

CAPTURING AND TRANSLOCATING TULE ELK IN CALIFORNIA

William E. Clark
California Department of Fish and Game
Sacramento, California

Abstract.

The annual Tule elk census in Owens Valley revealed that there were approximately 90 surplus animals. The decision to chemically immobilize, capture and translocate the surplus animals was made. During November and December 1977 the largest Tule elk immobilization and translocation operation ever attempted was successfully accomplished by California Department of Fish and Game personnel. By shooting the animals from the open door of a Jet-Ranger helicopter with drug-filled darts, 72 Tule elk were chemically immobilized. Sixty-two elk were transported in horse trailers for a distance of approximately 350 miles to two holding corrals in the bay area. Of the remaining ten Tule elk immobilized, seven were radio-telemetry collared and/or ear-tagged and released in the Owens Valley. Three elk died of capture-related problems.

INTRODUCTION

There are three sub species of elk in California: Rocky Mountain (*Cervus canadensis nelsoni*), Roosevelt (*C. c. roosevelti*), and Tule elk (*C. c. nannodes*). At the present time there are approximately 700 Tule elk in the Owens Valley (Inyo County), Cache Creek (Colusa County), Grizzly Island Wildlife Management Area (Solano County) (WMA), and Santa Clara County. Confined Tule elk are located at Tupman (Kern County), San Luis Island (Merced County), the Concord Naval Weapons Station (Contra Costa County) and at various zoos in California.

In 1971 a bill was passed (the Behr Bill) which amended Section 332 of the California Fish and Game Code. This amendment provides that the Fish and Game Commission cannot authorize the taking of Tule elk in the State until the total statewide population exceeds 2,000 animals or, until no further suitable Tule elk habitat can be found.

As a result of the 1971 legislation safe, efficient animal restraint and transportation techniques were needed. Not only for Tule elk, but to facilitate biological data collecting on selected wildlife and to enable biologists to rescue and transport problem or injured animals. The responsibility for the development of safe, efficient animal immobilization and transportation techniques was given to the Disease Section of the Wildlife Investigations Laboratory.

Since 1971 and before the latest capture and translocation operation in the Owens Valley, the reactions of approximately 50 elk in California to various animal restraint and transporting techniques have been evaluated.

When the 1977 Owens Valley Tule elk census revealed a surplus of 92 animals, the decision was made to capture and translocate the surplus animals. During November and December 1977, the largest Tule elk capture and translocation operation ever attempted was successfully accomplished by California Department of Fish and Game personnel.

METHODS AND MATERIALS

Palmer CapChur Equipment (Palmer Chemical and Equipment Company, Douglasville, Georgia) was used to administer the drugs to the elk. The CapChur extra-long range dart projector was used with green low power charges and a 5 ml dart. The darts were pushed down the barrel of the gun to a predetermined position. This provided a flat dart trajectory at ranges up to 12 meters, reduced muzzle velocity and consequently reduced impact speed of the dart.

The elk were spotted, herded and darted from a Bell Jet Ranger helicopter that had the right rear door removed. To dart an animal being pursued the pilot flew the ship from the right front seat and the shooter hung out the right rear opening. With this arrangement the pilot had the same view of the target animal as the shooter.

The immobilizing drugs used were Etorphine Hydrochloride (M99, D-M Pharmaceuticals Incorporated, Rockville, Maryland, USA) at dosages of 3.0 or 4.0 mg with 20.0 or 10.0 mg Acepromazine (Ayerst Laboratories, Incorporated, New York, N.Y.) to total 5 ml in a CapChur dart. The mixture of 4.0 mg, M99 plus 10.0 mg Acepromazine seemed to be the better overall dosage. Diprenorphine (M50-50) was used as the Etorphine antagonist or reversal drug at twice the M99 dosage, i.e., if 4.0 mg of M99 was used to immobilize an animal 8.0 mg of M50-50 was used to reverse the drug effect. The reversed animals remained slightly tranquilized due to the continued effect of Acepromazine. Additional Acepromazine was given to the animals if they began to get restless after being loaded into the horse trailers used for transport.

Once an animal was darted from the helicopter, it was kept under surveillance either by hovering around the darted animal or by landing the ship on a nearby hill and observing with binoculars until the drugs took effect. After a darted animal was immobile it was approached quietly and a large 18" x 22" military bandage was placed over its eyes and secured. Leather hobbles were used to secure the legs before the tranquilized animal was transported to the base station. The immobilized elk were taken to the base station either by being carried in a sling suspended by a rope under the helicopter or in the back of a pickup truck. On occasion, an animal was put in a sling and removed from an area of extremely rough terrain to a nearby ground vehicle and then transported to the base camp for processing. Upon arrival at the base station the drugged elk underwent a series of examinations and procedures. The body temperatures were monitored continually from first contact in the field to the time of reversal of drug effects at the base station. Examinations were made for any cuts or abrasions and medical attention was administered when needed. The dart wound was treated and sprayed with an antibiotic. In addition a long-acting antibiotic was injected intramuscularly. Blood was drawn for disease and specific research studies. External parasites were removed for identification. After being aged, sexed, ear-tagged

and the weight estimated, the still drugged animal was placed on its sternum in a holding crate. The reversal drug M50-50 was then administered intravenously and the animal kept under observation until the effects of M99 were gone. After the elk stood up, it was allowed to adjust to its new surroundings for a while before being loaded into a horse trailer for the approximately 350 mile trip to a holding facility. Horse trailers of various sizes were used, ranging from two-horse to four-horse. Depending on the size of the elk, seven to nine could be loaded into a four-horse trailer bedded with alfalfa. Twenty-five pound blocks of ice were put in the trailers to furnish water for the elk during transportation. Initially the elk were transported the same day as captured, but later they were held overnight and transported the following day. A shipment of elk for transport varied in numbers from six to 12 in several trailers.

RESULTS

Seventy-two Tule elk were captured, 62 were loaded into horse trailers and transported approximately 350 miles to two holding facilities in the bay area. Of the remaining ten elk, one was ear-tagged and released at capture site, six were radio-telemetry collared and released back to their respective herds and three died in the sling while being transported to the base camp. There was a total of four mortalities—the fourth being a calf that died from disease complications in the Concord holding pen. The stress of capture and transport in all probability compounded the liver disease problem the calf was found to have when necropsied. Improper placement in the sling and resultant stragulation was the cause of one of the three mortalities related to the slinging operation. The second elk was bloated when placed in the sling and the pressure of the sling against the abdomen caused pressure against the diaphragm and resultant suffocation. After a longer than average chase before darting, the third elk died of a heart attack while in the sling.

The induction times (time for drug effect) ranged from six minutes to 30 minutes for the last 35 animals darted. The reversal time ranged from 50 seconds to 5 minutes (Table 1).

Approximately 140 darts were used during the operation with overall shooter success roughly 60%. There were quite a few hits that bounced back and subsequently did not inject any drugs. One shooter successfully darted seventeen animals using 22 darts. The cost of capturing and translocating a Tule elk from the Owens Valley to the bay area including expense of the darts, drugs, transport, vehicles, helicopter and personnel was approximately \$1,000 per animal.

DISCUSSION

The success of a capture and translocating operation such as was accomplished depends on the teamwork and expertise of many people. The logistics and problems of shuttling trailer loads of Tule elk across six mountain passes over 7,000 feet high through occasional blizzard conditions and for approximately 350 miles, at times seemed insurmountable, but the dedication and esprit de corps of the people involved made the operation a success. The one most significant factor that insured the success of this operation was the expertise and patience of the helicopter pilot.

TABLE 1
Owens Valley Tule Elk 12/8 - 12/11/77

Date	Sex	Age	Weight	Induction Time	Reversal Time	Tag #	Comments
12/8	+	< 2 1/2	225	29 min.	1 min. 30 sec.	4290	BH*
12/8	+	adult	350	11 min.	1 min. 45 sec.	4291	DJ
12/8	+	2 1/2	315	24 min.	1 min.	4292	DJ
12/8	+	~ 2 1/2	275	30 min.	2 min.	4293	DJ
12/8	+	~ 2 1/2	275	10 min.	1 min.	4294	DJ
12/8	+	adult	325	23 min.	1 min. 55 sec.	4295	TE
12/8	+	< 2 1/2	-	15 min.	1 min.	4296	TB
12/8	+	adult	-	10 min.	1 min. 20 sec.	4297	TB
12/9	+	adult	-	11 min.	2 min. 30 sec.	4298	BC 20 mg ace. given 1 hr. after reversal
12/9	+	adult	-	11 min.	1 min. 30 sec.	4501	BC 20 mg ace. given 45 min. after reversal
12/9	+	adult	400	17 1/2 min.	1 min. 55 sec.	4502	PJP
12/9	+	adult	375	?	55 sec.	4503	Banky, PJP shot twice
12/9	+	adult	400	10 min.	3 min.	4504	PJP
12/9	+	adult	400	12 min.	2 min.	4505	PJP
12/10	♂ castrated	4 1/2 adult	475	14 min.	1 min. 40 sec.	4506	BG
12/10	+	7 +	-	10 min.	∅	4507	BG died in sling
12/10	+	1 1/2	275	12 min.	50 sec.	4508	BG 15 mg ace. 3 min. after reversal
12/10	+	adult	300	12 1/2 min.	1 min.	4509	BC
12/10	+	adult	300	12 1/2 min.	2 min. 15 sec.	4510	BC 15 mg ace. after reversal
12/10	+	adult	325	9 min.	1 min. 15 sec.	4511	BC 15 mg ace. after reversal
12/10	+	adult	-	11 min.	∅	4512	DJ died in sling
12/10	+	adult	300	17 min.	1 min 45 sec.	4513	BH 15 mg ace. after reversal
12/10	+	-	-	7 min.	1 min. 45 sec.	4514	BH 15 mg ace. after reversal
12/11	+	adult	300	22 min.	1 min. 30 sec.	4515	BC 15 mg ace. after reversal
12/11	+	-	-	15 min.	1 min. 45 sec.	4516	BC 15 mg ace. after reversal
12/11	o	yearling	~220	13 min.	1 min. 30 sec.	4517	BC 15 mg ace. after reversal
12/11	+	yearling	250	10 min.	1 min. 30 sec.	4518	BC 15 mg ace. after reversal, shot twice
12/11	+	-	-	30 min.	1 min. 42 sec.	4519	BC 15 mg ace. after reversal
12/11	♂	1 1/2	250	9 min.	5 min.	4520	BC hard reversal
12/11	♂	~1 1/2	~250	13 min.	1 min. 40 sec.	4521	DJ 25 mg ace. after reversal
12/11	♂	1 1/2	300	12 min.	~4 min.	4522	DJ 15 mg ace. after reversal
12/11	♂	yearling	225	lost sight of animal	2 min. 10 sec.	4523	DJ 15 mg
12/11	+	yearling	240	9 min.	4 min.	4524	DJ
12/11	+	adult	-	15 1/2 min. old blue	1 min.		DJ replace radio collar
12/23	+	adult	200-225	6 min.	recumbent	?	jumped in canal 11/20/77 in ~6 hours; treated 12/23 died 12/24. Ear tag lost probably 3470 or 3467

* Initial indicates individual shooter.

Since the passage of the Behr Bill which essentially put the Tule elk in a nongame category, the only management of the elk has been to capture and translocate surplus animals to fenced or otherwise confined areas. The magnitude and success of these latest translocation activities hopefully will enable the population of Tule elk in California to exceed 2,000 animals. When that proposed number is reached, then sound biological management can be enacted on the various free-roaming herds we will have throughout the State.

