The Need of Transboundary Efforts to Preserve the Southernmost Jaguar Population in the World

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At the June 2005 IUCN/SSC/Cat Specialist Group Workshop in Brazil on the “Status and conservation needs of the Neotropical Felids”, Argentine and Brazilian researchers were surprised to learn that the same jaguar Panthera onca had been photographed by camera traps in both countries. The Brazilian researchers (Kasper, Mazim, Soares and de Oliveira) “captured” the animal during their sampling activities at Turvo State Park, in Brazil, and the Argentine group (Paviolo, De Angelo, Di Blanco, Ferrari and Di Bitetti) photographed the same animal two months later, 36 km away, during their field study in Yaboti Biosphere Reserve, in Argentina (Fig. 1). The jaguar is a large male in good physical condition (Fig 2); his home range most likely encompasses areas of Argentina and Brazil.

This is not the first reported case of felines crossing the borders between countries in this region. Crawshaw (1995) reported that three radio-tagged ocelots Leopardus pardalis in Iguaçu National Park crossed the Iguazú River between Iguaçu (Brazil) and Iguazú (Argentina) National Parks. He also recorded the movement of a young jaguar that crossed the Iguazú River, which defines the border between Argentina and Brazil, and at least twice it crossed the Paraná River, which divides Argentina and Brazil from Paraguay. It is worth mentioning that the Paraná River is not only a political border between these countries, but also a wide river, second in size only to the Amazon in South America.

A landscape feature important to these transboundary crossings is the threatened Upper Paraná Atlantic Forest (UPAF). To date, less than 7% of the original forests cover remains. The Green Corridor is the biggest continuous remnant (12,000 km2) of this ecoregion and is strategically situated in a tri-national boundary between Argentina, Brazil and Paraguay (Fig. 1). Misiones province in Argentina contains more than 80% of this forest remnant, and comprises several national and provincial protected areas, including the Iguazu National Park (670 km2), which, along with the Brazilian Iguaçu National Park (1,700 km2), protect the world-famous falls. Brazil also has another important protected area in the region, Turvo State Park (140 km2), which is also separated from protected areas on the Argentinean side by a wide river, the Uruguay (Fig. 1). Only small forest remnants are still present in Paraguay near the Paraná border, with a few small connections to the remainder of the Green Corridor. However, jaguar populations isolated from the Green Corridor still remain in the rest of the UPAF ecoregion in at least five isolated forest fragments in Paraguay (San Rafael National Park, Mbaracayú Biosphere Reserve, Morumbí Private Reserve and in Itábo and Limoy Biological Reserves), and in three areas in Brazil (Morro do Diabo and Varzeas do Rio Ivinhema State Parks and in Ilha Grande National Park). These populations are very important, despite their isolation, and should be included into conservation strategies for this species in the ecoregion.

The Green Corridor still contains populations of six wild Neotropical cats, jaguar, puma Puma concolor, ocelot, margay Leopardus wiedii, oncilla Leopardus tigrinus and jaguarundi Herpailurus yaguarondi. The area has also been identified as a “Jaguar Conservation Unit” (Sanderson et al. 2002). These authors suggested that scientific and conservation efforts should focus on this population because of its long-term conservation potential and its ecological uniqueness. Also, this jaguar population

Fig. 1. Map of forest remnants, protected areas and camera trap “captures” (stars) of the same jaguar in the Green Corridor of Argentina, Brazil and Paraguay.
is the only one that has been categorized with a “high long-term survival possibility” in both the Atlantic Forest and Argentina (Sanderson et al. 2002).

Nonetheless, up-to-date results from three camera-trap surveys by the Argentinean team at Iguazú National Park, Uruguai-i Provincial Park and at Yabotí Biosphere Reserve indicate a very low jaguar density (0.13 to 0.86 individuals/100 km²) in the region (Paviolo et al. 2006).

One of the most serious threats to the jaguar population in the Green Corridor is habitat loss and fragmentation. These processes have already devastated forests in Brazil and Paraguay and are rapidly occurring in several areas of Misiones Province due to the replacement of native forests by exotic species destined for commercial logging, the expansion of cattle raising and to unplanned human settlements. The Green Corridor faces the additional problem of forest degradation caused by the non-sustainable logging of native plant species and by the loss of native fauna due to poaching. This leads into very low density of terrestrial vertebrates in most forests (Cullen et al. 2000, Paviolo 2002). The situation is aggravated by the fact that the vertebrate species most valued by hunters are the same prey preferred by large wild felines (Jorgenson & Redford, 1993). Jaguars are also hunted either as trophies or for the threat they represent for cattle. Transboundary efforts are needed to solve these problems. In Argentina’s Yabotí Biosphere Reserve (Fig. 1) park rangers and frontier guards report meeting Brazilian hunters who have crossed the border to gain access to the larger forest areas with more abundant prey. Obviously, joint efforts and coordinated control policies are needed to restrain illegal activities that threaten the regional fauna.

Recent results show that the jaguar population has abruptly declined in the last 10 years. These estimates indicate that the present population of the Green Corridor is about 50 individuals (Paviolo et al. 2006). Given the strong likelihood that the processes leading to the present situation will become worse in the future, the conservation of the jaguar population in the Green Corridor and the whole Upper Paraná Atlantic Forest is at stake. None of the protected areas of the region can by itself ensure jaguar conservation due to their low population density. The possibility for this species survival is closely related to the safeguarded connection between the protected areas and the existing remnants in the three countries so as to ensure free movement of the species. Equally important is the mitigation of present threats. Argentineans, Brazilians and Paraguayans should realize that to sustain jaguars in the Upper Paraná Atlantic Forest it is critical to coordinate and join efforts to preserve the Green Corridor. Argentinean authorities should consider the Brazilian protected areas that lay on the other side of the international border as vital for the preservation of jaguars and other species of the Green Corridor. Brazilian authorities should understand that without the Green Corridor, both Iguazu National Park and Turvo State Park have no long-term future as isolated forest fragments. Jaguars can still move between two important Brazilian protected areas, Turvo State Park and Iguazu National Park, but they do so only through the Green Corridor of Misiones, Argentina. There is no corridor in Brazil.

Transboundary planning as a regional conservation strategy has already been implemented in different parts of the world. Within the IUCN Global Transboundary Protected Areas Network (www.tbpa.net), several international endeavors are being undertak-

Fig. 2. Jaguar male captured at Esmeralda Provincial Park, Argentina, and Turvo State Park, Brazil (Photo: Wild Cats of Brazil Project).
The Iberian lynx *Lynx pardinus* is considered the most endangered felid in the world. In December 2003, the Spanish Ministry of Environment and the Andalusian Government initiated a collaborative Conservation Breeding Program for the Iberian lynx. In the past two years, nine cubs have been born at El Acebuchec Breeding Centre. As of May 2006, 22 lynx are in captivity. Soon the Andalusian Government will open a new Breeding Center in La Aliseda, in the province of Jaén.

The Iberian Lynx ex-situ conservation breeding program is closely linked to in-situ conservation efforts. Its main goals are to preserve genetic diversity in captivity and, in the near future, to help re-establish Iberian lynx populations in areas of recent historical occupancy. Additionally, the program has a strong communication/outreach component. In order to take advantage of the unique opportunity of closely studying the behaviour and physiology of this magnificent cat, Iberian lynx ex-situ conservation is a learning-oriented program. In this regard, the program collaborates with more than 30 national and international institutions and is presently carrying out collaborative projects in the areas of husbandry, behaviour, nutrition, health issues, reproductive physiology and genetics. In addition, one of the program goals is to gather and integrate as much information as possible to help with the design of future reintroduction strategies in collaboration with the ex-situ conservation program.

The objective of the Seminar series in fall 2006 is to gather present knowledge regarding Iberian lynx biology as it relates to conservation breeding efforts and to share knowledge and experiences with experts from other related projects. The four seminars are dedicated to the following subjects:

- Veterinary aspects applied to Iberian lynx conservation efforts
- Husbandry and management of captive populations
- Reproductive physiology and biogical resource banks
- Reintroduction of wild carnivores: applicable experiences to the Iberian lynx.

The objective of the Seminar series is to help with the design of future reintroduction strategies in collaboration with the ex-situ conservation program.

### References


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