

SUMMARY REPORT

First Interagency Furbearer Workshop

OCTOBER 3 & 4, 1989
FAIRBANKS, ALASKA



FURBEARER WORKSHOP AD HOC ADVISORY COMMITTEE

&

DIVISION OF WILDLIFE CONSERVATION
ALASKA DEPARTMENT OF FISH AND GAME

1990

COVER DRAWING

The National Wildlife Federation permitted us to use the fine drawing by D. A. Brabick. We thank them for the permission.

ACKNOWLEDGEMENTS

Participating Agencies

Alaska Department of Fish and Game
Bureau of Land Management
U.S. Fish and Wildlife Service
U.S. Forest Service
U.S. National Park Service
University of Alaska, Fairbanks

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EDITOR'S NOTE

A draft of this report was reviewed by the Ad Hoc Advisory Committee. Several committee members suggested changes in organization or language to improve clarity. As final editor of the report, I made these changes unless there was conflicting suggestions, in which case I decided which one to use. I accept responsibility for the final result. I hope you, the reader, find the reports informative and easy to read.

Herb Melchior

PREFACE

This workshop was organized to address the status, scope, and direction of furbearer research and management in Alaska and to improve communication and cooperation among biologists with state and federal agencies and the University of Alaska Fairbanks. The stated objectives of the workshop were: 1) to examine our respective agencies' short- and long-term objectives; 2) to share our knowledge and current approaches to gathering information about furbearers; 3) to explore ways of coordinating our work; and 4) to identify specific management and research needs and develop recommendations for cooperative efforts.

We reviewed the mandates, goals, and information needs of the participating agencies, which established a framework for ways that we can initiate, fund, and conduct furbearer programs in Alaska. The problem statements and project descriptions provided by participants let us know what projects are currently being conducted and identified where further work is needed. Perhaps our most important accomplishment was prioritizing research and management needs and recommending areas where future work and increased funding should be focused. Our recommendations should be used by the agencies in setting overall objectives, by directors and program leaders in allocating personnel, money, and other resources, and by biologists in identifying problem areas, collecting data, and cooperating with other agency personnel.

We focused our efforts on the various challenges we face in dealing with furbearers; there is much work to do. Our establishment of an ad hoc advisory committee will ensure that the ideas and recommendations of the workshop participants are documented and passed on to the decision makers. We support the continuation of an interagency furbearer advisory committee to give direction and facilitate coordination of programs, and we recommend that each agency assign 1-2 people to serve on that committee.

In addition to the agency statements, problem statements and project descriptions, and the research and management recommendations made by the participants, we have included in this report a summary of the results of the workshop evaluation. Despite the generally positive responses we received, we recognize that not everyone's needs or interests were addressed and at times the open-forum discussion was too unstructured. These problems are somewhat inherent when a large group (45-50 people) attempts to distill a variety of concerns into a prioritized list of recommendations. We appreciate all your efforts as well as your suggestions for improvement and topics for future workshops.

Thanks for your participation!

Furbearer Workshop Ad Hoc Advisory Committee

CONTENTS

Acknowledgements.....	ii
Preface.....	ii
Contents.....	iv
Summary of Recommendations.....	1
Agency Presentations.....	3
Problem Statements and Project Descriptions.....	10
Recommendations of Study Group.....	21
Workshop Evaluation.....	31
Participants.....	34

SUMMARY OF RECOMMENDATIONS

Workshop participants decided on 7 major subject areas that need development. Seven groups were formed, one for each topic, with the charge to discuss these topics in some depth and develop recommendations for all participants to consider. Summaries and recommendations from these groups are presented in the body of the report on the workshop. Highlights of these summaries are presented here.

RESEARCH

The group discussing this topic recommended species-specific studies be undertaken on lynx, marten and wolverine. They also believed there was a strong need to continue to develop and refine aerial track survey techniques and to initiate development of survey techniques for use in areas of the state that have poor snow conditions or are densely forested.

TRACKING-HARVEST STRATEGY FOR MANAGING LYNX

To effectively manage lynx by this strategy, the group decided that we needed to obtain population indices for small accessible areas using standardized ground surveys (snowmobiles) and for large remote areas using standardized aerial surveys. Existing methods of census for lynx need further development and evaluation. In addition, prey indices should be obtained possibly during the same surveys that are being conducted for lynx. Finally, there is need for more flexibility in the management of lynx to respond to lynx population changes.

HABITAT QUALITY

This group identified increasing access, fire, logging, and mining and oil as major problem areas needing further study for key furbearer species. Also, more data are required on the productivity of habitats, the importance of patch size and the effects of a variety of environmental variables on habitat quality.

HARVEST ASSESSMENT

This group decided there was a need to improve the state's trapper questionnaire and expand it to cover the entire state. It was suggested that a standardized portion of the form be coupled with a portion to use for "local" questions. In formulating the questions to be asked, greater coordination is needed with other agencies and among regions of the state.

The group agreed that the state legislature should be encouraged to make names and addresses on harvest documents

confidential to encourage greater compliance and improve the accuracy and quality of information requested. Along with this, the public needs to be educated on the need for and importance of accurate harvest reporting.

Because marten is such an important species in Alaska, the group believed the state should consider sealing marten statewide but doing so in pelt lots as is done in SE Alaska.

PREY ABUNDANCE

Statewide abundance and distribution of prey species is not well known. A number of relatively inexpensive surveys to provide data for indexing relative abundance of prey should be evaluated. A number of techniques were discussed including standard 3-day snap-trap lines for small mammals; aerial flock flushing-counts done in conjunction with moose surveys to obtain indices for grouse and ptarmigan; pellet and track ground-transects to index hare abundance; and the Christmas bird count and breeding bird surveys for passerines.

POPULATION STATUS INDICATORS

This group recommended formation of an interagency committee to evaluate the utility of age and sex ratios as indicators of harvested populations, especially for marten and wolverine. A field technique needs to be developed to age wolverine. The recently developed aging technique for marten, using skull characteristics, should be evaluated for its potential use for wolverine.

POPULATION TREND-COUNTS

The group identified the following information needs:

- 1) Determine the importance of short and long distance movements of animals to assess the effects of these movements on the accuracy of trend counts.
- 2) Continue with the development and evaluation of aerial track surveys for assessing relative track abundance.

Following the group sessions, workshop participants reconvened. Each group presented a summary of their discussions and recommendations. In addition, the participants decided to establish an Ad Hoc Interagency Committee to:

- 1) Prepare and distribute a report on the workshop,
- 2) Evaluate the workshop,
- 3) Recommend future workshops.
- 4) Coordinate future interagency furbearer activities.

AGENCY PRESENTATIONS

ALASKA DEPARTMENT OF FISH AND GAME

Legal Mandates and Furbearer Policy: Summary of Presentation

Herbert R. Melchior, Statewide Furbearer Coordinator
Department of Fish and Game
Fairbanks, Alaska.

LEGAL MANDATES

Administration and management of Alaska's wildlife resources, including furbearers, was transferred from federal agencies to the State by the Alaska Statehood Act of 1958. The transfer occurred when, as required by the act, the Secretary of the Interior certified to Congress that the Alaska State Legislature had "made adequate provision for the administration, management, and conservation of said resources in the broad national interest." (Pub. L. 85-508, July 7, 1958).

The underlying policy for wildlife management in Alaska can be found in the State Constitution, Article VIII, Natural Resources. Two sections are especially relevant to wildlife management policy. Section 3 states: "Whenever occurring in the natural state, fish, wildlife, and waters are reserved to the people for common use." Section 4 states: "replenishable resources belonging to the State shall be utilized, developed, and maintained on the sustained yield principle, subject to preferences among beneficial uses."

Alaska Statutes, Title 16 provides the legal framework for the basic structure and authority for the Department of Fish and Game (ADF&G). This includes the Board of Game, which has the responsibility of establishing regulations governing the use of furbearers.

Management of Alaska's furbearers also is influenced by various federal laws and the policies derived from them. Most notable in this category is the Alaska National Interest Lands Conservation Act (ANILCA), especially Title VIII Subsistence Management and Use.

In an effort to cope with the array of State and Federal laws and policies affecting management of Alaska's wildlife, ADF&G has developed Memoranda of Understanding (MOU's) with each Federal agency that has land and/or wildlife management responsibilities. Although they differ in some details, basically each MOU states that ADF&G and a federal agency recognize each others specific legal mandates, mutually

agree to cooperate on studies of wildlife, and that the federal agency will utilize the state's regulatory system regarding uses of wildlife.

MANAGEMENT POLICY

In 1980, ADF&G presented to the Board of Game and the Board adopted revised Species Management Policies. The Statewide Furbearer Management Policy, which is a part of the Species Management Policies, is currently under review by ADF&G. Wolves, which are classified as both big game and as furbearers, are managed under a separate Wolf Management Policy.

It is not appropriate to include these policy statements in their entirety, because they are available for review, but a few key points can be stated.

First, the Department recognizes that responsible furbearer management depends on scientific knowledge.

Second, maintenance of suitable habitat is of foremost importance to furbearer management.

Third, hunting and trapping of furbearers for their economic value are the major uses of furbearers in the state. Furbearers also will be managed for recreational uses such as observation and photography, and wilderness experience including being aware of or observing furbearers in natural interactions with their environment.

Fourth, situations may arise requiring control of furbearers in response to a specific problem, but no control will be undertaken until investigation by ADF&G determines a valid need exists. When control by removal is deemed necessary, humane methods will be used. Poisons will not be used for control.

HARVEST MONITORING

There are four sources of harvest information for furbearers: sealing certificates, fur acquisition reports, fur export reports, and trapper questionnaires.

Sealing: In Alaska we seal (apply locking tags to the pelts) five species statewide (beaver, lynx, land otter, wolf, and wolverine) and one species (marten) only in southeast Alaska and the Kenai Peninsula. At the time of sealing, biological and geographic data are entered on a Furbearer Sealing Certificate and these data subsequently are entered into a computer.

Fur Acquisition Reports: Licensed fur dealers are required by law to fill out a Report of Acquisition of Furs and Hides each time they purchase raw pelts from trappers or other fur buyers. The number of pelts by species and the Game Management Unit in which they were harvested (if purchased from a trapper) are recorded. These data also are entered into a computer.

Fur Export Reports: Each time raw furs are mailed, shipped, or transported out-of-state, a fur export permit/report must be completed. The report contains the number of skins by species and, for trappers, the Game Management Unit of take. These data are entered into a computer.

Trapper Questionnaire: For over 10 years, trapper questionnaires were sent out to cooperating trappers in the Interior. In 1987-88 and 1988-89 trappers in southcentral Alaska were added to this survey. Information on questionnaires returned to the Department is compiled and summarized. The summary is then sent out with the questionnaire for the next trapping season. We plan to expand the process to a statewide mailing list of trappers for the 1989-90 and successive seasons.

ECONOMICS

In recent years the value of raw furbearer pelts to residents of the state is estimated to have been in the range of \$5-10 million per year. Last winter (1988-89) marten was the most important species in value to Alaskan residents. About 30,500 marten were harvested and at an average pelt price of \$80 earned Alaskans \$2.44 million. Because a high proportion of trappers are rural residents who live in small communities with limited job opportunities, the cash derived from selling furs is an important component of rural economies.

U.S. FISH AND WILDLIFE SERVICE

Mandates, Objectives and Management Needs of the U.S. Fish and Wildlife Service in Relation to Furbearer Management on Alaskan National Wildlife Refuges

Paul Schmidt, Deputy Assistant Regional Director of Refuges and Wildlife, U.S. Fish and Wildlife Service
Anchorage, Alaska.

The U. S. Fish and Wildlife Service has the following general mandates with regard to management of National Wildlife Refuges: (1) ensure healthy and viable populations of resident wildlife on refuges; (2) manage refuge lands to attain and perpetuate a natural diversity of wildlife,

including furbearers, and their habitats at optimum population levels, and (3) provide for human uses of those resources where it is compatible with the purposes of the refuge including hunting, trapping, and nonconsumptive recreation.

The Alaska National Interest Lands Conservation Act (ANILCA), gives Alaskan refuges more specific mandates regarding furbearers. The most common, and probably most important, mandates that we provide for continued subsistence uses by local residents (which includes trapping furbearers). ANILCA established 9 new national wildlife refuges and added areas to 7 existing refuges. The first purpose stated in ANILCA for each of these refuges begins with: "to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to," which is followed by a list of species or species groups. For the following refuges, one or more species of furbearers is listed: For the Innoko, Kanuti, Koyukuk, and Tetlin Refuges, "furbearers" are listed; for the Arctic Refuge, wolves and wolverines are listed; the Kenai Refuge has wolves and other furbearers listed; the Nowitna Refuge has marten, wolverines, and other furbearers listed; the Yukon Flats Refuge has wolves, wolverines, and other furbearers listed; and Kodiak and Alaska Peninsula Refuges have sea otters listed.

Regional short-term objectives and management needs are to: (1) develop better furbearer census techniques; (2) initiate several furbearer studies including, but not limited to, an Interior marten study and a study on the effects of wildfires on furbearer populations in the Yukon Flats area; (3) reduce and minimize user conflicts; and (4) reduce the potential for overharvest.

Regional long-term objectives and management needs are to maintain subsistence opportunities and cooperation with other agencies. The Service will ensure maintenance of healthy populations of furbearers. Other regional objectives are to continue increasing our knowledge of furbearers and be able to make defensible population estimates of furbearers on the refuges.

U.S. FOREST SERVICE

Furbearer Management on National Forest Lands in Alaska: A Brief Overview

Fred B. Samson, Wildlife Program Manager, USDA Forest Service - Alaska Region, Juneau, Alaska.

Lowell H. Suring, Wildlife Habitat Relationships Coordinator, USDA Forest Service - Alaska Region Juneau, Alaska

Broad planning direction for all USDA Forest Service land management activities is provided in the Forest and Rangeland Renewable Resources Act of 1974, the National Forest Management Act (NFMA) of 1976, and implementing regulations published in the Code of Federal Regulation. Although there are many key regulations concerning land management planning on National Forests, three are of particular significance to furbearer management.

First, Forest Service planning regulations (36 CFR 219.19) require managers to maintain viable populations of all native vertebrate species as well as desirable introduced species. Habitat for these populations must be well distributed to allow for interaction among viable populations. Number of individuals needed for a viable population varies, and is influenced by factors such as age of first reproduction, number of young produced annually, number of years reproductively active, and life expectancy. Well distributed generally is defined as "throughout the existing geographic range of the species."

Second, a key requirement of the NFMA is that "population trends of the management indicator species will be monitored." The management indicator species (MIS) concept was developed in response to forest planning requirements contained in NFMA. MIS are vertebrate, invertebrate, or plant species whose population changes are believed to indicate effects of land management activities. The MIS concept allows the manager to focus on a subset of all species found within a planning area. Most MIS represents a group of species thought to have similar habitat requirements and/or life histories. However, some MIS are related only to specific issues and may not represent a group of species.

An interagency committee that included professional biologists from the Alaska Department of Fish and Game, USDI Fish and Wildlife Service, and National Marine Fisheries Service developed and implemented a process to identify species having the greatest potential to serve as MIS for the Alaska Region. Three furbearers; the gray wolf, marten, and river otter were selected as potential MIS.

Habitat capability models developed for each MIS are used for: (1) analysis of the effects of management, (2) allocation of habitats during project design and layout, (3) timing of activities, (4) monitoring, and (5) other aspects of forest management. Three habitat capability models for furbearers (gray wolf, marten, and river otter) are being used in analysis for the revision of the Tongass Land Management Plan. The marten model also has been used in the preparation of supplemental environmental impact statements for several recent timber sales. Importantly, each of the models will pass through a verification phase. The marten

model and associated computer programs are currently going thorough a verification process. The marten model also will be validated through Forest Service and Alaska Department of Fish and Game field studies.

Third, NFMA and implementing regulations (36 CFR 219.26) provide the following direction for biological diversity: "Forest planning shall provide for diversity of plant and animal communities and tree species consistent with the overall multiple-use objectives of the planning area. Such diversity shall be considered throughout the planning process." In addition, "for each planning alternative, the interdisciplinary team shall consider how diversity will be affected by various mixes of resource outputs and uses, including proposed management practices." Furbearers are an important component to biodiversity on National Forest lands, both in terms of being unique species, and as part of an ecological process (i.e., predator-prey ecosystems) characteristic of National Forest lands in Alaska.

In summary, furbearers are recognized as an important resource on National Forest lands in Alaska. Maintenance of habitat for these species is accomplished through the National Forest planning and project implementation process.

U.S. NATIONAL PARK SERVICE

Furbearer Management and Research Objectives

LAYNE G. ADAMS, Wildlife Research Biologist
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Anchorage, Alaska.

The National Park Service-Alaska Region (NPS) manages approximately 15% of the lands within Alaska. Unlike most NPS managed areas throughout the rest of the United States, subsistence and/or sport harvest are allowed on most Alaskan NPS areas. Within the state, three schemes of harvest management occur on NPS lands:

NO HARVEST: No harvest is allowed in parks that existed prior to ANILCA (Denali, Katmai, Glacier Bay) and one new park (Kenai Fjords). These areas make up 17% of the land managed by the NPS in Alaska.

SUBSISTENCE HARVEST ONLY: Subsistence harvest for local, rural residents is allowed in 6 parks and monuments established by ANILCA (Kobuk Valley, Gates of the Arctic, Lake Clark, Wrangell-St. Elias, Cape Krusenstern, Aniakchak) and ANILCA additions to the three previously existing parks. These areas make up approximately 50% of the lands managed by the NPS in Alaska.

SUBSISTENCE AND SPORT HARVEST: Both subsistence and sport harvest are allowed in preserve areas established by ANILCA, which constitute 33% of NPS lands in Alaska. Preserves are managed the same as parks, except that sport hunting is allowed. Preserves are either separate (Bering Land Bridge, Noatak, Yukon-Charley Rivers) or are associated with parks (Denali, Lake Clark, Katmai, Glacier Bay, Gates of the Arctic, Wrangell-St. Elias, Aniakchak).

The NPS is the most conservative management agency involved in furbearer management in Alaska. The NPS has the responsibility to see that natural processes continue and that wildlife and their habitats occur in natural diversity within areas we manage. In cooperation with ADF&G, we manage subsistence harvest in ANILCA parks and monuments to provide for customary and traditional uses of wildlife.

At present, the NPS has three objectives regarding furbearer harvest/research:

1. To evaluate present harvest levels;
2. To determine methods for monitoring populations; and
3. To improve the understanding of furbearer ecology in Alaska.

During the last few years, the NPS has been involved in three wolf studies and one furbearer study to address these objectives. Wolf studies are presently being conducted in Denali, Gates of the Arctic, and Northwest Areas. Each study is addressing basic population demography for each area, but all also are answering other basic questions. In Denali, the wolf study is being conducted in close coordination with the ongoing caribou study in order to gain insights into wolf/caribou relationships. In Gates of the Arctic, in cooperation with ADF&G, efforts to determine subsistence harvest levels and evaluate the influences of harvest on wolf population are under way, as are efforts to determine late winter wolf/prey relationships. The studies in Northwest Areas, in cooperation with ADF&G and USFWS, are focusing on evaluation of satellite telemetry technology and development of population census methods.

To date, only one furbearer study has been conducted by NPS. That study is ongoing in Gates of the Arctic and initially involved development of aerial track census techniques to evaluate relative abundance of furbearers. In the last 2 years, the focus has been on determining the characteristic of the furbearer harvests through trapper contacts and carcass purchase.

PROBLEM STATEMENTS AND PROJECT DESCRIPTIONS

The Alaska Department of Fish and Game (ADF&G) currently is involved in several projects. In interior Alaska, there are 2 furbearer disease projects, a lynx carcass collection/analysis project, a project focusing on the special requirements of managing beaver in an urban area, and a project to refine the development of survey techniques to determine the relative abundance of hares, lynx and marten. In southcentral Alaska, there is a wolf-wolverine census technique project and in southeast Alaska, there is a marten habitat project in cooperation with the U.S. Forest Service. In Arctic/northwest Alaska, there is a wolf census and demography study in cooperation with the U.S. Fish and Wildlife Service and the U.S. Park Service. Also, there is a wolf necropsy project in cooperation with Yukon Renewable Resources, Yukon Territory, Canada. Several of these projects are described briefly here.

STUDY TITLE: Prevalence of trichinosis (Trichinella spiralis) in lynx.

PROJECT CONTACT: Randy Zarnke, ADF&G, Fairbanks.

PROBLEM STATEMENT: Published reports of prevalence of trichinosis in lynx are very limited. Trichinosis is a parasitic disease caused by the nematode Trichinella spiralis. Larval nematodes localize in muscle tissue where they are encysted by the host. Muscle performance is compromised. Transmission occurs by means of ingestion. All meat-eaters (including humans) are susceptible. Lynx are prime table fare for humans and thus represent a potential source of infection. The primary purpose of the current survey is to assess the magnitude of this potential. If other biologists wish to participate in the survey, it is as simple as collecting tissues and submitting them to Randy Zarnke. Preferred tissues include masseter (cheek), tongue, and/or diaphragm. It is not necessary to collect all 3 tissues. Label the tissues with age, sex, month and location of capture. Specimens must remain frozen. Results will be shared with all participants.

STUDY TITLE: Prevalence of a stomach nematode (Soboliphyme baturini) in marten.

PROJECT CONTACT: Randy Zarnke, ADF&G, Fairbanks.

PROBLEM STATEMENT: Early results suggested the prevalence of Soboliphyme baturini differs between geographic areas. The primary purpose of this project is to test this hypothesis. The worms are 1.9-3.8cm long, 3.2mm in

diameter and have a spherical structure on one end. Amphibians are intermediate hosts for other developmental stages of the parasite. Marten apparently acquire the parasite when consuming amphibians. The worms reside in the stomach of marten and are easily observed with 20-30 seconds of examination. We are also interested in correlating prevalence to sex and age cohorts. Therefore, we request that you record sex, age, month of capture, location, and trapper's name. Sex and age parameters are easily determined using the skull measurement criteria developed by Audrey Magoun. Forward all data to Randy Zarnke in Fairbanks. Results will be shared with all participants.

STUDY TITLE: Lynx carcass collection and analysis in interior Alaska.

PROJECT CONTACT: Robin Beasley, ADF&G, Fairbanks.

PROJECT DESCRIPTION: Lynx throughout most of Unit 20 are managed with a tracking-harvest strategy; trapping and hunting regulations are more liberal when the lynx population is high and more restrictive during population lows. In addition to having fewer lynx, population declines and lows are characterized by a lower proportion of sexually mature yearling female lynx, a lower mean number of corpora lutea/placental scars per ovulating female, fewer kittens in the harvest, and often a decline in harvest. To monitor the status and trend of the lynx population, lynx carcasses have been collected from trappers in Subunits 20A and 20B since 1988. The objectives of the carcass collection are: (1) to determine the sex and age distribution of the annual lynx harvest, (2) to assess the reproductive status of female lynx, (3) to determine the accuracy of using pelt measurements to monitor recruitment, and (4) to provide biological samples for other research (see wildlife disease lynx project). Coupled with data from sealing certificates and trapper questionnaires, these carcass data are used to recommend changes in the lynx trapping and hunting regulations that are necessary to manage with a tracking-harvest strategy.

STUDY TITLE: Beaver management in the Fairbanks vicinity.

PROJECT CONTACT: Robin Beasley, ADF&G, Fairbanks.

PROJECT DESCRIPTION: Human-beaver conflicts in the Fairbanks area (lower Chena River) are common, time-consuming to resolve, and sometimes include costly damage to human property. Management goals for beaver in this area are: (1) to provide an opportunity for people to view and photograph beaver, and (2) to protect human property in human-beaver interactions. To achieve these goals, since

1969 beaver trapping has been prohibited in the lower Chena except by permit from the Department. These permits (nuisance and registration) are used to reduce human-beaver conflicts by removing problem beaver and reducing the population. Annual beaver cache surveys are done in late September to estimate beaver density. Harvest quotas for the registration permit trapping season are set based on cache survey data.

STUDY TITLE: Evaluation of an aerial track-index technique for furbearers.

PROJECT CONTACTS: Howard Golden and Dan Reed, in cooperation with the U.S. Fish & Wildlife Service and National Park Service.

PROJECT DESCRIPTION: The development of a reliable method to indicate furbearer population changes over time is needed, particularly in interior Alaska. Our current reliance on harvest data alone is inadequate for sound management of populations. The technique to be tested is a modification of methods used to determine the general distribution and relative abundance of furbearers across the Yukon Flats National Wildlife in 1985-86 and across the Gates of the Arctic National Park and Preserve in 1987-88. These studies focused on identifying patterns of furbearer distribution across large areas during a specific period of time. We will sample 2 areas in the Yukon Flats NWR and 1 in the Yukon-Charley Rivers National Preserve beginning in February and March 1990. The objectives are: (1) to assess observer bias in identifying and counting tracks; (2) to measure the rate of track accumulation following snowfall; and (3) to determine if track deposition rates are stable. With this cooperative project, we hope to develop a technique that will be sensitive to changes in population density and independent of harvest data. We will assume that changes in track density between years reflect changes in actual abundance.

STUDY TITLE: Habitat relationships and population ecology of marten in southeast Alaska.

PROJECT CONTACT: Rod Flynn, ADF&G, Juneau, in cooperation with the U.S. Forest Service.

PROBLEM STATEMENT: Habitat relationships and population ecology of marten (Martes americana) in southeast Alaska are poorly known. Currently, industrial-scale logging is converting large areas of old-growth forest into clearcuts and second growth. About 400,000 acres of old-growth habitat has already been logged on the Tongass National Forest; the current Tongass National Forest Land Management

Plan schedules an additional 1.75 million acres. The construction of roads into previously roadless areas accompanies logging activities. Logging roads greatly affect patterns of trapper access. Marten have been selected as management indicator species (MIS) for the revision of the Tongass Land Management Plan because of their believed sensitivity to forest management activities. To quantitatively assess the impact of land management activities on marten, a habitat capability model relies entirely on unverified assumptions about marten habitat relationships. The assumed habitat relationships need to be examined before the impacts of logging on marten can be predicted with confidence. Because of high pelt prices, marten are trapped extensively. The impacts of trapping on marten populations are poorly understood, especially as a result of changing access patterns.

STUDY TITLE: Development of wolf census methods and wolf demography in northwest Alaska, including movement patterns in relation to the Western Arctic Caribou Herd.

PROJECT CONTACTS: Warren Ballard, ADF&G, Nome
Lee Anne Ayers, USNPS, Kotzebue.

PROJECT DESCRIPTION: This interagency project has the following objectives:

1. Determine the spatial relationships and movement patterns of wolves in northwest Alaska (focused on Noatak, Kobuk, and Selawik drainages) using standard and satellite telemetry.
2. Develop and test new survey methods containing a measure of precision.
3. Quantify winter and summer predation rates.

This project is cooperatively supported by ADF&G, USFWS, and USNPS. It is scheduled for completion by October 1, 1991.

STUDY TITLE: Wolf necropsy studies.

PROJECT CONTACTS: Bob Stephenson, ADF&G, Fairbanks
Bob Hayes, Yukon Renewable Resources,
Whitehorse.

PROJECT DESCRIPTION: Between 1971 and 1989, 907 wolf (Canis lupis) carcasses from various parts of Alaska were necropsied to obtain information on sex and age composition, nutritional and reproductive condition, morphology, infirmities, and food habits. During the period 1983 through 1989 similar data were obtained from 507 wolves in

the southern and central Yukon Territory. The Alaska and Yukon data are being analyzed jointly, with an emphasis on describing the effects of wolf population reduction on population ecology. Preliminary computer analyses using SPSS statistical software are being conducted.

BUREAU OF LAND MANAGEMENT

No project descriptions were submitted, but a study of marten in the Steese/White Mountains National Recreation Area is being considered.

U.S. FISH AND WILDLIFE SERVICE

Currently, most U.S. Fish and Wildlife Service furbearer studies are concentrated in three geographic areas of the state: Kenai National Wildlife Refuge (NWR) on the Kenai Peninsula in south central Alaska; Innoko, Koyukuk, and Nowitna NWR's in west central interior Alaska; and Tetlin NWR in eastern interior Alaska.

STUDY TITLE: Furbearer studies on the Kenai NWR.

PROJECT CONTACT: Ted Bailey, Kenai NWR, Soldotna.

PROJECT DESCRIPTION: Furbearer studies on the Kenai NWR include: coyote and lynx studies designed to compare food habits and habitat use of these two species; beaver population status and habitat use in the northern lowlands area (Game Management Unit 15A) of the refuge where, in addition to cache surveys, approximately 300 lakes and ponds were examined for evidence of beaver occupancy and use, and; an inter-agency wolverine study that is nearing final review prior to implementation, which will focus on the status of and habitat use by wolverine in the northern area of the refuge.

STUDY TITLE: Innoko furbearer study.

PROJECT CONTACT: Bob Skinner, Innoko NWR, McGrath.

PROJECT DESCRIPTION: The main objective of this study is to determine species occurrence, population sizes, distribution and harvests of furbearers on the Innoko National Wildlife Refuge. The general approach will be to:

1. develop a trapper questionnaire to determine harvest information-species, and numbers harvested, calendar of harvest, and location of harvest;

2. map traplines by aerial survey to determine location and distribution of harvest and for comparison with trapper questionnaire;

3. collect furbearer carcasses from trappers to determine sex and age ratios and for carcass analyses - corpora lutea counts and parasites;

4. conduct annual aerial track surveys in winter to determine species present, distribution, and general abundance. Ground truth portions of flight-lines to determine the track sightability and identification of the aerial track-surveys;

5. and conduct annual surveys of beaver caches to determine abundance and distribution.

STUDY TITLE: Marten studies on the Koyukuk and Nowitna NWR's.

PROJECT CONTACT: Buddy Johnson, Koyukuk and Nowitna NWR, Galena.

PROJECT DESCRIPTIONS: Two marten studies were in the planning stages at the time of the Inter-agency Furbearer Workshop. It appears now that these studies will be modified, expanded and refocused to include work on the effects of fire on marten and lynx. Since the original goals may still be retained as well, they are given here.

The original purposes of the studies were (1) to determine the numerical response of marten (Martes americana) to prey abundance and its implications to analysis of annual harvest statistics on the Nowitna NWR, and (2) to determine movement patterns and dispersal of marten and their implications to analysis of annual harvest statistics on the Nowitna NWR.

The expanded studies may add investigations of populations of lynx and marten in burned versus unburned habitats, relative abundance of small mammal prey species, and characteristics of vegetation in burned versus unburned habitats that might influence the abundance of prey, lynx or marten.

STUDY TITLE: Tetlin furbearer program studies.

PROJECT CONTACT: Terry Doyle, Tetlin NWR, Tok.
Five projects comprise the furbearer program on the Tetlin NWR as follows:

1. Fire effects on several species of mammals is being evaluated annually by recording tracks observed within six

1-mile long snowshoe transects walked 3 times a year in burned and unburned portions of three different habitats (spruce, mixed spruce/hardwood and tundra).

2. Population levels of furbearers on the Tetlin NWR are evaluated annually by conducting furbearer track counts from a snow machine along the Nabesna and Chisana Rivers.

3. Annual estimates of the number of wolves on the Tetlin NWR are determined by aerial wolf surveys done in cooperation with the Alaska Department of Fish and Game and the Yukon Territorial Government. One or two wolves in each pack are radio-collared to assist in locating packs. Incidental sightings of wolves are recorded also.

4. Annually monitor furbearer harvests and general population trends by determining who traps on the refuge and sending them a questionnaire containing questions about their harvests and observations on furbearer abundance.

5. Conduct a study of lynx on the refuge beginning in spring 1990. The study will focus on determining home ranges by sex and age of lynx, dispersal patterns from areas of high prey abundance, causes of mortality, productivity of females, temporal movements, habitat use and lynx distribution relative to prey.

U.S. FOREST SERVICE

The U.S. Forest Service, in cooperation with the Alaska Department of Fish and Game, is conducting a marten ecology project in south east Alaska. See the project description under the Alaska Department of Fish and Game heading for additional information.

U.S. NATIONAL PARK SERVICE

The National Park Service (NPS) has active furbearer projects in four locations and additional problem statements identifying concerns relating to furbearers on NPS-managed lands.

STUDY TITLE: Population ecology of wolves in Gates of the Arctic National Park and Preserve, Alaska.

PROJECT CONTACT: Layne Adams, Bruce Dale and Brad Shults, National Park Service-Alaska Region, Anchorage; Bob Stephenson, ADF&G, Fairbanks.

PROJECT DESCRIPTION: Research began in 1986 to determine the demography and distribution of wolves in and adjacent to

Gates of the Arctic National Park and Preserve and to assess the harvest of wolves from this population. Since March 1987, 51 wolves have been radio-collared and monitored to determine distribution, pack sizes, pup production, and mortality/dispersal characteristics.

Harvest information has been collected through a carcass purchase program in Anaktuvuk Pass, Bettles and Wiseman since winter 1985-86. In March 1989, we began to evaluate the influences of caribou abundance and distribution on wolf predation behavior by daily monitoring of 4-5 packs for 30 days in the Alatna River Area, in conjunction with intensive surveys to determine moose and caribou abundance. Progress reports for 1986, 1987 and 1988, as well as the 1989 predation behavior study, are available. The study is expected to end before December 1990.

STUDY TITLE: Distribution and relative abundance, population characteristics, and harvest of furbearers in Gates of the Arctic National Park and Preserve.

PROJECT CONTACTS: Mike Britten, Gates of the Arctic National Park and Preserve, Fairbanks; Howard Golden, formerly NPS-Alaska Region, currently ADF&G, Ft. Yukon.

PROJECT DESCRIPTION: The National Park Service initiated a study in Gates of the Arctic National Park (GAAR) to continue development of the aerial track-index technique that was begun on the Yukon Flats National Wildlife Refuge, and to assess characteristics of furbearer harvest occurring within and adjacent to GAAR. During 1987-88, the aerial track-index technique was utilized in GAAR and evaluated. Since winter 1987-88, harvest has been determined using ADF&G pelt-sealing records and a carcass purchase/trapper contact program. A report detailing accomplishments prior to August 1988 is available.

STUDY TITLE: Demography and distribution of wolves, Denali National Park and Preserve, Alaska.

PROJECT CONTACTS: L. David Mech, U.S. Fish and Wildlife Service, St. Paul, MN; Tom Meier and John Burch, National Park Service, Denali Park.

PROJECT DESCRIPTION: Research began in 1986 to determine the demography, distribution, and wolf/prey relationships in Denali National Park and Preserve. To date, 72 wolves have been instrumented with radio-collars and 12-19 wolf associations have been monitored each year. Information on wolf distribution, mortality, pack composition, and pup production has been collected. Over 600 ungulate kills have been documented during the course of the project and the

majority have been investigated to determine age, sex, and condition of wolf-killed individuals. This research has been closely coordinated with a concurrent study of caribou population biology focusing on calf production and survival in the Denali Caribou Herd. Annual progress reports are available for 1986-89. The study is expected to continue through September 1992.

STUDY TITLE: Demography of a harvested marten population, Yukon-Charley Rivers National Preserve.

PROJECT CONTACTS: Layne Adams and Brad Shults, National Park Service-Alaska Region, Anchorage.

PROJECT DESCRIPTION: This proposed study will determine characteristics of marten populations and marten harvests within the Yukon-Charley Rivers National Preserve (YUCH). The study area has been chosen to include portions of the active trapline of a cooperating trapper. Marten will be trapped, sexed, aged, marked and recaptured prior to the opening of the regular trapping season. In a small portion of the overall study area, marten will be monitored by radio-telemetry prior to, during and following the trapping season. Carcasses purchased from trappers, who trap within the YUCH, will be examined to determine sex, age, general condition, body size, and reproductive status.

STUDY TITLE: Wildfire effects on furbearer populations.

PROJECT CONTACT: Brad Cella, National Park Service-Alaska Region, Anchorage.

PROBLEM STATEMENT: Three general concerns that need to be addressed are:

1. We need to improve our understanding of the effects of wildfire on furbearer populations and habitat, both biologically and politically.
2. We need to improve our ability to estimate the status and trend of furbearer populations.
3. We need to improve our ability to assess the effort and success of trappers at the local and regional level.

STUDY TITLE: Assess furbearer populations and harvest.

PROJECT CONTACTS: Steve Ulvi and Penny Knuckles, Yukon-Charley National Preserve, Eagle.

PROBLEM STATEMENT: Fourteen species of furbearers inhabit the 2.5 million acres of diverse taiga and tundra habitat within the Yukon-Charley Rivers Preserve (YUCH). Of primary management interest are wolf, wolverine, lynx, marten, river otter, red fox, and beaver. The first six of these mammals are important as predators within the ecosystem. Marten are probably of greatest economic value to personal use and fur trappers in general except when lynx cyclically increase or when lynx prices are high.

Trapping of furbearers has been an economic mainstay in the preserve area since the mid-19th century when Han Athapaskans were introduced to the steel trap and the concept of monetary value for raw furs. Before the introduction of the steel trap, furbearers had been sought primarily for clothing and ceremonial decorations and perhaps some trade value. The introduction of manufactured steel traps and an increased opportunity to sell furs for cash or supplies probably greatly increased furbearer harvests.

ANILCA requires the National Park Service (NPS) in cooperation with the Alaska Department of Fish and Game (ADF&G) to manage all fish and wildlife within the preserve so that "healthy" populations are maintained while providing for legitimate subsistence and sport uses including trapping. Information on furbearer ecology is limited.

The State establishes regulations to manage the trapping season, bag limits, and capture methods. Traplines are not registered or delineated in any official manner. Most areas within the preserve where trapping occurs are known to the preserve staff and Department biologists. Annual trapping effort and take by species for specific areas within YUCH is not well understood.

Harvest levels are calculated from three sources collected by ADF&G: (1) sealing records; (2) fur export reports; and (3) reports of fur acquisition. Sealing records provide the most detailed information of the 3 records. Within the three game management units that encompass the preserve, five species (lynx, wolves, wolverine, river otter, and beaver) require sealing. Many furs are not sealed because some areas lack a Fish and Game office or sealing agent. Some furs are processed at home and used without sealing. Reported harvest therefore represents minimum harvest. Over-harvesting may occur in localized areas, especially when environmental factors such as hard winters or a reduced prey base cause additive mortality.

Trapping effort and species sought vary in response to fur prices as well as other factors. Increased prices can result in increased trapping effort and potential overharvest of highly-valued species. Private development

of inholdings, human population increases in adjacent communities, and development of access corridors could result in increased trapping within the preserve.

Reserve staff estimate that approximately 75% of present trapping effort on preserve lands comes from residents within the preserve and 25% from residents outside the preserve. Trappers primarily use snowshoes, dogsleds, snowmachines, or aircraft for access. Snowmachine and aircraft use are at low levels; however, these access methods enable individuals from distant communities to trap within the preserve.

Of the major furbearer species, only wolves have been surveyed. State biologists continue to survey the wolf population in the southern portion of the preserve primarily to provide information for ungulate management. River otters are known to occur in small numbers and therefore are a species of concern because of potential overharvest. Beaver density appears low and trapping effort is generally light because of low prices. The status of other furbearer species is unknown. Despite the increased interest in furbearer management, practical survey methods for most species do not exist. Research (Howard Golden, 1987-present) has resulted in promising survey and population estimation methods for lynx and marten that must be refined and utilized.

UNIVERSITY OF ALASKA FAIRBANKS

No project descriptions or problem statements were submitted.

COMMENTS AND RECOMMENDATIONS OF STUDY GROUPS

I. RESEARCH NEEDS - Species Specific

LYNX

- A. Cooperative study needed. Length: 1-plus cycles, location: Some group members felt the Upper Tanana drainage would be a good location for such a study.

Objectives:

1. Determine lynx population parameters and dispersal mechanisms through 1 cycle.
2. Evaluate hare population trends.
3. Evaluate aerial tracking techniques.
4. Evaluate harvest characteristics as the population changes and refine harvest tracking techniques.
5. Incorporate influences of lynx and other predators on marten throughout cycle.

Costs: \$150-200K/year field costs.

Personnel: One person in charge!

- B. Two site specific studies will be required in some places (Kenai Peninsula etc).

MARTEN

Large cooperative study not needed at this point.

1. Regional or site specific studies;
 - a. S.E. determination density-patch size relationships;
 - b. Kenai - peninsular nature of population;
2. Efforts should be coordinated regionally to minimize overlapping objectives.

WOLVERINE

Regional or site-specific studies, coordinated to evaluate variation across their range.

1. Productivity
2. Density
3. Mortality characteristics

TECHNIQUES

Survey Techniques/Problems that need to be addressed:

1. Aerial track surveys need to be refined;
2. Survey methods applicable to interior and southcentral need to be developed;
3. Need to evaluate observer variability;
4. Training program to improve consistency in application of methods;
5. Research needed for techniques in rest of state;
6. Densely forested areas present special problems that should be addressed;
7. Need to develop alternatives to snow tracking in areas with poor snow conditions.

Trapping Techniques: Let Canadians do it.

II. TRACKING-HARVEST STRATEGY FOR MANAGING LYNX

BASIC PRINCIPALS

1. Use repeatable, systematic (=standardized?) techniques.
2. Use harvest data when available.

LYNX POPULATION INDICES

1. In large remote areas use standardized flight routes;
2. In smaller accessible areas use standardized ground surveys (snowmobiles);
3. Repeat same routes or transects (each year or every other year);
4. Start surveys in early November after fresh snowfall;
5. Collect data on lynx track crossing, family groups and size, prey abundance, other predators;

6. Suggest: 1 survey per month (November-March)
Smaller trend areas (subunits or drainages).

LYNX POPULATION CENSUS (Schwartz & Becker)

1. Continue evaluation;
2. Use to calibrate/interpret indices as needed.

PREY INDICES

Collect data on prey abundance on standardized flight route/ground transects;

MANAGEMENT AGENCIES

Need more flexibility to respond to lynx population changes, e.g. authority to issue Emergency Orders when necessary. (Editor's note: ADF&G has EO authority to close or open seasons).

III. HABITAT QUALITY

PROBLEM AREAS

Fire, logging, access.

DATA NEEDS

1. Productivity of habitat (food and cover);
2. Natural: climax habitat, forested vs nonforested;
3. Successional stages: prescribed fire, natural fire, logging induced changes;
4. Identification of importance of patch size to support animals;
5. Effect of other environmental variables (e.g. elevation);
6. Juxtaposition of habitats: natural vs following management (logging, prescribed burns);
7. What constitutes population viability (population questions);
8. Effect of roads.

FIRE EVALUATION

Locations:

1. Yukon Flats: provides all aspects of fire ecology/management. Current cooperators: FWS and ADF&G;
2. Kenai: provides opportunity to incorporate effects of fire into land management to achieve objectives. Current cooperators: FS, FWS, and ADF&G.

LOGGING EVALUATION

Location:

1. Southeast Alaska (current study being implemented). Current cooperators: FS and ADF&G.
2. Will require emphasis on value of retaining corridors, value of maintaining complete watersheds as refugia.

PETRO/MINERAL

Location: Interior

GENERAL POINTS

1. Emphasis should be on integrating effects and not competing for funds.
2. Independent work should be encouraged to include effects on furbearers.

USE OF INFORMATION

Predict effects of management practices and natural environmental perturbations on furbearer populations e.g. logging layout, road management, burn prescription, burn evaluation.

SPECIES TO EMPHASIZE

1. South Coastal: marten, wolverine, lynx, river otter.
2. Northern Alaska: wolverine, lynx, and marten.
3. Interior: marten, lynx, wolverine, red fox, beaver, wolf.

METHODS: Technical issue.

1. Time: formulation of study plan - incorporate biological consideration of species.

2. Cost: see study plan.
3. Emphasize interagency cooperation. Linkage between other groups. (1.) population assessment, (2.) harvest assessment.

IV. HARVEST ASSESSMENT

IMPROVE TRAPPER QUESTIONNAIRE

1. Go statewide;
2. Leave portion of form open to insert "local" questions;
3. In 1989-90, do a trial trapper questionnaire/calendar of harvest (front side/back side) test run in southeast Alaska to get trapper response;
4. Send draft of revised questionnaire to other agencies for review/input as well as to ADF&G area biologists;
5. Need trapper effort data.

SUPPORT (ACTIVELY) STATE LEGISLATIVE ACTION TO MAKE HARVEST DOCUMENT NAMES AND ADDRESSES CONFIDENTIAL.

EDUCATE PUBLIC ON NEED FOR HARVEST DATA.

1. To achieve greater compliance on sealing in state.
2. To achieve greater participation in Trapper Questionnaires.

CONSIDER ADDING MARTEN TO STATEWIDE SEALING PROGRAM, BUT "LOT" SEALING AS IS DONE IN SOUTHEAST.

V. PREY ABUNDANCE

Food habits of non-ungulate carnivore furbearers are reasonably well-known from studies in U.S., Canada, and Alaska.

Distribution of prey species is not well known in Alaska statewide. Somewhat known on a regional basis.

Status of Prey Populations in Alaska

	<u>Resident</u>			<u>Seasonal</u>	
	Small mammals	Grouse/Ptarmigan	Hares	Water-fowl	Passerines
Statewide	Unknown	Yes	Yes	Yes	Unknown
Regional	Yes	Yes	Yes	Yes	Yes
Quantitative Data(Q)					
Statewide	No	No	No	Yes	No
Regional	Yes	Yes	Yes?	Yes	Yes
Index Data (I)					
Statewide	No	Yes	Yes	Yes	Yes
Regional	Yes	Yes	Yes	Yes	Yes

Population Estimation: time, cost, personnel

Index of Relative Abundance: long-term, cheap surveys with uniform, standard, repeatable techniques.

What are we doing? I=Index, Q=Quantitative, D=Distribution

	F&G	FWS	NPS	FS	BLM	UAF
Small Mammals	Yes I/Q/D	Yes I/Q/D	Yes I/Q/D	No Inactive I	Yes D	No Inactive I
Grouse/Ptarmigan	Yes I	Yes (on Kenai)	No --	No (BG ^a ? SE)	No --	No Inactive Q
Hares	Yes I/Inactive Q	No --	No --	No --	No --	No Inactive Q
Water-fowl	Yes Q	Yes Q	Yes Q	No --	Yes Q	? ?
Passerines	Yes Q/I	Yes Q/I	Yes I	Yes Q/I	? ?	Yes Q/I

^a BG = Blue Grouse

METHODS NEEDED

1. Indirect; predator abundance:
 furbearers and raptors;
 Prey specific vs generalists.
2. Consider using: breeding bird surveys, Christmas counts, raptor surveys, productivity surveys.

TECHNIQUES FOR ASSESSING RELATIVE ABUNDANCE

Small Mammals:

1. Standard transect line, snap traps, 3 days (cost about \$300); Rd index and productivity.

Grouse/Ptarmigan:

1. Aerial flock flushing. Index in conjunction with moose surveys, 1 day (no additional cost).
2. Pellet counts on moose browse lines. Index 3-5 days (no additional cost).

Hares:

1. Pellet counts on lines or moose browse lines, 2 days;
2. Track counts, variable;
3. Questionnaires, 2 days.

Waterfowl:

1. Done by FWS. Quantitative data population estimate.

Passerines:

1. Christmas counts. Index 1 day.
2. Breeding bird survey. Quantitative + index 2-4 days/\$100.

VI. POPULATION STATUS INDICATORS

Recommend that sex and age data be investigated as a population status indicator for marten and wolverine.

1. Establish a brainstorming research group (to include Terry Bowyer, UAF, and representatives of the management agencies) to set up a research project that

will investigate the utility of sex-age ratios as population status indicators (status = increasing, decreasing, or stable).

2. Encourage current collection of sex and age data on marten and wolverine that will have a common clearinghouse available to all interested parties.
3. Hire a person who will coordinate the data collection and processing (part-time position).
4. Recommend that information on factors which may affect sex/age ratios be collected simultaneously.
 - a. Productivity: corpora lutea counts (to be processed at the University of Alaska Fairbanks;
 - b. Parasites: coordinated by Randy Zarnke;
 - c. Trapline characteristics (1 data collection sheet for recording this information will be designed and distributed by the clearinghouse person).
5. Set up a training session to instruct interested biologists on carcass analysis and importance of trapline characteristics. (This will also be done by the clearinghouse person).

Recommend completion of Randy Zarnke's "pilot" project on parasite incidence in marten; should be completed in 2 years with no extra money and little additional effort.

Recommend the trapper questionnaire as a useful population status indicator; cannot be used as a predictive tool; questionnaire should be standardized among the agencies working with trappers.

Pelt measurements are useful for determining juvenile status in lynx and probably otter, but not in marten or wolverine.

Recommend investigation of a technique for aging wolverine; possibly using skull measurements as they are for marten.

We can determine lynx population status using (1) pelt length (< 35" to determine % kits), (2) productivity through carcass analysis, (3) harvest statistics, and (4) hare trends. We need to know at what point harvest regulation changes are needed. No recommendations for a research project.

VII. POPULATION TREND COUNTS

AREAS WHERE SNOW-TRACKING IS GENERALLY POSSIBLE

Lynx, marten, wolverine:

1. Systematic surveys for relative abundance, aerial or ground.
2. Intensive "size-bias" technique for population estimates.
 - a. Cost and simplicity are advantages of (1), more applicable for remote areas;
 - b. Precision and actual estimates of density are advantages of (2), more applicable where access is good, if ground transects are necessary.
3. Placement of transects, survey routes, or intensive efforts depend on need for broad, regional information and knowledge of changes in distribution vs need for refined estimates in specific areas (stratification).
4. Combination of both approaches within a given area may be advantageous.
5. Ground transects can provide some general composition data (kittens) for lynx.

Canids: wolves, foxes, coyotes.

1. Existing aerial survey adequate for most situations;
2. Systematic "size-bias" technique in development and may be useful for point estimates in limited areas;
3. Same generally true for foxes and coyotes, but little known and no major questions involving these species at this time.

WHERE SNOW CONDITIONS POOR

1. Techniques unknown, limited, and/or more difficult.
2. Mark/recapture, possibly ground transects of surveys in mud, sand, or snow.

AQUATIC

1. Beaver: Cache surveys feasible and already used on most habitat types. A sufficiently good index to relative abundance.

2. Otter: No techniques known, coastal surveys in Southeast may be practical.

INFORMATION NEEDS

1. Annual, seasonal and local differences in movement rates;
2. Inter-regional movements at population level.
3. Further development of aerial surveys of tracks for relative track abundance (currently being done on Yukon Flats).

COST AND LOCATION

Totally dependent on local needs, area, etc.

1. Costs are not exorbitant. Trend information can be obtained at reasonable cost. Estimates of abundance somewhat more expensive.
2. Primarily interior regions for track surveys.

TRACK I.D. AND METHODS MANUAL

TRAPPER REPORTS ON HARVEST

Would be helpful if standardized and if use became established.

RESULTS OF FIRST INTERAGENCY FURBEARER WORKSHOP EVALUATION

Participants were asked to complete the following evaluation to get their views on how productive the gathering was for them. The reported benefits and deficiencies of this workshop will be used to improve future workshops. We appreciate everyone's response, and we show results of the evaluation for your information. N = 18.

Please circle the number which best expresses your reaction to each of the items.

1. The organization of the workshop was:

1	2	3	4	5	Mean = 3.5	Range = 2-4
Poor			Excellent			

2. The stated objectives of the workshop were:

1	2	3	4	5	Mean = 3.6	Range = 2-5
Vague			Clear			

3. Facilitation of discussion by the leader(s):

1	2	3	4	5	Mean = 3.4	Range = 1-5
Poor			Excellent			

4. The material discussed at workshop was of:

1	2	3	4	5	Mean = 4.1	Range = 3-5
Little Interest			Great Interest			

5. My concerns were addressed at the workshop:

1	2	3	4	5	Mean = 3.3	Range = 2-4
Disagree			Agree			

6. I had ample opportunity to express my ideas:

1	2	3	4	5	Mean = 4.1	Range = 2-5
Disagree			Agree			

7. My level of participation at workshop was:

1	2	3	4	5	Mean = 3.3	Range = 1-5
Inactive			Active			

8. Overall, I considered the workshop:

1	2	3	4	5	Mean = 3.8	Range = 2-5
Not Beneficial			Very Beneficial			

Participant responses to the following topics are summarized below.

Parts of the workshop that were most beneficial:

- Work Groups and their recommendations.
- Discussion of agency mandates, goals, and needs.
- Meeting others working in furbearer research and management.
- Opportunity to discuss wide range of furbearer issues.
- Discussion about the anti-trapping movement.
- Establishment of the Ad Hoc Advisory Committee.

Parts of the workshop that were least beneficial:

- Open forum discussion that often rambled.
- Time lost to organizational matters.
- Large number of participants with wide diversity of interests.
- Dominance of discussion by a few participants.
- Detailed discussions on specific topics.

How could future workshops be improved?

- More structured agenda.
- Narrower focus on specific topics.
- Smaller number of participants with similar interests.
- Hold intra-agency workshops first to set objectives.
- More formal presentations.
- Include key decision makers and user group members.

Topics I would like to see addressed by future workshops/meetings:

- Information needs for managing furbearers.
- Census/survey techniques.
- Population status and trend indicators.
- Methods to improve collection of harvest data.
- Identification of key studies in specific areas.
- Habitat/fire relationships with furbearers.
- Important prey species.
- Effects of harvest on furbearers.
- Regional concerns.
- Financing of furbearer research.
- Long-term goals.

Other comments and/or suggestions:

"The crying need for cooperative furbearer management programs in Alaska was made abundantly clear at this gathering."

"I was particularly impressed with the overall high level of cooperation and participation. Recognition of diverse agency objectives is a hard barrier to surmount, but I think it was very effectively accomplished."

"Overall, it was a great beginning step. We now need to make sure our progress doesn't disappear."

"We must be sure to follow through with a statement and recommendations to people in leadership positions. To me, that would seem to be a major product of the sort of workshop we had, in that it gives us an opportunity to make the point that fur work is underfunded and underemphasized."

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