

Cat Project of the Month – October 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

Natural history and conservation of Geoffroy's cat in Argentina



Proyecto Gatos del Monte

Geoffroy's cat is a little known South American felid recently upgraded to the "near threatened" category due to human-related impacts upon its populations. This multi-disciplinary project is collecting critical data necessary to develop a conservation strategy for Geoffroy's cat and to evaluate population viability and conservation needs of this species outside protected areas in Argentina.

Javier is a fellow of the National Research Council of Argentina at the Center of Applied Ecology of Neuquen (CEAN) and is currently a PhD student of the University of Buenos Aires. He has been involved in "Gatos del Monte" project since 1999 and is a member of the Cat SG since 2005. He is also a member of the South American Cats Conservation Alliance. Marcela has been the Associate Veterinarian for South America with the Wildlife Conservation Society's Field Veterinary Program since 1996. She is the regional coordinator for South America for the IUCN Veterinary Specialist Group.<

javipereira@yahoo.com
submitted: August 2007



Javier Pereira and Marcela Uhart working on a Geoffroy's cat (Photo Proyecto Gatos del Monte)

Background

Geoffroy's cat (*Leopardus geoffroyi*) is a solitary, primarily nocturnal small felid, distributed from southern Brazil and Bolivia throughout southern Patagonia in Argentina and Chile. This species was heavily hunted (at least 350,000 skins were recorded between 1976-1978) for the international fur trade until the middle of the 1980s. At present, habitat loss and poaching, mainly for control of predation on domestic poultry, are probably the main threats to its survival. However, major ecology and biology information gaps exist for this feline to accurately assess the impact of these threats on its populations or to develop scientifically sound conservation strategies to ensure their survival. While the IUCN has listed this cat as "near threatened", the Argentine Society for the Study of Mammals (SAREM) has categorized it as a "potentially vulnerable" species.

Protected areas have long been the focus for wildlife research. Because their potential as habitat for or wild cats is usually limited by their size, conservation of wild cats must occur also in human-dominated landscapes. Although livestock production is one of the main components of the economy of many countries, no study has evaluated the impact of cattle management on the ecology and demography of a small wild cat.

The paucity of studies on Geoffroy's cat and the total absence of studies outside protected areas make it impossible to judge the impact of habitat alteration on their populations. Since much of the Geoffroy's cat range is being converted into cattle ranches, it's important to understand the ecological flexibility of this species to predict the full implications of any change in management practices on their populations.

Aims and objectives. The overall aims of this project are to determine the population status of Geoffroy's cats in central Argentina and to determine the effects of cattle management and associated disturbances on the natural history of this species.

The specific objectives of the study are:

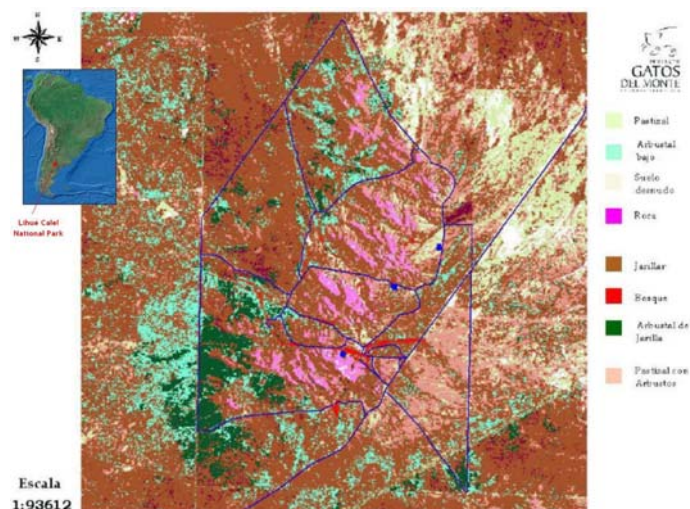
1. to study spatial ecology (home range, movements, density) and habitat use by Geoffroy's cat in protected and non-protected landscapes
2. to determine demographic parameters (survival rate and reproductive success) in both protected and non-protected areas;
3. to determine the diet of Geoffroy's cat and its trophic interactions with other mesopredators; and



Geoffroy's cats (Photo Proyecto Gatos del Monte)

4. to assess the overall health status (infectious diseases, parasites) that may affect Geoffroy's cats in both protected and non-protected areas (exposure to infectious diseases, parasites, haematology, etc).

Study Area and Methods



Satellite image of Lihue Calel National Park and adjacent cattle ranches.

Study area

Lihué Calel National Park -LCNP- (37°57'S and 65°33'W, see map) is located in La Pampa province, Central Argentina. This park represents the Monte ecoregion, endemic of this country, deficiently protected (less than 2% of its 158,000 square miles) and listed as Vulnerable by WWF because of seriously damaging effects due to human activities. LCNP consists of flat desert scrub and an isolated set of bare rock hills and is surrounded by an immense plain of desert scrub divided into large cattle ranches. Vegetation is a mosaic of creosote bush or Jarilla (genus *Larrea*), mixed shrub patches and open areas of grasses and forbs.

Captures of Geoffroy's cats. Geoffroy's cats are being captured using live traps baited with live domestic pigeons, and then chemically restrained with ketamine and medetomidine. While under anesthesia, cats' weight, sex, age (based on body condition and tooth wear) and standard body measurements are recorded, and a complete physical exam is practiced. Blood samples are collected for hematological, genetic and disease studies. Additionally, we search for ectoparasites and collect fecal samples for endo-parasitological studies. Vital parameters (body temperature and heart and respiration rates) are monitored during cat handling. Only healthy-adult Geoffroy's cats are fitted with a radiocollar with a "mortality" or "activity" switch. All veterinary procedures are conducted by personnel of the Wildlife Conservation Society – Field Veterinary Program.

Spatial ecology, demography, and diet. Locations of radiocollared Geoffroy's cats are obtained by triangulation (1–5 times per week) from the ground or by the "homing in" technique. Visual sightings of radiocollared animals are georeferenced using a GPS and included in the analysis of home-range sizes. Home-range size is estimated using the minimum convex polygon and the adaptive kernel methods in the CALHOME software package .

Between January and May 2006, we conducted a camera-trap survey (27 trap stations, trapping effort = 1002 trap days) to study the density of Geoffroy's cats, based on the capture – recapture method and the program CAPTURE.

Litters are located by radiotracking females or by searching known sites where females have bred previously. In this way, we record seasonality of conception and birth, mean litter size, sex ratio of litters, and cub age at dispersal. Data from radiocollared individuals and their cubs are used to determine causes of mortality and annual mortality rates for various ages (cubs, young adults, old adults) and sex classes in the populations (protected and non-protected).

Diet of Geoffroy's cat and other mesopredators (Pampas fox, hog-nosed skunk) is being described following analysis of scats collected opportunistically in LCNP and surrounding cattle ranches. Further, seasonal density of main carnivores' prey (small rodents, birds, and hares) is being assessed to study prey selection by these predators.



Desert scrub, a typical Geoffroy's cat habitat in the Monte eco-region of Argentina (Proyecto Gatos del Monte).

Health status of Geoffroy's cat. Baseline haematological and biochemical parameters are being established. Additionally, serology for selected infectious agents is being performed, including feline leukemia virus, infectious peritonitis, feline immunodeficiency virus, feline panleukopenia, canine distemper virus, feline calicivirus, feline herpesvirus, rabies, leptospirosis, toxoplasmosis, and dirofilariasis. On the other hand, when a dead animal is found, a complete necropsy is performed and samples are submitted for histopathological analysis. Identification of endo and ectoparasites is also under way both from both live and dead animals.

Preliminary findings

Captures of Geoffroy's cats. Since 2002, 35 different Geoffroy's cats (53% males) were successfully captured. Twenty-nine of these cats (four in 2002, ten in 2003 and fifteen in April-July 2007) were fitted with radiocollars. Two additional juveniles were released without radiocollaring. All anesthetic procedures were judged satisfactory for the performed procedures and the animals recovered normally and without complications.

Spatial ecology, demography, and diet. Home ranges for males during 2002 were near 202 ha and that of the single female was 27 ha. The second year of the study (2003) coincided with a severe drought and a strong decline in prey abundance. As a result, four females occupied an average home range of 255 ha, and the home-range size of the single pre-drought female increased by a factor of two. Geoffroy's cats predominantly used habitats of dense cover during the pre-drought period, but they became more habitat generalists during the drought. The occurrence of this drought event led us to study for the first time the spatial ecology of a small wild cat species under nutritional stress in South America. Details on this results have been published in the *Journal of Mammalogy* 87(6):1132-1139.



WCS-Field Veterinary Program personnel during Geoffroy's cat manipulation (Proyecto Gatos del Monte).



Male Geoffroy's cat camera-trapped in Lihue Calel National Park (Proyecto Gatos del Monte).

A new stage of this research on the spatial ecology of Geoffroy's cat was started in may 2007. After 3 month of captures (1,102 trap nights), 15 individuals have been radiocollared. The radio-telemetry data obtained to date has not been analysed yet.

During the camera trapping survey, at least 51 different Geoffroy's cats were recorded. The population density estimate (\pm SE) in an area of between 40.4 – 72.9 km² (depending on the buffer used to estimate the area effectively sampled), ranged from 139.9 \pm 3.5 to 252.6 \pm 63.1 individuals/100 km². These values are greater than those recorded in the Bolivian Chaco (Cuellar et al. 2006, *Stud. Neotrop. Fauna Envir.* 41:169-177). During this study, the presence in LCNP of Pampas cat, puma and jaguarundi were also recorded.

Several litters (1.8 cubs per litter) were recorded during summer and spring, but no reproductive activity was observed during the drought of 2003. Main mortality causes detected were starvation and high parasite loads (during the drought of 2003), road accidents, predation by puma, and illegal hunting (outside the national park).



Two Geoffroy's cat cubs, here 10 days old, born in January 2006 (Photo Proyecto Gatos del Monte).



Geoffroy's cat diet (n = 182 scats) was dominated by mammals throughout the year, with rodents as the most common prey group (79%). Birds were well represented in the diet during spring and summer (>20%), whereas European hares made lesser contributions in all seasons. Low level of diet overlap was recorded between this cat species and other mesopredators at Lihue Calel.

Geoffroy's cat killed on a road bordering a cattle ranch near Lihue Calel National Park (Proyecto Gatos del Monte).

Health status of Geoffroy's cats. Hematological and blood biochemistry profiles of Geoffroy's cats in Lihue Calel were found to be within normal ranges published for domestic cats and within values described for captive *L. geoffroyi*. Some of the animals surveyed tested positive for feline calicivirus, toxoplasmosis, canine distemper, infectious feline peritonitis, and dirofilariasis. The helminths collected during necropsies (see Beldoménico et al. 2005, *Acta Parasitologica* 50:263-266) were identified as *Vigospirura potekhina*, *Didelphonema longispiculata*, *Pterygodermatites cahirensis*, *Trichuris campanula*, *Ancylostoma tubaeforme*, *Toxocara cati*, and *Taenia* sp. Fecal analysis revealed the presence of eggs of *Capillaria* sp. and an unidentified anoplocephalid tapeworm, and coccidian oocysts. Some of this findings represent first records of these species in *L. geoffroyi*. Further, *V. potekhina*, *D. longispiculata*, and *P. cahirensis* had never been reported previously in South America. These evidence suggest exposure of free-ranging Geoffroy's cats to various viral and infectious agents which are common to domestic carnivores, supporting the need to continue monitoring the health of wild and domestic carnivore populations to understand the role of diseases in population dynamics, the effects of wild/domestic interactions and their significance for the conservation of wild felids.

Additional activities. We have been monitoring prey availability for Geoffroy's cat since 2003. A suite of survey methods are being employed to count small rodents, birds and hares in different habitat types. As a result, more than 600 small mammals of 10 species have been marked and released, and more than 2500 km of transects have been surveyed.



A member of the project during a rodent survey. Appropriate biosecurity measures are necessary to prevent disease transmission (e.g. Hantavirus; Photo Proyecto Gatos del Monte)

On the other hand, we interviewed all the local people living around the LCNP (19 cattle ranches) as the easiest and cost effective way to assess the perceptions and attitudes of local inhabitants and cattle producers toward carnivores. Most respondents were landowners with properties of >2,500 hectares. Most of them reported direct experience with carnivores. Twenty-six percent of respondents reported domestic animals injured or killed by a puma, and 21% reported losing a domestic animal to another predator (small wild cats, lesser grison, Pampas fox, hog nosed skunk). Ranchers reporting losses to carnivores were more likely to favor their elimination, and said they would shoot a puma if they had the opportunity. In relation to strategies for carnivore management by the wildlife authority, most of respondents (84%) preferred that authorities take no action and monitor the situation in the case of a carnivore being sighted near houses or near cattle. However, most of respondents (79%) approved the capture and relocation of "problem" animals. As a result of our work, local people are now very enthusiastic and interested in carnivore management as a way to harmonize cattle production with the conservation of wildlife in their lands.

References

- Beldomenico, P., M. Kinsella, M. Uhart, G. Gutierrez, J. Pereira, H. Ferreyra & C. Marull. 2005. Helminths of Geoffroy's cat, *Oncifelis geoffroyi* (Carnivora: Felidae) from the Monte desert, central Argentina. *Acta Parasitologica* 50(3): 263-266.
- Cuéllar, E., L. Maffei, R. Arispe & A. Noss. 2006. Geoffroy's cats at the northern limit of their range: activity patterns and density estimates from camera trapping in Bolivian dry forests. *Studies on Neotropical Fauna and Environment*. 41:169-178.
- Pereira, J., N. Fracassi & M. Uhart. 2006. Numerical and spatial responses of Geoffroy's cat (*Oncifelis geoffroyi*) to prey decline in Argentina. *Journal of Mammalogy* 87(6): 1132-1139.

Project Information

| | |
|---------------------|---|
| Duration: | 1999 – ongoing |
| Location (see map): | Lihue Calel National Park and surrounding cattle ranches, La Pampa, Argentina |
| Sponsor(s): | * Asociación para la Conservación y el Estudio de la Naturaleza (ACEN) * Wildlife Conservation Society – Field Veterinary Program * Dr. Jim Sanderson (Conservation International & IUCN-CSG) * Maurice Rufford Foundation * Cleveland Metroparks Zoo & Cleveland Zoological Society * Roger Williams Park Zoo & Rhode Island Zoological Society * Idea Wild. |
| Project address: | Av. Santa Fe 3435 6to. "A" (CP 1425) Ciudad de Buenos Aires, Argentina |
| Project leader: | Lic. Javier Pereira (CEAN-CONICET & ACEN) – Project Coordinator – javipereira@yahoo.com MV Marcela Uhart (WCS-Field Veterinary Program) – Veterinary team coordinator – muhart@wcs.org |
| Website | www.acen.org.ar/gatosdelmonte_e.html |