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HISTORY AND DISTRIBUTION OF THE HUNGARIAN PARTRIDGE IN OHIO, 1909-1948¹

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Of the many game birds introduced to the North American continent only two, the European or Hungarian partridge, *Perdix perdix*, and the ring-necked pheasant, *Phasianus colchicus*, have been successful thus far. Recent introductions of the chukar partridge, *Alectoris graeca*, also show promise of being successful.

The pros and cons of animal introductions have been discussed in a number of papers. It is definitely true that rabbits in Australia, starlings in America and the mongoose in Hawaii have become pests. But the game birds introduced in North America cannot fairly be classed as pests; they have been welcomed in a number of states and provinces; actually partridges and pheasants have completely altered the hunting picture in many areas, and it is difficult to realize the amount of hunting left if these birds were removed. King (1942), although generally opposed to the introduction of the partridge and the pheasant in America, mentions that probably 90 percent of the upland bird shooting in Oregon is produced by the partridge and pheasant; and the importance of the pheasant as a game bird in the cornbelt needs no elaboration.

Graham (1944) raises four questions to be answered by the ecologist who is trying to evaluate the feasibility and legitimacy of exotics.

The first question is: Will they survive? Our present knowledge of the ecology of any animal is not and may never be so complete that we can accurately predict the results of introductions into new environments.

The second question is whether the new species will spread widely, take the place of a now useful species, or otherwise seriously upset present conditions. The biological implications resulting from such introductions is of great concern to naturalists and wildlife managers.

Ohio was originally 95 percent forested. Today a relatively small percentage of the state is in forest. This drastic change in landscape naturally affects the game of the state. The wild turkey and prairie chicken disappeared; the ruffed grouse became scarce and is presently restricted to southeastern and eastern Ohio; the bobwhite quail expanded its range; and none of the prairie grouse immigrated from the west into the newly created open lands of Ohio.

¹The material here presented was collected while the author, during the years 1947-1949 studied as a wildlife research fellow of the Ohio Cooperative Wildlife Research Unit: The Ohio State University, the Ohio Division of Wildlife, the U. S. Fish and Wildlife Service and the Wildlife Management Institute cooperating.

Sincere appreciation is expressed to Drs. Daniel L. Leedy and Charles A. Dambach for guidance and advice; to Drs. George A. Petrides and Eugene H. Dustman for the stimulation of discussions; also my sincere thanks to the agencies making the full study possible.

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The bobwhite quail is close to its northern limit in Ohio; it has never consistently occurred in large numbers in this state, and it has been protected from hunting since 1912.

As no native game bird was left, and as no upland game birds voluntarily moved into the newly created habitat in western and northwestern Ohio (except for the bobwhite quail which does not thrive too well there), the importation and release of pheasants and partridges must be considered a morally legal, economically sound and practical procedure.

The third question posed by Graham is whether the new species is more valuable than a native species now available. This question has already been answered above; there was no native game bird present in numbers in the habitat in which introduction of partridges was tried.

The fourth question to be answered is whether the introduced species can maintain itself successfully, or will require special care. In Ohio, the partridge thrived well for a number of years, but was very low in numbers by 1949. It does not look as if it is the low of a cycle; it looks as if the bird was gradually disappearing from many areas. Only the future can give the answer here.

LIBERATIONS

The first introductions of partridges into Ohio took place about 1909. Between 1909 and 1916 a total of approximately 2000 birds were released in almost every county of the state; World War I put a stop to the importations, but again from 1924 until 1930 new shipments of partridges were received, totalling about 7000 birds. These birds were liberated in all but 14 unglaciated hill counties (Hicks, 1935).

The distribution of the partridge in Ohio as of 1930 is shown in figure 1.

From 1932-1940 partridges were again purchased and planted in northwestern and central western Ohio, this time totalling 8420 birds.

According to the information in the files of the Ohio Division of Wildlife the following numbers of partridges were liberated during the period 1932-1940:

1932	100 birds released
1933	132 birds released
1934	none
1935	746 birds released
1936	none
1937	1383 birds released
1938	1403 birds released
1939	2686 birds released
1940	1970 birds released
<hr/>	
1932-1940	8420 partridges released

As to the expenses involved in the importation of Hungarian partridges, the correspondence dealing with the matter has been checked in the files of the Ohio Division of Wildlife. Unfortunately not all bills and letters are left, but a reasonable estimate of the amounts involved and not accounted for can be had by comparison with figures for the first introductions of partridges in Pennsylvania (Gerstell, 1940).

From 1909-1916 and from 1924-1930 a total of about 9000 partridges were imported from Europe. The price per pair seems to have been about \$7.50, making a total of \$33,750.00. The payment for the 2686 birds received in 1939 was \$8,997.00, and the payment for the other partridges received seems to have been about \$6.75 per pair, for the remaining 5734 birds totalling \$19,352.25.

The total sum paid for the 17,420 partridges released by the Ohio Division of Wildlife is estimated at \$62,100.

According to the correspondence concerning the shipments in the late thirties it appears that the birds imported came from Czechoslovakia.

INCREASE AND DECREASE

Few data are available about the early results of partridge liberations in Ohio. On the basis of fragmentary information an attempt will be made to reconstruct the pattern of increase, attained maximum and decrease.

Apparently the early plantings attained a good foothold in certain areas. Only a few years after the 1915-plantings in northwestern Ohio, partridges shifted in 1916 or 1917 over the border to southern Michigan where they colonized Lenawee County (Yeatter, 1934).

In all of the eastern and southern parts of the state the liberations seem to have been failures. Trautman (1940) mentions liberations of partridges in the area around Buckeye Lake in 1915, but this experiment was a failure. Another experimental release of 15 pairs of partridges on a postglacial lake bed in the same region seemed successful for a couple of years but failed eventually. Hicks (1933)

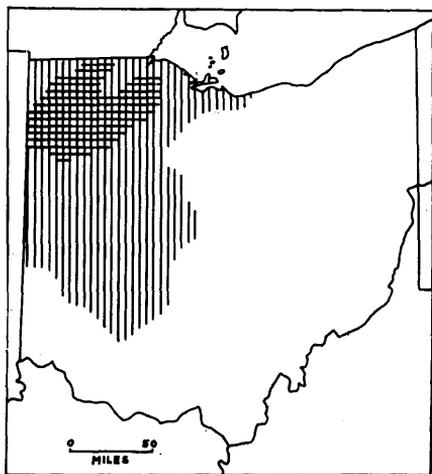


Figure 1

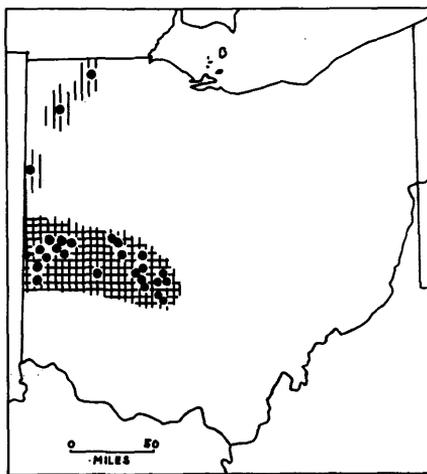


Figure 2

FIGURE 1. Distribution of the Hungarian partridge in Ohio in 1930, modified after distribution map by Hicks. Highest concentration (in the former Lake Maumee area) is indicated by cross hatching.

FIGURE 2. Distribution of the Hungarian partridge in Ohio by 1948. Dots indicate recorded coveys.

mentions the failure of an introduction of 24 birds in Cherry Valley Township, Ashtabula County, in 1930; two broods were raised in 1930, one nest was found in 1931, but no trace was found of the birds in 1932.

Partridges established themselves during the twenties, mainly on the lacustrine limestone soils of former Lake Maumee, and in fairly good numbers on the glacial limestone soils of western Ohio, except in the southern part of this area.

The peak of population density seems to have been reached somewhere around 1930 or in the early thirties. Reports of decrease began in the latter half of the thirties.

The highest partridge populations were found in northwestern Ohio, namely in the lake bed counties: Henry, Wood, Defiance, Paulding, Fulton, Van Wert, Allen, Hancock, Putnam, and Lucas. In this area the partridge, to about 1935, averaged 25 or more birds per square mile (Hicks, 1935).

The partridge was considered common to abundant when populations reached that density. According to Old World standards, in the partridge's native habitat, this is a very low population. Data from 84 Danish farms and estates (Westerskov, 1949a) in 1945 gave an average of 21 pairs per square mile in spring; the resultant

fall population would number 200 in a year of good production. For the very best partridge habitat, 400 partridges per square mile has been recorded. On the well-managed partridge beats in England the partridge population is higher than in Denmark. Maxwell's figures (1911) indicate a maximum kill of one bird per 2.3 acres during the best years, or 278 birds per square mile, corresponding to about 600 birds per square mile in the fall, based upon an average harvest of 55 percent as shown for English estates by Middleton (1935).

Some data are available on the partridge population in Ohio in the late thirties.

The partridge harvest by farmers and residents in 1937 in 15 northwestern counties was estimated at 10,098 birds (Hicks, 1939c).

During 1938 fall roadside counts showed an average of 27 partridges per 1000 miles of auto travel (Hicks, 1939a) and the estimated partridge harvest by farm residents for 1938 was 24,836 birds in 31 counties (Hicks, 1939d).

In the fall survey conducted in 1939, 42 partridges were seen during 62 man-days, or 15 partridges per 1000 miles of auto travel (Hicks, 1939b). The estimated partridge harvest in 12 counties that year was 6,434 birds (Hicks, 1941).

In 1940 the number of partridges had decreased to 6 per 1000 miles of auto travel, (Hicks and Leedy, 1940) and in 1941 to 1.3 per 1000 miles of auto travel (Hicks *et al.*, 1941).

The war put a sudden stop to these surveys.

In 1946 not a single partridge was observed during the summer in 56 man-days in four counties, whereas in previous years the numbers of partridges observed were as follows: 1938, 18; 1939, 11; 1940, 15. (Leedy, 1946).

In the summer of 1947 two partridges were seen in 19 man-days, covering 1358 miles (Leedy, 1947a). Not a single partridge was seen in September 1947 during a survey (conducted morning and evening) covering 1864 miles (Leedy, 1947b) or during the 1948 summer and fall surveys (Leedy, 1948a, 1948b).

All records obtained during my field work and from questionnaires and reports during 1947 and 1948 are shown in Fig. 2. A total of 26 partridge coveys were located. It will be seen that the bird had disappeared from most of its former range in northwestern Ohio and around 1947-48 most of the birds remaining in the state were found in the counties extending westward from Columbus towards the Indiana line, mainly in Madison, Fayette, Champaign, Clark, Miami and Darke. Scattered birds were found, however, here and there in the formerly inhabited range, indicating that small "pockets" of birds still existed. These birds under favourable breeding conditions may serve as a reservoir in bringing the partridge back as an important game bird in Ohio, but it is rather doubtful.

From the available data, the peak of the partridge population seems to have been somewhere in the early thirties. The population density was highest in the Lake Maumee area. The only year for which estimated population densities are given for the major part of the partridge range is 1939. In the lake bed counties the number of partridges varied between 1.1 and 34.8, with an average of 14 birds per square mile. For the remaining number of counties studied, the number of birds estimated per square mile varied between 0.01 and 16.9, the average being 5.6 birds per square mile.

The total number of partridges for the counties discussed (Hicks, 1939d) is estimated to have been slightly in excess of 110,000 birds.

A total of 24,836 partridges was estimated to have been bagged by the farmer-hunters in the northwestern and western counties in 1938 (Hicks, 1939d), including all but the three southernmost partridge counties, where the partridge population, however, was very low. For the whole partridge range in Ohio, the number of partridges killed by farmer-hunters, in 1938, may be estimated at 24,900 birds. If we assume that about half of the hunters in the field are city-hunters, and that their kill amounts to about the same as the kill by the farmers, the total estimated kill would amount to about 50,000 partridges. Long established shooting records

from England (Middleton, 1935) indicate an average kill of 55 percent of the population. Figuring on a 50 percent kill, a total of 100,000 partridges should have been found at the beginning of the hunting season, which corresponds closely with the comparative figures for population density.

An interesting parallel with the Ohio decline can be had by a comparison of the kill estimates from Indiana and the gradual decline figures for Ohio. The Indiana data supplement the Ohio figures, and as the partridge inhabited area is of about the same size in the two adjoining states (the partridge populations actually

TABLE 1

Comparative data for the kill of partridges in Indiana (Barnes, in litt.) and Ohio. Figures indicate estimated number of birds killed.

YEAR	INDIANA	OHIO
1940	47,457	42,250
1941	34,900	37,000
1942	33,019	31,750
1943	26,436	26,500
1944	17,384	21,250
1945	15,256	16,000
1946	15,677	10,750
1947	10,163	—

TABLE 2

Open seasons on the partridge in Ohio (Dambach, 1948). Only years with changes from the foregoing are listed.

YEAR OF LAW	BAG LIMIT	OPEN SEASON	LENGTH OF OPEN SEASON
1917	—	Nov. 15–Dec. 4	20 days
1919	6	Nov. 15–Nov. 25	11 days
1931	4	Nov. 15–Nov. 25	11 days
1938	4	Nov. 15–Nov. 30	16 days
1939	4	Nov. 8–Nov. 30	23 days
1940	4	Nov. 15–Nov. 30	16 days
1942	4	Nov. 20–Dec. 5	16 days
1943	4	Nov. 19–Dec. 4	16 days
1944	4	Nov. 17–Dec. 2	16 days
1946	2	Nov. 15–Nov. 30	16 days
1947	—	Protected	
1948	—	Protected	

merge into one another), the striking similarity might be said to be more than coincidental and substantiates the Ohio figures.

The estimated kills of partridges in Indiana (Wm. B. Barnes, *in litt.*, 11.24.1948) and Ohio are shown in table 1.

The seasons and bag limits for partridges in Ohio are shown in table 2. It will be seen that partridge hunting was begun in 1917, only eight years after the first introductions, indicating a rapid increase in numbers during these first years.

SUMMARY

1. Introduction of the Hungarian partridge into Ohio was justified as no native game bird was found in any numbers in the new habitat created when forest lands were converted to croplands.

2. Between 1909 and 1940 a total of 17,420 partridges were imported from Europe (Czechoslovakia) and were released in all parts of the state. The total cost of the birds was \$62,100.

3. Partridges increased in numbers in western and northwestern Ohio up till about 1937-40 when a rapid decline began. At its peak in the thirties the fall population numbered about 100,000 birds.

4. The decline in the Ohio partridge population seems to be general and not a cyclic low.

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