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Autumnal Decimation of Mearns Cottontail, Decatur County, Iowa, 1952

By PAUL D. KLINE AND GEORGE O. HENDRICKSON¹

In summer and early in autumn hunters frequently see many cottontails along roads. When they start to hunt the animals late in autumn, the pursuers express disappointment often at the fewer rabbits, and inquire for causes of the decimation. To obtain better understanding of reasons for autumnal losses investigation was conducted on a 185-acre tract of farm land, Decatur County, Iowa, from July 28 to December 31, 1952. Particularly the losses and causative agents during September and the three following months will be reported.

The cover consisted of corn, 57 acres; pasture, 33 acres; woodland, 31 acres; brushland, 18 acres; alfalfa, 16 acres; red clover, 8 acres; oats and alfalfa, 7 acres; forbs, 11 acres; grass, 3 acres; and garden, 1 acre. Ten acres of the corn were cut and shocked, and the remainder was picked mechanically and by hand. The value of corn as protective cover was reduced greatly by November 15. About two-thirds of the pasture land was grazed closely, and the remainder was ungrazed. Two tall catalpa post-plantings, and trees with undercover bordering two intermittent streams and several gullies, and on an abandoned 80-rod road, were classed as woodland. The brushland, with shrubs, young trees, and undercover, was along fencerows and some gullies, and at field corners. The wild herbs, shrubs and trees were essentially the same as those reported by Hubbard and Hendrickson (1951). Numerous woodchuck burrows of the woods and brushland augmented the protective cover. The alfalfa was mown three times, the last early in September. The red clover, following the harvesting of a nurse crop of oats, grew to a height of about 12 inches by October 1, and was left to stand through autumn. Seven acres of red clover in thin stand were plowed and seeded to oats and alfalfa late in August, which grew to a height of about 3 inches by October 1. Because the wet spring weather delayed field

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operations, chiefly annual forbs took over one small field and furnished protective cover until late in October when cornpicker turning operations flattened most of it. The grass, chiefly of waterways, was lost as protective cover very largely during cornpicking and other heavy farm machine operations. The harvested garden was of little value to cottontails in autumn.

Information concerning the individual rabbits was obtained chiefly through the operation of 37 box traps placed discriminately in or near protective cover, along travel lanes, and at other sites indicating prominent rabbit activity. The animals were ear-tagged, tail-dyed yellow with picric acid solution, sexed, examined for condition, and measured for ear and hind foot lengths. In all, 140 individual rabbits were caught. With information gained from the captured cottontails a life history table was constructed to show probable dates of birth, numbers of litters and their sizes for the rabbits which may have lived on the area at some time during the breeding season and autumn. From that table and observational data, 123 captured cottontails were considered as residents of the area at sometime during the breeding season and autumn. Of the resident cottontails 44 were recaptured one or more times.

To estimate the total number of cottontails that may have resided on the area from spring into autumn, and of which the captured animals were a sample, the simple proportion, $A/X = B/C$, was used. A represents the number of cottontails first-caught before September 15, B those first-caught before September 15 and recaptured after September 15, C those first-caught after September 15, and X the estimated population. By substitution of values the proportion becomes $44/X = 13/92$, and X is 311 cottontails. The estimated population of cottontails, 311, divided by 123, the sample of all first-caught cottontails, yields 2.53. The ratio, 2.53:1, was used to represent the ratio between the number of resident rabbits and the estimated tagged animals resident at any given date. Thus, the resident number on September 1 was estimated at 284; on October 1, 238; on November 1, 184; December 1, 102, and on January 1, 41 cottontails. A loss of 241 cottontails from the area in the last four months of the year was indicated in the reduction from 284 to 41.

We may express the daily loss of rabbits in the months September through December in this manner. In September the average daily loss was 1.5 rabbits; in October 1.7; in November 2.7; and in December 2.0. A total of 58 dead cottontails was accounted for by several methods. These detected losses by months

were in September, 10; in October, 17; in November, 22; and in December, 9. Trap thefts by predators was assigned to 14 lost, of which 6 each were in September and October, and 2 in November. Traps containing rabbits were rolled over, mauled and chewed by predators until either doors opened or the sides gave way to release the cottontails. From sign raccoons were indicated four times, red fox once, and cat once for trap theft. Farm dogs may have done some of the damage, although observation and sign did not indicate their interference with traps. Hunting took 10 rabbits of which 9 were shot in November and 1 in December. Six parties of bobwhite hunters ignoring cottontails visited the area, 2 parties sought both bobwhites and cottontails, and 2 others were interested only in cottontails.

Observation and sign credited the great horned owl with destroying 5 cottontails. In 29 horned owl pellets cottontail was represented in 69 per cent, ranging from none in October to 85 per cent in September. Sign indicated the loss of 5 rabbits to red fox. In 177 fox scats the frequency occurrence of cottontail averaged 50 per cent, ranging from 28 per cent in September to 88 per cent in December. Probably there were 3 to 4 foxes to a section in the vicinity. In 127 raccoon scats cottontail was seen in 10 per cent, ranging from 8 per cent in September to 50 per cent in December. Forty-one per cent of 29 cat scats contained cottontail, varying from none in September to 100 per cent in November. In 4 striped skunk scats of October 25 per cent had rabbit and none of 10 credited to November showed rabbit evidence. No indication of rabbit was seen in opossum scats. Fifteen red-tailed hawk and barn owl pellets showed no rabbit. Twenty-one cottontails were taken by unrecognizable birds and mammals. Undiagnosible disease and mechanical injuries accounted for 1 loss each. Warbles were found in 19 cottontails, and 1 rabbit death was assigned to warbles.

The drought of September and October, when the precipitation of 1.3 inches was only 18 per cent of the normal 7 inches, withered food and some protective cover to an extent that modified the habits of wildlife considerably. The early killing frost of October 6 greatly decreased the green ground cover. A decrease in numbers of mice probably caused foxes and predatory birds to turn more toward rabbits. Greatly lessened green food forced cottontails to seek corn earlier and more frequently. The lessened value of corn, grasses and forbs as protective cover resulting from drought and early corn harvest operations gave advantage to the predators.

In summary, the autumnal reduction of an estimated population of 284 Mearns cottontails of September 1, 1952 to 41 by January 1, 1953, was studied on an 185-acre tract of farmland in Decatur County, Iowa. For 58 detected losses in trap thefts and in the field, the major losses were assigned to red foxes, raccoons, and great horned owls. Hunters took 10 cottontails. Drought of September and October, early October killing frost, and harvesting operations reduced greatly the food and protective cover values of 79 acres of herbaceous growth. The lessened numbers of mice have caused predators to seek cottontails to a larger than normal extent. The rabbits, seeking food in the 47 acres of picked corn and 10 acres of shocked corn, probably were more frequently and easily preyed on than normally. The protective cover was restricted largely to 49 acres of scattered brushland and under-cover of woods.

Literature Cited

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