

months and so no bats live there. There are no trees there and consequently no arboreal mammals such as make up a sizable part of the mammalian fauna farther south. There are not even any bushes five to ten feet tall that provide habitat for such mammals as chipmunks and woodrats farther south. The permafrost, several hundred to more than a thousand feet deep, excludes the variety of species that burrow and live in holes in the ground farther south. Lakes and streams, although covering half the surface of the area around Point Barrow, are open<sup>only</sup> briefly in the short summer and for most of the year are frozen solid; fresh-water mammals, therefore, have no place to live and so the river otter, mink, muskrat and water shrew are missing.

It is only the surface of the ground that is available to mammals, and of course, for a brief period in summer, the upper six to eight inches of soil that thaws out. It seems that the small number of species of mammals is proportional to the small number of habitats; it is correct to say that there are few species because there are few habitats.

The fluctuations in number of individuals in each of several species is great. For example, in a summer when brown lemmings are scarce, a naturalist walking for days on the tundra might see only one or two individuals, or none at all. On the same area a year later a dozen individuals might be seen, and two years later a hundred. Three years later thousands might be seen--four to a dozen at any given instant scurrying to hiding places ahead of the observer, reminding him of dry autumn leaves moving ahead of a strong breeze. The increase is gradual, but gains momentum, over a three year period until the peak is reached. Then, perhaps early in spring, in only one or a few months, the crash reduces the numbers to a fraction of one per cent of the winter population.