

THE SNOW LEOPARD HUNTS.

G. U. Kuznetsov and E. N. Matyushkin.
First published in Priroda 12 : 65-67, 1962 (Russian)
Translated to English by:
Kathleen Braden
Woodland Park Zoo
3500 Phinney Avenue North, Seattle, WA. 98103, USA

The snow leopard or ounce (*Felis uncia* Schreber) is the rarest animal in the high mountains of Central and Middle Asia. This predator's way of life has thus far been insufficiently studied.

In February 1961, in the Aksu-Dzhabagli Reserve, we were able to conduct some observations on the snow leopard, supplementing the meager information available on these animals.

The reserve is located in the northwest spurs of the Talasski-Altai, one of the regions of mountain ridges belonging to the gigantic Tien-Shan system. Individual peaks here attain heights of 4,000 m, and are covered by snow fields and glaciers all year.

The Talasski-Altain system is divided into five vertical landscape zones; the lowest is the zone of low mountain steppes, occupying the foothills and inter-mountain plateaux (800-1,800 m). The meadow-steppe reaches a height of 2,000 m above sea level, and is characterized by inselbergs (not counting stretches of the rivers) and forest stands of the western Tyan-Shan.

The next zones are the sub-alpine and high mountain steppes, located in various parts of the mountain ridges with individual peaks of approximately 2,000-3,000 m. These zones are interspersed with each other, depending on the moisture supply. Higher up, the zones border on the permanent snow line in the region of alpine meadows.

The winter climatic conditions here are rather severe. The diurnal temperature variation is very great— from 15°C freezing at night to daytime thaws. There are also dense snow storms, snow accumulation in the valleys, and strong winds. In the whole territory, including the southern slopes, there is a steady snow cover, the depth of which fluctuates from 0-70 cm. All these factors may vary sharply, depending on absolute elevation and the form of relief.

However, despite the severity of nature in the Tien-Shan, in winter the vertical zones of the "Celestial Mountains" teem with life. Hoofed animals are distributed rather irregularly at this time of the year: roe-bucks and wild boars are concentrated in the meadow-steppe zone of the Talasski ridge spurs, argali migrate to lower snow-dusted ridges of the Karatai. As for the mountain goats, they are distributed more peculiarly. During the observation period, they gathered on a wide variety of peaks, from 1,800 m in the meadow steppe zone to 3,500 m on the crest of the highest ridges, which are covered with permanent snow fields even in summer. In general, mountain goats in winter are widely distributed, depending on fodder and weather conditions, where they hold mainly to southern slopes of sub-alpine zones and on high mountain steppes.

The information of various authors suggests that the snow leopard in winter migrates following the mountain goats and therefore to some extent, they are also tied to these zones. In these very areas we were able to observe a snow leopard's goat hunt.

It was a sunny, cold day. The snow was melting on the southern slopes. A sheet of flakey clouds lay below, at an altitude of almost 1,400 m. Our route followed the crest of the watershed of two small rivers: Dzhetyssaya and Kshi-Kaindy. The slopes here are dissected by small, transverse ravines, so that the general relief is significantly broken up. The steepness of the slopes extends from 25-50°. The depth of snow cover on the

crest was almost 5 cm. We found fresh tracks of pasturing mountain goats about midday at a height of 2.300 m. Among these tracks, a distinct line of feline prints was evident, stretching from the Kazanchukhur Massif. Judging from the tracks, there were two snow leopards. Suddenly from behind a cliff, at the bottom of a neighbouring ravine, 150 m from us, two male goats broke away and began galloping toward the opposite slope. They stopped several times, carefully looking backwards. On the next ravine, a herd of goats appeared, numbering about 14 animals (10.4), also evidently upset by something.

After a few minutes, a predator silently appeared below, on the cliff from which the goats had just jumped. In the dazzling white snow, the silhouette of the beast seemed black; however, with binoculars, even the details of the colours were distinguishable. It moved behind the goats, following higher along the slope. A weak wind came up to meet it. The animal moved with sweeping step, wallowing strangely in the snow (the snow was 30-40 cm deep). It seemed as if it were swimming. Crossing the ravine, the snow leopard ran to climb up the crest, moving 100 m higher than the spot where the goats struggled to rush higher up the slopes to the height of the cliff. The animals stopped on the ledge of the cliff, turning toward the snow leopard and frozen with fright in strained positions.

The further behaviour of the predator seemed very strange: it did not begin to surround the goats again, but went around them along the snow covered crest in the complete open. The snow leopard advanced to 60 m from the herd with a calm, sweeping walk as before. It seemed as though it did not even notice the goats. They stayed absolutely motionless, and

followed its actions. Then the snow leopard hid in the cliffs where it could get closer to the goats unnoticed, and the animals threw themselves from the cliff and, raising a whirlwind of snow dust, flew in our direction. The herd quickly hid itself in a close ravine. All this took place in the course of half an hour.

The hours passed (at this time the ravine was already noticeably darkened), and we began to climb down from the crest to look at the animal's tracks. The tracks leading to the ravine were clearly two-fold - however, behind the ridge of the cliff only one line of tracks extended. Further events took a completely unexpected turn. We stopped, looking at the opposite slope, among the big rocks of the two hills of a high cliff, extending approximately 15 m from each other. About ten seconds passed, and from a rocky boulder, located four m from the ones in the foreground, jumped an ounce. With big, soft leaps, it crossed the snowfield. The animal jumped onto the ledge of a cliff 25 m from us, and calmly walked around on the ledge. It moved completely without noise and it seemed to us that it did not even glance in our direction. In a few moments it stopped, then hid behind a protruding cliff. Apparently, the animal was not frightened by the appearance of people. This became even more evident when we were convinced that it did not leave the cliff of the massif located 40 m ahead of us, the snowy slopes of which had suddenly come into view. When the snow leopard hid itself, we looked over the place from which it had appeared. A narrow, snow-covered ledge with rough bushes on the edge was located behind a fragment of the cliff. There were tracks of a very characteristic nature there - four imprints, closely drawn together and just barely melted through. They corresponded to the position of the animal poised for a leap. Apparently, the snow leopard had been waiting for goats there.

Why did it remain here right up to the moment when

people were approaching? The animal could not help but see us, especially since from this place, one could see our whole route along the slope. It could not help but hear us, particularly since we called out to each other loudly several times while going along the cliff. The slopes in this place are quickly agglomerated, and the snow leopard could have easily avoided encountering us. On the other hand, the goats had left the area much earlier. This type of behaviour by the animal was hard to explain, all the more so, since the snow leopard's ability to attack man is almost out of the question.

There is an interesting point. Why did one snow leopard remain in the close cliffs at the same time as another one was stalking the goats? Taking into account the fact that as a result of the first animal cutting them off, the goats rushed in the direction of these cliffs, i.e., to a meeting with the second snow leopard, one could assume that the snow leopard, like other predators, employs the driven hunt.

In the photograph from F. D. Shaposhnikov's notes, one of the Kazanchukhurs spurs is depicted, including the hunting path of the snow leopard - approximately the same place where he met us. This provides some basis for assuming that the snow leopards (if they were the same animals) may use their hunting spots over the course of many years.

Among the population of the western Tien Shan, the opinion is widely held that the snow leopard is harmful, and its elimination is important. This is completely groundless. Many opinions favour a reduction of the numbers of this interesting and rare animal.

Meanwhile, taking into account its small population and insignificant damage to human beings, it is apparent that the snow leopard - a pearl among the animals of the high mountains of Asia - deserves protection. Hunting and trapping of the snow leopard should be strictly controlled.

OCCURRENCE OF SNOW LEOPARDS IN THE SOVIET UNION

A. Andriuskevicius, Director
Respublinskis Zoologijos Sodas
Kaunas Zoo
233028 Kaunas
16 divizijos pl. 21
USSR

The snow leopard range in the Soviet Union extends north and northwest, in mountainous Central Asia, Kazhakstan, and in some areas of southern Siberia. These areas consist of the Pamir mountain ranges, Darvazsky, Peter the Great, and Gissarsky mountains and, together with the last one, a side range of the Baisuntau mountains. The snow leopard range also includes the mountains of Tien Shan, Zalassky, Alajsky, Zeravshansky, Turkestansky, Kuralijsky, Fergansky, Chatkalsky, Pskemsky, Ugamsky, Talasky, Karatay, Kirgizky, Terskey- Alatau, Kungey- Alatau, Zailsky- Alatau, Ketmem, and even Dzungarsky- Alatau, Tarbagatai, and Saur. In the Altai, the snow leopard dispersal is irregular and only the southern parts have permanent populations. In other areas of the Altai, in the Zuisk mountains and around the Buhtarm, the snow leopard is transient. Earlier, the species was found in the Sayans and in the Pribaykal mountains, though individuals are no longer found there. Snow leopards have also disappeared from the Karatau mountains and have become very rare in the western Tien Shan as well as in the southwestern Pamir- Alai regions. The snow leopard ranges today consist mainly of alpine meadows, dismal passes, rocks, and snow covered mountain peaks in altitudes of about 3000 meters. Individuals have also been reported on the side ranges of the Dsunkarsky and Sailisky Alatau, and in the lower rocky mountains at altitudes of 600 to 1500 meters.

Snow leopards have no permanent nests where they return daily. Females keep temporary nests only at time of birth and while caring for cubs until the age of

1 1/2 to 2 months. Snow leopards use the same permanent tracts in moving about. Each individual holds its own territory which it scent marks frequently. The trapping of snow leopards is done on these routes.

Hunting has been going on for centuries, until about 1970. During the years 1953-1968, a total of 425 individuals were caught from the Tadzhikistan alone. In the first ten years, about 37.5 pelts were obtained yearly, whereas in the last five years, the amount of pelts per year has been reduced to less than half the former amount.

Even though hunting snow leopards is now banned, their numbers are continually decreasing. Lately, live catching for zoos has been quite widespread and has already received some criticism. During 1963-1967, about 64 animals were live caught and from 1936 to 1969, a total of nearly 400 individuals were caught for zoos in the Soviet Union and in foreign countries. The method of catching is usually the same: traps that fasten tightly around the animal's paw. This causes foot injuries, tears, and damage and breaking of canine teeth.

Another reason for the snow leopard becoming increasingly rare is its slow rate of reproduction. An individual is not sexually mature before the age of 3-4 years. The observations in captivity have revealed that the gestation period in snow leopards lasts about three months and five days. In the wilderness, the newborn cubs are found in May, June, and even in July. Thus the mating season sets in February, March, and April.

The male courts the female for about a week, after which time she rejects him and the pair separates. At this time, both the mountains and the valleys are snow covered. Snow is scarce, however, on the southern slopes. Temperatures stay at about 10 to 15°C below zero. During the day, these rise to about 0°C and higher. Towards the end of March, the night frosts lessen and during the day

the sun radiates warmth into the valleys and passes. The pregnant females bask in the sun and, close to the time of parturation, they make nests in rock clefts and caves. Cubs are born blind and helpless. Litter sizes consist of from one to five individuals. The increase of human activity in the environment and the decrease of prey cannot help but influence the litter sizes. Lately, observations have revealed the average litters to be one to two cubs rather than three to four. At the time that the nest is abandoned, cubs are at most three to four months of age and are about half the size of their dam. They hunt with the dam through the autumn. At the age of 1 1/2 years, the cubs are fullgrown.

The female nurses cubs for three to four months, though she begins to feed them meat in the den at 1 1/2 to 2 months of age. At this time, one can find leftover bones, hairs, and feathers by the nest entrance.

The availability of prey for the snow leopard is uncertain and variable. One factor influencing availability is the abundance of local fauna which sustains the prey. The main prey species of the snow leopard in the Soviet Union are: Siberian ibex (*Capra i. sibirica*), Bharal (*Pseudois nayaur*), wild goat (*Capra aegagrus*), goral (*Nemorhaedus goral*), Siberian roe deer (*Capreolus pygargus*), wild boar (*Sus scrofa*), argali (*Ovis montanus*), marmots (*Marmota*), as well as other rodents and pheasants and snow cocks.

Individuals most often caught are females and young. Occasionally snow leopards will attack domestic animals such as sheep, goats, mules, foals, calves, and dogs.

It is very difficult to determine the exact number of snow leopards in the Soviet Union. The species is very rare in the eastern Pamir, in the western Tien Shan mountains, and in the Altai, Saur, and Tarbagatai as well.

The species appears more numerous in the western Pamir and in large parts of the Tien Shan's western and inner mountains, and in the Pamir-Alai high mountain ranges. The number of individuals in the Soviet Union is estimated at about 1000, of which over 500 are in Kirgizhia, 200 in Tadzhikistan, and about 50 in Utzbeakhstan. Snow leopards of the Kirgizhia are usually found in the inner mountains of Tien Shan. During 1936-1970, over 400 individuals were caught in this area. Snow leopards are commonly found in remote, inaccessible areas where human interference is minimal: in areas such as Tien Shan's inner and northern parts, western Pamir and Pamir-Alai's high mountain regions, though here, the number of snow leopard individuals seems to have decreased lately.

The hunting of snow leopards is totally prohibited and reserves have been founded for protection of the species.

The area of Alma-Ata National Park is 86,600 hectares, the greatest part of which consists of mountains: Zailjy Alatau (71,700 ha.). The highest mountain peak, Pik Talgar, reaches up to 5000 meters. Here, snow leopards stay for long periods of time in the higher altitudes. The State National Park, Aksu-Azabagli (73,000 ha.) is one of the oldest parks. It is located in the western parts of Talasky Alatau in the region of the high side ranges. The altitude is about 3000 meters.

The Issik-Kulja National Park has been enlarged. It now totals 702,000 hectares. In addition, the park is connected to a 510,000 hectare guarded hunting ground. The highest mountains reach 5000 meters. These are snow covered. In the lower altitudes, there are the alpine and subalpine zones where only a few snow leopards have been found. The growing human population, especially in the Issik-Kulja coastal areas, and the increasing tourism disturb the fauna of the park. In addition, there is some poaching.

The State National Park Sari - Tseleksky is 20,000 hectares and is located in the southern slopes of the Tsat Kalsky mountain range. The highest zone is partially covered with permanent snow; deeply sloping narrow passes break up the area. The highest peaks reach an altitude of 4200 meters.

Tsatkalsky, a State National Park, is divided into two parts: Baskizilsaisky and Maidantalsky, which together make up an area of 47,500 hectares. Snow leopards are found mainly in the Maidantalsky areas. The paucity of roads makes the area inaccessible to humans.

The Altai State National Park was founded in 1932. There, snow leopards used to be common, but nowadays, they are found only in Chulishmansk, on the plateau and in the side range of Sayans. The Altai reserve is the north-eastern most area in the Soviet Union where snow leopards are protected in their natural habitat.

The snow leopard populations in the above mentioned reserves are quite stable. Licenced live catching of snow leopards, for zoos, is done mainly in Kirgizhia.