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The Brown Bear in Eurasia, Particularly the Soviet Union

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INTRODUCTION

The brown bear, *Ursus arctos* L., may be viewed in life or death as a very lucky beast in that literally hundreds of research projects and published articles have been devoted to its evolution, taxonomy, global distribution, ecology, and its economic uses. Among the most prominent is a monograph, *Brown Bear*, by Kutyure dated 1954. Another monograph concerning fossilized and living bears on the Soviet Union is presently under preparation by me, so this preliminary report by necessity will only touch upon the topical aspects of bear problems and related subjects.

POPULATION STATUS

Of a questionable nature are the current population status of the Eurasian brown bear, its response to changes in natural habitat, and protective measures required to insure its preservation. In western Europe bears find refuge in forested enclaves primarily in mountainous regions of the Pyrenees, Alps, Appenines and parts of Scandinavia. The largest numbers of brown bears in eastern Europe are generally limited to the Balkans and the Carpathians. They comprise the remnant populations that occur in parts of the Austrian Alps, Yugoslavia, Romania and Bulgaria. The total number of bears estimated by Harper (1954), Kutyure (1954), Curry-Lindahl (1972) and others for Europe, excluding the Soviet Union, during the 1960s was 5, 500-6, 000. In Asiatic Turkey (Asia Minor) there are less than 1, 000 animals while Kutyure reported that during the 1940-1950s there were 2, 500-3, 000 or a few hundred more scattered among the countries of Iran, Iraq, Afganistan and Pakistan. There is little information about the number of bears occupying the southern edge of their habitat in north Burma, Tibet, West China, Manchuria and Korea. Apparently there are but a few thousand animals.

By my inventory, the number of bears found in the Soviet Union during the 1960s was still rather high and reached 100, 000 plus or minus 10, 000 individuals. By the 1970s, the Union for the Management of Hunting and Preservation claimed that the bears were 70, 000 in number. Approximately two-thirds of the world population, or 100, 000 Eurasian brown bears, are thus believed to be in the Soviet Union. There could possibly be a few more. Such a seemingly high number causes complacency regarding their welfare at least over the next decade, but there is indeed no basis for an attitude of calm.

The distribution and density of bears during the last decade is depicted in Fig. 1. Each dot represents 20 individual bears, and the heavy lines constitute the major configuration of natural habitat as it occurred late in the middle ages as evidenced by fossilized remains obtained from the Pleistocene layer. The greatest number and density of bear populations is in a line northwest of

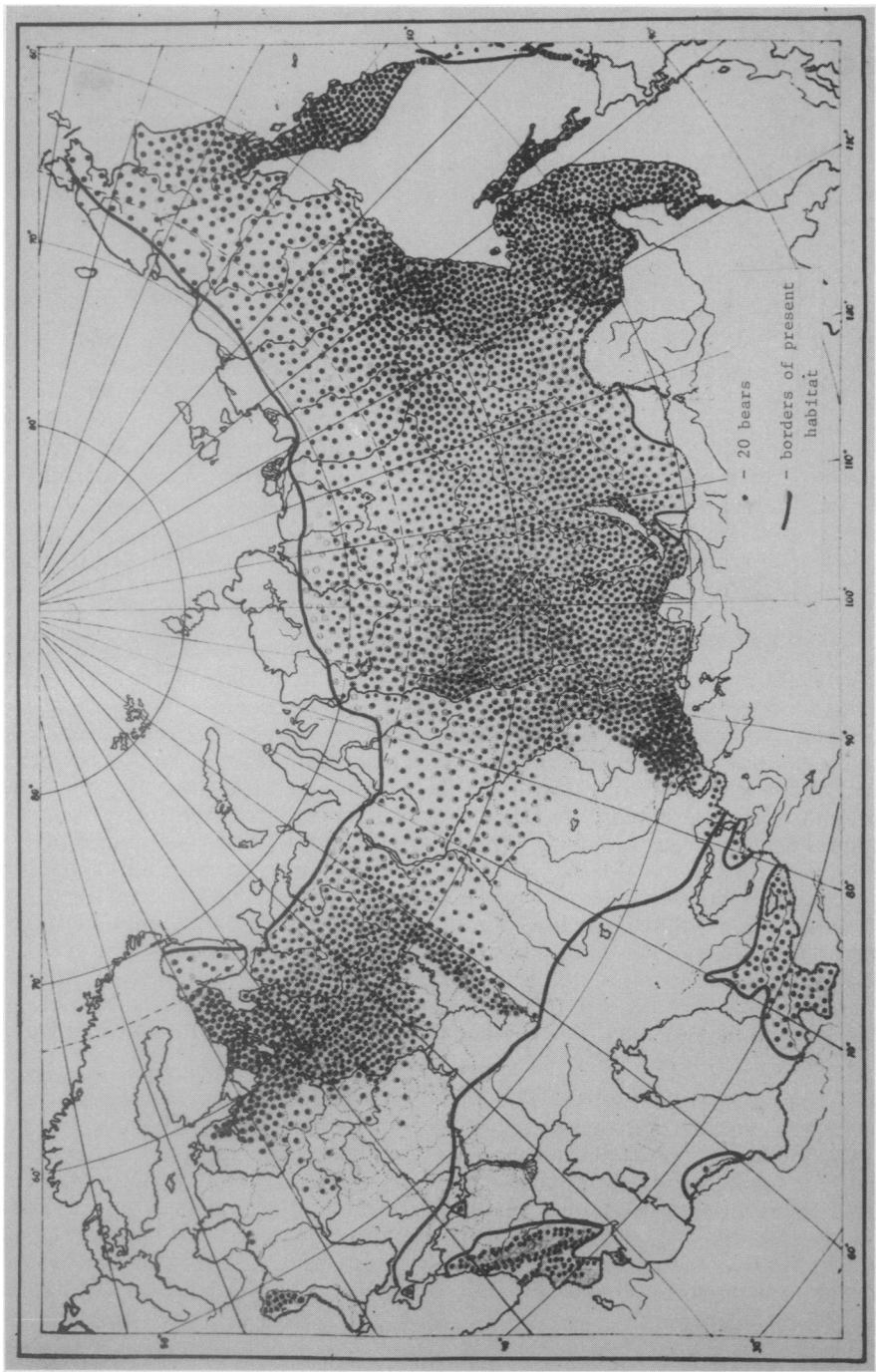


Fig. 1 Natural habitat and numbers of brown bears in the USSR.

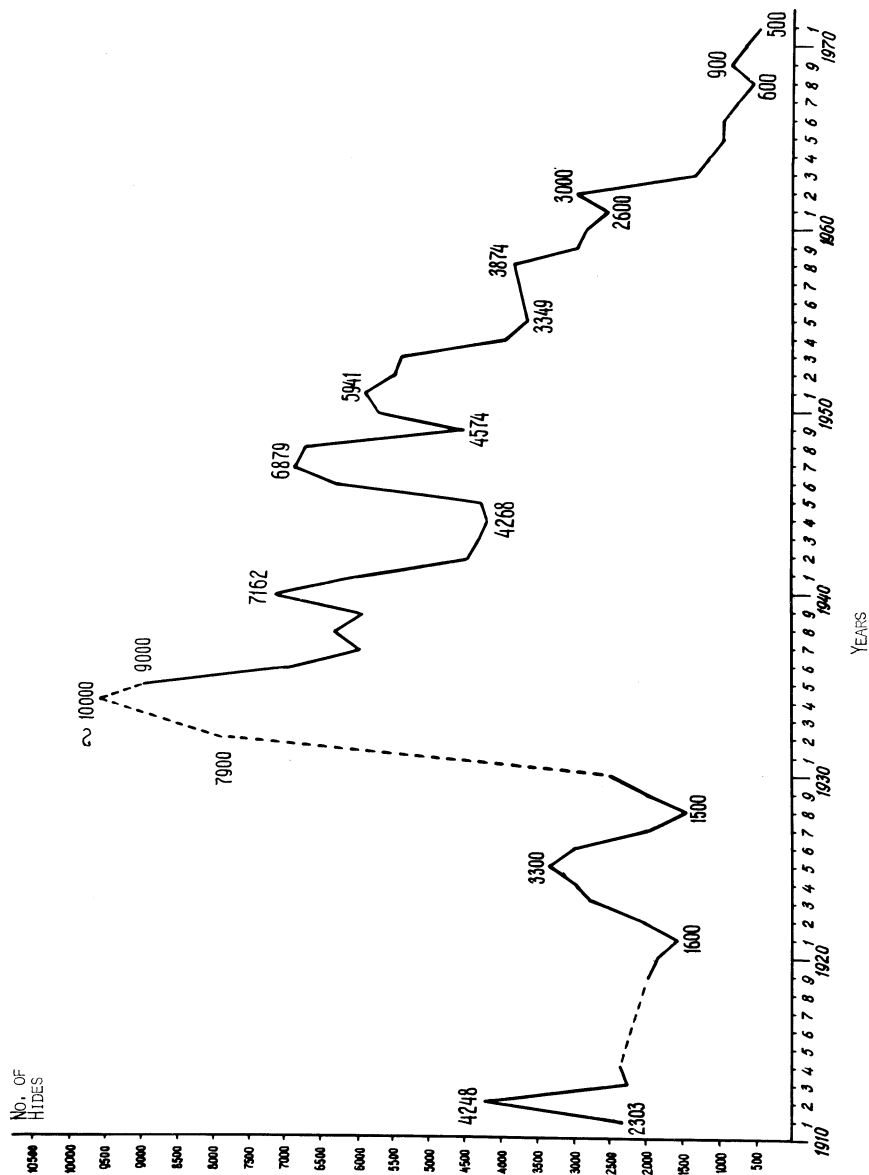


Fig. 2 Number of brown bear hides received at fur exchanges and official stations, 1910-1971.

the administered regions, south from Archangel and Vologadski regions, and the mountainous portions of the Ural, Altai, east Siberia, and especially the Far East regions. There are places in which 4 to 6 individuals occupy 100 square kilometers (10,000 hectares) and such abundance is usually proportionate to the intensity of forest cover. Those regions having the least population density include tundra and marshland habitats as well as the low food-producing lowlands of western Siberia and the central portion of the European part of the USSR.

The natural habitat once found in the European part of the USSR (deciduous forests and forest steppe of the Russian plain) proved to be the most vulnerable. Agricultural development and direct destruction of animals during the last century only has caused the northward shrinkage of their distribution by as much as 2 geographical degrees. Nevertheless, in some northwest regions and republics such as Estonia, Leningradski and Kalininski, their numbers have been maintained the last few years, and even increased in some places as a result of requiring hunting licences. By contrast, the number of bears declined rather quickly in parts of Siberia and the Far East, particularly in the Sakhaline and on Kamchatka. This condition is attributed to industrial expansion, application of military technology, and expeditions. Bears in the Baikal region, Sakhaline and Kamchatka, for example, have declined by approximately one half their former number within the past 20 years.

HARVEST

The number of bear hides recorded at fur exchanges and accumulated by the state during the Soviet period is depicted from 1910 through 1970 in Fig. 2. The

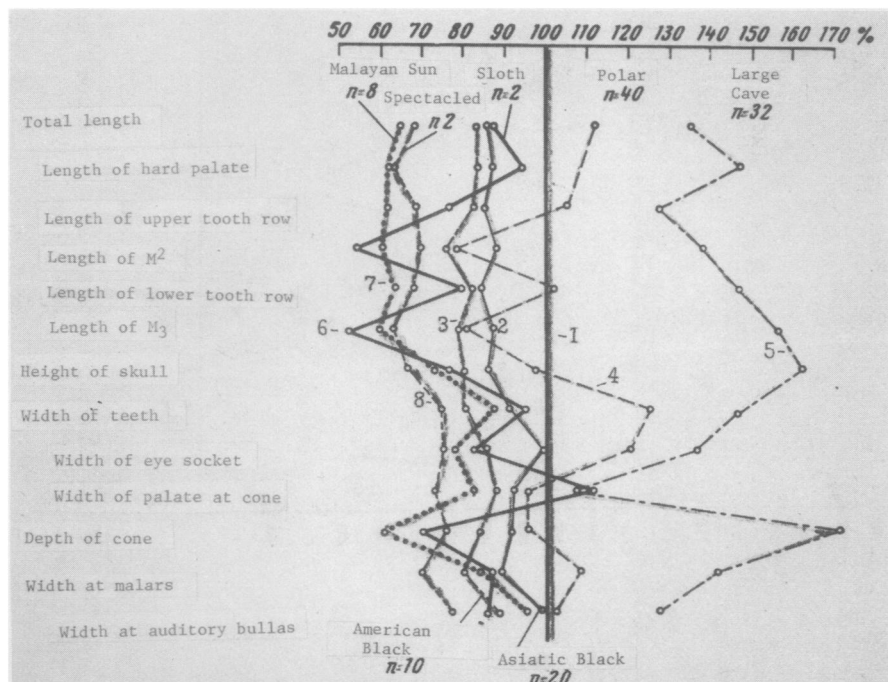


Fig. 3 Percent deviation from the brown bear of skull measurements of other bears.

abrupt fluctuations or 'toothiness' result primarily from variable socio-economic factors such as prices of hides, people moving from the taiga to cities, purchasing of hides by private fur traders, etc. In recent times, records have become quite confused. Nevertheless, information obtained through questionnaires and other means indicate not fewer than 5 to 6 thousand individual bears are harvested by shooting and trapping, mostly snaring. The percentage of commercial use varies from 5 to 15 percent per year according to the administrative area and, in essence, the second figure is the allowed maximum.

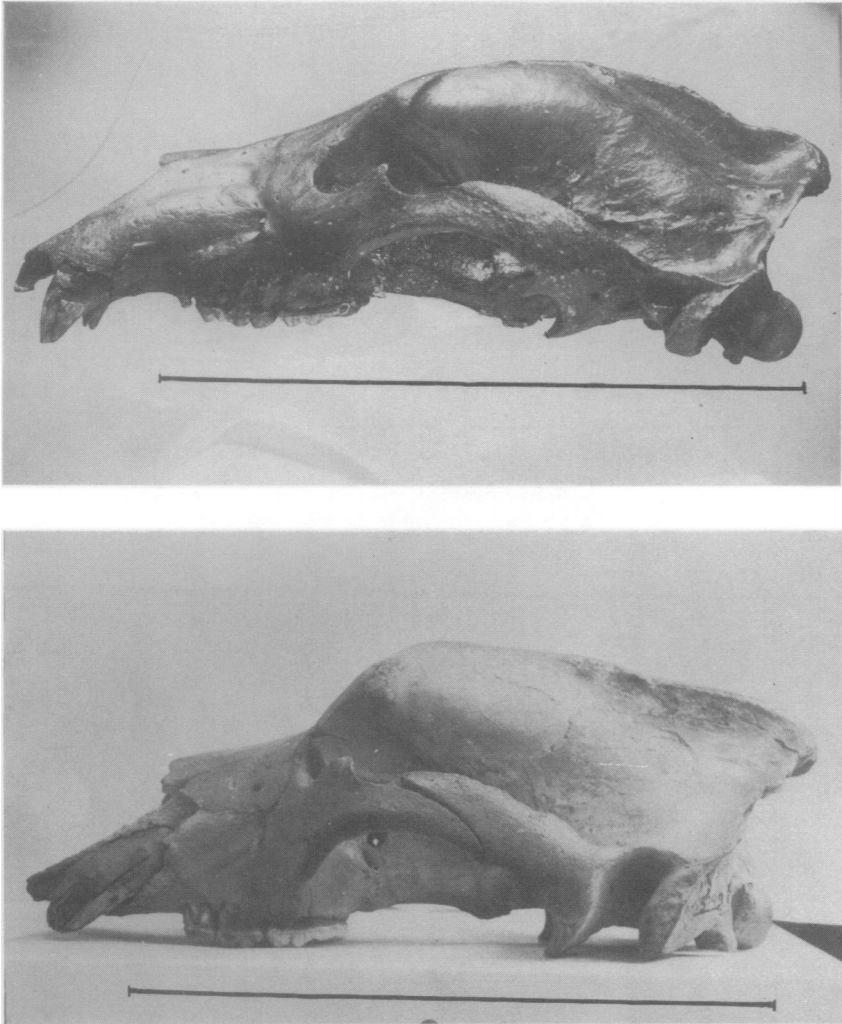


Fig. 4 Skulls of excavated bears: line indicates skull-length of modern brown bear.

(a) Brown bear from the middle-fourth alluvium of the Volga River.

(b) Large cave bear from the caves of the Zhigulevski heights.

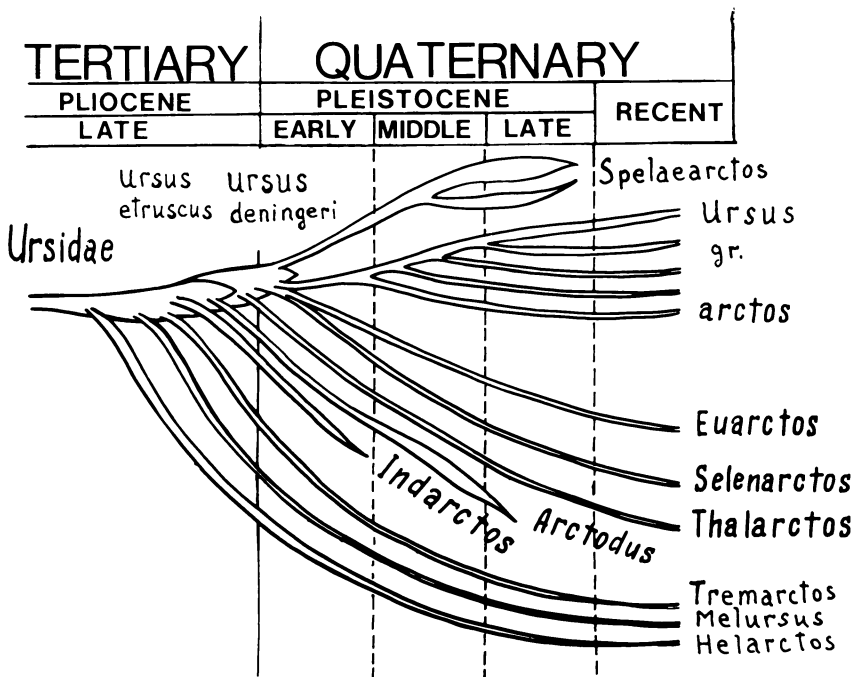


Fig. 5 Genealogical tree of the bear in the Cenozoic.

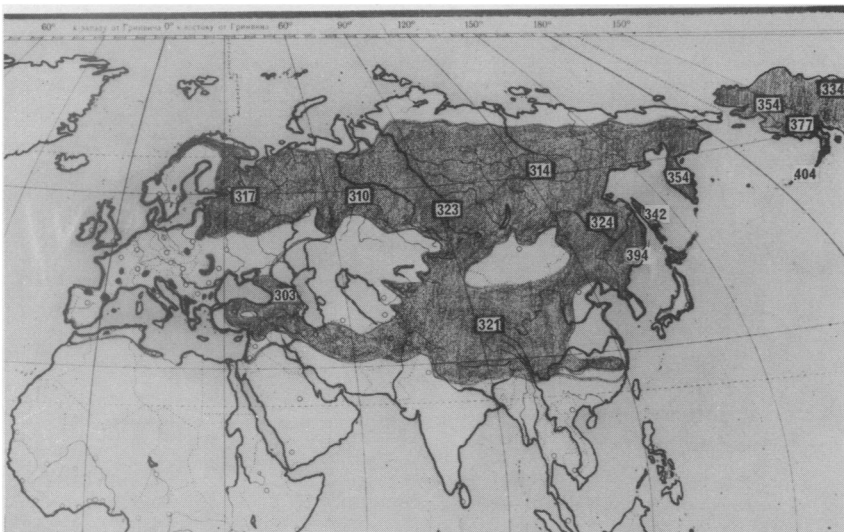


Fig. 6 Natural habitat and geographical variations in brown bear skull length.

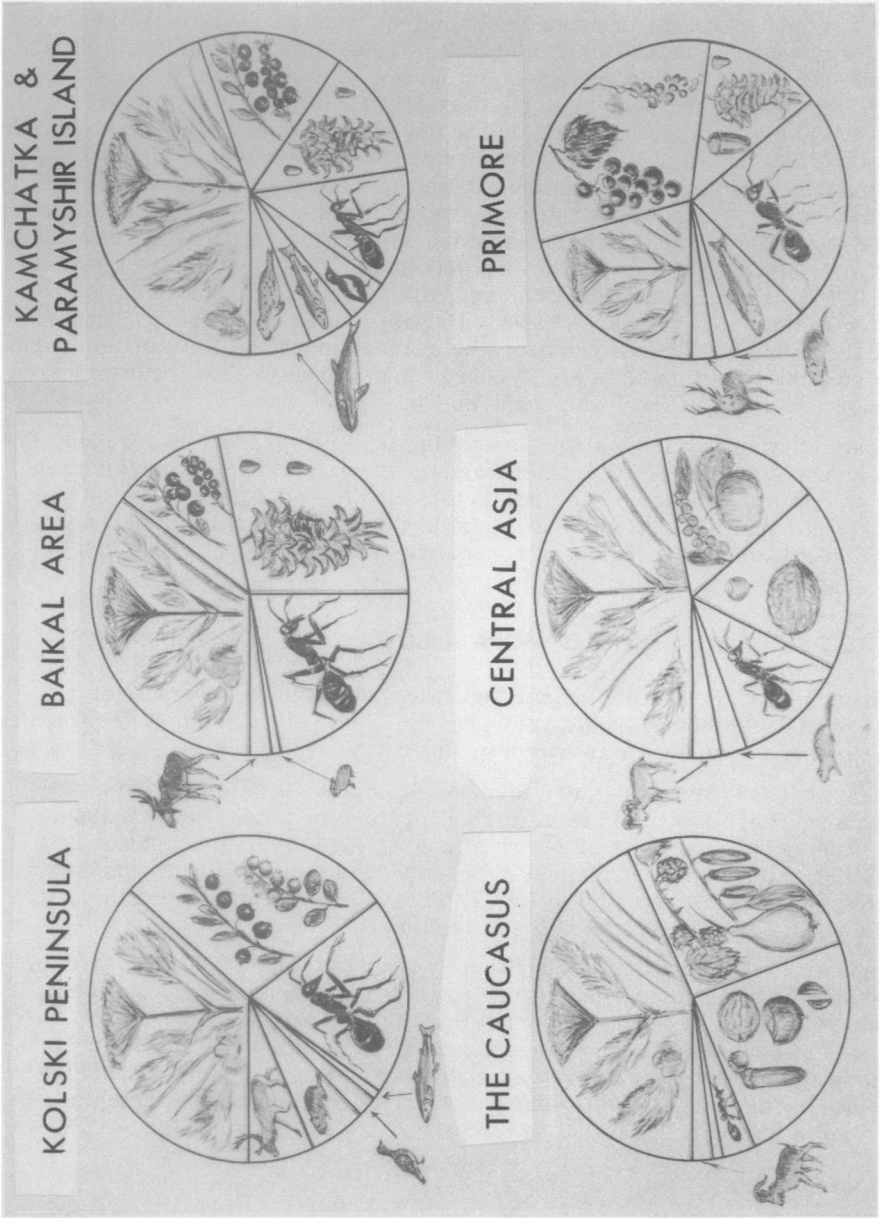


Fig. 7 Food composition of the brown bear in various regions of the USSR.

HISTORICAL ASPECTS

The geological and genealogical tree of the brown bear beginning in the late Cenozoic (Pliocene-Holocene) has been constructed on the basis of morphological traits of contemporary species and certain paleontological materials. In Fig. 3, the percentage differences are depicted for 13 skull measurements between brown bears originating from the North European part of the USSR and six species of bears found elsewhere in the world. I place emergence of the brown, white and cave species during the early Pleistocene using bone fragments as 'documentary' evidence. In the lower Pleistocene alluvium of Dnestra, dating 280-300 thousand years before our day, the discovery of bones of the bear led Deninger to the conventional belief in it being the forerunner of brown and cave bears. Among the stratum of the middle Pleistocene (Mindel-Riss, Riss) the remains of huge brown bears are seen in the valleys of the Volga, Urals and Selenga. And, in the lower paleontological layers of caves investigated in the Crimea, Caucasus, Ural, and Altai regions are skulls of both gigantic and dwarf cave bears (Fig. 4). Our forefathers purposefully hunted only cave bears and took brown bears by chance during the Palaeolithic period but during the Neolithic, they wholly sought brown bears. Cave bears apparently perished at the end of the Pleistocene epoch.

We postulate the genealogical tree as having features presented in Fig. 5. The contemporary picture of geographic variability particularly as pertains to skull size was influenced by natural factors, and the effects man had only during the historical period, and as a sequel to this phenomenon, a progressive reduction in animal size has been recognizable during recent decades.

GEOGRAPHIC VARIABILITY IN MORPHOLOGY, ECOLOGY AND ETHOLOGY

It is natural that the morphological, ecological and behavioral traits of our widely distributed bears should vary greatly. This relationship of geographical variability and skull length is shown in Fig. 6.

The largest bears live in eastern Siberia, especially in Primore and on Kamchatka, where albuminous and carbohydrate-type foods occur in abundance. Ecological characteristics are of course highly variable particularly in respect to food items. Composition of food items in the Soviet Union exhibit regional variation as depicted in Fig. 7. This in essence describes the entire natural food elements typical of these regions.

In respect to ethological traits, particularly their attacks upon large wild or domestic animals, and aggressiveness toward man, they rank among the most voracious animals in eastern Siberia. Here there are noticeably more instances of bears preying upon humans as well as fellow bears. The aggressiveness and habits of 'Shatuni' (emaciated bears which do not hibernate) are associated with drought or the absence of plant-food production typical of some regions of Siberia.

MEASURES OF PROTECTION

During the last decade the Soviet Union has taken protective measures while allowing for the reasonable use of our brown bear resource. Bear hunting is forbidden in Lithuania, Latvia, Estonia, White Russia, the Ukraine, Tataria, Mordovia ASSR, Turkmenia and Khirgizia. Hunting licences have been intro-

duced to many areas and measures have curtailed abusive use of such motorized methods of transport as helicopters and crosscountry vehicles. Bear hunting is permitted in game reserves, and plans are being formulated to develop bear reserves along the southern portion of their natural range and the European part of the USSR.