Species Management Report and Plan ADF&G/DWC/SMR&P–2019–13

Caribou Management Report and Plan, Game Management Unit 9C and 9E: Northern Alaska Peninsula Caribou Herd

Report Period 1 July 2012–30 June 2017, and

Plan Period 1 July 2017–30 June 2022

David W. Crowley

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Alaska Department of Fish and Game Division of Wildlife Conservation

Caribou Management Report and Plan, Game Management Unit 9C and 9E: Northern Alaska Peninsula Caribou Herd

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Species management reports and plans provide information about species that are hunted or trapped and management actions, goals, recommendations for those species, and plans for data collection. Detailed information is prepared for each species every five years by the area management biologist for game management units in their areas, who also develops a plan for data collection and species management for the next five years. This type of report is not produced for species that are not managed for hunting or trapping or for areas where there is no current or anticipated activity. Unit reports are reviewed and approved for publication by regional management coordinators and are available to the public via the Alaska Department of Fish and Game's public website.

This species management report and plan was reviewed and approved for publication by Todd A. Rinaldi, Management Coordinator for the Division of Wildlife Conservation.

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Cover Photo: A band of NAP caribou observed on the Bering Sea coastal plain during a 2016 aerial composition survey. ©2016 ADF&G. Photo by Chris Peterson.

Contents

List of Figures

List of Tables

Purpose of this Report

This report provides a record of survey and inventory management activities for caribou in Units 9C and 9E for the 5 regulatory years 2012–2016 and plans for survey and inventory management activities in next 5 regulatory years, 2017–2021. A regulatory year (RY) begins 1 July and ends 30 June (e.g., RY12 = 1 July 2012–30 June 2013). This report is produced primarily to provide agency staff with data and analysis to help guide and record its own efforts but is also provided to the public to inform it of wildlife management activities. In 2016 the Alaska Department of Fish and Game's (ADF&G) Division of Wildlife Conservation (DWC) launched this 5-year report to more efficiently report on trends and describe potential changes in data collection activities. It replaces the caribou management reports of survey and inventory activities that were previously produced every 2 years.

I. RY12–RY16 Management Report

Management Area

The range of the Northern Alaska Peninsula caribou herd (NAP) includes the mainland from Katmai National Park and Preserve (KATM) southwest to Port Moller, approximately 19,000 mi^2 including high elevations (Fig. 1). The Alaska Peninsula is bordered on the north by the Bering Sea and on the south by the Pacific Ocean. The Bristol Bay coastal plain on the Bering Sea side consist of flat to rolling tundra, lakes, shrub habitat, and poorly drained meadows. The Pacific side consists of mountainous terrain with steep faces and cliffs, sandy beaches, shrub habitat and sedge meadows. The Aleutian Mountain Range, which separates these areas, is characterized by glaciated mountains, steep canyons, and several active volcanoes. Weather is typically windy with low visibility, relatively mild winter temperatures with little snow accumulation except at higher elevations, and frequent storms year-round.

NAP caribou traditionally calve between the Ugashik River and the Bear River on the Bristol Bay coastal plain in 4 primary areas (Cinder River, Meshik River, Ilnik River and Bear and Sandy River calving areas) with some calving dispersed throughout the Aleutian Range. Use of these areas has varied since the 1970s and has diminished in some areas as herd size decreased.

Predators of caribou occur throughout the Alaska Peninsula at varying densities. Predators include bald eagles (*Haliaeetus leucocephalus*), brown bears (*Ursus arctos*), coyotes (*Canis latrans*), golden eagles (*Aquila chrysaetos*), wolverines (*Gulo gulo*), and wolves (*Canis lupus*).

Summary of Status, Trend, Management Activities, and History of Caribou in Units 9C and 9E

The NAP is a relatively small but dynamic herd that ranges from the Naknek River drainage to Port Moller. The herd is important to residents of the Alaska Peninsula for food as well as for nonconsumptive values such as viewing from their homes. Domestic reindeer herding was common during the first part of the twentieth century on the Alaska Peninsula, ending circa 1945

when commercial salmon fishing became much more economically lucrative for coastal villages. NAP caribou DNA is still marked by domestic introgression (Colson et al. 2014).

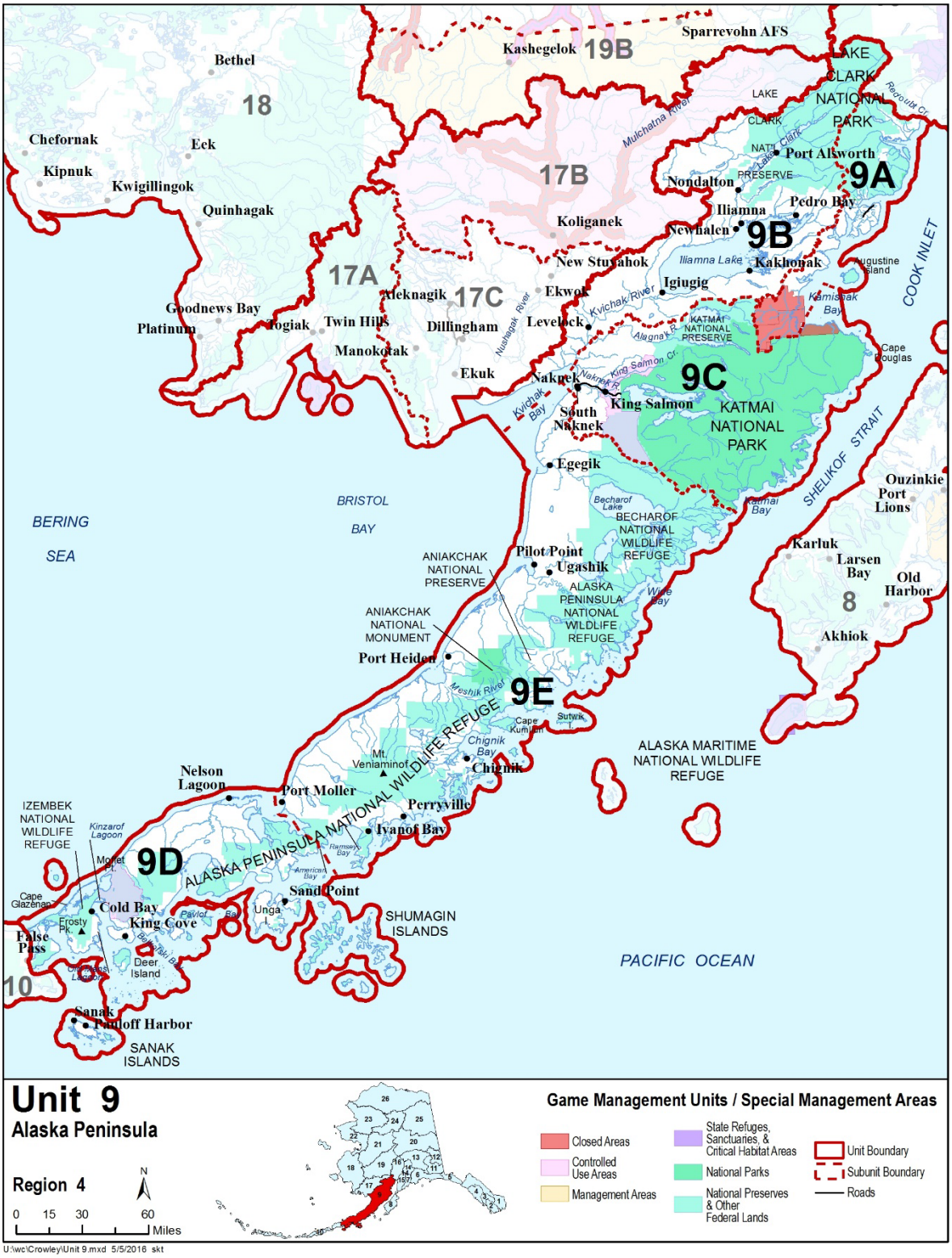

Figure 1. The Northern Alaska Peninsula caribou herd ranges from Unit 9C south of King Salmon to Port Moller in Unit 9E.

POPULATION SIZE

Historically, the NAP population has cycled widely in size, as is typical and natural for caribou populations, from about 2,000 to about 20,000 animals. Peaks of about 20,000 occurred around 1899 and again in the early 1940s. A crash occurred during the late 1940s when the population dropped to about 2,000 caribou, but by 1963 the herd had increased to more than 10,000 animals (Skoog 1968). The first radiotelemetry-aided census in 1981 estimated 16,000 caribou (Sellers et al. 1998a).

With the NAP population at this high level, the traditional boundary between wintering grounds of the NAP and the Mulchatna caribou herd (MCH) began to blur. By 1986 a portion of the NAP began annually wintering between the Naknek River and Lake Iliamna—well north of their traditional wintering grounds—some years with several thousand NAP animals moving into the area (Sellers 1990, 1995). Biologists believed that excellent forage conditions north of the Naknek River would sustain the NAP within the population objective of 15,000–20,000. However, at about the same time, up to 50,000 caribou from the Mulchatna herd (MCH) also began wintering in this area (Sellers 1999). Given this change in winter distribution of both herds, and the increasing competition for winter forage, by the late 1980s biologists decided that the NAP should be maintained at the lower end of the management objective—i.e., 15,000 caribou. Ultimately, a population objective of 12,000–15,000 was adopted (Sellers 2003).

During RY93 a record harvest of 1,345 caribou occurred (in part because of road and trail access from King Salmon and Naknek) and natural mortality estimated at >30% combined to reduce the population of the NAP from ~15,000 to ~12,500. The herd underwent a continued gradual decline to about 2,000 by 2008 (Butler 2009). The herd experienced extremely poor recruitment from 2003 through 2008 because of poor calf production and survival. Although indications of nutritional limitations were still evident in 2007, predation became increasingly important factor in decreasing herd size.

POPULATION COMPOSITION

Population composition ratios varied widely as the NAP increased and decreased in size (Butler 2009). During 1970–1980, when the NAP was growing, the average fall calf-to-cow ratio was 50 calves:100 cows (range = 45–56). During 1981–1994, when the population was near management objectives, the fall ratio averaged 39 calves:100 cows (range 27–52). During the decline the ratio averaged 26 calves:100 cows (range 18–38 between 1995 and 2002). From 1990 to 2004, the bull-to-cow ratio averaged 41:100 (range 34–49), but the ratio dropped to an average of 23 bulls:100 cows from 2005–2009 (range 19–27) despite hunting closures. From 2003–2009 fall calf ratios were the lowest ever recorded for this herd, with an average of 9 calves:100 cows. It was thought that poor calf recruitment since 2003 (caused by nutritional stress and predation) and the relatively short lifespan of bulls relative to cows have decreased the bull:cow ratio in the NAP (Butler 2009). Recruitment began improving in 2009 with ratios of calves:100 cows and bulls:100 cows slowly improving from 2009 to the present.

HABITAT, NUTRITION AND DISEASE

During the late 1980s and 1990s there were multiple factors providing evidence that habitat on the NAP range was under moderate stress including an observed depletion of lichens, low pregnancy rate and calf weights, high prevalence of lungworms, non-use or avoidance of traditional wintering grounds (with the exception of mild winters), and an observed increase in body size of NAP caribou after being transplanted to ungrazed range on the Nushagak Peninsula (Sellers 1999, Sellers et al. 2000). Age-specific productivity was monitored during 1997–1999 (Valkenburg et al. 1996; Sellers et al. 1998*a*, 1998*b*, 1999, and 2000). Overall, this work demonstrated that the NAP was under moderate nutritional stress. No 2-year-old females had produced calves (n = 32), and only 33% of 3-year-olds (n = 18) had been pregnant. Overall pregnancy rates were relatively low at 57% to 78% for cows over 2 years of age during 2005–2008. In 2005 a herd health assessment identified heavy parasite loads, the presence of bovine respiratory disease complex, poor immune response, low levels of micronutrients, and chronic dehydration in animals examined (Beckmen and Hansen 2005). An experimental study to investigate the effects of parasite removal on body condition and calf production was conducted between 2005 and 2007. Analysis indicated that parasite removal increased pregnancy rates; however, effects of parasite removal on body condition were not biologically significant (Riley 2011b).

As the population declined the NAP changed distribution patterns in winter and summer. By 2000, few NAP caribou moved north of the Naknek River into MCH winter range, and by 2004 calving became dispersed with more of it occurring in mountainous terrain rather than the customary calving grounds between the Bear and Cinder rivers on the Bristol Bay coastal plain.

MORTALITY

Hunting on the NAP closed in 2005. The average annual mortality rate for collared cows during 1980–1984 (other than hunting mortality), as the population approached peak size, was approximately 7%. Average annual mortality rate increased to 18% during 1985–1989 when the NAP numbered about 20,000, and to 25% during 1992–1998 as the population began declining. Annual mortality rates of adult females ranged 7–18% during 2001–2003.

During a 1998 calf mortality study 35% of radiocollared calves (n = 37) died during their first month of life (Sellers et al 1998a). Predators, primarily brown bears (*Ursus arctos*), bald eagles (*Haliaeetus leucocephalus*), and wolves (*Canis lupus*) caused most of the mortality of calves <2 weeks old, but disease apparently was an important mortality factor in calves >3 weeks old. During the 2005–2007 study, 60% of the radiocollared calves died during the first 2 weeks of life, primarily due to predation by wolves and brown bears (Butler 2009). Calf mortality remained high between 2 weeks and 4 months of age (66% mortality) though the cause of the late calf mortality is unknown. Evidence that large predators were present at mortality sites was found, but scavenging could not be distinguished from predation due to the large time interval between calf mortality and site investigation (typically ≥1 month).

INTENSIVE MANAGEMENT

In response to the declining population, biologists evaluated intensive management (IM) options for the NAP in 1999, 2004–2005, and 2007–2009 and concluded that no viable solutions existed to alter the status of this herd (Butler 2009). A Tier II hunt, a drawing hunt limited to resident subsistence hunters only, was instituted the same year to restrict human harvest in 1999, but by 2005 hunting was closed entirely and remained closed through the reporting period. The major impediments to creating a successful intensive management plan included apparent nutritional limitations and predator control restrictions imposed on federal lands. In March 2010 the Alaska Board of Game (BOG) authorized a predator control program to remove all wolves from calving areas under the intensive management law which became active in RY11. Only 15 wolves have been taken under the IM program during RY11–RY14 compared to 179 wolves harvested under regular hunting and trapping regulations during the same period. Low wolf harvests under the IM program has been attributed to inclement weather, lack of snow, formidable logistics, and prohibited access to federal lands. Annual reports to the Board of Game about the intensive management program for the NAP are available on the ADF&G website at www.adfg.alaska.gov/index.cfm?adfg=intensivemanagement.unit9c9e#anchor.

Management Direction

ADF&G manages caribou on the sustained yield principle using the best scientific knowledge available for the benefit of the resource and people of Alaska.

EXISTING WILDLIFE MANAGEMENT PLANS

- *Alaska wildlife management plans: A public proposal for the management of Alaska's wildlife: Southwestern Alaska. (ADF&G 1976).*
- *Strategic Plan (ADF&G 2002)*

GOALS

- Protect, maintain, and enhance the NAP caribou herd and its habitat.
- Provide the greatest sustained opportunity to hunt and harvest caribou for human consumption.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

The Board of Game in 1989 determined that the NAP has a positive finding for customary and traditional use. The amount necessary for subsistence (ANS; 5 AAC 99.025) is 1,200–1,900 caribou. Codified regulations provide a Tier II drawing hunt for residents only when the harvestable surplus is below 1,200.

Intensive Management

The NAP is recognized as an intensive management population. The Board set the following objectives for the NAP in 2010 (5 AAC 92.108):

- Population size of 6,000–15,000 caribou.
- Annual harvest of 600–1,500.

MANAGEMENT OBJECTIVES

- Maintain a population of 12,000–15,000 caribou. This range objective recognizes the relatively limited extent of habitat on the Alaska Peninsula and the precipitous crashes following peaks of 20,000 caribou that occurred both historically and recently.
- Maintain an October sex ratio of at least 35 bulls to 100 cows.

MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Conduct fall composition survey to estimate sex and age ratios, trend, productivity, and mortality, and to derive a model-based population estimate using survey data.

Data Needs

Sex and age ratios are used to predict population trend, productivity, and herd size. A model-based population estimate is currently utilized because techniques using photo census requires post-calving aggregation which the NAP does not do at its currently low population level.

Methods

Aerial surveys were conducted each October to assess population composition. Fixed-winged aircraft pilots located caribou groups through radiotelemetry, and biologists aboard a helicopter defined composition of each group (cow, calf, yearling, and bull: small, medium or large). Survey comprehensiveness was assessed using the proportion of radiocollared caribou encountered relative to total radiocollared caribou. Composition data were entered into a deterministic computer model to assess and predict herd dynamics and size. The model also utilizes pregnancy rates, survival rates, and caribou harvest.

Results and Discussion

Department staff conducted composition surveys of the NAP in October during each year of the reporting period (Tables 1 and 2). Proportion of bulls observed in the population was on an increasing trend during the last 5 years, exceeding the minimum objective of 35 bulls:100 cows 2014–2016 (Table 2). The bull:cow ratio was biased high in 2016 because weather conditions did not allow us into the mountains where cows with calves often reside. This circumstance was also reflected in the overall smaller sample size in 2016. Proportion of calves was on an

increasing trend until 2014, then declined thereafter to a level of concern by 2016. However, the calf:cow ratio may have been biased low in 2016 because of survey conditions.

Using survey results as input parameters, the population size predicted by computer modeling continued to increase during the reporting period after hitting bottom between 2008 and 2010 (Table 1). The computer model has provided more consistent results for population size compared to adjusting sample size with collar detection rate as a population index, because sample size can vary widely depending on flying conditions. Generally, sample size has been increasing with predicted population size although it decreased in 2016 under limited flying conditions.

Recommendations for Activity 1.1.

Continue.

Table 1. Northern Alaska Peninsula caribou herd population size and spring pregnancy rates, regulatory years 2006–2016.

Regulatory year	Predicted pop. size[a]	Composition sample[b]	Percent pregnancy rate	Percent Pregnant 95% CI
2006	2,506	1,725	74	68–79
2007	2,249	1,719	76	71–80
2008	2,137	1,841	84	77–91
2009	2,222	2,126	88	83–93
2010	2,169	1,795	77	70–84
2011	2,321	2,395	81	75–86
2012	2,525	1,352	–	–
2013	2,754	2,076	94	91–97
2014	3,084	2,295	76	70–83
2015	3,188	2,122	71	65–78
2016	3,414	1,556	73	66–80

[a] Derived from a computer model of population size using survey data. This model does not provide confidence intervals.
[b] Number of caribou counted during composition survey.

Table 2. Northern Alaska Peninsula caribou herd composition count surveys in October.

Year	Bulls: 100 cows	Percent bulls	Calves: 100 cows	Percent calves	Percent cows	*N*	95% confidence intervals Percent bulls	Percent calves
2010	25.2	17.5	18.2	12.7	69.7	1,795	15.7–19.4	11.2–14.2
2011	25.8	17.8	19.5	13.4	68.8	2,395	16.1–19.4	12.0–14.8
2012	28.3	18.8	22.4	14.9	66.3	1,352	16.5–21.0	13.0–16.8
2013	30.8	20.2	21.3	14.0	65.8	2,076	18.4–22.1	12.5–15.5
2014	39.6	22.8	34.0	19.6	57.6	2,295	20.9–24.7	17.9–21.2
2015	37.5	22.6	28.7	17.2	60.2	2,122	20.6–24.5	15.6–18.9
2016	70.1	36.1	23.9	12.3	51.5	1,556	33.6–38.7	10.7–14.0

ACTIVITY 1.2. Conduct parturition survey to estimate pregnancy rates and to derive a model-based population estimate using survey data.

Data Needs

Pregnancy rate is an indicator of productivity and is used in a computer model to help predict herd size. A model-based population estimate is currently utilized because techniques using photo census require post-calving aggregation which the NAP does not do at currently low population level.

Methods

Parturition surveys were flown in late May or early June, in an attempt to sample at least 25% of the herd. Fixed-winged charter pilots located caribou groups through radiotelemetry, and ADF&G biologists aboard a helicopter counted and determined composition and pregnancy status of each sample. We classified caribou on the calving grounds as parturient cow (with calf, hard antlers or distended udder), nonparturient cow, yearling, or bull (Whitten 1995). We also observed radiocollared females to potentially document age-specific pregnancy rates. Pregnancy and survival rates along with composition data were entered into a deterministic computer model to assess and predict dynamics (increasing, stable or decreasing) and herd size.

Results and Discussion

We flew a two-day parturition survey of the NAP each year of the reporting period except RY12, which was spring of 2013 (Table 1). Pregnancy rate declined from RY13–RY17. However, as the population increases a somewhat reduced pregnancy rate can be expected before young cows reach breeding age. Pregnancy rate was sufficient to allow continued population increase, according to the computer model.

We observed a difference in phenology of calving periods between the NAP, where most calves were too old to capture on foot at the end of May, and the southern-most Unimak Island herd, where calving was just getting started. Plant phenology observed south of Port Moller in the 1980s was substantially later than that of the NAP (Pitcher et al. 1990).

Recommendations for Activity 1.2.

Continue.

ACTIVITY 1.3. Capture caribou to deploy radio collars and maintain an adequate number of collared animals.

Data Needs

Maintaining an adequate number of collared animals is critical for locating adequate sample sizes and obtaining a herd-wide distribution during surveys, particularly when the herd is at low density. Herd distribution and survival rates are monitored periodically by radiotracking of collared animals. The goal is to maintain at least 30 VHF radio collars on adult female caribou to aid in locating the herd during surveys and to obtain basic information about the animal's condition.

Methods

Caribou cows were captured and marked with VHF radio collars with the help of funding provided by the U.S. Fish and Wildlife Service (USFWS), Office of Subsistence Management. During each capture standard morphometric measurements and blood samples were taken. (Robinson Helicopters Inc.) using standard techniques approved by the ADF&G Division of Wildlife Conservation Institutional Animal Care and Use Committee (IACUC).

Results and Discussion

We captured and collared 9 cows in April 2013 and 18 in 2015 (10 of the collars used were satellite radio collars) in Unit 9E. Cows were in good to excellent body condition with low-level warble infestations. Currently there are approximately 50 active collars deployed on NAP caribou cows, including on yearlings and on 24 known-age cows.

Recommendations for Activity 1.3.

Continue.

ACTIVITY 1.4. Calf mortality study: As needed, repeat calf mortality study to determine factors limiting calf survival.

Data Needs

Calf survival is an index of recruitment into the population and is used in a computer model to predict population size and trend. An assessment of calf predators is important in developing intensive management projects if those are necessary to more aggressively manage a caribou population.

Methods and Results

Research on NAP calf mortality was conducted prior to this reporting period, during 2005–2007 (Butler et al. 2007) and 2011 (Riley 2011a). No mortality study activity occurred during this reporting period.

Recommendations for Activity 1.4: Repeat when necessary.

2. Mortality-Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitor the caribou harvest through hunter harvest reports and contact with hunters and guides.

Data Needs

Analyzing harvest data is an important component of managing the NAP for sustained yield.

Methods

Hunting was closed on NAP caribou in RY06, but with the recent increase in herd size, we initiated a conservative Tier II hunt for resident hunters only in the last year of this reporting period, RY16. We determined the harvest quota based on historical harvest levels and with the aid of a computer model that simulated current population size, composition, survival rates and production.

Season and Bag Limit

Unit 9C: 10 August–20 September and 15 November–28 February, one caribou.

Unit 9E: 10 August–20 September and 1 November–30 April, one caribou.

Results and Discussion

Harvest by Hunters-Trappers

Reported harvest started out slowly as was expected on a low-density herd that had been closed to hunting for over a decade. Reported harvest in RY16 was 88 caribou including 8 females. We issued 200 permits; 60 permittees did not hunt.

Permit Hunts

The Tier II hunt for residents only, TC505, was the only permit hunt issued for NAP caribou.

Hunter Residency and Success

All hunters were Unit 9 residents except for one hunter from Unit 14A.

Harvest Chronology

Caribou were harvested under TC505 as follows: 41% during August–September, 32% November–December, 19%, January–February, and 8% March–April.

Transport Methods

The primary transportation mode used by successful hunters was snowmachine in Unit 9C (68%) and 4-wheeler in Unit 9E (75%).

Other Mortality

None.

Alaska Board of Game Actions and Emergency Orders

The BOG authorized the Tier II hunt on the NAP at its February 2015 meeting. The first season opened fall of 2016.

Recommendations for Activity 2.1

Continue.

3. Habitat Assessment-Enhancement

ACTIVITY 3.1. Evaluate range condition through assessment of the body condition of captured females and observed pregnancy rates.

Data Needs

Body condition and pregnancy rates are indices to the nutritional status of the range.

Methods

All caribou were immobilized from an R-44 helicopter (Robinson Helicopters Inc.) using standard techniques approved in IACUC Protocol No. 2015-33. Body condition was a subjective ranking from 1 (emaciated) through 5 (obese) based on palpation of soft tissue at withers, ribs and hips (Gerhart 1996) and warble load (low, medium, or high), and agreed upon by staff working on each animal.

Results and Discussion

We captured and collared 9 cows in April 2013 and 18 in 2015 (10 of the collars used were satellite radio collars) in Unit 9E. Cows were in good to excellent body condition with low-level warble infestations. Pregnancy rates have been in the normal range. Body condition assessment was recorded in capture records.

Recommendations for Activity 3.1

Continue.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

Digital data are backed up daily on an in-house server (O:\WC-DIV). Paper records are stored in file cabinets and on shelves in the area biologist and assistant area biologist offices. Archived records are stored in indexed and labeled boxes, second floor of new warehouse (O:\WC-DIV\Admin King Salmon Area Office\Filing system\archived filing system index).

Agreements

None during the reporting period.

Permitting

Standard techniques approved in IACUC Protocol No. 2015-33 for caribou capture activities were used for capture of NAP caribou.

Conclusions and Management Recommendations

Population metrics of the NAP indicated an upward trend and improving bull: cow ratio during the reporting period. Calf:cow ratio declined from a peak in 2014 but this may be partly explained by poor survey conditions in 2016. This may also be a result of an increased number of immature cows in the population. With the continued upward trend in population and reaching our management objective of 35 bulls:100 cows we opened a Tier II drawing hunt (200 permits) for residents only in RY16, resulting in a reported harvest of 83 caribou. The author recommends increasing the number of Tier II permits to 300 for either RY17 or RY18, depending on survey results.

II. Project Review and RY17–RY21 Plan

Review of Management Direction

Management Direction

The existing management direction for the NAP is appropriate for Unit 9 and there are no recommended changes.

Goals

The primary goals for the NAP are to 1) protect, maintain, and enhance the NAP caribou herd and its habitat, and 2) provide the greatest sustained opportunity to hunt and harvest caribou for human consumption.

Providing a population level for sustainable harvest also provides for other uses such as viewing and photography. These goals outline the role of the Division of Wildlife Conservation when faced with land use practices such as mining or reindeer herding that may put a caribou herd at risk.

Codified Objectives

Amounts Reasonably Necessary for Subsistence Uses

The ANS set for the NAP (1,200–1,900 caribou) was determined when the population was near its highest level, with corresponding record high harvests, and is therefore inappropriately high and will not be achieved during most of the herd's approximately 40- to 50-year population

cycle. ANS would more appropriately be determined as a proportion of herd size and respective harvest quota. With the current herd size, for example, 100% of the harvest quota of 150 caribou is earmarked for state and federal subsistence hunters. The RY16 harvest of 88 caribou by subsistence hunters fell substantially shy of the lower ANS level of 1,200 caribou. Historically, a subsistence-only harvest of 1,200 caribou has not been necessary for the people of the Alaska Peninsula. Either the method of determining ANS should be revised, or the public made to realize that the current ANS applies only when the population grows to 20,000 caribou. Meanwhile the department will diligently work to keep the population within an ecologically sustainable level.

Intensive Management

The IM program for the NAP is currently inactive and will expire on 30 June 2020. No changes are recommended. The program was suspended because of low participation and little harvest by the public. Low harvest was primarily because of the lack of snow for tracking and spotting wolves, poor flying conditions, expensive logistics, remoteness, and the availability of other more successful programs, such as in neighboring Unit 17. Same-day airborne programs require considerable staff time even if permitted teams choose not to participate. Annual reports to the BOG about the intensive management program are available on the ADF&G website at http://www.adfg.alaska.gov/index.cfm?adfg=intensivemanagement.main

MANAGEMENT OBJECTIVES

Current management objectives as detailed in the report section continue to be appropriate for the NAP. Management is not complicated because this is a geographically limited and small- to medium-sized herd. Hunting activity is relatively limited; hunter harvest will become of lesser significance to population size as the herd increases in size toward the management objective. Maintaining a good bull:cow ratio will keep hunter interest high on the NAP.

REVIEW OF MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Conduct fall composition survey to estimate sex and age ratios, trend, productivity, and mortality.

Data Needs

We use the fall composition survey to monitor bull-to-cow ratio, abundance, and percent of bulls in the population (to determine harvest quota), provide maximum hunting opportunity, and feed our population simulation model. Calf parameters are also used in the model and to monitor productivity and survival. A decline in calf-to-cow ratio to less than 10 calves:100 cows coincident with a similar decline in bulls may trigger a calf mortality study, an activity used in the past on the NAP but not anticipated in the next 5 years. In the absence of post-calving aggregations at low population density, composition surveys have provided a means to monitor population trend. This activity should continue.

Methods

The methods are described in the Methods section in the report above. Results will be reported with 95% binomial confidence intervals as appropriate.

ACTIVITY 1.2. Conduct parturition survey to estimate pregnancy rates and a minimum population count.

Data Needs

Pregnancy rate indicates reproductive potential as well as nutritional condition of cows. Pregnancy rate is a parameter used in our population simulation model for the NAP. This activity should continue during the next 5 years. We will consult a biometrician to define sample size and precision and/or statistical power of pregnancy rate (e.g., binomial CI), and present these values in future reports.

Methods

The methods are described in the Methods section of the report above. Results will be reported with 95% binomial confidence intervals as appropriate.

ACTIVITY 1.3. Capture caribou to deploy radio collars and maintain an adequate number of collared animals.

This is a routine management activity for caribou populations.

Data Needs

Maintain an adequate number of collared animals for surveys, for locating adequate sample sizes, and for obtaining a herd-wide distribution during surveys, particularly when the herd is at low density. At issue with a growing population such as the NAP is whether to maintain a set upper limit of marked animals, or a proportion of collared animals in the population. Given the geographic limitation on the peninsula and minimal seasonal movements of NAP caribou an upper limit of perhaps 50 marked animals may be appropriate. We will not fully know the upper limit of marked animals required until the population increases to management objective size; in the meantime, maintaining 30 to 40 marked cows in the population is adequate for other management activities.

Methods

All caribou will be immobilized from an R-44 helicopter using standard techniques approved by the IACUC. Each captured caribou will be fitted with a VHF radio collar.

ACTIVITY 1.4. Calf mortality study: Repeat calf mortality study as needed to determine factors limiting calf survival.

Data Needs

Calf survival is an index of recruitment into the population and is used in a model to predict population size and trend. An assessment of calf predators is important in developing intensive

management projects if those are necessary to more aggressively manage a caribou population. Given the current status of the herd, including increasing size and good calf:cow ratio, we do not anticipate conducting further calf mortality studies within the next 5 years. Calf mortality was evaluated intensively on the NAP as the population bottomed out, and, as expected, brown bears and wolves were the primary predators of caribou calves (Butler et al. 2007; Riley 2011a). An IM program for reducing brown bears, which are managed for trophy hunting on the peninsula, is not feasible for social and biological reasons. A recent IM program which included aerial gunning aimed at reducing wolf numbers was unsuccessful. Therefore, future study of calf mortality on the NAP should be given careful cost-benefit analysis given the expense of field work on the Alaska Peninsula.

Methods and Results

Research on NAP calf mortality was conducted during 2005–2007 (Butler et al. 2007) and 2011 (Riley 2011a).

2. Mortality-Harvest Monitoring

ACTIVITY 2.1. Monitor the caribou harvest through hunter harvest reports and contact with hunters and guides.

This is a routine management activity for most caribou herds in Southcentral and Southwestern Alaska.

Data Needs

Harvest data are an important component of managing the NAP for sustained yield.

Methods

Reporting is mandatory under a Tier II hunting permit.

Results

Hunting had been closed on NAP caribou since 2005 until RY16. With the recent increase in herd since we initiated a conservative Tier II hunt for resident hunters only in RY16. We determined harvest quota with the aid of computer model simulating current population size, composition, survival rates and production.

Managers expect that the only hunting that will be offered will be Tier II hunting for years until the harvestable surplus is over the current ANS in regulation (1,200 caribou), unless the Board of Game changes the ANS to a more appropriate level. Tier II hunters alone probably will not kill 1,200 caribou, and at this level we will be pressed to harvest the entire quota of caribou to control population size once the lower population objective (12,000) is achieved.

3. Habitat Assessment-Enhancement

ACTIVITY 3.1. Evaluate range condition through body condition assessment of captured females and pregnancy rates.

This is a routine management activity that is quickly accomplished while capturing and collaring caribou, the data from which are recorded online with capture records.

Data Needs

Body condition is an index to the nutritional status of caribou and the health of the range. We capture caribou on the NAP every few years; this is not an annual activity.

Methods

Caribou will be immobilized using standard techniques approved by an IACUC using an R-44 helicopter and fixed-wing support.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

No changes.

Agreements

No changes.

Permitting

Renew IACUC protocol permits as needed for capture.

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