

LOCATION

Game Management Units: 13 and 14B (25,000 mi²)

Herd: Nelchina Caribou Herd

Geographical Description: Nelchina Basin

BACKGROUND

The Nelchina caribou herd (NCH) contained 5,000-15,000 caribou in the late 1940s. The herd increased during the early 1950s, aided by intensive predator control. It continued to expand and peaked at about 70,000 caribou by the mid-1960s. A dramatic decline began in the late 1960s and the herd numbered between 7,000 and 10,000 caribou in 1972. In 1973-74 the NCH began to increase and grow through the late 1980s.

The NCH has been important to hunters because of its accessibility and proximity to Anchorage and Fairbanks. Hunters killed 112,000 Nelchina caribou between 1954 and 1989. The Board of Game (BOG) increased bag limits and extended seasons when the NCH began to increase in the late 1950s. From 1955 until 1971, the bag limits varied from 2 to 4 caribou and season lengths fluctuated between a split 2-month season in September and November, to a 7-month season from August to March. Annual harvests from 1955 through 1971 ranged from 2,500 to more than 10,000 caribou. The department recognized a decline in 1972 and the BOG curtailed the season and bag limit. From 1972 through 1976, the bag limit was 1 caribou and fall seasons varied from 15 to 40 days. Even with restrictions the reported harvests ranged from 560 to as high as 1,200 caribou and exceeded the desired harvest level. In 1976, the season was closed by emergency order after hunters killed 800 caribou in 5 days. It became apparent a short season was not controlling the harvest. Since 1977 Nelchina caribou have been hunted by permit only.

MANAGEMENT DIRECTION

Management Objectives

The management objective is to reduce the herd to 40,000 caribou by increasing human harvests, then maintain the herd at that level with a minimum of 40 bulls:100 cows and 40 calves:100 cows. The department recommends the annual harvest level based upon population estimates, overwinter adult survival, and calf recruitment.

METHODS

Biologists conducted an annual census and associated sex and age composition counts during the past 4 years and biennially prior to 1988. The censuses involved aerial counts of caribou observed in postcalving aggregations; counts were followed immediately by sex and age composition surveys. Surveyors estimated the cow base and the proportion of calves and bulls in the postcalving aggregations. Biologists conducted aerial sex and age composition counts annually during fall to estimate herd composition and evaluate calf recruitment. They extrapolated fall population estimates from the counts and composition data.

Surveyors located radiocollared caribou seasonally to delineate herd distribution, sex and age composition, and to determine seasonal range use. They attempted to maintain between 30 and 40 radiocollared caribou in the herd each year.

Biologists used permit reports, periodic check stations, and hunter field checks to monitor hunts. Personnel monitored forage condition and use at approximately 5-year intervals at established range stations.

RESULTS AND DISCUSSION

Population Status and Trend

Population Size: The NCH increased from an estimated 30,276 caribou in 1987 to 45,484 in 1992 for an average annual growth rate of 10% (Table 1). The 1992 estimate was the highest in more than 20 years, however, the 1992 total was only slightly higher than the 1991 estimate. This suggested a cessation of growth in this herd. The estimated density was 1.03 caribou/km² in 1992 based on an approximate range of 44,200 km² (Lieb *et al.* 1988) and a population estimate of 45,484 caribou.

Population Composition: Biologists observed 63 calves:100 cows during the 1992 postcalving survey. This was the highest spring calf:cow ratio obtained in recent years and it was surprising because the spring of 1992 came very late. Some calving occurred on the Lake Louise flats for the first time in over 15 years. Between 1983 and 1990 postcalving calf:cow ratios ranged from 51 to 61 calves:100 cows. Current calf:cow ratios obtained immediately postcalving suggested high herd productivity each year. Calf:cow ratios typically declined between summer and fall and a decline of 23 calves:100 cows occurred in 1992. The 1992 fall ratio of 40 calves:100 cows was 7% below the 5-year average (1987-91) of 43 calves:100 cows.

Surveyors observed 48 bulls:100 cows during the fall 1992 survey. This was a 4% decline from the 5-year (1987-91) average of 50 bulls:100 (Table 1). Recently, fall bull:cow ratios have been lower than ratios observed in the early 1980s ($x = 60$ bulls:100 cows). This

reduction was the result of a harvest regime in which approximately 85% of the caribou killed during hunting seasons were bulls. Field notes from recent fall composition surveys suggested fewer large, mature bulls than in past years. This was a subjective conclusion because bulls were not classified by age class (i.e., small, medium, or large). However, it was evident that large, mature bulls were not as prevalent in breeding groups as in previous years.

Distribution and Movements:

Biologists monitored the distribution and movements of the NCH and Mentasta caribou herd (MCH) by periodic flights to locate radiocollared, cows. During the 1990 postcalving/early summer period the NCH was distributed throughout the eastern Talkeetna Mountains from Fog Lakes southeast to the Little Nelchina River. This distribution was similar to the previous 5 years. Caribou were spread widely over lower-elevation hills in the eastern Talkeetna Mountains, the Lake Louise flats and the Alphabet Hills by late August. The NCH began migrating east during early October 1990. Approximately 50% of the NCH intermixed with the Mentasta herd between the Copper and Nabesna Rivers by 16 October. The herd ranged from the eastern Mentasta Mountains to Snag Creek, Canada by 28 December. The eastern Mentasta Mountains contained about 75% of the herd. The Nelchina caribou that did not migrate eastward, out of Unit 13, wintered in the eastern Talkeetna Mountains and the Lake Louise Flats.

The intermixed NCH and MCH ranged around Northway and the Black Hills to Snag Creek, Canada from January until March 1991. During mid-March 1991, some of the caribou moved northwest from the Tetlin refuge. In early May Nelchina caribou migrated across the Lake Louise Flats into the Talkeetna Mountains.

The peak of the 1991 calving season occurred 28-31 May on the traditional calving grounds between the Oshetna River and Kosina Creek. During the 1991 postcalving/early summer period, the NCH was distributed throughout the eastern Talkeetna Mountains between the Oshetna River and Caribou Creek.

Approximately one-half the NCH observed during the 1991 fall composition counts on 2 October was migrating eastward through the Chistochina River region. The remaining caribou were located between the Maclaren and Talkeetna Rivers. In December 1991 Nelchina caribou that migrated were distributed from Jatahmund Lake to west of Tetlin and along the Alaska Highway to the Canada border. The MCH intermingled with Nelchina caribou from the Nabesna River north to Northway and Tetlin. The Nelchina caribou that remained in Unit 13 (approximately one-half of the herd) wintered on the Lake Louise Flats, with groups scattered south into the Nelchina and Tazlina drainages. Since 1988 caribou have increasingly used the Nelchina and Tazlina drainages during winter and summer.

The 1992 spring migration occurred from early April to mid-May though prolonged winter conditions delayed major movements. The Nelchina caribou that wintered north and east of Unit 13 moved westward through the Mentasta Pass, crossed the Richardson Highway between Sourdough and Meiers Lake, then crossed the Lake Louise Flats. The peak of calving occurred 26-30 May between the Oshetna River and Kosina Creek. The late spring delayed migration and caused some cows to calve on the Lake Louise flats in late May, while en route to the Talkeetna Mountains calving area. During the 1992 postcalving/early summer period the NCH was distributed, as it had been the past 6 years, throughout the eastern Talkeetna Mountains from Fog Lakes southeast to the Little Nelchina River.

Mortality

Harvests:

Season and Bag Limit. The 1990-91 season for subsistence hunters in Unit 13 and Subunit 14B was from 21-23 August, 28-30 August and 18-20 September. The winter season was 1 January to 28 February. The bag limit was 1 caribou during the fall hunt or 1 antlered caribou during winter. The 1991-92 season was from 10 August to 20 September and 5 January to 31 March. The bag limit was 1 caribou in fall or 1 antlered caribou in winter.

A state subsistence hunt for Nelchina caribou occurred in Unit 12 during winter and it was opened and closed by emergency order. There was no season in 1990, but a 13-day season was open in 1991 from 28 October to 9 November.

The Unit 13 federal subsistence seasons in 1990 and 1991 were 10 August to 20 September and 5 January to 31 March. In 1990 the bag limit was 1 caribou and in 1991 the limit was 2 caribou. The Unit 13 federal subsistence hunt was a registration hunt administered by the Bureau of Land Management and only residents of Units 13, 11 or 12 along the Nabesna Road were eligible.

The Unit 12 federal subsistence season was from 19 November to 17 December. In 1991 the season was from 7 November to 8 December. The bag limit was 1 antlerless caribou in 1990 and 1 bull in 1991. The Unit 12 federal subsistence hunt was a registration hunt administered by the USFWS and only residents of Northway or Tetlin were eligible.

Board of Game Actions and Emergency Orders. In 1989 the Alaska Supreme Court determined that local residency as a criterion for determining subsistence eligibility was unconstitutional. The BOG then defined all Alaskans were subsistence users. The sport harvest of Nelchina caribou was eliminated and only subsistence hunting has been allowed since 1990. All Alaskans were eligible to hunt in fall 1990. The 1990 fall hunt was an unlimited registration hunt because there was not enough time between the BOG meeting in July and the traditional opening of the fall hunting season in August to conduct a

Tier II hunt. Hunters obtained registration permits in Glennallen, Palmer, Delta Junction or Cantwell on 17-18 August. The department closed the 1990 fall hunt by emergency order after the first 3-day season (21-23 August) when hunters reached the fall quota. The BOG established the winter 1990-91 hunt and the entire 1991-92 season as a Tier II drawing permit.

The federal government assumed control of wildlife management on federal lands following the McDowell decision. A federal board was established to establish subsistence seasons and bag limits on federal lands beginning with the 1990 season. The major difference between federal and state caribou hunts was that only a portion of Subunit 13B was federal land and this reduced the opportunity to take caribou under a federal permit.

Hunter Harvest. The reported harvest in 1990-91 for the combined state and federal hunts was 3,020 caribou; the total harvest was 2,920 caribou in 1991-92 (Table 2). The 1990-91 harvest was a 52% increase over the 1989-90 harvest, and a 59% increase over the previous 3-year mean (1987-89) annual harvest of 1,796 caribou. Cow harvests increased 150% over the past 2 years. The winter bag limit was 1 antlered caribou to encourage the harvest of cows and immature bulls. Most breeding bulls shed their antlers before the winter season.

Illegal and unreported harvests of Nelchina caribou are an important source of mortality. We can only estimate the number of caribou taken. The most common type of illegal harvest occurs when a permittee fails to validate the permit after taking a caribou. Once a permittee transports a caribou from the field without punching the permit tag, there is minimal chance of citing them for taking additional caribou on the same permit. Also, individuals share permits with friends, similarly failing to validate the permit. There are reports of 5 caribou taken with 1 permit before the permit was validated. Enforcement is increasing and permittees who do not validate permits before transporting their caribou are cited.

Yukon residents harvested Nelchina caribou during winters when the animals moved into Canada. This harvest is expected to increase if the NCH continues migrating into the Yukon in substantial numbers and locals become aware of the opportunity to take caribou.

Road kills occur primarily during winter and are positively correlated with snow depth. Roads bisect much of the winter range and caribou seek the salt on the plowed highway. The number of caribou killed in vehicle collisions is unknown because reporting is incomplete.

Permit Hunts. Nelchina caribou were harvested exclusively by permit hunts. From 1987 to 1990, the number of Nelchina permits issued tripled, from 2,883 to 8,665 (Table 2). The increase in permits was because of a change in the hunt. Hunter participation was not limited in the registration permit hunt and the season was closed when the harvest quota

was reached. The BOG increased the number of permits issued as the herd has grown, thus the allowable harvest has increased each year.

During the past 2 years, 4 permit hunts for Nelchina caribou took place each year (Table 2). In Units 13 and 12 there were state subsistence hunts and federal subsistence hunts. The Unit 13 state hunt was the largest hunt. In 1990 this was Hunt 565, a registration hunt. The department issued 6,825 permits and hunters harvested 2,490 caribou. The department closed the season by emergency order after the first 3-day season. Since the winter 1990-91 season, state caribou hunting in Unit 13 has been by Tier II permit. In 1991, 6,840 applicants applied for Tier II permits and 2,802 permits were issued with a harvest of 1,973 caribou.

The Unit 13 federal hunt, Hunt 513, was a registration hunt for residents of Units 13, 11 and 12 along the Nabesna Road. The number of participants was comparable to when the state administered the hunt. The 1991 harvest was similar to past years (Table 2).

The number of caribou harvested in Hunt 513 varies because federal acreage is limited. In some years caribou are absent from federal lands while at other times the entire herd may be found in Subunit 13B. Concentrations often occur between Sourdough and Paxson along the Richardson Highway which is a traditional migration area for Nelchina caribou going east for winter. Ideal access provides hunters an easy opportunity to kill caribou.

The state (560T) and federal (512) registration hunts in Unit 12 were smaller because fewer caribou were available, however, 822 permittees harvested 273 caribou in Hunt 560T during 1991. The federal hunt (512) was small because it was limited to local residents of Tetlin and Northway and federal lands.

Hunter Residency and Success. Only Alaska residents could hunt Nelchina caribou. During 1990 local hunters took 355 animals (12%), and nonlocals took 2,665 caribou (88%) (Table 4). In 1991 local residents killed 898 caribou (31%) and nonlocals killed 1,946 animals (69%). Nonlocals harvested more caribou in 1990 than 1991 because the registration hunt did not limit participation to unit residents. For many nonlocal Alaskans this was the best chance at a Nelchina permit in years and they took advantage of the opportunity to hunt. Local residents' success increased in 1991. The bag limit for the federal hunt increased to 2 caribou and animals were more available on federal lands.

In 1990 successful hunters spent an average of 2 days afield, while unsuccessful hunters were afield 3.5 days. In 1991 successful caribou hunters spent an average of 4 days afield compared to 5 days for unsuccessful hunters. Tier II hunters averaged 3.7 days to take a caribou compared to 5.7 days for locals with a federal permit. Unsuccessful state permittees spent 4.3 days hunting compared to 8.5 days for federal permittees.

Hunter success in 1990 was 52%, a decline from the 1989 rate of 70%. Hunter success increased to 64% in 1991. We attributed hunter success to the increased number of

permits and the shortened season. Although hunter success increased in 1991, it did not approach the 73% average success rate observed between 1987-89.

The decline in success rate is probably a result of the Tier II permit system. If a household qualifies, every member that applies receives a permit, so the number of permits may exceed the need for caribou in the household.

Harvest Chronology. Fall is the most important time to take caribou (Table 5). Hunting occurs throughout the fall and is not concentrated early or during moose season. The winter hunts are important when caribou are available. Weather dictates when hunters go afield in January, February, or March.

Transport Methods. Highway vehicles were the main form of transportation (43%) in 1991-92 followed by snowmachines and 4-wheelers (Table 6). Field observations suggested the use of 4-wheelers was increasing, while aircraft use declined last year. The use of snowmachines fluctuated widely and depended on the availability of caribou during the winter hunt.

Other Mortality: Wolf predation is a potentially significant mortality factor for the NCH. The number of wolves harvested by hunters and trappers was relatively high on the core Nelchina caribou range during the mid-1980s. The low wolf population was probably a factor in the high calf survival during that period, which aided the growth of the NCH. Since 1988 wolves have increased over much of the Nelchina caribou range. Field observations of wolf-killed caribou and the mortality rate on radiocollared caribou suggested wolf predation on caribou increased as the wolf population increased. The mortality rate on radiocollared caribou during winter 1991-92 was 16% (6 of 38). Ballard *et al.* (1987) reported Unit 13 wolves preyed primarily on moose and did not follow caribou. Field observations supported this conclusion until recently. During winter 1991-92 observations of radiocollared wolves suggested that packs followed caribou movements and preyed on them. This predation reduced the number of harvestable caribou for humans. Currently, wolf predation does not present a biological problem in the Nelchina herd as it is not resulting in a population decline.

Winter snow accumulations have been above average in recent years with the last 4 winters classified as severe. A severe winter has average snow depths exceeding 28 inches over much of the winter. Winters of 1989-90 and 1990-91 were especially severe, however much of the herd wintered in Unit 12 where snow depths were much lower. The strongest influence of deep snows during these years was in the increased energy costs to pregnant cows migrating to calving grounds. We have not documented an increase in caribou mortality specifically attributable to severe winter conditions. Mortality of radiocollared cows has increased but this was probably caused by wolf predation given the time and/or location of the death.

Habitat

Assessment:

Between 1955 and 1962 the department established 39 range stations, including exclosures, throughout much of the Nelchina caribou range. Biologists examined these stations at 5 to 6-year intervals from 1957 through 1989. The evaluations indicated lichen increased over much of the range from the early 1970s to 1983. However, as the herd doubled in size over the decade 1974-1983, increases in lichen biomass ceased in areas of substantial caribou use. Lichen development continued in areas of light caribou use. The calving and summering range in the eastern Talkeetna Mountains has a history of continuous, heavy caribou use for over 30 years, and it had a poor lichen standing crop. Lieb *et al.* (1988) stated:

While the productivity, survival, and general condition of NCH animals has been good in recent years, it is clear that population levels in the 20-30,000 range have had a substantial negative effect on the lichen flora - even on moderately-utilized seasonal ranges. Preliminary examination of data collected during range station evaluations in summer 1989 indicate that areas receiving heavy use by caribou showed further range deterioration. Lichen standing crops are expected to continue decreasing with either increased or stable herd size. It is of concern to managers that even current numbers of caribou have dramatically impacted their seasonally preferred food and that only limited areas of lichens in good condition remain within the traditional range of the NCH. A larger herd and the resultant range deterioration could reduce body condition, increase the incidence of disease, reduce productivity and survival, increase the use of unsuitable habitats, and trigger emigration."

In 1990 the department initiated studies of body condition of Nelchina caribou in an attempt to evaluate the carrying capacity of the Nelchina caribou range. Researchers evaluated body condition of over 40 adult cows captured in late April or early May between 1990 and 1992. Initial analysis suggested Nelchina animals were in poorer body condition than animals from the Alaska Peninsula or the Mulchatna caribou herds (Pitcher, pers. comm.). However, NCH animals were not in poor condition overall. The Nelchina caribou that were examined had been migrating for at least 4 weeks and moved a minimum of 170 miles through very deep snow. Their body condition and low fat reserves could have been attributed to migration and not the condition of the winter range in Unit 13.

The potential for habitat loss because of land disposal and mining is a concern. An increase in mining activity could affect the Nelchina calving grounds. Recent land disposals on the Lake Louise Flat could result in a loss of caribou habitat. Another concern is the gas pipeline planned for construction adjacent to the oil pipeline and

Richardson Highway. This utility corridor transects the NCH winter range and if it becomes a barrier to caribou movements, it would exclude the herd from 50% of the winter range. Developments must be designed to minimize loss of caribou habitat and reduce disturbance of caribou.

Enhancement: Caribou habitat enhancement is not planned in the near future. Enhancement depends on the occurrence of wildfire. *The Copper River Basin Fire Management Plan*, an interagency plan, designates areas in Unit 13 where wildfires will not necessarily be suppressed. The plan provides for a natural fire regime to benefit wildlife habitat. In spite of the plan, fires have not been allowed to burn regardless of the suppression category of the land. Unit 13 has not had a large fire since 1950.

Wildfire promotes lichen growth and fire suppression is detrimental to caribou range. It may take lichens several decades after an intense fire to become productive. Small, periodic wildfires are necessary to ensure a constant lichen supply. Effective fire suppression increases fuel buildup and the possibility of an intense fire over a large area. This type of wildfire creates less diversity and decreases caribou carrying capacity.

Nonregulatory Management Problems/Needs

The concerns and problems associated with monitoring the size and condition of the Nelchina herd include: (1) accurately estimating population size and trend; (2) monitoring animal condition; (3) translating range and animal condition information into a reasonable estimate of the optimum caribou population; (4) managing predator populations; and (5) minimizing land use activities that adversely affect the Nelchina range.

I recommend an annual census and composition count. Without an annual census and composition count, actual population status and trend is more difficult to determine and actual changes may go unrecognized for several years. I also recommend doing surveys of peripheral calving and postcalving sites throughout the Nelchina range to estimate the numbers of caribou in subherds. These areas should be surveyed every fourth year.

We should continue to examine the 39 existing Nelchina range stations periodically, as well as the sites established in calving, summering, and wintering areas in 1989.

The department should continue to monitor the body condition of Nelchina caribou. Growth and size measurements along with other condition factors such as fat indices, parasite load, and blood parameters should be examined. A previous investigation of spring body condition suggested Nelchina caribou were in poor condition. Future work should include animals that winter in Unit 13. We need to determine if the poor body condition of adult females is the cause of the reduced calf survival observed between spring and fall surveys.

I also recommend developing a program to monitor the wolf population on the Nelchina range and associated predation on caribou. Wolf predation on Nelchina caribou is unknown. If the number of wolves increase on the Nelchina range, and caribou harvests increase, it will be important to have good information on wolf numbers and predation levels, especially on calving grounds.

CONCLUSIONS AND RECOMMENDATIONS

Hunting for Nelchina caribou has evolved from a general open hunting season, to a drawing permit sport hunt, to a combination Tier II subsistence hunt - drawing sport hunt, to a combination local subsistence hunt - drawing sport hunt, to a registration subsistence hunt for any Alaska resident, to the current Tier II subsistence hunt for Alaska residents. Because of the large number of people interested in hunting for Nelchina caribou it is necessary to restrict participation. Unlimited participation, such as occurred during the registration hunt, poses the risk of overharvest and places undesirably large numbers of hunters in the field at the same time. The registration system for such a large hunt stretches the department's resources and is time consuming and inconvenient to hunters. I recommend that future hunting of the NCH be by limited permit such as the current Tier II system or the prior, random drawing system. This provides for long seasons and uncrowded conditions but allows taking of the desired harvest level.

Other management concerns are the winter hunts in Units 12 and 13. These have proven difficult to manage because of the unpredictable winter distribution of the herd and because of mixing with the depressed Mentasta and Delta herds. There are also concerns about overharvesting local resident subherds such as the Upper Susitna-Nenana subherd along the western Denali Highway when they are the only caribou available for a winter hunt in Unit 13 and the demand is high because of a large winter quota. I recommend that most, if not all, of the annual harvest quota be taken during fall season when distribution is predictable and herd mixing at a minimum. If winter hunts are held in areas where mixing occurs with depressed herds, harvests must be limited to bulls to minimize affects on these herds.

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Table 1. Nelchina caribou fall composition counts and estimated population size, 1987-1992.

Regulatory year	Total bulls: 100 cows	Calves: 100 cows	Calves (%)	Cows (%)	Total bulls (%)	Composition sample size	Total adults	Estimate of herd size	Postcalving ^a count
1987/88	50	51	25	50	25	5,134	22,707	30,276	31,027
1988/89	56	48	24	49	27	2,502	--	--	--
1989/90	49	39	21	53	26	2,817	31,851	40,317	39,754
1990/91	42	33	19	57	24	3,671	29,909	36,860	42,127
1991/92	51	45	23	50	26	2,187	34,594	44,903	46,634
1992/93	48	40	21	53	25	4,135	35,807	45,484	46,948

^a Spring census

Table 2. Nelchina caribou harvest data by permit hunt, 1987-92.

Hunt No. /Area	Regulatory year	Permits issued	Percent did not hunt	Percent successful hunters	Percent unsuccessful hunters	Bulls (%)	Cows (%)	Unk.	Total harvest
515 ^a	1987/88	1,700	12	86	14	1,064 (87)	159 (13)	5	1,228
	1988/89	1,775	12	74	26	944 (85)	167 (15)	10	1,121
	1989/90	2,230	14	74	26	1,188 (85)	203 (15)	8	1,399
565 ^b	1990/91	6,825	30	54	46	1,825 (74)	639 (26)	26	2,490
566T ^c	1990/91	877	29	45	65	167 (62)	104 (38)	3	274
	1991/92	2,802	11	80	20	1,476 (75)	488 (25)	9	1,973
562W ^d	1987/88	1,183	28	65	35	306 (60)	205 (40)	8	519
	1988/89	1,161	30	68	32	349 (66)	182 (34)	4	535
	1989/90	1,292	32	61	39	410 (81)	94 (19)	1	505
86 513 ^d	1990/91	792	36	45	55	167 (86)	28 (14)	2	197
	1991/92	2,201	22	46	54	482 (76)	151 (24)	14	647
562WY ^e	1989/90	152	24	73	27	61 (79)	16 (21)	5	82
560T ^e	1991/92	822	19	42	58	257 (94)	3 (1)	13	273
512 ^f	1990/91	172	N/A	34	66	48 (84)	9 (16)	2	59
	1991/92	118	35	40	60	22 (88)	3 (12)	2	27
Totals for all permit hunts	1987/88	2,883	18	77	23	1,370 (79)	364 (21)	13	1,747
	1988/89	2,936	19	72	28	1,293 (79)	349 (21)	14	1,656
	1989/90	3,674	23	70	30	1,659 (84)	313 (16)	14	1,986
	1990/91	8,665	30	52	48	2,207 (73)	780 (27)	33	3,020
	1991/92	5,943	16	64	36	2,237 (78)	645 (22)	38	2,920

^a Drawing permit sport hunt.

^b Registration permit subsistence hunt for all Alaskans.

^c Tier II subsistence drawing permit. A winter hunt only in 1990-91.

^d Subsistence registration for Unit 13 residents, administered by BLM as federal hunt 513 in 1990.

^e A winter registration hunt for residents of Tetlin or Northway administered by ADF&G. Only the hunt number changed in 1991.

^f A winter registration hunt administered by Tetlin National Wildlife Refuge staff for residents of Unit 12.

Table 3. Nelchina caribou harvest and accidental death, 1987-92.

Regulatory year	Hunter harvest							Accidental death	Grand total
	Reported				Estimated				
	M (%)	F(%)	Unk.	Total	Unreported	Illegal	Total		
1987/88	1,370 (79)	364 (21)	13	1,747	20	25	45	27	1,819
1988/89	1,293 (79)	349 (21)	14	1,656	20	50	70	150	1,876
1989/90	1,659 (84)	313 (16)	14	1,986	100	50	150	200	2,336
1990/91	2,207 (73)	780 (27)	33	3,020	200	100	300	200	3,520
1991/92	2,237 (78)	645 (22)	38	2,920	200	100	300	200	3,420

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Table 4. Nelchina caribou annual hunter residency and success, 1987-92.

Regulatory year	Successful				Unsuccessful				Total ^b hunters
	Local ^a resident	Nonlocal resident	Nonresident	Total ^b	Local ^a resident	Nonlocal resident	Nonresident	Total ^b	
1987/88	519	1,228	--	1,747	274	241	--	515	2,262
1988/89	551	1,105	--	1,656	256	387	--	643	2,299
1989/90	544	1,442	--	1,986	328	533	--	861	2,847
1990/91	355	2,665	--	3,020	690	2,166	--	2,863	5,883
1991/92	898	1,946	--	2,857	843	483	--	1,348	4,205

^a Local resident means a resident of Units 13, 11 or 12 along the Nabesna Road.

^b Total includes unknown residency.

Table 5. Nelchina caribou annual harvest chronology percent by time period, 1987-92.

Regulatory year	Harvest periods													n
	Weeks (fall)								Months (winter)					
	1	2	3	4	5	6	7	8	Nov.	Dec.	Jan.	Feb.	Mar.	
1987/88	21	14	11	10	11	14	--	--	--	--	19	--	--	1,747
1988/89	9	18	17	16	9	9	9	--	--	--	13	--	--	1,656
1989/90	9	13	13	16	16	12	11	--	--	--	4	1	1	1,986
1990/91	1	1	83	1	1	1	1	1	--	--	4	2	3	3,020
1991/92	9	9	8	9	8	11	7	--	8	1	10	5	15	2,857

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Table 6. Nelchina caribou harvest percent by transport method, 1987-92.

Regulatory year	Percent of harvest								Unk.	n
	Airplane	Horse	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle			
1987/88	10	1	10	22	7	16	33	1	1,747	
1988/89	10	1	10	18	6	15	38	2	1,656	
1989/90	10	1	9	21	4	15	35	5	1,986	
1990/91	10	2	7	33	3	10	30	5	3,020	
1991/92	5	1	6	16	16	7	43	6	2,857	

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CARIBOU

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