THE EVOLUTION OF CAPTURING BIGHORNS IN ALBERTA

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Since the 1960's a variety of methods were used by Alberta Fish and Wildlife Div. staff to capture approximately 1600 bighorn sheep (Ovis canadensis) for tagging or transplanting programs. The most successful technique for capturing bighorns was a trap designed for a one-man operation. Capture mortality of sheep was minimal. The major purpose of the capture program was to provide detailed information on dispersal and population dynamics of bighorns (MacDonald 1961, Wishart 1976, Smith and Wishart 1978, Jorgenson and Wishart 1979).

METHODS AND RESULTS

In 1960, Palmer cap-chur equipment was used to tranquilize bighorns with only moderate success. Succinyl choline chloride was administered successfully in the field on 5 bighorns at 1 mg/1.3 kg body weight. Two major problems with this technique were the short approach distance needed for accurate dart placement and the long induction times on sheep that were usually in precarious mountain terrain.

In 1961 a pole corral for horses at the Sheep River Ranger Station was converted to a bighorn trap by extending the height to 2.3 m and lining the interior with wire mesh (2.5 cm squares). The wire mesh was later covered with burlap and finally plywood sheets, since the bighorns lacerated their noses when attempting to push their heads between the widely spaced fence rails in efforts to escape. Some animals were able to leap over the 2.3 meter fence. Subsequently traps were extended to 3.6 m. During the winter and spring the animals were baited with hay and/or salt and the gate was closed manually via a long wire extending to a bunk house. Once the

animals were locked in the corral they were hazed into a small covered hut. Each animal was either forced through a small door into a calf squeeze or man-handled, blindfolded and hog-tied for measurements and marking. Approximately 150 bighorns were handled in this manner without any losses.

An automatic tagging device described by Romanov (1956) was modified for marking bighorns without handling by Wishart (1968) where a collar (nylon rope) was pulled around the neck of a sheep by an observer at a salt lick. The device was a wooden frame that was closed on three sides and placed over a salt block. The nylon rope was placed around the opening in the form of a snare and when an animal placed its head through the collar, the snare was pulled shut onto a snap fastener that served as a two-way stop to the tightening loop of the snare. When the collar snapped shut, the fastener broke away where it was attached by a thin piece of wire. Approximately 60 bighorns were marked in this manner during the summer months in the late 1960's by towermen at fire lookouts near the headwaters of the North Saskatchewan River.

Drop nets over salt or hay were used on a few occasions. However, this technique required a large staff to subdue and prevent the animals from causing injury to themselves, particularly if 5 or more sheep were captured (Erickson 1973).

As bighorn studies progressed, sheep traps were built at Ram Mountain and the Mannix coal pit at Cadomin. New traps were similar to the original trap at Sheep River. In addition, a Stevenson deer trap was used in a unique situation at Cadomin where sheep entered a crusher tunnel at the Inland Cement Co. limestone quarry to lick mineral residues from the walls. The large tunnel door was tripped shut by the sheep in the tunnel. The Stevenson trap was then placed at the small exit door within the larger

door and the sheep were selectively hazed through the Stevenson trap into a net.

The door of the trap near the Mannix coal pit was closed in a similar manner to the above by a rope and pulley when the animals tripped a spring-loaded triggering device as they milled around the salt block (Lynch 1978). The tripped gate cut off a radio transmitter, signalling a distant operator that the trap was sprung (Lynch 1978).

In 1975, the sheep trap on Ram Mountain was modified to allow animals to be handled by a single person. This involved the construction of a side chute with a net located at the exit (Figs. 1, 2, 3). The operator was able to encourage one animal at a time into the enclosed cubicle. The exit door from the side chute was then removed so the animal would become entangled in a net as it attempted to escape. The net was attached to the trap by a length of rope resembling a purse-string. This restrained the animal sufficiently to allow it to be easily handled. A small beam was attached to the cubicle by a bolt and supported on its free end by a bipod. This provided support for a hand winch which allowed the operator to weigh each animal. A dial scale was attached to the winch which in turn secured the net restraining the animal. The only drawback of this technique was the loss of horn sheaths from yearling females when striking the end of the net. The net was also responsible for the deaths of two young rams when they summersaulted, entangled and broke their necks; since then, yearlings have been subdued by hand rather than by the net. In most cases, yearlings are light enough to be carried to the scale by one person. The complete handling of an animal(marking, measurements, weights, fecal, hair, blood samples, aging) requires less than 30 minutes. No drugs were required and mortality was negligible. The sex and age classes of bighorns
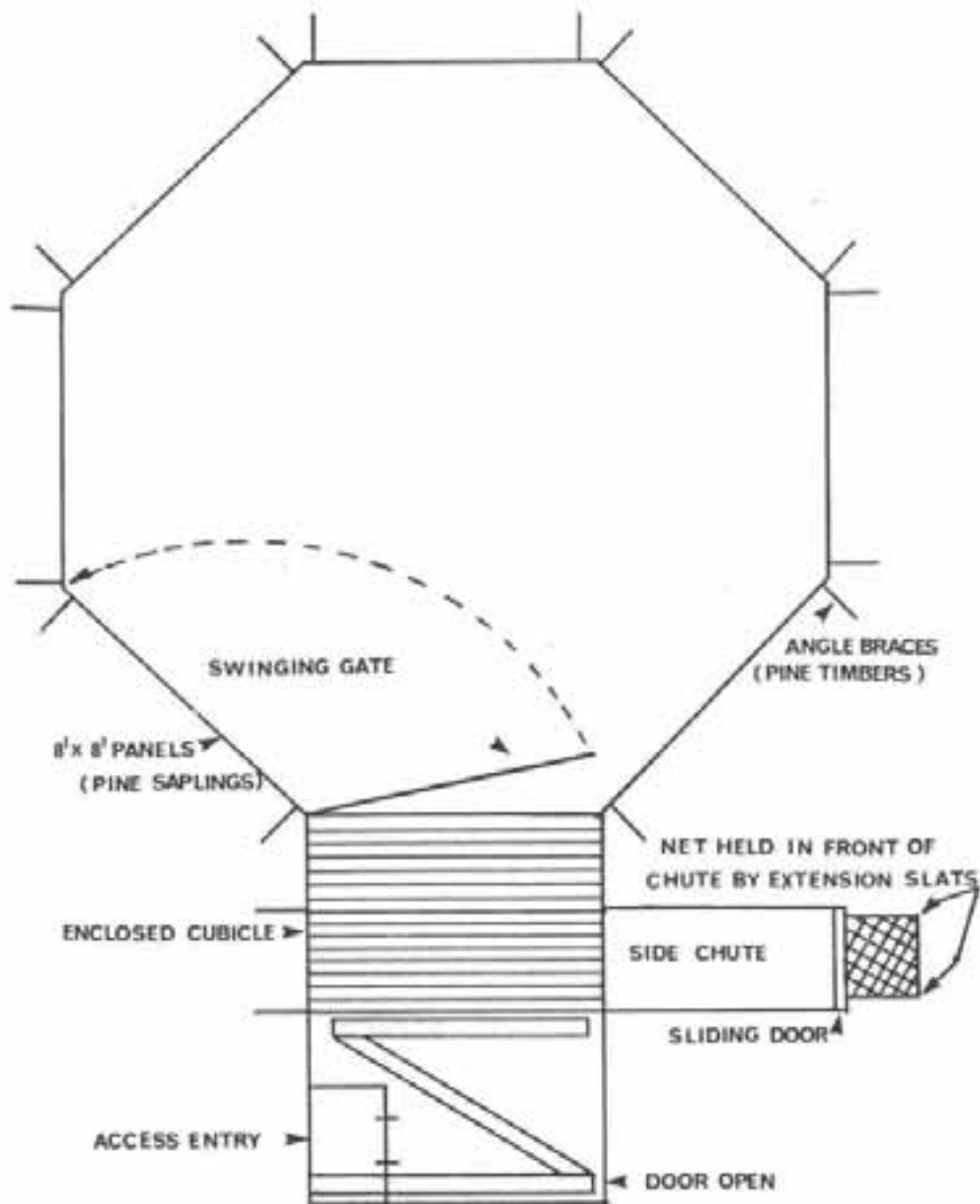
Fig.1   Overhead view of bighorn sheep trap and
handling facilities used on Ram Mountain, Alberta.
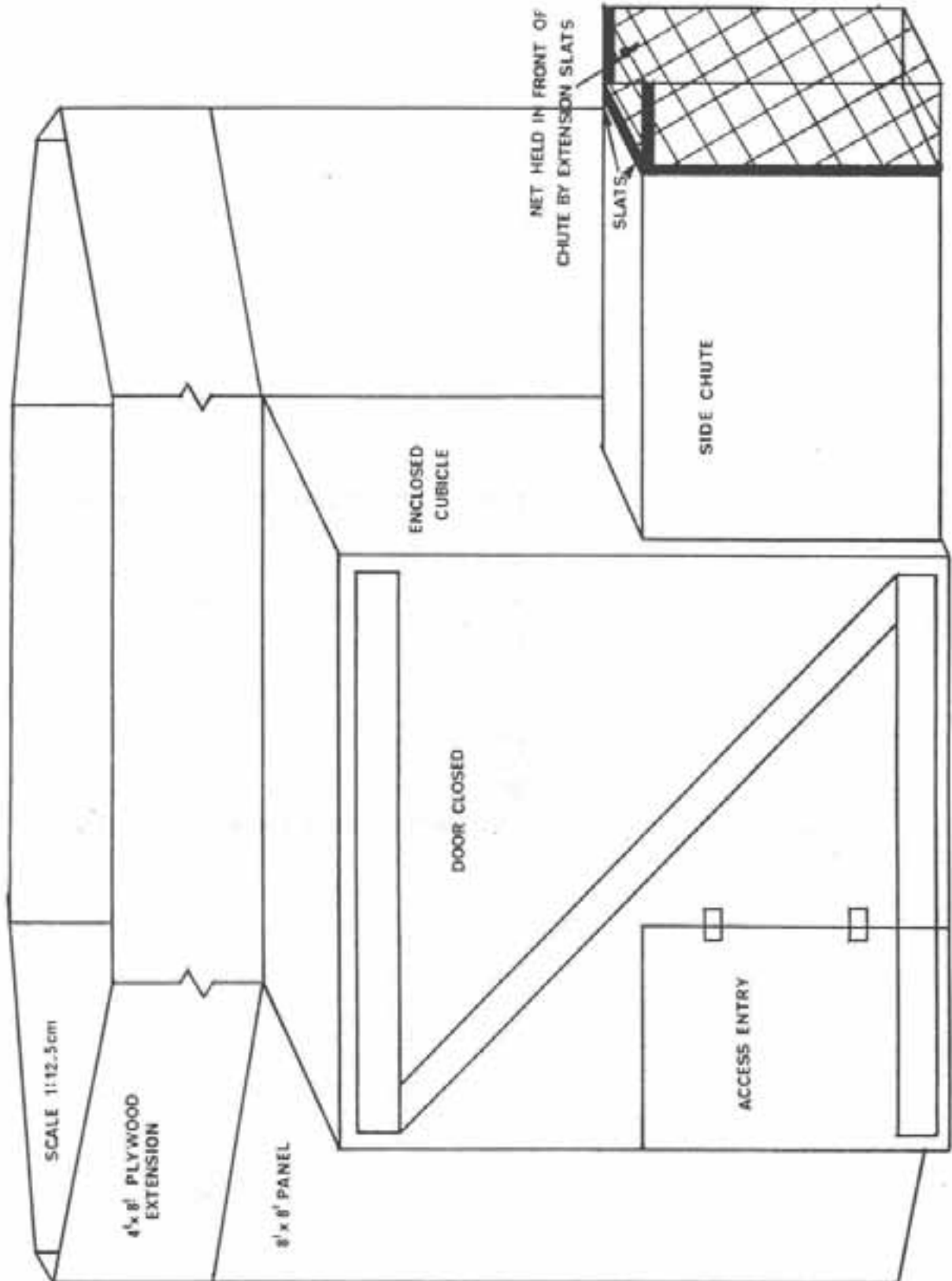(Modified from Erickson, 1973).

Fig. 2   Frontal view of bighorn sheep trap and handling facilities used on Ram Mountain, Alberta.

SCALE 1:12.5cm

4' x 8' PLYWOOD EXTENSION

8' x 8' PANEL

DOOR CLOSED

ACCESS ENTRY

ENCLOSED CUBICLE

SIDE CHUTE

NET HELD IN FRONT OF CHUTE BY EXTENSION SLATS

SLATS

SCALE 1ft 2-5 cm

4'x 8'
PLYWOOD
EXTENSION

8'x 8'
PANEL

ENCLOSED CUBICLE

NET OVER DOOR
TO SIDE CHUTE

DOOR OPEN
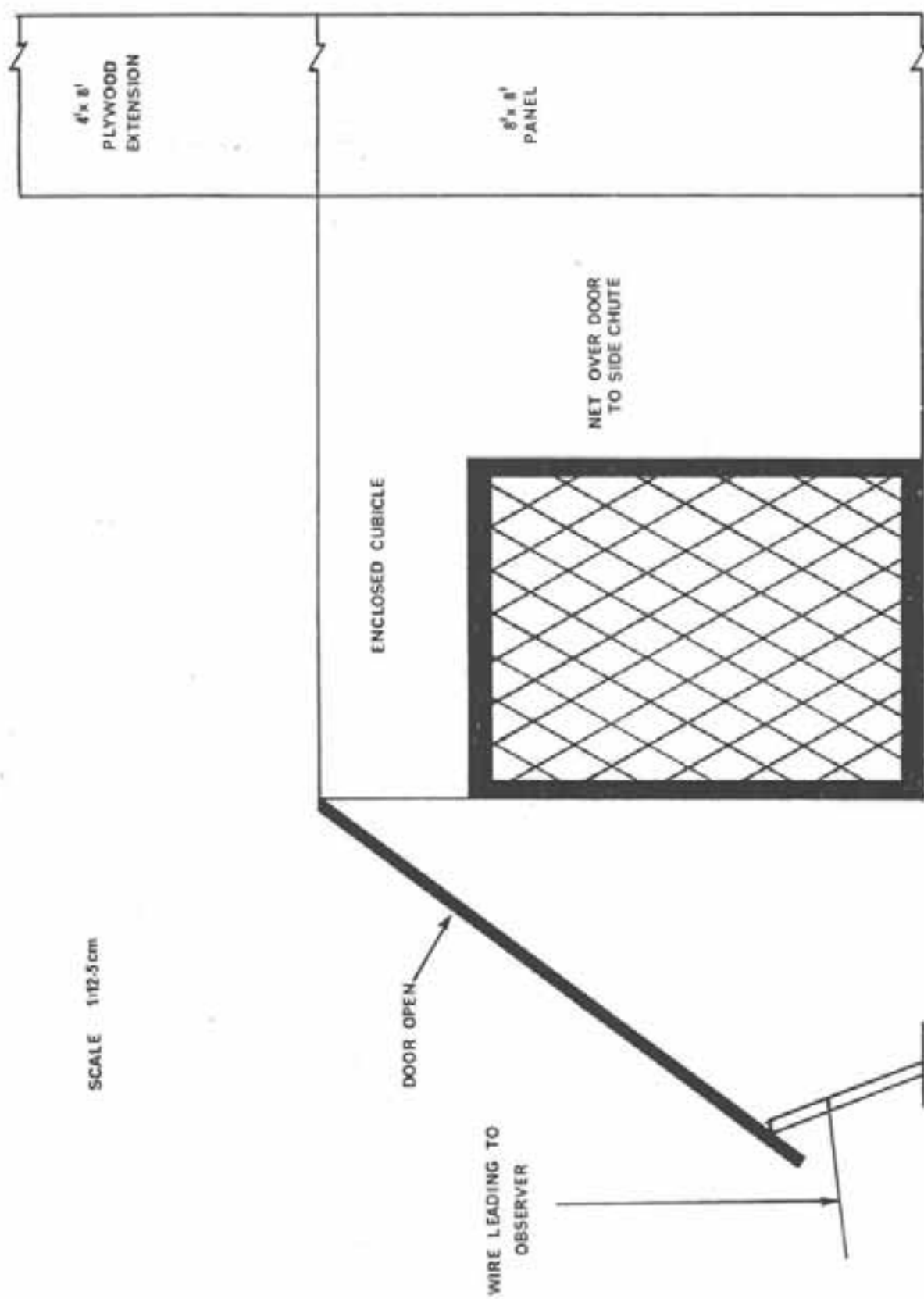
WIRE LEADING TO
OBSERVER

Fig. 3   Side view of bighorn sheep trap and handling facilities used on Ram Mountain, Alberta.

Table 1. Age and Sex of Bighorn Sheep Captured and Handled on Ram Mountain, Alberta (1968-79).

Age Group	Number of Animals Handled	Percent
Lambs	167	14.8
Yrlg. ♂♂	124	11.0
Yrlg. ♀♀	153	13.6
2-3 Yr. ♂♂	121	10.8
2-3 Yr. ♀♀	229	20.4
4+ Yr. ♂♂	113	10.0
4+ Yr. ♀♀	217	19.4
Total	1124	

trapped and handled at Ram Mountain and Cadomin are summarized in Tables 1, 2, and 3.

ACKNOWLEDGEMENTS

Table 2. Summary of Mortalities and Accidents Occurring during Trapping and Handling of Bighorn Sheep on Ram Mountain (1968-1979).

Accident Type	Number	Percent of Total (N= 1124)
Mortality[a]	3	0.27
Broken Horns	2	0.18
Loss of Horn Sheath	12	1.10
Broken Nose	2	0.18
Injuries to Legs	2	0.18

[a]One broken neck; one skull fracture; one destroyed (unable to rise).

Table 3. Age and Sex of Bighorn Sheep Captured at Cadomin, Alberta. (1972-1977)

| Sex | Age | No. of Sheep Captured | | Total |
		Mannix Pit	Tunnel	
Rams	Yrlg.	4	18	22
	2-3 Yrs.	14	12	26
	4+ Yrs.	83	19	102
Ewes	Yrlg.	0	9	9
	2-3 Yrs.	0	4	4
	4+ Yrs.	4	42	46
Lambs		0	5	5
Total		105[a]	109[b]	214

[a] 1 mortality (drug overdose)

[b] 1 mortality (drug overdose)

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