

Cat Project of the Month – December 2007

The IUCN/SSC Cat Specialist Group's website (www.catsg.org) presents each month a different cat conservation project. Members of the Cat Specialist Group are encouraged to submit a short description of interesting projects

Jaguar Juruena



We are recording cattle depredation by jaguars and local opinion to resolve the conflict in ranches and rural settlements surrounding the “Juruena” National Park in Southern Amazon, Brazil. We are also using camera-traps, tracks, and interviews with local residents to assess status, distribution and hunting of jaguars and their natural preys for the different areas.

Francesca is a Biologist and Research Associate of the Reserva Brasil, a non-profit socio-environmental organization. She has focused on wild cat's conservation since 1999 and since then she has investigated the livestock depredation by puma (*Puma concolor*) and jaguar (*Panthera onca*) and the local opinion to solve the conflict at different Brazilian biomas (e.g.: Atlantic Rain Forest, Cerrado and Amazon Forest). Francesca has joined the Friends of the Cat Group in 2007. yagouaroundi@yahoo.com.br
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Francesca Belem Lopes
Palmeira at the Reserva Brasil
Research Station in Southern
Amazon (Photo C. Trapé
Trinca).

Background

Conservation problems: Cattle ranching has increased deforestation disproportionately in the Southern Amazon, replacing natural areas with extensive pastures. As a consequence, large cats have to coexist with domestic cattle. The Amazon Forest was considered high probability of long-term survival for jaguar (*Panthera onca*) study and conservation, however, due to the lack of knowledge on the species' geographic range and population status (Sanderson et al. 2002). Despite jaguar status and distribution have never been assessed in Southern Amazon; they have been killed as a result of livestock depredation (Michalski et al. 2006, Trinca and Ferrari 2006).



A young male jaguar photographed during the first expedition to Southern Amazon in January 2000 (Photo R. Deléo Amato).

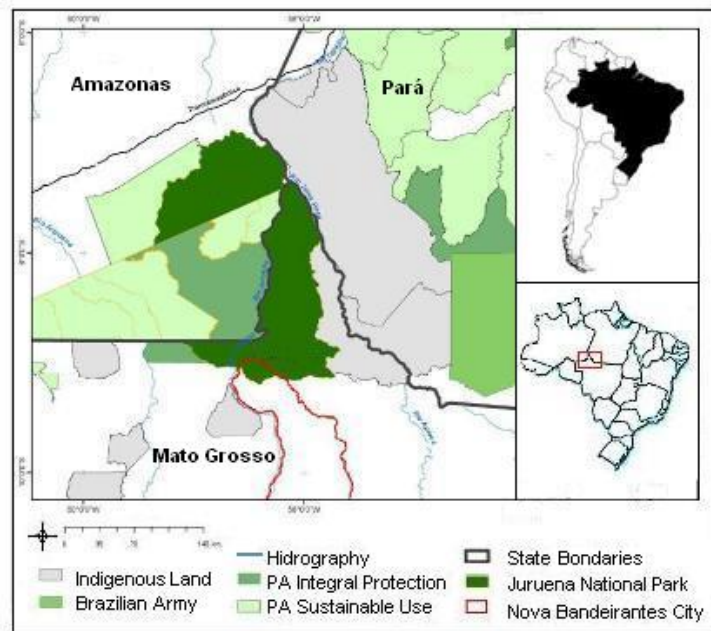
Goals: We are recording the actual proportion of cattle killed by jaguars and the local opinion to resolve the conflict in ranches surrounding the “Juruena” National Park in Southern Amazon in Brazil. We are also assessing the jaguar status and distribution, providing an estimative of the jaguar populations and their natural preys. This project will be very important to jaguar conservation in private lands surrounding of Protected Areas.

Therefore, we are evaluating:

- the actual proportion of cattle killed by jaguars in ranches;
- the temporal distribution of cattle depredation along the year;
- the spatial distribution of cattle depredation through the landscape mosaic;
- the local perception about cattle depredation by jaguar;
- the spatial distribution of jaguar through the landscape mosaic;
- the abundance and hunting of jaguar and their natural preys.

Study area: This study is carried out at the ranches surrounding the Juruena National Park, located in the municipality of the Nova Bandeirantes (9°00' to 10°30' S and 57°30' to 58°40' W) in Southern Amazon, Brazil. Nova Bandeirantes has an area of 9531.21 km² and approximately 6950 inhabitants, of which approximately 30% live in the urban area and 70% in the rural area. The demographic density is approximately 0.72 inhabitants/km². Nova Bandeirantes is only 25 years old and less than 20% deforested. However there is inside of a frontier of colonization, called "Arc of Deforestation" and has been deforested quickly. Most of city area is formed by cattle ranches, rural settlements and crops. There also has an intensive logging exploitation and gold mining. Most of people are formed by colonists from Southern Brazil.

Location of the Nova Bandeirantes city surrounding the Juruena National Park and others Protected Areas (PA) in Southern Amazon, Brazil. Source: ICV (2006).



Methods



Calf attacked by jaguar in October 2007 (Photo F. Belem Lopes Palmeira).

The methods have been divided in five main components: cattle depredation, local perception, jaguar status and distribution, jaguar prey abundance and hunting, and we are regularly monitoring cattle ranches and rural settlements.

1. Cattle depredation: The distinction between jaguar and puma (*Puma concolor*) kills is only possible during the fieldwork, whenever a depredation occurs and we can check the killed or wounded animal. We are examining the carcasses to determine the cause of death. We are also looking for external or internal lesions caused by bites or claw marks, especially in the head, neck and legs, in order to identify the predator. We are recording the age (months) and sex of the kill. In addition, we are using GPS to obtain locations (UTM) of all pastures where depredations occur (Palmeira et al. in press).

2. Local perception: We are using a semi-structured questionnaires to interview colonists from ranches and rural settlements. We are monthly visiting several properties to check whether there had been livestock depredation. The questionnaires are requesting information on the socio-economic profile, the number of each livestock type owned by the rancher, the number of livestock depredation by large cats, methods of reducing the loss and attitudes towards large cats (Conforti and Azevedo 2003, Zimmermann et al. 2005, Palmeira and Barrella 2007).



Independence Party of Brazil in a rural settlement in September 2003. Most of the settlements are comprised of households, ranchers, loggers and miners (Photo C. Trapé Trinca).

3. Jaguar status and distribution: To estimate the jaguar spatial distribution (presence or absence), we are walking along trails and roads throughout the study site to search for jaguar signs, such as tracks or scats. We are determining the proportion of the surveyed area occupied by jaguars. We are using 10 camera-traps (five trap stations) to identify the jaguars. We are estimating the relative/absolute abundance of jaguar according to (Cullen et al. 2005, Soisalo and Cavalcanti 2006).

4. Jaguar prey abundance: We are estimating the relative abundance of jaguar preys using standard line transect surveys (Peres 1999, Lopes and Ferrari 2000). Surveys are being concentrated on a subset included all the members of the orders Artiodactyla, Perissodactyla, and Carnivora, most members of the Primates, and Xenarthra, as well as caviomorph rodents (Cavioidea and Erethizontoidea).

5. Hunting: Whenever possible, we are recording data on date, place, age, sex and biomass (kg) of jaguars killed. In addition, hunters have donated the skulls of ungulates harvested. On monthly visits, the hunters are being interviewed, the skulls collected and their locations recorded on a map of the area using a GPS. We are collecting information on the animal's species and age, the hunter's area of activity, the hunting technique used and the motive for killing the animal (Trinca and Ferrari 2006).

Involvement of local people: Because we have conducted some researches in Southern Amazon since 2000, we have a long-term familiarity with many colonists who have constantly contributed with us researches and they have provided data on wildlife. The involvement with the colonists is very important because they have been able to be key-informants on cattle depredation by large cats and, illegal and subsistence hunting. As cattle ranches and rural settlements usually spread over large areas, their cooperation is extremely important in any conservation program for jaguars.



Cristiano Trapé Trinca, checking a skull of a young male jaguar killed on a cattle ranch in October 2007 (Photo F. Belem Lopes Palmeira).

Preliminary Conclusions:

1. Cattle depredation: We are monitoring the carcasses to determine the cause of death and if a depredation occurs by jaguar or puma. Only in October 2007, we have recorded 12 calves and a foal killed by jaguars in three ranches in a same region. Large cats persecution has been a most frequent methods to reduce depredation. Most hunters reported that cattle ranchers offer one cow (USD\$ 150) as a reward for each large cat killed. On a small-scale, cattle ranchers have also put several kind of poison in carcasses to avoid future depredation by felid predator.



Partial view of area where jaguars have been killed as result of cattle depredation (October 2007; Photo F. Belem Lopes Palmeira).

2. Local perception: Ranchers have reported that cattle depredation has increased during the last years (since 2004). In addition, we did not record any depredation by large cat at the first expedition in 2000. During 2003, we only recorded a pig attacked by a black jaguar which was killed. Ranchers have also reported that depredation has been most frequent during transition between dry and wet season (from July to December). Ranchers and households have behaved several negative attitudes toward large cats. However, they would like to be compensated for not killed livestock predators.

3. Jaguar status and distribution: We are still assessing jaguar status and distribution in the study area. Apparently, jaguars have occurred in areas of cattle ranches and rural settlements. Tracks are being an efficient method for monitoring jaguars, but they have serious limitations caused by climate and ground conditions (e.g. in dry and wet seasons). We are installing camera-traps that are a non invasive method and useful in almost any field conditions.

4. Jaguar prey abundance: Primarily in 2003, survey results indicate that large-bodied mammals are still relatively abundant throughout the study area, that is, at both hunted and unhunted sites. The lack of any clear difference in the abundance of ungulates between hunted and unhunted sites is unexpected, especially considering that these species made up a large proportion of the mammals hunted during the study period (Trinca and Ferrari, in prep).

5. Hunting: We had already recorded a preliminary data on hunting in a rural settlement. In 2003, hunting was evaluated using questionnaires (n = 17) and informal interviews, in addition to quantitative monitoring of the vertebrates caught by 14 hunters, members of nine different families. In all, 113 mammals, belonging to 17 species, were killed. A majority of the animals were peccaries: 47 (41.6%) white-lipped (*Tayassu pecari*), and 23 (20.4%) collared (*Pecari tajacu*) which were taken for their meat (subsistence hunting). All the animals killed were ungulates, rodents, xenarthrans or carnivores, and no primates or birds were harvested during this period (Trinca and Ferrari 2006). Thus, we have collected a large number of zoological materials from local hunters and donated to several education and research institutions of Brazil.



Skulls donated by colonist hunters to UFMT (Federal University of Mato Grosso; Authorization Number: IBAMA/SISBIO 10408-1) during 2003. Most of skulls are peccaries which were killed to subsistence in a rural settlement (Photo F. Belem Lopes Palmeira).

Next Steps: We will create a group meeting with some colonists to start a jaguar conservation action. We will compile a variety of information about jaguar-people conflict. The ranchers will be instructed to distinguish between jaguar and puma kills. The local people could suggest some preventive techniques and contribute with a participative cattle management to reduce depredation by large cats. In addition, we will promote local workshops to disseminate preventive techniques and participative cattle management to reduce depredation by jaguars, using the results of research and local opinions. We hope to implement the participative cattle management to reduce depredation by large cats, but this will depend mainly of rancher's opinion. To know this, during interviews we will investigate if ranchers would change your husbandry practices to reduce livestock depredation. Together, we will contribute with long-term information about jaguar-people conflict in the study area. If the depredation occurs predominantly close to forest patches upon smaller and calves should be kept as far as possible from such areas. The birth of calves should be concentrated in the same period of the year in all farms in order to concentrate the impact caused by predators during one time per year. The proportion of cattle depredation before and after the participative cattle management should be compared. Therefore, the success of any strategy will depend on an ability to reduce livestock depredation to a level that ranchers will accept, without reducing cat populations to unviable levels. In addition, we would like to understand how hunting is affecting population structure of jaguar prey. We will evaluate the biomass extracted and the age structure of ungulates. We will evaluate long-term effects on the presence and abundance of large-bodied mammals with reference to surveys conducted since 2000. Therefore, it will be necessary to have the support of local communities as well as governmental and non-profit institutions to establish effective conservation measures.

References

- Conforti, V.L., Azevedo, F.C.C. 2003. Local perceptions of jaguars (*Panthera onca*) and pumas (*Puma concolor*) in the Iguazu National Park area, south Brazil. *Biological Conservation* 111, 215-221.
- Cullen Junior, L., Abreu, K.C., Sana, D., Nava, A.F.D. 2005. Jaguars as landscape detectives for the upper Paraná River corridor, Brazil. *Natureza & Conservação* 3, 147-161.
- ICV. 2006. Proposta de Criação do Parque Nacional do Jurueña: análises e considerações. Cuiabá, Mato Grosso. 23 p.
- Lopes, M.A., Ferrari, S.F. (2000). Effects of human colonization on the abundance and diversity of mammals in eastern Brazilian Amazonia. *Conservation Biology* 14, 1658-1665.
- Michalski, F., Boulhosa, R. L. P., Faria, A., Peres, C. A. 2006. Human-wildlife conflicts in a fragmented Amazonian forest landscape: determinants of large felid depredation on livestock. *Animal Conservation* 9, 179-188.
- Palmeira, F.B.L., Crawshaw Jr., P.G., Haddad, C.M., Ferraz, K.M.P.M.B., Verdade, L.M. in press. Cattle depredation by puma (*Puma concolor*) and jaguar (*Panthera onca*) in Central-Western Brazil. *Biological Conservation* (BIOC-D-06-00951R3).
- Palmeira, F.B.L., Barrella, W. 2007. Conflitos causados pela predação de rebanhos domésticos por grandes felinos em comunidades quilombolas na Mata Atlântica. *Biota Neotropica* 7, 21-30.
- Peres, C.A. 1999. Evaluating the impact and sustainability of subsistence hunting at multiple amazonian forest sites. In: *Hunting for sustainability in tropical forests (biology and resource series)*: 31-56. Robinson, J.G. and Bennett, E.L. (eds). New York, Columbia University Press.
- Sanderson, E.W., Redford, K.H., Chetkiewicz, C.L.B., Medellin, R.A., Rabinowitz, A., Robinson, J.G., Taber, A.B. 2002. Planning to save a species: the jaguar as a model. *Conservation Biology* 16, 58-72.
- Soisalo, M.K., Cavalcanti, S.M.C. 2006. Estimating the density of a jaguar population in the Brazilian Pantanal using camera-traps and capture and recapture sampling in combination with GPS radio-telemetry. *Biological Conservation* 129, 487-496.
- Trinca, C.T., Ferrari, S.F. 2006. Caça em assentamento rural na Amazônia matogrossense. In *Jacobi, P. and Ferreira, L.C. Diálogos em ambiente e sociedade no Brasil*. São Paulo: ANPPAS, Annablume. p.155-167.
- Trinca, C.T., Ferrari, S.F. In prep. Game populations and hunting pressure on a rural frontier in southern Brazilian Amazonia.
- Zimmermann, A., Walpole, M.J., Leader-Williams, N. 2005. Cattle ranchers' attitudes to conflicts with jaguar *Panthera onca* in the Pantanal of Brazil. *Oryx* 39, 406-412.

Project Information

Duration: July 2007 – July 2009

Location (see map): Juruena National Park, Southern Amazon, Brazil

Sponsor(s): Wildlife Conservation Society / Jaguar Small Grants Program (WCS) and Idea Wild

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