

EARTHWATCH INSTITUTE FIELD REPORT

Project Title: Carnivore Ecology and Conservation in the Brazilian Grasslands.

Principal Investigator: Leandro Silveira.

Position/Affiliations: Biologist, PhD / Jaguar Conservation Fund, Instituto Pró-carnívoros.

Research Site: Emas National Park, Mineiros-GO, central Brazil, extreme southwest of Goiás state, 18°19' S 52°45' W.

Local Management Status of the Research Site: Emas National Park is one of the largest Cerrado reserves in the world. It is a World Heritage Site – UNESCO, Biosphere Reserve and the reference hotspot area for the Cerrado biome.

Scientific names of primary species being studied: *Panthera onca*, *Puma concolor*, *Chrysocyon brachyurus*, *Leopardus pardalis*, *Oncifelis colocolo*, *Cerdocyon thous*, *Pseudalopex vetulus*, *Nasua nasua*, *Conepatus semistriatus*, *Herpailurus yagouarundi*, *Leopardus tigrinus*.

Key Research Objectives:

- Investigate the distribution and ecological requirements of the carnivore species of ENP;
- Investigate the ecology of the carnivore community of ENP;
- Investigate the carnivore diets;
- Investigate the prey abundance;
- Assess the impact of road-kill in the road bordering ENP;
- Assess the epidemiological state of the carnivores in the region;
- Assess the conservation threats, conservation status and need for management of the carnivore community of ENP.

Date this report was completed:

The carnivore project has been studied since 1994.

Data Collection and Results

A total of 113 individuals of 11 species of carnivores has already been captured in Emas National Park since 1998: 4 *Panthera onca*, 6 *Puma concolor*, 45 *Chrysocyon brachyurus*, 7 *Leopardus pardalis*, 7 *Oncifelis colocolo*, 39 *Cerdocyon thous*, 1 *Herpailurus yagouarundi*, 1 *Leopardus tigrinus*, 1 *Nasua nasua*, 1 *Conepatus semistriatus* and 1 *Pseudalopex vetulus*. 85 of these individuals were fitted with radio-collars, with 68 individuals being continuously monitored with the use of radio-telemetry.

Utilising the technique of radio-telemetry to monitor these carnivores, more than 4,000 locations were obtained.

Camera traps were used between 2002 and 2004. A total of 270,312 camera trap sampling hours have been accumulated in Emas National Park and the surrounding area,

resulting in 3,832 photographic registers of 34 terrestrial mammals weighing over 500 grams (13 species of carnivores). 103 registers of jaguar were obtained.

A preliminary epidemiological survey was made of the wild and domestic carnivores of ENP and surroundings. The presence of antibodies against *Toxoplasma gondii* and *Leptospira sp* were registered. These results are being analysed for publication.

A carnivore long-term monitoring program in ENP and the surrounding area is being implemented. This study will assess and monitor the population dynamic and the epidemiological, reproduction and genetic status of the carnivore community.

Significance/Benefits of Research

In the last three decades, the Cerrado biome of south-western Brazil experienced a drastic reduction. The conversion of natural habitats into crop fields and exotic pastures has reduced and fragmented habitats and populations. The survival of most of the medium-large bodied vertebrates is regionally threatened in a long-term perspective due to the relatively small sizes of conservation units available to support genetically viable populations. In this scenario, the knowledge of the ecology of the carnivore community in the region gives us not just insight on the species conservation status but helps determine regional conservation priorities as well. Understanding the distribution, abundance and ecological requirements of the carnivore species in the ENP and surrounding area are the first steps to design regional conservation efforts.

The long term monitoring program of the carnivores is the key to detecting population trends and properly diagnosing their causes. This program will be essential for updating the current knowledge on carnivore distribution and to develop a better understanding of carnivore population dynamics and conservation status throughout these biomes, which will help orient the species conservation strategies and efforts on an ecosystem scale.

Dissemination of Results

Chapters of books published:

- Silveira, L., & Jácomo, A. T. A. 2002. Jaguar conservation in the Cerrado of central Brazil. *In* : Medellin, R. A., Chetkiewicz, C. ; Rabinowitz, A.; Redford, K. H. ; Robinson, J. G.; Sanderson, E. & Taber. A. (eds.). *Jaguars in the new millennium. A status assessment, priority detection, and recommendations for the conservation of jaguars in the Americas*. Mexico D. F., UNAM/WCS.
- SILVEIRA, L. 1994. Gato Palheiro, *Felis colocolo*, (Molina, 1810). Em: *Mamíferos Brasileiros Ameaçados de Extinção*. Fundação Biodiversitas, pp. 276.

Scientific papers published:

- SILVEIRA, L., JÁCOMO, A. T. A., DINIZ FILHO, J. A. F. Camera-trap, line transect census and track surveys: a comparative evaluation. *Biological Conservation.*, v.114, p.351-355, 2003.
- RODRIGUES, F. H. G., SILVEIRA, L., JÁCOMO, A. T. A., BEZERRA, A. P., COELHO, A. M. R., SANTOS, D. C., PAGNOZZI, H. G., HASS, A. Composição e caracterização da fauna de mamíferos do Parque Nacional das Emas, Goiás.. *Revista Brasileira de Zoologia.* , v.19, p.589 - 600, 2002.

- RODRIGUES, F. H. G., SILVEIRA, L., JÁCOMO, A. T. A., MONTEIRO FILHO, E. L. A. Albinismo parcial em veado-campeiro (*Ozotocerus bezoarticus*) no Parque Nacional das Emas, Goiás. *Revista Brasileira de Zoologia*. , v.16, p.1229 - 1232, 1999.
- SILVEIRA, L., RODRIGUES, F. H. G., JÁCOMO, A. T. A., DINIZ FILHO, J. A. F. Impact of wildfires on the megafauna of Emas National Park, central Brazil. *Oryx*. , v.33, p.108-114, 1999.
- SILVEIRA, L., RODRIGUES, F. H. G., JÁCOMO, A. T. A. Um albino parcial de veado-campeiro (*Ozotocerus bezoarticus*) e uma crítica sobre albinos na América do Sul. *Revista Brasileira de Zoologia*. , v.00, p.0 - , 1999.
- SILVEIRA, L., JÁCOMO, A. T. A., RODRIGUES, F. H. G., DINIZFILHO, J. A. F. Bush-dogs in Emas National Park, central Brazil. *Mammalia*. , v.62, p.446 - 449, 1998.
- SILVEIRA, L., JÁCOMO, A. T. A. *Eunectes murinus* (Green anaconda) diet. *Herpetological Review*. , v.29, p.241 - 242, 1998.
- SILVEIRA, L., JÁCOMO, A. T. A., RODRIGUES, F. H. G., CRAWSHAW, P. G. Hunting association between the Aplomado falcon (*Falco femoralis*), and the maned-wolf (*Chrysocyon brachyurus*) in Emas National Park, central Brazil.. *Condor*. , v.2, p.33 - 35, 1997.

Phd dissertation:

- Jácomo, A. T. A. 2004. Ecologia, manejo e conservação do queixada (*Tayassu pecari*) no Cerrado. Dissertação de Doutorado. Universidade de Brasília-DF.
- Silveira, L. 2004. Ecologia Comparada e Conservação da Onça-pintada (*Panthera onca*) e Onça-parda (*Puma concolor*) , no Cerrado e Pantanal. Dissertação de Doutorado. Universidade de Brasília. Brasília-DF. 218pp.

Congress presentation:

- SILVEIRA, L., KASHIVAKURA, C. K., JÁCOMO, A. T. A., PERES, S. A., TORRES, N. M., FURTADO, M. M., SUERO, D. R., C. K., FERRO, C. Análise Comparativa de dois métodos de Captura de mamíferos carnívoros na região do Parque Nacional das Emas. *In: XXV Congresso Brasileiro de Zoologia, 2004, Brasília. XXV Congresso Brasileiro de Zoologia*. , 2004.
- KASHIVAKURA, C. K., FURTADO, M. M., JÁCOMO, A. T. A., MARVULLO, M. F.; SILVA, J. C., FERRO, C., PERES, S. A., TORRES, N. M., SUERO, D. R., SILVEIRA, L. Brucelose em queixadas *Tayassu pecari*, de vida livre da região do Parque Nacional das Emas. *In: XXV Congresso Brasileiro de Zoologia, 2004, Brasília. XXV Congresso Brasileiro de Zoologia*. , 2004.
- FURTADO, M. M., KASHIVAKURA, C. K., FERRO, C., SUERO, D. R., TORRES, N. M., PERES S. JÁCOMO, A. T. A., SILVEIRA, L., A. Fratura dental em lobo-guará (*Chrysocyon brachyurus*) de vida-livre *In: XXV Congresso Brasileiro de Zoologia, 2004, Brasília. XXV Congresso Brasileiro de Zoologia*. , 2004.
- FURTADO, M. M., KASHIVAKURA, C. K., FERRO, C., PERES, S. A., SUERO, D. R., TORRES, N. M., JÁCOMO, A. T. A., SILVEIRA, L., Impacto de atropelamento de mamíferos silvestres na região do Parque Nacional das Emas *In: XXV Congresso Brasileiro de Zoologia, 2004, Brasília. XXV Congresso Brasileiro de Zoologia*. , 2004.
- SILVEIRA, L., JÁCOMO, A. T. A.,. Infanticídio em onça-pintada no Parque Nacional das Emas *In: XXV Congresso Brasileiro de Zoologia, 2004, Brasília. XXV Congresso Brasileiro de Zoologia*. , 2004.
- SILVEIRA, L., SUERO, D. R., JÁCOMO, A. T. A.,. Mamíferos do Parque Estadual do Cantão *In: XXV Congresso Brasileiro de Zoologia, 2004, Brasília. XXV Congresso Brasileiro de Zoologia*. , 2004.

- JÁCOMO, A. T. A., SUERO, D. R., SILVEIRA, L. Predação de Onça-Pintada sobre boto In: XXV Congresso Brasileiro de Zoologia, 2004, Brasília. XXV Congresso Brasileiro de Zoologia
- SILVEIRA, L., JÁCOMO, A. T. A., DINIZ-FILHO, J. A. F. Uso de armadilha-fotográfica como método para estimar a densidade de onça-pintada no Parque Nacional das Emas In: XXV Congresso Brasileiro de Zoologia, 2004, Brasília. XXV Congresso Brasileiro de Zoologia. , 2004.
- JÁCOMO, A. T. A., PERES, S. A., TORRES, N. M., FURTADO, M. M., SILVEIRA, L., SUERO, D. R., KASHIVAKURA, C. K., FERRO, C. Uso de habitat e padrão de atividade de tatu-canastra (*Priodontes maximus*), na região do Parque Nacional das Emas In: XXV Congresso Brasileiro de Zoologia, 2004, Brasília. XXV Congresso Brasileiro de Zoologia. , 2004.
- FERRO, C., JÁCOMO, A. T. A., SUERO, D. R., SILVEIRA, L., FURTADO, M. M., TORRES, N. M., PERES, S. A., KASHIVAKURA, C. K. Uso de lavouras por ema Rhea americana, na região do Parque Nacional das Emas In: XXV Congresso Brasileiro de Zoologia, 2004, Brasília. XXV Congresso Brasileiro de Zoologia. , 2004.
- JÁCOMO, A. T. A., SILVEIRA, L., KASHIVAKURA, C. K., FERRO, C., FURTADO, M. M., PERES, S. A., TORRES, N. M., SUERO, D. R. Área de Vida de queixada (*Tayassu pecari*), na região do Parque Nacional das Emas In: XXV Congresso Brasileiro de Zoologia, 2004, Brasília. XXV Congresso Brasileiro de Zoologia. , 2004.

Publications and media presentations:

- July 2003. National Geography program about the Maned Wolf project in the Cerrado
- 2000. National Geography program about the maned wolf project.
- 2000. Globo repórter. Brazilian television program about the Biodiversity Projects at Emas National Park;
- Web site about the NGO – Jaguar Conservation Fund (the mission, the projects, the researchers, the goals, the methodology,...); <http://www.jaguar.org.br>
- 2003. Terra Magazine – about the Cerrado’s project in ENP.
- Feb. 2002: Informative web site describing the participation of CI’s Jeff Flocken and SeaWorld/Busch Garden’s Julie Scardinas on the Peccary project at Fazenda Rio Negro and on the Carnivore project at *Parque Nacional das Emas*, located on CI’s “investigatebiodiversity,expeditions”pages:
<http://investigate.conservation.org/xp/IB/expeditions/pantanal/pantanal.xml>,
<http://investigate.conservation.org/xp/IB/expeditions/pantanal/day4/>, [.../day5/](http://investigate.conservation.org/xp/IB/expeditions/pantanal/day5/), [.../day10](http://investigate.conservation.org/xp/IB/expeditions/pantanal/day10/)

Conferences, workshops:

- November 2004: Annual EW conference, Boston, MA. Poster presented about the Carnivore project – Emas National Park;
- January 2004: presentation of Leandro Silveira’s PhD dissertation at University of Brasília – DF: Ecologia Comparada de Onça-Pintada e Onça-Parda no Cerrado e Pantanal;
- January 2004: presentation of Anah Jacomo’s PhD dissertation at University of Brasília – DF: Ecologia, Manejo e Conservação de Queixadas e Catetos na região do Parque Nacional das Emas”;
- December 2003: participation at “Lectures of the Corridor of Biodiversity Cerrado-Pantanal” by Oreades and CI-Brasil, Mineiros-GO. Leandro Silveira spoke about the Onça-Social Project in the Pantanal, Rio Negro-MS.
- December 2003: participation by CRI-Pantanal researchers at the Landscape Species Workshop sponsored by WCS and Embrapa-Pantanal in Corumbá, MS, Brazil.

Researchers contributing data or participating were: Erich Fisher, Don Eaton, Alexine Keuroghlian, Helen Waldemarin, Reginaldo Donatelli, and Leandro Silveira.

- November 2003: Annual EW conference, Boston, MA. Poster presented by Cytia Kashivakura (Carnivore project – Emas Park).
 - June 2003: First Workshop of Pantanal Researchers, sponsored by EW and CI-Brazil. Presentation by Leandro Silveira about the Corridor of Biodiversity Cerrado-Pantanal and Anah Jácomo about the “Ecology and Conservation of White lipped peccary in ENP and surrounding.”
 - January 2003: participation of CRI-Pantanal researchers at the “Mapping the Corridor” workshop, sponsored by CI-Brazil – participants: Leandro Silveira, Mauro Galetti, Andréa Araújo, Reginaldo Donatelli, Alexine Keuroghlian, and Don Eaton.
 - May 2002 & Sept. 2001: Friends of Nature (*Amigos da Natureza*) workshops held in Mineiros, GO and Campo Grande, MS. Leandro Silveira and Anah Jácomo spoke about conservation issues and carnivores and their prey at *Parque Nacional das Emas*.
- November 2001: Annual EW conference, Boston, MA. CRI poster presented by Leandro Silveira (Jaguar project).