

the different components. Some individuals have begun to be sold for display in cages in Yemeni villages. It was only recently, in response to the activities of different conservation programmes and newspaper articles describing the rarity of this predator, that a market appeared, with huge amounts of money to be earned! A trapper currently sells a leopard for \$4,000-5,000 to a dealer, who subsequently sells it at a much higher price. However, trappers (and virtually anyone can set up traps, as it requires little skill) do not trap all year long because of the cost of the goats used as bait.

At the National Wildlife Research Center (NWRC) at Taif, Saudi Arabia, there are two males that seem to be younger than the ones held at the Taezz Zoo. The first one was acquired by the Center in July 1997, and is estimated to be four years old, and the second, which is slightly older, was acquired in June 1998. The coat colour of the first one is more yellow and darker than that of the second, which is paler, almost black and white. Both are very shy. The first one ventures out only in the late afternoon, jumping on top of its box. The second spends the entire day inside the box, coming out only to grab food, or at night. One was purchased, and is supposed to have been caught in Saudi Arabia, although it might in fact have been caught in Yemen, most likely in Wa'ada. The other leopard came from the Saudi-Yemeni border market, and also probably comes from Wa'ada. Both weigh between 20 and 25kg.

During the last few years, Patrick Paillat of the NWRC has been investigating and interviewing people along the 400km Sarawat-Asir escarpment, which is known to be one of the last habitats of the Arabian leopard in Saudi Arabia. There is another isolated population close to Medina. The escarpment drops from a height of more than 2,000 m a.s.l. down to 600 m a.s.l. in a steep rocky slope shaded by sparse juniper forest.

The part of the escarpment believed to shelter leopards runs from Al Baha to Abha, approximately 350km in length. In some areas there are large colonies of hamadryas baboons *Papio hamadryas*, whose young may be occasional prey for the leopards. Signs of the presence of leopards are found mainly halfway up the escarpment, as the animals appear to avoid the inhabited areas on the plateau on the top of the escarpment, and on the plain at the bottom. It is also at this altitude (approx. 1,500 m a.s.l.) that a communicating network of caves can be found under the huge rocks fallen from the cliff, or carried by the wadi while in flood. We explored these caves and found bones and blood of hyrax *Procapra spp.* goat bones, leopard footprints, a claw and droppings.

According to Paillat, the Saudi population numbers no more than 50 individuals. Sightings and reports from local people are not rare, but different sightings may be of the same animal, as the leopards are likely

to move large distances along the escarpment in search of prey. By interviewing people, we learnt that a leopard had been seen a week before our arrival in an area known by people as a leopard area. We were shown a stuffed animal that was said to have attacked a hunter. Not far away, an apiarist told us he had seen a female with two cubs two years ago.

The three main threats to the leopard in Saudi Arabia seem to be:

1. intensive hunting of hyrax, which is the leopards' main prey
2. fragmentation of the escarpment into isolated patches, due to the building of new roads
3. the continual encroachment of human settlements into leopard territories, and as a consequence, leopards being killed because of their habit of feeding on goats, or encountering hyrax hunters.

Some research is underway on the Omani leopard population in the Dhofar area, to the south, close to the Yemeni border.

Scientists concerned with the status of the Arabian leopard estimate that the total population throughout the Peninsula does not exceed 200 individuals, and could be closer to 100 animals. There is no legal protection for the leopard in Saudi Arabia.

\* Veterinarians, France

## The Leopard in Armenia: Which Subspecies is it?

by Igor Khorozyan \*

**T**he leopard *Panthera pardus* is famous for having the widest distribution among all the wild cat species, but its subspecies-level taxonomy still remains uncertain throughout the range. Particularly, the leopards of Armenia and the whole Caucasus, lying between the Caspian and Black Seas have been defined at different times as subspecies *tulliana*, *ciscaucasica*, *saxicolor*, *dathai* and *transcaucasica*. The last name is artificial and out of use in today's systematics, and the validity of the fourth is dubious, while *tulliana*, *ciscaucasica* and *saxicolor* fit the Armenian leopards most properly. But which one?

Recently, a study of leopard pelage kept at the Yerevan-based Institute of Zoology (two skins and three stuffed materials), and an analysis of the picture of a leopard skin harvested in southern Armenia (Zangezur ridge, Kapan district) in November 1997 were performed. These procedures have shown a similarity of local cats with those described for eastern Turkey, southern Turkmenistan and northern Iran as *saxicolor*. The features of *saxicolor*, defined by Borner (1977) and listed here, are found in the pelage studied: (1) coloration – creamy white or light yellow on the back and pure white on the belly; (2) rosettes – small, closely grouped together, rows of solid dots extending along the body from head to tail, except in the middle where the small rosettes of the flanks extend over the back; (3) tail – no thick furry tip; (4) tail length/body length ratio <1; and (5) hair length up to 7 cm on the belly.

The most eye-catching fact emerging from observation of Armenian leopard skins is their obvious similarity with snow leopard, supported by Alan Shoemaker's (pers.comm.) statement that they look like a live leopard seen by him in Kabul, Afghanistan, and that Afghan leopards have often been confused with snow leopards by

local people due to their light coloration and thick fur (Nowell and Jackson 1996). These data also tend to convince us of the common origin of the leopards from Armenia and northern Iran, where they have greyish rather than yellow or tawny fur colour observed elsewhere (Heptner and Sludskii 1972), as Armenia's Zangezur ridge may act as a corridor between local and Iranian leopard populations (Khorozyan 1999).

The present finding also corroborates a recently proposed idea that, given the absence of significant geographical barriers within the leopard range in south-west Asia (from Asia Minor and the Caucasus to the Arabian peninsula and Afghanistan), it is suggested that this region has been inhabited only by one subspecies, *saxicolor*, and any variations in morphological features or genetic structure between the separate subspecies occurring here (*ciscaucasica*, *dathei*, *jarvisi*, *nimr*, *saxicolor*, *sindica* and *tuiliana*) may be attributed to the ecological flexibility of this species (Miththapala *et al.* 1996).

### Armenian Leopard Conservation Society

The Armenian Leopard Conservation Society (ALCS) is a newly-established public, non-profit organization functioning with the single goal of saving local leopards of the North Persian subspecies *Panthera pardus saxicolor* from imminent extinction. It unifies professionals from different scientific entities (Center for Ecological and Noosphere Studies, Institute of Zoology, Ministry of Environment and the Khosrov Reserve) working as volunteers for leopard ecology and conservation in the country.

In the period 1999-2004, the ALCS plans to pass through the following three stages before the establishment of a workable National Leopard Conservation Strategy (Leopard Conservation Assessment and Management Plan, CAMP) in Armenia:

- implementation of extensive field research, especially in Khosrov Reserve
- assessment of the potential for the development of *in situ* conservation,

captive propagation and reintroduction programs

- initiation of public education campaigns, especially among urban children and youth and in local rural communities.

Currently, ALCS intends to prioritize just field research activities which would enable the collection of necessary material and to use this database for the development of national programmes on leopard *in situ* conservation policy making, captive breeding, reintroduction and public education. We also plan to produce a quarterly "Pardus Newsletter" for free distribution throughout Armenia, but primarily within the rural communities sharing their habitat with the leopards.

### What has been completed and what is expected to be done in the near future?

All information, published or not, has been compiled on leopard status in Armenia and adjacent countries. All extant field data and findings gathered from museum-kept specimens have been processed and presented in several publications in English. They will all be available soon in the Cat Specialist Group Library.

Now it is necessary to clearly define how serious is the economic setback created by leopard predation on the livestock on Armenian farms which, in its turn, inclines rural dwellers to eliminate the cats, in spite of the stringent governmental measures of punishment. For this purpose we plan to begin a large-scale study, which would envisage scat analysis for prey spectrum identification. Collected fecal samples will be used also for a further 4-D study:

1. determination of wolf-bear-leopard feeding competition on domestic livestock, based on comparing the diets (prey residues in scats) of these predators within a common range;
2. determination of reproductive status of local leopard females, given the data on fecal steroid monitoring;

3. determination of the contamination level of the leopard faeces by harmful substances, e.g. heavy metals and pesticides, which is expected to be high; and
4. determination of spatial structure and size of the leopard population by means of mapping defecation site distribution pattern and scat freshness levels in each.

Anybody interested in fruitful partnership and/or willing to support our research endeavours, please do not hesitate to contact Igor Khorozyan, ALCS Chairman by email <eco@hragir.aa.am>. We cordially welcome any financial assistance and advice.

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\* Chairman, Armenian Leopard Conservation Society (ALCS)  
Email <eco@hragir.aa.am>  
Centre for Ecological and Noosphere (a Soviet term for biosphere plus human mind and activities) Studies, National Academy of Sciences, Abovian Str. 68, Yerevan 375 025, Armenia