. The very purpose of the ESA is to conserve species and the ecosystems on which they depend:

> The purposes of this Act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species… 16 U.S.C. § 1531(b).

Under the ESA, "conserve" is defined as:

> …to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary. Such

> methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking. 16 U.S.C. § 1532(3).

In other words, "conserve" means "recover" under the ESA. Critical habitat designation is essential to recover this species. In a subsequent section, we discuss the value of critical habitat designation for the Jaguarundi and how FWS should determine its critical habitat. As noted above, this species likely occupies only small fragments of suitable habitat in Texas. But this animal's future lies in its unoccupied habitat – whether presently suitable or capable of being restored to thornscrub – that can expand and connect areas in which Jaguarundis can grow their populations and eventually recover. Moreover, critical habitat designation can ensure that actions by federal agencies in potential Jaguarundi habitat (occupied or unoccupied) better promote the best interests of this cat.

Description of Petitioner

WildEarth Guardians is a non-profit environmental organization whose mission is to restore wildlife, wild places, and wild rivers in the American West. WildEarth Guardians has over 4,500 members. The organization has an active endangered species protection campaign, with a geographic focus on the western United States (although the organization has a national scope). As part of this campaign, Guardians works to obtain or upgrade ESA protection for a wide variety of imperiled wildlife and plants and the ecosystems on which they depend.

Species Description

The Jaguarundi (*Herpailurus yagouaroundi* Geoffrey, 1803) is a small to medium-sized cat, which weighs approximately 5 kg (11 lbs) and has a very long tail. The male's head and body length are approximately 68.3 cm (26.9 in), with a tail length of 50.4 cm (19.8 in). The female's head and body are 59 cm (23.2 in) long, with a 43.8 cm (17.2 in) long tail. It is smaller than the Ocelot (Oliveira 1998).[10]

The Jaguarundi has been described as "the cat with relatively few feline features" (Oliveira 1998: 1, citing Guggisberg 1975). Its long body, small rounded ears, small head, short limbs, and uniform fur distinguish it from other neotropical cats. Born spotted, an adult Jaguarundi is not spotted: its fur is uniform in color (although sometimes its head and neck are slightly lighter in coloration). Color phases include brownish black, gray, or reddish but are largely grouped into two phases: 1) grey; or 2) "eyra," a distinct burnt red. Different individuals in a litter can have different color phases. The Jaguarundi's eyes are honey-brown (Oliveira 1998). Its tracks are very different from other small cats, with toe-pads significantly more elongated and oval

[10]Oliveira, T.G. 1998. *Herpailurus yagouaroundi*. Mammalian Species 578: 1-6. [Attachment 11]

(Konecny 1989).[11]

Jaguarundis are not close relatives of other small neotropical cats. They descended from ancestors that likely evolved in Europe, then migrated to the Western Hemisphere via the Bering Land Bridge, at approximately the same time as cougars (*Puma concolor*) (Werdelin 1985, cited in Grigione et al. 2007).

The Jaguarundi is diurnal but can also be active at night, particularly on nights with a full moon (Konecny 1989; Caso 1994).[12] The species is primarily terrestrial, but moves in trees with agility, particularly when pursued. Adults have a wide range of vocalizations, with at least 13 distinctive calls. Like other small cats, it makes friendly close-range gurgling vocalizations that are short, noisy, and low-intensity, and used for close friendly contact, courtship, mating, or between mothers and kittens. This species is easily tamed (Oliveira 1998).

Females reach sexual maturity at approximately 2 years, and mating occurs in late autumn in the northern portion of the species' range. Estrus lasts approximately 3.2 days; gestation ranges from 63-75 days; and the average litter size is 1-4 kittens, with a mean of 1.9. Females have three pairs of mammae. The young leave the nest starting at approximately 28 days. By 42 days of age, young are able to eat by themselves. Longevity (in captivity) is a maximum of 15 years. *Id*.

The Jaguarundi preys on small rodents, reptiles, and birds. Mammals and birds appear to be the most common prey items (Konecny 1989; Oliveira 1998). Its mean mass of vertebrate prey per day is approximately 400 g (14.1 oz) (Oliveira 1998).

Habitat Requirements

According to FWS, the Jaguarundi requires habitat similar to the Ocelot (Jahrsdorfer and Leslie 1988, USFWS 1992).[13] See WildEarth Guardians (2010) for a full description of Ocelot habitat requirements. In the Texas portion of its range, Tamaulipan dense thornscrub is key habitat for both cats. While the Jaguarundi is sometimes found in open habitat, it requires proximity to dense cover (Caso 1994; Oliveira 1998). States Caso (1994: 73), "jaguarundis use open areas for hunting and sometimes for resting, but if threatened with a potential danger they will seek cover in brush areas."

Likely the Jaguarundi's most important remaining location in the U.S. is Laguna

[11]Konecny, M.J. 1989. Movement patterns and food habits of four sympatric carnivore species in Belize, Central America. Advances in Neotropical Mammalogy: 243-264. [Attachment 12]
[12]Caso, A. 1994. Home range and habitat use of three neotropical carnivores in Northeast Mexico. Thesis. December 1994. Online at: http://www2.for.nau.edu/research/pb1/Service/ocelot/Caso_Thesis.pdf [Accessed January 2010]. [Attachment 13]
[13]Jahrsdorfer, S.E. and D.M. Leslie, Jr. 1988. Tamaulipan brushland of the lower Rio Grande Valley of south Texas: description, human impacts, and management options. U.S. Fish and Wildlife Service, Oklahoma Cooperative FWRU, Stillwater, OK. [Attachment 14]; U.S. Fish and Wildlife Service. 1992. 90-day finding on petition to delist the Jaguarundi (Felis yagouaroundi tolteca). 57 Fed. Reg. 14556-7. [Attachment 15]

Atascosa National Wildlife Refuge (Laguna Atascosa NWR), which has flat topography, elevations of 0-10 m (0-32.8 ft), and a range of salt flats and marshes, along with chaparral and brush-grasslands (Harveson et al. 2004; Horne et al. 2009).[14] Santa Ana and Lower Rio Grande Valley NWRs also contains Tamaulipan brushland (Jahrsdorfer and Leslie 1988) that may be suitable for the Jaguarundi.

Plants occurring in the Jaguarundi's Texas habitat include: Spiny hackberry or granjeno (*Celtis pallida*), crucita (*Eupatorium odoratum*), Berlandier fiddlewood (*Citharexylum berlandieri*), honey mesquite (*Prosopis glandulosa*), desert olive (*Forestiera angustifolia*), snake-eyes (*Phaulothamnus spinescens*), colima (*Zanthoxylum fagara*), brasil (*Condali hookeri*), Texas ebony (*Pithecellobium flexicaule*), lotebush (*Zizyphus obtusifolia*), and other thorny shrubs (Harveson et al. 2004; Haines et al. 2005b; EDF 2006).[15] Preferred soil types for these plants are Camargo, Laredo, Olmito, and Point Isabel (Harveson et al. 2004).

Unfortunately, the dense thornscrub favored by Jaguarundis and Ocelots in Texas is much-diminished (e.g., USFWS 1990). FWS states that "Little thorn forest classified as optimal habitat for ocelots remains in south Texas" and "very little optimal habitat remains in the current U.S. range of the ocelot." *Id*. at p. 18. The agency quantifies suitable habitat as follows:

> The total habitat available to ocelots in the Lower Rio Grande Valley is estimated to be less than 20,000 hectares (49,400 ac), with the largest block of thorn forest being the Laguna Atascosa NWR, with 3,352 hectares (8,280 ac) of remaining thorn forest. Laguna Atascosa NWR probably supports 25 to 30 ocelots...The remaining habitat in the area exists as numerous smaller thorn forest tracts, most less than 100 hectares (247 ac) and widely separated from other blocks...Lack of corridors between these thorn forest islands may restrict the use of these potential habitat sites. (USFWS 1990 at p. 16).

Currently, Laguna Atascosa NWR contains 75 km^2 (18,530 ac) of suitable habitat (Haines et al. 2005a).[16] The private land habitat in Texas known to be currently occupied by the Ocelot (and providing potential habitat for the Jaguarundi) consists of 2 dense thornscrub patches that measure 3.8 km^2 (939 ac) and are less than 0.2 km (0.1 mi) apart

[14]Harveson, P.M., Tewes, M.E., Anderson, G.L. and L.L. Laack. 2004. Habitat use by ocelots in South Texas: implications for restoration. Wildlife Society Bulletin 32(3): 948-954. [Attachment 16]; Horne, J.S., Haines, A.M., Tewes, M.E., and L.L. Laack. 2009. Habitat partitioning by sympatric ocelots and bobcats: implications for recovery of ocelots in southern Texas. The Southwestern Naturalist 54(2): 119-126. [Attachment 17]

[15]Haines, A.M., Tewes, M.E., and L.L. Laack. 2005a. Survival and sources of mortality in ocelots. Journal of Wildlife Management 69(1): 255-263. [Attachment 18]; Environmental Defense Fund. 2006. Safe harbor agreement between Environmental Defense, Inc. and the U.S. Fish and Wildlife Service to provide Safe Harbor assurances to landowners in South Texas who voluntarily agree to enhance habitat for the Endangered Ocelot. Dated February 17, 2006. [Attachment 19]

[16]Haines, A.M., Tewes, M.E., Laack, L.L, Grant, W.E. and J. Young. 2005b. Evaluating recovery strategies for an ocelot (*Leopardus pardalis*) population in the United States. Biological Conservation 126: 512-522. [Attachment 20].

(Janecka et al. 2008).[17]

Scientists have documented a variety of home range sizes for the Jaguarundi. In Belize, two adult males had home ranges of 99.9 km^2 (24,685.8 ac) and 88.3 km^2 (21,819.4 ac), respectively, and an adult female's home range size was 20.1 km^2 (4,966.8 ac). In Brazil, an adult male had a home range of 17.6 km^2 (4,349.1 ac) and an adult female 6.8 km^2 (1,680.3 ac) (Konecny 1989; Oliveira 1998). In Tamaulipas, Mexico, Caso (1994) documented home ranges of 8.5 km^2 (2,100.4 ac) for an adult male and 8.8 km^2 (2,174.5 ac) for an adult female. Caso and Tewes (2007)[18] more recently estimated mean home range size for adult males at 9.6 km^2 (2,372.2 ac) and adult females at 8.9 km^2 (2,199.2 ac) in Tamaulipas.

Range

The Jaguarundi's range stretches from southern Texas, through Mexico, to portions of South America (Oliveira 1998). There are two subspecies of Jaguarundi in the United States: the Gulf Coast Jaguarundi (*Herpailurus yagouaroundi cacomitli*), which occurs in Texas and Mexico; and the Sinaloan Jaguarundi (*Herpailurus yagouaroundi tolteca*), which occurs in Arizona and Mexico. The Sierra Madre highlands likely act as a barrier between the two U.S. subspecies (USFWS 1992). These subspecies represent the northern extent of the full species' range (Grigione et al. 2007, 2009).

While FWS and scientists have questioned whether the species is a resident in Arizona (e.g., Oliveira 1998), it has been reported from that state. Indeed, in 1992, in its rejection of a petition to delist the Jaguarundi in Arizona, FWS found that there were at least 20 sightings of Jaguarundi in Arizona from 1975-1991 on file with the Arizona Game and Fish Department and the Arizona Nature Conservancy. This led FWS to conclude that "numerous sightings by reliable sources do provide reasonable evidence that the jaguarundi may occur in Arizona" and that "Potential jaguarundi habitat does occur in southeastern Arizona" (USFWS 1992: 14556).

More recently, in a study of neotropical cat sightings in the Chiricahua and Peloncillo Mountains of southeastern Arizona, Grigione et al. (2007) report the Arizona Game and Fish Department has on file 33 reliable sightings of Jaguarundis between 1938-1998. Grigione and colleagues interviewed 21 parties that reported seeing the species in the area between 1974-1999. Six of these 21 accounts were from professional biologists and two from wildlife artists. Reports included jaguarundis of different color phases. These authors write that, "there almost certainly are additional sightings of which we are unaware" and further investigation of the species' status in the state is warranted (Grigione et al. 2007: 195).

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[17]Janecka, J.E., Tewes, M.E., Laack, L.L. Grassman, L.I. Jr, Haines, A.M., and R.L. Honeycutt. 2008. Small effective population sizes of two remnant ocelot populations (*Leopardus pardalis albescens*) in the United States. Conserv. Genet. 9: 869-878. [Attachment 21]

[18]Caso, A. and M. Tewes. 2007. Habitat Use, Spatial and Activity Patterns of the Jaguarundi in Northeast Mexico. Online at: http://www.carnivoreconservation.org/files/meetings/felids_2007_oxford.pdf [Accessed January 2010]. [Attachment 22]

Figure 1 shows the range of the Jaguarundi in the United States. Due to the lack of information on its current range, the map shows historic range only.

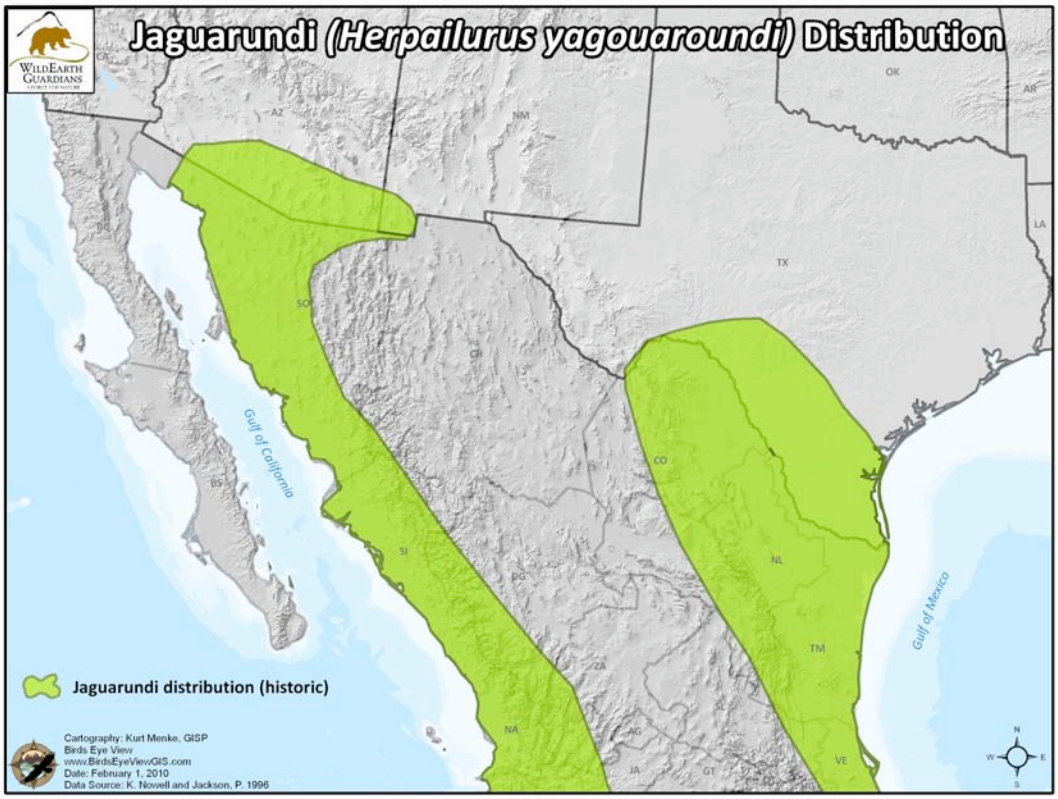

Figure 1: Historic Range of the Jaguarundi.

The Texas Parks and Wildlife Department (TPWD) describes the Jaguarundi's range in the state as "South Texas Brush Country and Lower Rio Grande Valley."[19] Figure 2 indicates that TPWD believes the Jaguarundi's range in Texas consists of Willacy and Cameron counties.

[19]See http://www.tpwd.state.tx.us/huntwild/wild/species/endang/animals/mammals/jag.phtml [Accessed January 2010]. [Attachment 23]

Figure 2: Jaguarundi Distribution in Texas, according to Texas Parks and Wildlife Department. Shaded Counties Indicate Distribution.

FWS reported in 2009 that every year there are credible sightings of Jaguarundi on or near the Laguna Atascosa NWR in South Texas (USFWS 2009a).

Population Status

The full species is now thought by scientists to be decreasing in population (Caso et al. 2008a).[20] Scientists write:

> The jaguarundi is much less abundant than previously perceived and needs to be monitored in the future as the threats persists and will likely fragment and reduce the overall population.
>
> With density estimates considerably low and the negative impact of ocelots (Oliveira *et al*. in press) it is likely that no conservation units, with the probable exception of the mega-reserves of the Amazon basin could sustain long-tern viable populations of jaguarundis. *Id*.

[20]Caso, A., Lopez-Gonzalez, C., Payan, E., Eizirik, E., de Oliveira, T., Leite-Pitman, R., Kelly, M. & Valderrama, C. 2008a. *Puma yagouaroundi*. In: IUCN 2009. IUCN Red List of Threatened Species. Version 2009.2. <www.iucnredlist.org>. Downloaded on 30 January 2010. Online at: http://www.iucnredlist.org/apps/redlist/details/9948/0 [Attachment 24]

There are no estimates of the number of Jaguarundis for its U.S. range overall. However, scientists estimate that less than 15 individuals may exist in South Texas (Klepper 2005; USFWS 2009a).

Grigione et al. (2007) write that the establishment of the species in the U.S. is contingent on immigration from source populations in Mexico. These scientists indicate the importance of identifying source populations in Mexico, as well as travel routes by which the Jaguarundi can reach the U.S. State Grigione et al. (2007: 197):

> …further investigation of possible populations of neotropical felids, especially jaguarundis and ocelots, is a priority in the border region…Conservation for these northernmost populations is imperative.

Grigione et al. (2009) quantified Jaguarundi sightings in the U.S. and Mexico[21] as follows: 1) There were 25 Class I sightings, in which sightings were made by a credible observer, with physical evidence such as a carcass; 2) there were 157 Class II sightings, wherein a detailed description of event was provided by a reliable observer, but there was no physical evidence; and 3) there were 170 Class III sightings, where the observer was vague and provided no physical evidence.

TPWD describes the species as "very rare" in Texas. According to the agency, "The Jaguarundi is so elusive that researchers have been unable to estimate how many are left in the wild" (TPWD 2008).[22]

A Forgotten Species

Both of the U.S. subspecies of the Jaguarundi were listed under the Endangered Species Act on June 14, 1976 (USFWS 1976). FWS has never issued a determination on critical habitat for the Jaguarundi. While FWS maintains that the 1990 recovery plan for the Ocelot is also a recovery plan for the Jaguarundi, FWS states in that plan, "For the present, plans for recovery of the listed cats of Arizona and Texas will have to be limited largely to ocelot preservation" (USFWS 1990: 24). No specific recovery plan for the Jaguarundi has ever been issued.

[21]Grigione et al.'s (2009) study area was: the US states of Arizona, New Mexico and Texas, and the Mexican states of Sonora, Chihuahua, Coahuila, Nuevo Leon and Tamaulipas.
[22]Texas Parks and Wildlife Department. 2008. Online webpage for Jaguarundi. [Accessed 2008]. [Attachment 25]

Threats to Survival and Recovery

ESA Section 4 (16 U.S.C. § 1533(a)(1)) sets forth listing factors under which a species can qualify for ESA protection (see also 50 C.F.R. § 424.11(c)):

A. The present or threatened destruction, modification, or curtailment of habitat or range;
B. Overutilization for commercial, recreational, scientific, or educational purposes;
C. Disease or predation;
D. The inadequacy of existing regulatory mechanisms; and
E. Other natural or manmade factors affecting its continued existence.

To recover, a listed species must no longer face threats under these listing factors. Scientists consider habitat loss and persecution to be the main threats to the Jaguarundi (Caso et al. 2008a). Grigione et al. (2009: 78) recognize the following threats to the neotropical cats in general:

> Neotropical felid populations in the border region are threatened by land development and land conversion, predator control by cattle growers, an increase in disease exposure, construction of highways, international bridges and immigration-control infrastructure.

ESA Listing Factor A: Habitat Loss and Degradation

Habitat loss is considered the primary threat to the Jaguarundi (Oliveira 1998; USFWS 1990, 2009a). FWS has indicated that Jaguarundis require similar habitat as the Ocelot (USFWS 1990, 1992), and scientists have documented severe and continued declines in Ocelot habitat in the U.S. (Murray and Gardner 1997; Harveson et al. 2004; Jackson et al. 2005; Janecka et al. 2008; Haines et al. 2005a, 2005b; Horne et al. 2009).[23] FWS has also reported extensive dense thornshrub habitat loss (USFWS 1982; USFWS 1990; USFWS 2009b).[24] FWS estimated a 90% decline in Lower Rio Grande Valley brushland; predicted in 1990 that more would be lost on private lands within five years; and described the habitat as rapidly disappearing along the Rio Grande in Mexico as well (USFWS 1990: 84). Thornscrub habitat loss continues: Jackson et al. (2005) report that, from 1991-2000, approximately 45,800 ha (113,126 ac) of closed canopy suitable for Ocelots (and therefore Jaguarundis) were destroyed in south Texas.

Grigione et al (2007) warn that travel routes needed by Jaguarundis to reach the Arizona portion of their historic range are being eliminated by habitat destruction in both Arizona

[23]Murray, J.L. and G.L. Gardner. 1997. *Leopardus pardalis*. Mammalian Species 548: 1-10. [Attachment 26]; Jackson, V.L., Laack, L.L. and E.G. Zimmerman. 2005. Landscape metrics associated with habitat use by ocelots in South Texas. Journal of Wildlife Management 69(2): 733-738. [Attachment 27]

[24]U.S. Fish and Wildlife Service. 1982. Endangered Status for U.S. Population of the Ocelot. Final Rule. 47 Fed. Reg. 31670-31672. [Attachment 28]; U.S. Fish and Wildlife Service. 2009b. Spotlight Species Action Plan for the Ocelot. Online at: http://ecos.fws.gov/docs/action_plans/doc3052.pdf [Accessed January 2010]. [Attachment 29]

and Mexico. Additional threats are border walls and fences, which obstruct Jaguarundi passage between the two countries, as well as harming fragile ecosystems needed by this cat. *Id*. FWS has recognized that border activities, including immigration, drug trafficking, and police and military efforts to address these concerns, are causing habitat loss and further isolation of Texas populations from Mexican populations of Ocelots (USFWS 2009b). Border installations and activities threaten the Ocelot by restricting mobility and disrupting animals through artificial lighting (Grigione and Mrykalo 2004; Bies 2007;[25] List 2007;[26] Grigione et al. 2009). As another transborder cat, the Jaguarundi is likewise imperiled by these activities.

Human population growth is the primary driver of habitat loss for transborder cats in the U.S. Indeed, in the 2009 Action Plan for the Ocelot, USFWS described how human population growth

> …has produced another wave of land use change, as agricultural land has given way to residential development, causing further loss of remaining brush land and increasing the threat of future habitat loss due to the sale and/or subdivision of formerly large land tracts…

See USFWS (2009b: 1). Human population growth is discussed under ESA Listing Factor E, below.

In summary, habitat loss and degradation has been, and continues to be a threat to the Jaguarundi in the U.S. Whether from agriculture, urbanization, roads, border activities, or other land uses, habitat destruction is the principal obstacle to the Jaguarundi's survival and recovery.

ESA Listing Factor B: Overutilization

Oliveira (1998) indicated that poisoning has been documented in mortalities of the Jaguarundi. Killing Jaguarundis to protect poultry is the leading threat, after habitat loss. *Id*. Predator control in the Ocelot's U.S. habitat was cited by FWS as a threat to this species (USFWS 1982; 1990), and the agency should similarly consider these activities as a threat to the Jaguarundi.

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[25]Bies, L. 2007. Bordering on disaster: new Homeland Security legislation jeopardizes wildlife. The Wildlife Professional Spring 2007: 24-28. [Attachment 30]

[26]List, R. 2007. The impacts of the border fence on wild mammals. Pp. 77-86 In A Barrier to Our shared Environment: the Border Fence Between the United States and Mexico. Eds. A. Cordova and C.A. de la Parra. Secretariat of Environment and Natural Resources, National Institute of Ecology, El Colegio de la Frontera Norte, Southwest Consortium for Environmental Research and Policy. See, especially, Map 1. [Attachment 31]

ESA Listing Factor C: Disease or Predation

Jaguarundis can suffer from a range of parasites, including hookworms, tapeworms, and lung flukes. Diseases in captive jaguarundis have included respiratory (particularly pneumonia), urogenital, cardiovascular, and digestive ailments (Oliveira 1998).

The Jaguarundi likely faces the same non-human predators as the Ocelot: feral dogs, coyotes, bobcats, mountain lions, feral pigs, great horned owls and other large raptors, alligators, and snakes (USFWS 1990). Haines et al. (2005b) reported that at least 3 of 29 mortalities were from a rattlesnake bite, attack by a domestic dog, and predation on an Ocelot. Additionally, Ocelots themselves have a negative effect on the populations of smaller sympatric species, such as the Jaguarundi. Scientists have termed this "the ocelot effect" (Oliveira et al. in press, cited in Caso et al. 2008b).[27]

FWS has noted how shrinking habitats increase the threats from predation and disease to the Ocelot (USFWS 2009b). The Jaguarundi is likely to be similarly – or even more – susceptible, as it shares the few islands of remaining habitat with the Ocelot.

ESA Listing Factor D: Inadequacy of Regulatory Mechanisms

The Jaguarundi is listed as Endangered under the Endangered Species Act and is on Appendix I of the Convention on International Trade in Endangered Species (CITES). Both designations protect this species from direct, intentional take and commerce. However, while the Jaguarundi is listed under the ESA, critical habitat designation would increase regulatory shields for this species.

Habitat loss has even occurred on NWR lands managed by FWS, primarily through planting grain crops for waterfowl (USFWS 1990). As of 1990, the total suitable dense thornscrub habitat on Laguna Atascosa was approximately 8,000 acres, with plans to convert 500 additional acres to brush. *Id*.

The primary problem for the Jaguarundi in the U.S. is that it suffers from neglect by FWS. Expenditure reports from 1996-2007 indicate relatively little spending on this animal.[28] The Sinaloan Jaguarundi has suffered from particular neglect: FWS has not spent any funds on this animal since 1999. FWS expenditures on the Gulf Coast Jaguarundi have averaged just $25,233 from 1996-2007 (not including habitat acquisition). The total expenditure on habitat acquisition in this 12-year timeframe was just $270,200 for the Gulf Coast subspecies and just $167,500 for the Sinaloan subspecies (Tables 1 and 2).

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[27]Caso, A., Lopez-Gonzalez, C., Payan, E., Eizirik, E., de Oliveira, T., Leite-Pitman, R., Kelly, M. & Valderrama, C. 2008b. *Leopardus pardalis*. In: IUCN 2009. IUCN Red List of Threatened Species. Version 2009.2. <www.iucnredlist.org>. Downloaded on 30 January 2010. Online at: http://www.iucnredlist.org/apps/redlist/details/11509/0 [Attachment 32]

[28]Expenditure reports for endangered species for 1996-2007 are online at http://www.fws.gov/Endangered/pubs/index.html [Accessed January 2010]. [Attachments 33-43]

Table 1. Federal and State Expenditures on the Gulf Coast Jaguarundi.
Source: FWS Expenditure Reports 1996-2007.

Year	FWS	Other Federal	State	Land Acquisition
1996	$2,500	$83,050[a]	$0	$0
1997	$0	$66,280[b]	$500	$0
1998	$38,000	$28,000	$0	$167,000
1999	$15,500	$400	$0	$0
2000	$4,800	$1,500	$0	$0
2001	$16,200	$1,750	$1,000	$0
2002	$27,600	$1,300	$0	$0
2003	$44,500	$480	$0	$0
2004	$39,000	$5,870	$1,900	$0
2005	$45,100	$37,440[c]	$4,300	$0
2006	$28,600	$10,230	$4,650	$0
2007	$41,000	$5,280	$2,500	$103,200

[a]Most of this was expended by the Navy ($82,700).
[b]Most of this was expended by the Natural Resources Conservation Service ($65,000).
[c]Most of this was expended by the Bureau of Reclamation ($31,500).

Table 2. Federal and State Expenditures on the Sinaloan Jaguarundi.
Source: FWS Expenditure Reports 1996-2007.

Year	FWS	Other Federal	State	Land Acquisition
1996	$51,000	$450	$3,500	$0
1997	$26,800	$1,800	$0	$500
1998	$34,000	$9,100	$500	$167,000
1999	$0	$5,300	$500	$0
2000	$0	$900	$3,000	$0
2001	$0	$100	$3,000	$0
2002	$0	$500	$12,000	$0
2003	$0	$200	$12,000	$0
2004	$0	$0	$12,000	$0
2005	$0	$0	$0	$0
2006	$0	$150	$0	$0
2007	$0	$100	$0	$0

Overall, FWS is failing to spend adequate funds to ensure the survival and recovery of the Jaguarundi in the U.S. Moreover, FWS is failing to spend adequate funds on a measure necessary to counter the threat of habitat destruction: habitat acquisition. The agency's meager overall spending on both subspecies indicates that the Jaguarundi is, indeed, a forgotten species.

ESA Listing Factor E: Other Natural or Manmade Factors

Vehicle mortalities. The last known record of the Jaguarundi in Texas was of a road-killed individual found in 1986, east of Brownsville (USFWS 2009a). *See also* Caso (1994). Collisions with motor vehicles constitute some degree of threat to this species.

Human population growth. Habitat destruction and other threats, including the proliferation of roads, in the U.S. portion of the Jaguarundi's range are propelled by human population increases (USFWS 2009b). Multiple studies have pointed to rapid human population growth in the Lower Rio Grande Valley as a driver of threats such as habitat loss and road mortality (Harveson et al. 2004; Haines et al. 2005a, 2005b). Haines et al. (2005a) describe this valley as having "the most impoverished and rapidly growing border population of humans in the U.S." (Haines et al. 2005a: 513). For example, census data for Cameron County, Texas show rapid human population growth (Figure 3).

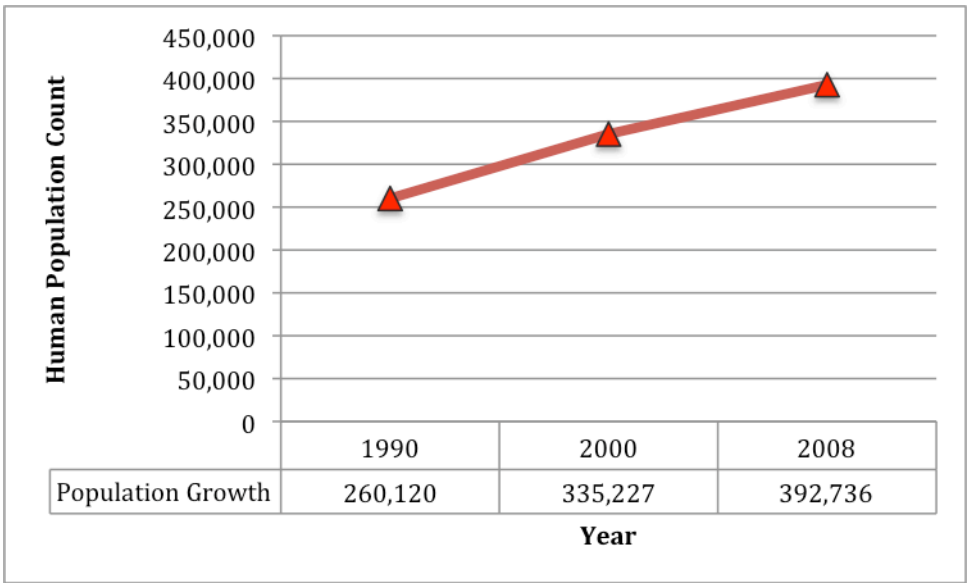

Figure 3: Human Population Growth in Cameron County, TX, from 1990-2008.
Source: US Census Bureau 2010; www.factfinder.census.gov [Accessed January 2010]

Climate change. Drought, tropical storms, and hurricanes all occur within the Jaguarundi's U.S. habitat. Climate change has, and will continue to, increase the frequency and severity of these weather events in this region of the U.S. (e.g., Karl et al. 2008; 2009).[29] Indeed, FWS has acknowledged this threat to Ocelot habitat (USFWS

[29]Thomas R. Karl, Gerald A. Meehl, Christopher D. Miller, Susan J. Hassol, Anne M. Waple, and William L. Murray (eds.). [CCSP]. 2008. *Weather and Climate Extremes in a Changing Climate. Regions of Focus: North America, Hawaii, Caribbean, and U.S. Pacific Islands.* A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. Department of Commerce, NOAA's National Climatic Data Center, Washington, D.C., USA, 164 pp. Online at: http://www.climatescience.gov/Library/sap/sap3-3/final-report/sap3-3-final-all.pdf [Accessed November 2009]. [Attachment 44]. Karl, T.R., Melillo, J. M., and T.C. Peterson (eds). 2009. Global Climate Change Impacts in the United States, Cambridge University Press, 2009. Online at

2009b) and describes Jaguarundis as having the same habitat requirements (USFWS 1992, 2009a).

Small population size. The small and isolated status of extant Jaguarundi populations in Texas (estimated at fewer than 15 individuals) is likely causing genetic erosion as well as increased exposure to stochastic events, such as extreme weather caused by climate change. (See analogous discussion for Ocelot in USFWS 2009b and WildEarth Guardians 2010.)

Cumulative factors. The Jaguarundi is likely threatened by the cumulative impacts of multiple threats. For example, habitat loss causes more vulnerability to vehicle mortalities; habitat loss can lead to shrinking populations, which are then more susceptible to disease and genetic inbreeding; climate change can reduce suitable habitat and habitat loss can make the species more vulnerable to hurricanes, droughts, and other dynamics resulting from climate change. This list is not comprehensive but provides demonstrations of ways in which cumulative threats endanger the Jaguarundi.

The Value of Critical Habitat Designation

As noted previously, species with critical habitat designations are twice as likely to recover as those lacking such designations (Taylor et al. 2005). While Laguna Atascosa NWR offers the most suitable habitat at present, it also has potential to increase suitable habitat through restoration of areas that contain preferred soils to thornscrub (Figure 4). In addition, Shinn (2002)[30] indicates that there are several areas on the Lower Rio Grande NWR that contain suitable dense thornscrub habitat. Jahrsdorfer and Leslie (1988) describe Laguna Atascosa NWR, Lower Rio Grande NWR, and Santa Ana NWR as all providing dense thornscrub habitat.

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http://www.globalchange.gov/whats-new/286-new-assessment-climate-impacts-us [Accessed November 2009]. [Attachment 45]

[30]Shinn, K.J. 2002. Ocelot distribution in the Lower Rio Grande Valley National Wildlife Refuge. M.S. thesis, University of Texas-Pan American, 85 pp. [Accessed January 2010]. [Attachment 46]

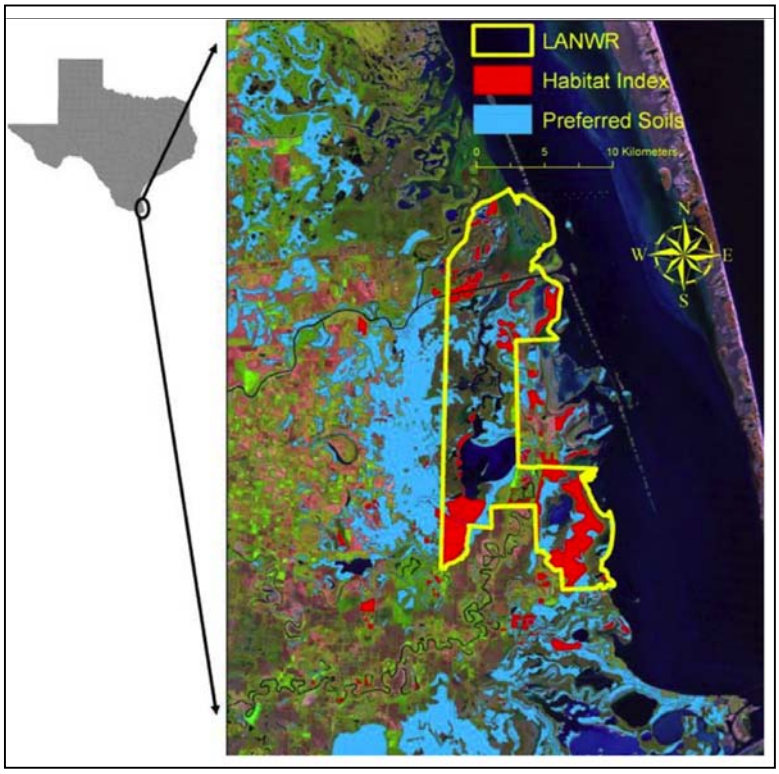

Figure 4. Map of Laguna Atascosa National Wildlife Refuge and vicinity showing dense thornscrub habitat patches and preferred soil types for thornscrub habitat restoration in the Lower Rio Grande Valley. Source: Haines et al. (2005a).

Critical habitat designation would help this animal in a multitude of ways, particularly given that habitat loss (which leads to more vehicle collisions, encounters with predators, genetic inbreeding, etc.) is the leading threat to this species. In particular, critical habitat on those lands essential to the conservation of the Jaguarundi would provide FWS with added impetus to restore habitat under its management authority to thornscrub; better curtail threats; and prescribe conservation measures on projects with a federal nexus. Actions executed, funded, or permitted by Laguna Atascosa NWR, Lower Rio Grande Valley NWR, Santa Ana NWR, Department of Homeland Security, U.S. Department of Transportation, Environmental Protection Agency, Federal Emergency Management Agency, Natural Resources Conservation Agency, and any other federal agency that permits, funds, or conducts activities that may affect the Jaguarundi would have to avoid the destruction or adverse modification of any areas designated as critical habitat by FWS. 16 U.S.C. § 1536(a)(2).

Critical habitat designation could also provide guidance for federal acquisition of key habitats, including core, buffer, and corridor areas, under ESA Section 5. 16 U.S.C. § 1534. Given the drastic reduction of its dense thornscrub habitat, acquisition is key. However, as discussed above, there has been minimal allocation of federal funds toward Jaguarundi habitat acquisition.[31]

The primary way agencies have been spending funds on the Jaguarundi is through the consultation process. Reports indicate expenditures on the two U.S. subspecies by a variety of agencies, but the expenditures are usually small.[32] Involved agencies include, but are not limited to: FWS, Army Corps of Engineers, Bureau of Land Management, Bureau of Reclamation, Federal Energy Regulatory Commission, Natural Resource Conservation Service, Navy, and U.S. Forest Service.[33] Any of these funds spent on consultations would have provided increased protection for the Jaguarundi and its habitat if the agencies were required to avoid adverse modification of critical habitat, rather than the current standard of avoiding jeopardy to the species.

Specific actions that would result from ESA consultation over the effects of federal spending, permitting, or operations within Jaguarundi critical habitat include (but are not limited to):

- **Effective measures to address the loss of habitat**. For lands managed by federal agencies, actions by federal agencies, and actions on non-federal lands requiring federal permits or involving federal monies, critical habitat provides heightened protection for the species from habitat loss.
- **Effective measures to ensure travel corridors from Mexico**. U.S. federal agencies would have to ensure border walls, fences, patrols, and other infrastructure or activities not impede Jaguarundi travel across the U.S./Mexico border.

[31]Likewise, there has been minimal allocation of funds toward Ocelot habitat acquisition. See WildEarth Guardians (2010).
[32]See Attachments 33-43.
[33]*Id*.

- **Effective measures to address the threat of vehicular collisions**. Increased obligations to limit construction of new roads or improvement of existing roads; and construction of safe passages, including underpasses.
- **Effective measures to address threats from climate change**. Critical habitat designation for the Jaguarundi would increase FWS' ability to regulate factors causing climate change, with resultant impacts from drought, hurricanes, and other climate change-related events on this species.

Determination of Critical Habitat for the Jaguarundi

FWS should develop a critical habitat proposal based on the habitat essential to the Jaguarundi's survival and recovery. The ESA defines critical habitat as:

> (i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of this Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and
> (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of this Act, upon a determination by the Secretary that such areas are essential for the conservation of the species.

16 U.S.C. § 1532(5)(A). To determine critical habitat, FWS must analyze the physical and biological features the Jaguarundi requires. These are called "primary constituent elements," and include:

> (1) Space for individual and population growth, and for normal behavior;
> (2) Food, water, air, light, minerals, or other nutritional or physiological requirements;
> (3) Cover or shelter;
> (4) Sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and generally;
> (5) Habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species.

See 50 C.F.R. § 424.12(b). As discussed previously in this petition, the most important factors for Jaguarundi appear to be dense thornshrub; adequately sized habitat patches, based on home ranges of approximately 2,200-2,400 acres per animal in the Tamaulipan Biotic Province; and connectivity of these habitats. In addition, Harveson et al. (2004) recommended that target areas for thornscrub restoration be partly based on preferred soil types (Camargo, Laredo, Olmito, and Point Isabel).

In December 2003, a group of 29 scientists and conservationists developed a list of priority conservation areas for three felids (Jaguarundi, Ocelot, and Jaguar (*Panthera onca*)) that occur in the U.S./Mexico border area (Grigione et al. 2009). They developed two types of priority areas: Cat Conservation Units (CCUs) and Cat Conservation

Corridors (CCCs). CCUs were defined as "habitat areas important to the long-term survival of a species, often where populations are currently located or areas likely to support relocated populations." *Id*. at p. 79. CCCs were defined as "strips of habitat connecting otherwise isolated Units that had documented Class 1 sightings."[34] *Id*. The most important features of the units were size, habitat quality, and connectivity; while the most important feature of the corridors was connectivity.

The map (Figure 5) they created of Jaguarundi CCUs was based on 25 Class I Jaguarundi sightings. These scientists recommended conservation areas totaling 68,407 km^2 (16.9 million ac) in the eastern bioregion. No areas were suggested for the western bioregion due to a lack of data. They found that only 1.9% of the eastern bioregion areas currently had any level of protection (Grigione et al. 2009, see especially p. 84 and Table 3). Grigione et al. (2009) recommend that CCUs, CCCs, and study areas be revised as new information is obtained. For the Jaguarundi, this would hopefully mean the delineation of key additional areas for conservation.

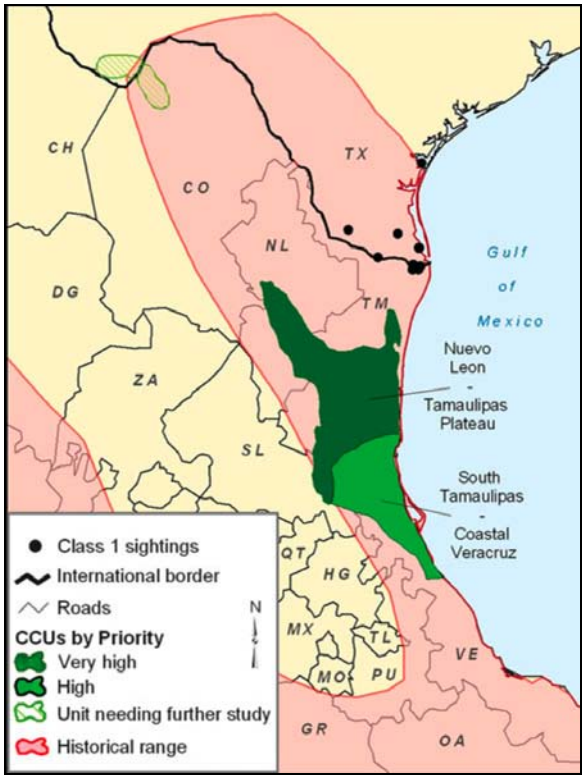

Figure 5. Cat Conservation Units (CCUs) for Jaguarundi. No habitat areas were delineated for the western bioregion because of lack of data. Units are ranked by level of importance. Source: Grigione et al. (2009).

Grigione et al. (2009: 84) summarized their findings as follows:

[34]A Class I sighting is defined as a reliable sighting that includes physical evidence, such as a carcass.

> There are two major outcomes of this analysis. The first is the lack of protection associated with areas identified as Units and Corridors. Because land development and conversion in the border region are the primary threats to all three species, *there needs to be greater protection of important habitat areas and dispersal corridors to ensure long-term viability of these populations*. Although there is more nominal protection for Units (8.9%) than Corridors (1.1%), both lack protection beyond south-east Arizona and south-west New Mexico. (emphasis added)

They further noted that climate change habitat shifts should be factored into which areas should be protected: it may be that areas north of the Jaguarundi's current range should be protected for future expansion. Additionally, Grigione et al. (2009) underscored the need for transboundary protections for these border cats, as well as measures to ensure their mobility is not hindered by border installations. Finally, these scientists point out that habitat protections for transborder felids can also shield other species that share their habitat.

Proceeding from the statutory and regulatory framework outlined above, FWS's critical habitat designation should include all occupied or potential habitat in the Jaguarundi's historic range in the U.S. (Figure 1). This should include, but not be limited to, the U.S. portion of the study area for the Jaguarundi reported in Grigione et al. (2009) (Figure 5); the 11 dense thornscrub habitat patches identified by Haines et al. (2006, 2007)[35] (Figure 6); any current or potential habitat (indicated by soil types) on Laguna NWR indicated in Figure 4; any current or potential habitat on Santa Ana and Lower Rio Grande Valley NWRs; and open areas that may be used for hunting by Jaguarundi but are close to escape cover (e.g., Caso 1994).

[35]Haines, A.M., Tewes, M.E., Laack, L.L., Horne, J.S. and J.H. Young. 2006. A habitat-based population viability analysis for ocelots (*Leopardus pardalis*) in the United States. Biological Conservation 132: 424-436. [Attachment 47]; Haines, A.M., Tewes, M.E., Laack, L.L., Horne, J.S. and J.H. Young. 2007. Corrigendum to "A habitat-based population viability analysis for ocelots (*Leopardus pardalis*) in the United States" [Biological Conservation 132 (2006) 424-436]. Biological Conservation 136: 326-327. [Attachment 48]

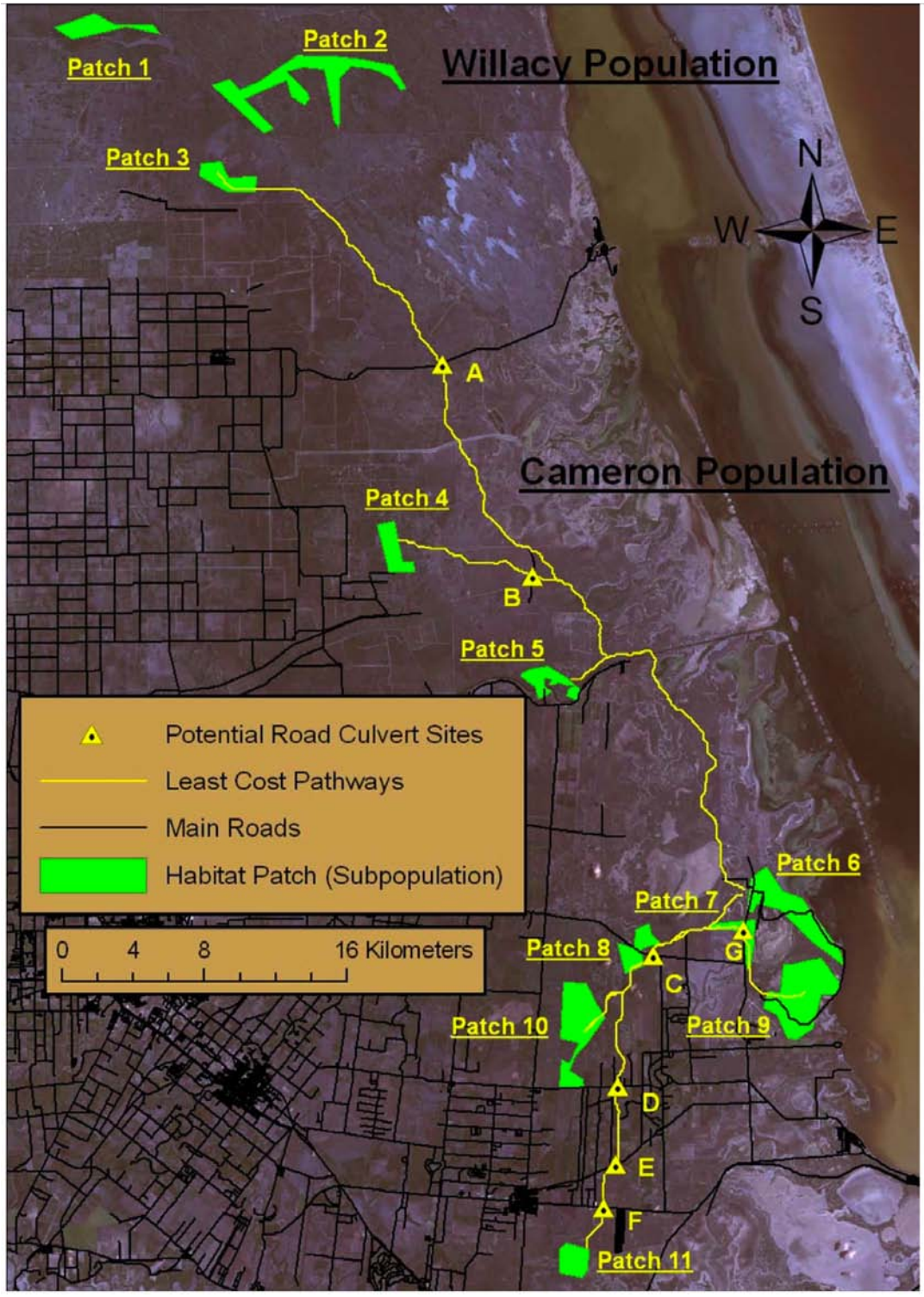

Figure 6: Locations of 11 habitat patches identified by Haines et al. (2006) within and in the vicinity of the Willacy and Cameron Ocelot populations in Texas. UTM coordinates in Haines et al. (2006).

Exclusions

The ESA provides exclusions from critical habitat based on economic and management considerations. Section 4(b)(2) provides the ability, within specified parameters, to exclude areas from critical habitat designation:

> The Secretary shall designate critical habitat, and make revisions thereto, under subsection (a)(3) on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact, of specifying any particular area as critical habitat. The Secretary may exclude any area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific and commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species concerned.

See 16 U.S.C. § 1533(b)(2). In deciding which areas to designate as critical habitat for the Jaguarundi, FWS should err on the side of inclusion, enveloping all lands within this species' historic range in the U.S. that contain current or potential Jaguarundi habitat; could be restored to such habitat given their soil type; are open areas proximate to dense thornshrub; or contain other biotic or abiotic characteristics making them suitable for current or future use by Jaguarundis.

FWS cannot avoid critical habitat designation on the basis that it cannot be identified for the Jaguarundi or that the U.S. is the extreme northern periphery of the species' range. The agency used this logic vis-à-vis the Jaguar, but its decision was remanded by a U.S. district court in Arizona (*Center for Biological Diversity vs. Dirk Kempthorne*, No. CV 07-372, decision dated March 31, 2009). Moreover, scientists have explicitly pointed out the importance of preserving habitat and populations of neotropical cats such as the Jaguarundi in the northern periphery of their range (*Id*.; Grigione et al. 2007, 2009).

Conclusion

The Jaguarundi has been all but forgotten by the U.S. Fish and Wildlife Service. FWS has not spent a cent on the Sinaloan subspecies since 1999.[36] The Gulf Coast subspecies has not fared much better in terms of resource allocation. Despite having been listed under the ESA since 1976, both U.S. subspecies continue to lack a recovery plan. FWS needs to increase its efforts to protect and recover this species. Critical habitat designation would provide an important hedge against extinction. For the co-occurring Ocelot, FWS has long indicated the need to protect, restore, and acquire habitat to prevent its extinction and obtain its recovery, due to the dire threat from habitat destruction and continued loss. The same prescription is required to pull the Jaguarundi back from the brink. On this basis, WildEarth Guardians requests the revision or designation of critical habitat for the Gulf Coast and Sinaloan Jaguarundi.

[36]This evaluation is based on records through 2007.