

In summer, the beautiful snow leopard (*Panthera uncia*) may live in a rocky 13,000-foot Asian mountain range; in winter, it will move down to lower valleys with their evergreen foliage. Here on snowy slopes the snow leopard explores for prey—wild sheep, deer, hares, wild goats, birds and young domesticated cattle. The undercoat is white in winter, turning yellowish in summer. The shape of the snow leopard's skull is distinctive, and its huge "insulating" tail may measure up to 90 per cent of its body length.

JM → P. Jackson 12

Oil painting by Britta Magnusson 1983, exclusive for The Explorer

Shy, elusive, struggling to survive

# The snow leopard

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THE GREAT SILVER CATS streaked by each other, cuffing and rolling. Bounding from boulder to boulder, like ricocheting bullets, the two seemed as comfortable in the air as on the rocks. Finally, panting, they lay beside each other, content, their youthful exuberance spent in the late afternoon sun.

Slowly the crowd dispersed. Left in their cage, alone, thousands of miles from their homeland, the snow leopards lay gazing at the lengthening shadows.

Where once snow leopards were hunted to near extinction for their thick silvery pelts, now they are being displaced by industrialization and agriculture necessary to feed growing populations.

Little is known about these shy and elusive animals. Their habitat includes the remote ranges of the Himalayas, Pamirs, Hindu Kush, Tian Shan, and Altai mountains of Central Asia. Their numbers in the wild are unknown since the usual techniques for determining species populations cannot be used in these rugged, mountainous terrains. An idea of their population density was given by George Schaller when he estimated that only four or five snow leopards were living in the Chitral in West Pakistan, an area of about 1,200 square miles.<sup>1</sup>

Snow leopards are found in the U.S.S.R., Mongolia, China, West Pakistan, India, and Afghanistan. They are considered endangered by every country in which they range. Soviet surveys estimate anywhere from 300 (plus or minus 150) to 1,000 animals in the southern mountains; around 750 is probably the more accurate figure.<sup>2</sup> Hari Dang, famed Indian naturalist, recently estimated

300 of these cats in Bhutan and India and 100 in Nepal.<sup>3</sup> Specific numbers for other areas are not available.

Just looking at the areas where specific numbers are given, it may seem that enough snow leopards remain in the wild for species-survival purposes. When it is realized, however, that 2,000 snow leopard pelts were brought annually to Chinese markets alone at the turn of the century, population estimates of 750, 300, and 100 do not seem impressive.

The physical appearance of these animals reflects their alpine habitat. Slightly smaller than a leopard, their long dense coats are a silvery gray with large open rosettes of black. Undercoats are white in winter, turning to a yellowish color in summer. Paws are large, an advantage while walking or hunting in snow and ice. The most striking aspect of the snow leopard, however, is its tail, which equals between 75 percent to 90 percent of its body length. During periods of extreme cold, the cat will lie curled with its long, thickly furred tail wrapped around its body as an insulator.

Its face is both alluring and distinctive, distinctive enough to encourage a number of zoologists to classify it in a genus separate from other large cats. John Gray, describing the snow leopard in 1876, wrote, "This genus (*Uncia*) is at once known by the shortness and breadth of the face and the sudden elevation of the forehead."<sup>4</sup>

It is this "Persian cat" expression which is so appealing—yet there is a purpose for it. The large nasal cavities are an adaptation for efficient utilization of oxygen in the thin mountain air.

The snow leopard's agility represents another adaptation to environment. It has been reportedly seen completing a 49-foot leap uphill. If that seems a slight exaggeration, the cat is known to leap routinely 30 feet in a single bound, and easily jump 10 to 12 feet into the rarified atmosphere.

This agility is confirmed by Rodney Jackson, the only scientist currently studying the snow leopard in the field and the first to collar the cat with radio-telemetry equipment. While following their quarry, he and his associates were forced to fight their way across a swollen stream in inner-tube rafts, a stream which the cat had little difficulty crossing. The snow leopard's seasonal movements follow the distribution of its prey. In summer it usually lives near the 13,000-foot range; in winter it moves down to the lower valleys.

What little is known of the snow leopard's social structure has only cast confusion on how it lives. Some theorize that it lives an isolated life, coming into contact with others of its kind only during the mating season. Others believe the cats live in pairs, coordinating their hunts to make the most of limited prey species, and argue that one animal will chase the prey to an area where the other is hiding in wait. Snow leopards may also form pairs in their territory to assure fertilization of the female during the limited estrous period—usually five to seven days between January and March—and to provide assistance in rearing the young.

It has been suggested that, since the snow leopard's range of habitat is so large, some areas may have both



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The snow leopard has a rather short and broad skull.

### *The snow leopard* continued

monogamous and polygamous pairs. Certainly the size of the individual territory and the amount of food available are important factors. If reintroduction into the wild is to be successful, these questions must be answered satisfactorily for the welfare of the released animals. Territories must be large since they must include enough food for at least one adult, if not for the two to three cubs usually born in the spring.

The snow leopard diet includes bharal or blue sheep. In many parts of its home range the cat is known as "bharal h'aye," bharal killer. It also preys on wild goats, deer, gazelle, boar, small animals, and birds.

Big cats can usually subdue prey weighing at least three times their own weight. If the territory is not abundant with natural prey, the cat is not above dining on local livestock (such as goats, sheep, and young cattle). Unfortunately, snow leopards are still considered vermin by economically motivated villagers. As human populations increase, agriculture and livestock are moved higher up the mountain and, in the resulting struggle for survival, it is not uncommon for snow leopards to be killed in the course of being displaced by human and livestock pressures.

Since most snow leopard areas are not densely populated with prey, large hunting groups are not formed. A female and her cubs, however, will remain and hunt together during the cubs' first winter. Some believe that the shortage of food is serious enough to cause large numbers of pre-natal and post-natal deaths. Shortages may also prevent fertility in the female.<sup>5</sup>

The snow leopard is known by several names in the western world. "Ounce," the most popular, may have

been derived from the Italian *uncino*, meaning to tear with a hook. It may, on the other hand, have derived from the French *once* meaning lynx, an animal with markings and coloration similar to those of the snow leopard. The Latin *unicus* refers to one of a kind. Many zoologists believe that the cat is in a genus of its own, *Uncia*, rather than in the genus *Panthera* with the big cats.

Little, in fact, is known of this remarkable animal, which, in the Altai mountains, often rests in the high nests of the Black Vulture. Its habitat is so remote, its habits so reclusive that modern zoologists are still divided on the scientific nomenclature to be used. Those preferring an independent generic rank, *Uncia*, do so for several reasons. The primary difference between this and other big cats (the lion, tiger, panther, and jaguar), it is argued, lies in the shape of its skull. As mentioned earlier, Gray differentiated this cat from others by its "relatively short and broad" skull with wider than usual cavities and a "sudden elevation of the forehead." The pupils of its eyes, moreover, are not round as in the big cats, but pointed at the upper and lower ends. The snow leopard does not roar as do the big cats. It lacks the big cats' cartilaginous band which replaces the bony intermediate protuberance found in the hyoid apparatus of the small cats. Small cats cannot roar and big cats can purr only while exhaling.

Those who prefer the classification *Panthera* argue that the same snow leopard skull (the skull is the most important of the skeletal features used for classification) has enough important similarities with the big cats that the ounce should be included with them.

Ulla Gripenberg of the University of Helsinki recently compared the chromosomes of the snow leopard and the big cats. Her conclusion: "The snow leopard and the *Panthera* species show unique homologies in their chromosome pattern. The homologies indicate close phylogenetic relationship."<sup>6</sup> She feels the snow leopard should be placed in the genus *Panthera*. Her study may well have ended the long-running classification disagreement of *Uncia uncia* and *Panthera uncia*.

While officially there is only one species of snow leopard, some argue the existence of two subspecies, *Uncia uncia uncia*, found in central Asia, and *Uncia uncia uncoides*, found in Tibet and China. The basis of the argument rests on coat color and pattern. The central Asian animal is lighter in color and has fewer dark spots and rosettes. It is more slender with a longer tail. The notable difference in the size of the cats is another argument for the existence of subspecies. Certainly the tremendous range of the ounce makes the speculation feasible.

In an effort to settle the question, the Helsinki Zoo has begun a project to determine the existence of subspecies. Unfortunately, the apparent shortage of skulls has hindered this work.

Actually, these questions may soon become academic. The snow leopard, it is believed, lives to 10 years in the

wild, an estimate which may be optimistic. Even though the Endangered Species Act of 1973, prohibiting the import of snow leopard hides into the United States (the major demand market at that time) has eased hunting pressures, the cat now faces other threats. The rapid expansion of human population in terms of agriculture, urbanization, and tourism are all squeezing this shy animal out of its territory. Most of the regions, moreover, that the snow leopard inhabits, are in active military areas or potential war zones, among them the Indian-Chinese and the Soviet-Afghanistan borders. In addition, the hunting of prey species and similar population pressure problems faced by the snow leopard are removing the food sources available to the cat.

There are 65 zoological institutions in the world which house 241 snow leopards. While their breeding in captivity has gone well, many questions still remain to be answered before confidence may be felt for this cat's future.

There is a cub mortality rate (birth to six months) of 46 percent; reasons for this high rate in the captive population are unknown. An eye disease, multiple ocular coloboma, has affected captive-born cubs since 1976. It ranges in severity from a slight notch in the eyelid to total blindness. It is not known if the disease is congenital or genetic. If genetic, it could be catastrophic.

In an effort to "promote measures which help to ensure the perpetuation of a viable breeding population of snow leopards, both in zoological gardens and in the natural habitat," the Third International Snow Leopard Symposium was held in Seattle in June, 1982. Its aims involved not only success in continuing to maintain a captive population of snow leopards, but considerations relative to reintroducing the species into the wild.

Helen Freeman, conference chairman and head of the newly formed Snow Leopard Trust, reflected the feeling of those in attendance: "A captive propagation project cannot be carried on indefinitely."<sup>8</sup> The costs, financially and genetically, would be too expensive. If reintroduction is to be realized, then, as Hari Dang explained, "In the final analysis it is the ability of the environment to enable the animals to survive that counts."<sup>9</sup>

In addition to the economic and social problems already discussed, another problem persists in the attitude of the hill people who share the snow leopard's habitat. Will they, having worked so hard to eliminate the animal, accept it back in their areas? George B. Schaller once wrote of his impression of man's overriding principle in life, "If it moves, kill it; if it doesn't, chop it down."<sup>10</sup> That attitude is still prevalent in many parts of the world.

Certainly, if the snow leopard is to be preserved beyond the cage, there is work ahead. If that work is ignored or avoided because of defeatist attitudes, a great and lovely species will be wiped out because of social greed and economic expediency. There are those who will not accept that consequence.

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The monogamous pairs of snow leopards are truly affectionate. Their long dense coats have open rosettes of black. Paws are large.

Helen Freeman beautifully explained this cat's importance to the world:

"For me, there are two major reasons for saving the snow leopard: 1) I believe the quality of life is directly tied to the diversity of life on this planet. Snow leopards enrich our lives by adding to this diversity; and 2) the cat itself is magnificent, trusting, and a beautiful animal. It moves with grace, it doesn't waste the earth's resources, and individuals respond to each other with affection. We need more examples like this."<sup>11</sup> □

#### NOTES

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8. Freeman, Helen, "Welcoming address," Third International Snow Leopard Symposium, June 23, 1982, in Seattle.
9. Dang, *op. cit.*
10. Schaller, George B., *Mountain Monarchs, Wild Sheep and Goats of the Himalaya* (Chicago: University of Chicago Press, 1977) p. 12.
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