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THE RELATIONSHIP OF FIRE HISTORY TO FURBEARER POPULATIONS AND HARVEST

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Final Report Federal Aid in Wildlife Restoration Project W-22-2, Job 7.13R

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Job No.: 7.13R Job Title: The Relationship of Fire History to Furbearer Populations and Harvest

Period Covered: 1 July 1982 through 30 June 1983

SUMMARY

The effects of fire on furbearer habitat and populations in Interior Alaska were studied through interviews with trappers familiar with conditions in burns. Sixty-two individuals contributed observations on furbearer populations in 44 different burns ranging in age from 2 to 80 years ($\bar{x} = 17.7$ years).

Trappers generally perceived burns as having beneficial short-term effects on most furbearers. Their observations suggest that microtine rodents including primarily red-backed voles (Clethrionomys rutilis), tundra voles (Microtus oeconomus), meadow voles (Microtus pennsylvanicus), and yellow-cheeked voles (Microtus xanthognathus) often reach high densities in the dense herbaceous vegetation that commonly occurs soon after a fire. This creates an optimum food source for marten (Martes americana), red fox (Vulpes vulpes), ermine (Mustela erminea), mink (Mustela vison), and birds of prey. Extensive use of burns by marten occurred as soon as 1-3 years postburn, and high populations often developed within 3-10 years with unburned inclusions and burn edges as centers of activity.

Good habitat for lynx (Lynx canadensis) does not generally occur until about 15 years postburn and coincides with the development of suitable winter habitat for snowshoe hares (Lepus americanus). Effects on beaver (Castor canadensis) were generally positive with productive habitat developing within 10 years postburn. Early plant successional stages often attracted moose (Alces alces) and thus benefited wolves (Canis lupus). Trappers observed that fire had little apparent effect on wolverine (Gulo gulo), otter (Lutra canadensis), and muskrat (Ondatra zibethicus) populations. The most persistent negative effect of fire was on red squirrels (Tamiasciurus hudsonicus). The rate and type of revegetation in burns is highly variable, and some fires create generally poor furbearer habitat that persists for relatively long periods. The long-term effects of fire were evaluated by comparing regional differences in fire cycles. This analysis suggested that the shortest fire cycles (greatest fire occurrence) characterize areas generally regarded as exceptionally good habitat for furbearers.

Key words: beaver, Castor canadensis, fire, furbearers, habitat, Interior Alaska, lynx, Lynx canadensis, marten, Martes americana, population ecology, red fox, Vulpes vulpes.

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BACKGROUND

Fire has been a natural force in the Alaskan Interior for thousands of years. Without fire, organic matter accumulates, permafrost levels rise, habitat productivity declines, plant communities become much less diverse, and their value as wildlife habitat generally declines. The habitat modifications resulting

from fire are beneficial to many species. Numerous investigations have shown positive effects for browsing animals such as moose (<u>Alces alces</u>)(LeResche et al. 1974), but by comparison, there has been relatively little consideration given the effects of fire on the habitat of furbearing mammals.

Kelleyhouse (1979) discussed fire-wildlife relationships in Alaska and pointed out the role of fire in maintaining habitat diversity and, thus, wildlife species diversity. He also reviewed the known and potential effects of fire on various species and concluded that due to the higher populations of small mammals, snowshoe hares (Lepus americanus), and moose usually found in early and mid-successional vegetation, most furbearers were likely to benefit from fire in the long term.

In an unpublished report, Bunnell (1980) attempted to assess fire's potential effects on selected furbearers by considering the biology of each species and comparing the estimated effect against records of fur harvest and fire history in the Yukon Territory. The results of this analysis were sometimes Predicted effects were contradicted by analysis of confusing. harvest records which suggested that except for marten (Martes americana), all species underwent a postburn decline in harvest lasting at least 20 years. This is a longer recovery period than predicted, and Bunnell suggests that changes in trapping effort could account for the confusing picture of effects presented by his analysis.

In their review of the effects of fire in Alaska and adjacent Canada, Viereck and Schandelmeier (1980) predicted that fire should be beneficial to lynx (Lynx canadensis) (due to positive effects on snowshoe hares), beaver (Castor canadensis), and muskrat (Ondatra zibethicus), and, possibly, also to marten.

This study took advantage of the extensive observations of trappers who annually traverse thousands of miles of furbearer habitat in Alaska's Interior. Many trappers have acquired knowledge of furbearer abundance in and around burns and have observed the changes in wildlife populations that occur during the vegetational succession that follows fire.

The Alaska Interagency Fire Management Council is presently completing fire management plans that, by 1984, will influence fire control efforts on nearly all 220 million acres in Interior Alaska. This report is intended to provide an initial assessment of the value of fires to furbearers that can be incorporated into an ecologically based fire management process.

OBJECTIVE

To evaluate the effects of fire on furbearer populations and harvest, primarily through interviews with trappers who have trapped in burned areas.

PROCEDURES

Initially, a number of trappers familiar with conditions on burns were contacted. In addition, an attempt was made to solicit interest from potential cooperators by mail. In July 1982, a letter was sent to over 400 Interior trappers describing the project and asking those familiar with conditions on burns to assist us by providing information by mail and/or scheduling an interview. Names and addresses of trappers were obtained from the mailing list maintained in conjunction with a trapper questionnaire program conducted by Jean Ernest at the Fairbanks ADF&G office.

We prepared a written interview format to serve as an informal guide for discussions with informants and also to serve as a form for recording information (Appendix A). The goal of each interview was to obtain a qualitative description of preburn and postburn habitat, the extent of unburned inclusions, preburn and postburn abundance of prey and furbearer species, and the informant's opinion of the overall effects of the fire on furbearers.

Before meeting with an informant, we obtained as many details as possible regarding the fire in question, including date, size, severity, location, and boundaries. Bureau of Land Management (BLM) fire records and fire detail sheets, LANDSAT and U-2 photographs, and knowledge of various people familiar with the burn were used as the information base. Fire boundaries and the locations of traplines in relation to burns were plotted on 1:250,000 scale maps and attached to each completed interview.

By September 1982, we had selected the informants and began traveling to various trapping-oriented communities to interview trappers. The communities visited included Tok, Eagle, Chicken, Fairbanks, Delta, Nenana, Clear, Ruby, and Galena. One to several days were spent in each locality interviewing as many trappers as possible. Additional interviews were conducted throughout the winter and spring as various interested trappers visited the Fairbanks office or were contacted in the course of other fieldwork. The completed interviews, maps, and associated information are the basis for this report and are on file at the ADF&G office in Fairbanks.

STUDY AREA

We obtained information from an area bounded on the west by Galena and the upper Kobuk River and on the east by the Black River and Tok, and from the Alatna and upper Coleen Rivers on the north to the Alaska Range on the south. Due to limitations on time and finances, we obtained a significant amount of information only from the southern half of this area including primarily the Tanana and upper Yukon drainages and trappers in and around the communities of Tok, Eagle, Chicken, Delta, Circle, Central, Fort Yukon, Fairbanks, Clear, Manley, Nenana, Ruby, and Galena. Information was obtained from a variety of habitat types, including lowlands such as the Tanana flats and Koyukuk lowlands, hilly uplands throughout the Tanana Hills, and the foothills of the Alaska Range. Most of this area is covered by taiga, an extension of the boreal forest. Viereck and Schandelmeier (1980) provide a concise description of taiga vegetation. About 32% of the Alaska taiga is forested with the unforested land consisting of extensive bogs, brush thickets, grasslands, sedge (<u>Carex</u> sp.) meadows, and alpine tundra.

RESULTS AND DISCUSSION

Between August 1982 and June 1983, 62 individuals, primarily trappers, provided information regarding furbearer abundance on 44 different burns. Seven trappers not currently trapping on burns also contributed observations based on past experience in and around burns. Eleven of the people contributing information were interviewed by telephone or provided brief written comments. The information pertained primarily to the winter distribution of furbearers.

Due to the tremendous variation in the characteristics of different burns, and in the extent, quality, and quantity of information provided by trappers, we have elected to present information primarily in a narrative form, rather than relying on tables, graphs, or simple categorization of reported effects on various species. Some interviews did lend themselves to tabular presentation, but most had more subjective information that could not be incorporated into tables.

The interview format contained many topics, and only the most observant and experienced trappers could respond to all questions. Most areas provided good habitat for a few species, while other species were scarce or absent. Most trappers could comment only on relatively abundant species because it is difficult to assess the effects of fire on furbearers that are scarce. In some cases, trappers had little time to devote to an interview, had few comments to offer, or had their own agenda for the interview which included primarily topics other than the effects of fire on furbearers.

Age of Burns

Although not by design, our findings pertain primarily to relatively young burns. Trappers on older burns are often not aware they are using a burn or do not have even a rough idea of its age. Fire records in Alaska have been kept only since 1940, and the early records are difficult to obtain and interpret. The 44 burns from which we obtained information ranged in age from 2 to 80 years. The ages of the oldest burns are based on the memory of residents of the area. The average age of 37 known-age burns was 17.7 years. The age distribution of these burns is shown in Table 1. This emphasis on recent burns is, in a sense, desirable since fire-related effects, as opposed to other natural factors, are more discernible than in older burns where the contrast between conditions in the burn and those in surrounding areas is diminished. In addition, a major concern of wildlife managers and the public is the length of time likely to be required for burns to become productive for at least some forms of wildlife. Early successional stages would seem most likely to be lacking in terms of food and/or cover for furbearers and their prey.

Size of Burns

The information provided by trappers pertains to fires ranging in size from 640 to 525,000 acres. Excluding the smallest burn, the average size of the burns studied was 117,794 acres (N = 29). The possible relationships between fire size and effects on furbearers are not clear in this sample. While large fires would be expected to have more lasting negative effects, this was not apparent in our sample, at least with regard to the development of suitable marten habitat. Two of the largest fires, the 400,000-acre Poorman fire and the 525,000-acre Butte Creek fire, rapidly developed into good marten habitat. The apparent lack of a clear relationship between fire size and rate of development of furbearer use suggests that size is just one of the many factors including fire severity, date of burn, preburn vegetation, elevation, and drainage that combine to determine the effects of a particular fire on furbearers.

Successional Stages of Burns Studied

It was difficult to obtain a detailed picture of preburn and postburn conditions for many burns. Trappers were usually familiar only with winter conditions, when herbs and other low growing plants are inconspicuous. In addition, describing the density, height, and extent of various plants and plant communities is a subjective judgment; terms such as scarce, common, abundant, and dense have different meanings to different people. Trappers had often begun using an area several years after a fire and therefore lacked knowledge of preburn habitat and wildlife populations.

A description of revegetation in each burn was obtained through trapper interviews to acquire a general feeling for plant community structure, dominant plant species, and the stages of succession that had so far occurred. The successional sequence after fire in the taiga is complex and is affected by preburn vegetation type and age, climate, fire severity, time of burn, parent material, presence and absence of permafrost, and weather. In addition, the rate of revegetation and the species involved are highly variable (Viereck and Schandelmeier 1980). Despite this complexity, 3 general patterns of succession have been described in Alaska and northern Canada. These patterns apply

generally to dry upland sites (white spruce (<u>Picea glauca</u>)/ feathermoss type) and wet, poorly drained sites (black spruce (<u>Picea mariana</u>)/feathermoss type) as described by Foote (1979) and to open black spruce/lichen woodland (Johnson and Rowe 1975, Maikawa and Kershaw 1976).

We attempted to determine forest fire severity from fire records or during interviews with trappers because the amount of the organic layer removed affects the rate and type of plant succession. However, the severity of a fire is difficult to determine after a few years (Viereck and Schandelmeier 1980), and sometimes it was impossible to obtain an indication of severity. When possible, we assigned severity classes using previously established criteria (Viereck et al. 1979) defining light, moderate, and heavy severity.

Our knowledge of revegetation on most burns is general, allowing only brief comments regarding the suitability of various stages of plant succession for different furbearers. A more extensive analysis of furbearer-vegetation relationships will require fieldwork in a number of burns.

Area Summaries

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A summary of each interview is included in Appendix B. Each summary includes available details about fire name and/or number, date, size, severity, presence of unburned inclusions, and vegetation in the burn. The information contributed by trappers is summarized below by area in an attempt to condense the most significant and well-founded observations. General attitudes regarding the desirability of fires from the trapper's point of view are presented. Area summaries are followed by species summaries.

Tok:

Tok is a trapping-oriented community with marten, lynx, and fox as the furbearers most often sought. The area includes a diversity of habitats that support all the furbearers common to Interior Alaska, and many trappers pursue a variety of species. We spoke with 5 trappers who have experience trapping in 4 burns in the Taylor Highway area north of Tok. Terrain in this area is generally hilly. Three fires occurred in 1966 and 1 in 1969; all are presently in the shrub successional stage, although birch (Betula papyrifera) and aspen (Populus tremuloides) saplings are common in some areas. Vegetative cover in these burns is relatively sparse, and the burns are fairly open.

Snowshoe hares are cyclic in both burned and unburned areas, and comments indicate that hare numbers are not generally high except around unburned areas. As a result, and because lynx seem to avoid the large, relatively open portions of burns, these areas are not considered to be good lynx habitat.

In the Cement Creek and West Fork fires, voles have been generally abundant due to dense stands of grass that rapidly revegetated portions of the burns. As a result, marten have been generally abundant and were present as early as 3 years after the Cement Creek fire with high densities observed 3-5 years after the fire. Terry Brigner observed that marten abundance in the Ladue burn is generally greatest in unburned inclusions and along the burn edge. Extensive open portions of the burn are used less.

Red fox (Vulpes vulpes) numbers are reported to range from low to moderate except in the Canadian burn where Bill Simmons said they are abundant and seem to be attracted to the burn. In contrast, John Zabielski had not observed any benefit to foxes in the West Fork fire.

The Ladue River and creeks in the Cement Creek burn are reported to support good numbers of beaver due to the availability of aspen and birch. Mink (<u>Mustela vison</u>), otter (<u>Lutra canadensis</u>), muskrats, and other furbearers are generally scarce, and the effects of the burns on these species are unknown.

The trappers agreed that the burns were beneficial to marten and have provided fair to good habitat for foxes and beaver and poor habitat for lynx. The effect of the burns on other furbearers is unknown.

Eagle:

The information obtained from trappers in Eagle indicated that marten are the most widespread and abundant furbearer in the area with red fox generally uncommon and lynx cyclic at relatively low amplitude. Wolverine (<u>Gulo gulo</u>), mink, beaver, and otter are also generally uncommon.

We interviewed 3 trappers who trap in the eastern portion of the large 1969 Butte Creek burn and another trapper familiar with marten numbers in the western portion of the burn. In addition, 3 trappers familiar with parts of this and other burns, as well as furbearer abundance in unburned areas, provided useful observations.

All 3 trappers familiar with the 13-year-old Butte Creek burn reported that the burn supports high densities of marten and attribute this to the dense grass and high numbers of voles in much of the burn. Danna Ulvi noted that in contrast to most other trappers in the area, he has found that marten are abundant even in the interior of the burn, which provides some of the best Other trappers often find that marten are concentrated trapping. around unburned inclusions and the burn edge. John Ostrander reported that in his 10-year experience in the burn, marten have been consistently more abundant there than in adjacent more mature habitat. George Moore's observation that marten are also abundant in the western end of the burn suggests that marten abundance may be relatively high through much of the burn.

The Butte Creek burn appears to provide some of the best marten trapping in the area. However, 3 trappers who use unburned areas pointed out that while burns often provide good marten habitat, unburned areas can also be very productive. Mike Potts noted that in his area marten are usually most abundant along creeks where tussock meadows are common and, to a lesser extent, above timberline in grassy areas. Populations fluctuate considerably, and at high density, marten are found in all habitat types. Bill Goebel traps near timberline at about 2,800 ft elevation and notes that the area near timberline is best for marten which feed on voles in these areas. Jerry Nelson also observed that in more mature habitat marten are most abundant above timberline where voles and berries are abundant.

Trappers in the Eagle area report that foxes are not generally abundant and, as with lynx, wolverine, beaver, muskrat, and otter, numbers have not been high enough in or out of burns to allow meaningful observations on the effects of fire.

Delta:

The Delta area encompasses a variety of habitat types but to the east, west, and south of Delta the primary furbearers sought are lynx, foxes, coyotes (Canis latrans), and wolves (Canis lupus). Marten are extremely scarce in this area, and wolverine, muskrat, and mink are rare.

We spoke with 3 trappers and 1 biologist familiar with several burns that occurred within the past 12 years. All trappers pointed out the rapid development of red fox and coyote populations in burns due to the influx of grasses and high densities of voles. Foxes are reported to be abundant for the same reason in the vicinity of the Delta Barley Project. The repopulation of burns by foxes is reported to have been fairly rapid with significant populations existing in the Donnelly and Barley Project burns within 2 years. Unharvested grain in some areas is also thought to contribute to high vole populations.

In the recent burns (12 years old or less) near Delta, the indications are that snowshoe hare populations and possibly vegetative cover have not developed sufficiently to provide good habitat for lynx. The relatively high-elevation Shawnee Peak fire has apparently remained unproductive for wildlife in general.

Fairbanks:

We spoke with 8 trappers in the Fairbanks area regarding furbearer populations in and around 8 burns. On the Tanana Flats south of Fairbanks, primary furbearers are red foxes and lynx with other species present but often at lower densities. Marten are not widely distributed but are sometimes abundant in local areas. In the hilly country north of the Tanana River, foxes, lynx, and marten are all important furbearers with wolves, wolverine, and beaver also being present.

On the 9-year-old Sled fire, Ted Meyer reported that voles increased dramatically after the fire, resulting in a noticeable increase in foxes. Lynx were virtually absent before the fire and have continued to be scarce, although hares are increasing slowly. Marten, which were abundant before the fire, were scarce until 7 years after the fire, when they again became common.

Red foxes, which had been common, increased following the burn and appeared to benefit noticeably from increased numbers of voles. Ermine (<u>Mustela erminea</u>) were scarce before but abundant after the burn.

Buck Nystrom stated that an approximately 25-year-old burn on the eastern Tanana Flats is still not attractive to lynx even though hares are common. Like Ted Meyer and various other trappers, he has concluded that lynx have an aversion to large expanses of relatively open habitat. An abundant vole population in the burn has consistently supported a dense fox population which has increased to an extremely high level in the last few years. Coyotes are also common in this area. Marten exist at low levels in this area, and Mr. Nystrom can discern no significant effect of the burn on numbers.

Pete Buist noted that while foxes are common, at least along firebreaks, in the 2-year-old Blair Lakes burn, other furbearers have not repopulated the burn to any extent and are more abundant outside the burn. Ron Long commented that the Blair Lakes burn is still a "desert" in terms of furbearer abundance.

North of the Tanana River, information from several trappers suggests a pattern similar to other areas. Voles and associated predators often become abundant during the early successional stages following a fire while hares and lynx make little use of burns until at least 15 to 20 years have passed.

In the Chena drainage, both a 16- to 17- and a 24-year-old burn are reported to support a variety of furbearers. However, Norm Phillips reports that snowshoe hare numbers in the 24-year-old Chena Dome burn are lower than in adjacent unburned areas and that lynx do not remain in the burn for any length of time. Marten numbers increased in the burn from 1966, 8 years after the burn, until 1982 when numbers declined. Marten seem to be concentrated around unburned inclusions. In the Wickersham burn, marten were apparently common relatively soon after the fire but declined after reaching a fairly high density 9 years after the fire. In contrast, the 3-year-old Stuart Creek fire still supports few furbearers other than foxes according to Steve Burgess.

Most of the trappers in Fairbanks with whom we spoke thought that fires were generally beneficial to furbearers with marten and foxes often prospering within a few years after a fire. As in other areas, significant populations of lynx do not usually occur until later in a burn development. Based on his observations in the Chena Dome burn, Norm Phillips stated that this burn was beneficial in providing a diversity of habitat, but the fire would have been more beneficial had it burned more mature white spruce along creeks, which is the least productive habitat due to the sparse understory and ground cover.

Manley:

Three trappers provided information about furbearer abundance in 4 burns south of Manley in the Kantishna, Cosna, and Zitziana drainages. This area is characterized by lowlands and gently rolling hills that support a variety of furbearers.

The pattern of furbearer abundance in these burns, the oldest of which is 11 years, is similar to a number of recent burns elsewhere. Both Dave Kurhajec and William Spear observed an abundance of voles and associated predators, including marten and This foxes, within the 1st several years following a burn. increase was noticeable within 2-3 years, after which high populations of marten persisted for several years. Foxes also appeared to benefit but increased more slowly, reaching high densities 7-10 years postburn. Although the exact age of the Moose Creek burn trapped by Leroy Shank is unknown, it was apparently recent at the time of his observations since vegetation was predominantly dense grass. Voles were abundant and marten were the most abundant furbearer, with foxes and wolverine common. Both hares and lynx were scarce. Dave Kurhajec also noticed an increase in ermine in the Cosna burn.

While some furbearers increased during the 1st several years following these burns, clearly negative effects on lynx and red squirrels were apparent. The only trapper to comment on effects on other species was Dave Kurhajec, who observed no significant changes in wolverine, mink, otter, and beaver populations following the Cosna burn.

The opinion of trappers regarding the effects of the burns south of Manley is that they have so far been positive on marten, foxes, and ermine numbers and negative on lynx and red squirrels. The fires have so far had a neutral effect on other furbearers.

Ruby:

The Ruby area supports a variety of furbearers with marten, foxes, and, at times, lynx being the most important species sought by trappers. Four trappers were contacted, and 3 indicated that burns generally support some of the highest populations of marten and foxes, while being relatively poor habitat for lynx. As in other areas, the benefit to marten and foxes stems from the dense herbaceous cover and abundant small mammals (and in the Poorman Road area, blueberries (Vaccinium uliginosum)) that often occur in burns. Of interest is Mark Freshwaters' observation that in mixed-mature forest along the Nowitna River, marten are most common near grassy areas between sloughs and ponds. This habitat resembles the early successional stage in some burns. Although 2 trappers noted that burns supported relatively few lynx, Henry Titus thought that lynx, as well as marten and fox, benefited within about 10 years in a burn in the lower Nowitna due to the abundance of voles. Albert Yrjana reported that moose, wolves, and black bears (Ursus americanus) became very abundant in the Poorman Road burn.

With the exception of Phylip Albert, trappers in Ruby seemed to agree that fires are generally beneficial to furbearers. Although marten and foxes are common in the 23-year-old burn trapped by Mr. Albert, he does not think the burn was beneficial. Henry Titus reported that otter and mink were initially affected negatively by a fire but have since regained their former abundance with mink being especially abundant.

Galena:

There are many experienced trappers familiar with a variety of furbearers in the Galena area, which is known as exceptionally good marten country. We spoke with 8 trappers in this area regarding furbearer populations on 5 burns ranging in age from 5 to 40-50 years.

Four trappers described furbearer abundance on the 13-year-old Bear Creek fire which covered a 660 mi² area north and east of Galena. This area included extensive open areas even before the burn and was not exceptionally good habitat. Trappers seem to agree that foxes have increased significantly in recent years, that beaver regained their previous abundance 10 years after the fire, that lynx are largely restricted to relatively dense vegetation along creeks, and that otter were affected little by the burn. Although marten are common in much of the burn, and Sanders Cleaver observed abundant marten sign in the northwest portion, it is not clear whether the burn benefited them. However, Sidney Huntington observed that marten are generally attracted to burns and are most common along burn edges.

In the Dulbi River burn, Colin Brown observed signs of good populations of foxes and lynx in 1981-82. Hazel Strassburg reported that a 40- to 50-year-old burn south of Galena is fairly productive for marten and lynx. Don Lowe and Colin Brown report that in "unburned" areas marten feed primarily on berries and voles at high elevation.

The observations of Gary Bamford in the Pah River burn constitute one of the most detailed descriptions of the development of furbearer populations during the 1st 10 years after a fire. He observed a strong and fairly rapid repopulation of the burn by marten which reached a high density 5 years after the burn. The burn was revegetated quickly by grasses which supported high populations of red-backed (Clethrionomys rutilus), tundra (Microtus oecomomus), and yellow-cheeked (Microtus xanthograthus) voles, providing a good food supply for marten which began repopulating the area within 3 years after the fire. Marten numbers persisted at fairly high levels from 5 years until 10 years postburn. During winter 1982-83, however, marten declined to a low level in both the Pah River burn and to the south outside the burn on Jimmy Huntington's trapline. Mink have also benefited from the availability of small mammals.

Red foxes are not normally abundant in the Pah River area and were not abundant in the burn until 1981-82 when a large number apparently moved into the area from the west. The other beneficial effects on wildlife, so far observed, are an improvement in moose habitat quality and an expansion in the Ten years after the fire, over 50 beaver beaver population. lodges existed in an area that supported 12 lodges prior to the burn. However, the burn did not develop sufficiently to provide good beaver habitat until 8-10 years had passed. The Pah River fire had relatively little effect on lynx, ermine, wolverine, otter, and muskrat while being strongly beneficial to beaver, marten, and other predators on small mammals such as owls. The fire has so far been detrimental to red squirrels (Tamiasciurus hudsonicus) and possibly wolves.

Gary Bamford and Jimmy Huntington felt that repeated fires at short intervals would be detrimental to most furbearers; Mr. Bamford suggested that burned areas should not be allowed to burn again for at least 30 years.

Trappers in the Galena area, although reporting a number of cases in which fires benefited wildlife species in general and furbearers in particular, offered a more qualified view of the positive effects of fires on furbearer abundance than did trappers in most other areas.

McGrath:

Although only a limited amount of information was obtained in the McGrath area, it is included here as an aid to future cooperative studies of furbearer populations on the Bear Creek burn that will be carried out jointly by BLM and ADF&G in winter 1983-84.

A number of trappers provided at least brief comments regarding furbearer populations in and around the large, 5-year-old Bear Creek fire. Allen Dubord observed that in the Farewell area, large inclusions of unburned spruce are centers of activity for foxes and marten, and that foxes seem to be most abundant along the edge of the burn. Nick Alexie of Nikolai, who trapped in the area prior to the fire, related in correspondence that 2 years after the fire marten were as abundant as before the fire, while foxes were more abundant than before. Bobby Esai remarked that although he lost his traps and a cabin in the fire, which also destroyed considerable wildlife initially, the burn has benefited hares, caribou (Rangifer tarandus), and moose.

Tom Coyle, who traps in the area immediately west of the Bear Creek fire, reports that this area generally supports large numbers of marten (which declined in 1982-83) and low numbers of lynx (which increased in 1982-83). Voles are abundant, while hares are common and relatively stable. Red foxes are fairly abundant, and other furbearers including wolves, wolverines, beaver, otter, and mink are also common.

Upper Koyukuk and Kobuk:

Bud Helmericks provided a detailed account of the effects of a large burn in the Alatna drainage. Within about 12 years after the fire, he noticed that vole, hare, ptarmigan (Lagopus sp.), moose, and berries had increased, while numbers of spruce grouse (Canachites canadensis) and squirrels had decreased compared to levels before the fire. Lynx were abundant from 5-12 years after the fire, and marten became common within 3-4 years. Foxes were considerably more abundant 5 years after the fire than they had been before. Populations of wolverine, beaver, muskrat, mink, otter, and ermine have been affected relatively little by the fire, although beavers and muskrats may be benefiting somewhat from new growth.

Anthony Moses of Allakaket reported in correspondence that marten prospered in a burn currently about 12 years old, although it took a few years for berries and other foods to become sufficiently abundant.

Although he does not trap on a recent burn, Bruce Lee, on the Mauneluk River (Kobuk drainage), related an interesting observation regarding marten habitat preference. He reported that moderate marten populations are concentrated near meadows and other grassy areas, apparently because of the greater abundance of voles. He also observed that marten are attracted to open water during early winter where they feed on salmon (<u>Oncorhynchus</u> sp.) carcasses. The marten population in this area has been relatively stable until 1981-82 when numbers declined fairly drastically, coincidental to a dramatic increase in fox numbers.

Both Bud Helmericks and Anthony Moses think that while fires initially disperse and lower furbearer populations, the eventual result is increased densities of most animals. The observations of Bud Helmericks provide one of the few indications that lynx will successfully exploit a burn during the sapling stage.

Fort Yukon:

Five experienced trappers provided information on fires in the Fort Yukon-Porcupine River area. This area (Game Management Unit 25) includes some of the most productive furbearer habitat in the Interior. It often accounts for 17-37% of the Statewide lynx harvest as well as significant numbers of marten, fox, beaver, mink, and wolverine (unpubl. data, Department files). North of Fort Yukon, Ron Bennett has observed a good density of marten along the edge of the small, 1974 Outlook Point fire on the Sheenjek River. On the upper Coleen River, Heimo Korth found that voles are most abundant in parts of a 40- to 50-year-old burn and also in open meadows at low elevation which support the greatest numbers of marten. As in other areas, dense herbaceous cover, whether due to fire or other factors, often seems to support the greatest concentrations of marten.

Joe Firmin reported that in a 13-year-old burn on the lower Sheenjek River, foxes and marten have been common while lynx are found in good numbers only along the burn edge and around inclusions. In contrast, the 13-year-old Fishhook fire has not, to Mr. Firmin's knowledge, achieved more than a low level of productivity for furbearers. He observed that marten and foxes can reoccupy burns rapidly, sometimes within a year, although edge habitat is often preferred. Mr. Firmin reported that the Kevinjik drainage, which supports some of the highest marten populations in the area, was completely burned around 1900 with frequent, smaller burns occurring since then.

Albert Thomas, who has trapped in the Black River area for about 30 years, also observed that burns can provide good habitat for marten and fox within a few years. He stated that rapid growth of grasses and the accompanying development of small mammal populations is typical after a fire, and that as soon as 1 year after a fire marten and foxes can be found in a burn. In his experience, lynx will begin using a burn as soon as snowshoe hares reach a sufficient level of abundance, regardless of the The Black River area used regularly by the density of cover. Thomas family was extensively burned in 1950 and has consistently supported good populations of most furbearers. Lynx reached high densities for several years during the notably last population high, when the burn was from 25 to 32 years old, and marten are currently increasing. The Black River burn has also had a dramatic and continuing beneficial effect on beaver. Mr. Thomas stressed that the pattern of furbearer repopulation in a particular burn is strongly influenced by the status and trend of populations in the area in general.

Bill Straub provided a detailed account of furbearer status near Circle which contrasts conditions in a 5-year-old burn at relatively high elevation with those in a 27-year-old burn at relatively low elevation. In the latter area, voles were common even 1 year after the fire and were tremendously abundant 24 years after the fire, as were marten. Hares have increased to peak levels in recent years as have lynx, and Mr. Straub's observations suggest that this burn was suitable for lynx when roughly 20 years old, although lynx still prefer dense vegetation along waterways. Foxes have been generally abundant. Moose are concentrated in the burn and wolves are abundant. Beaver are abundant due to the willow (Salix spp.) in the burn, and mink are increasing steadily. Wolverine and ermine are common.

The 5-year-old higher elevation burn is, by comparison, unproductive for wildlife; all species of furbearers are rare. Mr. Straub observed that regeneration has been slow in this burn and cover is not yet sufficient to support furbearers or their prey.

Trappers in the Fort Yukon area have observed fairly rapid development of furbearer populations on burns with the development of small mammal, marten, and fox populations preceding the development of lynx and hare populations. Regardless of their origin, grassy habitats seem to support the highest populations of marten and foxes in the area, while lynx are most abundant in and around mixed stands of willow (Salix spp.), birch, aspen, and spruce where hares are most common. As in other areas, there appears to be wide variation in the rate of habitat development in burns. While the long-term beneficial effects of fire are appreciated, some trappers mentioned that fires are often a hindrance in the short term because downed timber causes problems in trail maintenance.

Species Summaries

The following summaries bring together the available information regarding the effects of fire on each furbearer species with special attention given to the time usually required for at least moderately dense populations to become reestablished. In evaluating the information about each species, we have not considered areas where that particular furbearer is largely absent regardless of habitat.

Lynx:

Trappers' reports strongly indicate that lynx do not become widespread in burns until at least 15 years have passed. In burns less than 15 years old, reports indicate that, with 1 exception, lynx were largely restricted to areas in and around unburned inclusions, burn edges, and creeks where vegetation often remains unburned or regenerates rapidly. The 1 exception appears to be the Alatna burn where lynx were abundant 5-12 years after the fire. In addition, lynx began to repopulate the Cosna burn within 6 years. In 6 of 7 burns 24-50 years old, lynx were present in at least fair numbers. In the 24-year-old Chena Dome burn, lynx are still not common, although this could be due in part to the relatively low numbers of lynx in the Fairbanks area in general. Notable is the steady development of sizable lynx populations to recent highs in 27- and 32-year-old burns in the Fort Yukon area. In the 27-year-old burn, the population began developing 16 years after the fire. In the 32-year-old burn, lynx were fairly abundant somewhat earlier, although the most recent high, which developed since the burn was about 25 years old, has been more sustained than earlier ones (F. Thomas, pers. observ.).

Based on winter tracking and radio-telemetry studies in Nova Scotia, Canada, Parker et al. (1983) concluded that lynx selected for regenerating mixed forest habitats approximately 20 years following logging. These habitats were also optimal for snowshoe hares.

The prevalence of negative comments regarding the value of fire to lynx is due in large part to the relatively young age of most of the burns about which we obtained information. Many trappers noted that lynx show an aversion to large expanses of open habitat and think this accounts in part for the general rarity of lynx in recent burns. More important, perhaps, is that adequate winter cover for snowshoe hares is rarely present until shrubs and tree saplings develop significantly, which usually occurs 6-25 years after a fire (Foote 1979). The presence of adequate cover for lynx appears to largely coincide with the development of suitable winter cover for snowshoe hares.

The drastic cyclic fluctuations that characterize lynx and hare populations strongly influence the rate at which various burns are repopulated. For instance, the presently low or declining status of hare and lynx populations in most of the Interior will result in slow population development in burns that become suitable habitat during the next few years. On the other hand, because hares will use relatively open habitat during population highs (Wolff 1977), a burn that develops into even marginal habitat during a high may temporarily support considerable numbers of hares and thus lynx.

Another assessment of the effect of fires on lynx can be made by considering the fire history and habitat in what is generally regarded as some of the Interior's best lynx habitat. The northeastern part of the Interior (Game Management Unit 25), including the Porcupine, Black, and upper Yukon drainages, yields from 17-35% of the lynx harvested annually in Alaska (unpubl. data, Department files) even though the number of trappers is not The combination of low precipitation and high summer excessive. temperature in this area creates the most extreme fire climate in the state (Trigg 1971). Yarie (1981) studied fire periodicity in this area and determined a fire cycle (the time period required to burn an area equivalent to the area under study) of 43 years for the entire area. For individual forest types, the cycle was 113 years for white spruce, 36 years for black spruce, and 26 years for hardwoods.

The short fire cycle in the Black River area has created habitat comprised of a high proportion of shrubs and hardwoods compared to areas to the south where fire suppression has been effective for a longer period. A visit to the Thomas trapline on the Black River in March 1983 revealed an abundance of willow, birch, and aspen and the extraordinary habitat diversity in this region. The abundance of early and middle successional stages mixed with mature stands of both black and white spruce is probably the

major factor accounting for the region's relatively dense and widespread lynx population. Both harvest records and trappers' comments indicate that lynx in this area reach higher densities and maintain these high densities for a longer time than in other areas. Yarie (1981) determined that the current fire cycle in the Porcupine area has been lengthened to 93 years by 20 years of fire suppression, and predicts that continued suppression will have substantial effects on habitat. In other parts of the State, cycles of 100-200 years are common with the longer cycles being typical of Western and Southwestern Alaska (Viereck and Schandelmeier 1980).

In the Tanana River basin, Welbourn (1983) showed that the fire cycle has been lengthened from 100-110 years to about 300 years by 40 years of fire suppression. A tangible result has been a decrease in nonforest habitat due to the lowered occurrence of habitat in the early stages of succession (less than 15 years postfire). In the long term, the lower incidence of fire will lead to an increasing predominance of spruce and mixed spruce-hardwood forest. Burris (1971) surmised that fire control could adversely affect lynx by permitting forest maturation with a consequent reduction in snowshoe hare habitat.

Marten:

The information gained from trappers indicates that in regions where marten populations are well established, they often make extensive use of burns as soon as 1-3 years after a fire. Dense populations were reported in several burns as early as 3-5 years postfire. In other burn areas, high populations did not develop for 6-10 years. In a few cases, dense marten populations occurred several miles from unburned habitat, but most trappers found marten to be most abundant near inclusions and along burn edges. With the exception of some trappers in the Galena area, most thought that burns were usually beneficial to marten, supporting higher densities than unburned habitat adjacent to However, burns were not always regarded as being burns. necessary to provide good habitat. Trappers in the Fortymile area were uniform in acknowledging the good marten habitat in recent burns, but were also careful to point out that alpine-fringe plant communities and lowlands with extensive sedge meadows often support marten densities equal to or higher than those reached in burns.

Virtually all trappers reporting high densities of marten in burns cited the relative abundance of voles, which commonly results from the dense herbaceous plant cover, as the major reason for the abundance of marten. Several also noted that birds of prey were often common in recent burns. Some trappers added that marten also benefited from an abundance of berries, while others observed that extensive amounts of downed timber in burns provided valuable cover for small mammals and, in association with increased herbaceous growth, contributed to the growth of small mammal populations.

Although marten are capable of using a variety of foods including small mammals, birds, insects, and fruits, all food habits studies to date indicate that small mammals, primarily microtine rodents, are the staple food in all seasons but are most directly important in winter. The abundance of marten is associated with the abundance of small mammals, especially red-backed voles and members of the genus Microtus (Strickland et The overwhelming importance of microtine rodents in al. 1982). the marten diet is contrary to the popular notion that red squirrels are their staple food and that marten are, therefore, dependent on climax coniferous forest. However, food habits studies in Alaska (Lensink et al. 1955; S. Buskirk and s. MacDonald, unpubl. manuscript), British Columbia (Quick 1955), Alberta (Cowan and Mackay 1950), Ontario (Francis and Stephenson 1972), Montana (Weckwirth and Hawley 1962), Wyoming (Murie 1961), Idaho (Koehler and Hornocker 1977), and Maine (Soutiere 1979) are in agreement that red squirrels are not a major prey species for most North American marten.

The numerous trapper reports of microtine abundance in the early herbaceous cover in recent burns are consistent with the results of most small mammal studies in Alaska and in the boreal forest The 1st successional stage following fire in most in general. white and black spruce habitats is characterized by the development, at varying rates, of a dense cover of mosses, herbs, and tree seedlings. A detailed description of the various combinations of species is beyond the scope of this report, but predominant species commonly include horsetail (Equisetum spp.), fireweed (Epilobium angustifolium), bluejoint and grass (Calamagrostis canadensis). The herb layer begins to develop immediately after the fire and, at least on white spruce sites, increases in total coverage into the early part of the tall shrub stage that follows (Foote, pers. commun.). Berry producers, mosses, and sprouts or seedlings of various trees and shrubs can also be common.

In Interior Alaska, this relatively dense herbaceous ground cover often supports high densities of 1 or more species of rodents including red-backed, tundra, meadow (Microtus pennsylvanicus), yellow-cheeked voles and brown (Lemmus sibiricus) and and northern bog (Synaptomys borealis) lemmings (Douglas 1977; Wolfe and Lidicker 1980; West 1982; S. Buskirk and S. MacDonald, unpubl. manuscript). The rate at which voles colonize disturbed habitat is largely dependent on the speed at which herbaceous cover develops. This is controlled by many factors with drainage a primary one. In a 1971 burn north of Fairbanks, West (1982) reported that colonization on an upland site by red-backed voles was gradual over a period of 5 years, while on adjacent, wetter sites colonization was more rapid with 4 vole and 2 lemming In a study of seasonal food habits of species being present. marten in Southcentral Alaska, S. Buskirk and S. MacDonald found that herbaceous and low (unpubl. data) shrub meadow habitats supported the most diverse and abundant small mammal

populations, followed by coniferous-dominant forests and woodlands, and, lastly, by tall shrub thickets and deciduous-dominant forests. They suggest that the quality of marten habitat is directly related to the availability of meadows and other nonforested habitat which provide marten with an abundant supply of their preferred food. In a review of postfire succession of small mammal and bird communities, Fox (1983) concluded that small mammal numbers and biomass are higher in the herb stage, and lower in the shrub and sapling stages, than in mature forests. It appears that species diversity and numbers can be drastically reduced in mid-succession by the development of a uniform, dense stand of trees having little understory (Quinlan 1979, Fox 1983).

In summary, a large proportion of trappers contacted in this study suggested that marten are attracted to recent burns. The use of open habitat such as meadows and grasslands has been reported by a number of early investigators, as summarized by Hagmeier (1956). Hawley and Newby (1957) and Koehler and Hornocker (1977) noted that marten home ranges often coincide with the edges of large meadows and burns. This leads to the conclusion that small fires, and large fires with irregular perimeters, variable severity, and/or substantial amounts of unburned inclusions can be highly beneficial to marten, particularly in relatively wet areas dominated by advanced successional stages where small mammals are relatively scarce. Burns in well-drained and relatively high elevation habitat sometimes regenerate slowly and may be less beneficial.

Red Fox:

Most trappers reported that burns provided adequate or good habitat for foxes. Trappers in Eagle attributed the low densities of foxes in burns to the low fox density in the general area. Strong repopulation by foxes was reported in several burns, and there is little doubt that the characteristics that often make burns attractive to marten also apply to red fox. There were several cases in which foxes did not become abundant in a burn until a number of years after marten were well established, although this may not necessarily be related to conditions in burns.

Red foxes exist in a wide variety of habitats but prefer semi-open habitat including marshes, lake edges, and natural clearings in forests. As most trapper reports suggest, burns are generally beneficial to foxes in that they create more open and diverse habitat and provide higher populations of small mammals than are found in mature forest. Optimum habitat in burns probably occurs when the development of vegetation is sufficient to support hares as well as microtines. As for most wildlife species, burns containing unburned inclusions and/or having irregular perimeters and variable severity probably create the most desirable fox habitat.

Coyote:

Coyotes are rare in the Interior, except for the upper Tanana valley in the vicinity of Delta and Tok. These 2 populations seem to be increasing. Comments from trappers in Delta indicate that coyotes can prosper in burns and generally benefit from them.

Wolf:

Many trappers could not describe any clear effect of burns on wolf populations since these animals travel widely, use a variety of habitats, and usually occur in low numbers compared to other While no long-term negative effects attributable to species. fire were noted, a number of individuals reported that winter concentrations of moose associated with abundant browse in some burns were used extensively by wolves. A notable example is the large 42-year-old burn south of Ruby, which supported abundant moose and wolf populations for an extended period. The importance of early successional stages to moose is well known and to the extent that fires benefit moose they also benefit The effects of fire on Alaskan caribou are less clear, wolves. but an exhaustive review by Davis et al. (1978) showed that negative effects have been minimal. Although the effects of fire on caribou are unclear, it can be stated that to the extent that fires benefit moose and other potential prey (including small mammals, snowshoe hares, and beaver) and diversify habitat, they are beneficial to wolves.

Wolverine:

As with other furbearers that normally occur at low density, and in this case also use a wide variety of food resources, the effects of fire on wolverine are somewhat ambiguous. The observations of trappers suggest that while wolverines seem to large, open burns, traverse even there is no discernible difference in the levels of use in burns compared to adjacent unburned habitat. Since wolverine prey on a variety of small mammals and also scavenge extensively, especially on the remains of wolf kills, fires should have a generally positive effect on wolverine populations.

Beaver:

We obtained a limited number of comments about the effects of fire on beaver. In 4 burns (Pah River, Paddle Creek, Black River, and Alatna), trappers observed favorable increases in beaver numbers, although there are indications that 8-10 years may be required for vegetation (willows, aspen, and/or birch) to develop sufficiently. In the 4 burns mentioned, beaver appeared to reach a greater abundance than before the fire. In the Bear Creek burn near Galena, trappers observed that beaver did not reach preburn abundance until 10 years had passed.

Previous studies suggest that in terms of cover and food, fires in mature coniferous forest should have a beneficial effect on beaver which are dependent to a large degree on early stages of forest succession (Hakala 1952, Patric and Webb 1953, Murray 1961, Heinselmann 1970). Our findings are in agreement with earlier work and suggest that although 8-10 years may be required for some burns to provide good beaver habitat, fires are necessary to maintain productivity in areas where potential beaver habitat advances to coniferous forest.

Muskrat:

Trappers had few comments regarding muskrats and fire, although the comments offered indicated that, as expected, fire had little negative effect on muskrats. In the 10-year-old Pah River burn, muskrats were common within a few years after the fire. In view of the rapid regeneration of marsh and streamside habitat after fire, it would appear that any negative effects on muskrats would be short-lived, and that fire could in some cases be beneficial.

Mink:

Only a few trappers commented on mink abundance in and around burns and in most cases could not discern either negative or positive effects. However, in the Pah River and Paddle Creek burns, mink were thought to have benefited from the abundance of small mammals in these burns, and in the Cosna burn mink numbers showed little change.

Although mink are not restricted to streamside habitat, they are generally associated with it. Because these areas are to some extent buffered from fire, and since burned habitat should usually result in an increase in small mammals, fires should have minimal negative effects on mink and, as observed in a few areas, mink could benefit from them.

Otter:

There was considerable agreement among trappers that otters are largely unaffected by fire due to their strong reliance on aquatic habitat. One trapper reported that mink and otter were killed in a fire on the Nowitna River but that populations subsequently returned to normal levels.

Ermine:

Some trappers observed increases in ermine after a fire, while other trappers noted little effect. A common observation was that ermine numbers cycled rapidly and that the effects of fire were, therefore, difficult to determine. Ermine could generally be expected to benefit from fire for the same reasons as other species, including marten, fox, and mink.

Red Squirrel:

The effects of fire are perhaps least ambiguous in the case of red squirrels which, based on trappers' observations, are excluded from burned habitat for an extended period. Knowledge of revegetation patterns suggests that burns would not provide suitable habitat for squirrels until at least 25 years have passed.

The Trapper's Perspective on the Value of Fires to Furbearers

At the conclusion of each interview, trappers were asked to comment on the general value of fire to furbearers based on their experience. Most trappers provided a qualified opinion; some species were thought to benefit, while for others the effects were neutral, unknown, or detrimental. A simple categorization of opinions as either positive or negative is, therefore, not possible.

Trappers often confined specific comments on effects to 1 or more of what can be viewed simplisticly as 4 major furbearer-food associations. These include the following: microtine rodents and animals that prey on them extensively (primarily marten and foxes but also wolverine, ermine, and in some cases, mink); snowshoe hares and associated predators (primarily lynx but also red fox); beaver; and large herbivores, usually moose, and their major predator, the wolf.

To portray the positive or negative value of fire to these various components, as perceived by this sample of trappers, I classified the responses as (1) positive--indicating at least some perceived benefit, (2) neutral--indicating little apparent positive or negative effect, (3) negative--indicating a detrimental effect, and (4) unknown--indicating the trapper had not developed an opinion. This tabulation of responses did not include those cases where trappers offered no comment about 1 or more components.

This subjective classification is shown in Table 2 and indicates that, with few exceptions, the trappers we spoke with perceived a benefit to the microtine/marten-fox group. In contrast, there was a slight predominance of negative opinion regarding effects on the hare/lynx group. These results are not surprising because the sample is weighted toward relatively young burns in which the period of maximum productivity for hares and lynx has not been reached.

The comments regarding effects on beaver and the moose/wolf component were, with 1 exception, positive. The small number of opinions offered is due in part to the comparatively low trapper interest currently elicited by beavers and wolves.

Trappers in Interior Alaska generally perceive that burns have beneficial effects on most furbearers. Indications of positive effects on wildlife abundance far outweighed reports of negative effects (Table 2). Most trappers recognized the value of fires to furbearers, but several expressed reservations about their short-term desirability because downed timber and drifting snow can make access and trap maintenance difficult. However, these comments were not numerous and did not seem to be dominant considerations in the minds of trappers.

The positive effects reported by most trappers should not overshadow the fact that some fires create poor furbearer habitat that regenerates at a relatively slow rate. Examples are the Stuart Creek (Fairbanks), Shawnee Peak (Delta), and, apparently, the Fishhook fire (Fort Yukon). In addition, it appears the 314,683-acre Big Denver fire that occurred in 1969 near Manley revegetated slowly but recently began supporting moderate populations of furbearers. The reasons for the slow development of these fires is unknown, but it appears that shorter growing seasons and drier conditions on slopes at relatively high elevation lead to slower regeneration.

While the effects of individual fires are an important consideration in determining the value of fires to furbearers, regional differences in fire regime should also be evaluated. For instance, the eastern portion of Game Management Unit 25 is known for its high populations of lynx, marten, beaver, and other furbearers, yet this area has the shortest fire cycle in the State. The Galena area includes extensive wet lowlands that are sparsely vegetated. In this wetter, more open habitat, natural openings and burns are abundant compared to the hilly country in the vicinity of Eagle. This may account for the comparatively dense and widespread marten populations that characterize the Galena area and for Galena trappers placing less emphasis on the importance of fires in providing marten habitat. Since fire governs habitat diversity by reinitiating plant succession at frequent intervals and creating a successional mosaic (Fox 1978), the long-term effects of fire on furbearers are very likely manifested in regional differences in character and productivity of habitat. The foregoing examples suggest that further research on this subject would be desirable.

RECOMMENDATIONS

Future research on fire-furbearer relationships should include the following:

1. A detailed analysis of regional differences in fire cycles and their relationship to furbearer habitat quality.

- 2. An effort to better understand the conditions that result in slow regeneration in some burns.
- 3. An assessment of the effects of fire in timberline habitat which tends to regenerate slowly and may provide important marten habitat without burning.

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0-1 0	
1 - 5 5	
5-10 8	
10–15 9	
15-20 3	
20–25 3	
25-30 3	
30-35 1	
35-40 0	
40-45 2	
45-50 2	
50+ 1	

Table 1. Age distribution of 37 known-age burns in Interior Alaska about which information on furbearer populations was obtained.

	Value						
Furbearer group	Positive	Neutral	Negative	Unknown	Total comments		
Microtine/ marten-fox	41 ^a	5	4	2	52		
Hare/lynx	16 ^b	4	22 ^C	0	42		
Beaver	8				8		
Moose/wolf	5	0	1	0	6		

Table 2. Summary of trappers' opinions regarding the value of fire to furbearers in Interior Alaska.

^a In addition, 4 trappers who did not trap on recent burns thought fires had a positive value to this group.

Includes 5 cases in which hares responded positively to a burn but were not exploited to a large degree by lynx.

^C Three trappers not using burns also thought that fires had a negative value to lynx.

b

ate:		Place of Interview:
	Trapp	per's name
	1.	Fire:
		a. Fire no.:
		b. Fire name:
		c. Date of burn:
		d. Location:
		e Size:
	2	Location of tranline (attach man):
	2. 2	Trapline length:
	J. 1	Transportation:
		Current owner(c) of land.
	J. c	Number of years transport yead area before and after
	0.	fire:
	7.	Furbearers sought and length of time spent trapping
·		each species:
		and a second
•	Fire	characteristics
	1.	Intensity and severity of fire (USFS forest floor
	· · · · ·	severity classes):
	2.	Occurrence of unburned inclusions (small, medium, large):
	з.	Erosion:
	4.	General effect of fire on snow conditions (drifting and
		its effect on trails and trapping):
	5.	Effect of fire on existing trails and on cutting
		trapline trails (relative abundance of downed timber):
	6.	Use of firebreaks as trails:
•	Veget	tation
	1.	Vegetation before and after fire
		Before Fire After Fire
		(yr. 1, 2, 3, etc.)
		a. Evergreen trees
		b. Deciduous trees
		c. Shrubs
		d. Berry/fruit producers
		e. Herbaceous plants
		f. Mosses and lichens
	2.	Present stage of succession in burn (Foote's 1979 stages
		in revegetation after fire):
	3.	Length of time each stage of succession lasted:
	4.	Means by which various plants are regenerating
		(vegetative or seed dispersal):
	5.	Rate of revegetation relative to topography. aspect.

.

.....

-

E

l :

D. Abundance of prey and other foods

Before Fire	Afte	r F	ire		
	(yr.	1,	2,	З,	etc.)

- 1. Voles
- 2. Hares
- 3. Grouse
- 4. Ptarmigan
- 5. Red squirrels
- 6. Moose
- 7. Caribou
- 8. Fish
- 9. Berries

E. Furbearer abundance

1. Abundance before and after fire

Before Fire After Fire

(yr. 1, 2, 3, etc.)

- a. Lynx
- b. Marten
- c. Red foxes
- d. Wolves
- e. Coyotes
- f. Wolverines
- q. Beavers
- h. Muskrats
- i. Mink
- j. Otters
- k. Ermine
- 1. Squirrels
- 2. Is there a definite connection between lynx and hare abundance?
- 3. Are various furbearers abundant in localized areas?
- 4. As vegetation developed after the fire, how did the distribution of various furbearers change?

F. Trapper's general impression of the value of fire to furbearers and its effect on harvest

Appendix B. Summaries of individual trapper interviews.

No. 1

Area: Tok Fire Name/Number: West Fork/Y-34 Informant: John Zabielski
Date of Burn:7-23-66 Age in 1982:16
Size (Acres/mi ²): 205,000/320 Fire Severity: light to moderate
Occurrence of Inclusions: common
General Description of Burn:
This fire burned mainly black spruce and spruce regrowth is visible. Aspen and
scattered willows are also coming in. The highest densities of grass and shrub
are found on bulldozer trails on mineral soil.
Trapper Experience:
Mr. Zabielski began trapping this area in 1975, primarily for marten.
Comments on Wildlife Abundance:
Voles, especially Microtus sp., are abundant in the burn. Snowshoe bares are
presently not any more abundant than in unburned areas Grouse and ptarmigan
are abundant above treeline. There are no red squirrels, and moose have not
increased in the hurn Berries are more common than in adjacent unhurnod areas
increased in the bain. Berries are more common than in adjacent unbarned areas
Twnx use unburned areas along creeks but are not abundant About 6 are caught
each year in a few small areas. There are often long stretches of trail without
any luny tracke
any tyna cracks.
Marten are generally attracted to the burn because of the high number of veloc
and are often found on hilltong where ptarmigan and charp-tailed groups
(Podiococtos phasianollus) are most common. Marten numbers remained high from
at loast 1975-90
at least 1979-00.
The hurn supports for force event for unhurned evens there there are fairly
The burn supports few foxes except for unburned areas where they are fairly
common. wolves pass through the burn only once of twice each winter. There are
no coyoles, beaver, muskrat, mink, or otter but there are some wolverine in the
Durn.

Mr. Zabielski concludes that the burn was beneficial for marten while not benefiting lynx or foxes. He thinks unburned inclusions provide the best furbearer habitat and that another burn in the area would be undesirable at this stage.

No.____

Area: Tok Fire Name/Number: Cement Creek/Y-33 Informant: Danny Grangaard
Date of Burn: $7-23-66$ Age in 1982: 16
Size (Acres/mi): 26,000/41 Fire Severity: 11ght to heavy
Occurrence of Inclusions: common
General Description of Burn:
The Y-33 fire, in the upper Ladue River, burned in spruce with highly variable
severity, leaving many areas unburned. Aspen and birch are coming in rapidly on
south slopes.
Trapper experience:
Mr. Grangaard trapped in the area from 1969-75 during the entire season on a
10-12 mile trapline.
Comments on Wildlife Abundance:
Voles became abundant in grassy areas resulting from the burn. There are some
moose on the burn in the fall but density is not high.
The burn has not yet reached the stage where it might produce good numbers of
lynx and only low numbers have been found in the burn to date.
Marten began using the area 3 years after the fire and numbers were high from
1969-71 due to an abundance of voles.
The burn occurred in hilly country and although numbers were fairly high, foxes
did not achieve densities as high as those observed on flatter, marshy areas to
the south (Northway Flats).
Wolves frequently travel the firebreaks left from firefighting activity.
The aspen and birch on south slopes have provided good food for beaver. Mink
and otter are scarce.
Mr. Grangaard thinks that burns create excellent habitat for marten by providing
good small mammal habitat. He has not found recent burns to be very attractive
to lynx. Red foxes reach good densities in some burns but numbers do not reach
the levels observed in extensive marshes.
E

Cement Creek/1-35
Area: Tok Fire Name/Number: Ladue River/9446 Informant: Terry Brigner
Date of Burn: 7-23-66/6-15-69 Age in 1982: 16/13
Size (Acres/mi ²): 26,000/41 and 9400/147 Fire Severity: moderate/moderate
Occurrence of Inclusions: medium/medium
General Description of Burn:
This fire occurred in spruce and burned primarily along the hillsides due to the open areas between the hillsides and the waterways. Riparian habitat was largely unburned and the fire left unburned inclusions of all shapes and sizes in the hills. Downed timber is now rotten. A few spruce are coming up as is a small amount of birch and aspen. On slopes back away from the main river there is sparse regrowth and these areas are still blackened. South slopes have revegetated most rapidly.
Trapper experience:
Mr. Brigner has trapped in the area since 1973 on a 169-mile trail, primarily for lynx, marten, wolves, foxes, and wolverines. The area was trapped very lightly if at all between 1940 and 1973.
Comments on Wildlife Abundance: Voles were "enormously abundant" 4 years ago (1978) but have since declined following a crash in 1979-80. When voles were abundant bait could not be used for traps because of the interference from voles. Gray jays (<u>Perisoreus</u> <u>canadensis</u>) were also abundant during this time. Hares have declined since 1981-82 and are now found in pockets. Grouse and ptarmigan have also declined; 2-3 flocks of sharp-tailed grouse are seen each winter. Red squirrels are abundant in green timber but have declined somewhat.
Moose numbers are the same as they were 7 years ago and the burn is used regularly by caribou during winter.
Blackberries and cranberries are abundant in unburned areas while their occurrence in burned areas is unknown.
Lynx show a strong preference for unburned habitat and lynx tracks are rarely seen in burned areas. Lynx numbers have been low since 1976 and snowshoe hares crashed in 1974. Although lynx have increased somewhat since 1980, hares have increased only slightly in pockets. Lynx and concentrations of snowshoe hares are found most consistently near willows along rivers which are maintained at a height of 4-6 feet by moose.

Marten numbers were relatively stable at a moderate level until 1982-83 when they declined somewhat. Marten are most abundant in unburned timber but are sometimes very abundant along the edge of burned areas. They do not seem to use large burned areas very much.

Fox numbers are relatively stable at a moderate level although fur quality has declined. Foxes do not seem to be partial to burns but will spend considerable time in them.

Wolf pack size has declined from 10-15 to 1-4, possibly due to the decline in moose since the 1960's. Coyotes are increasing but are still scarce compared to the upper Tanana Valley to the south.

Wolverine were abundant until 3 years ago when numbers began to decline.

Beaver are common but muskrats are very scarce. Otter are scarce as are mink. Ermine were more abundant 6 years ago but have declined.

Mr. Brigner believes that although burns are ultimately beneficial to furbearers, it takes a considerable length of time for benefits to be realized. In the short term, burns can be a hindrance due to downed timber, log jams, and loss of habitat.

 Area: Tok
 Fire Name/Number: Cement Creek/Y-33
 Informant: Willard Grammont

 Date
 of Burn: 7-23-66
 Age in 1982: 16

 Size
 (Acres/mi²): 26,000/41
 Fire Severity: light to heavy

 Occurrence of Inclusions: common
 General Description of Burn:

 See
 Interview Number 2 (Grangaard)

No.

4

Trapper Experience: Mr. Grammont has trapped in the area since 1975 for marten, lynx, and wolves.

In some years he covers 150 miles of trail and usually traps throughout the season.

Comments on Wildlife Abundance: Voles are known to be abundant in marshy areas and marten feed extensively on them.

Moose are common in fall and early winter.

Lynx are common along the edge of the burn but also wander out into the burn.

Marten are numerous in the Cement Creek burn and feed extensively on voles at low elevation in marshes, and are also found at high elevation where the abundance of voles is unknown.

Foxes are common but not numerous, and mink and otter are rare. Wolves are common.

Mr. Grammont believes the burn was strongly beneficial for marten and that lynx are also now doing well in the burn. Lynx are most abundant along the burn edge which is also the most productive area for other furbearers. The burn provides good winter habitat for moose. Area: Tok Fire Name/Number: Canadian/Y-46 Informant: Bill Simmons Date of Burn: 8-25-66 Age in 1982: 16 Size (Acres/mi^{*}): 250,000/390 Fire Severity: unknown Occurrence of Inclusions: unknown but some are present General Description of Burn: The fire burned primarily black spruce. Few spruce are currently found in the burn while aspen are regenerating rapidly. Shrubs are also coming in but are still too sparse to provide good cover for wildlife. There are many berries (especially blueberries) and herbs revegetating the burn. Trapper Experience: Mr. Simmons has hunted and traveled in the area since 1953 and began trapping in 1969, primarily for lynx, fox, and wolves on a 150-mile trapline. He does not trap for marten. Comments on Wildlife Abundance: Mr. Simmons had few comments relating to prey abundance. He reports that lynx numbers are low in the burn and attributes this largely to the fact that they avoid large open areas. The burn supports large numbers of foxes which do not hesitate to cross open areas. There are no coyotes in the area. There are some beaver, but muskrat, mink, and otter are rare. Mr. Simmons sees a definite connection between lynx numbers and the abundance of snowshoe hares, with lynx numbers lagging 1 or 2 years behind peaks in hare numbers. Furbearer activity seems to be greatest along rivers and creeks in islands of unburned timber, and along the edge of the burn. Mr. Simmons thinks that fire is good only for fox and marten while being bad for lynx.

5

No.

Area: Eagle Fire Name/Number: Bu	tte Creek/9430	Informant: Danna Ulvi
Date of Burn: §-10-69	Age in 1982: 13	
Size (Acres/mi ²): 525,000/820	Fire Severity:	light to heavy
Occurrence of Inclusions: scarce		
General Description of Burn:		
This large burn occurred in black	corruge and was of	Evariable coverity Wet

This large burn occurred in black spruce and was of variable severity. Wet areas went unburned and the severity of burning was patchy. The area has been revegetated by moderate densities of willow and small spruce are now present. There are dense growths of grasses, especially above timberline, and berries are abundant.

Trapper Experience:

Mr. Ulvi began trapping in 1980, primarily for marten in November and December, on a 100-mile trapline in the vicinity of Strawberry Dome on Washington Creek, 10 miles south of the Yukon River.

Comments on Wildlife Abundance:

Voles are abundant in the burn, especially above timberline. As a result, marten are abundant as are boreal (<u>Aegolius funereus</u>), great horned (<u>Bubo</u> <u>virginianus</u>), and great gray owls (<u>Strix nebulosa</u>). Although there are few unburned inclusions, marten are abundant in the interior of the burn, not just along the edge. Mr. Ulvi thinks this is in contrast to other areas in this and other burns, where trappers find marten more abundant along the edges of burns, rather than in large open areas.

Very few lynx use the area, and while foxes are increasing, they are still relatively uncommon and coyotes are very rare. Wolverine and mink are uncommon. There are no beaver or otter and few muskrats. The burn provides good winter moose range and is also used by caribou.

Mr. Ulvi believes that burns are beneficial to marten and other carnivores that prey extensively on voles.

Area: Eagle Fire Name/Number: Butte Creek/9430 Informant:	John Ostrander
Date of Burn: 6-10-69 Age in 1982: 13	· · · · · · · · · · · · · · · · · · ·
Size (Acres/mi ²): 525,000/820 Fire Severity: light to heavy	7
Occurrence of Inclusions: scarce	
General Description of Burn:	
This large burn occurred primarily in spruce forest. Although the inclusions, severity was variable from area to area. The burn is revegetated by shrubs; no regrowth by conifers has been noted. He abundant and there are extensive stands of grass.	ne fire left few s currently Berries are
Trapper Experience: Mr. Ostrander has trapped for 10 years, primarily for marten duri midwinter. His trapline extends up the Seventymile River to the area.	ing early and Ruby Creek
Comments on Wildlife Abundance: Voles are abundant in the Butte Creek burn in the vicinity of Mr. trapline and the area supports a high population of marten, at le In his experience marten consistently exist at higher densities i in adjacent, more mature habitat. He attributes this to the abun which allow marten to be generally abundant with exceptionally his certain areas.	. Ostrander's east in winter. in the burn than ndant voles igh densities in
Other furbearers do not generally exist at exceptionally high der Eagle area. Lynx and hares were at a peak in 1970-71 but have be since 1975-76. Red foxes are not common; only 3 were caught in a winters and none in the previous 8. Wolverines are common but no the burn. Red squirrels are rare in the burn while being common areas around Eagle.	nsities in the een very scarce the last 2 ot abundant in in unburned
Mr Ostrander believes the burn has been beneficial to marten due	a to the

increased populations of voles.

•

Date of Burn: 6-1	0-69	Butte Creek/9 Age in 19	430 82: <u>13</u>	Informant: <u>Ste</u>	eve Hamilto	on
Size (Acres/mi ²):	525,000/820	Fire Sev	erity: lig	ht to heavy		
Occurrence of Inc	lusions: scarc	e			• • •	
General Descripti	on of Burn:		- Destates Obs		• • • • • • •	
trannod is a 36 m	s probably par	t of the larg	e Butte Cr	eek durn and t	ne area	20
burn is comprised	of dense pate	hes of down t	imber, wil	lows, and gras	s and is	16
currently in the	herbaceous-vou	ng shrub staq	e	tons, and grad	<i>b</i> una 10	
· · · · · · · · · · · · · · · · · · ·	1	<u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u>				
Trapper Experienc	e:					
Mr. Hamilton trap	ped marten in	the area in 1	977-78.			
		•	e de la composición de			
Comments on Wildl	ife Abundance:					
voles are abundan	t in the burn	and as a resu	It the bur	n supports a d	lense marte	en
abundant on the f	lats north of	the hills in t	which the	hurn is locate	are are	
abundance on one i	racs north or	cue mario in	WILLOII CIIC	Durn 13 rocuce	su.	
Foxes and wolveri	nes are uncomm	on in the gen	eral area.	Beaver, otte	er, and min	nk
Foxes and wolveri are rare and musk	nes are uncomm rats are nonex	on in the gen istent.	eral area.	Beaver, otte	er, and min	nk
Foxes and wolveri are rare and musk	nes are uncomm rats are nonex	on in the gen istent.	eral area.	Beaver, otte	er, and min	nk
Foxes and wolveri are rare and musk Mr. Hamilton beli	nes are uncomm rats are nonex eves burns are	on in the gen istent. beneficial t	eral area. o marten d	Beaver, otte	er, and min ge microtin	nk ne
Foxes and wolveri are rare and musk Mr. Hamilton beli populations assoc	nes are uncomm rats are nonex eves burns are iated with the	on in the gen istent. beneficial t invading her	eral area. o marten d baceous co	Beaver, otte ue to the larg ver. He would	er, and min ge microtin d welcome	nk ne
Foxes and wolveri are rare and musk Mr. Hamilton beli populations assoc additional burns	nes are uncomm rats are nonex eves burns are iated with the in the area.	on in the gen istent. beneficial t invading her	eral area. o marten d baceous co	Beaver, otte ue to the larg ver. He would	er, and min ge microtin d welcome	nk
Foxes and wolveri are rare and musk Mr. Hamilton beli populations assoc additional burns	nes are uncomm rats are nonex eves burns are iated with the in the area.	on in the gen istent. beneficial t invading her	eral area. o marten d baceous co	Beaver, otte ue to the larg ver. He would	er, and min ge microtin d welcome	nk
Foxes and wolveri are rare and musk Mr. Hamilton beli populations assoc additional burns	nes are uncomm rats are nonex eves burns are iated with the in the area.	on in the gen istent. beneficial t invading her	eral area. o marten d baceous co	Beaver, otte ue to the larg ver. He would	er, and min ge microtin d welcome	nk ne
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Foxes and wolveri are rare and musk Mr. Hamilton beli populations assoc additional burns	nes are uncomm rats are nonex eves burns are iated with the in the area.	on in the gen istent. beneficial t invading her	eral area. o marten d baceous co	Beaver, otte ue to the larg ver. He would	er, and min ge microtin d welcome	nk
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Foxes and wolveri are rare and musk Mr. Hamilton beli populations assoc additional burns	nes are uncomm rats are nonex eves burns are iated with the in the area.	on in the gen istent. beneficial t invading her	eral area. o marten d baceous co	Beaver, otte ue to the larg ver. He would	er, and min ge microtin d welcome	ne

Area: Eagle Fire Name/Number: But	te Creek/9430 Informant: George Moore
Date of Burn: 6-10-69	Age in 1982: 13
Size (Acres/mi ²): 525,000/820	Fire Severity: light to heavy
Occurrence of Inclusions: small	
General Description of Burn:	
See interviews with Danna Ulvi and	John Ostrander of Eagle for details.
Trapper Experience:	

Mr. Moore does not trap in the burn but is familiar with a trapper who uses the western end of the burn near Bonanza Creek on the Charley River.

Comments on Wildlife Abundance: Mr. Moore reports that the western end of the burn supports a very dense marten population.

Area: Eagle Fi	re Name/Number: None	Informant:	Mike	Potts
Date of Burn:	Age in 1982:			
Size (Acres/mi ²):	Fire Severity:			
Occurrence of Inclusio	ons:		•	
General Description o:	f Burn:			

The area is characterized by spruce, birch, and dense riparian willow in valleys with dwarf birch, willow, and small spruce at high elevation. Berries are moderately abundant.

Trapper Experience:

Although Mr. Potts does not trap on a recent burn, he has trapped during 11 of the last 14 years in the Eureka Creek-Happy New Year Creek area, primarily for marten in November and December.

Comments on Wildlife Abundance:

Large voles are abundant in grassy areas (Eriophorum sp. tussocks) along creeks and are also found at timberline. Hare numbers have been down during the last couple of years. The area consistently supports the greatest concentration of moose in the Eagle area due to the wide valleys and abundant riparian willow. There are several moose mineral licks in the area.

The area is good marten habitat although populations fluctuate considerably. Marten are usually most abundant along creeks where <u>Eriophorum</u> tussocks are common, and to a lesser extent, above timberline in grassy areas. When the marten population is high, they are found in all habitat types. During 1977 a large number of marten migrated through the area.

Lynx are not abundant and foxes are uncommon as are wolverine, beaver, muskrat, and mink. Both coyotes and otter are absent from the area.

Mr. Potts believes that although fires are generally beneficial to marten, unburned areas can also provide good marten habitat. The low abundance of lynx, foxes, and most other furbearers makes it difficult to evaluate the effect of fires on these species.

Area:	Eagle	Fire Name/Numb	per: None	Informant:	Bill Goebel
Date	of Burn:		Age in 1982:		
Size	(Acres/mi ²):		Fire Severity:		
Occur	rence of Incl	usions:			· · · · · · · · · · · · · · · · · · ·
Gener	al Descriptio	n of Burn:			

Trapper Experience:

Mr. Goebel does not trap on a recent burn but offered a number of comments about furbearer distribution. He has trapped for 3 years on an 80-mile line on upper Slate Creek, primarily for marten in November and December.

Comments on Wildlife Abundance:

The best marten habitat on Mr. Goebel's trapline is located above 2,800 ft elevation where spruce trees become sparse and alpine vegetation begins. Marten appear to be feeding on large voles (probably <u>Microtus oeconomus</u> or <u>pennsylvanicus</u>) that inhabit these areas. Mr. Goebel, as well as other trappers in Eagle and Tok, report that marten sometimes "migrate" in large numbers through certain areas. According to some trappers in Eagle, old-timers in the area report that marten catches were formerly lower than at present. Lynx are not common but a few are caught each year and Mr. Goebel has seen a definite connection between lynx and hare abundance.

Wolverine are not common and the Slate Creek area supports few foxes, beaver, muskrat, or otter. Coyotes and mink are absent. The habitat along Slate Creek is good winter habitat for moose.

Mr. Goebel believes that while burns generally provide good marten habitat, alpine fringe areas provide habitat that is as good or better.

Area: Eagle Fire Name/Nu	mber: None	Informant	: Jerry Nelson
Date of Burn:	Age in 1982:		
Size (Acres/mi ²):	Fire Severity:		
Occurrence of Inclusions:		and a state of the	· · · · · · · · · · · · · · · · · · ·
General Description of Burn:			

Trapper Experience:

Mr. Nelson does not trap on a recent burn but offered the following comments regarding marten distribution and the effects of fires. He traps south of Eagle in the Dome Creek-Liberty Creek area and along the Taylor Highway to Fortymile bridge.

Comments on Wildlife Abundance:

Mr. Nelson catches good numbers of marten, primarily above timberline in areas with relatively dense grass, small spruce, and willows. Voles are abundant in these areas, as are berries. Mr. Nelson believes that recent burns often result in good marten habitat but that "unburned" areas can also provide excellent habitat.

Area: Delta Fire Name/Number: Donnelly Dome Informant: Floyd Weaver
Date of Burn: 1981 Age in 1982: 2
Size (Acres/mi ⁻): 19,200/30 Fire Severity: moderate
Occurrence of Inclusions: rare
General Description of Burn:
This fire moved rapidly through extensive grassland and stands of white spruce and aspen. Most of the area is vegetated by grasses which became common after
the fire. Spruce and willow regrowth is about 30 inches high and young aspen is
common around Bolio Lake. Blueberries and cranberries were common before the fire and some survived.
and the second
Trapper Experience:
Mr. Weaver has trapped in the area since 1971. 10 years before the fire.
Comments on Wildlife Abundance:
Hares were abundant prior to the burn but have since been absent. Both spruce
and ruffed grouse (Bonasa umbellus) are found in some areas, and ptarmigan, although present, occur in much lower numbers than several years prior to the burn. Moose are common and bison use grassy areas in the burn.
Marton are abcent in this and surrounding areas and have been for some time and
lynx are rare due to the lack of snowshoe hares.
Red fox were plentiful in the area 2 years after the fire and, like coyotes, have been common for several years, especially in grassy areas.
Beaver have largely deserted the burn, which killed most aspen. The fire had no discernible effects on the generally low density populations of wolverine, muskrat, and mink.
Mr. Weaver sees the clearest effects of the burn as being the positive effect on
voles, and, hence, foxes and coyotes, and the negative effect on hares and lynx. He notes that agricultural development has also benefited foxes and coyotes.

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Date of Burn: 1960	<u>Age in 1982:</u>	22			
Size (Acres/mi): 30,720/48	Fire Severity	: unkno	own	· .	
Occurrence of Inclusions: rare	an Tha an an An San Ann an An	· · · · · · · · · · · · · · · · · · ·			
General Description of Burn:	Ma a 22 a 44				
rew comments were offered by Mr.	weaver.				
Trapper Experience:					
				1. 11.	
Comments on Wildlife Abundance:					
Few comments were made by Mr. We	aver except that	foxes	have been	common	in
grassy areas for several years.					
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Area: Delta Fire Name/Number: Barley Project Fires Informant: Dean Cummings
Date of Burn(s): 1980 and 1981 Age in 1982: 2 to 3
Size (Acres/mi ²): several thousand acres Fire Severity: variable
Occurrence of Inclusions: variable
General Description of Burn:
Fires adjacent to the barley project burned primarily black spruce and ranged
from light to heavy in severity. Most fire-killed timber is still standing, and
dense grass has occupied most areas with some areas presently in the
herbaceous-young shrub stage.
Trapper Experience:
Mr. Cummings trapped in the vicinity of the barley project for several years
before the fires.

Comments on Wildlife Abundance:

As a result of extensive stands of grass that invaded much of the burned area around the barley project, voles have increased and support dense fox populations. Coyotes are becoming increasingly abundant in the Delta area while lynx have continued to be scarce and marten are still absent.

Area: Delta Fire Name/Number:	None	e	Informant:	Hubert	Sager	Sr.
Date of Burn:	Age	in 1982:	· · · · · · · · · · · · · · · · · · ·			
Size (Acres/mi ²):	Fire	Severity:	•			
Occurrence of Inclusions:	·		· · · · ·	•	•	
General Description of Burn:						

Trapper Experience:

Mr. Sager has trapped in the Delta area since 1975 and offered some general comments about fire and furbearers. He traps primarily red fox in early winter and for lynx when numbers are high. He is familiar with burns in the Gerstle River area and in the Molybdenum Hills.

Comments on Wildlife Abundance:

Mr. Sager has noticed a definite connection between the abundance of grasses and voles in the early successional stages after fires and red fox numbers. The abundant food appears to stimulate fox production.

On the burns with which Mr. Sager is familiar, lynx do not seem to be any more or less common than in surrounding areas, although they travel through burns more directly. He has noticed no significant effects on a number of furbearers that are generally scarce in the Delta area including marten, wolverine, beaver, muskrat, and mink. He also observed that red squirrels are generally scarce in recent burns.

Area: Delta Fire Name/Number: Gerstle River Informant: Charlie Champaine
Date of Burn: 1970 or 71 Age in 1982: 11 to 12
Size (Acres/mi ²): Fire Severity: unknown
Occurrence of Inclusions:
General Description of Burn:
This was a hot fire but its severity is unknown as is the pre-burn vegetation.
The area has been revegetated variously by spruce, aspen, and willows, and at
low elevation by grasses.
Trapper Experience:

Charlie Champaine has conducted wildlife surveys for ADF&G since 1972.

Comments on Wildlife Abundance:

Although the occurrence of furbearers in the Gerstle burn is unknown, he notes that the area is used extensively by moose and wolves. The area provides some of the best moose hunting in the Delta area.

Area: Delta Fire Name/Number:	Shawnee Peak	Informant:	Charlie	Champaine
Date of Burn:	Age in 1982:			
Size (Acres/mi ²):	Fire Severity:	unknown		
Occurrence of Inclusions:	-			2
General Description of Burn:		······		
Located about 40 miles northeast o years ago at relatively high eleva	f Delta, the St tion (about 3,0	awnee fire oc 000 feet).	curred se	everal

Comments on Wildlife Abundance:

Charlie Champaine, who has conducted aerial surveys for ADF&G since 1972, notes that the Shawnee Peak fire has remained unproductive for wildlife. This may be due, in part, to its relatively high elevation.

Area: Fairbanks Fire Name/Number:	Sled/8668	Informant: Ted Meyer	
Date of Burn: 2-13-73	Age in 1982: 9		
Size (Acres/mi ²): 7,930/12.4	Fire Severity: hea	avy	
Occurrence of Inclusions: small			
General Description of Burn:			
Located on the southwestern Tanana	a Flats, the fire b	ourned spruce mixed with som	le
	Andre Mars malan Anne	- lidling weat such and	ھ.

aspen and birch. The fire burned into the moss layer, killing root systems, and scorched trees, leaving a few small unburned areas. The burn is presently characterized by an abundance of grasses and berries among downed timber, with some regenerative sprouting by birch and aspen, and by willow which was absent before the fire.

Trapper Experience: Mr. Meyer trapped in the burn for 7 years before and 7 years after the fire.

Comments on Wildlife Abundance:

Voles were scarce before the fire but are now abundant. Hares were also scarce before the fire and, although still scarce, are increasing slowly. Ptarmigan became more common 1-7 years after the fire but have since declined to the pre-burn level. Red squirrels have declined from abundant to scarce because of the burn, while moose have become more common, in part because of wolf management in the area.

Lynx were virtually absent before the fire and are still scarce, probably because the burn is still too open to support many hares. Marten were abundant before the fire but were scarce for 6 years after the fire. Seven years after the fire they were common however.

Red foxes, which were common before the fire, became abundant after the fire. Ermine were scarce before the fire but became abundant afterward.

Mr. Meyer believes the increase in grasses and resulting increase in microtine populations constitute a habitat improvement for marten and foxes and thought the burn had a favorable effect on furbearers.

Area: Fairbanks Fire Name/Number: 59 and/or 9439 Informant: Buck Nystrom
Date of Burn: 1957 or early 1960's Age in 1982: 25
Size (Acres/mi ²): about 46,080/72 Fire Severity: unknown
Occurrence of Inclusions: some
General Description of Burn:
Little is known about the nature of this burn on the Tanana Flats. The fire
burned spruce, as evidenced by an abundance of both down and standing-dead
spruce Large portions of the burn are covered by dense willows.

Trapper Experience: Mr. Nystrom has trapped in the area since 1965.

Comments on Wildlife Abundance:

Voles are abundant in the burn, especially in grassy areas around the many intermittent sloughs. Hares have always been fairly abundant, never reaching extremely low densities, especially in dense willows. Moose are increasing.

Lynx have declined recently, but even when they are abundant they consistently prefer unburned spruce and avoid open burned areas. Along 1 5-mile trail through open burn, Mr. Nystrom has not seen a single lynx track in 5 years. In contrast, there are nearly always lynx tracks in the last live spruce stand adjacent to the burn. Even though hares are relatively abundant in the burned areas, lynx do not appear to make use of them. Unburned spruce thickets 40-50 acres in size held lynx for only brief periods in winter 1982-83.

Foxes have always been fairly abundant but during the last 2-3 years numbers have been extremely high due to the availability of both voles and hares. However, pelt quality is poor. Coyotes are fairly common in the area.

Marten have always been present in low numbers (1 or 2 caught per year), and were especially scarce this year.

Mr. Nystrom also traps in the Little Salcha drainage and notes that compared to this hilly and more mature habitat, the Tanana Flats burn supports significantly fewer lynx and marten, but more foxes. Also, he crosses a high elevation portion of the Ninety-eight Creek burn west of the Salcha River and has observed that this area is "sterile" in terms of furbearer numbers. Although Mr. Nystrom did not generalize about the effect of burns on furbearers, it appears that the Tanana Flats burn has provided good fox habitat but that lynx and marten have not populated the burn to any extent.

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Area: Fairbanks Fire Name/Number: Blair Lakes Informant: Pete Buist
Date of Burn: $5-17-80$ Age in 1982: 2 Size (heres/mi ²), 250,000/280 Fire Severity, light to heavy
Occurrence of Inclusions: common
General Description of Burn:
This burn occurred in a mixed forest of black spruce, white spruce, tamarack,
and some hardwoods. The fire generally burned slowly, killing many trees, and
is presently in the herbaceous-young shrub stage. Aspen are resprouting as are
willow and alder, and young spruce are evident in areas where spruce formerly
firewood are ingreasing
Theweed, are increasing.
Trapper Experience:
Pete Buist has trapped in the area since fall 1980, primarily for fox and lynx.
He travels only on firebreaks and is not sure about conditions in the interior
of the burn.
Comments on Wildlife Abundance:
Voles seem to be common along equipment trails, while snowshoe hares are most
abundant outside the burn. Ptarmigan and moose are common in the burn.
· · · · · · · · · · · · · · · · · · ·
Lynx are concentrated along waterways outside the burn, as are hares, which have
been relatively abundant outside the burn during the past few years.
Marten were uncommon even before the fire and are common primarily north of the burn.
Pod for any abundant on the Manana Plate generally and even to bunt the barme
along firebreaks intensively. Wolves pass through the area every 2-3 weeks.
There are no coyotes and wolverine are scarce.
There are a few mink on the edge of the burn but most are found along creeks
outside the burn, as are otters. Red squirrels are common along the edge of the
burn.
Mr. Buist cannot yet discern any strong effects by the burn. Although foxes are common in the burn, they are abundant outside the burn as well.
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Area: Fairbanks Fire Name/Number: Chena Hot Springs Road Informant: Dave Woodward Date of Burn: about 1957 Age in 1982: About 25 years

(16-17 yrs @ time of observation
Size (Acres/mi ²): 4,480/7 Fire Severity: heavy
Occurrence of Inclusions: small
General Description of Burn:
This fire burned black spruce forest along both sides of the Chena Hot Springs Road from 23 to 26.5 mile. Aspen and balsam poplar are coming back in and
severe, blueberries are common.
Trapper Experience:
Mr. Woodward trapped on the burn in 1972-73 and 1973-74 for foxes.
Comments on Wildlife Abundance:
Mr. Woodward does not know the abundance of voles when he trapped in the area, but hares were abundant in willows, especially in 1972-73. Grouse (both spruce and ruffed) and ptarmigan were common on south slopes where berries were thickest. Squirrels were absent, while moose were common in willows north of the road.
Lynx tracks were observed in willow-covered areas where hares were most abundant and marten were found in some areas, but it is unknown how the fire affected marten numbers.
Red foxes were abundant and wolves hunted moose in the burn. Wolverine sometimes used the area, and marsh hawks (<u>Circus cyaneus</u>) and great horned owls were common.

Mr. Woodward believes the fire was beneficial to foxes and lynx (due to hare abundance) and to wolves (due to the concentration of moose).

Area: Fairbanks Fire Name/Number: Wickersham Informant: Tom McCall
Date of Burn: §-71 Age in 1982: 11
Size (Acres/mi ⁻): 15,500/24.2 Fire Severity: heavy
Occurrence of Inclusions: small
General Description of Burn:
This was a severe fire that burned down to mineral soil in some areas. Aspen and small black spruce are revegetating the burn as are willows along creeks. The fire is revegetating slowly, primarily by sprouting of aspen and willow. Blueberries are abundant and raspberries were abundant from 3-9 years after the fire but have since declined.
Trapper Experience:
Tom McCall trapped the area in 1982-83 and is familiar with extensive studies
done on vegetation in the burn by the University of Alaska.
Comments on Wildlife Abundance.
Although voles are now common, Mr. McCall thinks they were more abundant from 4-9 years after the fire. They have since declined somewhat, as have marten. Hares are scarce in the burn, at least in winter, due to its relatively open nature. Grouse and ptarmigan are generally scarce; 1 flock of sharp-tailed grouse was seen in the burn in fall 1982. Moose have become abundant in the burn during the last 2 years. Red squirrels are rare.
The fire has not yet had a beneficial effect on lynx since hares are scarce and the burn is too open to be attractive to lynx.
The effects of the burn on marten are somewhat unclear. Trappers using the area previously report that large numbers of marten were caught in the burn with the last good catch occurring in 1980-81, 9 years after the burn. Marten numbers were very low in 1982-83.

The burn supports relatively few red fox at present. There are a few ermine in the burn but no sign of wolverine, mink, or otter.

The edges of the burn seem to have the most sign of furbearer activity. Mr. McCall thinks the burn has so far had negative effects on lynx, since hares have not yet become abundant, and also on red squirrels. He is undecided about the effects on foxes and a number of other furbearers. Although marten numbers have declined, it is apparent that the Wickersham burn earlier supported good numbers of marten.

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Area: Fairbanks	Fire Name/Numbe	er: unknown	Informant:	Dave Miller
Date of Burn:	-	Age in 198	32:	· · · · · · · · · · · · · · · · · · ·
Size (Acres/mi ²): 640/1	<u>l</u>	Fire Sever	rit <mark>y:</mark>	
Occurrence of Inclusion	าร			
General Description of	Burn:			
Mr. Miller traps primar	rily for marten.	However, we	e were able t	o obtain no
information on the vege Highway, on the Tolovar	etation in this na River.	small burn u	ostream from	53 mile Elliot
Trapper Experience:				
Unknown				
Mr. Miller noted that a area, they do not appea are found primarily in red fox in the area.	although marten ar to use the bu mature spruce f	are the most arn, but insta forest in this	abundant fur ead travel al s area. Ther	bearer in the ong it. Marten e are very few
Mr. Miller's view is th	nat this small f	fire has as ye	et had no val	ue to furbearers.
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Area: Fairbanks _Fire Name/Number:	Stúart Creek Informant: Stephen Burgess
Date of Burn: 1979	Age in 1982: 3
Size (Acres/mi ²): 6,400/10	Fire Severity: light to heavy
Occurrence of Inclusions: none	
General Description of Burn:	
The Stuart Creek burn, on the Sout spruce-white spruce-birch mixed fo downed and, 3 years after the fire and some willow.	ch Fork Chena River, occurred in a black prest. About 50% of the fire-killed timber is a, vegetation is limited to patches of alder

Trapper experience: Mr. Burgess trapped in the area for 3 years before and 3 years after the fire.

Comments on Wildlife Abundance: Mr. Burgess summarized the effects of fire on wildlife as follows:

Prey	Before Fire	After Fire
voles	scarce	common
hares	abundant	scarce
grouse	common	scarce
ptarmigan	common	none
red squirrels	abundant	none
moose	scarce	abundant
caribou	none	none
fish	common	common
berries	scarce	none
Furbearer		
lynx	cyclic	scarce in burn but common near
-	-	edge and in surrounding forest
marten	abundant	none
red foxes	common	common
wolves	abundant	scarce
coyotes	scarce	scarce
wolverines	scarce	common

Except for lynx and foxes, most furbearer populations declined or dispersed somewhat, especially marten which have yet to respond to the increase in vole populations. The fire has had a largely negative effect on habitat to date. Mr. Burgess also mentioned that military bombing practice affects the distribution of furbearers.

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Area: Fairbanks Fire Name/Number: Chena Dome Informant: Norm Phillips	
Date of Burn: 7-28-58 Age in 1982: 24	
Size (Acres/mi ⁻): 50,000/78 Fire Severity: heavy	
Occurrence of Inclusions: medium	
General Description of Burn:	
This burn, roughly centered on the Twin Buttes-Sorrels Creek area in the	
northern Chena drainage, was very hot and left only a few trees standing. Th	iere
are some 1-2 acre inclusions. The fire burned black spruce and some white	

spruce along the river. The burn is still in the shrub stage and is dominated by willow and birch with a few 12-14 foot black spruce. There are some berries but cover is generally sparse. Most downed timber has rotted.

Trapper experience: Mr. Phillips has trapped in the area since 1966 for marten, lynx, wolves, and wolverine.

Comments on Wildlife Abundance:

Red-backed voles are common but their precise abundance is unknown. Hares are abundant along the edge but not in the burn, at least during winter. Both spruce and ruffed grouse use the burn but numbers are presently low, and there is no difference in numbers in and out of the burn. Ptarmigan are present but are currently at low levels. The burn provides excellent moose habitat. Berries are common and the burn apparently did not affect fish populations since grayling are still common in streams. Red squirrels are currently abundant throughout the burn.

Lynx pass directly through the burn for the most part, which seems to be too open for them. Mr. Phillips, as well as other trappers, notes that when hares crash lynx use a variety of marginal habitats as they search for food. The burn does not normally sustain any number of lynx.

Marten have increased since 1966 and peaked in 1981-82 and have since declined. They appear to feed on voles and berries and most are caught in unburned inclusions. Ermine are more common than before the fire.

Red fox are common and Mr. Phillips thinks the heavy equipment and snow machine trails attract them out into the burn. Wolves frequently use the burn and coyotes were fairly common some years ago but have since declined.

Wolverine were apparently not affected by the burn, due to their diverse diet.

The area has never supported many beaver because of the extensive overflow. There are no muskrats and few mink or otter.

Mr. Phillips thinks the burn was generally beneficial to furbearers because it provided a diversity of habitat, and thinks the benefits would have been greater if the fire had burned more of the mature white spruce along creeks which is the least productive habitat due to the sparse understory and ground cover. The fire was not beneficial to spruce grouse or red squirrels.

Area: Manley Fire Name/Number:	Moose Creek	Informan	t: Leroy Shank
Date of Burn: unknown	Age	in 1982: unkno	wn
Size (Acres/mi ²): unknown		Fire Severity	: unknown
Occurrence of Inclusions: unknown	· · · ·		
General Description of Burn:			
The fire burned both black and whit	e spruce. A	Although the ag	e of the burn is

unknown, the area has been revegetated by dense 3 to 4 foot grass with relatively few trees or shrubs coming in.

Trapper Experience:

Mr. Shank trapped 1 season after the fire from Kantishna downstream on Moose Creek through Lower Canyon, primarily for fox and marten.

Comments on Wildlife Abundance: The burn supports dense populations of <u>Microtus</u> sp. but hares are scarce due to the sparse cover. There were no grouse or ptarmigan and few moose.

The area supported few lynx (Mr. Shank reports that he has never caught a lynx in a burn), but did support high numbers of marten which were most abundant in dense grass where they were feeding on voles.

Red fox were found in the burn but were not especially abundant. The same was true of wolverine.

Red squirrels were absent from the burn.

Mr. Shank also traps in an "unburned" mature black spruce forest off the Elliot Highway where lynx are scarce but marten are abundant.

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Area: Manley Fire Name/Number: Cosna/8577 Informant: Dave Kurhajec
Date of Burn: <u>7</u> -8-75 Age in 1982: 7
Size (Acres/mi ²): 30,000/47 Fire Severity: moderate
Occurrence of Inclusions: small
General Description of Burn:
The fire burned about 80% spruce on the Cosna River. Poplar and birch were
present before the burn and the new growth from these species is more abundant
than before while there is little regeneration by spruce. Grasses and fast
growing shrubs are also much more abundant while no change in berry abundance is evident. About 15% of the area is covered by downed timber, which is most
prevalent on higher slopes due to wind.
Trapper Experience:
Mr. Kurhajec trapped in the area 1 year before the fire and has monitored
populations since the burn.
Comments on Wildlife Abundance:
Following the Cosna burn, meadow voles increased dramatically. Hares were in
the last year of a cyclic high in the winter before the burn and were absent
immediately after the burn. The first appreciable increase in snowshoe hares
occurred in 1981-82, 6 years after the fire. There has been a significant
increase in sharp-tailed grouse which were not present before the burn, but they
have declined to low levels after peak numbers were reached 2-3 years after the
fire. Most of the area was poor spruce grouse habitat (small spruce and tundra)
and numbers are still low. Ptarmigan use the area in winter and there has been
no increase in numbers. Red squirrels are rare except in the areas adjacent to
the burn. Moose became more abundant than before the fire 6-7 years after the
fire. Fish populations were apparently unaffected.
Lyny numbers were high before the fire and hares were in the last year of a high
(1974-75) By $1976-77$ lyng wore gone reapposing only in $1981-82$
(1974-75). By 1970-77 Tynk were gone, reappearing only in 1981-82.
Marten numbers were low before the burn but by the second season $(1976-77)$ after
the hurn they had reached high levels which persisted for 3 years Marten
numbers are now slowly leveling off
namberb are now browny revening orr.
Red foxes increased after the fire and were highest after 6-7 years. Wolves
were common before the burn but declined after the fire.
Ermine increased after the fire, while numbers of wolverine, mink, otter, and
beaver showed little change.
Localized effects included a greater abundance of marten along the burn edges.
Lynx became most abundant in areas where rapid growth of willow and birch
provided food and cover for hares.

Mr. Kurhajec attributes a significant increase in marten beginning 1 year after the burn to the abundance of voles that followed the invasion of the area by grasses. The increase in red fox and ermine also corresponded to the increase in voles. The effects of the burn on other furbearers appeared to be less significant.

Mr. Kurhajec concludes the burn had beneficial effects on marten, foxes, and ermine.

West Twin/8563 andArea: ManleyFire Name/Number: Wien Lake/8631Informant: William SpearDate of Burn: 6-15-76/6-22-71Age in 1982: 6 and 11Size (Acres/mi²): 64,520/64-32,000/50Fire Severity: lightOccurrence of Inclusions: unknown

General Description of Burn:

These adjacent burns south of Manley were light in severity, scorching spruce and burning the moss layer only slightly. There are thick stands of grasses and sedges and aspen and alder are dense near creeks. Willow is abundant. Spruce are regenerating by seed dispersal while deciduous species are reproducing vegetatively. Lower elevations have revegetated more rapidly than higher elevations.

Trapper Experience:

Mr. Spear has trapped in the area for 10 years since the Wien Lake fire, primarily for marten but also foxes, wolf, wolverine, and mink.

Comments on Wildlife Abundance: Meadow voles are abundant in grassy areas as are red-backed voles at higher elevations. Hares are scarce.

Lynx are absent except for an occasional immigrant. Marten were scarce 1 to 2 years after the fire but were common in year 3 and abundant from 4-10 years after the Wien Lake fire. Mr. Spear sees a definite connection between the abundance of voles and marten.

Red fox were scarce to common in years 1-7 but became abundant 8-10 years after the fire. Wolves are scarce as are wolverine and mink.

The only clear effect seen by Mr. Spear is that of vole abundance on marten and fox populations.

Area: N	Manley	Fire Name/Number:	None		Informant:	Steve O'Brien
Date of	f Burn:			Age i	in 1982:	
Size (A	Acres/mi ⁻):	· · · · · · · · · · · · · · · · · · ·		Fire Sev	verity:	
Occurre	ence of Incl	usions:				
General	l Descriptio	on of Burn:				

Trapper Experience: Traps in various burns in the Titna River-Redland Lake area.

Comments on Wildlife Abundance: This area supports good marten populations and has a variety of habitats associated with various aged burns. During 1 winter Mr. O'Brien noticed that marten were concentrated almost entirely in a burn, whereas they are usually found in spruce.

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Area: Ruby	Fire Name/Number: none	Informant:	Mark Freshwaters
Date of Burn:	Age in 1982:		
Size (Acres/mi ²):	Fire Severity:		
Occurrence of Inclu	sions:		

General Description of Burn:

Although Mr. Freshwaters does not trap on a recent burn, he has trapped for 8 years on the Nowitna River, primarily for marten, and is familiar with conditions in the Ruby area. He offered the following comments about marten habitat and fires. His trapline includes sloughs and oxbow lakes along the Nowitna River. The area is white spruce with patches of birch, alder, and willows around creeks and ponds, and black spruce in areas remote from waterways.

Trapper Experience:

Comments on Wildlife Abundance:

Mr. Freshwaters reports that in his trapping area marten are found mainly in mature white spruce along portages between ponds and sloughs. These areas are covered by dense grass but he does not know the level of vole abundance.

Lynx numbers are generally low in this area. For unknown reasons lynx are usually more abundant in adjacent areas, even though the abundance of snowshoe hares is similar.

Foxes have increased during the past few years and beaver and otter are common.

Although furbearer populations, particularly marten, are good in the relatively mature forest trapped by Mr. Freshwaters, he does think that fires can benefit furbearers. He points out that a 1958 burn trapped by Mr. Jessie Williams of Ruby is one of the most productive for marten in the Ruby area due to an abundance of voles.

Area: Ruby	Fire Name/Number:	unknown	Informant: Henry Titus
Date of Burn: 19	940	Age in 198	32: 42
Size (Acres/mi ⁻)	: unknown	Fire Sever	rity: unknown
Occurrence of In	clusions: unknown		
General Descript	ion of Burn:	·····	
Mr. Titus traps	from the mouth of the	he Nowitna u	pstream to within a few miles of
"The Loop," a ti	ail distance of abo	ut 50 miles.	Although details about the 1940

"The Loop," a trail distance of about 50 miles. Although details about the 1940 burn are not available, he noted that willows came back fast along waterways and that dense grass covered the burn shortly after the fire.

Trapper Experience:

Mr. Titus last trapped on a 1940 burn in this area in the 1950's and has trapped since the 1930's.

Comments on Wildlife Abundance:

Voles became abundant after the fire, although it is not known whether they were more abundant than before the fire, and there was a strong repopulation of the area by lynx, fox, and marten. Wolves also became abundant due to an increase in moose.

Mr. Titus thinks that otter and mink were killed by the fire although they have since regained their former numbers, with mink being abundant. Beaver populations are similar to those found prior to the fire.

Mr. Titus thinks that fires are beneficial to lynx, marten, and fox because of the abundance of voles, but that fires are not beneficial to some other furbearers such mink and otter, although these will recover from the negative effects of fire.

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Alea: Ruby r	'ire Name/Number:	unknown	Informant: Phylip Alber	ct
Date of Burn: 1959	•	Age in 1982	: 23	
Size (Acres/mi ²):	about 50,000/78	Fire Severi	ty: unknown	
Occurrence of Incl	usions: unknown		- <u></u>	<u> </u>
General Descriptio	on of Burn:			
Mr. Albert would be interviewed only briefly and we obtained few details about				
the burn or about	prev species. T	he area he us	es is about 15 miles	
east-northeast of	the mouth of the	Nowitna Rive	r	
cust northcust of		nowrend hrve	±•	
Trapper Experience	•	1		
Mr Albort bag tra	 unnad ginga tha 1	92010		
MI. AIDEIC HAS LIG	ipped since the i	9 0 5.		
Commente en Wildli	fo Thursdonnes			
Comments on Wildli	.re Abundance:			
Mr. Albert has tra	pped on the area	since before	1959. Although he catche	es many
marten and fox on	the burn, he doe	s not seem to	think the burn was benef:	icial to
either species.				
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No.<u>34</u>

Area: Ruby Fire Name/Number: unknown Informant: Albert Yrjana
Size (Acres/mi ²): about 400.000/625 Fire Severity: moderate to heavy
Occurrence of Inclusions: unknown
General Description of Burn:
This burn covered a large upland area along the Ruby-Poorman Road south of Ruby. The area supported a mixture of black spruce and white spruce prior to the burn and now, 42 years later, is again dominated by spruce. Grass and blueberries became abundant a few years after the fire, followed by deciduous trees and shrubs.
Trapper Experience:
Mr. Yrjana has trapped in the area since the 1930's.
Comments on Wildlife Abundance:
Two to 3 years after the fire, dense grasses and abundant vole populations, as well as an abundance of blueberries, allowed marten and fox populations to reach high levels. Although snowshoe hare populations cycled normally in deciduous growth following the fire, lynx never achieved any level of abundance.
Moose became abundant in the burn for a long period due to the excellent browse available, and wolves also became dense, as did black bears. Moose have declined in recent years.
Mr. Yrjana is a strong proponent of the idea that fires benefit furbearers and has testified to this effect before the Board of Game. He is convinced that burns can provide excellent habitat for marten and foxes and also for moose.

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Area: Galena Fire Name/Number: Bear Creek/9486 Informant: Hazel Strassburg
Date of Burn: 6-29-69 Age in 1982: 13
Size (Acres/mi ²): 422,000/660 Fire Severity: generally heavy
Occurrence of Inclusions: common
General Description of Burn:
This fire burned black spruce and also large areas of tussock tundra in
relatively flat topography. The fire was generally severe but only scorched
open tussock flats. The burn is now in the shrub (willow) and tree sapling
stage. Birch is the most abundant tree with black spruce now about 1-2 feet
high. Willows are dense around ponds and creeks. Grass is thick in much of the
burn but berries are just beginning to come back.
Trapper Experience:
Mrs. Strassburg has been trapping in this area since the 1930's.
Comments on Wildlife Abundance:
Microtine rodents are currently not abundant in the southern portion of the burn
but hares are common in limited areas where willows are abundant. Grouse and
ptarmigan have been low in the Galena area for a number of years and populations
in the burn are generally low.
Mrs. Strassburg believes this and other burns are beneficial to lynx because of
the creation of better habitat for hares. In the Bear Creek burn lynx are found
mainly along creeks and in unburned patches of spruce. She has not seen a clear
benefit to marten although they are common in the burn. Mink and muskrats are
scarce, while otters are common, and do not seem to be affected by fires to any
great extent. Wolverine abundance is similar both in and out of the burn.
As noted by other trappers familiar with this burn, beaver are common in the
burn, but it took about 10 years for willows to reach a point where they provide
a suitable food supply, and beaver are no more abundant than before the fire.

Mrs. Strassburg seems to think that hares and lynx, and also moose, benefited from the burn but that marten may not have benefited much if at all.

Area: Galena	Fire Name/Number:	Bear Creek/9486	Informant: Paddy Nollner
Date of Burn:	5-29-69	Age in 1982: 13	3
Size (Acres/mi): 422,000/660	Fire Severity:	generally heavy
Occurrence of :	Inclusions: common		
General Descri	ption of Burn:		
See Strassburg	interview.		

Trapper Experience: Mr. Nollner has been trapping in the area since the 1950's.

Comments on Wildlife Abundance: Mr. Nollner observes that there are not many voles or hares in the burn and grouse and ptarmigan numbers are low. Moose are increasing in the burn.

He thinks the value of the burn to lynx is questionable. Marten were present in the hills surrounding the fire before it occurred and are still there in good numbers. Thus, the effect of the fire is unclear. Foxes were not abundant before the fire but have increased steadily during the past 4 to 5 years. Wolves seem to use the area less since the fire.

Beaver have repopulated the burn only in the past 3 years. Another fire in the burn area would be detrimental to beaver at this point. Otter are abundant but mink are recovering slowly since the burn.

In general, furbearers prefer the areas along the creeks. Mr. Nollner think the fire had no effect on marten and had an undesirable effect on beaver.
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Area: Galena Fire Name/Number:	Bear Creek/9486	_Informant:	Sidney	Huntington
Date of Burn: §-29-69	Age in 1982: 13			
Size (Acres/mi ²): 422,000/660	Fire Severity: g	enerally he	avy	
Occurrence of Inclusions: common	1		_	
General Description of Burn:				
See H. Strassburg interview.				

Trapper Experience: Mr. Huntington has trapped for a variety of species since the 1920's.

Comments on Wildlife Abundance: Snowshoe hares are common where willows and black spruce exist. The abundance of voles has declined recently and grouse and ptarmigan are at low levels. Moose are common along waterways. Berries are just beginning to revegetate in the burn.

Lynx are common in willows and thick black spruce where hares are found but, as noted by other trappers in the Galena area, are now declining (very few females with kittens in 1981-82) and undertake extensive movements. Lynx do not travel in open areas in the burn but follow brushy areas along creeks.

Mr. Huntington observes that marten are attracted to burns. In winter they burrow in the snow along burn edges to find food, escape the cold, or both.

Fox numbers have increased in recent years and the burn is good fox habitat. Wolverine travel everywhere and do not favor burns over other areas.

Beaver have come back after 10 years but are no more abundant than before the fire. There are currently few muskrats, which were abundant in the 1920's and 1930's when heavy rains created many more ponds. Mink are not abundant while otters are common and not affected much by fire.

Mr. Huntington does not see that fires have any great effect on furbearers, although marten do seem to be attracted to burns.

Area: Galena	Fire Name/Number:	Bear Creek/9486	Informant:	Sanders Cleaver
Date of Burn: 6-	29-69	Age in 1982:	13	
Size (Acres/mi ²)	: 422,000/660	Fire Severity:	generally	heavy
Occurrence of Ir	clusions: common	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
General Descript	ion of Burn:			
See H. Strassbur	g interview.		• .	

Trapper Experience: Mr. Cleaver has trapped in the Galena area for many years.

Comments on Wildlife Abundance: Mr. Cleaver reports that voles are currently abundant in thick grass on the flats in the northwestern portion of the Bear Creek fire and that marten are likewise abundant. Otter are also abundant, as in the Galena area in general.

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Area: Galena	Fire Name/Number:	unknown	Informant: I	Hazel Str	assburg
Date of Burn: ,	1930's	Age in 1982:	40-50 years		
Size (Acres/mi): unknown	Fire Severit	y: unknown		
Occurrence of]	Inclusions: unknown				
General Descrip	otion of Burn:				
This burn, in t	the vicinity of Kinl	caid and Bishop	Creeks, is no	ow in the	mature
black spruce/fe	eathermoss stage.				,

Trapper Experience:

Comments on Wildlife Abundance: This area provides good marten habitat and also supports some lynx and hares. It is not clear to what extent the burn affected marten populations but the burn is apparently fairly productive.

Area: Galena	Fire Name/Number:	none	Informant:	Don Lowe	
Date of Burn:		Age in 1982	•		
Size (Acres/mi)); F	'ire Severity:			
Occurrence of In	nclusions:				
General Descript	tion of Burn:				
Mr. Lowe does no experienced traj observations.	ot trap extensively pper and careful ob	on any particoserver, and o	cular recent ffered some	burn but b pertinent	he is an

Trapper Experience:

Mr. Lowe has trapped in the Bonanza Creek area 20 miles southwest of Galena since 1966.

Comments on Wildlife Abundance:

Mr. Lowe examines the stomach contents of the furbearers he traps and reports that in unburned areas marten are feeding primarily on berries (especially blueberries) and voles at relatively high elevation. Berries are important foods even in winter. Although he is not really sure about the value of fire to most furbearers, he thinks burns can provide an abundance of voles for marten. He is aware of a small burn on Eddy Creek, near his trapline, where there is an abundance of voles.

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Area: Galena Fire	Name/Number:	Dulbi River	Informant: Colin Brown
Date of Burn: unknown	-	Age in 1982:	unknown
Size (Acres/mi ²): 100,	000+/156	Fire Severity	1: unknown
Occurrence of Inclusio	ns:		
General Description of	Burn:		
There is presently 2 t coming in around ponds	o 3 feet spru . Birch is a	ce along strea lso revegetati	ams, while birch and willow are ing hillsides. Production of
both brueberries and c	rameriies ap	pears to be ex	certent.
Trapper Experience: Although Mr. Brown has	not vet trap	wed in the Dul	bi burn, he bases his comments

Although Mr. Brown has not yet trapped in the Dulbi burn, he bases his comments on tracks seen during his aerial surveys of the area.

Comments on Wildlife Abundance:

Furbearer sign is generally good in the burn. Lynx sign was abundant along creeks where spruce trees remain and willows are thick. Hares are also most common in these areas. Fox density appears to be high.

Mr. Brown is also familiar with the Bear Creek burn and agrees that beaver became reestablished in good numbers 10 years after the burn, and that a fire on the Kaijuh flats near Nulato also provides excellent beaver habitat.

Mr. Brown trapped for 1 year on the Upper Titna River, in the Nowitna drainage, and noted that voles (primarily red-backed voles) were abundant above treeline and that marten preyed on them intensively. He attributes the preference of marten for higher elevations to the source of food and also to the occurrence of marked temperature inversions during cold weather when alpine temperatures can be dramatically higher than in surrounding lowlands. He notes there are few lynx in the upper Titna drainage.

Area:GalenaFire Name/Number:Pah River/8673 and 8899Informant:Gary BamfordDate of Burn:1)19722)1977Age in 1982:1)102)5Size (Acres/mi²):1)120,000/1882)47,000/73Fire Severity:1)heavyOccurrence of Inclusions:1)small

General Description of Burn:

1) As noted in the interview with Jimmy Huntington, the 1972 fire was of heavy severity. Mr. Bamford observed that it burned to mineral soil in some areas, especially on slopes, and left few areas unburned. The vegetation now includes small spruce, with aspen on hillsides that were formerly covered by black spruce, and alder and willow on flats. Grasses, which were sparse prior to the burn, are abundant. The burn is presently in the shrub-deciduous tree-grass stage. There are few details available on conditions in the 1977 burn.

Trapper Experience:

Mr. Bamford has lived in and trapped in this general area since 1972 and since he uses an airplane in some of his trapping and keeps careful records of his catches, he was able to provide a detailed description of furbearer activity in the 1972 burn.

Comments on Wildlife Abundance:

Furbearer populations in the 1977 burn still appear to be low and the area is not currently being trapped by Mr. Bamford.

The 1972 burn generally supports high numbers of red-backed and tundra voles although populations have declined in the past year. Yellow-cheeked voles were moderately abundant in 1982. Microtine rodents are most abundant on south slopes. There are presently few hares in willow and birch stands along rivers. Grouse are found in the burn in spring and fall and ptarmigan are found in willows throughout the burn. Red squirrels were affected negatively because most white spruce were killed by the fire. Moose habitat was improved by the fire with dense willow on slopes being used extensively, while caribou have apparently avoided the area since 1975.

Fish were little affected by the fire.

Lynx are present in small numbers in spruce and in willows along waterways, with the last high in numbers occurring in the 1930's.

Marten began repopulating the burn in 3 years and were numerous in 5 years. Marten prey extensively on red-backed, tundra, and yellow-cheeked voles which are numerous, and marten are abundant even in the middle of the burn. Marten do not appear to require unburned areas or even a live tree to climb.

Foxes were not very abundant until 1981-82 when a large number moved in from the west. Foxes also feed on voles in the burn.

Wolverine are present in low numbers and fire apparently had little effect on them. Mink seem to be fairly stable in numbers and also hunt voles, sometimes being found 2 to 3 miles out in the burn, and they have probably benefited from the fire. Ermine fluctuate in numbers and are not presently abundant. Beaver appeared to benefit from the fire, although it took 8-10 years for the habitat to develop. In 1972, the year of the fire, there were 12 lodges in the area, whereas there were more than 50 in 1982. Muskrat numbers were fair a few years ago but they are scarce or absent at present. Otter are numerous and were not greatly affected by the fire.

Both great gray and hawk owls (<u>Surnia ulula</u>) were abundant after the fire but have since declined.

Mr. Bamford concludes that the 1972 Pah River fire was clearly beneficial to marten, owls, and beaver while being detrimental to caribou, red squirrels, and perhaps wolves. The fire had relatively little effect on lynx, red fox, wolverine, muskrat, mink, otter, and ermine. In his opinion an area that has been burned within the last 30 years or so should not be allowed to reburn.

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Area: <u>Galena</u> Fire Name/Number: <u>Pah River/8673</u> Informant: <u>Jimmy Huntington</u>
Date of Burn: <u>7-7-72</u> Age in 1982: 10
Size (Acres/mi ⁻): 120,000/88 Fire Severity: heavy
Occurrence of Inclusions: small
General Description of Burn:
This fire burned stunted black spruce, muskeg, and some white spruce along
rivers. Black spruce are presently 2 to 18 inches tall. Aspen are growing
rapidly on slopes with an understory of rose hins and grasses. Alder and willow
apidity on slopes with an understory of fose hips and glasses. Afder and willow
are dense on the flats. Raspberfles were abundant a few years after the burn
but have since declined.
Trapper Experience:
Most of Mr. Huntington's trapline lies outside the burn. He has trapped
extensively since the 1930's.
Comments on Wildlife Abundance:
Mr. Huntington did not know the present abundance of voles on the burn but knows
they were abundant along the nearby Koyokuk River in 1981-82. Hare numbers
chey were abundant along the hearby Royokuk River in 1901-02. hare hambers
cycle and often feach high abundance in willow thickets. Hares have been
abundant recently but declined in 1982-83.
Lynx were last abundant in the Pah River flats in the 1930's. Although hares
have peaked several times since then lynx have never become very numerous
(Sidney Huntington described the same pattern). Although the habitat in the
area appears to be as good as before, lynx numbers have remained consistently
low.
Mr. Huntington traps extensively for marten and in his experience has found the
fires do not substantially benefit them, pointing out that a stand of mature
black spruce south of his cabin produces good numbers of marten year after year
while the burns to the north have not produced much fur until the last 10 years
While the builds to the horth have not produced much fur until the last to years.
he has heard that a burn on the Husila flats about 10 years ago is still
relatively poor for furbearers. He thinks areas that are burned 2 or 3 times in
a period of years will be unproductive for a very long time.
Regarding the Bear Creek burn, he notes that the area was not exceptional
furbearer habitat prior to the 1969 fire.
He does not believe that fires have much long-term effect on furbearer
populations.

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V	/undik Lake and		
Area: Ft. Yukon Fire Name/Number: C	Outlook Point	Informant:	Ron Bennett
Date of Burn: 1978/1974	Age in 1982	: 4/8	
1) About 96,000/150)		
Size (Acres/mi ²):2) 3-5,000/4.7-7.8	Fire S	Severity:	unknown
Occurrence of Inclusions: unknown	······································	·	· _
General Description of Burn:			·

Mr. Bennett traps about 5 miles west of the western edge of the 1978 Vundik fire and also the edge of a small burn on Outlook Point on the Sheenjek River. Regarding the Vundik fire, little is known except that it burned in dense mature spruce, has an irregular perimeter, and that some portions were covered by extensive stands of fireweed in 1982. The small Outlook Point (referred to locally as Haystack Mountain) fire is characterized by dense down timber and grass. The area trapped most extensively by Mr. Bennett is vegetated primarily by spruce; birch is small and scattered. There are some extensive willow flats and meadows.

Trapper Experience:

Comments on Wildlife Abundance: Voles were common along the Sheenjek in summer 1982, as were snowshoe hares which have increased during each of the last 3 winters.

Usually only 1 or 2 lynx tracks are observed each year, but in winter 1982-83 they moved into the area in good numbers. Marten are generally common and were most abundant in 1978-79 after the Vundik fire. Although this abundance may have been partly due to emigration from the burned area, a peak in marten numbers also occurred in surrounding areas on the lower Sheenjek and upper Coleen Rivers.

There appear to be marten in the small burn on Outlook Point and Mr. Bennett plans to trap the edges of this burn in the future.

Area: Ft. Yukon Fire Name/Number: u	Informant: Heimo Korth
Date of Burn: about 1936	Age in 1982: 40-50
Size (Acres/mi ²): unknown	Fire Severity: unknown
Occurrence of Inclusions: unknown	
General Description of Burn:	

Mr. Korth lives on the upper Coleen River near Strangle Woman Creek where he has trapped since 1977. He traps primarily for marten, fox, wolverine, and some beaver. He believes the area was burned in the 1930's, as suggested by old-timers in Ft. Yukon. He area supports scattered spruce with thick spruce only along creeks. Alpine tundra occurs at higher elevation, and there are large tussock meadows on either side of the Coleen River near his cabin.

Trapper Experience:

Comments on Wildlife Abundance:

Voles are abundant along the Coleen River in parts of an old burn and also in large meadows on flats adjacent to the river. Hares are moderately abundant and have remained at about the same density for the past 5 years. Both spruce grouse and ptarmigan populations are low at present. Red squirrels are very rare. Moose are common in winter but not in summer.

The area supports a healthy marten population with the highest densities occurring at low elevation in large open flats along the river near Strangle Woman Creek.

Lynx are generally scarce, but fox, wolverine, beaver, otter, and mink are common.

The relatively old burn trapped by Mr. Korth is quite productive, and of interest is the fact that marten are most abundant in and around tussock meadows, which resemble a common early successional stage in burns.

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Area: Ft. Yukon Fire Name/Number:	Paddle Creek Informant: Bill Straub
Date of Burn: 1955	Age in 1982: 27
Size (Acres/mi ²): 128,000/200	Fire Severity: medium
Occurrence of Inclusions: common	

General Description of Burn:

This fire was of medium severity and large areas remained unburned. It occurred in small (8-10 inch diameter) black spruce. The area is presently vegetated primarily with small birch, willow, and alder while spruce are now about 1 foot high. Downed timber is abundant. Mr. Straub has trapped this burn since 1976 with 71 miles of trapline.

Trapper Experience:

Comments on Wildlife Abundance:

Voles were common in the burn even 1 year after the fire and 24 years after the fire were tremendously abundant. Hares have increased to peak levels in recent years. Grouse numbers are low in both burned and unburned areas and ptarmigan, which were previously abundant, have declined in large areas. Red squirrels are rare, while moose are common in the burn.

Mr. Straub thinks the burn has had a positive effect on lynx which have increased during the past 11 years, and observes that lynx tend to hunt in willows along creeks.

The burn appears to have had a strong positive effect on marten numbers, which were extremely abundant 4 years ago but have since declined somewhat. Marten are most common at about 1,500 feet elevation.

Red fox are also abundant due to the fire, and feed on both hares and voles. Wolves are common and exploit the concentration of moose in the burn. Coyotes are rare but one was seen in winter 1981-82. Wolverine were common during the first year after the fire. Ermine numbers are relatively cyclic.

The fire had a positive effect on beaver which feed on the abundant willows and as many as 5 lodges per mile occur in some areas. Along creeks mink are increasing steadily. Many owls and a few hawks use the burn.

Mr. Straub thinks this large burn was beneficial for lynx, marten, foxes, beaver, and mink with the relatively dense cover along creeks supporting the most hares and lynx, and of course, beaver and mink. There is a strong connection between vole abundance and the density and distribution of marten.

Area: Ft. Yukon Fire Name/Number:	Unknown	Informant: Bill Straub
Date of Burn: 1977	Age in 1982:	5
Size (Acres/mi ²): 25,600/40	Fire Severity	/: heavy
Occurrence of Inclusions: rare	_	
General Description of Burn:		
This burn, 24 miles southeast of Cir	ccle near the	Yukon River, occurred at about
2,000 feet elevation in 4-6 inch dia	ameter spruce.	. The burn is dominated by
grasses with no revegetation by tree	es or shrubs a	as yet.

Trapper Experience:

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Comments on Wildlife Abundance: Voles are not very abundant in this burn and hares are also scarce. Ptarmigan have declined in this and surrounding areas. Red squirrels and moose are rare.

Lynx travel through the burn but do not remain in the area.

Marten are not very common (5 to 10 are caught per year) and the burn is not sufficiently developed to attract fox in any numbers. Ermine are present in small numbers.

Mr. Straub considers this burn to be insufficiently developed to provide good furbearer habitat, in part at least due to the relatively high elevation and consequently slower revegetation. However, he does feel that fires generally have strong beneficial effects on furbearers.

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Area: Ft. Yukon Fire Name/Number: Black River Informant: Albert Thomas
Size (Acres/mi ²): large Fire Severity: unknown
Occurrence of Inclusional unknown
General Description of Burn:
This burn occurred in an area dominated by spruce and covered much of the area
currently trapped by the Thomas family. The spruce that predominated before the
fire has been replaced by extensive stands of willow, birch, and cottonwood
intermixed with some mature white spruce, especially along rivers. In burned
areas spruce are now about 10 feet tall.
Albert Thomas has been trapping regularly for a variety of furbearers in this area for over 30 years.
Trapper Experience:
Comments on Wildlife Abundance.
Mr. Themas provided the following information in a telephone conversation
Mr. momas provided the following information in a telephone conversation.
Although not as extensive an interview as would be desirable, his observations
are significant.
The Black River area is widely known as some of the most productive habitat for
furbearers, especially lynx, in interior Alaska. The area has supported
generally good, although fluctuating, populations of lynx, marten, mink, beaver,
foxes, and wolves since the burn.
One of the most dramatic positive effects of the fire was an increase in beaver
which responded within a few wars of the burn to the real an include in search by
which responded within a rew years of the burn to the replacement of spide by
deciduous species, notably willow. The area continues to support a high and
productive beaver population, and marten are currently increasing.
Mr. Thomas said that in his experience it is typical for small mammals to be
abundant in the extensive grass cover that often develops following a burn. It
is common for marten and foxes to use these areas as soon as 1 year after a
fire.
Regarding the use of burns by lynx, he has observed that as soon as snowshoe
hares become common lynx will use the area regardless of the density of the
Me Themes shows a that we will be a finance by first second a law a law to the
Mr. monas stressed that repopulation of burns by furbearers is dependent on the
population status and trend in the surrounding area. For example, if fox
numbers are low and declining they will become reestablished in a burn slowly,
despite an abundance of prey.
In a large burn that occurred about 5 years ago south of Chalkyitsik, Mr. Thomas
reports that fox and marten populations are good and that during the last
3 years moose numbers have increased. Willow and birch are already about
10 feet high in the area; this burn has regenerated guite rapidly.

Area: Ft. Yukon Fire Name/Number: Z-16, Gailey Lake Informant: Joe Firmin
Date of Burn: about 1969 Age in 1982: 13
Size (Acres/mi ⁻): 4,000/6.25 Fire Severity: unknown
Occurrence of Inclusions: common
General Description of Burn:
The vegetation prior to the burn is not known although the fire burned primarily spruce. The area is now characterized by dense grass and willows about 10 feet high The burn is located near the confluence of the Sheenjek and Porcupine
Rivers
NIVELS.
Tranner Experience.
Mr. Firmin has trapped in and around this burn since 1971.
Comments on Wildlife Abundance: During the first few years the Gailey Lake burn supported a few foxes and little else. Presently, fox numbers are high in some areas and marten use the burn but seem to prefer certain areas. Hare populations have developed along the edges of the burn and in inclusions which are good lynx habitat.
Mr. Firmin also commented on conditions in the 13-year-old, 363,000-acre Fishhook fire east of Ft. Yukon. This burn has remained quite open and supports few furbearers except for some fox. He suggested that the size and completeness of the burn has slowed revegetation.
Mr. Firmin also mentioned that the Kevinjik River, which he also traps, is excellent marten habitat. This area burned completely around 1900 and repeated small fires have occurred since then. The area is characterized by stands of fairly small but mixed-age spruce with some areas being relatively open from recent burns.
Mr. Firmin noted that marten, as well as foxes, often reoccupy burns rapidly, sometimes within a year, although unburned areas in and next to the burn are usually centers of activity. In contrast, lynx usually cross recent burns quite directly, rather than meandering as is usually the case in heavy cover.

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Area: McGrath Fire Name/Number:	Bear Creek/7721	Informant: Allen Dubord		
Date of Burn: 8-7-77	Age in 1982: 5			
Size (Acres/mi ²): 361,600/565	Fire Severity:			
Occurrence of Inclusions: common				
General Description of Burn:				
Mr. Dubord was interviewed briefly by telephone.				

Trapper Experience:

Comments on Wildlife Abundance:

Although Mr. Dubord did not trap in the Bear Creek area prior to the fire, he observed that presently large islands of unburned spruce are centers of animal activity in the burn. There are marten and red fox in the area and the foxes seem to be most abundant along the burn's perimeter.

Farewell or			
Area: McGrath Fire Name/Number: Bear Creek fire Informant: Tom Coyle			
Date of Burn: 8-7-77 Age in 1982: 5			
Size (Acres/mi ²): 361,000/565 Fire Severity:			
Occurrence of Inclusions:			
General Description of Burn:			
Mr. Coyle has trapped for 5 years in the Big River-Katlitna River area			
immediately to the west of the Bear Creek burn, and his comments, obtained by			
area biologist Bob Pegau, are pertinent to evaluating the effects of the burn.			
Trapper Experience:			
Mr. Coyle uses a trapline about 10 miles long in lowland habitat adjacent to the			
Bear Creek fire.			
Comments on Wildlife Abundance:			
Voles were abundant in 1982-83 and snowshoe hares were common. Hare populations			
seem to be stable in this area. Grouse are scarce as are ptarmigan which were			
formerly common. Red squirrels were extremely abundant this year. There are a			
few moose in the area and also a few caribou, especially in early winter. Both			
lowbush and highbush cranberries are common as is wild rose. Blueberries are			
scarce.			
Lynx are usually present in low numbers but there were increased numbers in			
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Area: Upper Ko	yukuk Fire Name/Numb	Der: Alatna/8673 Informant: Bud Helmericks		
Cize (Jenes (mi ²) - Jenes				
Size (Acres/mi): large Fire Severity: moderate				
Occurrence of inclusions: small				
General Description of Burn:				
This burn cove:	red much of the Alati	ha drainage both in and out of the mountains,		
including considerable area above timberline. The fire burned all summer and				
covered primarily climax spruce forest and about 10% deciduous forest.				
Revegetation progressed from blueberries and seedlings (1-3 years) to saplings				
of spruce, alder, birch, and willow with an understory of wild rose and lowbush				
cranberry. Much of the moss layer was burned in this fire but low elevation				
wetlands were burned less severely and came back faster than high elevations.				
Trapper Experie	ence:			
Mr. Helmericks trapped in this area for 30 years before the fire and 12 years				
after.				
Comments on Mil				
Comments on Wildlife Abundance:				
Mr. Heimericks	provided the follow.	ing summary of effects:		
Prey	Before Fire	After Fire		
walaa				
borres	scarce	abundant Nichon emplitude enclo		
nares	cyclic	nigher amplitude cycle		
grouse	common	abundant only along edge		
plaimigan	absent	iluctuate		
red squirrers	abundant	absent except along edge		
moose	scarce	abundant		
fich	ret offorted	ret offected		
herries	not affected	not affected		
Derries	Scarce	abundanc		
Furbearer	Before Fire	After Fire		
1		1.0		
TÀUX	common	1-2 yearsscarce; 3-4 years common;		
marten	common	5 yearsabundant, 12 years common		
red foxes	scarce	common		
wolves	no apparent effect	no apparent effect		
coyotes	absent	absent		
wolverines	scarce	scarce		
beavers	common	some benefit from new growth		
muskrats	common	some benefit from new growth		
mink	scarce	scarce		
otters	scarce	scarce		
ermine	fluctuate with			
	vole populations			

Mr. Helmericks concludes that although fires initially disperse and lower furbearer populations, they eventually result in increased densities of most animals. His observations suggest that lynx will readily use the sapling stage of revegetation.