SECTION G, CONSERVATION

Breeding Season of the Cottontail Rabbit in North-Central Oklahoma[1]

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An increased understanding of the reproductive behavior of the cottontail rabbit *(Sylvilagus floridanus alacer)* of the Southern Prairie region was the objective of this study. The study area was restricted to a portion of Payne and Noble counties in north-central Oklahoma north of the Cimarron River.

Method of Analysis

A total of 274 adult cottontail rabbits were collected from March, 1964 to February, 1965. Of this total, 142 were males and 132 were females. No predetermined schedule was followed for collecting. Samples were taken either by walking areas in the daylight or by driving fields at night and shooting with a shotgun.

The uterus of each female was removed and examined macroscopically for embryos, which were removed and measured for crown-rump length. The age of the embryos and conception date of each pregnant female were calculated using growth data developed by Schwartz (1942).

Each male was examined for the position of the testes in relation to the scrotum. Each testis and its epididymis were removed from the animal and cleaned of all adhering tissue. The combined weight of the testis and epididymis was taken using a balance-type scale. The numerical value used for analysis was the mean of the weights of the two organs. A smear was made from the anterior portion of one epididymis and checked for the presence of spermatozoa.

Discussion and Results

The breeding season of the cottontail rabbit in north-central Oklahoma during the period of study extended from mid-February to early September. The first pregnant female was collected on March 6. Using Schwartz's (1942) aging technique, the embryos of this female were approximately 20 days old. There is some indication that this female was exceptional. The conception date for the next four females collected was calculated to be March 1. This suggests that the males are ready to breed at a much earlier date than most females. The last pregnant female was collected September 19, and the embryos were estimated to be approximately 20 days old.

It has been shown that in cottontails a seasonal variation in the weight of the testes occurs (Lord, 1961; Schwartz, 1942; Haugen, 1942; Hamilton, 1940; Trippensee, 1936).

The mean weights (in grams) of the testes by month in this study were as follows: March, 11.2; April, 10.7; May, 10.2; June, 8.9; July, 4.9; August, 4.88; September, 1.09; October, 0.63; November, 0.65; December, 1.1; January, 3.9; and February, 6.7. These weights (Fig. 1) indicate that the male gonads reach their maximum development in March, decline

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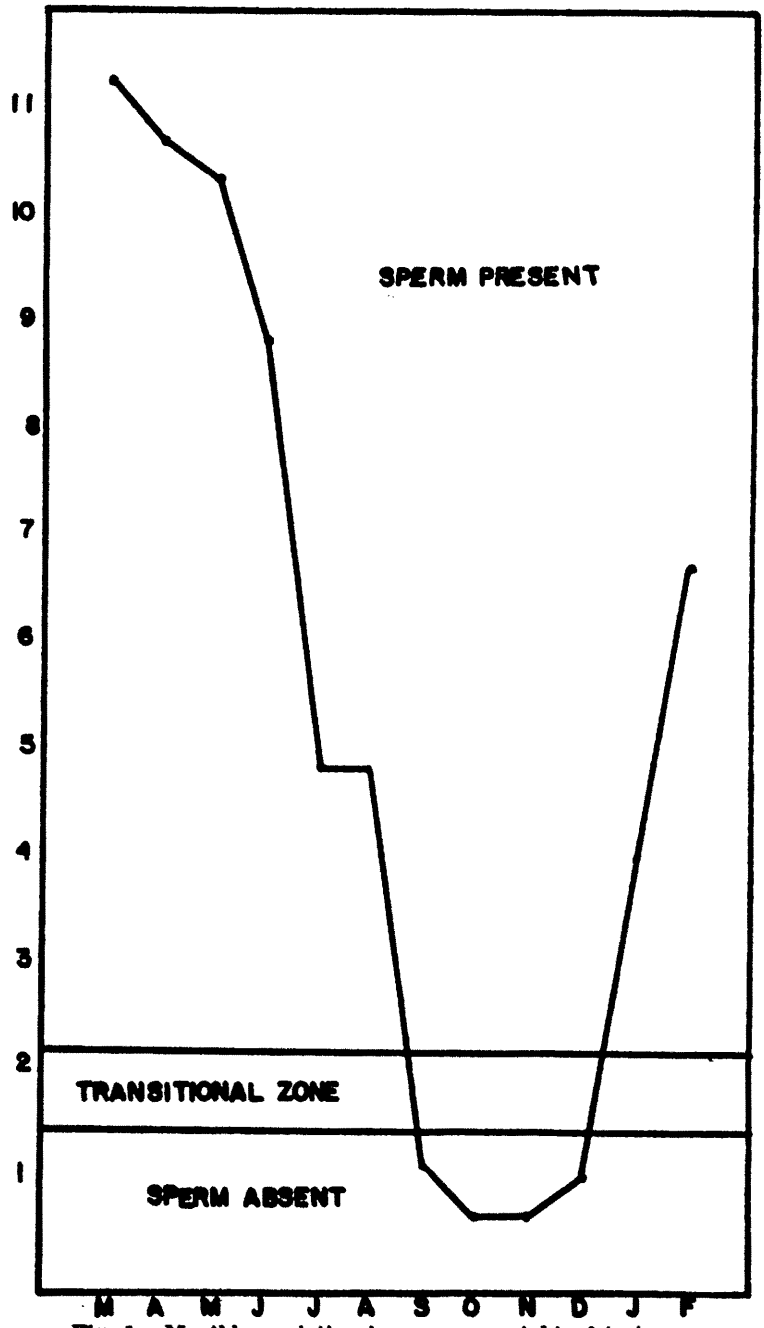

Fig. 1. Monthly variation in average weight of testes.

slowly in weight until June and decrease rapidly between June and July. There was only a minor difference between the weights obtained in July and August. From then until a minimum was reached in October there was a rapid decline. The weight increased slowly in December but rapidly thereafter.

Spermatozoa were present in the epididymides of all testes more than 2.1 g in weight (Fig. 1). No testis below this weight was found until the latter half of September. Spermatozoa were absent in the epididymides of all testes less than 1.4 g in weight.

Fig. 1 shows an area of overlap in which some of the epididymides had spermatozoa and some did not. Of the total variation however, the transitional zone was small, 1.4 - 2.1 g, a range of only 0.7 g. October was the only month in which no males collected had spermatozoa in the epididymis. One male in late November and three males in December did have spermatozoa. All the epididymides from males collected in January contained spermatozoa. Hamilton (1940) observed that in New York living sperms could be observed in the testes of a majority of males well into September, but usually by the middle of this month the testes had commenced to withdraw into the abdominal cavity and spermatogenesis had stopped.

Trippensee (1936) said "the size and position of the testes seem to be directly correlated with the breeding conditions of the animals. Although the size of the testes seems to be constant for different seasons, their position is somewhat variable and they move back and forth from a position within the body cavity through an opening into the scrotum. The testes are in the scrotum when the animal is in breeding condition, although sometimes one testis is found partly in the body cavity when the animal is handled." Schwartz (1942) found that in any season the testes may be withdrawn from the scrotum while the rabbit is being handled at the trap or as a result of shock received when the animal is shot. He concluded that the presence of the testes in the scrotum is not a reliable indication of sexual activity. Evidence in this study supports both Trippensee's and Schwartz's findings. The shock received by the animal when shot presumably caused much variation in the position of the testes in relation to the scrotum. During the breeding season, animals were found with both testes withdrawn, others with both descended, and still others with unilateral descent.

CONCLUSIONS

The breeding season of the cottontail rabbit in north-central Oklahoma during the period of study extended from mid-February to early September. The length of the breeding season appeared to be dependent on the condition of the females rather than the males. There was only one month, October, in which all males lacked spermatozoa.

LITERATURE CITED

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