ALASKA DEPARTMENT OF FISH AND GAME

JUNEAU, ALASKA

STATE OF ALASKA
Bill Sheffield, Governor

DEPARTMENT OF FISH AND GAME
Don W. Collinsworth, Commissioner

DIVISION OF GAME
Robert A. Hinman, Acting Director

ANNUAL REPORT OF SURVEY-INVENTORY ACTIVITIES

PART II. CARIBOU

Edited and Compiled by
Joann A. Barnett, Publications Technician

Volume XIII

Federal Aid in Wildlife Restoration

Project W-22-1, Job 3.0

(Printed February 1983)

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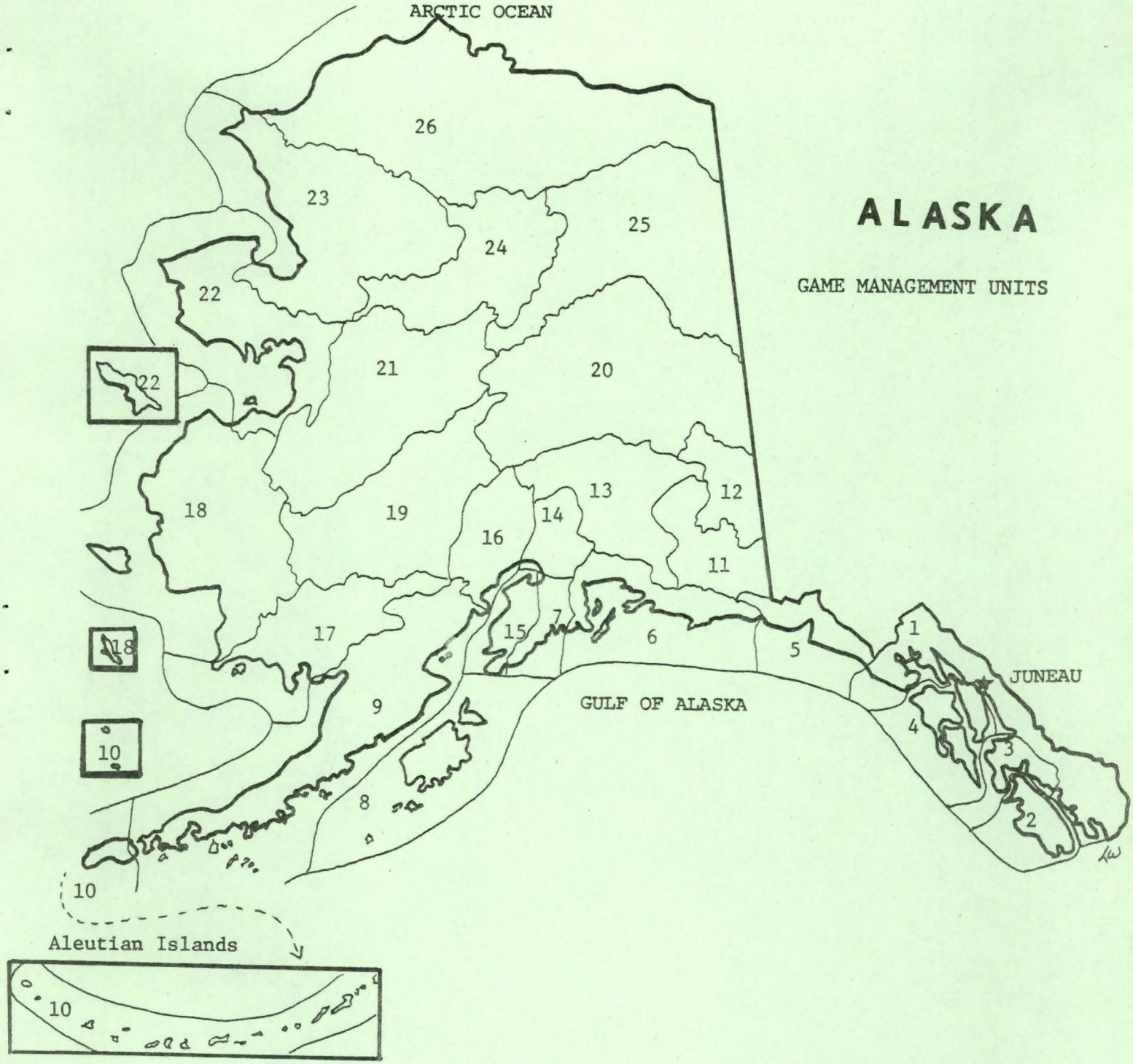
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Statewide Harvest and Population Status

Caribou

With the exception of small "remnant" herds, all caribou herds in the State were at high levels or were increasing during 1981-82. The Porcupine Herd was stable at a high level (about 110,000), while the other major arctic herd, the Western Arctic, continued to grow at a near-maximum rate. The Alaska Peninsula, Mulchatna, and Delta Herds were at high levels, while the Nelchina and Fortymile Herds were increasing slowly.

Reported harvests ranged from 0 (Denali Herd) to 1,138 (Alaska Peninsula Herd) and totaled 4,044 caribou statewide. However, compliance with reporting on harvest tickets is extremely poor in many parts of the State, and the actual harvest is probably twice that figure. The Western Arctic Herd, with a reported harvest of 906 and estimated actual harvest of over 3,000, illustrates this difficulty. Similarly, the reported harvest from the Porcupine Herd was 141, while the estimated harvest (in Alaska) was 1,680.

Herd	Harvest*	Pop. Status	Pop. Trend
Kenai Mts.	21	256	Stable
Ak. Peninsula	1,138 (1,500-2,000)	22,000-24,000	Stable
Mulchatna	261 (800-1,000)	20,618	Increasing
Adak	136	361	Increasing
Unimak	?	?	?
Mentasta	135	2,819	Stable
Chisana	24	1,000+	Stable
Nelchina	901	20,694	Increas. slowly
Denali	0	1,200-1,500	Stable
Kenai Lowland	4	65	Stable
Kilbuck Mt./ Andreafsky	?	200?	?
Beaver Mts./ Kuskokwim/ Alaska Range	43	?	?
Delta	268	6,800	Increasing
Macomb	20	500-700	Increas. slowly
Fortymile	45	8,000-11,700	Increas. slowly
Western Arctic	906 (3,000)	179,000	Increasing
Porcupine	141 (1,680)	110,000+	Stable
Central Arctic	95	9,000	Increasing

* Estimated harvest in parentheses.

Robert A. Hinman
Acting Director

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 7

HERD: Kenai Peninsula Mountain

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 10-Oct. 31	One caribou by drawing permit only. 100 permits will be issued.

Population Status and Trend

The Kenai Mountain Caribou Herd was established through transplants from the Nelchina Herd in 1965 and 1966. Annual composition counts made since 1977 have indicated that the herd is still expanding in size. A total of 256 caribou were counted in October 1981. The herd uses approximately 110 mi^2 of summer alpine range along the Resurrection Creek drainage in the Kenai Mountains. During winter, most of these caribou concentrate on 12 mi^2 or less of high-elevation, windswept range overlooking Big Indian Creek. Other winter ranges, if they exist, have not been identified.

Population Composition

Two hundred and fifty-six caribou were classified on October 19, 1981. The count was conducted using a Bell 206B Ranger helicopter; observation conditions were considered good to excellent. Herd composition was as follows: 43 total bulls or 30 bulls/100 cows, 145 total cows and 68 calves or 47 calves/100 cows. In comparison to the Kenai Lowland Herd, recruitment of calves into this fall population was high.

A portion of the herd's calving area was located during a survey on May 13, 1982. Seven cows and 3 1- or 2-day-old calves were sighted near the head of Little Indian Creek on a steep, north-facing ridge between 2,800-3,000 feet elevation. Ground cover at this site consisted of sparse alpine vegetation and extensive areas of talus. It was believed that calving had just begun since most cows observed were without calves.

Mortality

Twenty-one caribou, 9 females and 12 males, were reported killed by hunters in 1981. Sixty-three of 100 permittees actually hunted, resulting in a 33% success rate. Residents accounted for 100% of the caribou taken. Eighty-five percent of the harvest

had occurred by September 18. Transportation of successful hunters included horse (43%) and highway vehicle/boat (57%).

Management Summary and Recommendations

The Board of Game adopted a staff proposal to increase the 1982 drawing permit allocation from 100 to 150 permits. The additional permits were needed to maintain a desired harvest level of 12-15% of the late-summer population and provide long-term protection for crucial winter range. No other changes were recommended.

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SUBMITTED BY:

Leland P. Glenn
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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 9

HERD: Alaska Peninsula

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Unit 9C, 9D, and 9E	Aug. 10-Mar. 31	Four caribou, provided that not more than 1 caribou may be taken from Aug. 10-Oct. 31.

Population Status and Trend

The northern segment of the Alaska Peninsula Caribou Herd was censused, and 16,800 animals were estimated as the minimum population. The southern segment of the herd which resides south of Port Moller was estimated by Izembek National Wildlife Refuge staff to number between 5,000-6,000 (C. Dau, pers. commun.). The current total postcalving population on the Alaska Peninsula therefore was estimated at 22,000-24,000 and shows no change from 1981.

Population Composition

Calf production in the northern segment continues to be high (Appendix A), with 55 calves/100 cows in spring 1982. This composition survey also included several groups composed primarily of bulls, resulting in a higher bull:cow ratio than recorded in October 1981.

Mortality

There were 1,138 caribou reported killed during the 1981-82 season. A summary of kill data since 1977 are presented in Appendix B. Resident hunters continue to demonstrate low compliance in reporting their kills. The reported kill was estimated to be about half the actual kill. Consequently, the total 1981-82 caribou harvest was estimated at 1,500-2,000.

Management Summary and Recommendations

Biologists recognized that Alaska Peninsula caribou are composed of 2 herds, i.e., 1 located north and 1 located south of Port Moller. Because there is no overlapping use of range during calving, wintering, or migration and because there are obvious differences in harvest patterns, more emphasis should be directed toward managing these herds as distinct entities. For example,

virtually all the nonlocal harvest of the southern segment emanates from Cold Bay, and most (83% in 1981-82) occurs after November 1. Conversely, most nonlocal hunting effort on the northern segment emanates from King Salmon, and most reported harvest (70% in 1981-82) occurs prior to November 1. Currently, the staff of Izembek National Wildlife Refuge collects population data on the southern segment; however, to date, methodologies are not standardized.

After several years of unsuccessful attempts to count post-calving concentrations of the northern segment, good counts were made in 1981 and 1982 using radio telemetry to locate widely scattered herds. This technique should be continued, and new radios affixed to maintain surveillance.

The southern segment apparently still forms a postcalving aggregation which would allow standard photo censusing with appropriate extrapolation after a fall composition survey. During the past several years, funding limitations and adverse weather have prevented the USFWS from completing a standard photo census. A cooperative effort between State and Federal agencies should be made in 1983 to complete a standard photo census, with both summer and fall composition counts.

Existing harvest regulations are meeting both subsistence and recreational hunting demands while contributing to stabilization of the Peninsula Herd. Rural residents should be encouraged to comply with harvest ticket reporting requirements, so a more realistic estimate of total harvest can be made.

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APPENDIX A. Summary of available population statistics for the northern segment of the Alaska Peninsula Caribou Herd.

Year	Season	Bull:cow ratio	Calf:cow ratio	% calf in herd	Pop. est.
1970	Fall	48.3:100	46.1:100	22.9	--
1975	Fall	33.0:100	44.6:100	25.1	10,340[a]
1976	Spring	--	--	--	11,368[b]
1978	Fall	48.3:100	55.2:100	25.0	--
1980	Fall	52.8:100	56.5:100	27.0	--
1981	Spring	--	--	27.8	16,600[b]
1981	Fall	33.6:100	39.2:100	22.7	--
1982	Spring	52.2:100	55.4:100	26.7	16,800[b]

[a] Aerial photo-direct count-extrapolation technique; total herd.

[b] Spring aerial photo; possible underestimation of bull segment.

APPENDIX B. Summary of harvest information for Alaska Peninsula Caribou Herd, 1977-1981.

Year	Reported harvest (% males)	Estimated total harvest	% nonresident harvest
1977	949(81.4)	1,500-2,000	19.2
1978	663(78.3)	1,200-1,500	25.4
1979	784(81.6)	1,000-1,250	31.2
1980	900(77.0)	1,500-2,000	33.4
1981	1,138(76.9)	1,500-2,000	31.2

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 9A, 9B, 16, 17, 19B, and 19C

HERD: Mulchatna

PERIOD COVERED: July 1, 1981-June 30, 1982

Seasons and Bag Limits

Units 9A, 9B, and 17	Aug. 10-Sept. 5 Dec. 1-Feb. 28	Two caribou, provided that no more than 1 may be taken per day, nor may more than 1 caribou be taken from Aug. 10-Sept. 5.
Unit 16	Aug. 10-Oct. 31	One caribou
Unit 19B	Aug. 10-Mar. 31	Two caribou, provided that not more than 1 may be taken per day, nor may more than 1 caribou be taken from Aug. 10-Oct. 31.
Unit 19C	Aug. 10-Oct. 31	One caribou

Population Status and Trend

A photo census and sex and age composition counts conducted June 30-July 1, 1981 revealed a total of 18,599 caribou in the Mulchatna Herd. The extrapolated population estimate was 20,618 caribou, the highest estimate recorded for this herd. While no census was conducted in spring 1982, general indications are that this herd is continuing to grow.

The Mulchatna Caribou Herd continued to utilize the Twin Lakes/ Bonanza Hills area for calving. Major concentrations (2,000+) were found in the Keefer Creek area in July, September, and October 1981 and February 1982. Large concentrations (4,000+) were observed along the Chilikadrotna River near Snipe Lake in June 1982. Caribou were observed for the 1st time this century on the Nushagak Peninsula in June 1982 (A. Franzmann, pers. commun.). Several observations of caribou southwest of the Nushagak River and northeast of the Muklung Hills were reported between October 1981 and May 1982. Caribou sightings in this area are rare.

Population Composition

A sample of 3,324 caribou was counted July 1, 1981, and 51.9 calves:100 females were observed. Adult females made up 56% of the sample. A 2nd sample of 1,235 caribou was counted on September 30; and 52.5 males:100 females and 45.1 calves:100 females were observed.

A 3rd sample of 5,097 caribou was counted on June 16, and 59.3 calves:100 females were observed. Adult females made up 59% of this sample. The percent yearlings was not recorded but was noticeably higher in the last count than previously. All composition data indicate the Mulchatna Herd is expanding in numbers.

Mortality

The estimated harvest for the Mulchatna Herd was 800-1,000. Field observations indicated a large portion of these caribou were taken from December through February. Data derived from hunter harvest reports are of questionable value since harvest reports make up only a small fraction of the estimated kill. This year only 355 hunters reported and took 261 caribou. Of these, only 22 animals (8.4%) were reported taken during the winter season. Most of the unreported harvest was taken by local residents, and efforts should continue to encourage villagers to utilize harvest tickets to report their kills.

Of 12 caribou immobilized during June 1982, most showed effects of severe winter weather conditions. Ribs were visually apparent on all animals examined, and no fat layer was evident on any individual. However, no evidence of significant winter kill was observed during radio-tracking flights in February or May nor during moose counts in April.

Management Summary and Recommendations

While the Mulchatna Herd appears to be increasing in size, a series of annual photo censuses to determine population growth should be made. Postcalving aggregations were late in forming during 1982 and dispersed before weather conditions permitted a photo census. A photo census in June or July of 1983 and 1984 should be the 1st priority for this herd.

A cooperative planning effort between State and Federal agencies as well as private interests is currently underway in the Bristol Bay region. Knowledge of caribou migratory routes, calving areas, and areas of seasonal use is essential to long-range land use planning. For this reason, radio transmitters attached to caribou in the Mulchatna Herd should be monitored at least once a month to provide baseline information.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 10

HERD: Adak Island

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 10-Mar. 31	Two caribou; season may be closed by emergency order.

Population Status and Trend

U.S. Fish and Wildlife Service (USFWS) personnel observed 316 caribou on Adak Island during a ground survey conducted October 14-20, 1981. Approximately 70 caribou had been harvested during the 1981-82 season prior to the survey. This survey, when compared to surveys completed in the last 5 years (Sexton and Taylor 1981), indicated an increasing population.

Population Composition

No data were available.

Mortality

The reported harvest was 136 caribou, including 61 males, 72 females, and 3 of unknown sex.

Navy tugboats remain the primary method of transportation used by hunters. A few hunters use privately owned boats or backpack into hunting areas.

Management Summary and Recommendations

The annual increment to the herd is exceeding the annual harvest. A minimum of 250 caribou were present on Adak following the 1981-82 season. This number exceeds the precalving level of 150 caribou recommended in the Adak Island Caribou Management Plan adopted November 1980.

Due to the high cost of air fare to the island and security restrictions by the Navy, hunting is almost exclusively limited to military and civilian personnel stationed there. Additionally, caribou inhabit remote portions of the island which limits hunter access. For this reason, the Department recommended the season be lengthened from August 10-March 31 to July 1-June 30 and the bag limit increased from 2 to 3 caribou. The USFWS proposed the same season dates with a bag limit of 4 caribou.

Refuge personnel stationed on the island are presently conducting vegetative studies to determine carrying capacity. Results of this study will be used to update the Adak Island Caribou Management Plan.

Literature Cited

Sexton, J. J., and W. P. Taylor. 1981. Adak Island caribou survey-inventory progress report. Pages 17-19 in R. A. Hinman, ed. Annual Report of Survey-Inventory Activities. Part II, Vol. XII. Alaska Dep. Fish and Game. Fed. Aid in Wildl. Rest. Proj. W-19-1 and W-19-2, Job 3.0, 1.0, and 12.0. Juneau. 224pp.

PREPARED BY:

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William P. Taylor
Game Biologist II

SUBMITTED BY:

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 10

HERD: Unimak Island

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 10-Mar. 31 Four Caribou

Population Status and Trend

No data were available.

Population Composition

No data were available.

Mortality

As harvest tickets are not required, no data were gathered on the take of caribou on Unimak Island by hunters. This source of mortality is thought to be negligible, due to the extremely high cost and limited nature of access to the island. Major causes of mortality are brown bear and wolf predation, accidents, disease, and other natural factors.

Management Summary and Recommendations

The difficulty in reaching Unimak due to inclement weather and access restrictions imposed by U.S. Fish and Wildlife Service minimize human utilization of caribou. Seasons and bag limits are of little importance in controlling exploitation. Continuation of liberal regulations will allow the few hunters who visit Unimak the greatest flexibility to use this resource.

No changes in season or bag limit were recommended.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 11

HERD: Mentasta

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 10-Sept. 30	One caribou by drawing permit only. 350 permits will be issued.

Population Status and Trend

The population estimate for the Mentasta Herd was 2,819, a slight increase over the 2,621 caribou reported the previous year and the highest estimate since 1978 (Martin 1981).

Population Composition

Ratios of 43.1 bulls:100 cows and 40.0 calves:100 cows were calculated from sex and age composition count data collected on October 22, 1981. A ratio of 43.6 calves:100 cows was obtained during an April 6, 1982 survey to determine calf survival to 11 months of age. Because the 2 counts were similar, I believe winter mortality was minimal. Differences between the October and April counts were probably a reflection of differences in sampling technique.

Mortality

Hunters killed 135 caribou which included 108 bulls, 21 cows, and 6 of unknown sex. Two hundred twenty-four permittees reported hunting; the success rate was 60%. Only 8 successful permittees were nonresidents.

Aircraft were used by 103 successful hunters, making it the most popular method of transportation.

Management Summary and Recommendations

The Mentasta Caribou Herd is small and stable. Yearly fluctuation in population estimates and composition ratios probably reflect variations between surveys, rather than actual herd changes. Current season dates and the number of permits issued should be maintained.

Literature Cited

Martin, P. 1981. Mentasta caribou survey-inventory progress report. Pages 21-24 in R. A. Hinman, ed. Annual Report of Survey-Inventory Activities. Part II, Vol. XII. Alaska Dep. Fish and Game. Fed. Aid in Wildl. Rest. Proj. W-19-1 and W-19-2, Job 3.0, 1.0, and 12.0. Juneau. 224pp.

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SUBMITTED BY:

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 12

HERD: Chisana

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Sept. 1-Sept. 15 One bull

Population Status and Trend

In October 1980, a Department survey of the Chisana Herd located 582 caribou in 51 aggregations ($\bar{x}$ aggregation size = 11.4). In late November 1981, guides Terry and Debby Overly conducted an extensive aerial survey of the herd and counted 885 caribou in 70 aggregations ($\bar{x}$ aggregation size = 12.6). I believe that the Overly's are reliable observers and that the results of their survey are credible. They mapped all aggregations and individually counted all caribou observed (i.e., no estimates involved). It is doubtful they observed all caribou in the herd because much caribou range was not surveyed and a 100% sightability of caribou in the area surveyed seems improbable. Consequently, I now believe the herd numbers in excess of 1,000 caribou.

A March 1982 survey was conducted by the Department, but only 259 caribou were located. Caribou were widely scattered in small groups ($\bar{x}$ aggregation size = 7.8) and were difficult to see due to poor snow conditions.

Population Composition

Composition data were obtained only during the March survey and may not accurately reflect actual population composition due to small sample size. Calves (34) composed 13%, bulls (56) 22%, and cows, yearlings, and unrecognizable young bulls (169) 65% of the sample.

Mortality

Predation by wolves, grizzly bears, and other predators is believed to be the primary mortality factor affecting the Chisana Caribou Herd.

Twenty-four bulls were reported killed by 33 hunters during the fall 1981 season in the range of the Chisana Herd. This represents a hunter success rate of 73%. Of the 30 hunters

whose residency was indicated, 21 were Alaska residents and 9 were nonresidents. All nonresidents were successful, while 62% of the residents were successful.

Twelve bulls were taken farther to the west in the range of the Mentasta Herd by 42 hunters (29% hunter success).

An additional 15 hunters reported hunting unsuccessfully elsewhere in the Unit for a total Unit harvest of 36 bull caribou by 90 hunters. Unitwide, 40% of the hunters who reported were successful.

Hunter numbers in the Unit increased 32%, while harvest increased 38%. However, hunter success increased only 2% over 1980 levels. Human harvest appears to be low in relation to total caribou numbers in Unit 12.

Management Summary and Recommendations

The minimum population estimate for the Chisana Caribou Herd increased during this reporting period to 1,000+. Efforts to monitor the herd's size, composition, and trend should continue.

Late fall surveys hold the greatest promise for monitoring important population parameters needed for responsive management. In view of increased wolf harvests in the range of the Chisana Herd and a larger known herd size, I believe a slightly higher harvest would be justified. The 1981 harvest of 24 bulls was less than 2.5% of the population. A September 1-20 season with a limit of 1 bull is recommended to align closing dates for all ungulate seasons in Unit 12, thus simplifying the regulations.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 13 and 14 (except 14C)

HERD: Nelchina

PERIOD COVERED: July 1, 1981-June 30, 1982

Seasons and Bag Limit

Hunt 503	Aug. 20-Sept. 20	One caribou by drawing permit only, provided that only antlerless caribou may be taken between Jan. 1 and Feb. 28. 1,600 permits will be issued, including 150 subsistence permits.
Hunt 503W	Aug. 20-Sept. 20 Jan. 1-Feb. 28	

Population Status and Trend

The fall 1981 population estimate for the Nelchina Caribou Herd was 20,694 animals, compared to an estimated 18,713 the previous year.

Population Composition

A ratio of 55.8 calves:100 cows was calculated from data gathered during a June 25, 1981 survey. Overwinter survival of these calves (to age 11 months) was good, with a ratio of 42.4 calves:100 cows calculated from an April 6, 1982 survey. The sex composition of the adult segment was obtained during an October 19, 1981 survey and was 69.9 bulls:100 cows.

Mortality

During 1981-82, 1,601 permittees killed 901 caribou. Harvest data are summarized in Appendix A.

In 1981, the Board of Game created the 1st subsistence hunt (Hunt 503W), which authorized up to 150 of the 1,600 permits be issued to qualified "subsistence" hunters. Qualifications and conditions specific to both hunts are listed in Appendix B. Non-resident permittees killed 40 caribou in Hunt 503. Aircraft was the most popular method of transportation for successful sport hunters, while highway vehicles were the preferred method of transportation for subsistence hunters.

Management Summary and Recommendations

Population estimates for the Nelchina Herd indicated that caribou numbers have been increasing since 1976. High calf production and overwinter survival to 11 months of age suggest that continued herd expansion can be expected. Bull:cow ratios have also been increasing in recent years. Current estimates of 70 bulls:100 cows greatly exceeds the minimum 25 bulls:100 cows called for in the herd management plan (Draft Alaska Wildlife Management Plans, 1976).

The 1981-82 caribou harvest increased due to the increased number of available drawing permits. The harvests consisted mostly of bulls. The number of caribou permits issued should be increased as the herd expands. However, the annual harvest should not exceed 5% of the total herd estimate until the number of adult caribou surpasses 20,000. Once the herd has reached this point, management plans call for maintaining the herd at this figure.

PREPARED BY:

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APPENDIX A. Nelchina Caribou Herd harvest summary, 1981-82.

	Permits issued	Total harvest	No. hunters	% success	% harvest	(N)
Hunt 503	1,546	863	1,239	70	78.1	(674)
Hunt 503W	55	38	46	80	81.6	(31)
Totals	1,601	901	1,285	70	78.2	(705)

APPENDIX B. Conditions specific to Caribou Hunt No. 503 and Hunt No. 503W.

1. No more than five (5) percent of the permits will be issued to nonresidents of Alaska.
2. Up to 150 subsistence permits (503W) will be valid for both the fall and winter season. Remaining permits shall be valid for the August 20-September 20, 1981 season only.
3. Applications for subsistence Hunt 503W will be drawn first: A. If all 150 permits are issued, the remaining unsuccessful subsistence applications will be included in the drawing for the fall hunt. B. If fewer than 150 subsistence permit applications are received for Hunt 503W, excess permits will be included in Hunt 503 (thus making more than 1,450 permits available), but these permits will be valid only for this August 20-September 20 season.
4. Successful hunters shall present their completely filled-out permit report by appearing in person at the ADF&G office in Glennallen or Anchorage during regular working hours, or by mailing the permit to the Anchorage office within 10 days of killing a caribou.
5. Unsuccessful hunters shall return their completely filled-out permit report either by appearing in person at an ADF&G office in Glennallen or Anchorage during regular working hours, or by mailing it, within 15 days of the close of the season.

Conditions specific to Hunt 503W only:

1. Application for subsistence permits shall be marked 503W.
2. Only a single caribou may be taken per permit.
3. During the Jan. 1-Feb. 28, 1982 season, hunting may occur in Game Management Unit 13 except for 13B, and except for that portion of 13A within one-half (½ mile) of the Alaska Pipeline, Units 14A and 14B for antlerless caribou only.
4. Persons applying for Hunt 503W must submit, with their application, an affidavit* attesting to the following facts:
   A. The person is at least 12 years old by August 20, and
   B. Is a resident of Units 13 or 14A or 14B and has no permanent abode elsewhere, and
   C. Lives, or has lived for the previous 5 years in a household where not commercially taken fish and game have comprised more than half of the meat and fish of the diet, and
   D. Be a member of a household with a $12,000 or less gross income for the previous income tax filing year.

* Affidavits need not be notarized.

Additional Information for Hunt 503W Applicants: Persons filing an affidavit which provides false information are committing a Class A Misdemeanor (AS 11.56.210) crime. If you are applying as a qualified subsistence user, enter the number 503W on your application and submit your affidavit with the application; if you are not, enter only the number 503.

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 13E and 20C

HERD: Denali

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Unit 20C, that portion lying west of the Nenana River	No open season

Population Status and Trend

Based on National Park Service surveys of caribou observed in postcalving aggregations (700-800) and the calf composition of these groups, it appears this herd has stabilized at a low level of 1,200-1,500 animals.

Population Composition

Two surveys of the Denali Herd were conducted during the postcalving period. Results of an aerial survey by Park personnel on May 24 revealed 30 calves/100 cows. Another survey on June 24-25 indicated 21 calves/100 cows. Because yearlings were classified with adults, the level of initial calf production could not be determined. Nevertheless, this reproductive failure is similar to the previous year when postcalving surveys revealed 24 calves/100 cows (yearlings and older).

Mortality

Data regarding mortality of this herd were not collected. However, wolf densities of 1 wolf/30-50 mi^2 probably exist in the area within the original McKinley National Park boundary. The status of the wolf population within recent extensions of the Park is unknown; it is suspected that additions on the north and west encompass ranges of additional wolf packs. Wolf and grizzly bear predation is probably high enough to impede growth of moose and caribou populations within the Park.

Management Summary and Recommendations

The population estimate for the Denali Herd has remained unchanged for the past 10 years, despite restrictive or closed hunting seasons. Predation and poor calf survival are likely the major factors impeding growth of the herd.

Although the number of caribou inhabiting the Park is sufficient to meet current, nonconsumptive public needs, a larger herd may more adequately satisfy the subsistence needs of those communities that qualify to hunt within the Park (Cantwell, Nikolai, Telida, and Minchumina).

PREPARED BY:

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 15

HERD: Kenai Peninsula Lowlands

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Unit 15A	Sept. 11-Oct. 15	One bull by drawing permit only; 5 permits will be issued.

Population Status and Trend

The Kenai Lowlands Caribou Herd was established through transplants from the Nelchina Herd in 1965 and 1966. The herd, which currently numbers about 65 animals, occupies approximately 72 sq mi of summer and winter range between the city of Kenai and the Moose River Flats. Population growth has been negligible in recent years. The extent of potential caribou range available to this herd could be limiting. Predation of young calves (less than 30 days old) by domestic dogs and/or wild carnivores is strongly suspected of limiting annual recruitment.

Population Composition

Sex and age composition counts have been made each year since 1980 using a Bell 206B Ranger helicopter. See Holdermann (1981) for annual comparison of these data.

The 1982 composition count was conducted on June 15; 66 caribou were observed. Composition of the herd was as follows: 18 total bulls or 65 bulls:100 cows; 28 total cows; and 20 total calves or 71 calves:100 cows. The number of calves observed represents a 150% increase above the number seen the previous June, reversing a declining trend in calf production.

This herd has traditionally calved in the vicinity of the Kenai Municipal Airport. However, in 1982, cows with young calves were also observed on the Moose River Flats, near the mouth of the Kenai River, and within the Kalifonsky Beach gas field. All the above sites are similar in land form and vegetation. Generally, they may be characterized as open, poorly drained habitats that support a ground cover of sphagnum, grasses, sedges and low-growing forbs, and shrubs with small islands of black spruce interspersed throughout.

Mortality

The 1st sport harvest of the Kenai Lowland Caribou Herd occurred between September 11 and October 15, 1981. Caribou drawing Hunt #506 established that 5 permittees could each harvest 1 bull from the herd. A total of 4 trophy-class bulls were killed during the season.

Other known causes of mortality include occasional road kills, poaching, and predation by wolves and free-ranging domestic dogs.

Management Summary and Recommendations

Low annual recruitment is the primary management concern of this herd. In 1981, frequent monitoring of the herd showed that the number of calves decreased from 13 in June to 2 in October, an 85% mortality rate for the 4-month period. Because of the close proximity of herd's traditional calving area to the city of Kenai and the well-documented occurrence of dog packs in the area, it is strongly suspected that free-ranging dogs significantly contributed to this decline.

With increased calf production in 1982, the Department of Fish and Game should closely monitor the status of this age cohort throughout the summer and early fall. This should include documentation of the extent and causes of calf mortality. If high calf mortality persists and predation by domestic dogs is still suspected as a major source of mortality, the Department should pursue the following course of action: (1) bring the problem of predation by dogs to the awareness of the public (i.e., at meetings where Fish and Game issues are being discussed and through various media) and (2) employ all legal means of controlling dog numbers in calving areas as set forth by local ordinances and Titles 5 and 16, Alaska Administrative Code.

The Department recommended closure of the 1982 sport harvest of the Kenai Lowland Caribou Herd to allow additional recruitment of males into the older age classes. Sex and age composition of the herd will be reviewed in October 1982 to determine the feasibility of a sport harvest in 1983.

Literature Cited

Holdermann, David A. 1981. Kenai Lowland caribou survey-inventory progress report. Pages 36-37 in R. A. Hinman, ed. Annual Report of Survey-Inventory Activities. Part II, Vol. XII. Alaska Dep. Fish and Game. Fed. Aid in Wildl. Rest. Proj. W-19-1 and W-19-2, Job 3.0, 1.0, and 12.0. Juneau. 224pp.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 18

HERD: Kilbuck Mountain and Andreafsky Mountain

PERIOD COVERED: July 1, 1981-June 30, 1982

Seasons and Bag Limit

Unit 18, that portion south of Yukon River	Feb. 1-Feb. 28	One caribou
Remainder of Unit 18	Feb. 1-Mar. 31	One caribou

Population Status and Trend

Data collected during the reporting period were insufficient to determine the status of caribou in Game Management Unit 18.

Population Composition

Small herds of caribou were observed during reconnaissance flights in the Kilbuck and Andreafsky Mountains. In late February 1982, tracks of a lone animal were observed east of Three Step Mountain on the northeast side of Greenstone Ridge. On a flight over the Kisaralik River watershed on May 14, 1982, 32 animals were located (Appendix A).

From tracks observed on this date, a minimum estimate of 50 caribou was established in the Kisaralik watershed.

Caribou and their tracks were observed in the Andreafsky Mountains during aerial surveys on November 11, 1981 and February 25 and April 14, 1982. Most animals were seen in the vicinity of Needle and Iprugalet Mountain on the East Fork of the Andreafsky River (Appendix B).

Impression gained during the April survey indicated the total number of caribou on the Andreafsky and adjacent Golsovia watersheds was 150-200.

Mortality

The harvest of 1 caribou was reported during the regulatory year. According to the resident hunter report, a male was taken near the Kuskokwim River on August 31, 1981. A 2nd harvest report was received from an unsuccessful resident hunter.

During the April survey of the Andreafsky Herd, remains of caribou were seen at 3 kill sights.

Management Summary and Recommendations

Aerial surveys have established locations and minimum numbers of caribou in both the Kilbuck Mountain and Andreafsky Mountain Herds. Surveys should be conducted in alternate years to monitor trends in population levels and distribution of animals in the 2 areas.

The Department should continue to remind hunters that harvest tickets are required for caribou hunting and that hunting is allowed only during open seasons.

As illustrated in Appendix C, both bag limits and open season dates vary considerably between Unit 18 and other Units bordering it. South of the Kuskokwim River, regulations range from a 1-caribou limit with a 1-month season to a 3-caribou limit with a 5-month season. North of the Yukon River, the range is greater, with 1-5 animal bag limits and 7-week to 10-month open seasons. Management biologists from involved Units should evaluate the distributions and numbers of caribou within these areas to determine if current seasons and bag limits are compatible with long-term sustained yield of the herds present.

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APPENDIX A. Location of caribou sighted in Kisaralik River drainage, May 1982

Location	Adults			Yearlings	Calves	Total
	Male	Female	Unknown			
Quicksilver Creek	0	2	1	0	2	5
Northfork Creek	1	6	0	5	1	13
Kisaralik River, 2-5 mi below Kisaralik Lake	0	1	9	3	1	14
Totals	1	9	10	8	4	32

APPENDIX B. Aerial surveys in Andreafsky Mountains, winter 1981-82 and spring 1982.

Date	Location	No. caribou
11/11/81	5 mi west of Needle Mountain	20
2/25/82	Needle Mt. to 5 mi southwest of Iprugal Mountian	50-100
4/14/82	7 mi northeast of Needle Mountain	130

APPENDIX C. Caribou seasons and bag limits in Game Management Unit 18 and adjacent Units, 1982-83.

Unit	Season												Bag limit
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	
18 (south)								XXX					One caribou
19B		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX											Two caribou, 1/day, 1 caribou from Aug. 10-Oct. 31.
17A, 17B		XXXXXXXXXX				XXXXXXXXXXXXXXXXXXX							Three caribou, 1/day, Aug. 10-Sept. 15.
18 (north)								XXXXXXXXX					One caribou
21E		XXXXXXXXXX											One caribou
22A	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX												Five caribou

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 19 and 21

HERD: Beaver Mountains, Kuskokwim Mountains, and Alaska Range

PERIOD COVERED: July 1, 1981-June 30, 1982

Seasons and Bag Limits

Unit 19A	Aug. 10-Sept. 30 Nov. 1-Feb. 28	Two caribou
Unit 19B	Aug. 10-May 31	Two caribou, provided that not more than 1 may be taken per day, nor may more than 1 caribou be taken from Aug. 10-Oct. 31.
Unit 19C	Aug. 10-Oct. 31	One caribou
Unit 19, that portion of 19D south and east of the Kuskokwim River	Aug. 10-Sept. 30 Nov. 1-Jan. 31	One caribou
Remainder of Unit 19D and Unit 21	Aug. 10-Sept. 30	One caribou

Population Status and Trend

Herd identity of the small groups of caribou occupying parts of Units 19 and 21 are not well defined; consequently, status and trends of these groups are uncertain. Radio collars were placed on female caribou from 3 separate areas in late April 1982 to assist in ascertaining the status of caribou herds in parts of Units 19 and 21. Six were radio-collared in the Beaver Mountains, 5 in the Sunshine Mountains, and 9 at Farewell. In June, photos were taken of all groups observed during attempts to relocate collared caribou.

In late June, all 6 radio-collared caribou from the Beaver Mountains were relocated in a group of caribou on the southeast side of the Beaver Mountains, near the head of Gaines Creek. The caribou had been collared on the northwest side of the Beaver Mountains, near Windy Creek. Previous estimates of the herd have ranged between 1,200 and 2,000+ in the 1970's to a low of less

than 1,000 in 1980. Apparently, the decline has continued as only 713 caribou were counted. The fact that all 6 radio-collared caribou were in that group suggests that the group had not fragmented. Some additional caribou, especially bulls, were probably not located.

The 5 caribou radio-collared on the north side of the Sunshine Mountains had broken into at least 5 groups by late June. These groups ranged in size from 10-250 caribou and totaled 410. The groups were distributed from the Sunshine, Page, and Cripple Mountains to Cloudy Mountain. During winter 1981-82, 300-500 caribou, probably part of the Cloudy-Sunshine Herd, occupied the Nixon River flats.

A group of approximately 300 caribou that wintered in the vicinity of Farewell moved out of the area shortly after the collaring operation in late April 1982. Poor tracking conditions prevented relocating these animals in June.

Mortality

The total reported harvest of caribou in Unit 19 was 225 (204 males, 18 females, and 3 of unspecified sex). All but 43 were from the Mulchatna Herd. No caribou were reported taken from the Cloudy-Sunshine Mountains Herd. Only 5 caribou were reported taken from the Beaver Mountain Herd. Thirty-seven caribou reported taken in the Big River to Rainy Pass area were probably from the Rainy Pass group or possibly Mulchatna Herd. Six caribou were reported taken near the Tonzona River and Swift Fork of the Kuskokwim and may represent caribou from the Denali Herd. The unreported harvest was probably 75-150 caribou mainly from south of McGrath, near Lime Village, and on the lower Holitna River.

Whitefish Lake, Sparrevohn, Hoholitna River, and areas near Lime Village continued to be the principal areas where hunters took caribou in Unit 19. Caribou from those areas are part of the Mulchatna Herd. Seventy percent of the caribou were reported taken in September, with only 2 taken in December and 8 taken in March.

Management Summary and Recommendations

The status and herd identity of the small groups of caribou found in parts of Units 19 and 21 are poorly defined. Monitoring of the radio-collared caribou should provide considerably more definitive data on which to develop herd management plans.

The Beaver and Cloudy-Sunshine Mountain Herds both continue to be depressed despite very limited hunting mortality. The status of the caribou south of McGrath and near Farewell should be determined.

Even though most current hunting effort is directed at the Mulchatna Herd, the herd has apparently continued to increase. During 1981-82, caribou wintered throughout the Hoholitna valley. Other caribou were reported near the Kuskokwim drainage at Stony River. Close monitoring of hunting pressure in Subunit 19B should be maintained as air taxi operators from Anchorage were transporting numerous hunters to the area, which may cause excessive local harvests and crowded hunting conditions.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 20A and part of 20C

HERD: Delta

PERIOD COVERED: July 1, 1981-June 30, 1982

Seasons and Bag Limit

Unit 20A and that portion of 20C lying east of the Nenana River	Aug. 10-Sept. 30 Nov. 15-Dec. 31	One caribou by drawing permit from Aug. 10-Sept. 30; 150 permits will be issued, up to 25 of which will be issued nonresidents. Antlered caribou may be taken from Nov. 15-Dec. 31 by registration permit. A total of 400 caribou may be taken. See 5 AAC 81.055 and separate drawing and registration hunt supplements.

Population Status and Trend

The Delta Caribou Herd is still increasing. According to preliminary results of a June 1982 photo census, the herd numbers approximately 6,200 animals. An estimated 600-700 additional caribou inhabit the Yanert River drainage.

Although usually considered and managed as part of the Delta Herd, the Yanert River group generally does not inhabit the same range as the Delta Herd, and information to date suggests little interchange between the 2 groups.

Population Composition

During sex and age composition counts on October 2, 1981, 41 calves/100 cows (21% of herd), and 59 bulls/100 cows (30% of herd) were classified (N = 1,553). The 1981 calf:cow ratio (49:100) is similar to the 1980 ratio and suggests continued high calf survival. The bull:cow ratio of 59:100 represents a decline from last year's 85:100 but is still satisfactory. However, the bull:cow ratio figures for 1980 are suspect because some segregation had already occurred before the composition counts were conducted. No attempt was made to identify the yearling component of the herd.

Mortality

One hundred and fifty drawing permits were issued for the August 10-September 30 season, and 87 caribou were reportedly harvested. The 2nd season (November 15-December 31) was a registration permit hunt in which 181 caribou were taken. Permits were issued to 844 hunters. The Game Board's harvest quota for the Delta Herd of 500 caribou was not achieved.

During the early season, the western portion of Subunit 20A and adjacent Subunit 20C west of the Wood River produced 76% of the take. Virtually the entire harvest during the late season was west of the Wood River. Although aircraft was the most popular means of access during the early season (used by 56% of successful hunters), snow machines predominated during the late season (68% of all hunters). Other statistics are presented in Appendix A.

Thirty-seven caribou, including 7 in the Yanert drainage, were equipped with radio collars during 1982. No mortalities were recorded among the collared caribou.

Management Summary and Recommendations

The long-term population goal of 4,000-5,000 caribou for the Delta Herd has been achieved. Hunting seasons should be liberalized, so the annual increment is harvested yearly and the herd stabilized at present (or somewhat lower) levels. Population monitoring should continue.

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APPENDIX A. Delta Caribou Herd harvest summary, 1981.

	Drawing hunt	Registration hunt
No. permit applicants	938	844
No. permits issued	150	844
No. successful hunters	87	181
No. unsuccessful hunters	21	281
Did not hunt	36	330
Did not report	6	47
Harvest by drainage:		
Delta River	1	0
Dry Creek	3	0
Ferry-Healy	18	54
Gold King	0	3
Little Delta	14	0
Tatlanika	6	18
Totatlanika	14	76
Wood	21	7
Yanert	7	14

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 20D

HERD: Macomb

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Subunit 20D, that portion lying south of the Tanana River	Aug. 10-Sept. 30	One bull by drawing permit only. 70 permits will be issued.

Population Status and Trend

Surveys conducted during the reporting period suggest that the Macomb Herd is slowly increasing. Five hundred caribou were observed during the surveys, but there may be as many as 700 in the portion of Subunit 20D south of the Tanana River and between the Robertson and Delta Rivers.

Population Composition

A composition survey utilizing a fixed-wing spotter aircraft and a Jet Ranger helicopter was conducted on November 13, 1981. Most caribou found were on the northeastern slopes of Mount Hajdukovich. This is the 1st time in recent years large numbers of caribou have been recorded in this area. Approximately 475 caribou were observed; 445 were classified (Appendix A).

Data in Appendix A indicate improved survival of calves and yearlings in 1981 compared to prior years. This may be due to reduced wolf predation in the area after 1980.

Mortality

There were 192 applicants for the 70 available permits. Of the 70 permittees, 29 hunted and 20 were successful. This was a 51% success rate for those who hunted, or 29% among all permittees. Most (55%) of the harvest occurred in August and 45% in September.

Hunters took 19 bulls and 1 cow during 1981. The cow was taken illegally but was the only known illegal kill during the year. Most harvest occurred in the vicinity of the Macomb Plateau, but 1 hunter harvested a bull in the Jarvis Creek drainage.

As in previous years, walking was the most popular means of access (54%), horses were used by 13 (27%) of the hunters, and 6 hunters (13%) reported using off-road vehicles. The latter hunted outside the Macomb Plateau Controlled Use Area, in which mechanized transportation is restricted to float planes on Fish Lake.

Other mortality sources remain unquantified. Most of the wolves believed to hunt the Macomb Plateau area were removed in winter 1980-81. This probably resulted in increased survival of caribou calves and yearlings. Reports from hunters and observations by Department staff suggest that grizzly bears are numerous in the area. These bears may be another major source of caribou mortality.

Management Summary and Recommendations

The 1st priority for management of the Macomb Caribou Herd should be a more accurate estimate of herd size. Radio collaring 5-10 caribou should help in obtaining both an accurate population estimate and in other management activities. Searches during the postcalving period have not revealed aggregations of caribou which facilitate censusing. Monitoring radio-collared caribou should determine whether Macomb caribou aggregate and, if so, aid in locating aggregations. If no aggregations occur, the radio-collared caribou would facilitate an extensive aerial census during October concurrent with composition surveys.

Monitoring radio-collared caribou would assist in better understanding herd movements, which in turn will help in developing hunting regulations and measuring the effectiveness of predator management programs.

Predators are probably the factor limiting the growth of the Macomb Herd. Wolf control efforts should be continued in this area, and methods of increasing the harvest of grizzly bears should be explored.

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APPENDIX A. Fall sex and age composition of Macomb Caribou Herd.

Date	Bulls/ 100 cows	Yrlgs/ 100 cows	Calves/ 100 cows	% yrlgs	% calves	Sample size
1981	53	20	33	10	16	445
1980	43	10	13	6	8	306
1974, 1976, 1977, ($\bar{x}$)	42	13	22	7	13	348

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 20E

HERD: Fortymile

PERIOD COVERED: July 1, 1981-June 30, 1982

Seasons and Bag Limit

Aug. 10-Sept. 20 Dec. 1-Feb. 28	One bull, provided that caribou taken during the period Dec. 1-Feb. 28 must be antlerless; season will be closed by emergency order if estimated harvest exceeds 500 bull caribou.

Population Status and Trend

The results of a June 1980 photo census, not available until this reporting period, revealed 8,000 caribou present on the postcalving grounds on the east side of Mt. Harper. Two days after the photo census, pilot Ron Warbelow, who took part in the photo census, observed approximately 2,000 caribou moving through the head of the Charley River drainage toward the postcalving area. It is probable that these 2,000 caribou were not included in the photo census, so it appears that 10,000 caribou (mostly cows and calves) were present in the postcalving aggregations.

If only 8,000 caribou were present on the postcalving area, the herd would have totaled approximately 9,400, if adjusted to include bulls not present in postcalving aggregations. If 10,000 caribou were present, as was probably the case, the herd totaled 11,700, if a similar adjustment for bulls is made.

A census attempted during June 1982 was complicated by unpredictable caribou movements. A total of 7,000-9,000 caribou was estimated in the postcalving aggregations.

The Fortymile Herd is believed to be increasing slowly from a population low of 4,000-6,000 caribou in the mid-1970's. Wolf population reduction in a 3,000-sq mi portion of the Fortymile Herd's annual range is expected to facilitate the herd's population growth.

Population Composition

A total of 1,004 caribou was classified from low-level helicopter flight and from the ground on September 26, 1981.

This survey occurred during the herd's easterly fall migration. Survey conditions were excellent, and the data are believed quite accurate. Bulls composed 29% of the sample, compared to 12% of the June 1981 (i.e., postcalving) sample. This difference allowed the calculation of a total population estimate from numbers of caribou present in the postcalving aggregations. Calves composed 17% of the fall sample. The calculated bull:cow ratio was 52:100; the calf:cow ratio was 31:100. No attempt was made to classify yearlings and older caribou other than as males or females.

Seasonal Concentrations and Movements

Following the June 1981 postcalving concentration on eastern Mt. Harper, movements were not determined. Caribou were widely scattered throughout their range in August 1981. However, but by late August, they began to aggregate and migrate in a southerly direction up the Middle Fork of the Fortymile River. By late September, the vanguard of the migration was moving east across the head of the West Fork of Dennison Fork (Fortymile drainage). An estimated 2,000 caribou continued east across the Taylor Highway, while the remainder of the herd reversed direction and moved back to the northwest.

By midwinter, Fortymile caribou were scattered throughout the northwestern portion of Subunit 20E and were mingling with an estimated 5,000-15,000 caribou from the Porcupine Herd which wintered south of the Yukon River.

In April 1982, radio telemetry data indicated that Porcupine Herd caribou moved to the north leaving Fortymile caribou behind. Fortymile caribou calved in the Seventymile River area, though no concentrated calving area was determined.

By June 1982, a joint BLM-ADF&G study of Fortymile Herd movements revealed that many caribou had moved to the Mt. Harper postcalving concentration area used during the previous 2 years. The animals did not densely aggregate but moved back across Copper Creek and aggregated at the head of Granite Creek on July 13. Another large group of 3,000-4,000 caribou located on the north side of Mt. Eldridge on July 8 had moved west to Granite Creek by July 13. Many bulls and yearlings were widely dispersed from Mt. Eldridge to Mt. Veta and Mt. Harper by July 13.

Mortality

Predation by wolves, grizzly bears, and other predators is believed to be the primary mortality factor limiting the rate of population growth. Numerous instances of predator-caribou interaction were observed during the reporting period. At least 2 radio-equipped cows were known to be fed upon, and likely killed, by wolves during the reporting period.

A total of 45 Fortymile caribou was reported taken during the 1981-82 hunting seasons, 37 during the early season (Subunits 20B, D, E, F, and 25C) and 8 in the late season (Subunit 20E).

Three harvest tickets indicated out-of-season kills in July, October, and November 1981 for a total reported kill of 48 caribou. An additional 10 caribou were known to have been illegally taken in late September and October in the Mt. Fairplay area. Total illegal kill probably equaled the legal harvest with most poaching occurring during summer in the mining areas. Total human-caused mortality is estimated to have been 100 caribou, or only about 1% of the population.

In addition, an estimated 200-400 caribou from the Porcupine Herd were killed by residents of Eagle as the animals crossed the Yukon River during fall 1981 and spring 1982 migrations. While many of these kills were illegal, the harvests were believed to be insignificant to the Porcupine Herd which numbers in excess of 100,000 caribou.

Management Summary and Recommendations

The Fortymile Herd is known to number at least 8,000 and likely contained 9,400 to 11,700 caribou in 1981. The herd is expected to continue increasing as a result of wolf management in Subunit 20E. The Fortymile Herd is still far below carrying capacity, and herd growth should be encouraged until numbers approach 50,000.

Seasons and bag limits on the Fortymile Herd may continue to be liberalized as long as harvests do not significantly affect herd growth. A quota of 500 bull caribou will prevent overharvests from occurring.

If a major segment of the Porcupine Caribou Herd continues to cross the Yukon River, as it did during this reporting period, a season could be provided to allow a legal harvest. That portion of Subunit 20E north of the Seventymile River and including the lower Charley River and Washington Creek drainages could be opened to caribou hunting during October, November, March, and April without affecting the Fortymile Herd, provided the Fortymile Herd maintains its recent movement and concentration patterns.

The greatest potential threat to the future welfare of the Fortymile Caribou Herd is mining in areas of seasonal importance to the herd, such as the Glacier-Eldridge-North Peak calving area on the south side of the Seventymile River and the Mt. Harper postcalving areas. Development of the proposed large-scale asbestos mine in the Slate Creek area, immediately south of the calving area, would create considerable disturbance. A company town of 1,500-2,000 people in this area could greatly increase hunting pressure on the herd. One suggested access route south

from the Slate Creek mining area to Chicken, over which some 3,000 ore trucks would travel annually, intersects a historical, fall migration route. Similar disturbance and access problems are anticipated on the Mt. Harper postcalving concentration area.

If the herd continues to increase, rehabitation of historic range is anticipated; hence, range condition in areas formerly occupied by the Fortymile Herd will become critical. If only recent movement and concentration data are used to guide development, conflicts will most likely occur as the herd occupies ever-increasing portions of its former range. Continued monitoring of herd movements and concentrations and a compilation of historical data will be critical if impacts of proposed developments are to be minimized.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 22A, 22B, 23, 24, and 26A

HERD: Western Arctic

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Units 22A, 22B, 23, 24, and 26A	July 1-Apr. 15	Four caribou, provided that female caribou and may be taken from Sept. 15-Apr. 15, and that not more than 2 caribou may be transported from these Units per regulatory year.

Population Status and Trend

The Western Arctic Caribou Herd (WAH) is currently the largest caribou herd in the State and ranks as 1 of Alaska's major terrestrial resources. Caribou are typified by large-scale population fluctuations, and the WAH is no exception. In the last decade, the WAH has undergone a rapid decline and recovery. Recovery is continuing, and the herd will soon be as large as it was prior to the decline unless measures are taken to stabilize it.

Caribou in northwestern Alaska were abundant in the mid-19th century but had declined to low numbers by the early 1900's (Lent 1966, Skoog 1968). Caribou were increasing in northwestern Alaska by the 1920's and continued to do so into the 1930's (Skoog 1968). Whether this increase was due to herd productivity or to ingress from the southeast is not known. By the late 1940's, the WAH probably numbered over 250,000 animals (Skoog 1968). Lent (1966) intensively studied the WAH from 1959 to 1962 and estimated the July 1961 postcalving aggregations to contain about 150,000 animals. He estimated the total population to be 175,000-200,000. Skoog (1968) used village harvests to estimate the population at 300,000 in 1964. Hemming (1972) counted 179,843 caribou on photographs of postcalving aggregations and estimated the 1970 population to contain 242,000 animals. Between 1975 and 1982, the Department has conducted 5 aerial photo censuses of the WAH: in 1975, 1976, 1978, 1980, and 1982. In 1975, Davis and Valkenburg (1978) estimated the herd to contain from 67,000 to 121,000 animals but though that 103,000 was the most likely number. They reported a minimum estimate of 67,000 animals in 1976 (Davis and Valkenburg 1978). The 1976

estimate has subsequently been revised to 75,000. Results of the 1978 and 1980 photo censuses were 106,635 and 138,000 animals, respectively (Davis et al. 1980). These results indicate that the population has been growing at an annual rate of 14% since 1976. At the time of this writing, results of the 1982 census were not available; however, a 14% annual increase since 1980 would place the postcalving population at 157,000 in 1981 and 179,000 in 1982. Population estimates since 1961 are summarized in Appendix A.

Although breakup was late in northwestern Alaska in 1982 and the Utukok uplands were still extensively snow-covered during the 1st week of June, peak calving occurred during the week of June 4-10. Productivity appeared normal (Appendix B).

Population Composition

Fall composition surveys were not conducted in 1981. Limited surveys, however, were flown in 3 areas south of the Brooks Range during October and November in order to determine the proportion of calves in the herd. The combined results of these surveys ($\bar{N}$ = 4,659) indicated that calves composed 22% of the herd (Appendix C). Assuming a representative sample, summer and early fall calf mortality in 1981 was not excessive among caribou south of the Brooks Range.

Spring composition counts were conducted north and south of the Brooks Range in April 1982. The combined data from 4 different areas ($\bar{N}$ = 5,536) indicated that calves composed 23% of the herd (Appendix D). In some of the survey areas, it was apparent that segregation by age and sex classes had already begun. Consequently, the data probably overestimate the true proportion of calves. The spring composition data indicate that 1982 recruitment to short yearling age was sufficient to ensure continued growth of the herd.

A calving ground survey was conducted in early June 1982. A total of 2,962 caribou were classified north and south of the Utukok River (Appendix B) with a calf:cow ratio of 79 calves:100 cows. The high proportion of calves counted on June 9 suggests that the peak of calving occurred sometime before that date, perhaps during the previous 3-5 days. Calf production appeared normal, and there was no indication of excessive calf mortality.

Among 1,546 adult females sampled on the calving ground, 0.73% exhibited retained placentas, a rate insignificant in terms of reproductive success.

Mortality

The total reported harvest of caribou was 906, including 818 males, 65 females, and 23 of unreported sex. The actual harvest was probably much greater. During the 2 previous hunting seasons, the harvest was subjectively estimated at 3,000. This figure is a reasonable minimum estimate for the 1981-82 season as

well, although the actual harvest could have been substantially higher. Clearly, the reported harvest is still of very limited value for management.

The 1981-82 reported harvest (906) exceeded that of 1980-81 (458) by 98% due to a 90% increase in Unit 23 and a 142% increase in Subunit 26A. Whether this is the result of increased harvesting, improved compliance with reporting requirements, or both, cannot be determined. An increase in harvest levels is expected to accompany herd growth and liberalized bag limits. On the other hand, 13% more harvest tickets were issued this year than last. The bag limit was increased from 3 to 4 caribou which could have resulted in more truthful reporting by hunters who would otherwise have taken more than the legal limit.

Management Summary and Recommendations

The dramatic and much-publicized decline of the Western Arctic Caribou Herd in the early to mid-1970's demonstrated the need for a sound caribou management program in northwestern Alaska. Basic to any such program is a periodic inventory of the herd, including a census and composition counts. We recommend that a full-scale photo census of postcalving aggregations be conducted biennially, i.e., in 1982, 1984, 1986, etc. In census years, fall and spring composition counts should also be conducted. Fall composition counts will determine population structure, and spring counts will determine overwinter calf survival. In addition to these large-scale efforts, annual calving ground surveys should be conducted as funding allows. This effort should be designed to collect information on calving, including identification of core calving areas, peak calving dates, weather, and general observations on disease and predation.

The major management tool available at the present time is control of the harvest, and it is generally agreed that overharvest was a major factor in the recent decline of the herd. In order to rationally manage the harvest, it is necessary to know the following information: 1) the size and composition of the herd, 2) herd productivity, and 3) the size and composition of the harvest. Harvest estimates for the WAH have historically been poor. Although there were 1,199 households and 1,286 tax returns reported in 1981 in Unit 26, only 279 hunting licenses were issued.

At its spring 1982 meeting, the Board of Game adopted a staff proposal to allow the taking of 5 caribou on a harvest ticket, and additional increments of 5 caribou by registration permit. This regulation was designed to accommodate hunters requiring more than 5 caribou, liberalize the harvest, and promote reporting. The regulation is complex and should be accompanied by increased efforts to explain both the meaning and the purpose of it to the public. These efforts should include dissemination of written information and frequent village contacts.

At its spring 1982 meeting, the Board of Game also established a policy of attempting to stabilize the herd at approximately 200,000 animals. If it becomes apparent that the postcalving herd has fallen significantly below that level, seasons and bag limits should be reduced. Limiting the growth of the herd, on the other hand, should be a lower priority, particularly because there is no evidence that mainland caribou herds are ever range-limited. However, it may become necessary to limit herd growth to prevent escalating conflict with the reindeer industry. If this becomes necessary, the following 3 prioritized options should be considered:

1) Increase the subsistence and recreational harvest;

2) Increase the rate of predation by reducing the wolf harvest; and

3) Harvest caribou commercially.

At its current annual rate of increase (14% over the last 7 years), it is doubtful that the herd can be stabilized through liberalization of seasons, bag limits, or methods and means. It is likely, however, that the growth rate will decline because of environmental fluctuation and density-independent mortality.

The recent decline of the WAH has been partially attributed to wolf predation, and wolves in combination with hunting mortality appear to be capable of limiting caribou herds. Reducing wolf bag limits in Units 23 and 26 would presumably increase the natural mortality rate of the herd.

Commercial harvest probably has the greatest potential as a means for rapidly reducing the size of the herd. However, such a practice would set a questionable precedent and would be widely criticized by the public. Once commercial operations were established, it would be difficult to eliminate them when harvest reduction became necessary. We recommend that the commercial harvest option be considered only as a last resort if it ever becomes clear that a serious density-dependent decline is imminent.

Computer modeling efforts are underway to increase our understanding of herd population dynamics and to aid in management decision making. Once herd composition and harvest levels have been determined, this information can be plugged into WACH, a population model designed by S. Miller and D. Anderson to make predictions about changes in herd size and composition. These efforts will be updated as more information becomes available.

A concern is habitat loss and alteration due to industrial development. The highly mobile WAH may be particularly vulnerable to loss of migration routes and key calving areas through oil and mineral development in the western arctic. Associated with development are transportation corridors that

will provide increased access to the herd, for example, the proposed Red Dog Mine and transportation corridor from the Wulik Hills to the coast. The Department should advocate low-impact alternatives when they can be identified (alternate routing and transportation modes, traffic convoying, etc.). The Department should participate in, and encourage other agencies to undertake, habitat assessment programs designed to identify key caribou use areas and quantify habitat availability and quality. It should continue to explore the possibility of using satellite imagery in habitat mapping and assessment and should undertake a limited pilot project on the range of the WAH.

The potential for increasing caribou/reindeer conflict has already been mentioned. Reindeer have frequently been lost to caribou herds migrating through reindeer ranges. Reindeer herders respond by advocating reduction in the size of caribou herds and limitations on their movements. Until a comprehensive caribou/reindeer policy is formulated, the Department should oppose the reintroduction of reindeer to caribou ranges not presently occupied by reindeer.

Radio-telemetry efforts should continue as funding permits as a means of determining habitat selection, natural mortality, census, and movement information. The possibility of using satellite tracking to increase the frequency and number of radio locations should be explored.

Literature Cited

Davis, J. L., and P. Valkenburg. 1978. Western arctic caribou studies. Alaska Dep. Fish and Game. Fed. Aid in Wildl. Rest. Final Rep. Proj. W-17-8 and W-17-9, Job 3.19R, 3.20R, and 3.21R. Juneau. 111pp.

_____, _____, and H. V. Reynolds. 1980. Population dynamics of Alaska's Western Arctic Caribou Herd. Pages 595-604 in E. Reimers, E. Gaare, and S. Skjenneberg, eds. Proc. 2nd Int. Reindeer/Caribou Symp., Roros, Norway, 1979. Dierektoratet for vilt og ferskvannsfisk, Trondheim.

Hemming, J. 1972. Western Arctic Herd census. In R. E. Pegau and J. Hemming, Caribou Report. Alaska Dep. Fish and Game, Fed. Aid in Wildl. Rest. Rep. Proj. W-17-2 and W-17-3. Juneau. 215pp.

Lent, P. C. 1966. The caribou of northwestern Alaska. Pages 481-517 in N. J. Wilimovsky and J. N. Wolfe, eds., Environment of the Cape Thompson Region, Alaska. U.S. Atomic Energy Comm., Washington, D.C. 1,250pp.

Skoog, R. O. 1968. Ecology of the caribou (Rangifer tarandus granti) in Alaska. Ph.D. Thesis., Univ. California, Berkeley. 720pp.

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APPPENDIX A. Western Arctic Caribou Herd population estimates, 1961-1980.

Year	Population size	Source
1961	175,000-200,000	Lent (1966), photo census
1964	300,000	Skoog (1968), harvest data
1970	242,000	a
1975	102,700	a
1976	75,000	a
1978	107,000	a
1980	138,000	a

[a] Based on ADF&G photo census.

APPENDIX B. Western Arctic Caribou calf:cow ratios, June 9, 1982.

Location	Cows	Calves	Other	Calves/ 100 cows
North of Utukok R.	413	359	28	87
South of Utukok R.	1168	891	103	76
Totals	1,581	1,250	131	79

APPENDIX C. Calf percentage of the Western Arctic Caribou Herd south of the Brooks Range, late fall 1981.

Date	Location	Total caribou	Calves	Calf % of herd
10/31/81	Selawik Hills	1,914	422	22
11/2/81	Wulik R. to Lisburne Hills	1,075	221	21
11/5/81	Kobuk R. to Selawik Hills	1,670	373	22
Totals		4,659	1,016	22

APPENDIX D. Western Arctic Caribou spring composition survey, 1982.

Date	Location	Total caribou	Calves	Calf % of herd
4/15-17/82	North Slope	384	89	23
4/13/82	Wulik R. to Noatak R.	1,508	301	20
4/14/82	Selawik Hills to Selawik Flats	2,566	643	25
4/27/82	Selawik Flats	1,078	220	20
Totals		5,536	1,253	23

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 25A, 25B, 25C, 25D, AND 26C

HERD: Porcupine

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

July 1-Mar. 31	Five caribou; provided that not more than 2 caribou may be transported from these Units per regulatory year.

Population Status and Trend

The Porcupine Caribou Herd (PH) remained stable in size during most of the 1970's. A minimum population of 110,000 was estimated by an aerial photo-direct count-extrapolation (APDCE) census in July 1979. Productivity and recruitment were apparently good during the late 1970's; hunting mortality was low. Another census is planned in July 1982 to determine if the herd is increasing.

Population Composition

No data on PH composition were obtained in Alaska during this reporting period. However, casual observation during radio collaring and subsequent monitoring indicated good calf production and survival.

Mortality

Harvest ticket returns indicated that 123 persons hunted the PH during the 1981-82 season. Hunters reported taking 141 caribou. Most hunters used either aircraft (53%) or boats (28%) for transportation. Most successful hunters took 1 or 2 caribou. Harvest composition was predominately males (71%), and most of the kill occurred in late August, early September, and mid-October. The take in Unit 25 was 126 caribou. Even without the unusually high take of 40 caribou along the Yukon River near Eagle, the Unit 25 harvest was still higher than the mean for the previous 5 years ($\bar{x}$ = 44). The reported take in Subunit 26C of 15 caribou (Appendix A) was also higher than the 5-year mean of ($\bar{x}$ = 11). However, only 1 fly-in hunter reported hunting Subunit 26C; apparently, the actual "sport" or out-of-Unit harvest was relatively low.

Hunters who returned tickets were predominately not residents of Units within the PH's range and represent a biased sample. Most of these hunters flew to the hunting area and returned with no more than the legal 2 caribou limit. In most years, few hunters use boats to hunt PH caribou, primarily on the Porcupine River, but in October 1981 numerous PH caribou were available from the Yukon River near Eagle. Accordingly, hunters using boats harvested more caribou than usual. Overall, the harvest report data indicate that caribou were readily available in Unit 25 during the popular August/September season but relatively scarce in Subunit 26C.

Residents of Units within the PH range have generally not accepted the harvest reporting system. Only 4 reports were returned from Ft. Yukon, 6 from Kaktovik, and 0 from Arctic Village, Venetie, and Chalkyitsik. Fifteen reports came from Eagle, where unusually high numbers of PH caribou were available this past winter. For all of the above villages, estimated harvest far exceeded reported harvest. Fall and spring migrations brought PH caribou to areas where they have seldom, if ever, been in the past 50 years. Although substantial harvest occurred in these areas (namely, Eagle, Central, Circle, and Chalkyitsik), most harvest occurred on traditional winter range. Appendix B summarizes the estimated village harvests in Alaska and in Canada.

There were numerous reports of individual hunters far exceeding the legal bag limit, and a number of caribou were shipped to other villages in the spirit of "traditional" trade or barter. It is reasonable to infer that carcasses shipped out were surplus to local needs, implying a large harvest. Harvesting of caribou continued well beyond the legal season, even though most villagers had probably already taken more caribou than any other year in the past decade. There were no reports of waste, however, and harvested caribou were apparently utilized efficiently.

The illegal activities of the past year--specifically the widespread disregard for established seasons and bag limits--indicate the necessity for reassessing both herd status and legitimate harvest need. Results of a photo census completed in July 1982 should provide the 1st step. To the extent possible, liberalization of regulations should be considered to accommodate current practices. Clearly, however, local residents should be better educated of the need for harvest restrictions, and regulations must be more strictly enforced.

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APPENDIX A. Hunter success from harvest report returns, Porcupine Herd, 1981-82.

No. caribou killed/hunter	0	1	2	3	4	5
No. hunters in category	44	31	40	5	0	3
No. caribou harvested	0	31	80	15	0	15

APPENDIX B. Estimated Porcupine Caribou harvest by local residents, 1981-82.

Village	Harvest
Kaktovik	<50
Arctic Village	300[a]-1,000
Venetie	50[a]-100
Ft. Yukon	15[a]-50
Chalkyitsik	70-80
Eagle	200[a]-300
Circle/Central	<100
Old Crow, Y.T.	1,600-2,000
Ft. MacPherson, N.W.T.	1,500
Aklavik, N.W.T.	200-300

[a] Low value is Subsistence Division's estimate, others are Game Division's estimates, except Canadian data, which are from Yukon Renewable Resources Department.

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 26B

HERD: Central Arctic

PERIOD COVERED: July 1, 1981-June 30, 1982

Seasons and Bag Limit

Aug. 10-Oct. 15 Three bulls
Feb. 15-Apr. 15

Population Status and Trend

The Central Arctic Herd (CAH) has grown continuously since it was first recognized as a distinct subpopulation in 1975. The CAH was estimated at 9,000 (6,660 adults) in July 1981, having increased at a rate of approximately 13% per year since 1978. Rapid herd growth is attributable to excellent calf production and survival and low adult mortality.

Industrial development near Prudhoe Bay and the Trans-Alaska Pipeline corridor continues to affect the local distribution of CAH caribou. Cows and calves avoid these areas of intensive activity.

Population Composition

Results of composition surveys are shown in Appendix A. Survey conditions were generally good, although a few areas of low visibility precluded complete coverage of the easternmost portion of the CAH range during fall and spring; however, earlier reconnaissance indicated that very few caribou were present in those areas.

CAH calf production and survival were excellent in 1981-82. The postcalving and fall surveys yielded reliable estimates of overall herd composition. The high bull:cow ratio obtained in spring resulted from counts of several unusually large bull groups in valleys of the Brooks Range; cows were already moving north in widely scattered bands. Nevertheless, the results clearly indicated low overwinter calf mortality and, consequently, high yearling recruitment to the herd.

Mortality

Ninety-eight people reported hunting CAH caribou during the 1981-82 season; 65 successful hunters harvested 95 caribou. The majority of successful hunters (75%) took only 1 caribou, while

20% took 2 each, and only 12% reached the bag limit of 3. In addition, 1 person harvested 5 CAH caribou from Subunit 26C, where a higher bag limit was in effect.

As in previous years, about half of those hunting CAH caribou flew into the area, while most others used the haul road (Dalton Highway) for access. Fly-in hunters had a higher success rate (87% vs. 52%) but killed fewer caribou per person than did successful road hunters. The higher average take among road hunters is attributable to a few, more successful, individuals using snow machines or off-road vehicles.

Only 1 Nuiqsuit resident and 2 Kaktovik residents reported hunting the CAH. In addition, Kaktovik residents reportedly took 25-40 CAH caribou from the Canning River delta in late July 1981 and an unknown number (probably 25 or fewer) from the Sadlerochit Mountains in May 1982. Both areas are in Subunit 26C, where the season was open July 1-March 31. The harvest by Nuiqsuit residents was probably less than 50 caribou, some of which were taken during the closed season.

Management Summary and Recommendations

The CAH has been increasing by approximately 13% per year since 1978 and currently numbers about 9,000 (6,660 adults). The long-term welfare of the herd may be compromised on its calving grounds and summer range by rapidly expanding petroleum development. The Department should continue to conduct studies as necessary, to advise industry and other agencies of possible conflicts, and to contribute toward the development and implementation of mitigative policies.

Sport harvest of the CAH is low relative to herd size and productivity. However, harvest is increasing with greater use of the haul road and as more fly-in hunters discover the area. There is currently a surplus of bulls, however, and limiting harvest to bulls should accommodate sport hunters without affecting herd productivity.

Harvest of CAH caribou by Kaktovik residents occurs in Subunit 26C, where longer seasons and larger bag limits apply, but that take is presently inconsequential to overall population status. Although the current harvest by Nuiqsuit residents is low, a few cows are probably taken, and some hunting apparently occurs after the legal season. The open season should remain "bulls only," and harvest of CAH cows should be discouraged through strict enforcement of the regulations. Nuiqsuit residents will have ample opportunity to fill additional needs for caribou in Subunit 26A, where very liberal seasons will be in effect next year.

The current closed season from October 16-February 14 was implemented to prevent the taking of rutting bulls in poor condition. This restriction probably has little effect on total

harvest and could be eliminated or reduced to October 16-November 15. The bag limit of 3 bulls, however, should remain in effect.

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APPENDIX A. Sex and age composition counts of the Central Arctic Herd, 1981-82.

Season	Cows		Calves			Yearlings			Bulls			Total
	No.	%	No.	%	/100C	No.	%	/100C	No.	%	/100C	
Calving (June)	1,535	46	1,335	40	85	334	10	22	133	4	9	3,337
Postcalving (July)	1,625	39	1,042	25	65	333	8	20	1,167	28	70	4,167
Rut (October)	699	41	448	26	64	--[a]	--	--	565	33	81	1,712
Spring (April/May)	747	35	451	21	60	--	--	--	926	44	124	2,124

[a] Yearlings classified as adult cows or bulls.