

**FEASIBILITY ASSESSMENT FOR MAINTAINING OR
INCREASING SUSTAINABLE HARVEST OF MOOSE IN
GAME MANAGEMENT UNIT 19A**



Prepared by

DIVISION OF WILDLIFE CONSERVATION

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Board of Game meeting, March 2024

Feasibility Assessment template -- Version 3, January 2013

Overall assessment of potential to increase harvest: Low¹

Department recommendation: Neutral

I. FEASIBILITY ASSESSMENT²

A. Definitions

1. Define the relevant geographic area for assessing abundance of prey and predators (Appendix A, part 1); **Unit 19A downstream of and excluding the Holokuk River drainage.**
2. Recommend a time period for evaluation of the proposed program that matches the regional Alaska Board of Game (BOG) cycle: 6 years³;
3. Note if the feasibility assessment is for intensive management (IM; legal requirements in Appendix A and the *Intensive Management Protocol*) or another purpose; **This program will include issuing permits to the public for the aerial take of wolves under an intensive management program.**

B. Review Management Objectives and Current Abundance and Harvest

1. List the population and harvest objectives for prey species and current estimates of each; objectives may be in regulation for IM (Appendix A, part 2) or in survey and inventory reports otherwise; **The current IM population and harvest objectives are for all of Unit 19A and 19B. Apportioned to just unit 19A the population objective is 4,300 – 5,300 moose with a harvest of 240 – 300.**
2. Briefly review biological rationale of IM objectives (Appendix A, part 2) or other objectives for prey species; **Unit 19A has high hunter demand with a harvest of moose primarily for meat. Annual harvest is greater than 100 moose.**
3. List the population and harvest objectives for predator species in survey and inventory reports; **Unit 19A has a wolf population estimate of 85 wolves with 50 wolves in the proposed wolf control focus area.**

C. Recommended Management Strategy

1. Briefly describe the proposed management strategy for the ungulate population (actions to be taken on habitat, predation, harvest, access, or other factors; **The Unit 19A moose population has been growing since 2010 with no predator control efforts in place. Effectively reducing wolves in the proposed WCFA by at least 60 – 80% may allow further growth and harvest of moose.**
2. Propose measures of progress toward population or harvest objectives to be evaluated, identifying if additional data collection beyond survey and inventory program is necessary; **Measures of progress will include monitoring population**

¹ Component factors are discussed in Section II.

² The purpose of the feasibility assessment and process are described in *Intensive Management Protocol*.

³ Six years is the recommended time period for evaluating progress toward objectives because it fits either a 2-year or 3-year regional BOG cycle and should provide adequate time to assess whether a program is causing improvement in ungulate abundance or harvest in the defined area.

growth and increases in harvest. If IM is implemented, regular GSPE and composition surveys will be required, and harvest reporting will allow the Department to assess the effectiveness of the program.

3. Provide a brief explanation for collecting or evaluating data from untreated areas for comparison to areas treated under the management program as evidence in a scientific study design that the treatment effects are working as intended and not simply an artifact of nontreatment effects (e.g., widespread improvement in calf survival because of mild winter across region, not because of predation control in a specific area). **Data will not be collected from untreated areas for comparison.**
4. Provide an estimated cost of implementation (operations and field staff salary) for the proposed program over the evaluation time period. **Over the life of this program 40 adult cow moose would be collared, 2 GSPE surveys conducted, and annual twinning and composition surveys conducted for a total cost of \$215, 000.**

II. POTENTIAL TO ACHIEVE UNGULATE POPULATION AND HARVEST OBJECTIVES⁴

- A. Population increase in ungulates required to reach population objective (may be represented as comparable density). **The upper end of the current IM population objective in Unit 19A is 5,300 moose. The current population in Unit 19A is 5,500 moose. We are currently above the upper end of the IM population objective.**
- B. Increase in average estimated harvest (last three regulatory years [RY]; RY = 1 July–30 June) to reach harvest objective [*if applicable, clarify for IM areas at low density how many prey are needed to meet local needs as an initial means of contributing toward IM objective for that unit*]. **The Unit 19A harvest objective is 240 – 300 moose. An average of 135 moose are harvested annually in Unit 19A.**
- C. Potential to mitigate biological limitations in proposed IM area (Appendix B.I). **Low**
- D. Potential to reduce or moderate hunting conflicts (Appendix B.II) **Low. Access is limited to major river drainages in the area.**
- E. Anticipated public participation based on expense and other factors (Appendix B.III). **High for harvest, low for public control programs.**
- F. Data availability for designing an effective management plan [Appendix C]. **Low/Moderate**
- G. Potential to measure or demonstrate progress in ungulate population recovery or an increase harvest within a defined time period (Appendices B.I.E. and Appendix C). **Moderate**
- H. Potential to document reasons for success or failure in population recovery or harvest increase (Appendix B.I.E). **Low**

⁴ The background data used in evaluating potential are found in Appendices B and C.

APPENDIX A. Legal elements and criteria for intensive management objectives and a feasibility assessment.

Department staff should review and ensure the following four elements have been met [*Brief listing of information by bullet may be useful for Sections 1, 2, and 3 this appendix*]:

1. Definition of populations:

- The relevant area for defining an ungulate population under intensive management (IM) is that defined as a positive determination in Title 5, Alaska Administrative Code, Chapter 92, Section 108 (5 AAC 92.108). **Unit 19A has a positive finding for IM.**
- “Game population” is defined in AS 16.05.940(20) as a “group of game animals of a single species or subgroup manageable as a unit.” Clarify the purpose of ungulate or predator management zones proposed to be smaller than areas under 5 AAC 92.108. **The proposed WCFA within Unit 19A would focus predator reductions in the portion of the Unit with the best moose habitat and the WCFA also encompasses the major communities in the Unit. Finally, only removing wolves from a portion of Unit 19A ensures wolves will persist in Unit 19A.**
- Consider whether a population with a positive determination for IM (5 AAC 92.108) should match or differ from amounts necessary for subsistence (5 AAC 99.025) for the same geographic area. **Currently the ANS and the IM harvest objectives are different.**

2. The Alaska Board of Game (BOG) has established population and harvest objectives for IM of identified ungulate populations for a high level of harvest by humans:

- Positive determination made for species and herd (caribou) or unit/subunit (moose, deer) per 5 AAC 92.106(1) by considering the following factors:
 - Historic harvest that meets or exceeds defined levels (caribou: 100, deer: 500, moose: 100); the highest three consecutive years and three most recent years are provided by department. **Yes**
 - Accessibility (roads, rivers, trails, landing strips). **None, with the exception of rivers.**
 - Use of harvest primarily for meat. **Yes**
 - Hunter demand (reported hunting effort, number of applicants for permits). **Yes**
- Population and harvest objectives established in 5 AAC 92.108 are based on these criteria in 5 AAC 92.106(2):
 - Effects of weather, habitat capability, diseases, and parasites.
 - Maintenance of viable predator populations (see definition in *Intensive Management Protocol*).
 - Maintenance of habitat conditions suitable for other species in the area.
 - Effects on subsistence users.
 - Cost, feasibility and potential effectiveness of possible management actions.
 - Landownership patterns within the range of the population.

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- Accessibility to harvest.
 - Other factors considered relevant by the BOG.
3. Depletion of the ungulate population (abundance or harvest below objectives) or reduction of the “productivity” (recruitment) of the population has occurred and may result in a “significant” reduction in the allowable harvest per Alaska Statute, Title 16, Chapter 5 (AS 16.05.255[e]). **The IM population objective has been met. However, the IM harvest objective has not been met.**
 4. Enhancement of abundance or productivity of the big game prey population is feasibly achievable utilizing recognized and prudent management techniques (AS 16.05.255[e][3]).
 5. The BOG is not required to adopt regulations to provide for an IM program per AS 16.05.255(f)(1) if a proposed IM program is:
 - Ineffective based on scientific information.
 - Inappropriate due to landownership pattern.
 - Against the best interest of subsistence uses.
 6. The BOG may forego a feasibility assessment if per AS 16.05.255(f)(2) it declares that a biological emergency exists and takes immediate action to protect or maintain the big game prey population in conjunction with the scheduling for adoption of those regulations that are necessary to implement section (e).

APPENDIX B. Elements of a feasibility assessment for an area (deer, moose) or herd (caribou).

I. BIOLOGICAL FACTORS

Biological factors are the basis for evaluating potential to achieve population or harvest objectives. Information may be yes/no, numeric, categorical, or not applicable depending on species or area. Brief explanations may be warranted along with local data where available. In most instances professional judgment by department staff will be required to put numbers in context in the recommended management strategy (Section I: Feasibility Assessment, p. 1).

A. Nonpredation and Nonhunting Mortality of Prey

1. How frequently is there markedly reduced survival due to annual weather (snow depth, especially associated with complicating factors, such as severe cold; ice on snow events; flooding; drought)? **Occasionally**
2. How extensive is vehicle mortality along road and rail systems that reduce harvestable surplus in the population (estimated number killed annually or as a percentage of total kill by humans that includes harvest and defense of life or property)? **N/A**

B. Productivity of Prey Population and Habitat (may include prey density effects)

1. Evidence of inherent habitat limitation (e.g., nutrient deficiency) manifested in low reproduction, body weight, or survival? **No. The department does not conduct twinning surveys in Unit 19A due to low densities and difficulty obtaining a sufficient sample of moose. However, fall composition data indicate good calf production and in 2022 there were 48 calves:100 cows.**
2. How strong a negative effect from the local prevalence of diseases or parasites? **Low. We have no data to suggest any significant level of disease or parasites.**
3. Evidence of longer-term weather trends changing forage production or other habitat requirements (e.g., markedly increased area in recent burns or noticeably less frequent flooding) and its consequence for the ungulate in question. **Equivocal. There is less frequent ice scouring, however with climate change there may be more frequent fires which would benefit moose. In general this area tends to have mild winters with regular thaws throughout the winter.** Note trend in habitat capability. **No data.**
4. Evidence of high or excessive levels of forage use (excessive means evidence of plant mortality from inability to rejuvenate after persistent grazing or browsing at some proportional level of biomass removal). **No data.**
5. Has the combination of natural and human-caused disturbance produced an extent and mixture of vegetative seral stages capable of maintaining the present productivity if the population changes due to management treatment at a moderate level of increase? **Yes.** At a substantial level of increase? **Uncertain.**

C. Potential Effectiveness of Proposed Predator Control (based on number of predator species and seasonal prey location)

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1. Is effect of predation by individual predator species known for the ungulate species of interest in the proposed area? **No. There have been no mortality studies conducted in this area.**
 2. Is predation control being proposed for one or multiple predator species? **This IM assessment only considers wolves.**
 3. Are there concentrated calving and/or young rearing areas of ungulates for focused bear or wolf control? **No.**
 4. Are there concentrated winter ranges of ungulates suitable for focused wolf control? **Yes. The majority of the moose in Unit 19A are found in the western portion of the unit. This would be the area of focus for wolf reductions.**
- D. *Potential Effectiveness of Public Participation in Predator Control (under permit) or Predator Harvest* (see also III.A and III.B this appendix)
1. Number of licensed hunters and trappers within or near proposed management area (size of potential participant group) and the proportion of these hunters and trappers actively harvesting predators. **This area has a very small human population without a large active trapping community. An average of 5 wolves were sealed per year in 19A from RY18 – RY22.**
 2. Estimated wolf harvest rate (percentage of estimated fall population, average of three most recent regulatory years). **The estimated wolf harvest in Unit 19A over the last 3 years is 6% of the estimated fall population.**
 3. Estimated black bear harvest rate (percentage of estimated spring population, average of three most recent regulatory years). **Unknown; black bear sealing is not required in Unit 19A.**
 4. Estimated grizzly/brown bear harvest rate (percentage of estimated spring population, average of three most recent regulatory years). **Over the last 3 years 1 to 2 brown bears have been harvested in Unit 19A per year.**
 5. Historical effectiveness of a predator control program in this area (where applicable). **This area had a wolf control program from RY04 through RY08. During that 5 year period only 10 wolves were taken, the program was determined to be ineffective and was discontinued.**
 6. Number of competing predator control programs in the region and the anticipated impact of adding an additional program (potential dilution of participation by skilled members of the public). **The McGrath area office currently has 2 active programs, Unit 19D and Unit 19E. Getting public participation in Unit 19E is difficult and the potential to get public participation in Unit 19A is likely to be low as well.**
- E. *Ability to Confirm Treatment Response* (e.g., predator control, habitat enhancement, selective harvest) in treatment areas with data from nearby and comparable untreated areas through assessment of biological parameters using existing techniques. Low sample size for survey data may limit applicability in low density situations. Describe whether the following criteria for evaluating response to treatment are possible or recommended (*Yes/No* answers):

1. Established periodic survey for abundance. **Yes. Unit 19A is surveyed on a 3 year cycle.**
2. Fall composition surveys for young to adult female ratio as index to survival **Yes. Fall composition surveys are conducted annually in Unit 19A.**
3. Fall composition surveys for yearling to adult female ratio as index to survival **Yes. Fall composition surveys are conducted annually in Unit 19A.**
4. Radiotelemetry for survival of specific age cohorts. **No. We have no radio collared moose in Unit 19A.**
5. Total prey harvest and age-sex composition of harvest among local residents, state residents, and nonresidents (where applicable). **Yes. Moose hunting is currently in Tier II and we have excellent harvest reporting.**
6. Harvest per unit effort, particularly in focused program areas where the initial intent is reallocation of mortality from predators to harvest to first meet local harvest needs. **Yes. Reports from Tier II hunters allows us to assess hunter effort.**

II. SOCIETAL FACTORS

Societal factors associated with hunting conflicts (e.g., constraints to access, acceptable methods, and harvest expectations), hunter access, and public tolerance for intensive management practices.

A. *Public expectation for predator control and increased ungulate harvest* must be understood prior to initiating programs to increase ungulate populations. Public conflicts over ungulate harvest methods can reduce options for controlling population growth. Failure to limit growth can reduce the condition of habitat and ungulates to the extent of reduced productivity. Critical components of conflict mitigation are identifying acceptable predation control methods as well as the potential for additional ungulate harvest opportunities that are acceptable to the hunting and nonhunting public. Defining the benefits of increased harvest is complex because hunter motivation may include economic factors (cost of meat replacement) and intangible measures of satisfaction (continuation of hunting culture, time spent in the field with family or friends, etc.).

1. Has the public defined an acceptable quantity and sex/age structure of ungulate harvest? **Yes. The Central Kuskokwim Moose Management Plan identified moose population objectives. However this plan was finalized in 2004 and is now almost 20 years old.**
2. Does the level of unreported or unknown harvest hinder the ability of the department to evaluate response to management treatments? **Yes. The State season is managed using Tier II permits and we have excellent reporting. However, there is an overlapping federal permit and obtaining federal data is a challenge.**
3. Has the department informed constituents about ecological and biological constraints (nutrition, forage condition) relative to setting upper limits for population densities of managed ungulates? **No.**
4. If possible from historic data, characterize hunter density where significant conflicts occur between hunters: **High. In 2004 and 2005 hunting was regulated using a**

- registration permit and over 1000 permits were issued each year. User conflicts were high.** and between hunters and nonhunters: **Low.**
5. If possible from historic data, what is potential for conflict in rural areas between local hunters and nonlocal hunters? **High. Conflicts between local hunters and hunters from downriver villages which are much larger were high when the number of permits issued was unlimited.**
 6. Conflicts or problems associated with access, such as existing access constraints. **Many. Access is limited to navigable drainages in the area. Large areas along these same drainages are private lands with access available only to local corporation shareholders. Finally, there are significant amounts of Federal lands which are only open to federally qualified subsistence users.**
 7. *Acceptable strategies to spread out hunters and minimize trespass on private lands.* **Few.**
 8. *Acceptable strategies to minimize unacceptable levels of trail damage on public lands.* **Not applicable. Very few people use off road vehicles or ATV's for access. Most hunting takes place using boats.**
 9. Acceptance of restricted methods or means for *harvest, particularly near communities* (e.g., archery or muzzleloader). **No.**
 10. Anticipated increase in vehicle mortality with ungulate population growth (poses a public safety risk). **Low.**
 11. Anticipation of strongly adverse public reaction to a management tool (e.g., predation control, prescribed fire, selective harvest), geographic area, or other facet of the proposed program. **Low. There is strong local support for predator management and selective harvest such as cows.**
 12. Potential for predator control to have indirect negative effects on alternate prey, such as increase in medium predators that can prey on ungulate young, particularly in species of high interest to hunters (e.g., increased coyote abundance following extended periods of wolf control to benefit moose or caribou could increase predation on Dall sheep lambs during peak abundance of hares, with implications on number of legal rams in future years). **Low.**
 13. Coordination among hunters and trappers about control methods and allocation among ground-based trappers, aerial gunners by permit, and department *use of helicopters.* **Uncertain. There are very few local trappers who target wolves. However, there may be some level of conflict.**
- B. *Landownership* may influence or restrict access for predator control or ungulate harvest. Proximity of restrictive status to communities or areas where management treatments would be most effective is the important context (see discussion of management strategy, Section I: Feasibility Assessment, p. 1). If the objective is to increase harvest in a local area as progress toward a larger area objective, a program to reallocate mortality from predation to harvest without a substantial increase in ungulate abundance may be feasible with harvest coordination (see Section III.A.3).

1. Percentage of national park or preserve and national wildlife refuge (where predator control may be restricted) in game management unit or subunit or caribou herd range. **3.7%**
2. Percentage of area in federally designated wilderness or wilderness study areas where habitat or wildlife management may be subject to more extensive public process. **0%**
3. Percentage of Alaska Native corporation land. **17.5%**
4. Access for predator control or ungulate hunting allowed on Alaska Native corporation lands? **Yes for predator control. No for hunting.**

C. *Access for Predator Reduction and Ungulate Harvest* (see also Sections II.A.6 and II.A.7)

1. What is the extent of all-season roads? **Limited.**
2. What is the extent of ATV trails? **Limited.**
3. What is the extent of navigable rivers? **Moderate.**
4. What is the feasibility of landing fixed-wing aircraft in winter for predator removal? **Low to High depending on snow conditions which are highly variable.**
5. What is the feasibility of landing fixed-wing aircraft in fall for ungulate hunting? **Moderate. However, most areas accessible by float plane are also accessible by boat.**
6. What is the feasibility of ocean shoreline access for hunting or predator removal? **N/A.**
7. Is use of helicopters by the public (under permit) allowed for trapping or retrieval of carcasses from aerial shooting? **No.**
8. Are there controlled use areas that prohibit aircraft access for ungulate harvest? **No.**

III. ECONOMIC FACTORS

Economic factors define estimated costs of management programs and expectations for public participation in predator control programs for comparison to perceived benefits by the BOG and the public.

A. *Cost of Participation* (in prey harvest or predation control by the public)

1. Price (dollars/gallon) of unleaded gasoline (average among communities). **\$9/gallon.**
2. Price (dollars/gallon) of 100 octane low lead aviation fuel (average among communities). **\$12/gallon**
3. Cost to hunters per prey animal harvested from alternative area (e.g., transportation cost to hunt in adjacent areas with harvestable surplus of ungulates). **High.**
4. Value of predator hides or other parts legal to sell. **\$300-\$400**

B. *Potential for Participation* (in predator control or harvest by public)

1. Would creating a new predation control program hinder ability to maintain public involvement in existing predation control programs in the region? **No**

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2. Will a predation control program, habitat enhancement project, or ungulate harvest strategy conflict with existing harvest of predators by reducing opportunity for local hunters or trappers? **If a control program was successful it would likely lead to reduced opportunity for local hunters and trappers.**
 3. Potential to conduct department-sponsored control programs if public participation is lower than expected. **Low.**
- C. *Potential for Cost Sharing* (in habitat enhancement) (see also Section II.B)
1. Potential to collaborate on prescribed fire where hazardous fuel reduction is the primary goal. **Low.**
 2. Potential to collaborate on forest management or mechanical vegetation treatments to produce wood products or reduce hazardous fuels. **Low.**

APPENDIX C. Availability of population and harvest information.

Data include status of predators, ungulate species, and habitat for modeling predator removal rates and time until increase in harvest of ungulates is feasible Ungulate population status:

- Abundance survey within last 2 years. **Yes**
- Abundance surveys on set schedule to estimate trend. **Yes**
- Composition survey within last 2 years. **Yes**
- Estimate of parturition rate within last 5 years. **No**
- Young survival estimate with mortality causes identified. **No**

- Harvest of prey:
 - Trends in reported harvest by residents and “local” (game management unit) residents among general season, drawing permit, registration permit, and Tier II categories over last 10 years. **Yes**
 - Where unreported harvest occurs, public perception of trend. **Unknown**
 - Estimate of unreported harvest from telemetry, Division of Subsistence, or other sources. **No**
 - Department estimate of current sustainable harvest. **Yes**
 - Amount reasonably necessary for subsistence uses (specify date of determination or updates, whether specific to proposed intensive management (IM) area or larger area, and number relative compared to IM objective). **Yes. The board will consider changes to the ANS at the Region III regulatory meeting in March 2024.**
 - Historical harvest by nonresidents? **Yes**
 - Present harvest by nonresidents? **No**

- Status and harvest of predators:
 - Survey/census of wolf density within last 5 years. **No**
 - Survey/census black bear density within last 5 years. **No**
 - Survey/census grizzly/brown bear density within last 5 years. **No**
 - Predator-prey ratio estimated. **No**
 - Survey of alternative prey adequate to aid predator recovery. **No**
 - Most wolf harvest accounted for by sealing data. **Yes**
 - Most black bear harvest accounted for by sealing data. **No**
 - Department estimate of black bear harvest where sealing does not occur. **No**
 - Most grizzly/brown bear harvest accounted for by sealing data. **Yes**

- Habitat condition (methods may be specific to region or species):
 - Proportional removal of browse biomass in previous 5 years with no large population change or widespread disturbance (e.g., fire) since browse survey. **Unavailable**
 - Proportion of browse species with broomed growth structure (history of browsing). **Unavailable**
 - Proportion of area burned in last 10 years (potential browse availability). **Unavailable**
 - Proportion of area in appropriate habitat type based on vegetative classification (define as forage, cover, etc.). **Unavailable**
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- Ungulate nutritional condition (representative of environmental conditions experienced during the most recent population census or estimate; may be specific to area/region or herd)
 - Percentage of productive 3-year-old female caribou (cohorts are radiomarked for calf weights and monitored for photocensus coverage). N/A
 - Weight of 4- or 10-month-old females (*caribou, deer, moose*). Unavailable
 - Weight of adult (5–6 year old) female caribou (herd specific; requires baseline). N/A
 - Yearling female mandible length. Unavailable
 - Ratio of femur to hind foot length. Unavailable
 - Two estimates of moose twinning rate in previous 5 years with no large population change. Unavailable