

OHIO'S STATUS AS A GAME AND FUR PRODUCING STATE

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That Ohio is a great agricultural and industrial State and also ranks high in the value of minerals produced, particularly in coal, clay products, limestone, salt, gypsum, sand and gravel, are well known facts. That Ohio ranks high as a game and fur producing State, is known by relatively few people, even within the State. Thinking that some information on game and fur production would be of interest to the readers of the Ohio Journal of Science, the present article was prepared.

HUNTING PRESSURE IN OHIO

Ohio has an area of approximately 41,000 square miles and ranks 35th among the states in size. Nearly seven and one-half million people live within the State and, of these residents, about one in seven hunts or fishes or does both (Leedy and Dambach, 1948).

In a detailed study of game and wild fur production and utilization throughout the United States, Miller and Powell (1942) calculated that there were only 51 acres of potential huntable area per Ohio hunting license holder in 1935. In these calculations approximately 19.5 percent reduction in total land area was allowed for urban areas, highways, railroad rights-of-way, farmsteads, state game refuges and Army reservations on which public hunting was prohibited by law. No allowance was made for lands not available to hunters because they were posted by private landowners nor were the hunters, who hunted legally or illegally without licenses, included. It was pointed out that, of the estimated 20,996,911 acres of potential huntable land, 90.6 percent was privately owned and that a like percentage of this land was devoted to agriculture.

As one drives through the rich, agricultural area of western Ohio during March or early April he finds that more than one-third of the area is practically devoid of cover and includes plowed ground, soy bean stubble left after the beans have been combined and corn which has been cut and removed from the fields. In addition, many of the pastures and pastured woodlots provide but a minimum of cover.

The lush cover, available for farm game in the summer, has been reduced by the harvesting of hay and grains, further reduced by the clipping of grain stubble, fall and spring plowing, by winter winds, rain and snow and by the mowing and burning of ditch banks and fence rows until by April, with so little cover remaining, one wonders how game can survive in any considerable numbers at all.

It is likely, therefore, that the areas hunted were subjected to a hunting pressure considerably in excess of one hunter per 51 huntable acres in 1935 when the average ratio for the United States was estimated by Miller and Powell (1942) to be one hunter per 277 acres. At that time (1935) only New Jersey, Pennsylvania and New York, with hunter-acre ratios of 1 : 34, 1 : 39 and 1 : 47 exceeded Ohio in hunting pressures. In more recent years Dambach (1948) calculated a ratio of hunting licenses to huntable acres in Ohio of 1 : 30. If non-licensed hunters had been included, the ratio would have been increased still more.

¹Most of the data upon which this paper is based were collected while the writer was Leader, The Ohio Wildlife Research Unit, Ohio State University, Columbus 10, Ohio: The Ohio Division of Conservation, The Ohio State University, The U. S. Fish and Wildlife Service and The Wildlife Management Institute cooperating.

OHIO HUNTER PREFERENCES AND HUNTING PRESSURE
ACCORDING TO SPECIES

Following the 1946 and the 1947 hunting seasons the Ohio Division of Conservation and Natural Resources and the Ohio Wildlife Research Unit contacted, through questionnaires, samples of Ohio hunters in order to learn more about hunter preferences, wildlife economics and the game kill (Leedy, 1947, 1948a). These surveys showed that, in 1946, for every 100 hunters who indicated a preference for hunting pheasants, 58 preferred rabbit hunting, 21 preferred gray squirrels, 14 preferred raccoons and 11 preferred fox squirrels; and that, in 1947, regardless of preferences, 81 percent of the hunters hunted cottontails, 70 percent hunted pheasants, 48 percent hunted fox squirrels, 31 percent hunted gray squirrels and 12 percent hunted raccoons.

It is probable that hunter preferences for certain species are determined largely by the abundance and distribution of the game species and the ease with which they may be hunted. In spite of the fact that pheasants are not as abundant or as widespread in Ohio as rabbits, however, these exotic birds are a preferred game species and thousands of hunters travel to favorite bird counties in the north-western part of the State to hunt them. On the basis of questionnaires returned by Ohio hunters following the 1947 season, approximately 16 percent of the license holders hunt or trap fur-bearing animals. The raccoon is the most popular species for the night hunters and muskrats provide most of the trapping. The number of Ohio hunters engaging in deer hunting within the State more than doubled from 1947 to 1948. During the latter year slightly less than 23,000 deer-hunting permits were issued (Chapman, 1949a). The number of Ohio grouse hunters is also increasing.

Having seen something of the hunting pressure in Ohio, the preferences of hunters for various species and the scarcity of cover, let us see how Ohio game and fur production compares with that of other States.

GAME AND FUR PRODUCTION IN OHIO AND OTHER STATES

A comparison of the numbers of game and fur animals taken in the various states can be made only with the appreciation that the kill data, if available at all, vary in completeness and accuracy from state to state and from species to species. Most state-wide kill figures are based upon questionnaires returned by samples of hunters contacted by game departments or upon the estimates of game department field men. The take of fur is often based upon reports of licensed fur buyers and may not represent the total harvest.

Considerable progress has been made in wildlife bookkeeping during the last decade through the cooperation of hunters and State and Federal agencies, especially with respect to the take of big game, waterfowl and furbearers. There is still much room for improvement, however, particularly concerning the kill of small game.

In September, 1948, a questionnaire and an explanatory letter were sent to each of the 48 State game departments in an attempt to obtain some information as to the kill of various game species, the number of people engaged in big game hunting as compared with small game hunting and other items of interest. The response of the State game officials in filling out and returning the questionnaires was excellent and the writer expresses his thanks for their cooperation. Much of the information, thus obtained, was summarized for presentation at the 14th North American Wildlife Conference (Leedy, 1949).

The remaining data presented here on the game kill by states are necessarily incomplete and must be considered for what they are—the best estimates available. It should also be remembered that the take of game and fur-bearing animals is not a true index of actual populations. Weather conditions, the number of hunters and trappers per unit of area, hunting regulations and other factors affect the relative percentage of a game population that is harvested by hunters.

TABLE I

STATISTICS, BY STATES, OF HUNTABLE AREAS, LICENSE SALES AND TAKE OF SELECTED GAME SPECIES.

STATES	ESTIMATED POTENTIAL HUNTABLE AREAS IN ACRES ¹	RESIDENT AND NON-RESIDENT HUNTING LICENSES SOLD DURING THE FISCAL YEAR ENDING JUNE 30, 1947 ²	ESTIMATED KILL OF SELECTED SPECIES DURING THE 1946 SEASON			
			Cotton- tail Rabbit	Fox Squirrel	Gray Squirrel	Ring- necked Pheasant
Alabama.....	29,359,934	203,097	500,000	3,000	120,000	.....
Arizona.....	48,119,127	49,673	.....	.....	.....	.....
Arkansas.....	30,029,210	193,196	.....	.....	.....	.....
California.....	89,968,393	483,176	.....	.....	.....	.....
Colorado.....	60,150,185	414,274	271,803	.....	.....	256,550
Connecticut.....	2,395,648	49,061	.....	.....	.....	.....
Delaware.....	1,039,046	21,408	59,843	.....	23,777	1,134
Florida.....	29,841,801	101,411	No seas'n	52,215	469,938	.....
Georgia.....	33,806,376	142,253	159,960	.....	.....	.....
Idaho.....	48,196,411	166,357	6,000	.....	.....	400,000
Illinois.....	30,617,802	426,270	.....	.....	.....	.....
Indiana.....	18,963,858	369,125	3,600,000	1,775,000	450,000	70,000
Iowa.....	30,808,824	294,580	1,500,000	300,000	100,000	500,000
Kansas.....	43,381,708	176,538	.....	.....	.....	.....
Kentucky.....	20,815,219	181,670	1,470,656	.....	.....	.....
Louisiana.....	26,388,909	170,396	.....	.....	.....	.....
Maine.....	17,799,593	133,321	.....	.....	16,000	12,000
Maryland.....	5,338,309	118,566	.....	.....	.....	1,125
Massachusetts.....	3,997,935	135,788	73,459	.....	25,277	26,198
Michigan.....	32,394,698	1,046,839	1,306,973	786,002	77,731	904,367
Minnesota.....	43,330,430	495,370	186,055	92,789	231,672	801,372
Missouri.....	38,409,640	332,480	5,000,000	1,203,000	699,000	.....
Mississippi.....	25,989,720	183,279	298,000	86,000	693,000	.....
Montana.....	81,503,329	149,119	.....	.....	.....	.....
Nebraska.....	45,753,279	220,688	500,000	200,000	.....	2,000,000
Nevada.....	62,314,858	25,738	.....	.....	.....	.....
New Hampshire.....	5,341,695	109,175	17,354	.....	25,806	8,827
New Jersey.....	3,920,131	183,107	794,136	.....	152,624	211,460
New Mexico.....	68,550,697	53,041	Not classified as game	.....	.....	4,000
New York.....	26,527,851	826,774	304,524	.....	144,673	71,258
North Carolina.....	26,581,678	207,904	1,513,385	1,000	2,000,000	.....
North Dakota.....	39,193,662	70,036	.....	.....	.....	800,000
Ohio.....	20,996,911	702,510	4,606,000	1,505,000	994,000	868,000
Oklahoma.....	36,499,250	165,431	Non-game	500,000	100,000	.....
Oregon.....	54,524,362	199,020	5,000	.....	2,000	300,000
Pennsylvania.....	24,109,118	843,040	1,524,798	.....	.....	213,384
Rhode Island.....	517,377	13,516	.....	.....	.....	.....
South Carolina.....	17,261,083	171,458	.....	.....	.....	.....
South Dakota.....	41,408,999	210,978	.....	.....	.....	3,550,132
Tennessee.....	21,671,088	246,824	.....	.....	.....	.....
Texas.....	155,061,620	234,720	Non-game	.....	.....	.....
Utah.....	47,543,363	108,041	.....	.....	.....	200,000
Vermont.....	5,258,292	72,248	.....	.....	.....	.....
Virginia.....	22,914,408	285,380	130,000	.....	150,000	.....
Washington.....	35,882,835	381,174	.....	.....	.....	217,000
West Virginia.....	13,823,713	264,683	725,000	285,000	1,625,000	.....
Wisconsin.....	30,469,631	378,941	755,200	375,546	638,474	437,428
Wyoming.....	54,406,415	55,089	Non-game	.....	.....	65,000

¹After Miller and Powell (1942).²Taken from Fish and Wildlife Service News Release dated February 8, 1948, based on data compiled by the Branch of Federal Aid in Wildlife Restoration.

In analyzing the questionnaires returned by 39 State game departments, it was evident that the cottontail rabbit, ring-necked pheasant, gray squirrel and fox squirrel furnished hunting for a high percentage of the country's nimrods. Considered collectively, ducks also provide much hunting, as do the bobwhite quail and the white-tailed deer (Leedy, 1949).

How Ohio ranked in the harvest of the first four species in 1946 is indicated in Table I. These and other species will be considered as follows:

Cottontail rabbit.—Ohio had a calculated kill of 4,606,000 rabbits in 1946, ranking a close second to Missouri, among 24 states reporting. Following Ohio were Indiana, Pennsylvania, North Carolina, Iowa, Kentucky and Michigan.

Fox squirrel.—In the reported take of fox squirrels by 14 states, Indiana ranked first with 1,775,000 followed by Ohio with 1,505,000, Missouri with 1,203,000 and Michigan with 786,000. In each of the other states reporting, less than 500,000 fox squirrels were taken by hunters.

Gray squirrel.—Among 21 states reporting the kill of gray squirrels, Ohio ranked third with 994,000 estimated to have been taken, following North Carolina with 2,000,000 and West Virginia with 1,625,000.

Ring-necked pheasant.—South Dakota, with a reported hunter take of 3,550,132 pheasants and Nebraska, with an estimated kill of 2,000,000 pheasants, far out-ranked any of the other 22 states reporting. Following Nebraska were Michigan with a reported kill of 904,367, Ohio with 868,000, and North Dakota with 800,000.

Waterfowl.—Ohio is not a leading state in the production or kill of waterfowl. For the fiscal year ending June 30, 1947, it ranked 24th among the states in the number of Federal duck stamps purchased, with 37,105 out of a total of more than 2,000,000 issued. Of the 26,000,000 ducks estimated to have been bagged by hunters in the United States in 1946, relatively few were killed in Ohio. Only 409 out of 8,449 Ohio hunters, who returned questionnaires following the 1946 season, had bagged any ducks (Leedy, 1947).

Bob-white quail.—There has been no open season on quail in Ohio since 1913. Quail population trends have apparently fluctuated in about the same manner as they have in Indiana where hunting is permitted. On a nation-wide basis, the harvest of quail probably exceeds that of the ring-necked pheasant. In northern Ohio, the bobwhite is approaching the northern limits of its range where it is subject to sharp population declines resulting from severe winter weather and other factors.

White-tailed deer.—This animal probably ranks within the first ten game species in providing sport to hunters in the United States. According to Chapman (1939) white-tailed deer nearly, if not completely, disappeared from Ohio about 1904 due to persecution and habitat depletion. Through the introduction of deer at the Roosevelt Game Preserve in southeastern Ohio, 1922 to 1930, and the spread of deer into northeastern Ohio from Pennsylvania, the Ohio deer herd recently has increased rapidly in the areas reverting to brush and forest cover. Chapman (1949a) estimated that approximately 1,200 deer were taken in northeastern Ohio in 1947 and nearly 3,000 in 1948. Compilations made by the U. S. Fish and Wildlife Service (1948) of big game populations in 1946 showed Ohio to rank 36th among the 48 states in the estimated number of white-tailed deer present.

Mourning dove.—The mourning dove ranks high among the game birds in total kill in the United States. Approximately two and one-half million were reported taken in eleven of the states having open seasons in 1946. Like the bobwhite, however, the dove, as a game bird in Ohio, was given protection from hunting, 1913 to 1947, and, in the latter year, was designated a song bird (Dambach, 1948). In 1949 it was again classified as a game bird but no hunting was permitted.

Ruffed grouse.—In 1947, approximately nine percent of the hunters returning questionnaires reported that they had hunted grouse during the season (Leedy, 1948a). The reversion of land to brush in eastern Ohio is favorable to an increase in grouse populations. The numbers of this game bird that are harvested will

probably remain relatively small because of its wily nature and the difficulties in hunting it. In 1947, for example, 501 grouse hunters bagged only 246 grouse.

Hungarian partridge.—This exotic game bird after having had legal protection from hunters, 1913 to 1917, was hunted in Ohio until 1947 when it was again protected due to its scarcity. In 1946 less than one percent of Ohio's hunters bagged a Hungarian partridge and the total kill in the State was probably less than that for ruffed grouse (Leedy, 1947). Eighty-one out of 8,449 hunters reporting, however, killed 194 partridges.

The Hungarian partridge, relatively abundant in northwestern Ohio in the early 1930's, has decreased sharply in numbers throughout most of its range in the United States. Many states having an open season on partridges in 1936 had closed the season in 1946 and the kill reported by nine states, the latter year, was 61 percent less than that of 1936. In 1946, Idaho reported an estimated partridge kill of 50,000; Ohio, approximately 16,500; and Indiana, 15,000 (Leedy, 1949).

Other game animals.—There are a few black bears in the hilly forested sections of southern Ohio but not enough to warrant an open season on them. Likewise, Ohio has no jack rabbit, snowshoe hare, black-tailed deer, mule deer, antelope, moose, elk, Valley quail, Gambel quail, white-winged dove, sharp-tailed grouse, prairie chicken or wild turkey hunting. While considerable numbers of jack rabbits, snowshoe hares and others of these species are killed in the United States the totals are far less than for such species as the cottontail rabbit, the fox and gray squirrels and the ring-necked pheasant which Ohio has in relative abundance.

Insufficient information on the kill of rails, gallinules and woodcocks is available to indicate their status in Ohio as compared with other states. Of these three migratory birds, woodcocks are killed in the largest numbers. Two hundred of 5,599 representative Ohio hunters reporting at the close of the 1947 hunting season had killed 567 woodcocks; 76 hunters had killed 95 gallinules and 71 hunters had killed 54 rails (Leedy, 1948b).

Fur animals.—During the ten-year period 1938 to 1947, Ohio fur dealers reported purchasing an average of more than 900,000 pelts annually (Leedy, 1948b). A comparison of the fur crop harvested during the 1946-1947 season with the ten-year average crop, 1938-1947, is shown in Table II. The estimated annual take of fur animals on a nation-wide basis is indicated in Table III.

The figures on fur production in Ohio do not include the pelts shipped directly to out-of-state fur dealers by Ohio hunters and trappers. It is believed (Leedy, 1948b) that at least 10 percent of the total Ohio fur catch is disposed of in this way. On this basis the average annual take of fur animals in Ohio would be approximately one million pelts placing Ohio among the first half dozen States in fur production. In recent years, 1946-1947, the raw furs taken by Ohio hunters and trappers have had an annual value of approximately \$2,000,000.

As evident in Tables II and III, Ohio's common fur bearers are the same species that constitute the bulk of the furs produced in the United States. Louisiana, as shown by Ashbrook (1948), produces far more fur animals than any other State. Among six of the leading fur producing states—Louisiana, Michigan, Minnesota, Ohio, Pennsylvania and Wisconsin—Ohio's ranking in the number of pelts reported taken by species in the 1946-1947 season was as follows: Fox (primarily red and gray), Pennsylvania first, Ohio fifth; mink, Louisiana first, Ohio fifth; muskrat, Louisiana first, Ohio third; opossum, Louisiana first, Ohio second; skunk, Minnesota first, Ohio fifth; and weasel, Minnesota first, Ohio fifth (Ashbrook, 1948).

Due to their relative scarcity, striped skunks have been given protection from hunting and trapping in Ohio in recent years (1947 and 1948 seasons). Raccoons and foxes, on the other hand, have been more abundant than usual.

Among other fur animals that occur in the State are the beaver, the badger and the nutria (*Myogaster coypus*). Chapman (1949b) estimated that there

were from 100 to 125 beavers in Ohio in 1948, mostly in counties bordering Pennsylvania. There is no open season on the beaver in Ohio at present.

There are relatively few badgers in Ohio. Usually less than ten pelts are purchased annually by Ohio fur dealers, although other individuals are prepared by taxidermists or kept alive by their captors because of their scarcity.

The nutria, an exotic also known as South American swamp beaver or coypu, has been reported in Ohio (Petrides and Leedy, 1948) but is apparently found only as stragglers that have escaped from fur farms.

TABLE II

COMPARISON OF THE 1946-1947 OHIO FUR CROP WITH THE TEN-YEAR AVERAGE, 1938-1947
(After Leedy 1948b)

SPECIES	NUMBER OF PELTS TAKEN ¹		PERCENTAGE COMPOSITION OF FUR CATCH	
	1938-47 Av.	1947	1938-47 Av.	1947
Red fox.....	9,984	14,592	1.1	1.6
Gray fox.....	6,362	5,009	.7	.6
Mink.....	12,384	14,059	1.4	1.5
Muskrat.....	648,905	698,166	70.8	75.6
Opossum.....	120,866	73,014	13.2	7.9
Raccoon.....	45,469	92,615	5.0	10.0
Skunk.....	61,760	14,914	6.7	1.6
Weasel.....	10,147	11,442	1.1	1.2
Total.....	915,877	923,811	100.0	100.0

¹These figures do not include pelts bought by or shipped directly to out-of-State fur dealers by Ohio hunters and trappers.

TABLE III

ESTIMATED NUMBER OF PELTS PRODUCED ANNUALLY IN THE UNITED STATES¹

Species	Average Annual Production	Species	Average Annual Production
Muskrat.....	20,000,000	Ringtail.....	100,000
Opossum.....	3,000,000	Bobcat.....	40,000
Skunk.....	2,500,000	Badger.....	25,000
Raccoon.....	2,000,000	Nutria.....	20,000
Mink.....	800,000	Otter.....	15,000
Fox (red, gray, kit and swift).....	700,000	Marten.....	5,000
Weasel.....	400,000	Wolf.....	2,500
Coyote.....	300,000	Fisher.....	500
Beaver.....	125,000	Canada lynx.....	25
		Wolverine.....	20

¹Data supplied by Mr. Frank G. Ashbrook, In Charge, Wild Fur Animal Investigations, Fish and Wildlife Service, U. S. Department of the Interior.

The bobcat, Canada lynx, coyote, fisher, marten, otter, ringtail, wolf and wolverine, either not present in Ohio at all or so rare as not to warrant attention here, are taken in relatively small numbers where they still occur in the United States.

SUMMARY

1. Ohio, ranking 35th in size among the states, and with a population of approximately seven and one-half million people, has a hunting pressure exceeded by no more than three or four states.
2. Although well known for its industrial greatness and its agricultural and mineral production, relatively few people know how it ranks as a game and fur producing state.
3. Wildlife bookkeeping methods, although considerably improved in recent years, are still inadequate. The kill figures presented are to be regarded only as estimates but it is believed they are sufficiently accurate to permit rough comparisons of game and fur production in the various states.
4. Limitations of kill figures as indices of game and fur animal populations are indicated.
5. The cottontail rabbit, fox squirrel, gray squirrel and ring-necked pheasant provide hunting for a high percentage of the country's hunters. In 1947, the percentage of Ohio hunters hunting these species was 81, 48, 31 and 70 respectively.
6. Based upon data furnished by State Game Departments in response to a questionnaire, Ohio ranked first in the combined kill of these four species in 1946.
7. According to compilations made by the Branch of Wildlife Research, Fish and Wildlife Service, Ohio ranks among the six leading states in fur production.
8. Muskrats comprise approximately three-fourths of the state's average fur catch which totals nearly a million pelts and which, during recent years, has been worth about two million dollars annually.
9. The six leading fur animals in the United States, considering the number of pelts produced, are the muskrat, opossum, skunk, raccoon, mink, fox (red and gray) and weasel. These are the fur animals most common in Ohio.
10. Thus, while Ohio has a relatively small kill of waterfowl and big game animals and lacks certain game and fur species altogether, it is one of the leading states in the small game and fur animal harvest.

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