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## THE SNOW LEOPARD (*Uncia uncia*) IN THE DZUNGARSKY ALA TAU

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The information presented in this report was collected in 1979-1989. During that time a number of research expeditions were made to snow leopard habitats at different seasons of the year. We took a census of these predators and of the animals constituting their potential prey on routes more than 800 km long. Correspondence was conducted with 68 hunters. Information from game management research stations and various zoological expeditions was also taken into consideration.

The Dzungarsky Ala Tau mountain ridge is situated in S-E Kazakhstan within the Taldy-Kurgan region. Its total length is 450 km, its maximal width being about 100 km. The central parts of the ridge rise to an average altitude of about 4,000 m above sea level, the maximum altitude being 4,662 m. These mountains are characterized by vast plateau like spaces at different altitudes, and cut by a deep canyonlike gorge. The network of rivers and streams is well developed. The ridge is divided by the Koksuy river into a southern and a northern part.

Observations in recent decades show that at present the snow leopard is found in the Dzungarsky Ala Tau in the habitat peculiar to this predator along practically the whole length of the ridge from its western spurs to the eastern extremity, though it inhabits the different sites irregularly (Fedosenko 1982, our data).

In the southern part of the ridge snow leopards are comparatively rare. About 3 predators inhabit the upper reaches of the Koksuy, Bolshoi Usek and Malyi Usek rivers, in the territory of the Verkhnekoksuyisky Game Reserve. Single tracks were also found on the S-W spurs of the ridge (Chulak mountains) in the Kapchagaisky Hunting Reserve. There is no information on the presence of snow leopards in other areas in the southern parts of the ridge, though it is quite possible that single individuals live there (Grachyev, Fedosenko 1977).

In the northern part of the Dzungarsky Ala Tau snow leopards are more common. In the upper

reaches of the Aksu river, groups of 3 and 4 animals have been found. In the upper reaches of the Bien, Sarkand and Baskan rivers, the animals themselves have been seen, as well as their tracks. The total number of animals inhabiting these areas is about 8-10 individuals.

The snow leopard is also common near the heads of the Tentek and Lepsy rivers. Here, in Arganaky, Zhelysai, Archaly, Attopkan and some other territories there are no less than 10 snow leopards.

East of the Tentek river, in the Kysyltal territory, at least 4 snow leopards exist.

Snow leopards are comparatively numerous along the Tastau river and its tributaries (Mynteke, Tastyhagabn, Arkankirgen) and in the Terekty territory. According to our census, no less than 16 snow leopards live here.

In the ridges of the Eastern parts of the territory: Tochty, Chindaly, Selty and Chulak, snow leopards number 4-6 animals.

In the Kaikany mountains, isolated from the main ridge, about 2-3 individuals are regularly found.

Thus the census taken in certain territories shows that the total number of snow leopards in the Dzungarsky Ala Tau reaches at least 50-55 individuals. However, taking into account that some of the habitats are extremely difficult to survey, we believe that the number of snow leopards must reach some 65-70 individuals.

The area over which snow leopards range at present in the Dzungarsky Ala Tau is 8,200 km<sup>2</sup>. Taking into account the estimates given above, the average density of the snow leopard in this area is 0.83 individuals/100 km<sup>2</sup>.

The characteristic snow leopard habitat in this area is canyon like, often almost impassable gorges that may be from some hundred to some thousand meters deep. Their slopes are usually steep (up to 75 degrees). The soil is rocky and screes alternate with small meadows and clumps of shrubs. There is hardly any snow in the winter-time; it usually melts on the 2nd-3rd day after falling.

As compared with those occupying the mountain system of northern and inner Tien Shan (Koshkarev 1988), the snow leopards in the Dzungarsky Ala Tau inhabit sites at lower altitudes: from 800-3,500 m above sea level. In the vast majority of cases we observed the predators themselves as well as their tracks within an altitude range of 1,000-2,500 m above sea level. Such a vertical distribution of these predators is due mainly to trophic factors, their prey being found at the same altitudes.

In this area the chief prey of the snow leopard is the Siberian ibex (*Capra ibex sibirica*), which is the most numerous of all wild ungulate species in the area. Of 16 carcasses eaten by

snow leopards, 14 (87.5 %) were of ibex; 12 of the them were adult males aged 4-7 years and 2 were females. Ibex hair was also present in all snow leopard faeces found (n = 11). The ranges of the Siberian ibex and the snow leopard regularly coincide. The density of the ibex fluctuates from 40-50 to 350-400 individuals/ 100 km<sup>2</sup>. Recently, the numbers of ibex in the eastern part of the ridge have decreased as a result of sarcoptosis (*scabies*). The decrease will undoubtedly have an unfavourable influence on the number of snow leopards .

The leopard also preys on some wild ungulates: macal (*Cervus elaphus maral*), roe deer (*Capreolus capreolus*) and wild boar (*Sus scrofa*) (Fedosenko 1980, Annenkov 1986). It must also hunt the argali (*Ovis ammon*) , though we have no evidence of this, since the numbers of this species are relatively low. Snow leopards also prey on marmots (*Marmota caudata*), snow cocks (*Tetraogallus altaicus*), red grouse (*Alectoris rufa*) and chukar partridges (*Alectoris graeca*).

It is known that in certain cases they also attack domestic sheep and feed on their carcasses .

Snow leopards come into heat in February - March, judging from the time when females with cubs are seen (late May - early June). At that season the mobility of the predators intensifies. The frequency of tracks likewise increases. During our expeditions we recorded family groups of snow leopards seven times. In five cases each litter had two cubs and in two cases one cub.

In the Dzungarsky Ala Tau we and other zoologists (Fedosenko 1982, Savinov, personal comm.) observed snow leopards 31 times. Single adults were seen 19 times (61.3 %). Once (3.2 %) a pair of adults was seen. We observed groups comprising 3 animals 10 times (32.3 %). Eight of these comprised both adult and young animals, and in two groups the animals were of almost the same age. Once we observed a group of 4 individuals (3.2 %), two of which were adult and 2 young animals.

In the 1970s - 1980s a network of state reserves and game management areas was established in the Dzungarsky Ala Tau in order to protect a small number of rare game animals such as the snow leopard. The territory of these reserves and game management areas includes mountain hunting grounds, their total area being more than 10,000 km<sup>2</sup>. However, as the number of wardens is small and their technical equipment inadequate, the protection of the game is ineffective and a great deal of illegal hunting still takes place. It is therefore necessary to put into effect suggestions for creating a Dzungarsky reserve which will include the snow leopard habitat.

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