

USE OF THE CANNON-NET FOR CAPTURING FALLOW DEER

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ABSTRACT

The cannon-net technique for trapping deer was used to capture 130 wild fallow deer (*Dama dama*) in western Kentucky. The net proved dependable as deer were captured on 25 of 27 times it was fired. The average catch was 4.8 per attempt and up to 11 animals were captured at one time. Mortality was 3.1%. Acepromazine maleate was used with satisfactory results for tranquilizing captured deer.

INTRODUCTION

The cannon-net technique was adapted for capturing deer by Hawkins et al. (1968). We used the technique in the winters of 1968 through 1970 to capture wild fallow deer (*Dama dama*) for stocking and for marking to study movements. Four white-tailed deer were also caught but efforts were primarily directed to fallow deer. The purpose here is to report on the success of the cannon-net procedure.

The work was conducted in Land Between the Lakes, a 170,000-acre area in western Kentucky and Tennessee being developed by the Tennessee Valley Authority as a demonstration in outdoor recreation and conservation education. Approximately 20 fallow deer were introduced into the northern portion of the area in the early 1920's. The herd has increased to 500-1,000 animals on about 60,000 acres that was formerly the Kentucky Woodlands National Wildlife Refuge.

MATERIALS AND METHODS

Materials and methods were generally the same as reported by Hawkins et al. (1968). The net used in 1968 was made of No. 504 knotless nylon and had a 4-inch-square mesh. It was 60 x 40 ft with a 3 ft fringe along the periphery and was propelled by three recoilless cannons. In 1969, a 60 x 40 ft net made of No. 72 knotless nylon with a 6-inch-square mesh and no fringe was substituted following communication with R. E. Hawkins, Cooperative Wildlife Research Laboratory, Southern Illinois University. The latter net, propelled by four cannons, was much more predictable and efficient than the lighter net because it did not tear and the heads of does and fawns easily slipped through the larger mesh thus trapping the animals immediately. Deer escaped from this net on only two occasions.

The trap was fired manually from a blind by completing an electrical circuit from a 12-volt battery. The blind, which was 75 to 150 yards from the bait site, was usually entered about an hour before sunset. The net was not usually fired unless at least four deer were on the bait and no attempt was made to capture groups containing more than two large bucks.

Trap sites were located in open fields and were baited with shelled field corn and loose salt. Sites were prebaited 2 to 3 weeks prior to setup of the capture equipment. In addition, a "dummy" trap was placed at the site a few days before setup of the equipment. The latter reduced the problem of deer spooking away from the site for the first few days after the cannon-net was installed.

Two to five people were available to assist in handling the animals. Immediately after capture and before removal from the net deer were blindfolded and covered with thin blankets, after which they usually ceased struggling within a few minutes. In 1969 and 1970 the tranquilizing drug Acepromazine maleate (Ayerst Laboratory, Inc., New York) was injected into the hip of each animal at the rate of 6 to 10 mg per 100-lb body weight. After removal from the net the deer were "hog-tied" with nylon (ladies hose), trussed with rope, rolled tightly in a thin blanket, and again tied securely. The average time deer were restrained was about 1½ hours.

RESULTS AND DISCUSSION

A total of 27 shots was made resulting in the capture of 130 fallow deer for an overall average of 4.8 per attempt (Table 1). The average catch per attempt for each of 3 years was 3.2, 5.7, and 4.1, respectively. The largest number caught at one time was 11, but on this and other occasions larger catches were intentionally avoided because of insufficient manpower to handle the animals. The net was not fired on 35 trips to the blind, but at least one deer came to the bait on all but 13 of these occasions.

Deer came to bait much more readily in 1969 than in 1968 and 1970. This can probably be attributed to the extreme shortage of mast and certain other natural foods in that year. Acceptance of the bait was much better when the temperature was below 40 F than at higher temperatures. Deer usually came to bait just after sunset, but a few catches were made well before dark. When herbaceous vegetation began to appear in April, bait sites were used sparingly.

Four deer or 3.1% of the total catch were seriously injured or died during the trapping operation. In 1968 an animal was killed instantly when struck by a cannon or the leading edge of the net. Another suffered a back injury resulting in paralysis and was destroyed 3 days after its release. There was no mortality or serious injury among the 85 animals trapped in 1969. This was attributed to (1) the injection of deer with a tranquilizing drug immediately after capture, (2) care to avoid firing when deer were standing in the downward path of the cannons, and (3) greater efficiency and care in removing them from the net. Two deer died during the 1970 season, both from apparent shock. They were drugged and treated in the same manner as the previous year except blood samples were taken for antibody studies. There was no physical damage to the animals, but apparently the operation of removing blood triggered the shock response. Hawkins et al. (1968) caught seven fallow deer in Land Between the Lakes in 1966, but reported no deaths or serious injury from the cannon-net itself.

Acepromazine maleate was very effective in calming most deer. The effect of the drug could normally be seen within 10 minutes after injection. A few animals including the two that died in 1970 responded more slowly.

Fawn males comprised the greatest portion of the total catch (Table 2). These young males were observed at times to form separate groups of up to seven animals while fawn does usually remained near the adult does. According to Cadman (1966) fallow deer begin to form buck groups in mid-winter. The vulnerability of young males to the trap was particularly evident in 1970 when they made up 72.4% of the catch. The small number of adult males captured is misleading since groups containing more than two large bucks were usually avoided. All deer came to the bait readily in 1969.

Problems in technique encountered included: (1) deer chewing electrical wiring, (2) deer chewing net, (3) launchers pushing backward in soft soil resulting in the net firing too high, and (4) deer's antlers becoming entangled in the net prior to firing. When the site was well baited, chewing of the net and entanglement were minimal. Substitution of plastic for rubber insulated wiring eliminated damage by chewing. Wooden blocks driven into the ground behind the launchers prevented them from becoming loosened.

Results from this work indicate that the cannon-net is a dependable technique for use in areas where deer can be baited successfully.

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Table 1. Cannon-net data for trapping fallow deer, Land Between the Lakes, 1968-70

Date	Trips to Blind	Shots Made	Successful Shots	Total Deer Captured
1968				
February	10	3	1	7
March	7	2	2	9
Totals	17	5	3	16
1969				
January	4	2	2	14
February	12	6	6	29
March	8	5	5	32
April	4	2	2	10
Totals	28	15	15	85
1970				
January	4	1	1	4
February	5	3	3	13
March	5	0	0	0
April	3	3	3	12
Totals	17	7	7	29
Grand Totals	62	27	25	130

Table 2. Sex and age of fallow deer captured, Land Between the Lakes, 1968-70

Year	Adult Male	% Total	Fawn Male	% Total	Adult Female	% Total	Fawn Female	% Total
1968	4	25.0	7	43.7	1	6.3	4	25.0
1969	14	16.5	27	31.7	30	35.3	14	16.5
1970	1	3.5	21	72.4	2	6.9	5	17.2
Totals	19	14.6	55	42.3	33	25.4	23	17.7

A COMPARISON OF EYE LENS WEIGHT AND TOOTH IRRUPTION PATTERN IN AGE DETERMINATION OF FERAL HOGS (*Sus scrofa*)¹

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ABSTRACT

A study was conducted on the A.E.C. Savannah River Plant, Aiken, South Carolina, to determine if eye lens weight was a reliable indicator of age in feral swine. A strong correlation ($r=0.95$) was found between eye lens weight and tooth irruption age. In most cases, when body weight failed, eye lens weight remained a dependable indicator of age in feral hogs. Eye lens weight can therefore be used as a reliable age criterion in feral hogs. With the establishment of an eye lens weight - to - age curve based on known-age animals, eye lens weight may prove to be better than tooth irruption for indicating the age structure of a feral hog population.

INTRODUCTION

Age determination is fundamental in the analyses of wildlife populations. Although some criteria of age are more accurate than others, all are at best only estimators of the actual age of an individual. It is advantageous, therefore, to have several different techniques of age determination for any given species in order to improve the accuracy of estimation. To date, however, the only available method for ageing feral swine is the use of tooth irruption pattern. As part of a preliminary study of the feral hog (*Sus scrofa* L.) population on the Atomic Energy Commission's Savannah River Plant (SRP), the eye lens weights were compared to the ages determined by tooth irruption pattern (Sisson and Grossman 1938).

Eye lens weight has been used with varying degrees of success as an age criterion for many different species (Friend 1968). Friend (1967) determined that eye lens weight was a reflection of age and not nutritional status in Wistar-strain laboratory rats (*Rattus norvegicus*). In a later study of white-tailed deer (*Odocoileus virginianus*) on good versus poor range, Friend and Severinghaus (1967) stated that differences in lens weights among individuals of the same age classes were the result of nutritional deficiencies in the pregnant female affecting the lens growth of fetuses and/or young prior to weaning. In a controlled experiment with pen-raised European wild hogs, Matschke (1963) determined that eye lens weight was a reflection of body weight and as such was not a reliable indicator of age. It remains then, to determine what effect nutrition has on lens growth in feral hogs.

Since it seems likely that body weight may be a reflection of plane of nutrition, and it is also possible that eye lens weight is directly related to either age or plane of nutrition, it is instructive to examine the relationship between eye lens weight and body weight. A positive correlation between these two parameters would essentially invalidate eye lens weight as an age criterion.

PROCEDURE

The S.R.P. is located on the Savannah River near Aiken, South Carolina. The 315 square mile area within the plant boundaries consists of new and old

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