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BRIEF COMMUNICATION

Loss of historical range of jaguars in southern Brazil

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Abstract Loss of jaguar range in one of the most threatened ecosystems in the world is reported herein. Records of the last individuals shot reveal that the jaguar has suffered a loss of historical range at an estimated rate of one latitudinal degree every 10 years in its southern range in the Atlantic Rain Forest of Brazil. The chronological order of the records show a definitive pattern of range loss from south to north, extending over three latitudinal degrees. Results stress that direct hunting may be a decisive factor acting behind local extinctions of jaguars when populations are severely reduced.

Keywords Atlantic Forest · Jaguar · Extinction · Loss of range

The jaguar is the largest felid in the Americas, females averaging 42–76 kg, and males averaging 57–100 kg, depending on geographic location (Nowell and Jackson 1996). Its carnivorous diet and its large size combined result in large territory and resource requirements. This is certainly the main reason why the species has been disappearing from its former distribution in the Atlantic Rain Forest (Dense Ombrofilous Forest, DOF) of eastern Brazil (Swank and Teer 1989; Sanderson et al. 2002). With approximately 8% of its original coverage (Capobianco 2001), the DOF covers a coast strip where most of the Brazilian population concentrates, being considered one of the most threatened ecosystems in the world (Dinerstein et al. 1995).

The Serra do Mar mountain range located between the States of Paraná and São Paulo is considered the best habitat for jaguars in the DOF, but even there jaguar have become uncommon as a result of habitat modification (Pitman et al. 2002; Mazzolli and Hammer 2008). This concern has been recently stressed in a conference aiming to establish an action plan at the national level (Mazzolli 2007), in which it was also shown that jaguar populations inhabiting DOF reserves had a persistence expectation estimated from population viability analysis (PVA) as 10 years or less (Torres 2007).

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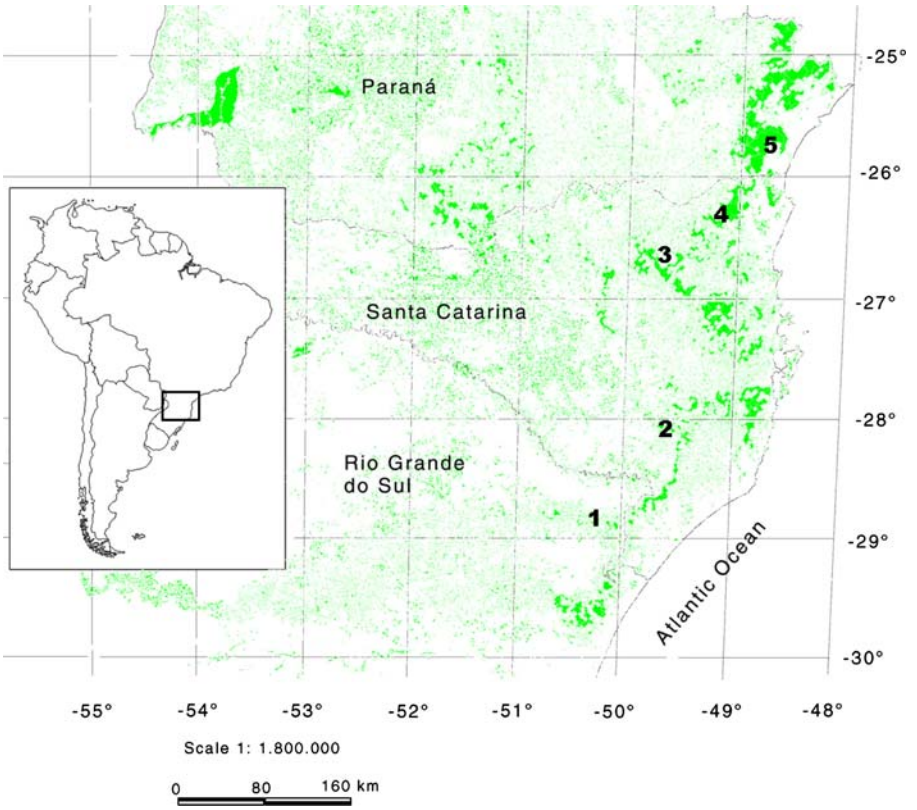

Fig. 1 Loss of historical range of the jaguar in its southernmost distribution in the Atlantic Rain Forest (FOD), showing a northward pattern: 1. locality of Silveira, RS, in 1960; 2. Urubici, SC, in 1970; 3. Rio Negrinho, SC, in 1980; 4. Corupá, SC, rumors of jaguar shot in 1992; 5. Guaratuba, PR, jaguar presence confirmed in 2006 (Mazzolli and Hammer 2008). Map background is the remaining Atlantic Forest (obtained from SOS Mata Atlântica, www.sosmatatlantica.org.br)

In the southernmost DOF covering the States of Rio Grande do Sul and Santa Catarina, the jaguar disappeared between the decades of 1960 and 1990 (Fig. 1). In the Rio Grande do Sul, bordered by Uruguay in the south and Argentina in the west, the last known jaguar in the DOF ecosystem was taken in the northeast in 1960, in the locality of Silveira. It has been taxidermized and is exhibited at a bar in the locality.

In Santa Catarina, a state localized north of Rio Grande do Sul, the last known jaguar was shot in the middle-eastern region of the State, in Urubici, in 1970. This specimen is taxidermized at a private museum "Museu Homem do Sambaqui," property of a school "Colégio Catarinense," located in the state capital, Forianópolis. The last known specimen in Santa Catarina was taken in the northeast, in the locality of Volta Redonda in the municipality of Rio Negrinho, in 1980. The specimen was recorded by the author during a field expedition in 1988, and was taxidermized as part of a private collection of Mr. Sr. Rüeckl in the same municipality of Rio Negrinho. There have been unconfirmed rumors that a jaguar was shot in Corupá in 1992.

Environmental and human pressures suffered by vulnerable species which result in loss of historical range seem to be highlighted in suboptimal habitats. In these habitats recolonization

is often compromised by lack of connectivity with source populations. In fact, populations in the DOF ecosystems are isolated from larger continental populations of the Amazons and Pantanal (Mazzolli and Hammer 2007). Furthermore, data on the last specimens of jaguar taken in the southern DOF leave no doubt regarding the sequence of events that led to the jaguar demise in this area. Although habitat loss was crucial to undermining the chances of jaguar survival, the last specimens of jaguar were poached. This data emphasize the importance of controlling illegal poaching when jaguar populations are extremely reduced, as may be the case for populations that still persist in the Serra do Mar (Mazzolli and Hammer 2008). In this region, the jaguar is already uncommon, and its prey species the peccaries *Tayassu pecari* and *Pecari tajacu*, and the tapir *Tapirus terrestris*, are currently confined to few refugia. At this stage it is necessary that management of remaining jaguar populations in the DOF incorporates systems of vigilance to solve conflicts with local human communities and reduce direct poaching. Adoption of livestock compensation after jaguar depredation incidents, which is not currently undertaken by local government, is recommended. Local nongovernmental organization (NGOs) could fill this role, but the cost of sending teams into the field based on rumors of jaguar presence represent a logistical and cost constraint. In fact, recent investigations of livestock depredation by local environmental authorities failed to identify the predator. Actions to preserve the jaguar would thus be more effective if ranchers and local community were instructed to record the presence of the predator from tracks or other means, which requires local capacity building. Another issue of vigilance that impairs efficient management is the absence of rangers to patrol the limits of government reserves, a position that is currently nonexistent in governmental organizations. Incorporation of these management recommendations is likely to yield positive results and hopefully an opportunity for jaguar populations to persist and even repopulate portions of its former range.

References

Capobianco JPR (org) (2001) Dossiê Mata Atlântica. Instituto Socioambiental (ISA), São Paulo, SP. http://www.socioambiental.org/inst/pub. Cited in 14 of March 2007 Organization site

Dinerstein E, Olson DM, Graham DJ, Webster AL, Primm SA, Bookbinder MP et al (1995) A conservation assessment of the terrestrial ecoregions of Latin America and the Caribbean. The World Bank, Washington

Mazzolli M (2007) O corredor do Tigre. Conference 'I Workshop de distribuição, manejo e conservação da onça-pintada no Brasil'. Parque Estadual do Cantão, Caseara, Tocantins, 27–29 August 2007

Mazzolli M, Hammer MLA (2007) Habitat suitability for jaguar and puma in southern atlantic forest of Brazil infered from proportion of area occupied and prey richness. Wild Felid Biology and Conservation Conference, University of Oxford, WildCRU, 17–21 September 2007

Mazzolli M, Hammer MLA (2008) Qualidade de ambiente para a onça-pintada, puma e jaguatirica na Baía de Guaratuba, Estado do Paraná, utilizando os aplicativos Capture e Presence. Biotemas 21(2):105–117

Nowell K, Jackson P (1996) Status, survey and conservation action plan, wild cats. IUCN, Gland

Pitman MRL, Boulhosa RLP, Galvão F, Cullen L Jr (2002) Conservación del jaguar em las áreas protegidas del bosque atlántico de la costa de Brasil. In: Medellín RA, Equihua C, Chetkiewicz CLB, Crawshaw PG Jr, Rabinowitz A, Redford KH, Robinson JG, Sanderson E, Taber A (eds) El jaguar en el nuevo milenio: una evaluación de su condición actual, historia natural y prioridades para su conservación. Prensa de la Universidad Nacional Autônoma de México/Wildlife Conservation, Ciudad de Mexico, pp 25–42

Sanderson EW, Redford KH, Chetkiewicz CLB, Cheryl-Lesley B, Medellin RA, Rabinowitz AR et al (2002) Planning to save a species: the jaguar as a model. Conserv Biol 16(1):58–72. doi:10.1046/j.1523-1739.2002.00352.x

Swank WG, Teer JG (1989) Status of the jaguar. Oryx 23:14–21

Torres N (2007) PVA da onça-pintada no Brasil. Conference at I Workshop de distribuição, manejo e conservação da onça-pintada no Brasil. Parque Estadual do Cantão, Caseara, Tocantins, 27–29 August 2007