

He has noticed a definite correlation between lynx track observations and snowshoe hare abundance. He has observed sign of cougar predation on lynx. He believes that lynx will change areas of use when disturbed by repeated snowmachine traffic.

**R.J. Smith, Salmon, Id.** - R.J. trapped a lynx in a willow riparian area adjacent to shrub-steppe habitats on a tributary to the Lemhi River in 1952. In 1976 he saw a lynx cross Highway 75 in Stanley Basin.

**Dave Williams, Salmon, Id.** - Dave reported three lynx observations, all in the early to mid-1970s. He observed a lynx crossing a road in a tributary to the North Fork of the Salmon River and saw tracks near the Continental Divide southeast of Salmon.

**Ron Malone, Twin Falls, Id.** - Ron reported three lynx observations west of Challis over a three-to- four year period in the mid-1980s while hunting with hound dogs. He also observed lynx tracks in a tributary of the Salmon River between Challis and Stanley.

#### PANHANDLE AREA

**John Smith** - John recalled one lynx that was harvested near Nampa in the 1950s or 1960s and another killed near Farrugut.

**Lee Carrick, Athol, Id.** - Lee had seen two sets of lynx tracks, one near Priest Lake and one near Horsehaven.

**Frank Tredowsky, Coeur d'Alene, Id** - Frank has not worked on any lynx in his taxidermy shop. Frank said that people who claimed to have caught a lynx usually have a bobcat.

**Bob Campbell, Sandpoint, Id.** - Bob said that lynx are very scarce. The largest population of lynx he is aware of is in the Purcell Mountains and the Selkirks, but emphasized that there were only a few in those areas. He has treed a few lynx with hounds and trapped four or five, but found them difficult to trap because they use such large areas. He found that if they weren't trapped quickly they would move on and not return for an extended time. He trapped lynx north of Bonners Ferry on Queen Mountain Road. He had a regular route that he snowshoed. The last lynx he trapped was about 1964.

He observed that there were a lot more lynx 20 or 30 years ago than there are now. He attributed a large part of the decline to the lack of snowshoe hares. He said that lynx did occasionally catch grouse, but that snowshoe hares made up most of their diet. Snowshoe hares were abundant until the late 1940s, when a large dieoff occurred and they still have not recovered. He thought that the dieoff was due to tularemia.

He had observed sign where lions had killed bobcats, and felt when the opportunity presented itself, they would also kill lynx. He thinks the increase in coyotes has impacted bobcats and lynx, although not to the same extent as declining snowshoe hare populations.

**Joe Blackburn, Plummer, Id.** - Joe did most of his trapping in St. Maries Creek and Upper Marble Creek. He hasn't seen any sign of lynx in the last ten years and no longer believes there are lynx in the area. Twenty to twenty-five years ago he observed lynx tracks about once a year. He believes the main factor in their decline is habitat loss, mainly in the form of clearcuts and roads, and predation by mountain lions.

**Dick Anderson, St. Maries, Id.** - Dick ran a 345-mile snowmobile trap line in the St. Joe region, mostly between the Clearwater and the St. Joe River. He has trapped for nearly 40 years and every year he saw three or four sets of lynx tracks. Because of the amount of snow, the tracks usually would be between snowfalls. He has never seen more than one set of lynx tracks at a time and assumed they were all male lynx. He had never seen any evidence of kittens.

He saw two wolf tracks in the area. He has seen numerous fisher tracks, and although he avoided trapping them, occasionally one would get caught in a trap set for marten. He saw the lynx that Cecil Samford harvested and also knew of a lynx his neighbor had trapped. He said all of these lynx were trapped incidental to coyote trapping.

He said there were more coyotes than imaginable in the high country and felt that coyotes could definitely impact lynx and bobcat populations, through kitten predation. He has seen a significant increase in the lion population and felt they could be impacting lynx.

In 1967, he unintentionally ran lynx with hounds while hunting near Dixie on the breaks of the Salmon River, just above the snowline in the spring and lost all of his hounds. Although he ran a few lynx with dogs, he never caught one.

**Bill Carter** - Although Bill had never observed lynx tracks, he recalled the location of the lynx that Cecil Samford trapped. He hadn't trapped in about ten years.

**Lester Gesel** - Lester saw a lynx in the North Fork of the Coeur d'Alene River drainage. Leo Black live-trapped one there about 30 years ago for use in a county fair and later released it. He said there were very few lynx and should have been listed as threatened or endangered years ago.

Individuals interviewed who had no information relative to lynx. It should be noted that information from knowledgeable individuals of where lynx are not present or when they were not present is valuable information.

**Don Wright, Idaho Falls, Id.**

**Warren Moore, Soda Springs, Id.**

**Al Nicholson, Boise, Id.**

**Doug Peterson, Driggs, Id.**

**Blake Phillips, Montpelier, Id..**

**Lyle Scheiss, Teton, Id.**

**Lee Frost, Hailey, Id.**

### Interview Summary

The interviews provide important information on where and how lynx persisted in Idaho. Many observations regarding specific issues were common to multiple observers. Prior to the interviews, except for an occasional anomaly, lynx and lynx habitat were thought to be confined to the Panhandle area of Idaho. However, over half of the lynx documented in Idaho are from the Salmon, Upper Snake, and Bear River watersheds. Habitat that supports snowshoe hare exists in these areas, but the majority of the southern portion of lynx habitat in Idaho would be considered by many as atypical.

### Alternate prey

Snowshoe hares are prominently mentioned by many of those interviewed as an important prey item for lynx. Red squirrels, voles, and forest grouse were also mentioned as alternate prey sources for lynx. These lynx prey-species have all been documented in research. Their importance to lynx appears to vary with numbers and availability, the season, and the area.

The interviews, however, suggest a greater use of prey other than snowshoe hares than has been documented in boreal forests of Canada and Alaska. There is also evidence to suggest a reliance on prey that either has not been documented or only rarely detected by research. This may be caused by the proximity of atypical lynx habitats that periodically support lynx prey or that atypical lynx habitats are often near snowshoe hare habitats. Alternate prey mentioned most often in the interviews include white-tailed jackrabbit, black-tailed jackrabbit, porcupine, and beaver. One person also suggested pikas as potential.

### Jackrabbits

Little is known about the white-tailed jackrabbit in Idaho. They have, however, been found in areas used by lynx. Anecdotal information suggests that white-tailed jackrabbits undergo periodic population fluctuations synchronous with black-tailed jackrabbits. Lynx have been documented preying on rabbits other than snowshoe hares when the opportunity presents itself. Lynx have also been documented in or close to areas that were or recently experienced jackrabbit population density peaks.

The interviews also suggest there is a disproportionate use of riparian areas for travel, dispersal, and security when lynx are in areas of high jackrabbit populations.

Countless scenarios of lynx behavior could occur as the result of the utilization of jackrabbits by lynx. All may be true at one time or other. They likely depend on prey density, prey location, and behavioral differences among individual lynx. Five possible scenarios that are based at least in part on anecdotal information obtained in the interviews are described below.

1.) Lynx follow high jackrabbit populations into atypical habitats many miles from typical habitats. When jackrabbit populations crash, lynx die of starvation if unable to backtrack to suitable habitats. The three lynx harvested in the Magic Valley in south-central Idaho in the late 1960s and early 1970s are examples of animals that may fit this scenario. The condition of these lynx, however, suggests that they are capable of traveling great distances across and effectively utilizing atypical habitats. The good-to-excellent condition of the harvested animals suggests they were probably still capable of traveling to habitats containing snowshoe hares.

Although this scenario appears to parallel lynx movements during and following snowshoe hare population crashes in boreal habitats in Alaska and Canada, the impetus for the movement may be different. In Canada and Alaska, where snowshoe hare populations fluctuate wildly, lynx that don't pursue other prey and/or move to other areas perish when snowshoe populations crash. In the southern part of their range, snowshoe hare populations do not appear to be cyclic, but rather mimic hare population lows in Canada and Alaska. These lynx populations or subpopulations have likely evolved to take advantage of "pockets" of snowshoe hares scattered over large areas. In doing so they regularly cross atypical habitats. If prey is periodically abundant in these atypical habitats, opportunism would likely dictate they continue utilizing these habitats until the prey is no longer available.

2.) Lynx follow jackrabbit population highs many miles from typical habitats only to end up near other similar habitats. This would be a logical explanation for disjunct populations of lynx in Colorado, the Bighorn Mountains in Wyoming, the high Uintas in Utah, the Eagle Cap Mountains in Oregon, and elsewhere. It also suggests a way for lynx to traverse between mountain ranges that are not as disconnected as the aforementioned examples.

3.) Lynx exploit jackrabbit population highs without leaving traditional habitats. In some areas, as jackrabbit densities peak, individual hares often disperse into habitats where they normally wouldn't occur such as the upper elevation shrub-steppe. In the case of white-tailed jackrabbits, dispersing hares may move from the shrub-steppe into adjacent forested habitats.

4.) Lynx move into shrub-steppe habitats, which they utilize until jackrabbit populations crash. These animals may then disperse back into forested habitats from which they came.

5.) Lynx make nocturnal forays into areas experiencing jackrabbit population highs, but continue to use traditional habitats for security and cover.

Jackrabbits could allow the long-term persistence of lynx in areas where habitats are proximal to typical snowshoe hare habitats. They are likely most important in providing a prey source that allows dispersal across shrub-steppe habitats into more typical habitat islands.

### Beaver

Western landscapes and plant communities have been greatly influenced by historic beaver activity. The number of beavers in Idaho prior to settlement must have been almost beyond imagination. For example:

1) From the journals of Peter Skeen Ogden:

- In 1819, Mackenzie returned from the Snake Country with 154 horses laden with beaver. The next year they returned with even more pelts than the previous year.
- Between 1819 and 1823, the British had 60 men trapping the Snake country. They harvested 80,000 beaver weighing 160,000 pounds.

2) Milton Skinner, the Chief Naturalist of Yellowstone National Park in the 1920s estimated that "the beaver population of Yellowstone National Park at about 10,000 animals, but believed that figure to be very conservative."

The historical abundance and availability of beavers as prey in areas where they coexisted with lynx was likely significant. The ability of lynx to effectively prey on beavers could explain why lynx persisted in areas where habitats currently appear marginal. The greatly reduced number of beavers could help explain the range contraction of lynx.

The interaction between snowshoe hares and beavers has never been scientifically examined, although research may exist that would allow that analysis. Aspen suckering resulting from topkilling mature stems by a variety of means, including beavers, is well-documented. It is likely that aspen suckers provide many of the same desirable qualities for snowshoe hare survival as stems from coniferous forest regeneration. Beavers likely are, or at least were, prey for lynx and provide additional prey by improving snowshoe hare habitat.

### Porcupines

The use of porcupines as prey by lynx has never been documented in the literature. However, anecdotal information suggests that they may be an important lynx prey item that supplement snowshoe hares in traditional habitats, especially at the southern extent of their range. Information on porcupines in Idaho is minimal-to-nonexistent, and no population trends are currently available for these animals. There is research, however, to suggest that mountain lions are capable of effectively using and even eliminating porcupines from areas. There is general agreement among researchers, biologists and those interviewed that mountain lion populations are at an all-time high. Thus, the availability of porcupines as alternate lynx prey currently may be very low.

### Predators and Competitors

Predation on adult Canada lynx rarely has been observed and recorded in the literature. The scarcity of actual observed predation records is probably a reflection of the limited opportunities to observe such events in the wild. Coyotes commonly kill bobcats, both adult and young, but are not known to kill lynx. The opinion of many of those interviewed, however, was that coyotes were having a detrimental effect on lynx, either by direct predation on kittens or from competition. This may be an important factor in the contiguous U.S. portion of lynx habitat where extremely high snowshoe hare populations seldom, if ever, occur and coyote populations are high in the absence of wolves and poisons such as 1080.

Research and anecdotal information documented mountain lions killing lynx. The current high numbers of mountain lions may also be having a significant effect on lynx either by competing for, or in the case of porcupines, possibly eliminating an important and limited prey resource. Current population densities of mountain lions increase random opportunities for killing lynx. A 1908 newspaper article in the Salmon Recorder-Herald reveals more in what it doesn't say than in what it does. The story tells of indiscriminate elimination of all predators, yet no mention is made of mountain lions. This suggests that there were few mountain lions in a predator mix that included lynx. The scenario today is different with few or no wolves or lynx, few bobcats, and numbers of coyotes and mountain lions.

### Dispersed Recreation

Dispersed recreation including but not limited to ATVs, snowmobiles, cross-country skiing, camping, hunting, fishing, and hiking, has been increasing for many years. The types of uses have also increased dramatically. More people now use natural resources to provide extreme outdoor challenges. They have spawned entire industries catering to both summer and winter activities.

When asked whether there were more roads now than when he occasionally saw or trapped lynx, one knowledgeable southeastern Idaho trapper replied that there aren't many more new roads today than in the 1950s and 1960s, but nobody used roads in the winter when lynx were present. He accessed his trap lines with cross country skis or snowshoes. He said now the area receives intensive snowmobile and ATV use and believes that is the primary factor in the absence of lynx since the early 1970s. Two knowledgeable interviewees who spent a great deal of time in the Sawtooth Valley echoed the same sentiments. Lynx were relatively common before snowmobiles, cross-country skiing and ATVs became a dominant use in the area. The threat to lynx from motorized and nonmotorized recreational activities has not been researched.

### Elk Grazing

Food habit studies of northern snowshoe hares are similar to rabbits found in more southern latitudes such as the black-tailed jackrabbit. Similarities exist in the amount and seasonal use of woody and nonwoody plants. Studies show that livestock grazing may reduce forage availability to the point that it limits black-tailed jackrabbit population density. Elk and livestock eat many of the same plant species.

Large elk herds were prevalent at the turn of the century, decreased over time, and then rebounded to above turn-of-the-century levels. The increase has led to an increase in competition for forage, especially that located along forest edges during the summer and fall. Development along the valley floors further reduces the amount of high-quality, low-elevation winter range available. As a result, elk and deer populations must use poor-quality, higher-elevation ranges. This often stresses certain plant communities and may have an indirect effect on snowshoe hare habitat by changing the amounts and kinds of plants that are present. Year-round competition for forage by both elk and livestock may have a direct impact on snowshoe hares.

Two observers mentioned that when lynx were present and snowshoe hare numbers were relatively high, elk numbers in Stanley Basin were very low with about 100 animals using the area during the summer and none in winter. Now, however, large elk herds (greater than 500 animals) use this area both in summer and winter. Snowshoe hares are now almost nonexistent in the area.

Domestic livestock and/or wild ungulates may be regionally or locally important as competitors with lynx prey or by changing plant communities so they are no longer capable of supporting lynx and their prey. This may be particularly true in the southern-most portions of the lynx range.

#### Trapping

Many lynx were trapped incidentally while targeting bobcat and coyotes. Although low fur prices and minimal trapping make it less of an issue, incidental trapping remains a problem with lynx populations so low. In some areas of the state, it occurs more frequently than in others. The extensive willow-riparian areas in the Lemhi Valley that bisect shrub-steppe habitats, but are in proximity to traditional lynx habitats, are an example.

#### Snowshoe Hares

Although several observers currently think that snowshoe hare numbers are higher than they have been in the recent past, the vast majority of observers feel that a key ingredient to fewer lynx is fewer snowshoe hares. Observers gave a number of reasons for the decline of snowshoes including tularemia, high numbers of coyotes, timber harvest practices, and high elk numbers. Snowshoe hare numbers are an important prey species that effect lynx persistence in the southern portions of lynx habitat. All of these factors are factors that should be investigated.

#### Timber Harvest Practices

Timber harvest practices appear to have variable impacts on lynx and lynx prey, depending upon the methods or techniques used and geographic region. Clearcutting and other silvicultural practices in drier habitats often result in regeneration with a low stem density. In some cases regeneration is nonexistent. Sites that are manually planted, if successful, normally result in stem densities less than what has been shown as beneficial for snowshoe hare and lynx. In addition, increased roads into occupied lynx habitat results in areas easily accessed by recreationists, which may disturb or displace lynx. Roads may also provide access to lynx competitors. Practices such as slash piling and burning likely causes a significant loss of lynx prey.

#### Other Factors

Road killed lynx were mentioned by several of those interviewed. Not only do highways result in direct mortality, but likely effect lynx prey, movements of lynx, and displace and disturb lynx. Although mining was not mentioned by those interviewed, a number of lynx were observed in or near areas now being mined. Although the observation was in Utah, a water impoundment now covers an area that lynx were seen stalking prey.

#### Conclusions

Three key conclusions surface as the result of this effort. First, lynx would not be present in southern portions of its range if it were not for snowshoe hares. However, lynx likely would not persist in these areas if they depended exclusively on snowshoe hares. Alternate prey appears increasingly important in the margins of lynx range.

Secondly, there is no "smoking gun" factor in the decline of lynx in Idaho. Many variables appear to limit

lynx numbers in this state. The most important of these appear to be timber harvest practices; high numbers of coyotes, mountain lions, and elk; increasing recreational use; incidental trapping; and reduced numbers of alternate prey, including species that are not documented as lynx prey in existing research. These include jackrabbits, beavers, and porcupines.

Finally, all of the factors contributing to the decline of lynx are intertwined. For example, timber harvest practices can affect recreational opportunities, which can affect the presence of lynx predators, which can affect competitors of lynx, which can affect the prey necessary for the lynx to survive. There are thousands of variations of the intricate relationships that determine whether lynx can live or die in a given area.

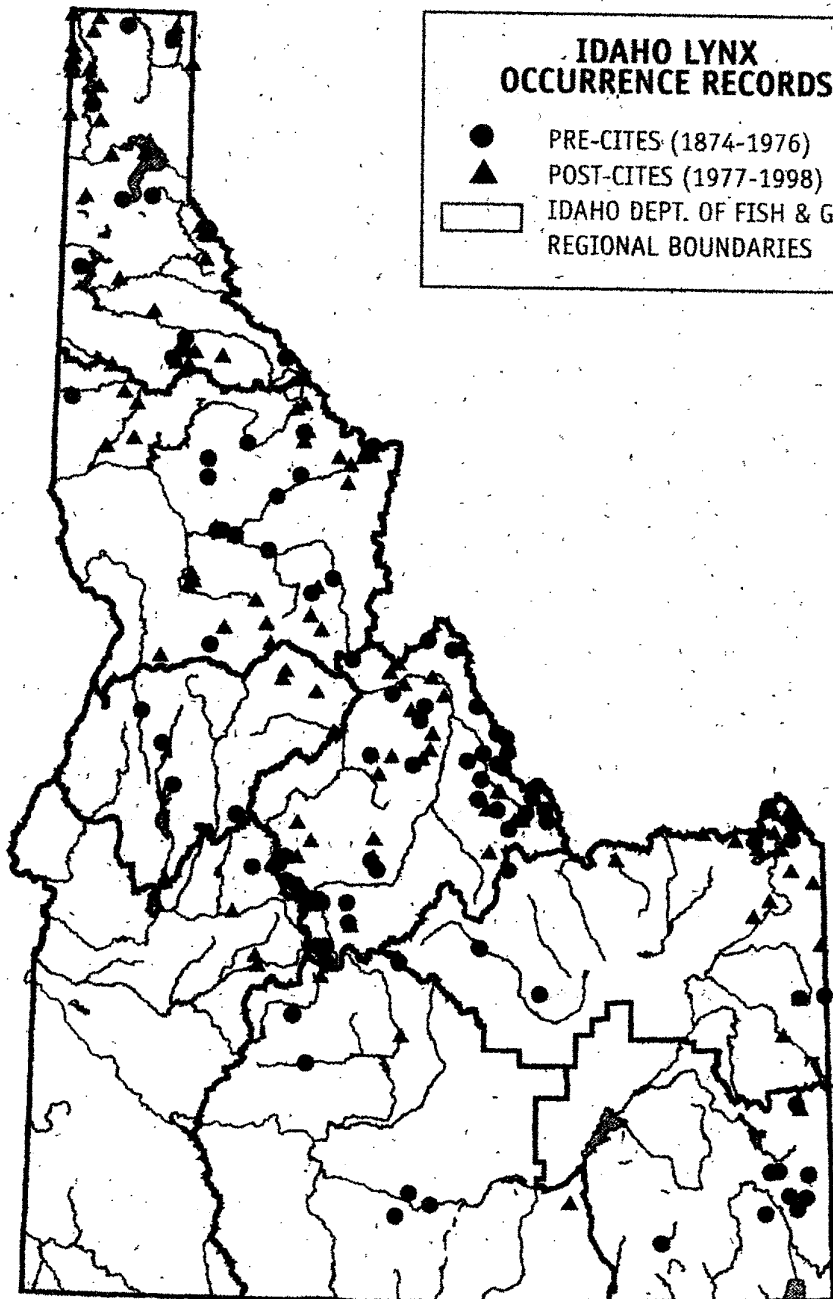
The complex interrelationships between lynx and biotic and human-caused factors never will be completely understood. Given the secretive, mystical, complex ways of the lynx, they are worthy of whatever hurdles must be overcome to ensure their conservation in Idaho.

### **References**

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Lynx occurrence records for Idaho, 1874-1998