

## **Distribution and Quantity of Brown Bears in Kazakhstan**

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The brown bear (*Ursus arctos*) is found throughout the territory of Kazakhstan to the Tien Shan border along the ridges of the Ugam, Pskem, Kirgiz, Talaz Alatau, Zailiy Alatau, Kungey Alatau, Ter Alatau, Ketmen, Dzhungar Alatau, Saure, Tarbagataye and Southern Latay regions. At the end of the 19th century and the beginning of the 20th, the bear was established in pine forests of the Kazakh foothills and piney ravines of Northern Kazakhstan where they are now absent (Sludskiy *et al.* 1953)

The basic habitat of the brown bear in the Altay is in mixed fir-cedar-deciduous forest; in the Saure, purely deciduous stands; Tarbagatay, nominal aspen-birch timber; in the Dzhungar Alatau and Northern Tien Shan, spruce; Western Tien Shan, juniper, apple, apricot and walnut forest. In the underbrush everywhere is encountered a multitude of berry bushes—dogrose, honeysuckle, raspberry, current, barberry and others. However, the animals do not always keep to the forest and, depending on the availability of food (basically juicy greens and berries), engage in significant altitudinal migration. In spring, immediately after leaving the den, they often spread out along the mountain ridges and migrate to the bordering lower forests to mid-slope where they soon approach where the snow slides have exposed the slopes; here they quickly uncover green shoots which they eat. In summer, depending on the type and timing of emerging herbaceous plants, the bears migrate up to the edge of the forest and then into the subalpine and alpine zones. At the end of the summer and in autumn, when the berries, apples and other fruits ripen, they concentrate in the region of ripe fruit distribution on the lower slopes. In autumn, after the snow falls, the majority of bears again migrate upward to their den sites. Thus, the vertical distribution of bears is from 700 - 800 to 3500 - 400 m or to the snowline.

We counted the bears from 1971 - 1973. The counting method was based on visual observations (binoculars) in the early morning and in the hours just before sunset—the times at which they are most active during the daylight hours. The forest mass in the mountains is rarely uniform; it exists as islands, bands, or very much more thinly on the slopes of ravines which can be sufficiently well observed from an opposite side. In thick areas, where observation is difficult, we recorded signs of bear activity—remains of meals, excrement, etc. The bears were counted in well-defined territories during the course of several days. Data on their population density was extrapolated afterwards for mixed forest and mountain territories.

According to data for the southern Altay, in a forest area of 1,780,000 ha we counted about 440 bears (an average of 0.25/1000 ha); in the Western Tarbagatay (480,000 ha)—105 bears (0.22/1000 ha); in the Dzhungar Alatau (833,600 ha)—314 bears (0.37/1000 ha); and in the Kungey Alatau (100,800 ha)—5 bears (0.04/1000 ha). In the Zailiysk Alatau territory bears were rarities—largely confined to Alma-Ata forest reserve (valleys of the rivers Talgar and Issyk). In the western part of this range and the Kirgiz Alatau bears were also few in number. Bears are common in the territory of the Aksu-Dzhubaglin forest

reserve and also along the Ugama, Pskem and Chatkal'sk ridges. In all, the mountains of Kazakhstan contain about 900 -1000 bears. In general, numbers are highest in regions remote from human settlement. In comparison with mixed regions, the number of bears is markedly higher in the Southern Altay and Dzhungar Alatau. In the Southern Altay this bear is plentiful in regions lying east of Lake Markakol', the valleys of the rivers Chernaya and Belaya Bepel', Yzaovaya, Kurtynskaya, and in the Dzhungara Alatau—on the northern forested slopes of the ridges and basins of the rivers Tentek, Baskanov and Aganakta. Here we often observed 4 - 6 bears per day, and on some days up to 10 solitary bears and females with cubs.

According to data from the literature, at the end of the 19th century and the beginning of the 20th, there were markedly greater numbers of bears in the mountains of Kazakhstan. In the Semirechenskaya territory alone (i.e. the Dzhungar Alatau and Tien Shan) 100 - 200 per day could be counted, and in some years, up to 300 or more (Smirnov 1965).

At present, bears are encountered rarely in the Ketmen, Kungey Alatau, or Terskaya Alatau, the fields of which have been used intensively to graze cattle for the last 20 years. Lumbering and construction activity has also driven the bears away. The land area is controlled and poaching is common.

Currently hunting licences for bears can be obtained in some regions of the Altay and Dzhungar Alatau; in the rest of the territory of Kazakhstan bears are still protected.

#### REFERENCES

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