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## Volunteer expeditions support felid research projects

**Volunteer expeditions have helped to support research projects with two large wild cats. Results have raised concern regarding the conservation status of the Atlantic Rain Forest jaguar *Panthera onca*, and have successfully evaluated habitat conditions for Arabian leopards *Panthera pardus nimr* in two areas of their distribution.**

I was first introduced to the volunteering system through Biosphere Expeditions, an UK-based volunteer and non-profit organization. I learned that volunteer organizations usually joined field projects at some stage after the project's implementation. I was, however, aiming to a new project in a new place, when the partnership with Biosphere Expeditions came handy to start a project with jaguar in Brazil. This meant that I had to rely on the resources provided by Biosphere Expeditions and by the recruited volunteers to start and possibly maintain the project.

Volunteers came from several continents to help with their personal effort, and in most cases they had no previous research training. They were trained to record species' presence using GPS and datasheets. After some

practice in the field, during which tracks and scats of known species were shown, they were split into small groups to perform different tasks. To reduce identification errors, team members were instructed to bring scats to base camp whenever they were unable to identify the species, and were briefed on how to take photos of tracks for identification later at base camp.

### Jaguar in Brazil

The experience has been successful. Expeditions to the Serra do Mar mountain range in southern Brazil (25°40'N, 48°50'E) aimed to evaluate habitat conditions for jaguars *Panthera onca* and pumas *Puma concolor*. They were conducted with international vol-

unteers during the November-December periods of 2006, 2007, and 2008. Three local expeditions during July 2006, 2007 and 2008 were also organized as a way to extend the sampling period and to find new routes and locations. Results have been published in annual reports, in a local and international journal (Mazzolli & Hammer 2008a, Mazzolli 2009), and presented during national and international meetings (all available at <http://www.projeto-puma.org>, download section).

I have since been invited to participate in workshops to define action plans for the jaguar at both the national and regional levels, demonstrating that our work has been acknowledged by local managers and scientists, and that the information provided may be valuable to jaguar conservation.

Unlikely the puma, jaguar frequency in the area was found to be very low, and this has raised our concern. Results shouldn't have surprised us, though. The Serra do Mar mountain range is considered one of the best refuges to the jaguar in the Atlantic Rain Forest, but in practice it is not more than a 40km wide strip of forest along the coast. Furthermore, the ecosystem is considered as one of the most endangered in world, where jaguar populations are isolated from larger (source



Study site for jaguar and puma surveys in Brazil.



Base camp in Oman (both photos M. V. Reenen).

continental populations. Direct efforts should be allocated to preserve the jaguar in the Atlantic Forest, even if to maintain a likely variation adapted to a peculiar ecosystem.

We have attributed low frequency and occupancy of jaguars to low prey availability, inadequate implementation of reserves, and invasions motivated by the unsustainable harvesting of palm heart. Jaguar is very sensitive to habitat modification and the reduction in the stock of large-sized wild prey, particularly peccaries, *Tayassu pecari* and *Pecari tajacu*, and capybaras *Hydrochaeris hydrochaeris*. During the surveys we have also recorded, among other mammal species, primates, *Alouatta guariba* and *Cebus nigrurus*, the ocelot *Leopardus pardalis*, and the tapir *Tapirus terrestris*.

### Leopard in Oman

During January and February 2008 I had the privilege to work as a Biosphere Expeditions' scientist in search for the Arabian leopard *Panthera pardus nimr*, the leopard subspecies inhabiting the Arabian Peninsula. The Arabian leopard is listed in the IUCN Red List as *Critically Endangered*, based on estimates of fewer than 250 wild individuals (Mallon et al. 2006). Biosphere Expeditions is working jointly with the Arabian Leopard Survey Project to extend its reach, by sampling in areas that have not been previously surveyed, and by bringing new local and international partners to address the conservation aspect of the project.

We were to sample in the the Dhofar mountains in southern Oman, considered the best habitat for leopards in the Arabian Peninsula. We aimed, however, at a border area of the leopard's distribution, at the northern range

of the mountains (53° 37'E, 17° 13' N), not at prime leopard ranges. As a result, we have found few and old signs of leopard presence, and indications of leopard decline. No recent depredation incidents were reported by herders where once it was common. In spite of that, the habitat for leopard seemed quite intact, harboring prey species such as the nubian ibex *Capra ibex nubiana*, rock hyrax *Procapra capensis*, and mountain gazelle *Gazella gazella cora*. In addition, we have also recorded hyaena *Hyaena hyaena sultana*, caracal *Caracal caracal schmitzi* and the Arabian wolf *Canis lupus arabs*, among other species (Mazzolli & Hammer, 2008b). This contrasted with previous Biosphere Expedition's results in the Musandam Peninsula,

Biosphere Expeditions has produced a previous report of leopard surveys in the Musandam Peninsula (56° 10'E, 25° 50'). Results have shown that leopard wild prey was reduced in the area, and that vulnerable species like the hyena and wolf were also uncommon (Hammer et al. 2007). These indications of habitat impoverishment were corroborated by Stuart & Stuart (2007), which have found no evidence of continued occurrence of any wild ungulate in southern Musandam and adjoining areas of United Arab Emirates (UAE). Instead, they found that leopards were feeding mainly on exotic goats and Cape hare.

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