Alberta's Wild Species

The Food Chain and Population Cycle for Rabbits and Rodents

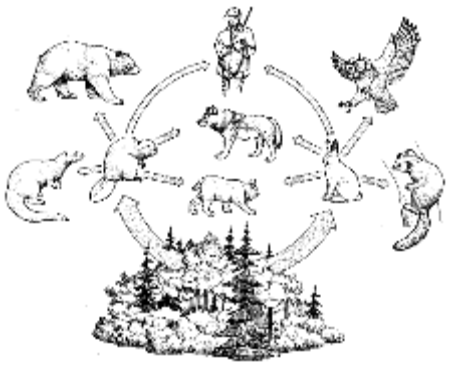
Government of Alberta

Rabbits, Rodents and the Food Chain

Because rodents and lagomorphs are abundant plant eaters, they occupy an important position in the food chain of their communities.

About the food chain

All food energy originates from the sun, and only green plants can convert sunlight into food energy. Some of this energy is passed onto animals that feed on green plants. These animals in turn pass some of their energy onto other animals that feed on them.



Some of the predators that depend upon rodents and lagomorphs for major portions of their diets are:

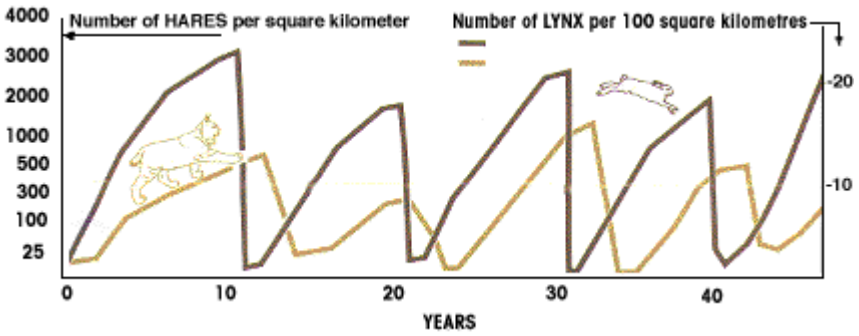
- coyotes
- fishers
- foxes
- hawks, eagles and owls
- lynx
- martens
- mink
- otters
- weasels
- wolves

Most predators are opportunists. They hunt whatever prey is abundant and easy to catch. Because there is a variety of rodent and lagomorph species in a community, most predators do not concentrate their hunting on just one species. They switch from one species to another as each becomes abundant or vulnerable. In this way, each prey species acts as a buffer to the others, and predators seldom endanger the existence of a particular prey population.

Population Cycles of Rabbits and Rodents

Several species of northern mammals go through periodic cycles of population change. Over a period of time, a population will steadily rise in numbers, suddenly

"crash" to very low numbers, only to rise again. Of the lagomorphs and large rodents, the snowshoe hare and muskrat tend to cycle about once every ten years.



Snowshoe Hare Population Cycle

The snowshoe hare cycle is one of the best known.

- At the "peak" of the cycle, population densities as high as 4000 hares per square kilometre (10 000/sq. mi.) have been estimated.
- Within a period of one year, these populations can crash to densities of less than one hare per square kilometre (2.6/sq. mi.).
- Over the next six to 13 years, the populations slowly return to their peak densities. As the hares increase in numbers, they reduce their food supply, and individuals eat less desirable and less nutritious vegetation. Because hares are plentiful and easy to find, more predators feed on them. Eventually one of several diseases, a chief cause of population crashes, kills all but the most hardy individuals.

Because the snowshoe hare is the principal prey of lynx, lynx populations also cycle about once every ten years.

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