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LINKING RESEARCH AND CONSERVATION

Conservation of Maned Wolves in the Serra da Canastra National Park

By Nucharin Songsasen and
Rogerio Cunha de Paula

The maned wolf is one of the world's most unusual canids. It is the only member of its genus, *Chrysocyon*, and has an evolutionary history dating back six million years. Having evolved to live in the tall grasses of South American savannas, a thick red coat, long black legs, large ears, solitary habits and omnivorous diet make the maned wolf unique.

Although found in several South American countries, most maned wolves live in the Brazilian Cerrado ecosystem where it is considered a flagship species. The Cerrado biome, considered one of 25 'biodiversity hotspots' worldwide has undergone extensive conversion into agricultural land over the past 30 years. Now, it is the largest producer of Brazil's soybean crop and cattle, and a significant source of coffee, rice, cotton and corn.

The Serra da Canastra National Park (SCNP, southeastern Minas Gerais State) is a core area for maned wolf conservation. The park was established in 1972 after a movement to protect the riverheads of São Francisco, Araguari, Santo Antônio and other important rivers in the Minas Gerais state. Canastra is comprised of a complex network of hydrological systems that are the foundation for water supplies throughout southeastern Brazil. The park rises to nearly 1,500 m in elevation, with agricultural development (cattle ranching, coffee and corn plantation) now immediately abutting the park. Because of its stunning landscape and abundance of rare flora and fauna, the park also accommodates more than 25,000 visitors per year.

The Maned Wolf Conservation Project, initiated in 2004, is a collaboration involving the Instituto Pró-Carnívoros (a local nongovernmental organization), the government's National Research Center for Predators Conservation (CENAP/IBAMA) and the Smithsonian's National Zoological Park. This multidisciplinary study aims at determining the influence of human development and related factors (including domestic species) on ecology, behavior, health and reproduction of maned wolves living in the SCNP. The project involves monitoring radio-collared wolves, analysis of fecal cortisol metabolites (indicative of stress) and periodic, hands-on assessment of general and reproductive health. In addition to this scholarly research, education and community outreach are also important components of this project. The project has received generous funding from: Fundo Nacional do Meio Ambiente, Morris Animal Foundation, Disney Wildlife Conservation Fund, AZA's Conservation Endowment Fund, Walcott Endowment, Maned Wolf Species Survival Plan, National Zoo' Conservation and Research Center, Houston Zoological Garden, Dickerson Park Zoo, Little Rock Zoo and Beardsley Zoo's AAZK chapter.

Since January 2004, we have captured and radiocollared 34 maned wolves (two wolves received a GPS collar) living inside the national park (15), around the park border (13) or exclusively on adjacent farms (6). Additionally, there have been nearly 170 recapture events, a rate that allows us to longitudinally monitor the biology and health of each individual wolf. Additionally, we have collected behavioral data during 136 encounters with wolves (~80 hours of behavioral observation). One of the most intriguing behaviors is the collaborative hunting between the wolves and the aplumado falcon (*Falco femuralis*). We believe that wolves and falcon help each other searching for prey that may be difficult to find in the grassland.

We estimate that approximately 80 wolves live exclusively inside the park, a population size nearly two times higher than that predicted by our predecessor James Dietz who studied the species in the same area 25 years ago. By using radio-telemetry to monitor collared individuals, we have collected close to 1,500 precise locations of wild wolves. Wolves living in this region have overlapping home ranges, especially those living inside the park and around the park border. This ecological characteristic is also different from that described by Dietz and is probably due to contemporary high food availability and less competition for ideal spaces compared to the late 1970s. When Dietz conducted his study (1978 to 1980), Canastra was only a 'paper park'. In 1979 IBAMA, after strongly encouraging farmers to leave this protected area, began managing Canastra as a national park. Although development on the periphery of the park is booming, a decline in human pressure inside the park has increased its capacity to maintain wolves. The level of overlapping home range decreases significantly in wolves living on farms. Landscape analysis using geographic information system has revealed that wolves living in farming areas avoid tended fields and tend to forage and use remaining natural habitat fragments.

Although ecological studies may suggest that maned wolves are able to exist in disturbed habitats, our health and serological evaluations suggest that the species may be at risk to diseases commonly found in local domestic dogs. The majority of wolves have been found to have antibodies against canine parvovirus (CPV), while 50 percent of dogs living on farms also test positive for this infectious disease. Most notably, the locations of CPV positive wolves and dogs are overlapping, suggesting that the disease is transmitted from the dog. However, since wolf home ranges also overlap, the disease also likely is being transmitted from wolf to wolf. CPV is known to cause high mortality (close to 80 percent) in juvenile wolves, and is able to persist in the environment for months or years. Therefore, if this disease perseveres within the maned wolf population, it will certainly influence recruitment of new generations that, in turn, will impact population sustainability.

Our studies also are revealing that wolves living on surrounding farmlands are producing higher corticoid concentrations in feces compared to wolves living within the park. The hematology and serum biochemistry data also are supporting the hypothesis that wolves in disturbed areas are stressed, likely contributed by interaction with humans, domestic species, and insufficient resources (caused by habitat alteration). However, to date, reproductive function as measured by incidence of successful births and semen traits is not different among wolves living on farmlands versus within the park. Currently, we are assessing pup survival to adulthood and dispersal age.

Our experiences and findings are being integrated into an education and outreach effort aimed at reducing human-wolf conflict. It was recognized during the first Population Habitat Viability Assessment Workshop held in the SCNP in October 2005 that human-wolf conflict is one of the major threats for this species, largely because the wolf is blamed for livestock losses. Our stud-

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ies have revealed that chicken predation is not always caused by wolves. Therefore, a local education campaign has been developed to improve perceptions while encouraging farmers to keep chickens in fenced areas for protection from wild carnivores and birds of prey. We also have built ten chicken enclosures on farms with a history of predation as demonstration models to illustrate the effectiveness of this preventive method. Local attitudes have gradually improved since the campaign begun.

In summary, over the past three years we have conducted a multifaceted study on maned wolves living in an area that is not only a core habitat for maned wolves but also of significant value to Brazil's hydrological system. Our scholarly information indicates that disease risk is the main concern for the survival of maned wolf population in the Canastra region. Our data also suggest that if "spill over" of disease can be controlled and natural habitat can be left in farming areas, maned wolves may well survive outside protected areas. Future research will focus on ecology of individuals living in disturbed habitat, as well as the epidemiology of canine parvovirus in wolves and other wild canids living in this region. We will also continue our education and outreach program to raise local people's awareness of the importance of the maned wolf and the Cerrado habitat. This study is made possible through support of North American zoos in partnership with local organizations.

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MANED WOLF SSP LOOKING FOR A FEW GOOD ZOOS!

The Maned Wolf SSP would like to add three to five zoos in the next two years. We are an active program, currently supporting conservation initiatives in Brazil, Bolivia and Argentina, as well as studies of captive animals in the U.S. and Brazil.

Plus, maned wolves and giant anteaters make a fabulous mixed exhibit!

Interested? Contact Species Coordinator Melissa Rodden, NZP-CRC at *roddenm@si.edu*, (540) 635-6550.

Nucharin Songsasen is a Gamete Biologist at the Smithsonian's National Zoological Park (*songsasenn@si.edu*)

Rogerio Cunha de Paula is a government researcher of the National Research Center for Predators Conservation (CENAP/IBAMA) and a member of the NGO Instituto Pró-Carnívoros (*rogerio@procarnivoros.org.br*)

For further information regarding the project, please contact the authors.