



## Canada Lynx In The Rockies

*Lynx live in Banff, Yoho and Kootenay National Parks, but not just anywhere in those parks. They establish home ranges in high evergreen forests occupied by snowshoe hare. Further north, in the boreal forest, hare populations rise and fall dramatically every 10 years, shadowed closely by lynx populations. This relay of life and death is less evident in the south, but it does occur.*

However, research in southeastern British Columbia indicates lynx here must range farther to find food. They also rely more on alternate prey such as red squirrels. This is a reflection of habitat features that dictate the life requisites for lynx, much like a game of chance.

### Habitat

Southeastern British Columbia is fragmented by rocky ridges and valleys, as well as by human developments. Across this patchy landscape, lynx



*The snowshoe hare is a vital part of the forest food web.*

seek out their life needs: food, mates, den sites, cover for hiding, shelter from weather, and travel corridors that tie it all together. Lynx cannot survive without hares. In turn, snowshoe hares need a thick undergrowth of shrubs and saplings for food and cover. Such habitat is found in young forests regenerating after disturbances created by windthrow, forest insects, forest disease, or fire.

Lynx meet their denning and cover requirements in older forests. Here, deadfall and wind thrown trees accumulate, adding dimension to the forest. For lynx, this debris creates sites ideal for resting and denning. Old-growth forests provide shelter and cover to move safely between habitats.

Mature, cone-producing forests also harbour red squirrels, an important alternate food source. Overall, a combination of forest age stands provides the habitat necessary for lynx to persist.



*Red squirrels rely on the rich seeds found in cones.*

Vermilion Pass at the north end of Kootenay National Park is a good example of this forest mosaic. Over time, forest fires here have created a range of forest ages. Such areas of core habitat may sustain enough hares and consequently a few lynx, through a low in the hare population cycle. During these lows, many resident lynx disperse or starve. Few kittens are born, and fewer survive. Lynx, especially females, that find enough hare and alternate prey to survive are vital to help lynx populations rebound after a “hare famine”.

### Lynx and Snow: an evolved relationship

Beyond life requisites tied to dynamic processes like forest succession and boom and bust prey populations, lynx are ultimately limited to forests with deep snows. It is here where they have evolved a competitive edge over other carnivores. With their thick fur, long legs and large, furry “snowshoe” paws, lynx easily tolerate extreme cold and deep snows – as long as there are sufficient hares about. But this specialization to one main prey comes at a cost.



Competing carnivores tend to be generalists. They can switch back and forth to whichever prey is most abundant or easily caught. Lynx simply cannot afford much competition for snowshoe hares, especially during populations lows. They need the isolation deep snow offers from close competitors, especially coyotes and bobcats.

Bobcats are uncommon in Yoho, Kootenay and Banff, but coyotes, wolves and cougars do live here. Snow-packed winter trails made by snowshoes or skis and plowed roads may provide these carnivores with sustained access to deep snow areas. Access by competing predators into important nodes of habitat could potentially impact the hunting success of lynx. Dogs, especially those off leash, may also interrupt and stress lynx trying to hunt or rest.

### Home Ranges

Lynx are usually solitary, and like hares, are mostly active at night. Within their home ranges, they hunt at a fine scale by wandering back and forth among forest stands with relatively high prey densities. The Lake Louise area appears to hold important nodes of habitat for lynx; research from 1996 to 2000 found the home ranges of three lynx overlapped here. Home ranges for resident adults averaged about 220 km<sup>2</sup> in the southern study area, which included the three mountain parks and provincial lands.

Researchers found that lynx averaged at least 3.5 km of daily travel, but ranged up to 32 km. However, when hare numbers drop, many resident lynx abandon their home ranges and become transient. A male research lynx with a home range in Yoho National Park was later trapped and killed north of Swan Hills, Alberta – nearly 500 km away.

### References

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### Reproduction

Lynx breed in early spring, and about nine weeks later, pregnant females den and produce kittens. Though litters of four to five kittens are typical in the north when hares are abundant, researchers in southeastern British Columbia documented litter sizes of two or fewer kittens. Kitten survival was also poor despite a slight increase in hares. This seems to indicate the rapid increase in lynx populations during years of peak hare numbers seen in the north does not occur in the south.

### Lynx Populations

In southern British Columbia and Alberta, it's thought that lynx occupy the landscape in loosely connected populations. Within each population, resident lynx are likely to breed with each other. Due to the fragmented nature of the landscape and the uneven distribution of snowshoe hare, some populations may produce offspring, while others don't. The latter rely on immigrants, usually juveniles, to disperse in from more productive lynx populations and reproduce. Dispersers help sustain genetic diversity or may augment a small population. Without this steady supply of new individuals, small populations are at risk of local extinction.

### Conservation

The conservation of lynx at the southern edge of their range may require special considerations. If too many populations become small, there may not be enough dispersing lynx to help them rebound, especially after a hare famine. Habitat must be managed for successful lynx reproduction. Three factors may help: maintain a diverse forest matrix across the landscape; consider the impact of winter trails and plowed roads into important nodes of habitat for lynx; and minimize human-caused deaths. Lynx are an important part of the Rocky Mountain ecosystem – their presence indicates a diverse community of life is being sustained.

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