ALASKA DEPARTMENT OF FISH AND GAME

JUNEAU, ALASKA

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MUSKOX REPORT

by

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Project Progress Report
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JOB PROGRESS REPORT (Development and S & I Job #16)

State: Alaska

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Project No.: W-17-2 Project Title: Wildlife Stocking-Muskoxen

Period Covered: July 1, 1969 - June 30, 1970

SUMMARY

Three transplants of muskoxen from the Nunivak Island Herd were made in 1970. Thirty-six were released near Nome, 36 at Cape Thompson, and 13 were released on the Kavik River. Capturing, holding, and transporting techniques were much improved and losses were low. There are an estimated 20-30 muskoxen in the Nelson Island Herd, which was established by transplants made in 1967 and 1968 from the Nunivak Island Herd. Several calves were reported to have been born in May 1970. The North Slope Herd (Barter Island release, 1969) has sustained considerable mortality. An estimated 25 animals have survived. Most sightings have been reported from the Camden Bay area.

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BACKGROUND

When muskoxen were introduced to Nunivak Island in 1933 and 1934, the primary purpose of the introduction was to build a nucleus herd for eventual reintroduction of the species to its former range along Alaska's Arctic Coast. This goal was first realized in 1969 when 52 muskoxen were transplanted from Nunivak Island to Barter Island, located on the northeast coast. Following release on Barter Island in March and April, the animals moved across the sea ice and soon established themselves on the mainland. Subsequent sightings indicate that at least some of the animals survived the rigors of transplanting and have settled along the coastal plain. Winter range surveys conducted by the Department indicated the areas near Nome and Cape Thompson offered suitable muskox habitat. The two locations were within historic range of Alaska's muskox, and therefore transplants to these locations were scheduled for March 1970. This report summarizes 1) techniques used for capture, holding, transporting, and releasing muskoxen, 2) recommendations for techniques to be used for future transplant operations, 3) age and sex composition of animals released, and 4) observations of herds following their release.

OBJECTIVES

To extend the range of muskoxen within Alaska and to provide harvestable populations in areas of suitable habitat.

CAPTURE PROCEDURES

The transplant began March 4, 1970 when Dr. Calvin Lensink of the U. S. Bureau of Sport Fisheries and Wildlife (and refuge manager of the Nunivak Island National Wildlife Range), Howard Wood, a department of Fish and Game temporary employee, and I arrived at the village of Mekoryuk on the north of Nunivak Island.

Native crews consisting of six men were organized, and a leader for each group appointed. These crews were instructed to capture yearling animals (11 months of age) using lariats and snow machines. Older animals were to be taken with immobilizing drugs delivered by a powder propelled syringe rifle.

Extremely cold weather prevented any capture attempts until March 8 when it warmed up to -15°F. A small crew was taken out by Lensink and myself, but we were unsuccessful in capturing any animals, partly due to the cold which made the use of drugs impractical.

The weather moderated on March 9 and we began successful capture operations simultaneously at Duchikthluk Bay, located on the south side of Nunivak Island, and at Nash Harbor, which is located on the northwest side of the Island. Several yearlings, all taken without drugs, were captured the first day at both locations. The following day five 2 year-old animals were captured from Nash Harbor, all with the immobilizing drug Sernylan. The animals were hobbled, tied on sleds and taken to camp, where they were put in holes in the snow measuring approximately 2' x 4' x 2' deep. The holes, in combination with the hobbles, usually prevented the animals from escaping.

Yearlings were captured by splitting the animals from the herd, using snow machines as one would use a cutting horse to work cattle. Usually the animal was chased a short distance by snow machine (up to a half mile) until it began to tire and stop running, at which time it could be approached on foot, grabbed by the long hair on top of the shoulders, and wrestled to the ground.

Animals taken by drugs were not always split from the herd. The important thing was to surround the animals with snow machines to keep them from escaping so that the gunner could inject the preferred animals. When the injected animal began showing signs of immobilization, the other animals were driven away so that the immobilized animal could be recovered and hobbled without interference from the others.

Sernylan (Phencyclidine hydrochloride) was mixed with Glycol to prevent freezing, and used for immobilization with good success. Females required at least twice the dosage required by males to achieve the same degree of immobilization, so dosage rates varied from .33 to .56 mg/lb. (Table 1). No mortalities resulted from using Sernylan.

Tranvet (propiopromazine hydrochloride) was given to the animals following the Sernylan injection to minimize convulsions which are reported to sometimes occur when Sernylan is used. The tranvet dosages given were approximately 20 mg/100 pounds, however, the rates are not critical. This drug was sometimes given to animals being transported on sleds to maintain tractability, but this practice was found to be unnecessary.

Some older animals (2 and 3 year-olds) were taken without the use of drugs, either by lassoing or with a large nylon net constructed on 3/16-inch nylon parachute cord. By far the best method for capturing the older animals was with the aid of the net. Capture was faster than with drugs and probably was just as safe for both participants.

The technique was to split the animal to be captured from the herd by use of snow machines (as described previously for yearling capture). After forcing the animal to stand still, usually by surrounding it with several snow machines, two men threw the net over the confused animal. The 10-inch mesh allowed legs, horns and muzzle to become entangled in the net, and by fighting the net the muskox only became further entangled. This capture technique definitely should be used during future muskox transplants.

HOLDING PROCEDURES

Following capture and temporary restraint, each animal was tied securely on a sled and towed by snow machines to Mekoryuk 35 miles away. At Mekoryuk the animals were tagged with numbered metal ear tags, weighed and released inside 6-foot high chain link enclosures which varied in size from 20 x 40 to 40 x 40 feet. Animals taken with drugs were given an injection of 200,000 - 400,000 i.u. of antiobiotic containing penicillin and streptomyacin to help prevent infection from the dart wounds.

The animals were fed hay during captivity and snow provided a natural source of water. Both were taken readily, especially by the yearlings. It was often several days before older animals began eating what we felt was a normal amount of food. This was possibly because yearlings were placed unrestrained in the pens, while the older animals were hobbled.

Conventional types of hobbles caused lameness and were too confining for penned muskoxen. We replaced the hobbles with a single 20-foot rope tied to one front leg. When we were ready to crate the animals we used the single "hobble rope" to pull the animal into the crate. The person pulling the rope worked from the end of the crate opposite the muskox, thus remaining protected by the crate door. This system worked extremely well and is recommended for future muskox transplants. If necessary all animals in a pen can be tied up by fastening the hobble ropes to fence posts, thus allowing personnel to perform duties inside the pens without danger from the animals.

The animal pen complex constructed by the U. S. Bureau of Sport Fisheries and Wildlife was extremely useful and probably accounted for the healthy condition of the transplanted animals. We felt we could keep animals in good condition almost indefinitely. Over 40 penned animals were kept at one time during the last week of the transplant.

Most of the muskoxen were accumulated in the holding pens during the capture operation and transplanted as soon as possible in March. Fourteen animals were held at Mekoryuk for an experimental June release at Kavik River. While in captivity a two-year old cow (24 months) gave birth to a single calf during early May. The calf weighed approximately 12 pounds, and this is the confirmed evidence we have of muskoxen breeding as yearlings. The calf and two yearling cows died during captivity for unknown reasons.

When captured on June 25 for crating, the animals appeared noticeably stronger and more vigorous than other animals of the same age class handled two months earlier. Most animals gained a few pounds during captivity.

TRANSPORTATION PROCEDURES

The muskoxen were shipped to the release sites by a chartered C-82 aircraft of boxcar configuration and capable of hauling up to 20 crated animals per load. This represented an improvement over the Air National Guard aircraft used last year.

The muskox transporting crates were constructed of 5/8-inch plywood with outside 2 x 4 bracing. Additional reinforcement was provided by two or three steel bands placed around the crate.

RELEASES

Seventy-two muskoxen were transplanted during March. Two trips were made both to Nome and Cape Thompson with a total of 36 animals being taken to each location. An additional 13 animals were held at Mekoryuk and flown to Kavik River on June 25. A breakdown by age and sex follows:

	Sex	Age*			
		Yearling	2-year	3-year	Adults
Nome	M	16	3	0	0
	F	14	1	2	0
Cape	M	12	4	0	1
Thompson	F	12	3	3	1
Kavik**	M	0	1	2	0
	F	0	3	7	0

* For clarification, age designation is as follows: yearlings, 11 mo.; 2-year, 23 mo; 3-year, 35 mo; adults, 47+.

** These animals passed a birthdate while being held at Mekoryuk, hence are listed as being one year older than animals of the same age released in March.

Four mortalities occurred during the transplant. The causes are as follows: one drowning, one heart attack (ruptured aorta), one broken leg (animal later shot) and one caused by a fall from a cliff. In contrast with past transplants, mortality was low which reflects 1) better holding facilities at Mekoryuk, 2) improved capture techniques, 3) more suitable immobilizing drugs, and 4) more experience in using drugs.

Appendix I summarizes age, tag numbers, and disposition information for all animals captured.

Table 1. Drug dosages.

Sex	Age	Sernalyn Dosage	Reaction
Female	3-year	75 mg.	Required second shot before losing control of hind quarters. Never lost control of head. Down 12 minutes after last second shot. Est. 300 lbs.
Female	3-year	75 mg.	As above. Est. 300 lbs.
Male	2-year	75 mg.	Barely adequate dose. Est. 250 lbs.
Male	2-year	125 mg.	Down in 7 minutes, lost control of head. Still sluggish next day. Est. 250 lbs.
Female	Adult	125 mg.	Required second shot. Went down a half hour after second shot. Did not lose control of head. 354 lbs.
Female	2-year	100 mg.	Wobbly but would not go down. Was roped and pulled down. 229 lbs.
Female	3-year	100 mg.	As above. 298 lbs.
Male	Adult	200 mg.	Down in 10 minutes. Lost control of head. 543 lbs.

OBSERVATIONS OF NELSON ISLAND HERD

The Nelson Island muskox transplant is an apparent success. Several calves were reportedly born during May, 1970. It is believed that between 20 and 30 animals make up the herd.

OBSERVATIONS OF NORTH SLOPE HERD

Irregular sightings have been reported by oil company, Fish and Wildlife, and Department personnel and it appears that the animals are adapting to their new surroundings. No new sightings have been reported from Canada, but is very likely that at least six muskoxen have wandered into Canada.

Several mortalities have been reported from the Barter Island transplant, but approximately 25 animals may have survived. Most sightings have been reported from the Camden Bay area.

It is hoped that the animals released at Kavik will augment this herd.

Appendix I.

Sex	Age	Date Caught	Tag Numbers Left	Tag Numbers Right	Remarks	Weight (Lbs.)
Male	23	3-11-70	9267	9268	To Nome 3-22	
Female	35	3-11-70	9270	9269	To Nome 3-22	
Male	23	3-11-70	9271	9272	To Nome 3-23	
Female	35	9274	9274	9274	To Nome 3-23	
Male	11	3-10-70	9275	9276	To Nome 3-23	
Male	23	3-11-70	9278	9277	To Nome 3-23	
Male	11	3-12-70	9280	9279	To Nome 3-22	166
Male	11	3-12-70	9282	9281	To Nome 3-22	185
Male	11	3-12-70	9283	9284	To Nome 3-22	157
Female	11	3-12-70	9286	9285	Cape Thompson 4-1	186
Male	11	3-12-70	9287	9288	To Nome 3-22	157
Female	11	3-12-70	9289	9290	To Nome 3-22	145
Female	11	3-12-70	9291	9292	To Nome 3-22	175
Female	11	3-12-70	9293	9294	Shot 3-25; broken leg	186
Female	11	3-12-70	9295	9296	To Nome 3-23	136
Female	11	3-12-70	9297	9298	To Nome 3-23	175
Male	11	3-12-70	9300	9299	To Nome 3-23	149
Male	11	3-12-70	10001	10002	Anchorage Zoo 3-15	143
Female	11	3-12-70	10004	10003	Anchorage Zoo 3-15	156
Female	11	3-12-70	10005	10006	Cape Thompson 4-1	135
Female	11	3-13-70	10007	10008	To Nome 3-23	126
Male	11	3-13-70	10010	10009	To Nome 3-23	172

Appendix I. (Continued)

Sex	Age	Date Caught	Tag Numbers Left	Tag Numbers Right	Remarks	Weight (Lbs.)
Female	11	3-13-70	10012	10011	To Nome 3-23	140
Male	11	3-13-70	10014	10013	To Nome 3-22	167
Male	11	3-13-70	10015	10016	To Nome 3-23	163
Male	11	3-13-70	10017	10018	To Nome 3-22	145
Male	11	3-13-70	10020	10019	To Nome 3-22	139
Female	11	3-13-70	10022	10021	To Nome 3-22	167
Male	11	3-13-70	10024	10023	To Nome 3-22	104
Female	11	3-13-70	10026	10025	To Nome 3-22	145
Male	11	3-13-70	10027	10028	To Nome 3-22	145
Male	11	3-15-70	10029	10030	Cape Thompson 4-1 Green streamer left ear; lost left horn	156
Female	23	3-16-70	10031	10032	To Nome 3-23	231
Male	11	3-15-70	10033	10034	To Nome 3-22	157
Female	11	3-16-70	10035	10036	To Nome 3-22	145
Female	11	3-10-70	10038	10037	To Nome 3-22	-
Female	23	3-21-70	10039	10041	Cape Thompson 4-1	268
Male	11	3-21-70	10043	10042	To Nome 3-23	-
Female	11	3-21-70	10044	10045	To Nome 3-23	-
Male	11	3-21-70	10047	10046	To Nome 3-23	-
Female	11	3-21-70	10049	10048	To Nome 3-23	-
Female	11	3-21-70	10050	10051	To Nome 3-23	-
Female	11	3-21-70	10052	10053	To Nome 3-23	-
Female	23	3-23-70	10055	10054	Kavik 6-25	202

Appendix I. (Continued)

Sex	Age	Date Caught	Tag Numbers Left	Tag Numbers Right	Remarks	Weight (Lbs.)
Female	23	3-23-70	10057	10056	Kavik 6-25	237
Female	23	3-23-70	10058	10059	Kavik 6-25	203
Female	23	3-23-70	10061	10060	Cape Thompson 4-1	243
Female	35	3-23-70	10062	10063	Cape Thompson 4-1	250
Male	11	3-24-70	10071	10070	Cape Thompson 4-1	140
Male	11	3-24-70	10072	10073	Cape Thompson 4-1	153
Female	35	3-24-70	10065	10064	Cape Thompson 4-1	298
Female	Adult	3-24-70	10067	10066	Cape Thompson 4-1	354
Female	23	3-24-70	10069	10068	Cape Thompson 4-1	229
Female	23	3-24-70	10082	10083	Kavik 6-25	256
Female	23	3-24-70	10085	10084	Kavik 6-25	279
Female	23	3-24-70	10087	10086	Kavik 6-25	215
Female	11	3-24-70	10088	10089	Cape Thompson 4-1	157
Female	23	3-24-70	10090	10091	Kavik 6-25	276
Female	35	3-26-70	10092	10093	Cape Thompson 4-1	293
Male	23	3-26-70	10094	10095	Cape Thompson 4-1	208
Male	11	3-26-70	10096	10097	Cape Thompson 4-1	142
Female	11	3-26-70	10098	10099	Cape Thompson 4-1	126
Female	11	3-26-70	10101	10100	Cape Thompson 4-1	129
Male	11	3-27-70	10102	10103	Cape Thompson 4-1	190
Female	11	3-27-70	10105	10104	Cape Thompson 4-1	147
Female	11	3-27-70	10106	10107	Cape Thompson 4-1	138
Male	11	3-27-70	10109	10108	Cape Thompson 4-1	155

Appendix I. (Continued)

Sex	Age	Date Caught	Tag Numbers Left	Tag Numbers Right	Remarks	Weight (Lbs.)
Female	11	3-27-70	10110	10111	Cape Thompson 4-1	143
Female	11	3-27-70	10113	10112	Cape Thompson 4-1	155
Male	23	3-28-70	10115	10114	Cape Thompson 4-1	303
Male	23	3-28-70	10117	10116	Cape Thompson 4-1	280
Male	23	3-28-70	10119	10118	Cape Thompson 4-1	240
Male	23	3-28-70	10120	10121	Cape Thompson 4-1	252
Female	11	3-28-70	10123	10122	Cape Thompson 4-1	165
Female	11	3-28-70	10125	10124	Cape Thompson 4-1	148
Female	11	3-28-70	10127	10126	Cape Thompson 4-1	185
Male	11	3-28-70	10128	10129	Cape Thompson 4-1	185
Male	11	3-28-70	10131	10130	Cape Thompson 4-1	150
Male	Adult	3-29-70	10132	10133	Cape Thompson 4-1	543
Male	11	3-10-70	10074	10075	Cape Thompson 4-1	-
Male	11	3-10-70	10076	10077	Cape Thompson 4-1	-
Male	11	3-10-70	10078	10079	Cape Thompson 4-1	-
Male	11	3-10-70	10081	10080	Cape Thompson 4-1	-
Female	11	4-10-70	10140	10141	Died 6-10-70	140
Female	11	4-10-70	10142	10143	Died 6-15-70	150
Male	11	4-10-70	10144	10145	Kavik 6-25	169
Female	11	4-10-70	10146	10147	Kavik 6-25	145
Male	23	4-3-70	10134	10135	Kavik 6-25	287
Female	11	4-3-70	10136	10137	Kavik 6-25	147
Female	11	4-3-70	10138	10139	Kavik 6-25	166

Appendix II. Personnel participating in muskox transplant.

Name	Agency	Position
Larry Jennings	Dept. Fish and Game	Project Leader, State
Calvin Lensink	U.S.F.W.S.	Project Leader, Federal
Howard Wood	Dept. Fish and Game	Fish and Game Technician
Mel Buchholtz	Dept. Fish and Game	Escort to Nome
Tony Smith	Dept. Fish and Game	Escort to Nome and Cape Thompson

RECOMMENDATIONS

Capture techniques should be modified so that calves or short yearlings are captured by hand. Nets, rather than lariats, should be used on two and three-year-old muskoxen. Drugs only should be used to capture adults. Future capture provisions should provide for several cabins for the capture crews at Nash Harbor and Duchikthluk Bay.

Additional releases to the mainland of Alaska, Seward Peninsula, and areas north of the Brooks Range should not be made until the spring of 1973. A release in the spring or summer of 1972 may be possible if the desirability of a transplant can be established through observations of the four previous releases made in these areas. The muskoxen released in 1970 will have experienced their first full winter in their new locations after the winter of 1970-71. Observations made in summer of 1971 and the winter of 1971-72 are essential to evaluating the results of the previous transplants and to adequately plan for the best strategic releases the summer of 1972 or the spring of 1973.

SUBMITTED BY:

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Game Biologist

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APPROVED BY:

Frank Jones
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