

MAJOR FLUCTUATIONS OF SOME ILLINOIS MAMMAL POPULATIONS

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The following notes constitute a partial history of fluctuations of some mammal populations in Illinois. They are often not continuous, nor made on equal bases, but in most cases constitute our only records. They are set down here in the belief that, when others are added in the future, the entire history will aid researchers in discovering specific causes of the fluctuations so as to predict and account for future changes.

NORWAY RAT

Beginning in the year 1934, the writer, while traveling widely in Illinois, recorded the numbers of certain animals seen crushed on the highway. During the course of the years up to 1939, he saw only one, two, or three rats crushed annually, usually only in cities.

In 1937 Starrett (1938) recorded only one rat per 1,255 miles in 7,529 miles of travel (3,229 during summer and early fall) within 80 miles of Peoria.

During 1939, however, the number seen crushed on highways increased

suddenly. Two or three were seen during the course of most 200-mile trips. An average of one rat per 26 miles was seen during the course of the summer and fall over most of the state (fig. 1). The next year, 1940, was similar. An average of one rat per 34 miles was observed in 1,943 miles of travel. In 1941 the number seen fell to that of preceding normal years. Only two were seen in about 2,000 miles. The peak of greatest abundance had passed.

No observations were made during 1943, 1944, or 1945, but all farm advisers of 10 widely scattered county farm bureaus which were contacted state that rats were not unusually numerous during those years, though increasing somewhat in a few localities.

The writer's observations were continued early in 1946, records being made on the basis of mileage traveled. This was another year of large rat populations, the observed highway kills being more comparable with those of 1939 and 1940 than with any intermediate years. While

TECHNICAL AND COMMON NAMES OF MAMMALS DISCUSSED

Gray fox
Groundhog
Norway rat
Opossum
Pennsylvania meadowmouse
Prairie meadowmouse
Raccoon
Red fox
Skunk

Urocyon cinereoargenteus (Schr.)
Marmota monax (Linn.)
Rattus norvegicus (Erx.)
Didelphis virginiana Kerr.
Microtus pennsylvanicus (Ord.)
Microtus ochrogaster (Wagn.)
Procyon lotor (Linn.)
Vulpes fulva (Desm.)
Mephitis mephitis (Schr.)

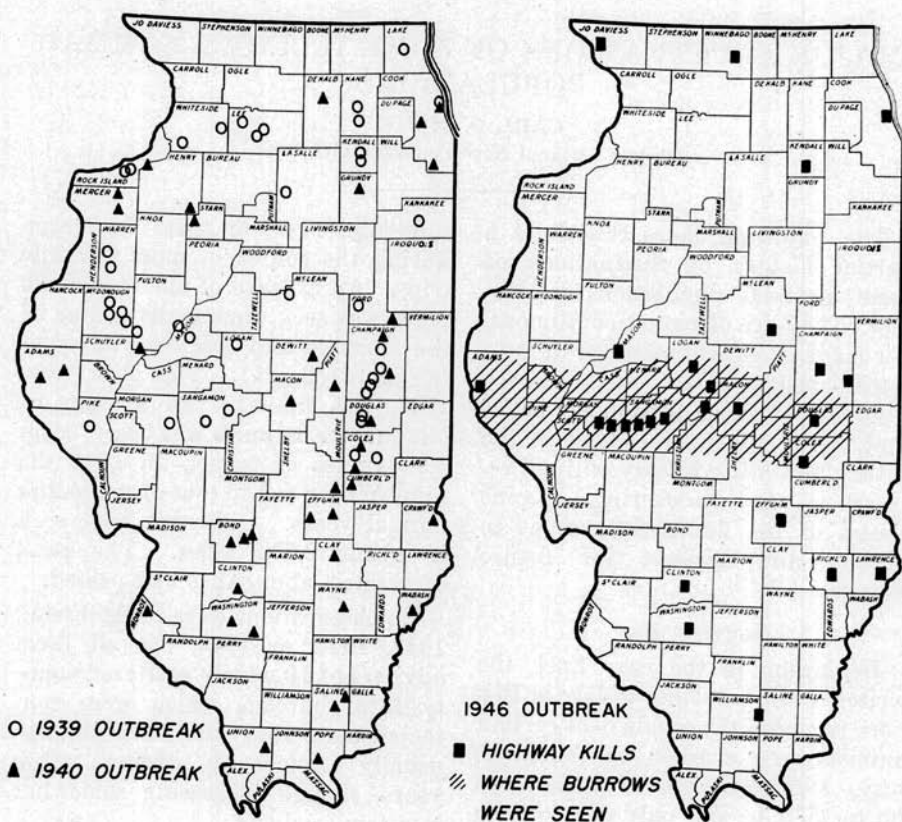


FIG. 1.—Localities where Norway rats or their signs were observed during two outbreaks, one of 1939 and 1940 and the other beginning in 1946. Circles, triangles and rectangles indicate localities where rats were seen dead on highways and streets. The hatched area indicates a zone where the writer observed large numbers of rat burrows alongside or in corn fields during the winter of 1946-47. Without doubt, a more intensive survey would have revealed burrows in a marginal area extending north, south and east of the area, though in much smaller numbers. No observations were made on distribution of burrows during the winters of 1939 and 1940.

traveling 5,726 miles from May 1946 to March 1, 1947, the writer observed 52 rats or one to approximately 110 miles. Because the number of rats observed crushed might depend much upon volume of traffic, comparative notes were made on cats whose number served as a basis. Ninety-eight were found killed, making about one rat to every two cats. During normal rat years, the num-

ber of cats observed crushed is a hundred or more in excess of rats.

Silver (1942) wrote "Their number varies locally from year to year though there is now no known cycle of rat abundance." There are few records of other outbreaks in Illinois.

Zinsser (1935) wrote "Dr. Lantz tells us that in 1903, hordes of rats migrated over several counties in

western Illinois, suddenly appearing when for several years no abnormal numbers had been seen." He adds that heavy damage was caused by rats in the entire surrounding country of farms and villages in the ensuing winter and summer.

GROUNDHOG

The groundhog appears to be on the increase in many parts of Illinois, but the increase is not general. At Lima, Adams County, an orchardist stated that these animals had become very abundant about 1940 but that about 12 years ago, which would be about 1935, "he hardly knew what they were."

Much the same story was given by J. E. Watt, farm adviser at Fulton County, who stated that 25 years ago (1922) when he came to Fulton county, these animals were extremely scarce. Now they are a common problem.

The late W. P. Flint of the Natural History Survey stated that when he came to Illinois in 1918 groundhogs were practically unknown around Springfield and East St. Louis.

In Massac County they have become more numerous in the last 3 years and are now very numerous according to Leonard Devers, Department of Conservation Inspector.

The farm adviser in Carroll County states that groundhogs have become more numerous there during the last three years but that they are still relatively uncommon. Twelve to 15 years ago, he said, they were extremely numerous, then suddenly declined¹ in abundance.

¹ G. C. Oderkirk, federal predator and rodent control agent, says that an intensive campaign was conducted to reduce their number.

The farm adviser of Whiteside County states that these animals are now relatively uncommon there. Neither are they especially numerous in Edgar County according to the county farm adviser.

COON

An attempt to keep running index figures which might measure trends in furbearer populations was begun in 1934, using trapper's reports.² Although the total number of coons caught is so dependent on fluctuations in price, weather, and nature of persons reporting that it reveals but little, the percentage of trappers and furbearers who caught them, i.e. effective coon trappers, kept pace in considerable measure with known changes in coon populations. So did the average number of coons caught per effective trapper. The percentages and averages for each county were weighed according to county size and recorded by the writer (1943). They need not be repeated in detail here. For the 1934-35 season, the percentage-index was 24 and rose rather steadily to 37 during the 1941-42 season. Preliminary examination of 1945-46 data indicates that it continued to rise. A straight unweighted percentage shows the same general trend.

The average-index figure started at 2.6 and rose rather steadily to 3.0. This is, however, not necessarily regarded as accurate as the percentage-index figure.

Coon hunters and trappers, and game investigators are generally agreed that throughout Illinois coons are as common or more common this

² These reports were kindly made available by the Honorable Livingston E. Osborne, Director of the Illinois State Department of Conservation, and preceding directors.

(1946-47) season as they have ever seen them. In Jo Daviess County, northwestern Illinois, Leroy Felderman, game investigator, stated that coon numbers increased markedly in the last three years and that an increase was noticeable there as long as 8 years ago. They are now seen in places where they were absent before.

A hunter in Alexander County, southwestern Illinois, stated that coons were scarce during 1917, of moderate numbers from 1930 to 1936, then became increasingly abundant, and are now more common than ever before within his memory. Their tracks are so numerous in cornfields that it looks as if a herd of hogs had been in them.

John C. Knight, Jr., reported in 1947 that his father had observed the territory around Yorkville, northeastern Illinois, for many years and stated that coon populations had never been as high as during this year. Coons there appeared to increase in numbers about four years ago.

Brown and Yeager (1943) state that many experienced furtakers were emphatic in their opinions that up to 1939 a decrease in coon populations had been steady and rapid during the preceding 5 to 10 years. During 1941 and 1942 when their report was being prepared for publication, they recorded that they had numerous and apparently reliable reports of increases in coon numbers, noticeable particularly in 1941 and 1942.

A hunter in Adams County, on the far western edge of Illinois, states that coons also became numerous there four years ago. Lyman

Bunting, president of the coon-hunters association in Edwards County on the southeastern quarter of Illinois, stated that in 1942 or 1943 an abrupt natural increase became very apparent and that coons now exceed any previous number that he has known. Other similar statements are at hand from Rock Island, Will, and Mason counties. They generally set the beginning of noticeable increase for about 10 years ago and the beginning of a decided increase three or four years ago. This fits the trend indicated by the percentage-index and average-index described above. There is general agreement among the various opinions and indices that the rise began 10 to 12 years ago and has continued upward.

This increase cannot be attributed, for any practical purpose, to artificial coon propagation. It is widespread in eastern United States.

POSSUM

It is reasonable to suppose that if possum populations vary consistently some of the trend will be reflected in the percentage of trappers and fur-hunters taking them, as possums are caught in much the same time, place, and manner as coons are caught. Percentage-index figures recorded by the writer (1943) for the same years as for coons show, not a gradual rise from 1934 as for the latter animals, but a high of 74 which fell to a low of 60 for the 1937-38 season, then rose gradually to 68 during the 1939-40 season and dropped gradually to 61 during the 1941-42 season. The average-index figures showed the same general trend during those years. Considering the strong steady rise of the figures for coons

as a base for comparison, the possum figures undulated clearly with reference to them.

The general impression of the writer is that possums are now again numerous. During previous years of travel it was unusual to see a possum crushed on the highway more than once in some 1000 miles of travel. During the summer of 1946 and the following winter until March 1, 27 possums were observed for each 3.6 cats. Starrett (1938) recorded only two in 7529 miles of travel within 80 miles of Peoria during 1937.

A coon hunter in Edwards County and another in Mason County stated that possums are more numerous than usual there. They began to increase in numbers about 1942 or 1943. A game investigator in Mason County stated that possum populations were common for a while, then became uncommon, and are now on the upswing. He did not remember the years of abundance and scarcity. A trapper in Will County stated that their numbers were low three or four years ago but that they are common now.

The game investigator in Jo Daviess County, Leroy Felderman, stated that a marked increase in possum populations became apparent three years ago and that they are common now. In Massac County possums are now common, according to a coon hunter there, their numbers having increased since a low three or four years ago.

Brown and Yeager (1943) wrote that, in general, fur-takers who were interviewed reported a steady increase in possum numbers from 1936 to 1939 when populations seemed to

level off or decrease. This is paralleled exactly by index figures cited above.

At this date we have no parallel index figures worked out from trappers data since 1942. The "lows" spoken of by the above observers appear to link up with the low of 61 for the 1941-42 data from trappers reports. All indicate a fairly regular undulation of population levels for the years in question.

RED FOX

According to a correspondent, John C. Knight, his father, keenly interested in fox hunting by tracking, found only few fox tracks after a long search in Kendall County seven or eight years ago. Now he finds such tracks without much search and has trouble following them because of the numerous other tracks.

According to a fox-runner, red fox numbers were lowest about 10 years ago in Massac County and are more common now than at any time within his memory. They are so common that, whereas he had to drive as much as 10 miles during the low population period to give his dogs a good trail, a half mile is now sufficient, and he can frequently start the dogs at his door. The numbers are so great that several dogs may start foxes, thus splitting the dog pack and making for a poor chase.

Leroy Felderman stated that the numbers of red fox were lowest in Jo Daviess County about 15 years ago and have now reached their all time high within his memory.

In Rock Island County, a coon hunter reported that they were lowest in number about 10 years ago

and have reached an all time high in his 35 years of experience.

In Adams and Mason counties, farmers stated that foxes have continued to increase in number for quite a few years and are now very common.

Percentage-index figures derived from trapper's reports for red and gray foxes combined show a general increase from 14 for the 1934-35 season to 16 for the 1941-42 season, last for which we calculated returns. There were, in this general upward trend, some fluctuations which may or may not indicate a corresponding minor change in actual fox populations. One of these was a drop back to 14 for the 1938-39 season and the other was a sudden rise to 18 for the 1940-41 season. The general trend, however, was upward and began 12 years ago.

According to Brown and Yeager (1943), of a total of 165 expressions of opinion tabulated by them up to 1939, by far the greater number (about 70 percent) believed that foxes had recently (1938 and 1939) increased in numbers. The remainder of opinion was equally divided between no change and decrease.

Index figures for both species of foxes by the writer (1943) agree with these opinions.

This increase is not by any means confined to Illinois but is widespread in eastern United States.

GRAY FOX

Statements by trappers and fox-runners indicate that gray fox numbers generally fluctuate in about the same way red foxes do. Separation of the figures for grays is difficult but would be desirable. Any large changes in their numbers are com-

monly reflected in their appearance and disappearance in areas which are generally not too suitable for them. During the present (1946-47) season they are more frequently reported from well out in the prairie sections of Illinois.

Brown and Yeager (1943) were fortunately able to obtain separate data on gray foxes. These indicate strongly that this species was on the increase preceding and during the 1938-39 and 1939-40 trapping seasons. Seventy-five percent of 80 trappers interviewed believed that gray foxes had increased. Only 14 percent believed that they had decreased in numbers and 11 percent that the numbers had not changed essentially.

John C. Knight, Jr., reports that his father had up to 1940 gotten only two gray foxes in many years of hunting and trapping in Kendall County, but since then has gotten ten. The grays are now present in most of the wooded stream valleys around Yorkville, Kendall County, according to Knight.

Leroy Felderman stated that grays were now present in prairie sections in northwestern counties in Illinois where they were previously limited to the rougher more wooded sections. Their numbers had increased along with those of red foxes.

A fox runner in Massac County stated that both gray fox numbers and red fox numbers had increased beginning about ten years ago.

SKUNK

Highway kills as described for rats and possums indicate relatively large numbers of skunks during the 1946-47 season. Seven were observed in 5,726 miles traveled from

May 1946 to March 1, 1947. This equals one skunk per 818 miles and one per 14 cats. The usual observed kill is one or two in several thousand miles and several hundred cats.

Lyman Bunting of Edwards County stated that 5 to 7 years ago skunks were dying of disease there but their numbers have since increased and they may be seen frequently.

Trapper's data converted for skunks as for coons, possums, etc. by the writer (1943) do not, as for some of the other furbearers, have sufficient parallel data for comparison. They indicate a general decline from 1934 to 1942. For the two years in particular question, they agree with trappers opinions described by Brown and Yeager (1943). They report a 33 percent decrease in the total number of skunks caught during the 1939-40 season as compared with the previous season and believe that this reflects a substantial decrease in actual populations. Their tabulation of opinions by fur takers regarding changes of population shows that essentially equal numbers believed that an increase or decrease had taken place, and that a small though substantial number thought that the population had remained about the same. These data indicate a general downward decline until about 1942, then a gradual rise.

PRAIRIE MEADOWMOUSE

Hamilton (1937) found "All available evidence points to a 4-year cycle" of Pennsylvania meadowmouse abundance in northeastern United States. He stated that past periods of great mouse abundance in New York were the winters of 1919-

20, 1923-24, 1927-28, 1931-32 and 1935-36. He added that peaks of future cycles might accordingly be expected in the winters of 1939-40 and 1943-44.

The species of which he wrote only occurs in northern Illinois. It remains to be seen whether or not the cycles described by Hamilton are shared by the prairie meadowmouse whose distribution pattern is more extensive in Illinois.

This latter species did become extremely numerous over much of Illinois by the winter of 1939-40 but, according to R. E. Yeatter, a fellow worker, became abundant again in three years, not four. It then reached another peak of abundance at the end of three more years by the winter of 1945-46.

Prairie meadowmice were particularly abundant in northern and western Illinois during 1946 according to an annual report by Oderkirk (1947) unpublished.

They were more than usually abundant at Champaign during the late winter of 1945 and continued so until at least late fall of 1946. Farmers or farm advisers, again reported them particularly abundant in Fulton County during 1947; in Adams County during 1946 and 1947; in Monroe County during 1946 and 1947; and Sangamon County during 1946. They were also troublesome in one orchard in Lake County during 1946 and early 1947.

Farm advisers in Edwards, Henderson, Massac, Pulaski, and Alexander counties do not find them especially numerous. This is partly because in these counties, not being red-clover or alfalfa producing counties, farmers do not have trouble

with them and partly because the yellow soil areas do not, even during mouse years, have a large population. Meadowmouse numbers in Jo-Daviess County appear to be non-troublesome although the mice may be more numerous than usual where suitable conditions exist for them.

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