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ALASKA DEPARTMENT OF FISH AND GAME

JUNEAU, ALASKA

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MUSKOX REPORT

by

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Volume X
Annual Project Segment Report
Federal Aid in Wildlife Restoration
Project W-15-R-3, Work Plan Q

(Printed August, 1969)

STUDY PLAN SEGMENT REPORT

FEDERAL AID IN WILDLIFE RESTORATION

STATE: Alaska

PROJECT NO.: W-15-R-3

STUDY PLAN: Q TITLE: Elk, Goat, Bison, Muskoxen

JOB NO.: 3 TITLE: Muskox Introductions

PERIOD COVERED: July 1, 1967 - June 30, 1968

ABSTRACT

Fifteen wild muskox were captured in March 1968 and transplanted from Nunivak Island to Nelson Island, Alaska. Eight were transplanted in 1967 making a total of 23 muskox released on Nelson Island.

Capturing was conducted from a helicopter using a syringe gun and succinylcholine chloride as the immobilizing drug.

The captured animals were placed in plywood crates and flown to Nelson Island by Northern Consolidated Airlines' Skyvan Aircraft. All animals moved survived the transplanting operation and appeared to be in good condition upon release.

RECOMMENDATIONS

When muskox are reintroduced to the arctic coast, the techniques developed during the 1967 and 1968 transplants should be used. A helicopter should be utilized to capture all animals 23 months or older.

Drugs should not be used to capture calves. Natives using snow machines and larriats can handle the capturing of calves as proved during the 1967 transplant. Teams of local natives should be contracted to capture and deliver calves to Mekoryuk where they can be kept until enough are accumulated for an aircraft load.

Three biologists would be sufficient to capture subadult and adult muskox, care for captured animals, and supervise the native crews. A Skyvan airplane should be used for future transplants because of its short field capabilities and cargo hauling configuration. A larger transport-type aircraft might be more useful to transport the crated animals from and to larger airfields over longer distances.

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OBJECTIVES

To experimentally transplant muskox to Nelson Island, Alaska.

PROCEDURES

Wild muskox from Nunivak Island, Alaska, were captured during March 1968, by use of a Palmer Cap Chur CO_2 gun and the immobilizing agent succinylcholine chloride. A Hiller 12E helicopter was used to haze the animals to level terrain and position the gunner so that suitable animals could be shot and immobilized. All shooting was conducted from the helicopter.

The immobilized animals were transported by sling to a temporary runway located on the ice at Duchikthluk Bay at the south end of Nunivak Island. The animals were then sexed, ear tagged with numbered locking metal tags and hobbled with leather or rope hobbles and left to await shipment to Nelson Island. They were fed Fairbanks grown brome hay while they were held at Duchikthluk Bay.

When four to six animals were accumulated, the animals were placed in plywood crates and flown by Northern Consolidated Airlines' Skyvan to Nelson Island. The animals were released near Tununak, a native village on the west side of Nelson Island.

RESULTS

Fifteen animals were transplanted; six male calves (11 mos. old), nine female calves, and one male (estimated age 35 mos.). With the 8 animals successfully transplanted last year, the Nelson Island muskox population now numbers 23 animals, assuming all animals from last year's transplant have survived. A number of new techniques were used during this transplant, and a few comments are in order.

The Hiller 12E helicopter proved to be a valuable addition to the transplant. With this versatile machine it was possible to fly to the south

end of Nunivak Island in about 40 minutes and, when capturing operations were finished for the day, to return to Mekoryuk on the north end of the Island.

The helicopter was useful for hazing the animals to areas suitable for capturing. The combination of high maneuverability and loud engine noise and blade prop wash was usually sufficient to keep the animals moving in the desired direction. It was imperative to haze the animals from the dune areas before immobilizing them. Failure to do this resulted in animals falling in inaccessible areas where the helicopter could not land close enough to sling load them.

Succinylcholine chloride dosages as determined by Wood and Bishop during the 1967 transplant were used. The approximate dosage was .20 milligrams of drug per pound of animal body weight. The drug was prepared by mixing 1000 mg. of powdered succinylcholine chloride with 40 cc. of a solution of 25 per cent alcohol and distilled water. The alcohol helped to keep the solution from freezing. The resulting solution contained 20 mg. of succinylcholine chloride per cc. This mixture made dosage computation relatively simple. Because the dosages were based on .20 mg. per pound of body weight, the correct dosage was 1 cc. drug solution per 100 pounds of estimated body weight.

Field dosages were based on a calf (11 mos. old) weighing 200 pounds. The animal's actual weight varied between approximately 185 and 220 pounds. The results were that some animals received an insufficient dose while others received an overdose that sometimes caused death.

We experienced some erratic performance from succinylcholine chloride. At times the drug appeared to lose its potency, although fresh batches were mixed daily and the mixed drug was kept cool to prevent deterioration. No explanation was found for the erratic performance.

The animal tranquilizer Tranvet (Propiopromazine hydochloride) was used where necessary to make the animals tractable. It was found that between 20 and 25 mg. was sufficient to keep the calves tractable enough so that they could be fed without the person doing the feeding being in danger of getting charged. Despite the small size of the animals, they could butt viciously if given the opportunity.

Tranvet was mixed with succinylcholine chloride on several occasions. This combination appeared to intensify the effect of succinylcholine chloride and is believed to have caused the death of one animal. No advantage was gained in mixing the two drugs, and its use was discontinued after an animal was killed.

The CO_2 powered Cap Chur syringe gun performed well until the temperatures dropped to about 15 degrees F., at which point the neoprene 0 rings became so hardened by the cold they failed to seal the gas in the gun, and the gun failed to function. A powder-propelled gun was substituted and was used throughout the remainder of the transplant with excellent results. The gun utilizes a .22 caliber blank to propel the syringe. The low-power blanks were found to be sufficiently powerful.

The muskox were fed brome hay while they were held in captivity and appeared to take the hay readily. This type of food is probably sufficient for feeding muskox while in captivity. Water was supplied in the form of snow.

The transporting crates used were constructed of 5/8 inch plywood with outside 2-inch by 4-inch bracing and with sliding doors on each end of the crate. Steel bands were placed around the crates to increase rigidity. Dimensions for single calf crates were 3 feet high by 1-1/2 feet wide by 4 feet long. Double calf crates (two calves per crate) were 3 feet high by 2-2/3 feet wide by 5 feet long. The subadult crate was 4 feet high by 2 feet wide by 6 feet long. The double calf crates did not save space as intended and should not be used again. The crates appeared to be sufficient for holding the animals about one week.

Four fatalities occurred during the transplant. Two animals were killed from apparent overdoses of succinylcholine chloride (one in combination with Tranvet) and two died when the syringe point struck vital organs (lungs and kidneys). Despite the maneuverability of the helicopter, it is still not possible to place the shot into the animal with pinpoint accuracy, even at close range.

The hides were salvaged for museum specimens and the gastro-intestinal tracts were saved for later examination.

Blood samples were not taken from the animals transplanted. It was found to be virtually impossible to locate blood veins in the thick mat of hair which the muskox possess.

A minimum of field personnel was utilized. The crew consisted of the project leader and a representative from the U.S. Bureau of Sport Fisheries and Wildlife, who assisted by ear tagging all animals and supervising the handling and loading of animals. In addition three natives were employed to feed the captured animals and load the animals aboard the aircraft.

A 1500 foot runway was marked out on a smooth section of ice on Duchikthluk Bay and was used by the Skyvan when transporting muskox. The skyvan, a twin-engined prop jet aircraft of freight hauling configuration, proved to be a capable performer. It could haul four to six crates per load. The limiting factor was the bulk rather than the weight of the crates. It is recommended that this aircraft be utilized during future transplants.

OBSERVATIONS

Prior to the transplant a brief flight over Nelson Island in a chartered Cessna 180 aircraft disclosed six animals from last years transplant. Reports from pilots indicate that occasional single animals are seen on the island. It is possible that all eight animals transplanted last year have survived.

Appendix I

MUSKOX TRANSPLANT - NELSON ISLAND
March 8 to March 20, 1968

Date Captured	Sex	Age	Tag No.	Date Released Nelson Island	Succinylcholine Chloride Dosage	Remarks
March 16	M	calf	none	March 17	40 mg	Down in 8 minutes
March 16	M	calf	none	March 17	40 mg	Down in 8 minutes
March 16	M	calf	none	March 17	40 mg	Down in 8 minutes
March 16	F	calf	none	March 17	40 mg	Down in 8 minutes
March 18	F	calf	552	March 20	40 mg	Required 6 shots before dart charge went off
March 18	F	calf	553	March 20	40 mg	First dart bounced out, required a second shot
March 18	M	calf	-	Died	40 mg	Animal died in two minutes
March 18	F	calf	554	March 20	40 mg	3 shots of drug failed to down animal, finally shot animal with 28 mg of Tranvet and downed the animal by jumping on it from the helicopter
March 18	F	calf	555	March 20	40 mg	First dart bounced out, required a second shot
March 18	M	calf	556	March 20	40 mg	First dart bounced out, required a second shot

Appendix I continued

Date Captured	Sex	Age	Tag No.	Date Released Nelson Island	Succinylcholine Chloride Dosage	Remarks
March 19	M	calf	557	March 20	40 mg	Down in 7-8 minutes
March 19	F	calf	558	March 20	40 mg	Required 3 shots before going down
March 19	M	calf		Died	40 mg	Down in 30 seconds, dead upon landing
March 20	F	calf	559	March 20	40 mg	Down in 8 minutes
March 20	M	yearling	560 (6840)	March 20	60 mg	37.5 mg Tranvet, down in 8-10 minutes, very active 15 minutes later
March 20	F	calf	561	March 20	40 mg	25 mg Tranvet, down in 2 minutes, apparently dead upon landing, started breathing by artificial respiration, survived
March 20	F	calf	562	March 20	40 mg	Down in 8 minutes
March 20	F	yearling		Died	60 mg and 40 mg	Required second shot of 40 mg of Succinylcholine chloride. Dart struck lung, animal died in 15 minutes
March 20	F	calf		Died	40 mg	25 mg Tranvet, animal died in 2 minutes

TOTAL CAPTURED 19 (10 female calves, 7 male calves, 1 female yearling, and 1 male yearling)

TOTAL TRANSPLANTED 15 (9 female calves, 5 male calves, and 1 male yearling)

Appendix II

STATE EXPENDITURES FOR 1968 MUSKOX TRANSPLANT TO NELSON ISLAND

Salaries	
1 biologist III 2 mos. @ $1,001/mo.	$2,002.00
1 conservation officer 17 days @ $949/mo.	521.00
2 temporary laborers 10 hrs. @ $3.77/hr.	37.70
Travel-Air	
2 round trips Fairbanks - Mekoryuk 2 round trips McGrath - Mekoryuk	930.00
Per Diem	
1 biologist 23 days @ $21	483.00
1 conservation officer 17 days @ $21	357.00
Freight	
Misc. Airfreight (crates, etc.)	604.00
Helicopter fuel	1,410.00
Muskox	1,157.30
Snow machine rental (including driver)	2,816.00
*Helicopter charter (including 20 hrs. ferry time) 63 hrs. @ $120/hr.	7,560.00
Equipment and materials	1,122.54
Total Expenditures	$19,000.54

Cost per transplanted animal - $1,360.00

U.S. Fish and Wildlife Service Expenditures

Per diem and salary	$ 791.50
Transportation	90.00
**(snow machine rental	1,920.00)
**(transportation of muskox	320.00)
**(helicopter charter	2,500.00)

* tentative figure, final cost not yet available

**included in state costs, but charges assumed by F.W.S.

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