OFF ROAD VEHICLE AND SNOWMACHINE USE IN ALASKA

A REPORT TO THE ALASKA BOARD OF GAME

PREPARED BY:

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION

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EXECUTIVE SUMMARY

The Board of Game (BOG) requested the Division of Wildlife Conservation update the 1990 report on use of off-road-vehicles (ORVs) and add an assessment of snowmachine use. This report provides a general overview of current issues related to use of ORVs and snowmachines as well as unit-by-unit descriptions. In general, use of ORVs for hunting has continued to expand, especially in road accessible areas of Southcentral and Interior Alaska. The majority of the increase is associated with the use of 4-wheel all terrain vehicles. In some areas, this expanded use of ORVs has positive effects by distributing hunting pressure over a larger area. In other localized areas ORVs create problems that warrant action to restrict use, but many situations require action that is not within the jurisdiction of the BOG (see Appendix A). One location was identified where removing restrictions on use of ORVs could enhance hunting opportunity without jeopardizing other uses and in one area trail development could mitigate adverse impacts of ORV use. The most significant problem identified is the impact of increased nonhunting recreational use of ORVs. Addressing this problem will require a public education and planning process involving multiple land and resource agencies and the public.

Snowmachines are now the most widely used form of ground transportation in the state, and general recreational use of snowmachines has increased rapidly in recent years. Snowmachines are widely used by hunters and trappers when snow and ice conditions permit. In most areas, legal use of snowmachines by hunters and trappers does not present management problems and may benefit management by distributing hunting pressure over larger areas. Two significant issues associated with snowmachines are the rising levels of disturbance during critical winter periods associated with large numbers of general recreational riders and illegal use of snowmachines to pursue and take game. The latter is a common practice in western and arctic Alaska where open tundra habitat is conducive to this pattern and where cultural values are more tolerant of mechanized pursuit of game. Neither of these problems can be solved by additional BOG action. The BOG cannot regulate general recreational use of snowmachines, and the BOG has already outlawed driving, herding or harassing game with snowmachines. These issues must be addressed through comprehensive educational and planning efforts.

The Alaska Department of Fish and Game (ADF&G) should work with users and other interested parties to evaluate the extent to which biological concerns or perceived user conflicts are valid and to develop management plans and strategies to address these issues. The BOG should continue to address use of ORVs and snowmachines within the context of it's regulatory process and the limits of it's statutory authority.

CONTENTS

INTRODUCTION

The Division of Wildlife Conservation provided a report to the Board of Game (BOG) in 1990 on the use of off-road vehicles (ORVs) for hunting in Alaska. For purposes of that report, ORVs were defined as 4-wheel drive trucks, automobiles, motorcycles, 3- to 8-wheeled all-terrain recreation and utility vehicles, vehicles with 2 tracks, air-cushioned vehicles, and airboats operated outside navigable waterways. Snowmachines were not included in the definition or report.

The report concluded that use of ORVs for hunting was increasing rapidly and recommended the BOG adopt a general policy to guide future regulation of ORVs. The BOG adopted that policy (now codified at 5 AAC 92.004) and has used it on several occasions as the basis for adopting restrictions on use of ORVs.

Improvements in the design, reliability and affordability of ORVs between 1990 and 1995 led to greatly expanded use of ORVs for travel and recreational activities in Alaska. Four-wheel-drive ORVs capable of transporting 1 or more people and a significant payload are now widely used for general transportation in rural Alaska and for a wide range of outdoor recreational activities in urban and rural areas.

During this same 5-year period, snowmachines also became more reliable and affordable. Snowmachines are increasingly used for transportation, general recreation and hunting or trapping.

During the 1995-1996 regulatory cycle, the BOG received numerous proposals designed to address concerns about user conflicts, habitat damage, adverse impacts on wildlife, and enforcement of existing regulations related to ORVs. Before acting on most of these proposals, the BOG asked the division to update the 1990 report and expand the analysis to include snowmachines. Specifically, the BOG requested that the division give a general overview, clarify ADF&G/BOG authority and policies, identify problem areas, and discuss alternatives for dealing with problems. This report is in response to that request.

In preparing this report area biologists across the state were asked to review the 1990 report and provide brief narrative updates on the overall use of ORVs, provide a brief description of snowmachine use in their areas, discuss current or potential problems and management options for dealing with the problems, and give examples of areas where ORV use could be expanded to enhance hunting opportunity. Much of the material presented in the 1990 ORV report is still current, including the extensive discussion and literature review of ORV impacts on soil, vegetation, wildlife, and other users. For this reason, the 1996 report should not be read as a separate document but rather as an addendum to the 1990 report.

This report includes a general introduction; a unit-by-unit synopsis of current use levels, trends, and problem areas; a list of areas where the division has identified specific concerns regarding use of ORVs and snowmachines, and management options for addressing these concerns (Appendix A); and a list of specific areas identified by area biologists where use of

ORVs or snowmachines could be expanded or enhanced to increase opportunities for public use without adverse impacts (Appendix B).

Readers should bear in mind the primary purpose of this report is to identify general issues and concerns, as well as areas where there are real or perceived conflicts between uses or users. Much of the information in the report is qualitative and anecdotal. This report is not intended as a decision document. Rather, it is intended to focus the attention of the BOG, ADF&G and public on issues or areas that need additional review, analysis and evaluation before any decisions are made.

GENERAL ISSUES

DEFINITIONS

A number of terms used in this report could be interpreted in various ways. The following definitions of some of these terms are provided to indicate what these terms mean in the context of this report.

ORV

State and federal regulations defining ORVs are similar. [1] Both state and federal definitions include a variety of motor-powered vehicles with wheels or tracks as well as airboats (though under state regulations airboats are only considered ORVs when operated outside navigable waterways). Neither state nor federal regulations define snowmachines as ORVs. No modifications to the definition of ORVs appears necessary at this time. Unless otherwise stated, the term ORV in this report refers to 3- and 4-wheelers, other types of all-terrain vehicles (ATV) except snowmachines, airboats, and hovercraft. In most of the unit-by-unit descriptions, the term ORV collectively refers to 3- and 4-wheelers and other ATVs.

Snowmachine

In this report, snowmachine means a small, lightweight gasoline engine-powered vehicle with a single or dual drive track and single or dual skis attached to handlebars for steering, designed to carry one or two passengers over snow or ice. This does not include larger, twin track driven over-snow vehicles with a multipassenger cab, commonly referred to as a snow cat. Snowmachines are not included within the definition of ORVs, but both types of

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[1] The definition of an "off-road vehicle" used by ADF&G, "includes 4-wheel drive trucks and automobiles, motorcycles, 3- to 8-wheeled all-terrain recreation and utility vehicles, vehicles with 2 tracks, air-cushioned vehicles, and airboats operated outside of a navigable waterway" (5 AAC 92.004). The US Fish and Wildlife Service defines an off-road vehicle as "any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, wetland, or other natural terrain, except snowmachines...and includes, but is not limited to, 4-wheel drive or low pressure-tire vehicles, amphibious machines, ground-effect or air-cushion vehicles, air-thrust boats, recreation vehicle campers, and any other means of transportation driven motive power from any source other than muscle or wind" (50 CFR 36.2(h)). The National Park Service defines an off-road vehicle as "any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh wetland or other natural terrain, except snowmachines or snowmobiles as defined in this chapter" (36 CFR 13.1(1)).

vehicles are subject to restrictions in special areas that prohibit use of wheeled or track-driven motorized vehicles off of a road surface (5 AAC 95.420).

Refugia

Refugia are areas that are either difficult to access or protected by law, which support populations of animals with little or no harvest pressure.

Post-rut Areas

Post-rut areas are areas used by moose during the period from mid-October through early December. They are often important areas because they provide quality browse after the energetically demanding breeding season.

LIMITS TO BOG JURISDICTION

The BOG's statutory authority over use of ORVs is limited to regulating their use as methods and means (AS16.05.255 [3]) for hunting or trapping and transporting hunters, trappers, or game (5 AAC 92.004). The BOG may take action if it finds that ORV use attributed to these activities in a specific area has resulted or is likely to result in one or more of the following conditions:

1 soil erosion or compaction, or vegetative changes, significantly affecting important wildlife habitat or wildlife distribution or abundance;

2 harvest of a population, sex, or age class significantly affecting condition, abundance, or trophy size relative to area management goals;

3 wildlife disturbance significantly affecting reproductive success, abundance, or condition; movement patterns, distribution, or behavior; or avoidance of important habitats such as mineral licks, feeding or birthing sites, or wintering habitat;

4 chronic conflicts with other user groups leading to a decline in the quality of the outdoor experience.

These conditions do not prevent the BOG from taking other action that it considers necessary or advisable to adopt or modify ORV regulations that might affect hunting or the transportation of hunters, hunting gear, or game.

Regulations covering ORVs under 5 AAC 92.004 do not include snowmachines.

Because the BOG can take action if hunting activity is <u>likely</u> to result in any of the above conditions, evidence that one of the above conditions has already occurred is not necessary. For example, the BOG does not need evidence that habitat destruction has already occurred or that bull:cow ratios are already low before action can be taken; only that these results are likely to occur if ORV use is not regulated.

Condition 4 above stipulates that the BOG can regulate ORV use by hunters even if the activity does not affect wildlife or habitat but leads to a decline in the quality of the outdoor experience. For example, regulating ORVs to improve the quality of hunting or other types of outdoor experiences is within the authority of the BOG when there are chronic conflicts among users.

Recreational riding of ORVs and snowmachines, which is increasingly popular, does not fall under the authority of the BOG. This creates two problems. First, some people who come to the BOG may find their concerns cannot be addressed. For example, the BOG heard from numerous Fairbanks area residents who objected to noise from use of airboats on the Tanana River and Flats in the summer months. Since most summer airboat use is related to fishing or sightseeing, the BOG could not regulate it, even if it wanted to.

Second, in cases where nonhunting use of ORVs may be adversely affecting habitat quality or productivity, the BOG cannot take unilateral action to protect habitat or wildlife populations. However, the BOG could encourage state and federal land management agencies and private land owners to work with users to eliminate or mitigate adverse effects of ORV use.

Many federal land managers already regulate use of ORVs on their lands. Existing federal regulations are described in the 1990 report and updated on a unit-by-unit basis in this report.

Finally, some of the problems with ORV use referred to in the unit-by-unit descriptions concerns abuse of existing regulations established by the BOG or by federal and state agencies. For example, some hunters use snowmachines to drive, herd or take game in violation of existing methods and means restrictions. No further action by the BOG can address the problem of illegal use of ORVs.

Limits to ADF&G Jurisdiction

ADF&G has limited authority to regulate use of ORVs or snowmachines. The commissioner only has authority to regulate use of ORVs and snowmachines to protect fish and wildlife habitat on state lands that are designated as special areas under Title 16 of the Alaska Statutes. Many state game refuges, critical habitat areas, sanctuaries and ranges have ORV restrictions, and use of ORVs and tracked equipment (including snowmachines) in these areas requires a special area permit issued under the authority of 5 AAC 95.400. Permits may be issued to individuals for specific periods of time and purposes, or as general use permits issued seasonally once frost and snowcover conditions permit use of snowmachines without jeopardy to habitats. The latter type of permit allows use by anyone during the general use permit period.

A few people who reviewed the draft of this report questioned ADF&G's authority to compile information on user conflicts, arbitrate between users or recommend restrictions on use of ORVs for any reason other than clear biological impacts. These individuals argued that ADF&G's role was strictly to monitor and report on biological effects and that the

public and BOG were responsible for identifying and resolving social, political or other nonbiological issues.

Alaska statutes empower the commissioner to gather data, statistics and information that, in the commissioner's discretion, will serve to fulfill the purposes of Title 16 (AS 16.05.050). Nothing in this statute limits the commissioner or ADF&G's authority to gathering biological information.

Further, the BOG authority is limited to setting regulations (AS 16.05.255). The BOG has no administrative or fiscal control over ADF&G, and no other resources to use in gathering nonbiological information. If ADF&G did not collect nonbiological information, the BOG would be limited to the information it could gather through the solicitation of public comments on regulation proposals.

Similarly, the BOG lacks the resources to involve potentially competing interest groups in management planning or conflict resolution outside the regulatory process. Accordingly, the BOG is dependent on ADF&G to develop management plans, facilitate public debate of issues associated with such things as use of ORVs in any given area, and bring options forward to the BOG for decisions.

ADF&G may make recommendations to the BOG regarding which of a number of biologically sound management outcomes the department would prefer. There is not debate, however, that it is the BOG, not ADF&G that has the authority to be the final arbitrator between conflicting interests with respect to nonbiological issues.

Increasing Use Patterns

ORVs

The unit-by-unit descriptions later in this report reveal that use of ORVs for hunting continues to increase in much of the state. However, there are only 2 areas where use of ORVs by hunters has reached a level that warrants consideration by the BOG, the Gustavus area in Unit 1 and the Alphabet Hills in Unit 13 (see Appendix A). The largest issue associated with increasing use of ORVs is the expansion in recreational riding. Summer recreational use of ORVs is contributing to resource impacts and public concerns in many areas around the state. Of particular concern are all areas of Unit 13, portions of Units 14A and B, Unit 16A, and portions of Unit 20.

Unit 13 is an especially popular area for ORV activity. Unit 13 is large, and the state road system provides access to much of the unit from major population centers of the state. A well developed system of ORV trails currently exists and is utilized by large numbers of ORVs. There are vast amounts of public land (both state and federal) in the unit with few ORV restrictions. The habitat is open and lends itself to unobstructed travel by ORVs. Because of the topography, scenic conditions and relatively easy travel, the unit is popular for recreational ORV use other than hunting.

Use of ORVs is so intensive and covers such extensive portions of Unit 13, that the current ORV policy does not adequately address the situation. ORV use is not just a hunter problem, though the number of hunters reporting the use of 3- and 4-wheelers alone had increased from 2 in 1983 to 1904 in 1994. The widespread use of ORVs in Unit 13 presents a management dilemma that will have to be addressed by a planning process involving a broad range of interested parties, not just hunters. State, federal and private landowners must also be part of the process.

Airboats

Modern air-powered shallow draft boats, commonly referred to as airboats, have become faster, can travel farther and carry heavier loads than earlier models. They have the ability to access areas that other boats, even jet-powered boats, cannot reach and have become very popular with Alaskan residents for hunting, fishing and general recreation activities. While some airboat owners have argued that technological advances also reduce total noise output from modern airboats, these vehicles are still among the loudest form of surface transportation.

Common complaints heard by division staff relate to excessive noise levels causing displacement of wildlife and decline in the quality of the outdoor experience and to habitat damage and conflicts between different hunting techniques. Increased use during summer months for fishing and general recreation has added to the complaints. Areas where public concerns have been received include portions of the North Slope of Unit 26, the Tanana Flats and Minto Flats in Unit 20, portions of Unit 6 and limited areas in Unit 1C.

As with other types of ORVs, the BOG can only regulate these vehicles when they are used for hunting related activities and only where they are operated outside of navigable waters.

Snowmachines

The first snowmachines were introduced to Alaska in the 1960s. By the mid 1970s, snowmachines replaced dog teams as the primary means of travel in rural Alaska. Currently, snowmachines are by far the most widely used method of surface transportation in the state. During the fall, winter and spring, snowmachines provide access throughout most of Alaska north of the Gulf Coast. Snowmachine travel is not limited by developed roads or trails like most vehicles, nor by waterways like boats.

Hunters and trappers have used snowmachines extensively and continue to do so. In most areas, legal use of snowmachines by hunters and trappers does not create management concerns. On the other hand, illegal use of snowmachines to take wildlife is a problem that was identified by a number of area biologists. In spite of regulations against driving, herding or harassing wildlife, snowmachines are sometimes used to chase and harvest wildlife. This use of snowmachines is more common in western and northern Alaska where such activity is more culturally acceptable.

Impacts of snowmachine use on wildlife are not limited to illegal use to pursue game. Over the past decade, general recreational use of snowmachines has increased far more than use

specifically for hunting and trapping. New suspension design has greatly increased riding comfort. Machines are now much more mechanically reliable and powerful enough to break trail through snow at depths formerly too deep for snowmachine travel. New snowmachines are also capable of much greater speeds and racing is common in open habitats and on frozen lakes. On many winter weekends, recreational snowmachine use is intensive around popular riding areas in southcentral and road accessible portions of interior Alaska. This activity raises concern by biologists about disturbance and displacement of wildlife during critical winter months and increasing incidental harvest of some species. Potential for habitat damage by snowmachines was not a common concern of the area biologists.

Neither of the two major concerns related to use of snowmachines (illegal use and increasing recreational use) can be addressed through further regulatory action by the BOG. Reducing illegal use to pursue game will require increased enforcement and education. The increase in general recreational use calls for additional research to quantify the nature and extent of impacts, educational efforts designed to make riders aware of the potential effects of their actions on wildlife, and in some areas, land-use planning involving users and land managers. Many snowmachine clubs have been engaged in such educational efforts and the division should assist with and complement their efforts whenever possible. Particularly important is education, planning, or land use designation to minimize adverse impacts in critical wildlife wintering areas.

Attitudes Towards ORVs, Snowmachines, and Airboats

In March 1994 ADF&G published the results of 3 surveys of the characteristics and attitudes of Alaska voters, Alaska hunters, and nonresident hunters towards wildlife. Several questions in these surveys involved attitudes towards the use of ORVs, snowmachines, and airboats and towards ownership of ORVs and snowmachines.

One of the questions asked of hunters was "Do you agree or disagree with the following statement? I prefer to hunt in areas where off-road motorized vehicles are not allowed." Sixty percent of hunters agreed with the statement, about 33% disagreed, and about 6% didn't know or had no opinion.

A similar question was asked of voters, "Do you agree or disagree with the following statement? I prefer to watch wildlife in areas where off-road motorized vehicles are not allowed." The response was similar with about 61% of voters agreeing, 25% disagreeing, and 9% didn't know or had no opinion.

Voters were also asked to indicate how they would consider the following in selecting wildlife viewing sites: a) many off-road vehicles and b) airboats in the area. In response to off-road vehicles, about 63% of voters reported that they would consider the presence of many off-road vehicles to be unattractive, 5% reported attractive, and 4% were neutral. In response to airboats, about 61% responded that they would consider air oats unattractive, 5% reported attractive, and 6% neutral.

Finally, both hunters and voters were queried about ownership of off-road vehicles and snowmachines. Hunting was the main reason for purchasing an ORV more often than for

purchasing a snowmachine. About 37% of hunters reported owning an off-road vehicle, of which, 43% reported that hunting was the main reason they purchased the vehicle. About 28% of hunters reported owning a snowmachine, of which, 19% reported that hunting was the main reasoned they purchased the vehicle. A smaller proportion of Alaskan voters as a group owned ORVs or snowmachines. About 24% of voters reported owning an off-road vehicle, of which, only 14% reported that wildlife viewing was the main reason they bought the vehicle. About 18% of voters reported owning a snowmachine, of which, 18% reported that wildlife viewing was the main reason they purchased the vehicle.

The data resulting from these surveys could be further analyzed to relate ORV ownership and attitudes to other factors such as location of residence (rural, urban), target species and success rates, number and locations of hunting and viewing trips, and demographic characteristics of owners.

RESEARCH NEEDS

ORVs

The 1990 ORV report extensively reviewed research on the effects of ORVs on wildlife. Though little of the research was done in Alaska, the author stated that "some studies in other states appear to be applicable to Alaskan wildlife, particularly where noise and activity are the chief disturbing factors." The author concluded that "research in other states has shown that ORVs can significantly affect wildlife resources and reduce recreational opportunities and quality of experiences of other legitimate users. In fact, a thorough literature review revealed few, if any, scientific studies where ORVs were operated without adverse impacts and no studies where ORVs were beneficial to wildlife populations or their habitat. Unrestricted ORV use in Alaska has resulted in user group conflicts and degraded soils and vegetation and, as the number of ORV users increases, impacts are expected to grow."

In this report a number of area biologists point to the potential benefit of ORVs in helping to distribute harvest in otherwise inaccessible areas or increase harvests to meet management goals (see unit-by-unit descriptions). However, in some areas, ORVs have actually concentrated harvest for some species, such as caribou in Unit 20E, resulting in user conflicts and higher than normal harvests. Whether or not ORVs have a positive or negative impact on wildlife populations and other users depends on the specific area, the species involved, the level of use, user behavior, the presence of other user groups, etc. Each situation should be analyzed separately and management options explored that will target the specific problem.

Suggested management options from the 1990 report include limiting ORV size, type, or number; designating open areas, trails, or times of use; closing areas to use except for retrieval of meat; closing areas to hunting and transporting game or to use by all ATVs (in the case of special areas); enlisting the cooperation of other land managers in regulating ORV use when impacts are caused by nonhunters. Most of these options have been implemented in the past or are still in place at the present time (see 1990 ORV report and the unit-by-unit descriptions). Research is needed on the success of these options in

producing the desired effect and on whether or not management options other than access restrictions could accomplish the same goal. In addition, research is needed on public response to and acceptance of implemented restrictions.

Snowmachines

Research is needed to determine the effects of snowmachine use on wildlife in Alaska. Snowmachines have a beneficial role to play in wildlife management because they help distribute hunting pressure and, in some cases, help biologists to reach their management goals. Moreover, they have been used to improve habitat conditions in some instances (e.g., making trails for moose in deep snow). However, the potential for snowmachine disturbance of wildlife is a concern for many biologists and members of the public in Alaska. The division is particularly concerned about the effects of expanding snowmachine use on wintering groups of moose, caribou, sheep, and goats and on denning brown bears. Certainly, the occasional passing of snowmachines presents little problem, and research from other states has shown that deer habituate to snowmachines, at least when the machines are confined to trails systems (Freddy et al. 1986, Eckstein et al. 1979, Richens and Lavigne 1978). In these studies, there were greater reactions of deer to humans on foot than to snowmachines that were moving. Snowmachines were even used to create travel routes for deer between preferred feeding areas. However, in Alaska, snowmachines are not always confined to established trail systems, making habituation to their use unpredictable. Much of the snowmachining is done in open areas above treeline. Responses of wildlife to snowmachines in open areas may be different than in forested areas (Richens and Lavigne 1978). Where snowmachines are used for hunting, the hunted species may be less tolerant of snowmachines even during periods closed to hunting.

Additional Information Available from ADF&G

Data on the use of ORVs and snowmachines for hunting and trapping are gathered in a number of ways by the division (e.g., harvest reports and sealing certificates). However, this type of information is not routinely analyzed by division biologists unless there is a specific interest for management purposes. Information on ORVs is collected in two categories: 3- and 4-wheelers and ORVs other than 3- and 4-wheelers. Other categories of motorized transport include highway vehicles, snowmachines and airplanes. This data could be analyzed to provide trends in use and success rates on an area specific or regionwide basis.

This information is archived by the division's Information Management staff. Electronic files are available and could be analyzed further by the division, other researchers or interested members of the public.

In addition, annual management reports dating back many years contain discussions of ORV and snowmachine use and their relationship to management goals. These reports could provide a historical account of ORV use and trends in specific areas before data were entered on computers or provide current updates in those areas where the data has been analyzed.

UNIT-BY-UNIT DESCRIPTIONS

UNITS 1A AND 2

ORV use in Units 1A and 2 is increasing as hunters and trappers access more of the area for their respective activities. Increased logging has provided a larger road network for access, and residents are taking advantage of the opportunity. On Revilla Island in Unit 1A and on Prince of Wales Island in Unit 2, hunters and trappers are accessing areas using 3- and 4-wheelers. Access to logging roads in Unit 1A is primarily by boat, and spur roads in Unit 2 can be accessed using highway vehicles. Concerns regarding user conflicts or wildlife and habitat impacts have not been identified by staff or the public.

Snowmachines

Snowmachine use is relatively limited in scope in this area because of weather conditions and land ownership. No conflicts or impacts have been identified.

UNITS 1B AND 3

Limited ORV use occurs in these units due to difficult terrain and land ownership. What use does occur is restricted to roads associated with logging activities. Only 6 of 778 moose hunters reported using ORVs during the 1995 fall hunt, and only 1 black bear hunter reported using an ORV during the 1994-95 season.

Snowmachines

Recreational use of snowmachines has seen a substantial growth on Mitkof Island because of an increase in the local population related to logging activity. Only 3 trappers reported using snowmachines during the 1995-96 season.

UNIT 1C

ORVs are not commonly used in Unit 1C, with two important exceptions.

In the Gustavus area, a small area of land surrounded by Glacier Bay National Park, ORV use has become common for hunter access and retrieval of harvested moose. This trend and increasing hunter effort in the area have led to complaints about user conflicts. Local concern about the effects of ORVs on wetland habitats prompted Gustavus representatives to the Icy Strait Advisory Committee to ask the division's area biologist to attend a public meeting in Gustavus in September 1996 to discuss the issue. The feeling of those present at the meeting (approx 40 people) was that ORVs used in connection with moose hunting should be used only for retrieval of harvested moose. The Douglas Area Office has repeatedly received inquiries and complaints about ORV use in wetlands at Gustavus since 1993. Most people who contact us are concerned about the possibility for altering drainage patterns and the resultant habitat changes, although there are also opinions expressed about fair-chase issues and the nature of competition between ORV-borne hunters and those on foot. The Dude Creek Critical Habitat Area, which was established to protect habitat used by migrating sandhill cranes, is also a popular moose hunting area at Gustavus. Mechanized access is an allowable use within the CHA, and while Title 16 permits are technically

required, they are seldom obtained. In addition to wetland habitat concerns, we have heard from people worried about the effects of harassment upon staging cranes.

ORV use during the Gustavus moose hunt was again the subject of controversy during the 1996 season. Use of ORVs, including the use of heavy equipment (e.g., backhoes, tractors), to retrieve moose from wetland areas provoked a new round of input from local residents to ADF&G. The Icy Straits Advisory Committee now supports restrictions on ORV use in connection with moose hunting, and a number of letters have been received from Gustavus residents who feel restrictions are necessary to protect habitat.

The second example of ORV use in Unit 1C is the use of airboats to access the drawing permit moose hunt (as well as bear hunts, trapping, and fishing) in the Berners Bay area (Lace, Berners, Gilkey, and Antler drainages). Access to these areas is exceedingly difficult by other means, so user conflicts have not developed.

UNIT 4

ORVs are not a significant means of transportation for hunting or trapping in this unit. Most use that does occur is generally recreational in nature. The limited amount of use in hunting situations is associated with logging roads. The Northeast Chichagof Island area has the greatest logging road system and the greatest highway vehicle and ORV use. In the Northeast Chichagof Controlled Use Area, brown bears may not be hunted with ORVs. Some localized declines to the Appleton Cove mountain goat population can be attributed to increased access to this area with logging roads built right up to alpine areas. In 1993, 5 or 6 goats were harvested in the road accessible areas and by 1995, no goats were taken. ORVs were used for hunting goats, but the same level of harvest probably would have occurred even if ORVs had been restricted. The decline affects only a small portion of the population and is not considered a management problem. Goats inhabiting areas away from road access are unaffected.

UNIT 5

ORVs, generally 4-wheelers, are a common means of access for moose hunters and retrieval of harvested animals in the Yakutat area. From 1990 to 1995, 9% of all hunters reported using ORVs as the primary access for the Yakutat Forelands moose hunt. During the 1995 hunt, 13% of all hunters reported using ORVs, indicating an increase in their use. These percentages probably underestimate the actual use of ORVs, for many hunters reporting other modes of transport probably use ORVs for access. ORV use is especially common in the western portion of Unit 5, accessible from Forest Highway 10 and other local roads. The only portion of the Yakutat Forelands not open to ORV use is a small area at the mouth of Tahwah Creek, closed by the US Forest Service.

Permanent ORV trails are readily seen in the roaded area west of the Dangerous River and from the end of Forest Highway 10 on the east side of the Dangerous River. Forest Service vegetation inventories have indicated that habitat types valuable to moose (i.e., willow stands) are especially sensitive to changes in drainage, and there is some concern from local residents as well as federal and state agency staff that by altering drainage patterns from

sheet flow to channels, ORV trails might have some impacts to moose habitat. Additionally, erosion from these trails could cause sedimentation of fish streams.

The level of competition for moose has increased to the point that hunters are feeling the pressure to take advantage of any opportunity to get a moose. Hunters on foot or in tree stands in Unit 5A complain about use of ORVs "pushing" moose out of areas and making it hard to hunt. There is also a belief among many hunters that when moose move away from ORVs, some hunters using these machines are shooting at moving animals at long ranges, leading to wounding losses. The area biologist has found 2 moose that were shot and never recovered, and protection officers have found even more.

UNIT 6

In general, Unit 6 receives very little ORV use. This is primarily due to the rough, steep terrain and extensive glaciation present in most of the unit. No wildlife related problems are presently known to exist, with the exception of the use of airboats to hunt moose on the deltas of the Copper and Bering Rivers and on the Tsiu River. At least 30 local residents own airboats and most are used to hunt moose. ADF&G receives about 3-5 public complaints each year, since at least 1991, about hunters using airboats to herd moose and shooting from airboats under power. These activities are already illegal and cannot be addressed by BOG action.

Efficiency of airboat hunters led to an overharvest of moose in Unit 6B from 1991-1994, resulting in a regulation prohibiting same-day hunting from airboats. The division was unable to adequately control harvest of bull moose in Unit 6B under a registration permit hunt from 1991 through 1994. The number of hunters did not significantly change during this period, however, hunter efficiency through use of airboats resulted in higher harvests during increasingly shorter hunt periods. Sixty-nine percent of bulls harvested were taken by hunters using airboats for transportation. Desired bull harvest was exceeded each year by 35-60 %, despite early closing of the season by emergency order. The number of days allowed for bull moose hunting with no special restrictions on motorized vehicles declined from 19 in 1991 to 1 in 1994. Exceeding the harvest target likely caused a decline in the bull:cow ratio from about 31:100 in 1991 to 22:100 in 1994. The continuation of this decline in bull:cow ratio was considered a management problem. This problem was considered by the local Advisory Committee and they submitted a proposal that was adopted by the BOG to prohibit same-day airboat hunting.

Other Species

Caribou and sheep are not present within Unit 6. However, mountain goats are present in some road accessible portions of Unit 6A, and an expanding road system and increasing human population are placing additional hunting pressure on these more vulnerable populations. A declining trend in these populations could require access and/or harvest restrictions in the future, but are not considered a management problem at this time.

Snowmachines

Very little snowmachine use occurs in Unit 6. During the last 5 years, only 1 black bear has been reported harvested using a snowmachine for transportation.

Trappers commonly use snowmachines during adequate snow years, however, there are less than 30 active trappers in Unit 6. Snowmachine use is confined mainly to drainages adjacent to the road system because of steep terrain. No impacts to wildlife or damage to wildlife habitat has been observed or reported.

UNIT 7

Land ownership in this unit is primarily under the US Forest Service which controls ORV access through regulation. Very little ORV access occurs in the unit because of difficult terrain and use restrictions.

UNIT 8

Kizhuyak Bay

ORVs are heavily used for recreation and for access to deer hunting areas south and west of Port Lions. This type of access is preferred by local residents. Increasing and spreading use has caused vegetation damage and erosion, even though the Kodiak National Wildlife Refuge restricts ORV use on refuge lands.

Afognak Island

ORV use, as a primary method of access by elk hunters, is on Afognak Island. This increasing use is associated with the expanding logging road network on the island. Occasionally, ADF&G will receive complaints by walk-in hunters that ORVs cause disturbance to elk and interfere with their hunting experience, however, these complaints are rare at this time.

Northeast Kodiak Island

Proliferating ORV trails in Chiniak Bay and the northern drainages into Ugak Bay are causing vegetation damage and soil erosion on state and private lands. Some of these trails are impacting sensitive wetland areas. Complaints received from the public focus on the visual impacts of tracking and scarring. However, at this time, ORVs are providing desirable access and are not in conflict with wildlife management objectives.

Northern Kodiak Island

Recreational snowmachine use in this area is expanding into mountain goat wintering areas and brown bear denning areas. At least one instance of a snowmachiner chasing a bear was witnessed, and biologists have observed a number of instances where snowmachines were used to follow bear tracks. Every year snowmachine trails have come within 50 yards of denning collared bears. With increasing snowmachine use, there is increasing potential for disturbance to goats and bears. However, there is no documentation that significant disturbance is occurring at this time. ADF&G personnel would like to work with local

snowmachine clubs to get voluntary concessions on avoiding sensitive areas. Cooperating with the US Fish and Wildlife Service to enforce existing regulations on harassing wildlife with motorized vehicles would also help to head off future problems.

Little or no hunting activity is associated with the expanded use of snowmachines, with the exception of some ptarmigan hunting.

UNIT 9

ORV use (primarily 3- and 4-wheelers) in Unit 9 is concentrated near most villages. Trail systems are expanding from these sites to local hunting and fishing sites. During many winters, snow conditions are not favorable for snowmachine use, and ORVs are used throughout the hunting and trapping season, especially south of Lake Illiamna. This use may be causing limited damage to vegetation near popular areas and routes.

Significant portions of Unit 9 are under federal agency supervision. ORV use in these areas is controlled by regulations issued by those agencies.

Harvest reporting in local villages is poor, so the importance of ORVs is underrepresented in harvest figures. During 1990-1994, the average number and percentage, respectively, of moose hunters using ORVs in each subunit were: 9A - 2.4 (17%); 9B - 3.6 (2%); 9C - 34.6 (22%); and 9E - 5.4 (9%). For the same 1990-94 period, the average number and percent, respectively, of caribou hunters reporting use of ORVs was: 9C - 140 (39%); 9E - 45 (11%). During 1990-94, only 21 (2%) of 1046 successful brown bear hunters used ORVs in Unit 9.

As indicated above, ORV use is most common in Unit 9C, especially in the Naknek drainage. This is related to the available road system and local population. During the 1980s, caribou commonly wintered near the towns of Naknek and King Salmon. As more hunters were attracted to this concentration of animals and road accessible hunting, competition between users, impacts on vegetation, and disturbance to game animals intensified. Cross country travel by ORVs to reach hunting areas in the King Salmon Creek drainage increased substantially during the September moose season and again in late fall when caribou were present in the area. New trails were established in the tundra from increasing ORV use, and some hunters believe that increased hunter activity displaced moose from upper King Salmon Creek during late fall, making them unavailable for the December moose season.

The Naknek-Kvichak Advisory Committee responded by proposing a Controlled Use Area for the eastern portion of Naknek drainage, restricting the use of ORVs by hunters to designated trails between August 1 and November 30. This proposal was controversial, but was implemented by the BOG in 1991. Since then, this regulation has been effective in reducing vegetation damage prior to freeze-up and has apparently gained support as conflicts between users diminished. Harvest of moose and caribou has not been compromised.

Some sporadic and isolated complaints regarding ORVs have been identified in other areas of Unit 9, however, no other ORV restrictions have been proposed to the BOG.

A recent ORV issue has been the use of these machines to access the outer barrier islands within the Izembek State and National Wildlife Refuge. Dual jurisdiction between state and federal agencies is present, with federal authority on the uplands and state authority on the tidelands. The concern is that use of ORVs has the potential to disturb staging waterfowl in this critical habitat area. ORV use to state tidelands is allowed through a permit from the Division of Habitat, and current levels of use do not appear to be impacting waterfowl populations.

Snowmachines

In Units 9C and 9B, snowmachines are used extensively for moose and caribou hunting when conditions permit. Satisfactory snow conditions are sporadic from year to year and even within a season. Increasingly unreliable snow conditions further diminish the use of snowmachines in villages further out on the Alaska Peninsula. When conditions are favorable, snowmachines serve to distribute hunting pressure better than other types of winter transportation.

UNIT 10

No ORV or snowmachine impacts or problems have been reported in Unit 10.

UNIT 11

Unit 11 is almost completely within the boundaries of Wrangell-St. Elias National Park and Preserve. ORV use in this area is regulated by the National Park Service (NPS) and is allowed by permit on designated specific routes for hunting, trapping and other traditional activities. The future use of ORVs in this unit will be influenced by concerns for visual and habitat impacts and additional implementation of NPS regulations.

Moose

Reported use of 3- or 4-wheelers for moose hunting has increased from 17% in 1990 to 25% in 1994. This reported increase does not represent a significant real increase in use because the total amount of use in Unit 11 is still relatively low in comparison to other areas.

Caribou

Caribou seasons have been closed in Unit 11 in recent years due to a significant decline in the Mentasta caribou herd. This situation is not expected to change, and hunting seasons will probably remain closed.

UNIT 12

Most of Unit 12 is under private or federal land ownership, and ORV access is limited. However, since 1990 use of ORVs substantially increased in the Tok River drainage,

resulting in impacts to wildlife populations. For example, the number of moose hunters using ORVs increased by 30-50% and most moose were harvested by hunters using ORVs. The subsequent decline in bull:cow ratios prompted the BOG to institute antler restrictions and develop new management direction. However, future management problems are anticipated because there is restrictive hunting regulations in adjacent units, increasing hunting pressure, and improved access due to timber and mining activities. Restricting ORV access is one option that could be used to address these management problems in the Tok River drainage.

ORV use will not increase in most of the rest Unit 12 because most of the land is under federal or private ownership or because the terrain is not suitable. In the remainder of Unit 12, existing seasons and bag limits for moose, caribou and sheep ensure the management objectives will be met. User conflict is expected to remain low because there is adequate separation between user groups. Habitat degradation is not a problem in the unit and is not expected to change during the foreseeable future.

Additional opportunities are not possible because of land ownership patterns in most of the unit. Access should not be improved to hunt moose because additional localized harvest would exceed the management objectives.

Moose

(see discussion above)

Caribou

ORV use is very limited for hunting caribou in Unit 12. Access is limited because of land ownership, and terrain is very difficult, further restricting this type of transportation.

Since 1991, a winter registration permit hunt has been available for Nelchina caribou in Unit 12. Hunters using snowmachines take over 50% of the harvest. Every year, staff biologists and protection officers witness 2-3 episodes of hunter harassment of caribou from snowmachines during routine flights, and ADF&G receives 10-20 complaints from the public regarding harassment of caribou from snowmachines. However, these activities are already illegal and cannot be changed through BOG action. Snowmachines provide increased hunter access which reduces hunter concentrations along the road system and probably reduces user conflicts as well.

Sheep

ORV use has remained low in Unit 12 because of the difficulty of accessing most of the sheep hunting areas. High levels of ORV use occur along the Nabesna Road but has not caused excessive user conflict or any biological problems.

Snowmachines

Snowmachines are used by most of the area trappers. There is little to no conflict concerning their use in terms of management objectives or user conflicts. (Also, see discussion on caribou above).

UNIT 13

Summary

Area biologist field observations, combined with data analysis from harvest report information, indicate that ORV use in Unit 13 has increased substantially since the early 1980s. For moose hunters alone, the reported use of ORVs increased from 777 in 1983 to at least 2415 in 1995 (Table 1). Recreational use probably exceeds use by hunters, although the division has no way of measuring this use.

Unit 13 attracts ORV use for a variety of reasons. The state road system provides easy access to most of the unit from the major population centers of the state. The habitat is visually attractive and generally open, which lends itself to unobstructed travel by ORVs. The topography, scenic conditions and relatively easy access make this unit very popular for recreational activities of all types. The large size of Unit 13 requires that some method of access be available to distribute use throughout the unit. The widespread use of ORVs in Unit 13 presents a management dilemma that will have to be addressed by a broad public planning process. Complicating factors include multiple agency and private land ownership patterns; existing, well-developed and expanding trail systems; and diverse user groups.

Moose

The use of ORVs by moose hunters in Unit 13 has increased appreciably since the 1990 ORV report. The most recent up-to-date data for ORV use for moose hunting in Unit 13 is from the 1994 season. During this season, 1904 moose hunters reported using 3- or 4-wheelers, and 817 used other types of ORVs, totaling 2721 hunters using ORVs to hunt moose (Table 1). This compares to the 1989 season, when 683 hunters reported using 3- or 4-wheelers and 710 used other ORVs for a total of 1393. While the number of "other" ORV users increased about 15%, the number of 3- or 4-wheeler users increased 180%. Overall, 45% of all Unit 13 moose hunters reported using some type of ORV as their primary form of transportation in 1994.

The increase in ORV use for moose hunting is due to the increase in the use of 3- or 4-wheelers beginning in the early 1980s (Table 1). The use of other types of ORVs remained fairly stable from 1983 to the present (Table 1). However, the reports of use of 3- or 4-wheelers by hunters increased from 2 in 1983 to 1904 in 1994 (Table 1). The percentage of moose hunters using all types of ORVs has increased from 25% in 1983 to around 48% in 1995, with all of this increase attributed to increasing use of 3- and 4-wheelers (Table 1). The percentage of moose hunters using other types of ORVs fell from 25% in 1983 to about 14% in 1995 (Table 1). For successful moose hunters, the percentage using all types of ORVs has increased from 34% in 1967 to around 54% in 1995 (Table 2). Success using 3- and 4-wheelers increased from 1983 to the present, while success using other types of ORVs declined (Table 2).

From 1990 through 1992, moose seasons were shortened throughout Unit 13 because severe winters and increased predation led to both reduced recruitment and increased adult mortality. Three short moose seasons of between 5 and 7 days in length discouraged many hunters from attempting very long or extended trips into remote portions of the unit just for

moose; in effect, the shortened seasons essentially excluded motorized use prior to specific opening dates. Beginning in 1993, moose seasons were lengthened to 30 days, running from 20 August - 20 September. The results of these changes in season length are evident in Tables 1 & 2. For example, in 1990 the number of successful hunters using 3- or 4-wheelers fell below what it had been in the previous 5 years; it stayed below this number until 1993 when it increased to more than the previous 3 years combined (Table 2). The expansion of the use of 3- or 4-wheelers for moose hunting was dramatic in 1993, increasing from 517 in 1992 to 1536 in 1993 (Table 1). By 1994, 34% of moose hunters were using 3- or 4-wheelers in Unit 13 and 36% of successful moose hunters had used 3- or 4-wheelers.

The current season opening date of 10 August is usually during a very favorable weather period for ORV use. August tends to be warm and dry, and ORV trails are usually in good condition, allowing fast, easy vehicle travel. Thus, the combination of increased season length and favorable travel conditions has led to increased use of ORVs for moose hunting in Unit 13 since 1993.

Coinciding with the increase in total numbers of ORVs has been an expansion of the trails in Unit 13 into previously unhunted areas. As hunters travel farther back into remote portions of the unit, a new hunting pattern is becoming apparent. Some hunters now take large ORVs into a base camp for an extended hunt because a longer hunting season provides for this opportunity. Because larger ORVs are much slower, traveling long distances takes a lot of time and was once a deterrent to such extended trips. Now, however, the larger ORVs often have hunters who accompany them on 4-wheelers. These small vehicles are faster and are often used to exchange hunters and transport fresh supplies quickly and more economically. Consequently, these larger camps can accommodate more hunters during the course of the season. This type of hunting really puts pressure on moose populations.

Caribou

The number of Tier II subsistence caribou permits issued has increased substantially between 1991 and 1995. Approximately 2800 permits were issued in 1991 and 12,000 in 1995. In 1991, 443 (18%) permittees reported using 4-wheelers and 217 (9%) reported using other types of ORVs to hunt caribou. In 1994, 1689 (30%) caribou hunters reported using 4-wheelers and 548 (10%) other ORVs, making 4-wheelers the most important transportation method for Nelchina caribou hunters. Total ORV use went from 660 hunters using vehicles in 1991 to 2237 in 1994. The reason for the large increase was obviously due in part to increased number of permits issued. However, the popularity of ORVs is evident in the increased percent of use between years.

ORV use for caribou hunting is popular in Units 13A, 13B and 13E. There are well developed trail systems in all these units. In addition the Denali Highway provides access in 13E and 13B that allows for ORV use off of the well developed trail systems. Hunters can spot caribou from the Denali, then use 4-wheelers to approach game or transport meat. This can entail cross-country travel in areas without established trails. Unit 13C is not as important to caribou hunters, although it has a number of trails that could be utilized for

caribou hunting because, in most years, caribou numbers are low in 13C during the fall season.

UNIT 13A

In Unit 13A, ORV use continues to be very high by both caribou and moose hunters. In the last 3 years moose hunters have extended their range from Eureka to the Susitna River. Prior to 1993, most ORV hunters only went as far as the Black River. Large camps with a number of 4-wheelers accompanying one or more larger ORVs are now scattered from the Black River to the north side of Goose Mountain near the Susitna River.

In Unit 13A, most of the vegetation is tundra or shrub, and the terrain allows ORVs easy cross-country access without trails. Trails can be found along most rivers and streams, especially east of Gunsight Mountain. The only significant portion of 13A that has not been accessible to ORVs lies in the Lake Louise Flats where the area is forested and wet.

ORV use was probably the major factor contributing to a bull:cow ratio which declined to 5:100 throughout much of Unit 13A in the early 1980s. Bull:cow ratios increased after antler restrictions were instituted. ORV use was not limited. Bull:cow ratios stabilized at only slightly higher levels due to continued high harvests of bulls with legal antlers. Conflicts between users have generally not been intense, presumably because non-ORV users recognize that this area is heavily utilized by ORV users and concentrate their hunting efforts in other areas.

ORV use in 13A west of Lake Louise Road has caused visible environmental degradation, but miners rather than hunters may be responsible, at least initially, for most of the impact. Environmental degradation is primarily a concern for visual quality; there has not been a significant loss of wildlife habitat, although ORV trail systems have expanded.

UNIT 13B

Unit 13B receives heavy ORV use in areas adjacent to the Denali Highway and the Richardson Highway north of Sourdough. The Clearwater and Sourdough Controlled Use Areas prohibit use of ORVs for hunting or transporting game, therefore, ORV use is concentrated south of the Denali Highway. Trails are extensive along Clearwater Creek, MacLaren River, and Tangle and Swede Lakes. Many trails lead into the Alphabet Hills and have continued to expand south with increasing hunting pressure. Along the Richardson Highway, trails branch out to the Gulkana, Gakona, and Delta Rivers.

Moose populations in portions of Unit 13B were formerly heavily harvested by hunters along the Denali Highway, and the Clearwater Controlled Use Area was established to resolve some of the problem. Bull:cow ratios are currently low throughout the unit, where the most accessible areas are heavily harvested. Now, with ORV trails extending farther each year, even the southern portion of the area receives considerable hunting pressure. In 1988, the BLM restricted ORV access to designated trails in the Tangle Lakes Archeological District, but this limits ORV use very little except within the boundaries of the District.

Expanding ORV trails into the upper Gakona River drainage and the Alphabet Hills has resulted in increased competition between hunters using aircraft and those using ORVs. These areas are popular among hunters using aircraft for access because they are remote. Harvests were restricted to backpacking distances from lakes accessible by float planes and existing strips. The southern portion of the Alphabet Hills still has some areas untouched by ORVs. This is one of the few areas where restrictions on ORVs could be implemented without impacting current ORV hunters and where hunters looking for a remote backpacking experience could hunt without competition from ORV users. There is currently little recreational or nonhunting ORV use. Habitat damage is minimal. Finally, the area is not an important caribou hunting area, and there would be little impact on caribou harvest.

UNIT 13C

Unit 13C also receives heavy ORV use. Trails extend from the Richardson Highway and Tok Cutoff. Extensive trail systems radiate east from the Gakona River, north along the Chistochina and Indian Rivers, and east from the Slana River. Trails also follow Ahtell and Suslota Creeks and Bear Valley. Trails have expanded yearly, and now most of the unit is accessible by ORVs. Although moose are heavily harvested along the ORV trails, heavy brush, timber, and wetlands limit cross-country travel somewhat. Consequently, bull:cow ratios in the subunit as a whole are currently acceptable.

UNIT 13D

The least important subunit for ORV use is Unit 13D. Much of the unit is inaccessible to ORV users because the Tazlina, Nelchina, and Matanuska Rivers are barriers and timber is heavy. ORV use is concentrated south of the Glenn Highway at Eureka and along the Klutina and Tonsina Rivers. Moose are heavily harvested along these trails.

ORV use is prohibited for hunting in the Tonsina Controlled Use Area. This area is an excellent example of how controlling access by ORVs can enhance both biological objectives and hunter satisfaction for walk-in hunters. Bull:cow ratios are high because most walk-in hunters remain close to the road. Bulls dispersing from the controlled use area provide better hunting in neighboring areas, a finding consistent with results of a study of tagged moose in Ontario.

UNIT 13E

Unit 13E has received heavy ORV use for many years. The trail systems are extensive, with numerous trailheads along the Parks and Denali Highways. Many trails exist south of the Denali Highway between Brushkana Creek and the Susitna River. Hunting pressure is extremely heavy in this area, and access is almost entirely by ORV. Trails expand yearly, with some trails resembling dirt roads. Heavy ORV use also occurs north of the Denali Highway, especially from the Nenana River to the Middle Fork of the Susitna River. ORV users gained access to most of this area during the last decade.

Snowmachines

Snowmachines are an important transportation method for trappers and hunters during winter months. Figures on use of snowmachines by all trappers are not available, however, in Unit 13, 70% of trappers responding to the 1994 trapper questionnaire reported using a snowmachine to run their line. In 1993, the last year when appreciable numbers of Nelchina caribou were in Unit 13 during the winter hunt, 1476 hunters reported using snowmachines to hunt. Snowmachine use is also important for brown bear hunters in early spring.

Recreational snowmachine use is particularly heavy behind Eureka in 13A. The trail system in the Eastern Talkeetnas is extensive and, because of low vegetation once snow depths increase, people can ride virtually anywhere. Using snowmachines to climb mountains is also becoming popular in the Talkeetnas. Lodges now keep trails groomed. Trail rides between Lake Louise and Eureka are common. A winter trail between Eureka and the MacLaren Lodge on the Denali Highway following the Tyone River and through the Alphabet Hills is being developed. This trail will open portions of the unit previously untouched by snowmachines and bring snowmachines into contact with some moose wintering areas.

In Unit 13B, snowmachine use has substantially increased in recent years. Summit Lake is extremely popular and, by the end of the winter, there are virtually no untouched areas between Summit Lake and the Gulkana Glacier. Paxson also provides ample opportunity, and the Denali Highway from Paxson to the MacLaren River gets heavy use. There is no question that when caribou winter around the eastern Denali Highway, snowmachine disturbance to caribou is a frequent occurrence, even when not associated with hunting. Whether or not the disturbance is causing adverse biological effects on the caribou is unknown.

Unit 13E on the Cantwell side receives heavy recreational use also. Since the MacLaren River Lodge has remained open all winter starting in 1994, snowmachining the Denali Highway from Cantwell to Paxson has become very popular.

Snowmachine use is also increasing in Units 13C and 13D. Recreational snowmachine use in these areas tends to be more dispersed as people leave concentration areas near Paxson and Eureka and explore the back country. There is the potential for increased disturbance of moose in 13C, as this is an important moose wintering area and snowmachines are not confined to established trail systems which would give moose an opportunity to habituate to their presence.

Chasing and harassing wildlife with motorized vehicles is already illegal, however, this activity still occurs to some extent. Just how commonly it occurs in Unit 13 would be difficult to determine because few people would engage in this activity if they knew they were being observed. At the very least, we need to complement the efforts being made by snowmachine clubs to increase the awareness of the public about the adverse effects of chasing or disturbing wintering animals with snowmachines.

UNITS 14A, 14B, AND 16A

Palmer Hay Flats State Game Refuge (14A)

The Palmer Hay Flats State Game Refuge was established in 1975 to protect and preserve the natural habitat and wildlife in this area. Addressed in a special area plan, ORV use is permissible during a specific time and in designated areas. However, the intensity of use by 4-wheelers was probably not anticipated by planning participants. The designated trail in one 200 meter stretch has become all but impassable and is growing substantially in width, causing a large area of disturbed/destroyed vegetation. Impacts on waterfowl are unknown, however, loss of nesting and brooding cover are suspected based on biologists observations over the last 5 years. In addition, creation of channels may be diverting water flow which could ultimately speed up the process of draining this important waterfowl wetland. These channels are formed when users leave the established trail. This issue may be addressed in an anticipated review of the PHFSGR plan (10-year review). A potential resolution is a seasonal floating bridge over the wettest areas. Elimination of use is sure to meet with strong resistance.

Bald Mountain Ridge(14A)

User conflicts have declined because most users now access the area by 4-wheelers or tracked vehicles. The potential for disturbance to post-rut moose by snowmachines (see the discussion below on the WMCHA) is more of a concern than impacts by ORVs.

Willow Mountain Critical Habitat Area (WMCHA)(14B)

There is some concern about the expansion of the ORV trail systems in the WMCHA that occurs during the fall moose season. However, more critical to moose that use this post-rut/winter habitat area, like most accessible subalpine areas in southwestern Talkeetna Mountains, is the growing use of the area by snowmachiners who are either hunting or seeking nonhunting recreation opportunities. These activities have been observed dispersing moose from critical feeding areas. The extent of the problem is unknown, but biologists have witnessed several episodes in the last 5 years while they were conducting aerial surveys. Biologists are concerned that the incidences of disturbance will increase as snowmachining expands. Another concern is the potential impact of snowmachining on the small subpopulation of caribou in the foothills east of the WMCHA. An educational program targeted at snowmachiners who use this area is one option to alleviate this problem. More restrictive regulations, however, may be necessary if disturbance is identified as a serious biological problem for moose or caribou in this area.

The logging road development approaching the WMCHA from the southwest mentioned in the 1990 report has only recently been connected to the trail system by 4-wheelers. As word spreads of this access, use is expected to increase substantially. The ORV trail systems in WMCHA appear to have grown in number of routes as well as level of vegetation damage since 1990.

WMCHA remains an area of concern, even though it has been lowered on the list of special areas entering ADF&G's Division of Habitat and Restoration planning process. In view of

diminishing planning personnel due to budget cuts, it can be assumed that planning for WMCHA will be delayed.

North Fork of the Kashwitna River (Brownie (VBM) Mountain) (14B)

This area was once inaccessible and served as a refugium for a large segment of bull moose in this subunit. However, it has recently been reached by 4-wheeler/snowmachine trails and is subject to increasing motorized use near post-rut moose concentrations. The extent of disturbance on moose is not known, but we include this area because of concern for the potential impact of ORVs and snowmachines on moose as use increases in this area. BOG actions cannot regulate the recreational use of these vehicles, so potential problems will have to be addressed by some other public planning process.

Peters Dutch Hills (16A)

The Peters Dutch Hills is advertised as a destination for snowmachine enthusiasts. Our concern is that the area is an important post-rut area for a moose subpopulation that has declined in recent years from deep snow winters and increasing predation by wolves. Potential impacts on the moose population are primarily disturbances during the post-rut/early winter period. Research staff have suggested that these areas are preferred or primary winter areas where moose would stay if not for snow depths pushing them to lower elevations. Without scientific studies to prove otherwise, we can only postulate that early dispersal from these post-rut areas is detrimental to over-winter survival of bulls and productivity. Snow machine trails may also enhance travel and predatory effectiveness by the growing wolf population in Units 14 and 16. On the other hand, snowmachine trails may make movements between feeding areas easier for moose, at least in winters of deep snow. In the winter of 1989-1990, snowmachine groups helped to develop snowmachine trails for moose on the terminal wintering areas at lower elevations. More information is needed on the potential for adverse effects on post-rut moose concentrations by expanding recreational snowmachining at higher elevations.

Northern Unit 16A off Petersville Road

The area of concern is the large, open bog meadows that provide 4-wheeler access for owners of remote recreational/seasonal cabins, for recreational travel, and for moose and black bear (baiting) hunters. Major trails through the bog meadows are becoming several hundred feet wide, expanding into the forest edge. The Tule white-fronted goose nests in this area and this ecotype. Potential impacts on the Tules are unknown, but population numbers appear to be limited to low levels and impacts could be important over time. The primary complaint by the public at this time is the visual eyesore created by the expanding trail system.

Other Areas

As a result of the recent adoption of the selective harvest strategy (SF/50") in Units 14 and 16, refugia have become less critical to subpopulation moose management. At this time, enhanced trail systems would be beneficial to the effectiveness of the SF/50" strategy and in meeting harvest potential. Current hunting seasons do not include the rut period in order to

avoid disturbance during breeding. However, as hunting pressure increases, there may be a need to restrict access, either temporally or spatially, to reduce user conflicts, to provide diversity of hunting styles, to enhance hunter success, or to provide refugia for moose from continual hunting disturbance.

Snowmachines

Use of snowmachines in the Matanuska and Susitna Valleys is substantial. During winter moose surveys, it is difficult to find large areas where snowmachiners have not ventured. While we have no means to measure the increase in use other than impressions by long time residents/pilots, clearly their use has been on a continual increase.

Use by trappers has been declining in recent years. Trappers in Unit 14 worked primarily from highway vehicles, snowmachines and 4-wheelers. Improvements to snow machines have caused substantial declines in the reported use of skis, snowshoes and dogsleds. Between 60 and 80% of trappers who seal fur in Unit 16 use snowmachines to access their lines.

Use by trappers is minor compared to the use by fishers, recreational riders, ptarmigan hunters, spring bear hunters and winter permit moose hunters. Recent adoption of new winter moose seasons and permit hunts are expected to substantially increase the reported use of snowmachines in moose hunting. The general spike-fork season this year did not provide a good example of interest and impact due to no snow and low hunter success. However, participation in November-December spike-fork hunts could reach 2000 hunters, with as many as half of those hunters using a snowmachine for part of their hunting activities. Approximately 60% of hunters in existing winter permit hunts for moose use snowmachines in Unit 16, but in Unit 14, where road access is greater, use of snowmachines by moose permit hunters is 30-40% of reported transportation methods.

Since 1990 spring snow conditions have ranged from good to excellent for snowmachining during late March to early May. Brown bear hunters took advantage of these conditions and improvements in snowmachine capabilities. Hunters have been able to extend their range in Unit 16. Successful bear hunters in Unit 16 report that almost 10% are now using snowmachines. Up to 17% of bears harvested during the spring season were taken by hunters transported by snowmachine. Between 1985 and 1989, snowmachines transported one percent or less of all spring harvested brown bears.

Potential impacts of high levels of snowmachine use on post-rut moose were described previously by area. The use of snowmachines , like ORVs , is not bad in itself, but in its misuse. Indiscriminate travel off established trails in critical moose wintering habitat or through willow patches used by ptarmigan are of particular concern, especially because we have little information on the biological impacts on vegetation and wildlife. Some ptarmigan "hunters" have been observed busting willow patches with their machines to flush birds. In deep, fluffy snow conditions , some operators have traveled from bush to bush because of improved traction on top of the willow stems. In the process, willow plants are debarked, damaged or broken. Loss of buds on which ptarmigan feed results from this activity. Field

observations by the area biologist suggest that this type of damage to vegetation is increasing.

Refugia for some species, such as ptarmigan and bears, may be lost due to snowmachine capabilities. In gently rolling terrain, ptarmigan may have little refuge from persistent hunting by snowmachiners. The same could be true for brown bears in spring under average spring snow conditions. The Peters Dutch Hills and Tokositna River Valley in Units 16A and 13E stand out in this issue. Numerous complaints have been filed about the unethical use of snowmachines by brown bear hunters. Hunters are reported to have chased bears down with snowmachines violating harassment regulations. User conflicts in the Tokositna River valley may be an exaggeration of a local user conflict issue, however, the ethical use of snowmachines throughout the state remains an issue, especially for spring bear hunting.

The BOG has jurisdiction to restrict the use of snowmachine by hunters only. Within special use areas such as state game refuges and critical habitat areas, special use permits are required for ORVs and snowmachines. Recreational snowmachiners cannot be restricted by the BOG or ADF&G (except in special use areas). Resolving problems or preventing potential problems between snowmachines and wildlife will have to involve a broad public process.

UNIT 14C

Game Management Unit 14C includes the state's largest urban area. ORVs and snowmachines are prohibited on most public lands in the Anchorage Bowl. The remainder of the subunit includes a large state park, two military reservations, a state game refuge, and part of a national forest. Consequently, ORV use is strictly regulated in most of the subunit.

Summary

ORV and particularly snowmachine use is increasing in accessible portions of Unit 14C where it is allowed. However, it is closely regulated by various state and federal land management agencies and has resulted in minimal damage to soils, vegetation, or wildlife populations. Snowmachiners would like to have more areas open in Chugach State Park, but they are heavily outnumbered by nonmotorized users (as evidenced by attendance at public meetings and in letters-to-the-editor) and are not likely to prevail. Snowmachine clubs work with park personnel to avoid problems and enhance recreational snowmachining. Few problems are associated with ORVs and snowmachines used for hunting or transporting game.

Chugach State Park

Established in 1971, this 700-mi^2 park encompasses most of the subunit's undeveloped wildlife habitat. Much of the park is mountainous, and it is heavily used by hunters, hikers, and campers. Two areas are open to ORV use. The Eklutna Lake Road is open 4 days/week to 3- and 4-wheelers and motorbikes. This is an old, gravel roadbed that is well-suited to small motorized vehicles. However, last year's flood washed out portions of the roadbed, and the trail is closed until 4 bridges are rebuilt. It should be open by early

September. Some sheep and moose hunters use ORVs to access the upper end of the valley, but most use is not related to hunting.

The only other portion of the park open to ORV use is Bird Creek Valley. A network of old logging trails was designated a "four-wheel area" by the Division of Parks and Outdoor Recreation (DPOR) in the late 1970s. Not designed for heavy machines, these trails suffered severe erosion by people in highway vehicles, particularly 4-wheel-drive trucks. DPOR installed a gate to prevent use by highway vehicles. Since then, an estimated 95% of the trails have become overgrown with alders (A. Meiners, pers. commun., 1996). DPOR plans to clear this brush on some of the trails to allow motorized and nonmotorized use. ORV use is prohibited beyond a designated wilderness boundary about 5 miles up the valley, but some ORV users ignore the sign. DPOR plans to erect a barrier at the wilderness boundary to discourage access. The Bird Creek trails are used primarily by small game, sheep, and moose hunters. ORV users are predominantly hunters during the hunting season.

Snowmachines are allowed in the valleys of the Eklutna River, Peters and Little Peters Creek (below the designated wilderness area), Eagle River (on gravel bars and frozen watercourses only), the South Fork of Campbell Creek above the Glen Alps entrance (including an access trail from Upper Huffman), and Bird Creek below the designated wilderness area. Snowmachines may be used only when DPOR determines snowcover is sufficient. Snowmachiners generally confine themselves to these areas, although they occasionally go into closed areas. Most snowmachiners in the park are not hunting. Park staff works closely with the Anchorage Snowmachine Club to develop trailheads and with the club, the Heritage Land Bank staff, and the Chugiak Community Council to evaluate alternate trailhead locations and trail routes.

Over the last 25 years, ORV and snowmachine users have accepted restrictions in Chugach State Park. The park's staff have built barriers where necessary and written some tickets. The presence of many nonmotorized park users has also ensured compliance.

Military Bases

Fort Richardson. ORVs and snowmachines are allowed on the portion of Fort Richardson north of Eagle River and several training areas south of the river. They are not permitted east of the Parks Highway or in the cantonment area. Users must register with the military police, however, the public is allowed to participate. Users must stay on trails. Snowmachines are only allowed when adequate snowcover is determined by the military police, and ORVs are not allowed during muddy periods. Consequently, there has been little damage to soils and vegetation. About 200 permits have been issued in 1996.

ORVs and snowmachines cannot be used for hunting; however, successful hunters are sometimes allowed to use them to transport moose. ORVs and snowmachines may be used to access several remote lakes for fishing.

Elmendorf AFB. Elmendorf allows ORVs and snowmachines only on designated trails. Snowmachines are allowed on 42 miles of trails only after adequate snowcover has accumulated. Four-wheelers are allowed on an 8-mile trail from Memorial Day weekend to

April 1. Use is presently restricted to armed forces personnel, retirees, and their dependents. ORV and snowmachine use requires a permit from the Air Force and a "hands-on" certification test. Approximately 500 snowmachines and 80 all-terrain vehicles are registered. Four-wheel-drive trucks and jeeps are not allowed off maintained roads. Use of snowmachines has increased about 200% in the last 5 years (D. Bostick, pers. commun., 1996). The only hunting or trapping season on base is an archery-only moose hunt by drawing permit. ORVs and snowmachines are not allowed for hunting, but a successful hunter can request to use an ORV to transport the meat to a nearby vehicle.

Chugach National Forest

ORVs and snowmachines are allowed in the valleys at the head of Turnagain Arm--Twentymile and Placer Rivers and Portage Creek--only during winter (December 1 to April 1) when use will not damage soils and vegetation. Opening and closing dates may be modified by the forest supervisor and areas can be closed if snowcover is not adequate. Lands managed by the National Forest north and east of Girdwood in the vicinity of Mt. Alyeska Ski Resort and the Portage Lake area, including the lake and Bear and Byron valleys, are closed to all motorized use year-round, except on roads.

Numerous snowmachines are operated in the Placer and Twentymile River valleys (C. Fox and C. Larson, USFS, pers. commun., 1996). On a weekend with good weather and snow conditions, 10-20 (sometimes more) snowmachines have been seen per day in each valley. Snowmachine use has increased an estimated 10-fold in the last 9 years in these valleys (C. Larson, pers. commun.). Most of the use in the Twentymile River valley is enroute to Carmen Lake and the nearby Twentymile Glacier.

Less than one-fourth of snowmachine and ORV use is by hunters--primarily small game, wolf, and coyote hunters and some trappers.

Some illegal use occurs. Moose hunters occasionally carry 4-wheelers in boats and use them before adequate snow has fallen. Some users operate their machines after a snowfall, but before the area has been opened by the Forest Service.

Damage to soils and vegetation has been minimal due to existing restrictions. However, moose appear to be very sensitive to disturbance in the Placer River valley and observations of moose running from snowmachines, sometimes at distances of one-half mile, are not uncommon in this area (C. Larson, pers. commun.). Research has shown that big game species can adapt to limited and predictable vehicular traffic (1990 ORV report: pg. 28); however, we have very limited information on the effects of motorized vehicles on wildlife in situations where the use is unpredictable, occurs in open areas, and occurs where species are routinely hunted with the use of motorized vehicles. The results of research from other areas on species such as mule deer and elk are not necessarily applicable to situations in Alaska where moose and caribou are involved, particularly when the situations in which the disturbance occurs is different between areas. There is a real need for more information on the effects of ORVs and snowmachines on wildlife in Alaska.

Anchorage Coastal Wildlife Refuge

ORVs and snowmachines are not allowed on the refuge, except by permit, and no permits have ever been issued for recreational use. Local residents complain about infrequent illegal access, but no one has been apprehended. Little or no damage has been done to soils, vegetation, or wildlife populations in the refuge.

UNIT 15

The majority of lands in Unit 15 are owned and managed by federal agencies, private corporations and local governments. Relatively little land is owned and managed by the state, but what is available is concentrated in the Caribou Hills area of Unit 15C.

The primary system of trails for conventional ORVs are the trails in Caribou Hills outside of the refuge. Most of these trails were established years ago as seismograph trails, then improved upon with the advent of modern day ORVs for hunting and cabin access. There are at least three recent, full time residents in the Hills. With the expected sale of Native lands to private residents, it is anticipated that that number will increase.

Increased logging activity, and associated roads, in Caribou Hills and other areas in Unit 15 are of concern. Management policy by the Ninilchik Native Association and CIRI allows only their shareholders and trespass permit holders (100 family permits issued in 1996) to use these roads. (There are 80 miles of gravel roads with ORV trails branching off in many places). This policy should limit ORV access to the road system and minimize impacts; however, enforcement of the policy is not adequate to forestall increasing ORV use. Access into the area at points other than where the guard is stationed allows ORVs to enter the area and join up with the system of trails without passing the guard. The judicious use of ORVs is not a problem and is considered an asset because it helps to distribute the moose harvest. However, with increasing use, there is the potential for undesirable effects such as higher harvest pressure on brown bears, more DLPs (defense of life and property), fewer refugia from hunting pressure, etc. The best approach to addressing this issue is to work with the users, requesting their input on how to minimize adverse effects of expanding ORV use while maintaining the opportunity to use these vehicles for access.

Snowmachines

Over the past several years the recreational use of snowmachines in the Resurrection Creek area has increased. These riders have the ability to access alpine habitat within the Kenai Mountain Caribou Herd wintering area. Because these animals are restricted to higher elevations where they can forage in windblown areas during winter, a marked increase in machine use may result in a shift in winter range or at least some unwanted harassment of caribou. On the other hand, access by snowmachines may serve an important function for managing harvests of this herd. Approximately 25 percent of this herd's range is on Kenai National Wildlife Refuge lands with the remainder on National Forest lands. The Refuge has an established policy of restricting snowmachine use in Resurrection Creek to below timberline. Expanding this policy to all of the winter range may make it difficult to reach the harvest goals for this herd in some years.

Snowmachine use in other areas ranges from very limited use by trappers to extremely heavy use in Caribou Hills and Turnagain Pass. Caribou Hills has supported a small amount of snowmachine use for ptarmigan hunting for many years. With the limit of five during mid to late winter, biologists don't anticipate a problem with allowing snowmachiners in the Hills to hunt ptarmigan. The Lost Lake area (including drainages such as Boulder Creek, Martin Creek, and Ship Creek) is becoming an increasingly important recreational snowmachining area, but staff are not aware of any problems that this use will create, with the possible exception of disturbance to goats in this area in the future.

UNIT 16

See Unit 14 discussion.

UNIT 17

ORVs are common modes of transportation in and around villages in Unit 17 where trail systems extend to local hunting and fishing areas. However, they are still not widely used for either big game hunting or trapping, although their use for hunting continues to slowly increase. Much of the habitat in Unit 17B is alpine tundra and would be easily accessible to 4-wheelers. However, through development of the Nushagak/Mulchatna Rivers Recreation Management Plan, a public planning process initiated by state agencies and local residents, a recommendation was made to close this area to upland motorized vehicle use. The Upper Mulchatna Controlled Use Area encompasses all of Unit 17B. Within the area, all motorized vehicles (except airplanes and motorboats) are prohibited from transporting big game hunters, their gear, and/or parts of big game from August 1 through November 1. Motorized vehicles can be used for transport within legal hunting camps. With these restrictions on motorized vehicles, there does not appear to be a significant increase in ORV use or user conflicts.

The only potential overland technology that we should monitor in this unit is hovercraft. A couple of local guides have small hovercraft and they allow access to many areas that were previously unreachable (e.g., spring bear hunting along areas with rotten ice or snow, moose hunting in the upper reaches of rivers that are swampy, or in sloughs and old river channels). The Coast Guard considers hovercraft as boats, however, the definition of ORVs used by ADF&G includes hovercraft.

Snowmachines

Snowmachines are the primary mode of access in Unit 17 from December through April. Winter employment opportunities are scarce in local villages, and local residents use snowmachines for subsistence hunting, trapping and other activities.

Modern snowmachines have become very reliable, and residents are able to access all areas of Unit 17 during adequate snow conditions. Over 90% of beaver and otter trappers report using snowmachines for access. Winter hunting with snowmachine access is the primary means for local residents to harvest caribou from the Mulchatna herd. Some recent interest

has been shown by nonlocal hunters in renting snowmachines for winter caribou hunts, however, that activity is still limited.

Snowmachine use, at current levels, does not appear to be impacting wildlife resources. However, snowmachine/wildlife problems that have been identified include illegal winter moose hunting in Unit 17A; harassing, herding and shooting caribou from snowmachines; and chasing, herding and shooting furbearers from snowmachines. All of these listed problems are already illegal activities and no additional regulations are necessary.

UNIT 18

ORV use in Unit 18 is generally concentrated around villages and fish camps, with trail systems radiating to local resource gathering locations. Four-wheelers are the predominant mode of transportation within the villages, but are only used to a limited extent for hunting big and small game and for trapping. The lowland tundra habitat type, combined with freezing and thawing weather conditions in winter, make ORV travel outside the village road system hazardous and difficult. Snowmachines and boats are the preferred method of transportation to hunting, fishing and trapping areas in Unit 18, except the beaches of Nunivak Island, Nelson Island and the coast south of Quinhagak, where ORVs are used extensively.

Most of Unit 18 lies within the Yukon Delta National Wildlife Refuge which has regulations prohibiting ORV use except when adequate snow cover is present. These regulations are enforced by refuge employees. ORV use in Unit 18 is relatively limited in extent and appears to be remaining at the same level of use as of the last reporting period.

Snowmachines

Snowmachine use in Unit 18 has the greatest impact on local habitat, and during winter months, the most impact on wildlife populations through harassment, hunting and disturbance. From about December 15 through March 15 of each winter, snowmachine travel is virtually unlimited over much of the Yukon Delta.

Use of snowmachines before adequate snowfall occurs has resulted in permanent scars and trail imprints on alpine and lowland tundra areas radiating from villages to popular hunting, fishing, trapping and travel corridors. These imprints then may be used by 4-wheelers which further erodes the surface.

The herding, molesting and harassment of big and small game and furbearers with snowmachines is widespread throughout the Yukon/Kuskokwim Delta. This method of hunting is a frequent topic at local advisory committee meetings. Although this activity is illegal, it is common knowledge that local residents chase and herd caribou, muskoxen and furbearers until they are exhausted. Another illegal activity that has been observed recently is night hunting with the aid of spotlights from snowmachines. This activity does not appear to be widespread at present.

Because of the winter snowmachine travel between villages in the area, much of the winter moose habitat is criss-crossed with trails. This activity during winter, at a minimum, disturbs moose and has the potential to displace moose from wintering areas and prevent populations from expanding into other areas.

Currently, snowmachine use is not a serious problem, however, it must be raised as a serious potential problem. Short winter seasons for impacted species, hunter education/ethics, and increased federal agency protection activities for federally managed lands should be continued to attempt to reduce snowmachine impacts.

UNITS 19, 21A, AND 21E

Largely because the area is inaccessible by road, ORV use in western interior Alaska (Units 19, 21A and 21E) is relatively low and has not increased significantly in recent years. With few exceptions, the area is largely inhospitable to ORV users, even though attempts have been made to bring machines in by aircraft. The only notable exception is the Farewell area of Unit 19C. A large airstrip at the abandoned FAA facility at Farewell provides access for multi-engined aircraft. These aircraft are able to transport ORVs and hunters interested in hunting moose, caribou, bear and bison.

Currently, there are no restrictions on ORV use in this area, and increasing use has led to an expanding network of trails radiating from the airstrip. This increase in use, primarily by moose hunters, has led to several complaints by bison hunters (who also use ORVs) of increased noise and competition. Bison hunters used to commonly take bison within 5 miles of Farewell, but this no longer a common occurrence. Although the use of ORVs in this area has increased dramatically in recent years, fall moose composition/trend surveys have not indicated declines in density or significant changes in sex or age ratios. Bison surveys indicate the herd continues to expand.

Snowmachines

Snowmachine use for hunting and trapping has not changed significantly in the past 10 years. Local residents use snowmachines as standard winter transportation. No significant increase in nonlocal snowmachine-borne hunters or trappers has occurred in Unit 19. A few complaints have been received from Yukon River villages in Unit 21E (e.g., Holy Cross) regarding moose hunters from downstream villages (e.g., Bethel) using snowmachines to access upriver village hunting areas. Regulations were recently enacted that prevented winter moose harvest within 1/2 mile of the Yukon or Innoko Rivers.

UNITS 20A, 20B, 20C, 20F, AND 25C

Controlled use areas with ORV restrictions include the Delta CUA, Yanert CUA, and the Wood River CUA. The remainder of the area is unrestricted for ORV use under game regulations. Denali National Park has ORV restrictions, however, most of that land is closed to state authorized hunting and trapping. The Bureau of Land Management has restricted ORV use in portions of the White Mountains National Recreation Area.

Use of ORVs for hunting is increasing throughout road accessible areas, primarily Units 20A, 20B, and eastern 20C. The increase is primarily in the use of 3- and 4-wheelers. For example, in Unit 20A, users of 3- and 4-wheelers accounted for 9% of the moose harvest in 1990-1991 and 22% in 1994-1995. Similarly in Unit 20B, moose harvest by users of 3- and 4-wheelers steadily increased from 14% of the total in 1990-1991 to 25% in 1994-1995 (1996 ADF&G Moose Management Report). Observations by staff suggest that ORV use is increasingly popular along the Rex Trail, Ferry Trail, Bearpaw Trail, Montana Creek, Faith Creek, Nome Creek, and Murphy Dome extension. ORVs are frequently used to hunt caribou from the Rex and Ferry Trails when harvest has been allowed.

The relative use of other types of ORVs has not increased (1996 ADF&G Moose Management Report). This changing pattern of use has not resulted in biological problems or in BOG proposals or actions to alter ORV restrictions. Recent proposals included a reduction in the size of the area where ORVs are restricted in the Wood River CUA .

Although similar data are not available for airboats, observations by staff indicate that airboat use, especially for moose hunting, is increasing in some wetland areas. Conflicts between user groups are apparent on the Tanana Flats. For example, proposals to restrict airboat use before the BOG at the March 1996 meeting generated substantial public comment. Identified concerns by nonairboat users, including hunters, focused on noise, conflicting hunting techniques, and habitat damage. Testimony against airboats was also given by nonhunters. Airboat users and supporters argued that noise levels have been reduced in modern airboats, airboat use distributes harvest into otherwise inaccessible areas, and that most airboaters use ethical and compatible hunting techniques. There are currently no biological considerations in the most controversial area, Unit 20A, as the moose population is increasing and seasons are generally being liberalized.

The BOG, during the March 1996 meeting, addressed public concerns regarding airboat use in the Tanana Flats by creating the Nenana Controlled Use Area which prohibits the use of airboats for moose hunting in portions of Units 20A and 20C. The Minto Flats Management Area was also closed to moose hunting by airboats and aircraft simultaneous with more liberal bag regulations in 1995-1996. There remains considerable controversy regarding this issue and there is little reason to think that it will soon go away.

Snowmachines

Snow machines are used locally for small game hunting and extensively for trapping. Snow machines are also commonly used for 2 moose hunts and one caribou hunt. Rural uses of snowmachines include travel between villages and cabins. Observations by staff suggest that recreational riding is increasing. Popular areas include the Tanana River, Steese Highway summits, and those trails in the White Mountains National Recreation Area where snowmachines are permitted. No wildlife population or habitat impacts have been identified with snowmachine use. Occasionally trappers report problems with disturbance of trail sets by other snowmachine users. In general, snowmachines generate little controversy for game management.

UNIT 20D

Overview

ORV and snowmachine use in Unit 20D differs north and south of the Tanana River. Unit 20D south of the Tanana River receives intensive ORV use. Terrain in much of the area is flat or the lower slopes of the Alaska Range, and the Alaska and Richardson Highways provide easy access to an extensive system of secondary roads and old military trails. Several large rivers flow out of the Alaska Range and also provide ORV access. The area also receives high levels of snowmachine use by recreational users and trappers.

Most of Unit 20D north of the Tanana River is difficult to access by ORVs and ORV use is generally low except in the Shaw Creek Flats portion of northwestern Unit 20D. Much of Shaw Creek Flats are wetlands and difficult to access by ORV except along an extensive system of old military trails in the area. Most of the remainder of northern Unit 20D is hilly and mountainous terrain with few trails except along major river corridors. The major river corridors provide primarily snowmachine access. Recreational snowmachine use is common in the Shaw Creek Flats and along the Goodpaster River by trappers and recreational riders. Most of the remainder of northern Unit 20D receives light snowmachine use.

Moose

ORVs are a very popular mode of transportation for moose hunters in southern Unit 20D and most segments of the moose population are accessible to ORV equipped moose hunters. As a result, antler restrictions are in effect in southwestern Unit 20D to compensate for widespread access to the area and intensive hunting pressure.

ORVs are also commonly used to hunt moose in the Shaw Creek Flats portion of northern Unit 20D. ORV use is low for the remainder of northern Unit 20D. Snowmachines are generally not used for moose hunting in Unit 20D, except during a mid-winter subsistence hunt in southern Unit 20D that has very low hunting pressure and harvest. Neither ORVs or snowmachines are preventing ADF&G from meeting moose management goals and objectives in Unit 20D. No conflicts are occurring between user groups as a result of ORV use.

Caribou

Hunting of Macomb caribou in southern Unit 20D is currently closed. When the hunting season reopens in the future, the core range of the Macomb Herd is within the Macomb Plateau Controlled Use Area (MPCUA) and regulations generally prohibit the use of motorized vehicles from August 10 - September 30, except at Fish Lake and the Dry Creek airstrip. ORVs are not preventing ADF&G from accomplishing goals and objectives of the Macomb Herd at this time.

A recent conflict developed between residents in the vicinity of the MPCUA and a proposed ADF&G regulation proposal. MPCUA boundaries include much noncaribou habitat that could be more accessible for moose hunters using ORVs. A regulation proposal was presented to the BOG in March 1996 to reduce the size of the MPCUA by removing much of the nonmoose habitat from the MPCUA. However, the BOG rejected the proposal due in

part to local concerns about ORV use in the area. Residents of the area were concerned that increased numbers of ORV hunters would be a safety problem for residents in the area, and they were concerned that environmental damage may occur from ORV traffic.

Hunting caribou from the Fortymile Herd in northern Unit 20D is very difficult by ORV. Most access to the herd is by aircraft. No conflicts are occurring between users in Unit 20D and ORVs are not preventing ADF&G from accomplishing goals and objectives of the Fortymile Herd in Unit 20D at this time.

Dall Sheep

Hunting Dall sheep in southern Unit 20D is within the Delta Controlled Use Area (DCUA), which also includes portions of Units 20A and 13B. The DCUA is closed to the use of motorized vehicles and pack animals from August 5 - 25, however, one airstrip provides legal access along the Johnson River. The motorized vehicle access restriction provides a walk-in hunting opportunity for hunters. The access restrictions are not in effect from August 26 until the hunting season closes on September 20.

The "walk-in" portion of the DCUA hunt is very popular and many "walk-in" hunters request that the entire season be restricted to walk-in only. However, use of ORVs is also very popular with DCUA sheep hunters after the access restrictions are lifted on August 26. Much of the DCUA is accessible by ORV, and many hunters use ORVs to access the area during the unrestricted access hunt.

Current regulations have been satisfactory to sheep hunters and no changes are planned. ORVs are not preventing ADF&G from accomplishing goals and objectives for Dall sheep in the DCUA at this time.

Other Species

ORVs and snowmachines are commonly used to hunt bison during the October 7 - March 31 season. Much bison hunting occurs on private land that has excellent access with ORVs and snowmachines. No conflicts are occurring between bison hunters and land owners and ORV/snowmachine use is not preventing ADF&G from meeting bison management objectives.

Much of the grizzly bear harvest occurs incidentally by hunters using ORVs to hunt other species, particularly moose. ORVs are commonly used to access black bear bait stations for spring black bear hunting. ORV use is not preventing ADF&G from meeting grizzly bear or black bear management objectives.

Trappers commonly use snowmachines to access trap lines in Unit 20D. No conflicts are occurring at this time and snowmachine use is not preventing ADF&G from meeting furbearer management goals and objectives.

Habitat Concerns

The greatest habitat concern attributed to ORV/snowmachine use is the potential degradation of critical caribou habitat on the Macomb Plateau. This concern is being addressed with motorized vehicle access restrictions in the Macomb Plateau Controlled Use Area.

Significant habitat degradation has occurred in the McCumber Creek drainage in southern Unit 20D, however, the degradation is associated with ORV use by miners rather than hunters. Several trails commonly used by hunters with ORVs have portions that have become eroded or degraded in some manner. Although the potential exists for increased habitat degradation in the future, the area biologist does not know of any major issues that need to be addressed at this time.

Additional Access Opportunities

The MPCUA is designed to protect caribou habitat and restrict motorized access for caribou hunters on the Macomb Plateau. However, the MPCUA boundaries include much noncaribou habitat that could be more accessible for moose hunters using ORVs. A proposal to reduce the size of the MPCUA was presented to the BOG in March 1996 but the BOG rejected the proposal due to concerns by local residents, as discussed above for caribou.

Southern Unit 20D has adequate ORV access along the numerous roads and trails in the area and no further access is needed. Northern Unit 20D has adequate ORV access in the Shaw Creek Flats. Providing additional ORV access into other portions of northern Unit 20D would require access across the Tanana River and would be difficult to accomplish without a major project. However, the area biologist believes that additional boat ramps along the Tanana River between the Canadian border and Fairbanks would be beneficial.

UNIT 20E

Moose

Transportation types used by most moose hunters are highway vehicles (34%) and 4-wheelers (21%). Success rate for hunters using 4-wheelers or other ORVs is about 33% and has been increasing the past 3 years. Increased success rates are due to more hunters discovering and using trails that lead into moose concentration areas. Hunters who use 4-wheelers in this area tend to concentrate more than hunters who use other transportation types and tend to have a greater affect on local moose populations. High harvest by this user group in several specific areas has caused the bull:cow ratio to decline below the management objective. In response, the BOG created a new controlled use area that restricts travel by ORV users to designated trails or areas. Additional motorized vehicle restrictions are not expected in the near future because difficult terrain is prohibiting most areas from being pioneered.

There appears to be little conflict between user groups because there are few areas that are accessible by multiple transportation types.

Caribou

ORV use, primarily 4-wheelers, has increased substantially during the past 10 years. During the 1970s and 1980s, Fortymile caribou were primarily accessed by hunters using highway vehicles (40-50%). Only 10-30% of the hunters used ORVs and were responsible for 20-30% of the harvest. During the 1990s, over 40% of the hunters reported using 4-wheelers and took over 50% of the harvest. There are three primary access points for hunters using ORVs, and hunting conditions along these trails were normally very crowded. The hunting season had to be closed by emergency order in 1991 and 1992 primarily due to the higher than normal harvests by hunters using 4-wheelers.

User group conflict has increased due to the rapid increase in the use of ORVs. Success rate for hunters using highway vehicles has declined and many believe that the increased use of ORVs contributed to the decline. They contend that ORV users have extended the existing trails to areas where little hunting historically occurred and are intercepting the herd early in its migration causing it to slow its progress toward the Taylor Highway. They further contend that since the annual harvest quota is currently low, hunters using 4-wheelers or other ORVs will often take the quota before the herd has a chance to get to the road.

To better meet the management goals and objectives for the Fortymile herd, the BOG recently adopted a policy that will prohibit the use of motorized vehicles along Chicken Ridge, the most popular trail system used to access the herd. This change is expected to reduce harvest and meet the management objective and also reduce conflict between user groups.

Sheep

The sheep populations in Unit 20E are not accessible by ORVs.

Snowmachines

Snowmachines are used extensively for trapping in Unit 20E and to access caribou during the winter hunt. Harvest levels have been within management objectives for both caribou and furbearers and user conflict is minimal.

Future Problems or Opportunities

By creating the Ladue River Controlled Use Area and by closing Chicken Trail to ORVs for caribou hunting, the BOG has resolved major management concerns in the subunit. At least for the next 5 years, no new opportunities for ORV users can be offered in Unit 20E. Moose densities are expected to remain at low densities and additional harvest would jeopardize the management objectives. The Fortymile caribou harvest objective has been reduced to 150 for the next 5 years. Methods and means will be restricted to meet this objective by limiting improvements in access.

UNIT 21

See narrative for Units 19 and 24.

UNIT 22

Use of ORVs in most areas of Unit 22 is near villages or along the 200 mile Nome road system. However, some expanded use has occurred by hunters who transport ORVs by road vehicle to departure points, and then travel considerable distances away from the road. New areas of concentrated ORV use may adversely impact moose populations. These areas include the upper Kougarok River drainage in the northern part of Unit 22D and the western portion of Unit 22B along the Council Road. Current survey data indicate that moose populations in most areas are remaining stable, but hunters have to travel farther from road access to find huntable numbers of moose.

The Bering Land Bridge National Preserve limits ORV use within the Preserve to existing trails. This restriction does not modify the above concerns regarding impacts, as relatively little of the area of concern is within Preserve boundaries. Additionally, few local residents are aware of the use restrictions.

UNIT 23

Local residents in Unit 23 commonly use ORVs for hunting, fishing and related activities. Permanent trail systems associated with these activities occur within 5-10 miles of each village. Some of these trail systems are also connected with limited road systems such as those near Kobuk, Shungnak, Deering and Kivalina.

Use of ORVs by commercial operators appears to have increased substantially in Unit 23 since 1993. Established guides are stationing ORVs in hunting camps to assist guided hunters. Concern associated with this increased use prompted a petition, circulated by residents of Noatak village, to the Federal Subsistence Board of Game in fall 1995 to restrict the commercial use of ORVs in the Noatak Controlled Use Area (which currently restricts the use of aircraft). Local residents are concerned about the increased mobility and efficiency of these hunters and the competition it creates for moose and preferred hunting sites, and ultimately the effects it might have on their subsistence lifestyle. Biologists are concerned about reducing refugia available for moose, especially the large bulls. The Mulgrave Hills is of particular concern because it is an important rutting area for moose and is being accessed via 4-wheelers by 2 guiding operations. Currently, ORV use *per se* is not threatening moose populations in this area; however, hunting overall is probably reducing moose bull:cow ratios in this portion of the Noatak drainage. Bull:cow ratios have declined from about 57 bulls:100 cows in 1988 to 34 bulls:100 cows in 1995.

The Squirrel River drainage also has a high level of nonlocal hunting, including use of ORVs. Conflicts with other users include residents of Kiana and Kotzebue who harvest the same moose population and other nonguided moose hunters who do not employ 4-wheelers. An often voiced concern of local users is the potential for deflection of migrating caribou away from important subsistence hunting areas during the fall. Some nonlocal hunters who have hunted the Noatak and the Squirrel River drainages for years are now complaining about crowding and are concerned that increasing commercial operations will eventually eliminate large bulls from the area.

The BOG can regulate ORV use when the harvest by ORV users significantly affects "trophy size relative to area management goals" and when there are "chronic conflicts with other user groups leading to a decline in the quality of the outdoor experience" (5 AAC 92.004). While the division can provide information on the use of ORVs in these areas and on the management goals for the area, the decision to restrict ORVs rests on the BOG's prerogative to decide these social questions.

Snowmachines

Snowmachines are commonly and extensively used by residents for winter transportation and for hunting and trapping. Additionally, reindeer herders use snowmachines to control their herds and to prevent depredation by wolves, bears and caribou.

Snowmachine use has caused local impact on some furbearer populations in Unit 23, such as wolverines. Most furbearers harvested by local residents are taken by tracking and then shooting them after close approach from snowmachines. This activity is technically illegal under state regulations but locally accepted and commonly practiced. Local hunters frequently cite this situation as evidence that state regulations are inappropriate for rural residents.

Caribou near villages during winter and spring are experiencing varying levels of disturbance from snowmachine activity. Some hunters chase caribou at high speed for long distances, resulting in increased energy demands, wounding, and nonselective harvest that results in waste of undesirable animals. However, responsible hunters use snowmachines to efficiently and selectively hunt caribou in Unit 23.

UNITS 24, 21B, 21C, AND 21D

Snowmachine access is essential for all trapping and winter hunting seasons in Units 21B, 21C, 21D, and 24. No recreational conflicts with hunters and trappers occur. Rivers take the place of roads in the units during summer and in winter snowmachines are used. Resource impacts are minimal and probably beneficial due to increased access to remote hunting areas which spreads out the hunting pressure over a wider range of the species being hunted. ORVs are used only on developed roads associated with villages in most of the area. Almost all of the villages are located along rivers, and the terrain in these areas is often associated with extensive sloughs, oxbows, and wetlands that preclude expanded ORV use. ORVs are currently banned for hunting within the Dalton Highway Corridor and are completely banned in national wildlife refuges and national parks.

UNITS 25B AND 25D

(see Unit 20 for narrative of Unit 25C).

Most of Unit 25 is under private or federal land ownership and road access is limited to a few areas on the southern and western boundaries of the unit. Access is also limited by the Yukon River on the south, the Dalton Highway corridor on the west, and the generally remote and rugged terrain.

ORVs are widely used for transportation and resource gathering activities on limited road and trail systems near local communities. Because of the limited extent of ORV trails, only a small percentage of the total harvest of moose and caribou is taken with the aid of ORVs. The use of ORVs is not likely to change significantly in the foreseeable future.

Airboats are rarely used in the area. A small number of nonlocal hunters have used airboats for hunting in Unit 25D and the Yukon River portion of Unit 25B in recent years. There are no reported wildlife population or habitat problems associated with airboat use. However, local residents are concerned about increased use of airboats in the future.

Snowmachines

Snowmachines are widely used by local residents for hunting and trapping and winter transportation in general. Snowmachine travel is most extensive on trail systems around local communities and near trails between communities. They are also used on remote traplines. The remote nature of the area and almost nonexistent road access greatly limits snowmachine travel by nonlocal hunters and trappers. However, residents of Stevens Village have complained about nonlocal snowmachine users intruding on local traplines from access points along the Dalton Highway.

The level of snowmachine use for hunting has been fairly stable for at least a decade, while the level of trapping effort has declined in recent years because of low fur prices.

UNIT 26A

Local residents use ORVs for summer hunting and other activities in the vicinity of villages and camps scattered throughout the unit. Wet terrain on the coastal plane of the unit restricts ORV use to coastal beaches and routes on drier ground. In mountainous inland areas, rough terrain and National Park Service (NPS) regulations restrict ORV travel to limited areas. Primary uses are for caribou and waterfowl hunting in coastal areas and caribou and sheep hunting in the mountains. Increased access through ORV use has dispersed hunting activity, and there are no reported wildlife population concerns at this time.

Habitat damage by ORV users in wetland areas of the unit has led to a confrontation between local users and the NPS, particularly with regard to impacts in Gates of the Arctic National Park.

Snowmachines

Snowmachine use is common and extensive by local residents throughout the long winter period. Caribou hunting pressure around villages has increased because of the increase in numbers of snowmachines. When caribou are found near villages, including Barrow, large numbers are taken in a short time period with the aid of snowmachines. These increased harvests do not appear to be a problem at this time.

Fast, efficient snowmachines have increased pressure on furbearer populations in the unit. With good snow conditions, hunters can travel throughout the area and typically access

areas over 150 miles from local villages. Furbearer populations appear to remain stable, with no reported problems at this time. However, hunters using snowmachines have the ability to significantly impact furbearer populations, and if declines are identified, restrictions on snowmachine use may be necessary.

UNITS 26B AND 26C

ORV use within the Dalton Highway Corridor Management Area (i.e., 5 miles on either side of the highway) is prohibited by regulation. Therefore, hunters cannot use ORVs within the corridor, nor use them to travel through the corridor to access other areas. A legal exception to this regulation would be to use boats to transport ORVs on rivers through the corridor to access state land; which is, in fact, being accomplished by some users. Under most conditions, this access would be very difficult using conventional boats, even jetboats. However, airboats are successful in achieving this feat, and this use is reported to be increasing. No conflicts between airboat users and other groups have been reported.

Kaktovik is the only village in the subunits and ORV use is reported to occur in the vicinity of the village. Other ORV activity has been reported from the Kavik airstrip. A commercial operator operates from this airstrip and caribou have been reported taken from this area. The amount of activity is unknown at this time, but appears to be limited. Similar ORV use has been reported from other large airstrips in the subunits.

The appendix to the 1990 ORV report states that ORV use contributed to increased sheep harvest within the Dalton Highway Corridor Management Area. Present enforcement of regulations that existed in 1990 probably have reduced the impact of ORV use by sheep hunters in that area. Except perhaps by aircraft or airboat, there would be few opportunities for sheep hunters to legally transport an ORV from the Dalton Highway to sheep hunting areas. Using ORVs for sheep hunting within ANWR would be prohibited. Use of snowmachines by residents of Kaktovik to hunt sheep in the Brooks Range probably hasn't changed much since the 1990 report.

Snowmachines

Snowmachine use for hunting is illegal within the Dalton Highway corridor. Use of the corridor for recreational snowmachining is occurring and is expected to increase. Commercial operators are offering tours from Coldfoot. Snowmachine use originating from outside the corridor is probably related to hunting activity from the villages of Nuiqsut and Kaktovik. The amount of activity seems to be stable at this time.

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Table 1 Use of 3- and 4-wheelers and other types of ORVs by all moose hunters in Unit 13

Year	3- and 4-wheelers	ORVs (Other than 3- and 4-wheelers)	All ORVs combined
1983	2 (<1%)	775 (25%)	777 (25%)
1984	250 (8%)	764 (23%)	1014 (31%)
1985	374 (11%)	706 (21%)	1080 (32%)
1986	456 (13%)	731 (20%)	1187 (33%)
1987	503 (14%)	703 (20%)	1206 (34%)
1988	517 (15%)	689 (20%)	1206 (34%)
1989	683 (19%)	710 (20%)	1393 (39%)
1990	438 (22%)	443 (22%)	881 (44%)
1991	570 (23%)	520 (21%)	1090 (43%)
1992	517 (19%)	446 (16%)	963 (36%)
1993	1536 (29%)	832 (16%)	2368 (45%)
1994	1904 (34%)	817 (14%)	2721 (45%)
1995[a]	1696 (34%)	719 (14%)	2415 (48%)

[a] Preliminary data.

Table 2 Number of successful moose hunters in Unit 13 using 3- and 4-wheelers and other types of ORVs

Year	3- and 4-wheelers	ORVs (Other than 3- and 4-wheelers)	All off-road vehicles
1967	- -	- -	475 (34%)
1968	- -	- -	515 (34%)
1969	- -	- -	357 (30%)
1970	- -	- -	323 (25%)
1971	- -	- -	436 (24%)
1972	- -	- -	210 (28%)
1973	- -	- -	201 (32%)
1974	- -	- -	320 (38%)
1975	- -	- -	297 (41%)
1976	- -	- -	301 (43%)
1977	- -	- -	323 (48%)
1983	0 (0%)	385 (45%)	385 (45%)
1984	54 (7%)	291 (36%)	345 (43%)
1985	87 (11%)	289 (37%)	376 (48%)
1986	116 (12%)	289 (31%)	405 (43%)
1987	117 (15%)	261 (34%)	378 (49%)
1988	135 (14%)	313 (33%)	448 (47%)
1989	167 (19%)	264 (30%)	431 (49%)
1990	78 (21%)	125 (33%)	203 (54%)
1991	135 (23%)	198 (34%)	333 (57%)
1992	101 (18%)	146 (26%)	247 (44%)
1993	363 (31%)	349 (30%)	712 (61%)
1994	318 (36%)	187 (21%)	505 (58%)
1995[a]	277 (32%)	194 (22%)	471 (54%)

[a] Preliminary data.

APPENDIX A Current, localized areas of concern regarding use of ORVs and snowmachines

Unit/ Specific area	Nature of concern	Affected policy element (1-4)[a]	Existing restrictions[b]	Management options
Unit 1C Gustavus, Dude Creek Critical Habitat Area	In the Gustavus area (a small enclave of state and private land surrounded by Glacier Bay National Park), ORVs have become more common for hunter access and moose retrieval. This trend, combined with an increase in moose hunter effort near Gustavus, has led to conflict between hunters. Complaints about ORVs focus on habitat damage, but user conflicts are also reported. ADF&G has no information relating to habitat damage, but biologists are concerned about the effects of ORV use on sandhill crane staging within the Dude Creek Critical Habitat Area.	1, 3, 4	A Title 16 Habitat Permit is necessary for ORV use within the boundaries of the Dude Creek Critical Habitat. It is up to Habitat and Restoration Division to determine the extent of restrictions on this permit.	Restrict ORV use through discretionary permit conditions under Title 16.. Establish a controlled use area in the Gustavus area that would include the Dude Creek Critical Habitat Area and would prohibit the use of ORVs for moose hunting.
Unit 8 Kizhugah Bay - Kupreanof Peninsula	South and west of Port Lions, village ORVs are heavily used for recreation and deer hunting on mixed state and private lands. Spreading trails are causing vegetation damage and scarring terrain.	1	Kodiak National Wildlife Refuge restricts ORV use. Enforcement is very difficult.	Cooperative planning with city of Port Lions and state to mark acceptable routes. Close sensitive areas.
Unit 8 NE Kodiak Island	Proliferating ORV trails in Chiniak Bay and northern drainages into Ugak Bay are damaging/scarring terrain on state and private lands. Trails provide access to deer hunters which is desirable and not in conflict with harvest management objectives.	1	Koniag Inc. requires permit for trespass.	Establish trails which are less destructive and close some areas (wetlands, streams). Improve trails. Would require cooperative effort by state, borough, city and private landowners.
Unit 8 Northern Kodiak Island	Snowmachines encroaching into goat winter areas and brown bear denning areas may contribute to stress and increased winter mortality of goats and bears. Snowmachines have traveled as far as upper Spiridon Bay drainage on western Kodiak, approximately 30 mi in N/S direction, in the past 2 years. Very little of this is for hunting.	3	Snowmachines are allowed only in specified corridor in Kodiak NWR, but enforcement difficult.	Work with local snowmachine club to get voluntary concessions on avoiding sensitive areas. Cooperate with US Fish and Wildlife Service on enforcement of regulations.

Unit/ Specific area	Nature of concern	Affected policy element (1-4)[a]	Existing restrictions[b]	Management options
Unit 9 Izembek State Game Refuge	The use of ORVs to access the outer islands within the Izembek State Game Refuge has been of concern because of potential disturbance to staging waterfowl.	3	A Title 16 Habitat Permit is required to access the refuge with an ORV.	Designate specific routes for airboats and ORVs, specific areas that can be accessed, and/or specific time periods when ORVs can be used as a condition of the Title 16 permit.
Unit 13 Alphabet Hills	ORV use has increased since 1990, and more hunters are using the south side of the Alphabets. ORV users are now competing with fly-in hunters for moose formerly harvested only by hunters using float plane access. Impact of ORV use is evident from the air in some areas. There is currently little recreational or nonhunting related ORV use. Numerous lakes exist for float plane access to allow for a moose harvest. The area is not an important caribou hunting area, and there would be little impact on the caribou harvest.	1, 4	Only the access points to get into the area are limited by existing regulations.	Create a controlled use area to restrict use of ORVs.
Unit 14A Palmer Hay Flats State Game Refuge	Addressed in a special area plan, ORV use is permissible during a specific time and in designated areas. However, the intensity of use by 4-wheelers was probably not anticipated by planning participants. A portion of the designated trail has become all but impassable and is growing substantially in width, causing a large area of disturbed/destroyed vegetation. Impacts on waterfowl are unknown, however, loss of nesting and brooding cover are suspected. In addition, creation of channels may be diverting water flow which may ultimately speed up the process of draining this important waterfowl wetland.	1, 3	ORV use is permissible during a specific time and in designated areas under a special area plan.	This issue may be addressed in an anticipated revisitation of the PHFSGR plan (10-year review). A potential resolution is a seasonal floating bridge over the wettest areas.

Unit/ Specific area	Nature of concern	Affected policy element (1-4)[a]	Existing restrictions[b]	Management options
Unit 14A, 14B Willow Mountain Critical Habitat Area, North Fork of Kashwitna River, Peters Dutch Hills, Bald Mountain	Use of ORVs and snowmachines impact moose during the post-rut early winter period. These areas are preferred or primary winter areas where moose concentrate until snow depth pushes them to lower elevations. Early dispersal from these post-rut areas may be detrimental to over-winter survival of bulls as well as reduce productivity. Snowmachine trails also enhance travel and predatory effectiveness by the growing wolf population in Unit 14.	3, 4	None	Work with DNR to develop access restrictions and a trail enhancement program.
Units 20A, 20C Tanana Flats	Increasing user conflicts and potential habitat concerns over the use of airboats for hunting moose and waterfowl exist in this area. Airboat users maintain that they help distribute harvest by accessing areas that other users cannot, and that great strides have been made toward reducing noise problems. Other users complain that airboat noise is not compatible with still hunting and calling hunting methods, that airboats are overly effective, and that airboat hunting practices are frequently not fair-chase.	1, 4	The Board of Game approved the Nenana Controlled Use Area in March 1995, closing a substantial portion of 20A and 20C to the use of airboats for moose hunting. This action may substantially reduce user conflicts by providing an area where other users can hunt in the absence of airboats. Some concerns remain because the area with the highest airboat use, highest density of airboat trails, and greatest number of user conflicts was not addressed. In addition, airboat users argue that portions of the closed area are only accessible by airboats and opportunity has been needlessly lost.	Monitor effectiveness of NCUA.
Unit 22B That portion adjacent to the Council Road	Since the late 1980s, all-wheel-drive 4-wheelers have become extremely popular with outdoor enthusiasts who use the Nome road system. Hunters transport ORVs to departure points on the road where they access areas up to 50 miles away. This expanded use occurred during a time	2, 3	The Bering Land Bridge National Preserve limits ORV use within the preserve to existing trails. However, only a small portion of the area of concern is within the preserve.	A 1994 moose management questionnaire sent to local residents indicated season and bag limit restrictions would be more palatable to local residents than permit hunts or controlled use areas. If harvest restrictions become necessary, existing

Unit/ Specific area	Nature of concern	Affected policy element (1-4)[a]	Existing restrictions[b]	Management options
Unit 22D Upper portion of the Kougarok River drainage and that portion adjacent to the Kougarok Road	when the moose population in the various subunits of Unit 22 declined by 35% to 50%. The use of 4-wheelers is heaviest in the upper Kougarok drainage in northern Unit 22D and in the western portion of Unit 22B along the Council Road. Although the proportion of the harvest taken by hunters using 4-wheelers has begun to decline during the 1994-95 regulatory year, many hunters still must range farther from the roads to find huntable numbers of moose. Current data indicate that the moose population in most areas is stable in size. However, if the moose population declines from its current size, more restrictive regulations may become necessary.		In addition, very few local residents know about the regulation.	antlerless seasons should be closed or shortened. Restrictions in the length of the bull season and/or antler restrictions would be next. Restrictions on ORV use should only be implemented as a last resort.

[a] 1 = 5 AAC 92.004 (a) (1); 2 = 5 AAC 92.004 (a) (2); 3 = 5 AAC 92.004 (a) (3); 4 = 5 AAC 92.004 (a) (4).
[b] Include 5 AAC regulations and applicable land use laws.

APPENDIX B Current and potential areas of opportunity regarding use of ORVs and snowmachines for hunting

Unit/ Specific area	Nature of opportunity	Affected policy element (1-4)*	Benefits	Possible problems created
Unit 13B Sourdough Controlled Use Area	Eliminate the Sourdough Controlled Use Area prohibiting the use of ORVs for hunting and transporting game.	4	1) Increase the opportunity for hunters to use ORVs for hunting and transporting game. 2) Better chance to meet the harvest goal for the Nelchina Caribou Herd. 3) Reduce the chance of adverse public reaction to seeing caribou killed along the road system (firing line).	This area has been a controlled use area since 1971 to establish an area where hunters accessing the area from the road did not have to compete with snowmachine hunters.

* 1 = 5 AAC 92.004 (a) (1); 2 = 5 AAC 92.004 (a) (2); 3 = 5 AAC 92.004 (a) (3); 4 = 5 AAC 92.004 (a) (4).