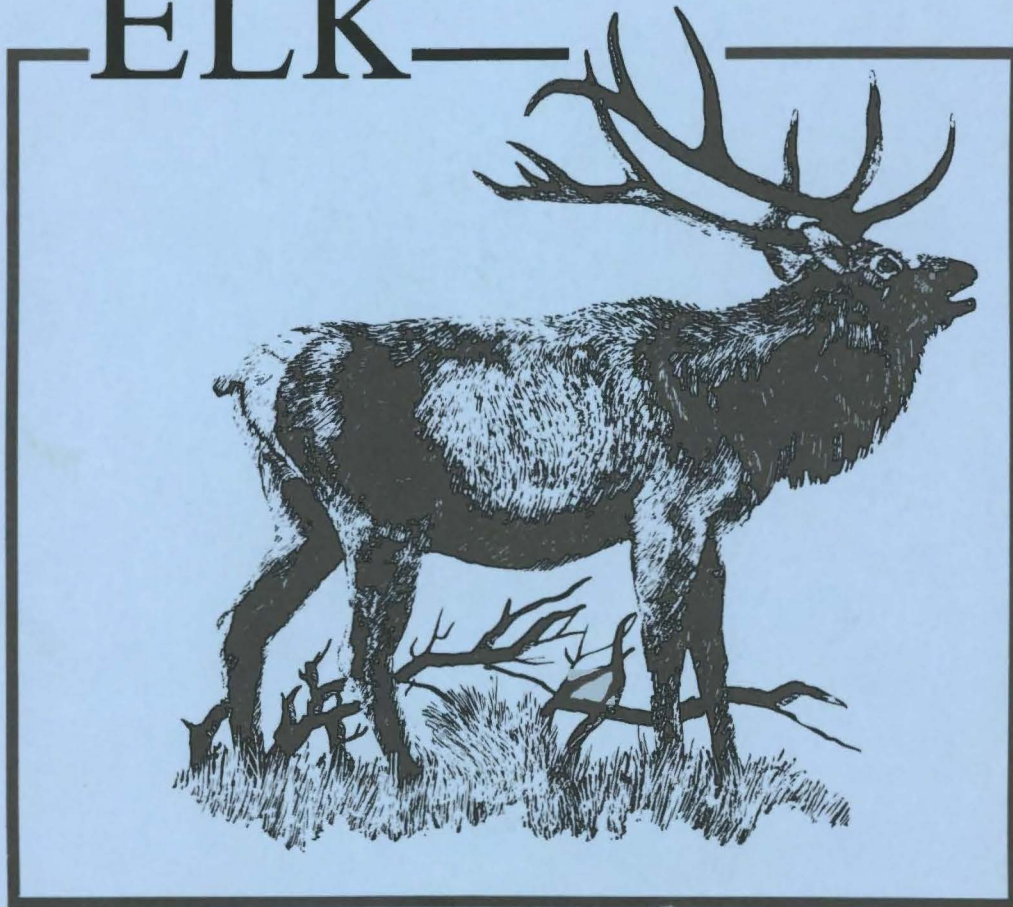


Alaska Department of Fish and Game
Division of Wildlife Conservation
Federal Aid in Wildlife Restoration
Annual Report of Survey—Inventory Activities
1 July 1987—30 June 1988

ELK—



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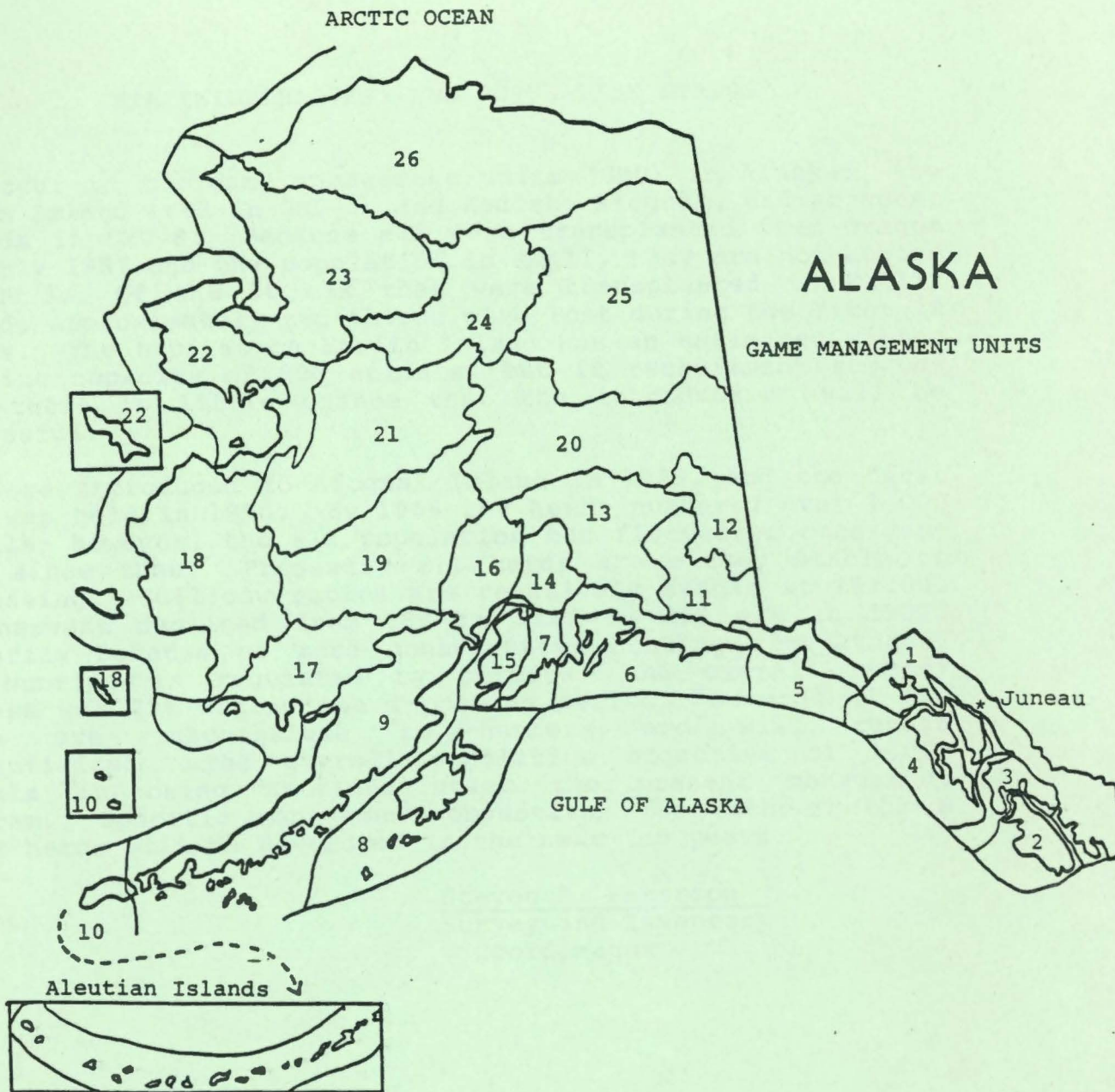
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STATEWIDE HARVEST AND POPULATION STATUS

Elk occur in two game management units (GMU) in Alaska: the Etolin Island area in GMU 3 and Kodiak, Afognak, and adjacent islands in GMU 8. Because elk were transplanted from Oregon in early 1987 and the population is small, they are not hunted in GMU 3. Of the 50 elk that were transplanted to Etolin Island, approximately two-thirds were lost during the first 18 months. The habitat on Etolin Island has an estimated winter carrying capacity of 900 animals, but if recruitment remains low, there is little chance that the introduction will be successful.

Elk were introduced to Afognak Island in 1929, and the first hunt was held in 1950. By 1965 the herds numbered over 1,000 animals; however, the elk population has fluctuated considerably since then. Presently all herds are either stable or increasing. Bull:cow ratios are relatively stable at 16:100. The harvest declined from 169 in 1986 to 120 elk in 1987, primarily because of more conservative hunting regulations. All hunting is regulated by permits, and overall hunter success was 29% during the reporting period. Several of the herds are inaccessible to hunters and will remain underutilized. The overall population objective of 1,000 animals is being attained under the present management program. Specific management objectives for each of the 6 major herds will be developed in the next few years.

Steven R. Peterson
Survey and Inventory
Coordinator

STUDY AREA

GAME MANAGEMENT UNIT: 3 (3,600 mi²)

GEOGRAPHICAL DESCRIPTION: Islands of the Petersburg,
Wrangell, and Kake areas

BACKGROUND

Elk are not endemic to Alaska but were successfully introduced to Afognak Island in the Kodiak Archipelago in 1929. There have been several unsuccessful attempts to introduce elk into Southeast Alaska. All previous introductions failed, but lack of monitoring has precluded determining the cause of these failures.

In 1927 six Roosevelt elk calves were released on Kruzof Island near Sitka. One calf died and the remaining five were returned to Sitka and held over the winter. In April they were returned to Kruzof Island; 1 female was later mistakenly shot for a deer. It was reported that "from the very first these animals have shown a tendency to wander, and to break up into small groups until it is impossible to secure an accurate check on them" (Burris and McKnight 1973).

In June 1962 the U.S. Forest Service (USFS) and the Alaska Department of Fish and Game (ADF&G) cooperatively attempted to introduce elk onto Gravina Island near Ketchikan. A group of 11 calves was captured on Afognak and Raspberry Islands and moved to Gravina Island, where the elk were penned. Eight survivors were released after about 3 months of captivity. These hand-reared calves were subsequently shot by a homesteader because they had repeatedly damaged his garden (Burris and McKnight 1973).

A bill was introduced and passed during the 1985 legislative session directing ADF&G to transplant not less than 30 or more than 150 Roosevelt elk onto Zarembo Island or another suitable location in Southeast Alaska. A companion bill appropriated \$50,000 for this project (ADF&G 1985).

An Environmental Assessment (EA) was required, because all potential release sites were on the Tongass National Forest. According to EA procedures, public hearings were held in several communities in Southeast Alaska in 1985. An inter-agency task force consisting of ADF&G and USFS biologists assessed the biological implications of the project. Etolin Island was chosen as the release site, after detailed consideration of 9 evaluation criteria (Young 1986). As elk from Alaska were specifically excluded by the bill as a source for the transplant, other sources were sought. An agreement with the Oregon Department of Fish and Wildlife was made to trade

15 mountain goats for 30 Roosevelt elk. After this trade was completed, additional elk were made available by Oregon in a complex trade arrangement involving other states.

Starting in January 1987 a total of 50 elk were moved from Oregon to Etolin Island and released (Table 1). The elk were moved in 3 shipments; the last release was completed on 15 March 1987. A total of 33 Roosevelt elk (i.e., 2 shipments) from the Jewel Meadows Elk Refuge were released on southern Etolin Island at Dewey Anchorage, thus fulfilling the requirements of the state law. Each animal was fitted with a wide, yellow collar that had a black identifying number or letter code; 15 of them were also fitted with radio collars.

Seventeen Rocky Mountain elk were moved from eastern Oregon and released at a site on the northwest side of Etolin Island. Rocky Mountain elk were used because additional Roosevelt elk were not available. The release site was just north of Johnson Cove and inside Marsh Island. Thirteen of these were fitted with radio collars, and all had blue visual collars with contrasting yellow number or letter codes to provide individual identification.

The radio transmitters in both groups were equipped with a sensor that would change the transmission rate from approximately 75 to 140 pulses per minute if it was immobile for 6 or more hours. This normally means the animal is dead.

POPULATION OBJECTIVES

There are no Federal Aid objectives for elk in Unit 3. The Etolin Island winter carrying capacity has been estimated to be approximately 900 elk (ADF&G 1985). The clear-cut logging that is scheduled to continue is expected to reduce carrying capacity. As several decades may be required for the elk population to reach carrying capacity, the Division's current objective is to provide total protection for maximum population growth. A bulls-only season will be initiated when the population reaches approximately 250 animals, and a postharvest ratio of 25-30 bulls:100 cows will be maintained (ADF&G 1985).

METHODS

Aerial radiotelemetry surveys were conducted to determine individual elk locations, monitor individual and group movements, and locate dead animals. Fifty-two fixed-wing aerial surveys were conducted from 22 January 1987 to 30 June 1988. In the initial surveys, an effort was made to precisely locate each transmitter on each flight so that movements or dispersal from the release site could be monitored. This effort was discontinued after it became apparent that there was very little movement away from the release site.

On subsequent surveys, only the general location of each live elk was determined; however, precise locations were made for elk transmitting radio signals in the "mortality mode." A thorough on-the-ground investigation of each death was made when possible. A cooperative ADF&G and USFS field project was conducted during June 1988 to determine the feasibility of using ground surveillance to assess sex and age composition.

RESULTS AND DISCUSSION

Population Status and Trend

The elk population has been declining continuously since the 1st release. Less than half of the transplanted animals survived to the end of the current reporting period, and recruitment has been low. Although the mortality rate declined after August 1987, there was still a net loss because the number of elk surviving to June 1988 was less than the number released.

Population Size:

There were 33 Roosevelt elk and 17 Rocky Mountain elk in the original release. The June 1988 ground survey located 9 adult Roosevelt elk and 3 yearlings. Two additional adult bulls were subsequently observed. As of November 1988 there were at least 11 elk surviving from the introduction as well as 3 surviving calves that had been born on the island in 1987. Animals observed without collars were recorded as born on the island, since their size and body conformation indicated they were yearlings. During a helicopter survey to locate a dead bull, 3 or 4 more elk were located in the June survey.

Of the 17 Rocky Mountain elk released only 6 were located in the June survey. No unidentified elk were observed. Four of the 13 radio-collared elk survived. The minimum combined elk population was 20; 17 of these are from the original introduction. Thirty-four percent of the Oregon animals survived for 18 months.

Population Composition:

During the June ground survey of the Roosevelt elk herd, 2 adult males, 2 yearling males, 6 adult females, and 1 yearling female were located. Another adult female was located by radio on the southeast side of Etolin Island; however, it was not observed. A private pilot photographed this cow with 2 adult bulls in late June 1988; all 3 had collars. It is highly improbable that the 2 adult males were from the group of 8 adults observed on the west side of Etolin Island 1 week earlier. This radio-collared female moved from the release site shortly after the release and has since been located in

the vicinity where it had been photographed. The known minimum number of Roosevelt elk is 6 males and 8 females.

Of the 6 Rocky Mountain elk located during the June survey, there were 5 adult cows and 1 adult bull; all were transplanted animals. Although 2 of the radio-collared cows had been radiolocated, they had not been observed. There was no evidence indicating any Rocky Mountain elk had been born on the island.

Distribution and Movements:

All the Roosevelt elk were released on the beach at the southern end of Etolin Island near Dewey Anchorage. Radio locations showed gradual movements by 1 cow who settled on Brownson Island, which is narrowly separated from Etolin by Canoe Pass about 8 miles east of the release site. The July photograph discussed above showed that at least 2 bulls were with her.

Radio and visual locations indicate that the rest of the Roosevelt herd moved northwest to the area of McHenry Anchorage, about 4 or 5 miles from the release site. Although elk are capable of traveling many miles in a short time, these animals apparently have not done so. Repeated radio locations show that they are staying at low elevations and utilizing a very limited area adjacent to the shore.

The Rocky Mountain elk showed a similar pattern in that they have not moved very far away from the release site. Except for 1 instance (see Natural Mortality, p. 5), the Rocky Mountain elk have always been located within 4 miles of the release area.

Mortality

Season and Bag Limit:

There is no open season in Unit 3.

Human Induced Mortality:

No indications have been found of human-induced mortality.

Natural Mortality:

Radiotelemetry observations were made periodically from a fixed-wing aircraft, starting on 20 January 1987, the day after the initial release. Each death was investigated as soon as possible after the mortality signal was noted. The approximate location of the death sites are marked in Fig. 1; each symbol represents at least 1 mortality.

One radio-collared elk is unaccounted for and is presumed dead; no signal was detected during several searches that completely covered Etolin and adjacent islands. We located one other radio collar from a Rocky Mountain elk transmitting a mortality signal at about 1700 feet elevation and about 13 miles east of the release site. Two attempts to find this radio on the ground were unsuccessful because of the difficult terrain and reflected radio signals. From the air, the signals appeared to come from a cirque, but we were unable to find the radio during a ground search of the area. The terrain between the release site and the apparent death site is extremely rugged. No other elk have been located near this area. This animal is listed as dead of unknown causes (Table 2).

Wolf predation is the largest single factor in the deaths of the elk so far. Accidents and malnutrition caused some losses, and 1 elk was eaten, but perhaps not killed, by a bear (Table 2). Of the 14 deaths investigated where some conclusions could be reached, 7 involved wolves. Not all were proven wolf kills, but all seven were eaten by wolves.

Black bears are common on the island. An abundance of scats and feeding sites suggests a high population. Black bear predation on elk calves can be severe. Schlegel (1976) reported that over a period of 3 summers in Idaho almost half of all radio-collared elk calves had been killed by black bears.

There are also a few brown bears on the island. As brown bears are known predators of moose, particularly moose calves (Le Resche 1966), it is likely that they will also opportunistically take elk. One elk had fallen off a steep, slick rock face, and bear tracks were found above the rock face along with elk tracks. This elk was eaten by a bear, but the species of the bear and the cause of death were not determined.

Habitat Assessment

The estimated winter carrying capacity of Etolin Island is approximately 900 elk. Winter range consists of the following: clearcut, 2 mi²; second growth, 2.2 mi²; nonforest or noncommercial forest, 72.9 mi²; old-growth forest, 124.4 mi² (ADF&G 1985). Since their release, the elk have remained close to the shoreline and are concentrated in mixed grass and sedge areas just above the high tide line. This area includes the spruce-hemlock forest and associated shrubby understory. The Rocky Mountain group is also using Marsh Island, and the understory vegetation there is being depleted. The elk may move to Marsh Island in response to the presence of wolves and return to Etolin Island when the wolves leave the vicinity.

Marsh Island is less than 200 acres in size and separated from Etolin Island by approximately 1/4 mile of salt water.

CONCLUSIONS AND RECOMMENDATIONS

The loss of approximately 2/3 of the elk during the first 18 months was higher than anticipated. The low observed survival of the 1st calf crop is not encouraging, as is the inability to find calves from the 1988 season. Based on previous investigations in Oregon (T. Kistner, pers. commun.), all adult cows released in 1987 were presumed to be pregnant. One dead calf, estimated to be 1 week old, was found and photographed on the beach by a fisherman in June 1987. Only 3 transplanted Roosevelt elk yearlings survived to June 1988, and no Rocky Mountain elk progeny were found.

All radio-collared bulls died, but observers saw at least 1 young adult bull with each group of cows. Visual observation locations are noted in Fig. 1. Most cows will breed in the fall of 1988.

If the low recruitment continues, there is little chance that the introduction will be successful. A reduction in predator pressure appears to be needed for the elk introduction to succeed. This might be accomplished by reducing the numbers of predators, reducing predation by supplying alternate food sources for predators, or transplanting more animals.

No lethal predator control program is currently authorized or likely to be authorized by the Board of Game. The concept of reducing depredation by providing an alternate food source may have merit. Providing supplemental food for predators during calving for 2 to 3 years might buffer the effects of the predation enough to allow the elk population to increase.

Despite existing predator pressure, additional elk transplants may also allow the herd to increase. No ADF&G funds are available at this time; however, the Ketchikan Sports and Wildlife Club is collecting contributions for additional elk transplants. Any additional elk introduced should be radio collared to provide information on mortality and to help gauge the success of the transplant.

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Table 1. Introduced elk population in Unit 3, 1987.

	Sex	Adult	Subadult	Total	W/radio	Release date	Release Site
Roosevelt elk	Male	2	7	9	3	01/19/87	Dewey Anchorage
	Female	11	1	12	7		
	subtotal	13	8	21	10		
	Male	0				02/03/87	Dewey Anchorage
	Female	12		12	5		
	subtotal	12		33	15		
Rocky Mountain elk	Male	0	5	5	2	03/15/87	North of Johnson Cove
	Female	7	5	12	11		
	subtotal	7	10	17	13		
Combined Total		32	18	50	28		

Table 2. Elk mortality in Unit 3, 19 January 1987 to 30 June 1988.

Date ^a	Subspecies	Sex	Age ^b	No. Days ^c	Cause of Death
03/10/87	C. e. roosevelti	F	Adult	36	Eaten by wolves ^d
03/10/87	C. e. roosevelti	F	Adult	51	Twisted gut
03/12/87	C. e. roosevelti	F	Adult	38	Wolf kill
03/26/87	C. e. nelsoni	F	Calf	11	Accident ^e
03/27/87	C. e. roosevelti	F	Adult	53	Accident ^f
04/08/87	C. e. nelsoni	M	Calf	24	Malnutrition
04/08/87	C. e. nelsoni	F	Calf	24	Eaten by bear
04/18/87	C. e. roosevelti	F	Adult	90	Eaten by wolves ^d
05/12/87	C. e. roosevelti	M	Sub-adult	114	Wolf kill
06/03/87	C. e. nelsoni	F	Adult	106	Malnutrition
06/30/87	C. e. nelsoni	F	Calf	106	Wolf kill
07/17/87	C. e. roosevelti	F	Adult	163	Eaten by wolves ^d
07/18/87	C. e. nelsoni	F	Adult	124	Accident ^g
07/27/87	C. e. nelsoni	M	Sub-adult	133	Unknown ^d
08/03/87	C. e. nelsoni	F	Sub-adult	140	Unknown
08/10/87	C. e. nelsoni	F	Adult	147	Unknown ^h
02/07/88	C. e. roosevelti	M	Sub-adult	385	Unknown ^h
04/06/88	C. e. roosevelti	M	Adult	444	Wolf kill

- ^a Approximate date of death
^b Estimated age
^c Number of days from release to death
^d Probable wolf kill
^e Fall from cliff, broken neck
^f Entangled in woody debris in creek
^g Collision with log, broken neck
^h Radio signal missing

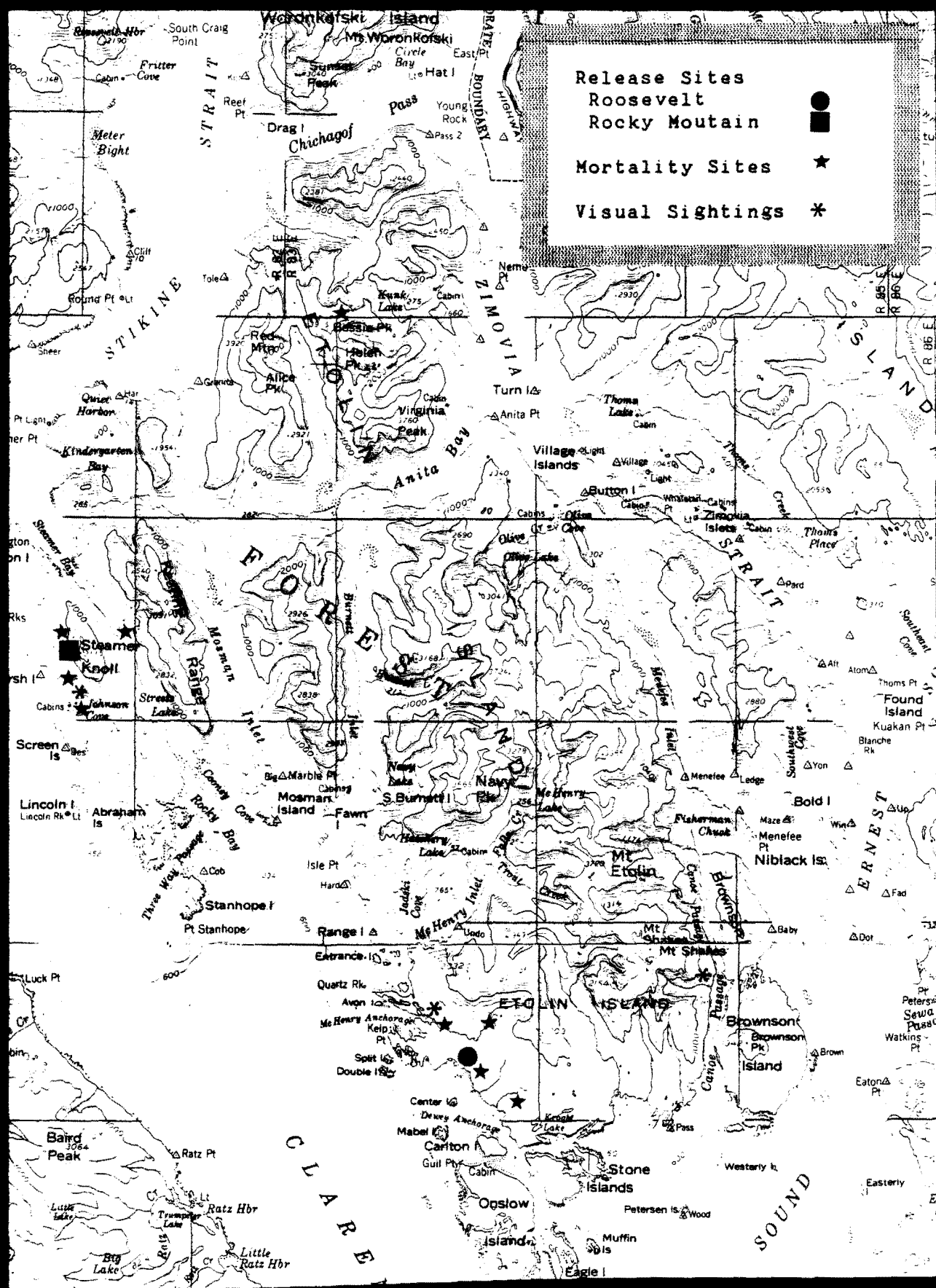


Fig. 1. Elk locations in Unit 3, 1988.

STUDY AREA

GAME MANAGEMENT UNIT: 8 (8,750 mi²)

GEOGRAPHICAL DESCRIPTION: Kodiak, Afognak, and adjacent islands

BACKGROUND

Roosevelt elk were introduced to Afognak Island in 1929. The population increased steadily, and the 1st hunt occurred in 1950. By 1965 the herds numbered over 1,000 animals; however, a series of severe winters resulted in a population crash, despite liberal hunting regulations. Since 1972 the population has increased from about 450 elk to an estimated 1,200+ animals. The annual harvest during 1983-1987 ranged from 271 in 1984 to 120 in 1987. Hunter demand has exceeded the harvestable surplus in recent years, except on northwestern Afognak where access is relatively difficult.

POPULATION OBJECTIVES

To maintain a minimum population of at least 1,000 elk for use by all user groups.

To maintain harvests of elk within sustainable-yield levels of the elk population.

METHODS

Aerial sex and age composition counts were conducted in July and August on Afognak and Raspberry Islands. Radio-collared elk were used to locate herds on eastern Afognak Island. Periodic locations of radio-collared elk also provided information on movements and seasonal habitat use. Harvest statistics were compiled from mandatory-permit reports. Lower jaws from harvested elk were collected for age determination. A field check station was operated during the fall hunting season, and periodic flights were made to monitor hunting activities.

RESULTS AND DISCUSSION

Population Status and Trend

The elk population has been slowly increasing since the early 1970's. Individual herd trends have varied from decreasing to increasing in the past 5 years. All herds were either stable or increasing during the reporting period.

Population Size:

Summer sex and age composition counts provide an index to the size of elk herds; the accuracy of these counts vary according to the ratio of dense forest to open meadows in each herd's range. For Raspberry (Hunt No. 702) and southwestern Afognak Islands (Hunt No. 751), which are less heavily forested, the composition counts most closely approximate the population size. The preseason population was estimated at 1,175-1,415 elk; i.e., 220-230 and 955-1,185 on Raspberry and Afognak Islands, respectively (Table 1).

Population Composition:

In July and August 1987, 14.8 hours of aerial composition surveys were conducted. Aerial photos of congregations of animals taken during surveys were used to verify counts. Calves and bulls were underrepresented in the 1987 surveys, probably because of the relative inexperience of the observer and pilot. The composition surveys were most reliable for Raspberry Island and least reliable for northwestern Afognak Island (Hunt No. 752), where herd composition counts were incomplete. The calf:cow ratio declined from 38:100 in 1986 to 24:100 in 1987 for Raspberry Island (Table 2). A similar drop from 44:100 to 28:100 occurred on southwestern Afognak Island. The overall calf:cow ratio for all areas declined from 36:100 to 27:100. The actual number of calves counted declined from 265 in 1986 to 183 in 1987. On eastern Afognak Island (Hunt No. 750) the 1987 calf:cow ratio of 43:100 was nearly identical to the 44:100 ratio recorded in 1986.

Bull:cow ratios were relatively stable; i.e., 16 bulls:100 cows in 1987 compared with 14 bulls:100 cows in 1986. The highest bull:cow ratio was 37:100 in southwestern Afognak Island.

Distribution and Movements:

Seven female elk that had been radio-collared in 1986 were relocated 5 times in 1988. Their 1987 movements verified that 4 distinct herds occupy eastern Afognak Island. On 11 July 1987 the 224 elk counted in herds associated with the radio-collared animals nearly equaled the previous year's maximum estimate of 230 elk. It is estimated that at least 260 elk were in this area in 1987.

Mortality

Seasons and bag limits:

The open season for resident and nonresident hunters on Raspberry Island is 1 October to 15 November. The bag limit

is 1 elk by drawing permit only. Up to 300 permits will be issued. The open season for resident and nonresident hunters on that portion of Afognak Island west and south of a line from the head of Malina Bay to the head of Back Bay is 1 October to 15 November. The bag limit is 1 elk by drawing permit only; up to 325 permits will be issued.

The open season for resident and nonresident hunters in that portion of Afognak Island northeast of a line from the head of Kozok Bay to Delphin Point in Perenosa Bay is 15 September to 31 October. The bag limit is 1 elk by registration permit only. The open season for the remainder of Unit 8 is 1 September to 15 December. The bag limit is 1 elk by registration permit only.

Human-Induced Mortality:

Harvest declined from 169 elk in 1986 to 120 elk in 1987 (Table 3). More conservative hunting regulations for Raspberry Island and southwestern Afognak Island were responsible for the decline. Hunting in southwestern Afognak Island was changed from a registration permit to a drawing permit. The number of drawing permits for Raspberry Island was reduced from 300 in 1986 to 200 in 1987. To distribute hunting pressure throughout the season and thereby preclude high numbers of hunters in confined areas as well as herd shooting, hunters in both regulatory areas were assigned specific 7-day hunting periods. Time assignments were made according to the order in which the permittees' names were drawn; some permittees complained they had been prevented from successfully scheduling hunts. Only 39 of 225 (17%) permittees reported hunting in southwestern Afognak; this percentage was much lower than had been predicted, and only 15 elk were killed.

The harvest in northwestern Afognak Island was 60 elk, an increase from 50 elk harvested in 1986. The harvest in eastern Afognak Island increased from 5 elk in 1986 to 12 elk in 1987. Good overwinter survival was indicated by the high incidence of yearling elk in the harvest. Yearlings composed 38% (22/58) of the animals from which lower jaws had been collected in 1987.

Hunter Residency and Success:

During this reporting period, local residents took proportionally fewer elk while nonlocal residents took more elk than in previous years (Table 4). Changing Hunt No. 751 from a registration to a drawing-permit hunt was responsible for that shift. The area is easily accessible to Kodiak residents, and they are generally more successful during a registration permit hunt than during a drawing-permit hunt.

Overall hunter success was 29% (120/412); this rate changed little from the 27% hunter success rate reported in 1986.

Permit Hunts:

All elk hunting in Unit 8 is regulated by permit (Table 5); 1,210 permits were issued in 1987, representing a slight decline from the 1,313 permits issued in the previous year. The number of hunters afield, however, declined substantially from 620 in 1986 to 412 in 1987. The low rate of hunter participation on southwestern Afognak Island influenced the decline. The recent economic decline in Alaska was also a suspected factor in the reduced hunting effort.

Most hunters supported the introduction of the "time zoning" of elk hunts on Raspberry and southwestern Afognak Islands, indicating appreciation for the relatively uncrowded conditions that had been uncharacteristic of previous years' hunts. Some local hunters stated opposition to drawing hunts in which residents of other Alaskan communities received a high percentage of permits. Those local hunters supported a system that would guarantee them a greater percentage of available permits. Most hunters stated that they preferred to have a choice in their time assignment in future drawings.

Harvest Chronology:

October was the peak harvest month, accounting for 59% of the harvest (Table 6). On Raspberry Island, the harvest ranged from 0 to 8 elk/week for the 7 weekly hunting periods. The harvest ranged from 0 to 4 elk/week for southwestern Afognak Island. No elk were killed by hunters assigned to the last week (9-15 November) in either of the hunts.

Transport Methods:

Aircraft was the predominant method used for transportation in 1987 (Table 7).

Natural Mortality:

Natural mortality was apparently relatively low in 1987. Spring brown bear hunters that were interviewed found no evidence of winter-killed elk. A high incidence of yearlings among elk killed by hunters further indicates that winter calf survival was high. Aerial composition counts also confirmed that the elk population did not decline.

Habitat

No data were collected during this reporting period. The long-term impacts of logging on elk is a concern that has not

been adequately studied; however, because most elk habitat is privately owned, opportunities for modifying logging practices to benefit elk are extremely limited.

Game Board Action and Emergency Orders

The elk regulations have been changed several times in the past 5 years; the trend has been toward more intensive management of individual herds. For Raspberry Island and southwestern Afognak Island, strict regulation (i.e., harvest quotas and either drawing or registration permit hunts) has been in effect. As a result of board action, Raspberry Island's hunt was changed from a drawing permit to a registration permit in 1984-85 at the Department's recommendation, because harvest quotas had not been achieved with drawing permits. Although the registration hunts were successful in achieving harvest goals, the board opted to return to a drawing permit in 1986-87 at the Department's recommendation because of hunter crowding, a high incidence of wounding loss, and public dissatisfaction with the conduct of the hunt.

Hunting on southwestern Afognak Island was regulated by registration permit; harvest quotas steadily increased through the 1986 hunting season. The loss of 46 elk in an accidental fall from a cliff during the 1986 season resulted in an Emergency Order closure in late October 1986. Evidence strongly indicated that intensive hunting activity was a factor in the accident. The Department recommended a drawing hunt with up to 300 permits for the 1987 season; this recommendation was adopted by the Board. Lower-than-expected participation in 1987 resulted in a harvest that was lower than predicted. By issuing all 300 permits and modifying the time-zoning procedures, an adequate harvest can be attained in 1988.

The season on eastern Afognak Island was closed by Emergency Order in both 1984 and 1985. Excessive harvest along the logging-road system was a suspected factor in the decline of 2 major herds. At the Department's recommendation, the Board of Game reduced the season from 1 August-31 December to 15 September-31 October for the 1986 season. The shorter season has been effective in reducing the harvest, and elk numbers appear to be increasing.

Because Department staff anticipated that the shorter seasons on eastern Afognak Island would increase hunting pressure on northwestern Afognak Island, they recommended reducing the season to 15 September-30 November; the Board adopted this recommendation. Because the anticipated increase in pressure did not develop in 1986, Department staff recommended increasing the season to 1 September-15 December for the

following year, and the Board also adopted this recommendation. Although a slight increase in harvest occurred in 1987, further liberalization of the season appears to be warranted, because the harvest of 60 elk is below what could be sustained.

CONCLUSIONS AND RECOMMENDATIONS

Applicants for drawing hunts on Raspberry Island and southwest Afognak Island will be able to indicate their preference for hunting-period assignments in the 1988 drawing. It is anticipated that this will increase the participation rate in the elk hunt on southwestern Afognak Island. If this elk herd continues to increase in 1988, the reinstatement of a registration hunt will be recommended.

Herds on northwestern Afognak Island remained relatively inaccessible to hunters. The further lengthening of the season may increase the harvest; however, the herds will probably remain underutilized, even with further liberalization. These herds are, at least, as large as they were in late 1960's, when severe winters decimated the population.

The current population objective for elk in Unit 8 dictates that a minimum population of 1,000 elk be maintained under a sustained-yield harvest regime. Because herds on northwestern Afognak Island are being underharvested, it is likely that these herds will continue to fluctuate with winter severity and a sustained harvest of animals in that area will be difficult to achieve. Specific management objectives for each of the 6 major herds will be developed in the next few years.

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Table 1. Elk population status by hunt area in Unit 8, 1987.

	Hunt 702 Raspberry Is.	Hunt 751 SW Afognak	Hunt 750 E Afognak	Hunt 752 NW Afognak	Total
Elk observed	215	283	224	470 ^a	1,192
Estimated population	220-230	300-325	230-260	425-600	1,175-1,415
% calves	18%	17%	29%	13%	Mean = 19%

^a Includes estimates of 2 large herds.

Table 2. Elk composition counts, 1983-87 and composition by hunt area in Unit 8, 1987.

Year	Males	Males: 100 females	Females	Calves	Calves: 100 females	Total
1983	139	28:100	505	190	38:100	834
1984	70	14:100	506	185	36:100	761
1985	59	7:100	792	264	33:100	1,115
1986	100	14:100	728	265	36:100	1,093
1987	106	16:100	684	183	27:100	973
<u>Hunt Area (1987)</u>						
702-Raspberry Island	18	11:100	159	38	24:100	215
751-SW Afognak Island	63	37:100	172	48	28:100	283
750-E. Afognak Island	10	7:100	150	64	43:100	224
752-NW Afognak Island	15	7:100	203	33	16:100	251

Table 3. Annual elk harvest (1983-87) and harvest by hunt area in Unit 8, 1987.

Hunter harvest						
Year	Reported			Total	Illegal	Total
	M	F	Unk			
1983	123	62	2	187	--	187
1984	151	113	7	271	--	271
1985	136	62	0	198	2 males	200
1986	111	48	10	169	2 males	171
1987	69	45	6	120	1 male	121
<u>Hunt Area (1987)</u>						
702-Raspberry Island	19	14	0	33		
750-E. Afognak Island	8	3	1	12		
751-SW Afognak Island	12	3	0	15		
752-NW Afognak Island	30	25	5	60		

Table 4. Elk hunter residency and success in Unit 8, 1983-87.

	Successful							Unsuccessful						
	Local res.	(%)	Nonlocal res.	(%)	Nonres.	(%)	Total	Local res.	(%)	Nonlocal res.	(%)	Nonres.	(%)	Total
1984	153	(58%)	107	(41%)	4	(1%)	264	487	(97%) ^a			17	(3%)	504
1985	126	(64%)	62	(31%)	10	(5%)	198	535	(97%) ^a			15	(3%)	550
1986	108	(64%)	54	(32%)	6	(4%)	168	400	(92%) ^a			26	(6%)	436
1987	57	(52%)	46	(42%)	7	(6%)	110	122	(41%)	159	(54%)	16	(5%)	297

^a Local and nonlocal lumped.

Table 5. Elk harvest data by permit hunt in Unit 8, 1983-87.

Hunt No.	Year	Permits issued	Did not hunt	Unsuccessful hunters	Successful hunters	Percent hunter success	Bulls	Cows	Unk	Total
701	1984 ^a	221	--	30	62	67	27	28	7	62
	1985 ^a	420	176	48	35	42	24	12	0	36
	1986 ^b	300	159	44	55	56	30	25	0	55
	1987 ^b	200	107	55	33	38	19	14	0	33
751	1984 ^a	221	--	38	37	49	26	11	0	37
	1985 ^a	420	176	73	51	41	35	17	0	52
	1986 ^c	1,013	394	84	57	40	47	4	6	57
	1987 ^b	225	179	24	15	38	12	3	0	15
750	1984 ^d	1,585	755	583	172	23	98	74	0	172
	1985 ^d	1,396	676	564	112	17	79	33	0	112
	1986 ^c	1,013	394	103	5	5	3	1	1	5
	1987 ^e	785	432	84	12	13	8	3	1	12
752	1986 ^c	1,013	394	195	51	21	30	18	3	51
	1987 ^e	785	432	134	60	31	30	25	5	60

^a Registration hunt with permits valid for Hunt No. 702 and 751.

^b Drawing hunt.

^c Permits valid for Hunt No. 750, 751, and 752.

^d Hunt No. 750 and 752 were not separated.

^e Permits valid for Hunt No. 750 and 752.

Table 6. Elk harvest chronology in Unit 8, 1985-87.

Year	Aug.	(%)	Sept.	(%)	Oct.	(%)	Nov.	(%)	Dec.	(%)
1985	10	(5)	99	(51)	39	(20)	33	(17)	13	(7)
1986	0	--	22	(22)	59	(59)	19	(19)	0	--
1987	0	--	16	(13)	71	(59)	27	(23)	6	(5)

Table 7. Successful elk hunter's method of transport in Unit 8, 1984-87.

Year	Airplane	(%)	Boat	(%)	ORV	(%)	Highway vehicle	(%)
1984	119	(47)	105	(42)	0	--	27	(11)
1985	94	(49)	98	(51)	0	--	0	--
1986	57	(39)	90	(61)	0	--	1	(1)
1987	61	(58)	41	(39)	2	(2)	2	(2)

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