

FURBEARER MANAGEMENT GUIDELINES



BOBCAT *Lynx rufus*

Since 1926, separate trapline areas in British Columbia have been assigned and registered to individuals licensed for the purpose of harvesting the province's plentiful fur resources. To obtain a license, trappers must successfully complete a three-day course that focuses on humane trapping methods, fur handling, and trapline management. The trapline management component includes knowledge of, and fosters respect for, provincial trapping regulations, adherence to professional and ethical standards established by the Ministry of Water, Land and Air Protection and the BC Trappers Association, and practices that help to manage and maintain furbearer populations. There are approximately 2900 registered traplines in British Columbia, and 19 mammal species are officially classified as furbearers.

For management purposes the bobcat is categorized as a Class 2 species, which means that it is considered sensitive to harvest and, because home ranges are large relative to the size of most traplines, population management cannot only be applied at the individual trapline level. Thus, while the input and cooperation of trappers are important, Class 2 species are managed primarily by application of provincial government regulations. Other Class 2 species are lynx, river otter, wolverine, and fisher

This document is intended primarily to provide British Columbia's professional trappers, government managers, and industry with information on bobcat biology, and on principles to consider in the sustainable management of the species. The material presented is generalized from the results of many studies conducted over a wide geographic area and local variations and exceptions may occur.

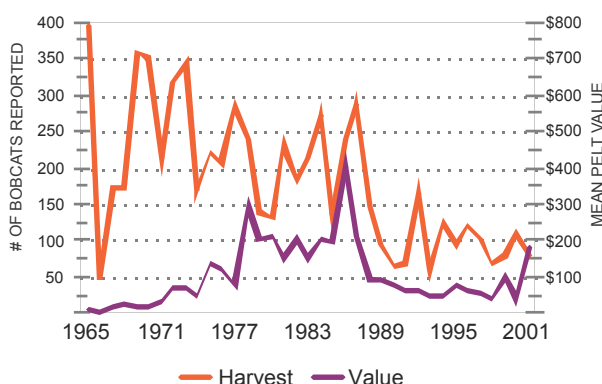
DESCRIPTION

The bobcat, also known as the lynx cat, bay lynx, and wildcat, has shorter fur, shorter legs, and smaller paws than its close relative, the lynx, and is therefore not as well adapted to extreme cold or deep snow conditions. Its short, dense fur is usually reddish in general tone, with lighter flanks and belly, and is marked with dark spots over most of the body. The bobcat has large, pointed ears with prominent white spots on a black background in back and usually with small but distinctive tufts of black hair at the tip. Its short tail is white on the underside, and tipped with black on top, and usually also has several less distinct black bands on top towards the rump, Adult male bobcats usually weigh 9 to 14 kg, while adult females are smaller at 6 to 10 kg.



ECONOMIC CONSIDERATIONS

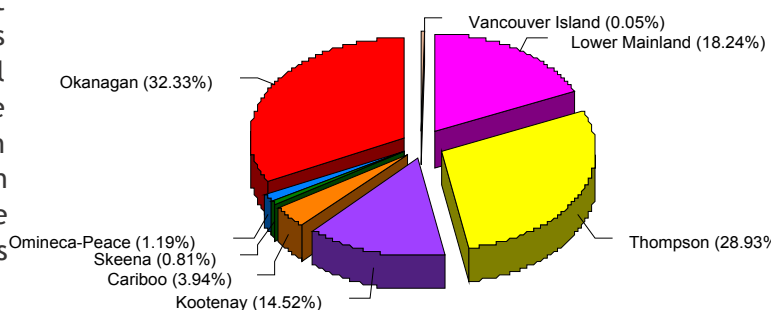
Figure 1: Reported Bobcat Harvests and Values, 1965-2001.



Prior to the 1970s, bobcat pelts were of little value and the species was trapped and hunted primarily for predator control purposes or taxidermy. With the removal of many of the world's large spotted cats from fur markets in the early 1970s, under the Convention on International Trade in Endangered Species of Flora and Fauna (CITES), the demand for North American bobcats increased. The soft and somewhat delicate fur is used for both coats and trim in fashion items destined for world markets.

The official numbers for bobcat trapper harvests in British Columbia are erratic, ranging between 50 and 400 animals annually since 1965 (Figure 1), but with a general downward trend from averages of 220 in the 1970s and 1980s to 96 in the 1990s. As shown in Figure 1, the low harvests in the 1990s followed a decline in pelt prices to \$40 to \$75 from \$200 to \$400 in the 1980s. The financial return for bobcat trappers improved significantly as of 2001, when the average pelt value rose to \$184. The contribution of bobcat pelt sales to the overall wild fur revenue of the province is small, not exceeding two percent of annual sales in any year on record and averaging less than one percent in the 1990s. However, this species is moderately important to individual trappers in the southern third of the province, especially in the southern Interior (Thompson and Okanagan regions) and the Lower Mainland where most of the provincial harvest occurs (Figure 2).

Figure 2: Bobcat Harvest by Region, 1985-2000



In addition to its status as a furbearer, the bobcat is also classified as a game animal. Hunter harvests of the species, primarily with the use of hounds, have increased the total annual kill by an average of about 25 percent (40 to 45 animals) since the mid-1980s. In most regions, the trapper harvest comprises 70 to 75 percent of the total kill. However, the hunter take in the Kootenay region has exceeded that of trappers by about 18 percent, with average annual harvests of 20 and 14 respectively (1986 through 2001).

As a medium-sized carnivore, the bobcat is an important component of the local ecosystems in which it occurs. Because they do not require habitats remote from human settlements and influence, bobcats are occasionally involved in conflict situations (usually predation on pets or small livestock), which may require control actions.

BIOLOGY

DISTRIBUTION AND HABITAT

The adaptable bobcat is found from southern Canada across most of the continental United States to central Mexico, inhabiting areas ranging from deserts to swamps to forests. Bobcats expanded their range northward in the 20th century, apparently benefiting from both warming climate and from the clearing of dense, mature, unbroken coniferous forests. There is some evidence that the trend to northward expansion is still occurring in BC, but the bobcat is largely restricted to the southern third of the province and is generally found at lower elevations in drier and warmer habitats. Consistent with the harvest pattern shown in Figure 2, the species is most common in Resource Management Regions 3 and 8 (Thompson and Okanagan), and along the lower Fraser River and portions of the south coast (Region 2), but does not occur on Vancouver Island or other coastal islands. The northernmost area of regular occurrence is in the Chilcotin drainage of Region 5 (Cariboo). The drier eastern portions of the Kootenays (Region 4) also provide significant numbers of bobcats. There are two subspecies in BC, one in the interior to which the description above generally applies, and a somewhat smaller, darker form that occurs only in the extreme southwestern portion of the province (Region 2).

During winter, bobcats generally use lower-elevation mature, multi-layered forests on moderate slopes, often dominated by Douglas-fir, with moderate canopy closure and large tree diameter. Snow depths of as little as 15 cm appear to influence their movements and habitat selection, and exposures that minimize snow build-up (often south to west aspects) are preferred. Openings of

shrubby or brushy areas or patches of immature forest are used for hunting, generally during non-daylight hours. Rocky outcrops, hillsides or ledges appear to be important habitat for resting, security, and social interactions.

The availability of den sites may restrict the distribution and productivity of bobcat populations in some areas, and den site distribution may influence the size and configuration of female home ranges. Dens used for birthing include caves, openings among large boulders, dense piles of brush, hollow logs, cavities at the base of large trees and stumps, abandoned beaver lodges, and even old abandoned buildings.

FOOD

The diet of the bobcat is highly variable across its wide range, but staple items generally include hares, rabbits, squirrels, small mammals (such as mice and voles), birds (primarily grouse) and deer. Bobcats are also known to take rats, ground squirrels, marmots, porcupines, snakes, and other reptiles, and one was even observed catching bats at a watering hole. In the American southwest, cottontail rabbits appear to be preferred over jackrabbits where both are available, and snowshoe hares are a common prey in other areas, including British Columbia.

Deer are an important part of the diet, particularly in winter. While much is probably carrion, predation on deer has been well documented. Most deer predation is probably on fawns, but adult animals are also killed. Deer are often attacked while bedded, generally by larger, adult male bobcats.

In a study in the East Kootenay during a period of low snowshoe hare density, red squirrels were the dominant item in the diet, followed by deer, mice and voles, birds, and snowshoe hares. Hares may form a larger component of the diet when they are more plentiful. Bobcats have shown the ability to modify their diet as prey availability changes. In two studies, when their two main prey species declined, bobcats took three times the number of total prey species.

Bobcats generally hunt by stalking and flushing, or "still" hunting from a hunting bed; they have been known to sit motionless for hours where prey may appear. The bobcat is a sprinter, not a distance runner, so rushes are often less than 15 m. Larger prey is occasionally cached.

SOCIAL BEHAVIOUR

Bobcats are essentially solitary, except when in family groups (mother with dependent kittens) and during the breeding season when they are paired for only a few days at a time. Bobcat populations are usually composed of residents that tend to occupy stable home ranges, and transients, a floating population that coexists with the residents. Home ranges of resident males are usually two to three times larger than those of females. In the only applicable BC study of the species, in the East Kootenay area, the average home range for seven males was 139 km² while the average for five females was 56 km². Animals in poor quality habitats and at lower population density tend to have the largest home ranges.

Home ranges are smaller in winter than in summer, as snow depths restrict movements and access to prey. There is generally a great deal of overlap in ranges between the sexes, but varying overlap within sexes, with males apparently more tolerant of overlap than females. Male bobcats generally expand their ranges during the breeding season. Dramatic declines in their major food source can cause the bobcat social organization and home range system to break down.

Bobcats are considered to be more aggressive than lynx, and are thought to have displaced previously resident lynx from all but the coldest and snowiest habitats in some areas. Coyotes may limit the number and distribution of bobcats, although the available information is conflicting. The two species tend to share the same prey base and broad habitats.

ACTIVITY AND MOVEMENTS

Bobcats are most active when their prey are most active, generally in early morning and late evening, although during winter there is greater activity during daylight hours. Daily and seasonal movements vary, and are probably related mostly to the degree of success an individual has while hunting. By following tracks in snow, researchers have recorded movements over 24-hour periods of as little as 0.8 km and as much as 18.5 km.

Juvenile bobcats generally disperse in late winter or spring, prior to new litters being born, although some young females do not disperse. Dispersal distances may be related to annual survival patterns and the resulting number of vacant territories. Dispersals of up to 158 km have been recorded, although the norm is far less (10 to 35 km).

REPRODUCTION

Bobcats breed from mid-February through March and, after a nine-week gestation period, the young are born in May or June. There are records of litters being born as late as mid-autumn in some areas, but it is unlikely that the young would survive in such circumstances in BC and other northern portions of the species' range. Litter sizes vary from one to six, but most are in the range of two to four. Yearling females can give birth, but pregnancy rates and litter sizes are generally much lower and smaller than for adults, and appear to be related to diet and condition. Males probably do not breed until two years of age.

CARE AND DEVELOPMENT OF THE YOUNG

Bobcat kittens are blind and helpless at birth, weighing about 200 to 300 grams. Their eyes open at about 10 days, they begin to take solid food by about four to five weeks, and they are usually weaned by about 8 to 10 weeks. All parental care is provided by the mother, which is restricted in her local hunting movements when the young are den-bound. Although the young increase their degree of independence steadily throughout the first fall and winter, they generally stay with the mother until the following spring.

MORTALITY, PARASITES AND DISEASE

No chronic parasite or disease conditions are known to regularly affect bobcat survival. One of the most common causes of natural mortality is starvation, which primarily affects young, transient animals, but may also claim numbers of adults in unusually severe winters or following a major decline in the primary prey base. Adult bobcats are also subject to predation by cougars and coyotes, and kittens are occasionally preyed upon by those species, as well as by smaller carnivores such as foxes, by adult male bobcats, and by large owls and hawks. Kitten and yearling survival rates are generally lower than those of adults, and appear to be strongly affected by prey abundance. The maximum lifespan of a wild bobcat is about 13 years, but such long-lived animals are rare. In a large sample of specimens from the U.S., fewer than one percent had attained an age of 10 years.

In most areas and years, the largest component of mortality is likely due to human related causes. That includes legal harvests by trappers and hunters, as well as predator control kills and road kills. Very hungry or starving bobcats, which may include dispersing juveniles and other transients at all times of year, and adults during severe and/or late winter conditions or during a prey shortage, are the most vulnerable to human-caused mortality. That is because they are travelling longer and farther and are more likely to encounter traps, be detected by hound hunters, or cross roads, and are more likely to enter a baited trap station or to enter farmyards and settlements in search of food.

POPULATIONS

Bobcats are at the northern limit of their geographic range in British Columbia, and may be less abundant and less productive in this province than in areas farther south. The only applicable study in BC has been in the East Kootenays, where study area densities were about 0.6 animals per 100 km². By comparison, measured densities of up to 4.3 animals per 100 km² have been measured in Idaho. It is likely that BC populations are very dynamic, potentially attaining densities as high as those in the western states during mild years and high prey abundance, but subject to major declines in years with heavy snowfall or poor prey availability.

The population age structure varies depending upon the level of mortality, with proportionately more kittens and yearlings in harvested populations and fewer of those classes in unharvested or lightly harvested populations. Sex ratios in the trapper harvest are generally high in favour of males, probably both because males have larger home ranges (leading to greater chances of encountering a trap) and because they may be bolder and less wary than are females. However, in one sample from the Kootenays, the trapper harvest was about 55 percent female. The sex ratio of the hunter harvest has been close to 50/50 throughout the province since the late 1980s.



GENERAL CONSIDERATIONS AND OBJECTIVES

The bobcat is currently designated as both a furbearer and a game species in British Columbia. It is identified as a Class 2 furbearer under BC's Fur Management Program, and harvests are officially regulated (methods, seasons, bag limits, quotas) at the regional level, in consultation with local trapper and hunter organizations. There are no open seasons in the Vancouver Island, Omineca-Peace, and Skeena regions (where bobcats do not regularly occur). In the rest of the province, a 12-week trapping season (15 November to 15 February), currently provides for unlimited harvest (i.e., a trapper may take any number) except in Region 4 (Kootenay), where there is a quota of two. The hunting season is the same as the trapping season in Regions 2, 3, and 4 (Lower Mainland, Thompson, and Kootenay, respectively), but is two weeks longer (to 28 February) in Region 8 (Okanagan), and is eight weeks shorter (1-31 December) in Region 5 (Cariboo). Hunter bag limits are one bobcat per licence in Regions 3, 5, and 8, two per licence in Region 4, and five per licence in Region 5.

Although the final responsibility for management lies with the provincial government, trappers and hunters may play a vital role in the management process by maintaining a level of harvest that does not generate or contribute a cause for concern, and by providing information and specimen material if and when requested. In regard to the former, the overall harvest management plan should address three strategic objectives:

1) SUBSTITUTING HARVEST FOR NATURAL MORTALITY WHEREVER POSSIBLE Transient animals, mostly dispersing yearlings, are the least likely component of the population to survive the winter and are therefore the primary targets in relation to this objective. However, it may also include some adults in late winter of most years, and larger numbers of adults in severe winters or following local prey population declines.

2) MINIMIZING THE CATCH OF ADULT FEMALES Resident adult females with secure, productive home ranges are the core of population productivity. As described below, protecting them is partly a matter of the timing and extent of trapping or

hunting activity, but may also involve specific knowledge of locations where family groups are operating.

3) MINIMIZING PRESSURE ON PREY POPULATIONS Removals of transient and adult male bobcats and competing species such as coyotes may help maintain a prey base that can provide for better survival of the remaining animals, and provide better support for females through pregnancy and during the rearing of young.

PLANNING AND INFORMATION CONSIDERATIONS

Given adequate food sources and suitable environmental conditions, bobcats are prolific, relatively resilient to harvesting pressure, and are able to sustain harvest rates of at least 20 percent of the fall population. However, since harvesters and managers will almost never have specific information on local population size, planning and managing for a sustainable harvest involves more indirect considerations. With the above three strategic objectives in mind, the following sections describe some considerations that may apply. Note that for any particular local situation, some of these factors may conflict with each other and decisions about which are the most important will require application of common sense.

VULNERABILITY TO HARVEST Addressing the three management objectives while harvesting bobcats is assisted by natural vulnerability patterns within the bobcat population. The most expendable (transient) members of the population are generally less secure and more likely to be travelling extensively in search of food than are established residents. They are therefore the ones that are most likely to find and enter baited traps, and are probably at least somewhat more likely to be detected by hunters (Objective 1). Transient animals are also the most likely to compete with established residents for the local food supply (Objective 3). Finally, adult females are somewhat less likely than transients (either sex) or adult males to encounter traps (Objective 2), because they generally have smaller ranges. However, the vulnerability of adult females often increases as the winter progresses, or in deep snow years. As their local food supply is depleted or becomes less accessible, they may wander more or even abandon their home ranges, increasing their potential exposure to traps and houndsmen. Note that hunters usually have the option of releasing obvious family groups alive, and it is recommended that they do so.

FOOD ABUNDANCE AND WEATHER CONDITIONS Since the productivity and resilience of bobcat populations is related to nutritional status and bobcats are poorly adapted to deep snow and severe cold conditions, it is important to maintain an awareness of those factors in one's area of operations. The distribution and relative abundance of hares, squirrels, grouse, and deer (all prey species whose presence is usually conspicuous either by direct sightings or tracks in snow) and the nature of winter conditions will be important clues as to where bobcats will be and how they may be doing.

TIMING Bobcat pelts have just begun to prime up when the harvesting season opens in mid-November, and are not yet at full value. Most are fully prime by early December and remain in that condition for about two months, to early February. Since the individual trapper's harvest of bobcats will rarely amount to more than a few animals, it makes sense to take them when they will provide the highest value. However, in years with low local prey abundance and severe early winter conditions, waiting too long may result in missed opportunities for transient animals that may already be leaving the area or succumbing to starvation and other causes of natural mortality. As noted in the previous section, the decision about when to stop trapping in a particular year relates primarily to increased vulnerability of adult females, either as observed by sign or harvest results or as predicted in relation to observed prey abundance and snow accumulation patterns.

TRAPLINE CHARACTERISTICS The potential for bobcat harvest on a particular trapline relates to the amount, quality, and continuity of available habitat. Areas in which bobcats are very localized in occurrence (i.e., with few or poor corridors for immigration from other occupied areas) have a lower potential and lower harvest resilience than do large expanses of

continuous habitat that may span several traplines. In BC, most bobcat winter habitat is in or near valley bottoms where human settlements and developments occur and, although bobcats are fairly tolerant of human occurrence, habitat connectivity may be a problem where human density is high.

COMPETITION FOR HARVEST The Registered Trapline system specifies who may set traps for bobcats in particular areas of Crown land, but the boundaries of a functional bobcat population may result in its being harvested on several traplines, on one or more guide-outfitter territories, and by numbers of resident houndsmen simultaneously. It is the total, combined harvest by all of those interests, not the harvest of any one of them alone, that is the reference for sustainability, so it is advisable for all parties to be aware of and in communication with each other and, if necessary, to work out practical ways to avoid negatively impacting each other or the population.

HARVEST MONITORING AND ASSESSMENT Currently, assessment of the bobcat harvest by provincial managers is done primarily in reference to fur sales data and information provided directly by trappers and hunters through Compulsory Reporting (required province-wide for all hunter kills, and in Regions 2, 4, and 8 and Management Units 1-14 and 1-15 for trapped animals). Some regions may also collect bobcat carcasses to assess the sex and age structure of the harvest and the reproductive status of females. In both cases, trappers and hunters need to provide accurate information about where and when the bobcats were taken.

Individual trappers and hunters will rarely handle enough bobcats in one season to enable clear and confident assessment of population status at that level. The presence of young animals in a small sample (five or fewer) is an indication of productivity in a given year, but their absence in such a sample would not necessarily confirm that production had been poor. Here again, communication and a pooling of information with other local users would be more instructive, providing a basis for collective decisions about when harvesting should stop in a given year.

There are three kinds of information that individual harvesters are either required or advised to keep track of both for official management purposes in the long-term, and for within-season assessment and ongoing planning of harvest activities.

SEX AND AGE OF ANIMALS CAUGHT This information is required for Compulsory Reporting, and is essential for determining the degree to which the three strategic objectives (above) are being met. Determining the sex of cats, including both bobcats and lynx, can be difficult. On males, the circular penis opening is farther back than on most other animals and there is no baculum, thus males are often misidentified as females. For males, except for very young animals, careful examination will reveal the testicles (usually smaller than might be expected) lying tight against the body near the anus. For females the vulva opening is vertical and located closer to the anus than the male opening.

Field determination of age can be accomplished only roughly, and is done primarily in reference to body size. First-year kits and yearlings usually appear more slender and dainty than adults, particularly around the head and neck. Adult females are best distinguished by the presence of conspicuous nipples, often ringed by bare patches caused by rubbing during suckling.

LOCATION AND DATE OF HARVEST, AND OF SIGHTINGS OR SIGN (TRACKS) OF FAMILY GROUPS (FEMALES WITH YOUNG) Only the former is required for Compulsory Reporting, but both are potentially useful in identifying important patterns of occurrence. For example, locations or particular trap sets that consistently produce adult females can be avoided in future operations, and those that most regularly produce young animals or adult males can be re-used with some confidence.

PHYSICAL CONDITION OF THE ANIMALS CAUGHT Determined primarily by the amount of body fat observed on the skinned carcass, this is not required for official reporting purposes, but is a good indirect measure of how the population may be doing. If most of the animals caught have little or no fat, and if that corresponds with observations that

prey species appear to be scarce, it is likely that the population is under stress. If there are few or no young animals as well, it is advisable to stop harvesting in deference to strategic objective 2 (protecting adult females), but if the harvest is primarily juveniles, continued harvesting in response to objectives 1 and 3 (substituting harvest for natural mortality and protecting the food base) is probably justified.

RECORD KEEPING AND COMPULSORY REPORTING Although it is possible to conduct the above monitoring and assessments on an informal, non-permanent basis, it is strongly recommended that the information be recorded on paper. That will provide more accurate information for Compulsory Reporting requirements, and a better record for demonstrating long-term patterns.

Compulsory Reporting may be done by mail or phone or in person, and must be completed within 15 days following the end of the trapping season. As of the 2002-03 season, the basic information required from both trappers and hunters, in addition to personal contact and licence data, is date, location, and sex of kill. Additional information required from trappers is age of kill, type of trap used, and number of days the trap was set before the animal was caught.

Trappers are also encouraged to share information about changes in the perceived abundance of bobcats and their prey by responding to the annual Trapper Questionnaire. Responses are an important component of the management of bobcats and other furbearers in British Columbia.

HARVESTING STRATEGIES AND SYSTEMS

At the operational level, there are three main approaches that may be used to harvest bobcats sustainably, as follows:

QUOTA SYSTEM This system identifies a harvest goal of a certain number of animals, and harvesting activities are stopped when that goal is reached. For cases in which that goal is a limit or quota imposed by government regulation or regional policy, there can be no other consideration. Some trappers work under self-imposed quotas which are usually based on long-term experience in which a particular number of bobcats has been harvested without apparent effect on the population year-after-year. The problem with a quota system is that it is not sensitive to actual productivity in a particular year, especially if the sex and age of animals caught are not monitored. In years of poor production, even a conservative quota may be too high, and in years of good production it will almost certainly be too low. An under-harvest both short-changes the trapper and may reduce an area's long-term productivity by failing to help keep the species and its prey in optimal balance.

TIME-BASED SYSTEM Based either on long-term experience in a particular area or on practical considerations relating to time available, pelt primeness, and normal vulnerability patterns, this system develops a schedule in which traps are left set only for a pre-determined period which is shorter than the actual open season. Although similar to the quota system in most respects, including the potential problems, it is less likely to result in a significant under-harvest in years of high production. That is especially true if used in conjunction with harvest monitoring, which would enable shortening or extending the originally designated schedule based on the nature of the catch.

AREA-BASED SYSTEM Also referred to as a "refuge" system, the basis for this approach is that a portion of the available bobcat habitat is left unharvested, with the expectation that it will serve as a source for animals dispersing to areas where trapping or hunting does occur. Since bobcat habitat during the harvesting season in BC is mostly at low elevations and overlaps areas of human occupation, refuge requirements in some areas may be easily satisfied with large blocks of rural private property, or with blocks of Crown land that are relatively inaccessible. The size requirement for an effective refuge has not been determined, but it clearly must

be large enough to fully enclose the home range of at least one adult female, and a block enclosing three to five such ranges has been suggested. That would equate to an area of as little as 20 to 30 km² in good habitat and 150 km² or more in poor habitat. Although the usual concept is that habitat designated as refuge will remain so permanently, an alternative where most of the available habitat is accessible is to harvest portions of it on a rotating basis. Thus, a trapper might divide the bobcat habitat in his area into three roughly equal-sized parcels and trap each only once in a three-year period. A rotating system may have a better potential for reducing pressure on local prey populations and maintaining bobcat productivity.

While the primary focus of a refuge system is providing for the maintenance of a stable breeding stock (mainly adult females), it cannot be safely assumed that those animals will not move out of the refuge areas late in some or most years. Further, prey populations in refuge areas may become depleted over the long term or in years when the number of transient bobcats is high. In short, even with the refuge system it is recommended that the characteristics of the harvest be closely monitored and ongoing trapping plans and activities be modified accordingly.

HABITAT MANAGEMENT

The availability of suitable winter habitat appears to be the primary factor limiting bobcat abundance where the species occurs in British Columbia, although that may be less the case in the southern Okanagan and Lower Mainland where snowfall is usually minimal. In most regions of the province, the primary winter habitat coincides with our most intensively used lands, in low-elevation areas where agriculture, settlement, wood fiber production, and roads are concentrated. Fortunately, the adaptable bobcat is relatively resilient to all but large-scale changes in habitat.

There is little that bobcat harvesters can do about such changes on private land, but they are advised to take all opportunities to provide input for resource developments on Crown Land. The forest industry is the largest agent of habitat change in that context, and trappers should make every effort to see that bobcat habitat needs are considered when long-term timber harvests are planned. That would involve considerations of cutblock size (smaller is better), alternative practices (selective logging is preferable where possible), retention of uncut patches during logging, and retention of cover and forage plants afterward. Silvicultural practices such as extensive thinning and the application of herbicides generally reduce the suitability of prey habitat and cover. The goal for areas to be managed for benefits to bobcats would be to maintain forest patches that are multi-layered and structurally diverse, with adequate connectivity between them.



The major role of trappers and hunters in habitat management for bobcats is in providing information about where the animals occur, since forest and habitat managers do not routinely gather that information on their own. For areas with moderate to heavy snowfall, sites regularly used by

wintering deer will likely have many of the cover, exposure and snow-shedding characteristics useful to bobcats, and trappers should make sure that such areas are identified in resource development plans. In addition, written records of harvest locations and sightings of either animals or sign (tracks) are useful for documenting areas of occurrence.

Given the size of bobcat home ranges, it would be difficult for bobcat trappers to enhance or modify habitat directly on a scale sufficient to benefit populations, but there is some potential for enhancing the living situation of individual animals. Habitat for prey species, particularly hares and rabbits, can be improved by cutting over-mature shrubs to stimulate new growth. In addition, the return of carcasses of trapped animals or road-killed ungulates to the trapline can provide an important food source during late winter. A source of carrion could be especially important during severe winters and particularly for females, since survival of kittens and productivity are closely tied to the availability of food and the condition of the female going into the spring.

SUMMARY

The bobcat is generally adaptable and prolific, able to live in close association with humans and in intensively used landscapes. However, it is at the northern limit of its range in southern British Columbia and may be less resilient to either habitat change or harvest in some areas of this province than it is in areas of occurrence in the United States. Classified as both furbearer and game animal, the bobcat is regularly harvested in BC by both trappers and hunters (the latter mostly using hounds).

Functional bobcat populations usually span several traplines, and it is the combined harvest of all of the trappers and hunters operating in the area involved that must be considered in relation to sustainability. The species has a moderate reproductive potential, with yearling females able to produce young and litter sizes averaging three to four kittens. However, productivity varies from year to year, depending upon climatic and biological factors primarily as they may affect food supply. In BC, winter snowfall is probably the most important factor bearing on productivity, individual survival, and vulnerability to human-caused mortality.

Strategies for sustainable harvesting involve substituting harvest for natural mortality wherever possible, minimizing the catch of adult females, and controlling animal numbers to reduce pressure on prey populations. Accomplishing those objectives requires attention to winter conditions and prey abundance, together with continuing monitoring and assessment of the catch. With those considerations always at the fore, potentially useful harvesting systems may be either time-based, focusing on a balance between pelt primeness and adult female vulnerability patterns, or area-based employing untrapped "refuge" areas.

To contribute to more informed long-term management of bobcat populations, trappers and hunters are urged to keep accurate personal records on harvest and sighting locations of the species, and relative abundance of prey species such as squirrels and hares, to respond to trapper questionnaires, and to attend meetings and workshops where cooperative management of this resource can be discussed. To help maintain habitat, bobcat trappers and hunters are advised to be active in providing information and input to forestry operations and other resource developments in their areas of interest.

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SOURCES FOR ADDITIONAL READING

Apps, C.D. 1996. Bobcat (*Lynx rufus*) habitat selection and suitability assessment in southeast British Columbia. Master of Environmental Design thesis, Faculty of Environmental Design, Univ. of Calgary, AB. 145pp.

- Bailey, T.N. 1974. Social organization in a bobcat population. *J. Wildl. Manage.* 38:435-446.
- Kinley, T.A. 1992. Ecology and management of bobcats (*Lynx rufus*) in the East Kootenay District of British Columbia. Master of Environmental Design thesis, Univ. of Calgary, Calgary, AB. 78 pp.
- Knick, S.T. 1990. Ecology of bobcats relative to exploitation and a prey decline in southeastern Idaho. *Wildlife Monographs* 108:1-43.
- Knick, S.T., J.D. Brittell, and S.J. Sweeney. 1985. Population characteristics of bobcats in Washington State. *J. Wildl. Manage.* 49:721-728.
- Koehler, G.M., and M.G. Hornocker. 1989. Influences of seasons on bobcats in Idaho. *J. Wildl. Manage.* 53:197-202.
- Lariviere, S., and L.R. Walton. 1997. *Lynx rufus*. *Amer. Soc. Mammalogists. Mammalian Species No.* 563. 8pp.
- McCord, C.M., and J.E. Cardoza. 1982. Bobcat and lynx. Pages 728-766 in J.A. Chapman and G.A. Feldhamer (eds). *Wild Mammals of North America: Biology, management, and economics.* Johns Hopkins Univ. Press, Baltimore, MD.
- Rolley, R.E. 1987. Bobcat. Pages 671-681 in M. Novak, J.A. Baker, M.E. Obbard, and B. Malloch, eds. *Wild furbearer management and conservation in North America.* Ontario Trappers Association, North Bay, ON.
- Wolf, A., and G.F. Hubert, Jr. 1998. Status and management of bobcats in the United States over three decades. *Wildl. Soc. Bull.* 26:287-293.

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NOTE: This document has been formatted for insertion into the British Columbia Trappers Association Trapper Education Training Manual and for inclusion in print documents intended for government managers and industry representatives who are involved in furbearer management in British Columbia.