The Quest for little-known Cats of the Americas:

Project Wild Cats of Brazil

Above: The little spotted cat is a native to Brazil. Photograph © Wild Cats of Brazil Project.

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The American continent houses 12 species of wild felids, of which only three are commonly found in North America. Tropical America, which comprises the zoogeographical province of the Neotropics (coastal and tropical lowland areas of Mexico all the way down to the Straight of Magellan in southernmost Chile and Argentina), on the other hand, harbors 10. These are: ocelot (*Leopardus pardalis*), margay (*Leopardus wiedii*), little spotted cat (*Leopardus tigrinus*), Geoffroy's cat (*Leopardus geoffroyi*), kodkod (*Leopardus guigna*), pampas cat (*Leopardus colocolo*), Andean cat (*Leopardus jacobitus*), jaguarundi (*Puma yagouaroundi*), puma (*Puma concolor*), and jaguar (*Panthera onca*). Only the puma is characteristic of both areas, and except for the kodkod and Andean cat, all are found in Brazil.

Needless to say, studies on North American felids (puma, bobcat – *Lynx rufus* – and Canada lynx – *Lynx canadensis*) make them some of the best-studied species worldwide. However, in the Neotropical realm, felids are among the least known in the world, with very limited information available regarding their ecology and conservation needs. This holds true even for Neotropical puma. All species "south of the border" are under a series of threats and are considered threatened with extinction in varying degrees in several parts of their range. In Brazil, all are threatened either nationally (most species) or at the state level.

In 2003, Brazil's Ministry of the Environment, through the National

Above: Melanistic Geoffroy's cats, female (Bugra) and her kitten (Sombra). This population, which is being studied by camera-trapping and radio-telemetry, was originally all spotted, and after animals were shot, it was replaced by an all melanistic and currently is partly spotted and partly melanistic. Photograph © Wild Cats of Brazil Project.

Environmental Fund (FNMA), launched two programs to support studies on its threatened species:

1. Category I – basic research towards the elaboration of a conservation action plan (for species with limited information).

2. Category II – to implement conservation action plans.

A project on the little spotted cat was submitted and approved for category I: "Studies on the biology, distribution, and conservation status of the little spotted cat in Brazil." The ultimate goal was to elaborate a conservation action plan for natural populations of this small felid in Brazil. The proposal was integrated, joining together all (the very few) researchers and their field studies that were currently ongoing with the species in Brazil. Initially, 14 researchers and 10 institutions were involved in this endeavor. This small cat is currently the main focus, but the project greatly expanded to include all other felids in all Brazilian biomes from north to south, including the Amazon and Atlantic rainforests, savannas, semi-arid scrub, pampas, and mixed Araucaria (pine) forests.

Then it became "Projeto Gatos do Mato – Brasil" i.e., Project Wild Cats of Brazil. Wild Cats of Brazil is a large-scale, multidisciplinary effort to study Brazilian felids. It was launched in July 2004, and as an umbrella project, it now involves 23 researchers and 11 institutions from north to south.

The project hopes to enlighten current small cat knowledge and provide a baseline for their ecology and conservation. As such, the project will focus on home range, habitat use, food requirements, distribution, reintroduction, genetic makeup, population estimates, reproductive biology, disease, livestock depredation, and conservation. Some topics that have never been attempted will be of a pioneering nature, including verification of the re-introduction of captive-born animals (to be used as a tool for small felid conservation). The project is geographically the largest of its kind for wide-ranging species in South America.

Below: Geoffroy's cat has a limited distribution in Brazil, being restricted to Rio Grande do Sul State. This more "temperate" species seems to be the dominant small felid in the southern cone. Photograph © Wild Cats of Brazil Project.

Objectives:

- Conduct ecological (telemetry) studies to determine home range, activity patterns, food habits, habitat use, daily movements, etc. of the smaller species;
- Evaluate the potential for re-introduction of captive-born or raised individuals as a management tool for the conservation of small felids;
- Assess the geographic distribution, range, and genetic makeup of the populations of the little spotted cat;
- Verify the occurrence of hybrids with other Neotropical felids, within the populations of little spotted cat/pampas cat/Geoffroy's cat;
- Assess species community composition and density estimates for all Brazilian biomes;
- Understand the basic issues of the smaller species' reproductive biology;
- Identify diseases affecting wild and captive populations;
- Determine the main threats and the conservation status for the different areas of Brazil.

Ecological data on species community composition and abundance estimates are being gathered from camera trapping studies using locally-made cameras (two of the models developed by team members). This has proven to be highly effective with a cost/benefit ratio much better than traditional camera trap brands. Data on home range, movement, and daily activity patterns come from radio-telemetry (some information has also been gathered from camera traps) and diet from scat analysis. Genetic studies focus on determining significant evolutionary units of little spotted cat and the occurrence of hybrids. Distribution records combine those of museum collections with field observations, whereas reproductive biology information is being collected from zoo specimens. To evaluate the viability of captive-raised smaller felids as a management tool (for re-introduction programs), animals under study are being adapted for release in the wild through predatory training. Animals considered apt will be released and monitored to evaluate this procedure as a future tool for conservation of smaller wild felids.

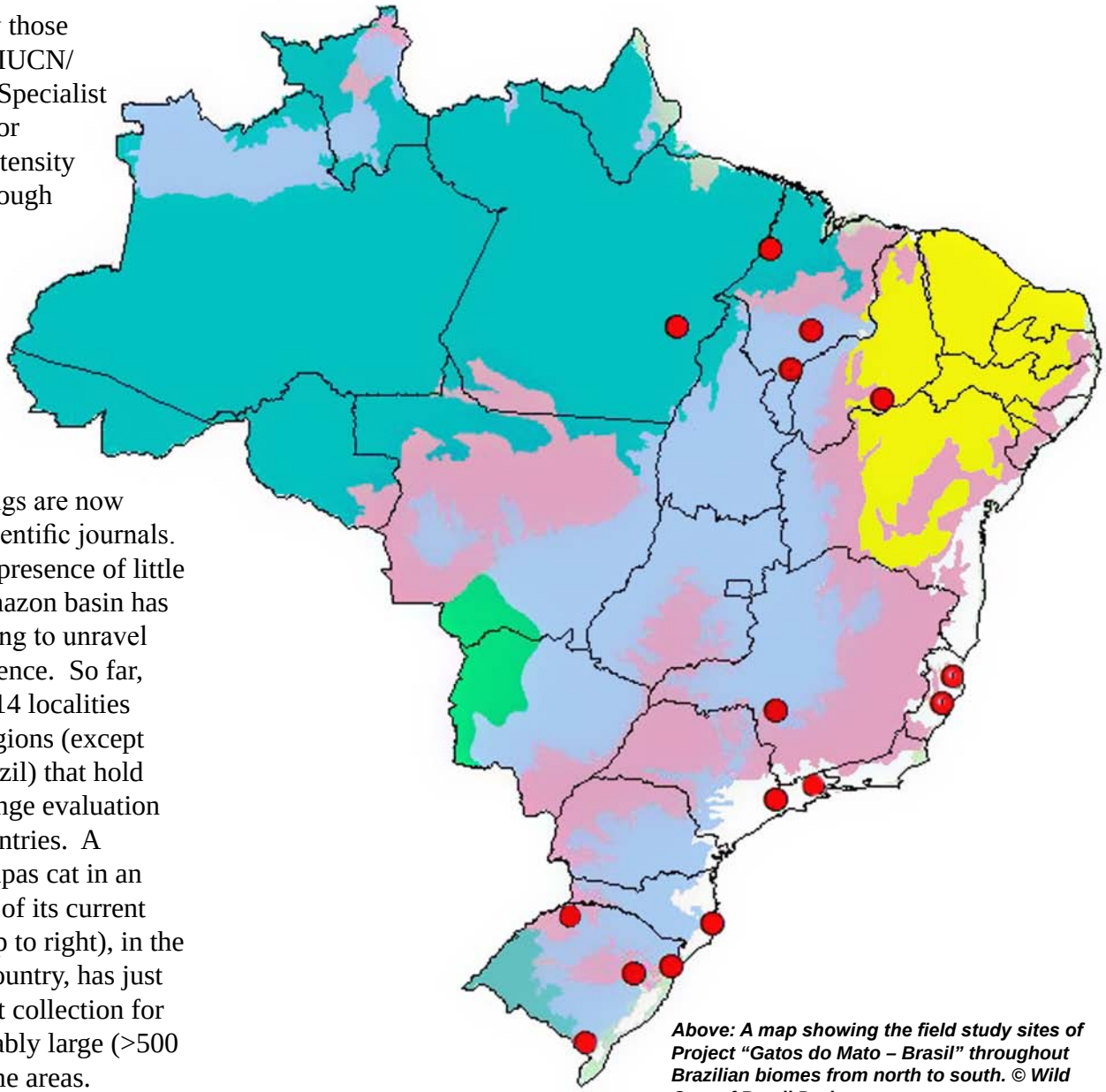
Left: The author placing a radio-collar on a male (Maragato) little spotted cat. Photograph © Wild Cats of Brazil Project.

Jaguarundi, along with other small felids, are part of the reintroduction program of Project "Gatos do Mato – Brasil." Captive-born or raised individuals are readapted for release back in the wild through predatory training. The project seeks to assess the viability of reintroductions of captive-born/raised individuals as a future tool for conservation. Photograph © Wild Cats of Brazil Project.

Pampas cats were unknown from Maranhão state in northern Brazil. The nearest known area for the species was 500 km south. This record considerably expanded the species range. In the savannas of Mirador State Park, the first ever species' density estimate is coming out. Photograph © Wild Cats of Brazil Project.

Procedures follow those recommended by the IUCN/ SSC/Re-introduction Specialist Group. Evaluations for "threats" assess the intensity of various factors, through the percentage of a particular area under impact. Evaluations for "conservation status" combine all information gathered from natural populations.

Preliminary findings are now being published in scientific journals. Correspondingly, the presence of little spotted cats in the Amazon basin has been confirmed, helping to unravel the myth of their presence. So far, there are more than 214 localities comprising all eco-regions (except for the pampas of Brazil) that hold spotted cats – their range evaluation included all other countries. A population of the pampas cat in an area considerably out of its current known range (see map to right), in the northern part of the country, has just been discovered. Scat collection for diet study is considerably large (>500 samples each) for some areas.



Above: A map showing the field study sites of Project "Gatos do Mato – Brasil" throughout Brazilian biomes from north to south. © Wild Cats of Brazil Project.

Little spotted cat, along with other small felids, are part of the reintroduction program of Project "Gatos do Mato – Brasil". Captive born or raised individuals are readapted for release back in the wild through predatory training. We want to assess the viability of reintroductions of captive born/raised individuals as a future tool for conservation. Photograph © Wild Cats of Brazil Project.

The first camera-trapping results are also proving exciting, with preliminary density estimates for little spotted cat, margay, Geoffroy's cat, pampas cat, and jaguarundi. This has never been done, at least with camera trapping (in the case of jaguarundi). Estimates have also been made for ocelots. Results so far have shown that ocelots reach higher numbers than the smaller species. But, most importantly, this has a significant impact for conservation. Given their density estimates, areas needed for their long-term survival (ca. 5,000 individuals for more than 40 generations) are considerably large. For ocelots, areas should be no smaller than 13,000 km^2 and for the smaller species 20,000 km^2 in areas where such cats might be considered "common." Note – this does not suggest the same areas for ocelots and smaller cats. However, in less favorable locations (which comprise most of their range), the area needed to ensure their survival would reach 250,000 km^2 or more.

Although margay ranges from Mexico through northern Argentina and southern Brazil, it is very poorly known. Photograph © Wild Cats of Brazil Project.

A look at small cat community composition is also proving interesting. Ocelots tend to be the dominant and most abundant species. We theorize that ocelot and jaguar numbers might effect those of little spotted cats and margays. This "ocelot effect" also has conservation implications. The largest protected areas (almost all of which is located in the Amazon), which also harbor good ocelot populations, would thus not be the best areas for large populations of at least some of the smaller species, especially the little spotted cat. This is a similar situation to that of the lion and cheetah in Africa (where lions are abundant, i.e., within protected areas, cheetahs are not).

In the radio telemetry effort to date, the following have been collared: two little spotted cats, one margay, three jaguarundis, and two Geoffroy's cats. Animals are being monitored in a forest and agricultural

The southern-most population of jaguars in Brazil is found at Turvo State Park, where camera-trapping has shown that individuals cross the border with Argentina, attesting to the need of transnational conservation actions/efforts. Photograph © Wild Cats of Brazil Project.

Female ocelot from Maranhão state northern Brazil. Photograph © Wild Cats of Brazil Project.

mosaic. By doing so, researchers will be able to know how the cats cope in this landscape (a mosaic which dominates much of southern-southeastern Brazil, and more and more all over the country).

So far, researchers have detected that forest cover is of paramount importance at least for the little spotted cat, margay, and jaguarundi.

Findings on the predatory training of captive-raised specimens are also quite interesting, with a far better response than expected. Notably, natural hybrids have been detected within some species. As the days go by and as findings are coming out, project actions and participation are increasing. However, phase one is about to end, and the quest for the project's continuation (phase two) is on. This phase hopes to answer some of the questions about the natural history of the little known Neotropical felids.