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MIGRATORY BIRD SECTION

PERIODIC REPORT NO. 9

July 8, 1974

THE 1973 CANADA GOOSE HARVEST IN ILLINOIS FROM THE MAIL QUESTIONNAIRE SURVEY

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Abstract: A return rate of 48 percent of mail questionnaires yielded 964 Canada goose hunters on which to base harvest projections. Some 47 percent of those responding did not hunt in 1973. The statewide harvest estimate was 29,075 birds, 23,260 from within the quota zone and 5,815 in the remainder of the state. A typical hunter from the survey hunted 1.46 times and had a seasonal success rate of .85. Some 52 percent of the active hunters harvested no geese, 28 percent took one or two birds, 11 percent took three or four geese and one percent took more than 20 geese. Some 27 percent of all goose hunting trips took place in Alexander County followed closely by Williamson and Union Counties with 24 and 20 percent of the trips respectively. The projected harvest from the questionnaire in the quota zone was only 505 above the actual registered harvest. Hunters in the zone were primarily from population centers or local counties led by out-of-state residents and residents from Jackson and Cook counties with 10, 10, and nine percent of hunting efforts respectively. These same hunters lead the quota zone harvest with 30 percent of the total take. Based on the three year study recommendations were for an upstate harvest allotment of 20 percent of total state quota.

INTRODUCTION

This report covers the third year of a statewide Canada goose harvest survey. The purpose of the survey was to assess the magnitude of the goose harvest away from the quota zone counties and thus provide data to aid in the proper allotment of the statewide harvest quota between the quota zone and the remainder of the state. In the initial year, 1971, a mandatory permit was issued to each individual hunter and a report of his goose hunting activities was required. In 1972, a sample was drawn from the 1971 permittees and questionnaires were mailed requesting a report of goose hunting activities. The results of those years are found in Periodic Report Number 3 (Kennedy et al. 1973).

Special thanks are due to George Brakhage, U. S. Fish and Wildlife Service who fostered the mandatory goose permit and subsequent followup procedures.

NATURAL HISTORY SURVEY

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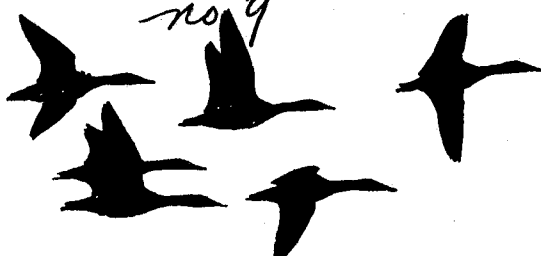
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METHODS AND MATERIAL

Hunter Population

During the 1971 Illinois goose season, each hunter who hunted Canada geese in Illinois was required to possess an Illinois Goose Hunting Permit. At the end of the season, each hunter was required to return the permit to the Illinois Department of Conservation, reporting the counties in which he hunted Canada geese and the number of Canada geese harvested in each county hunted. In the permit returns, 30,230 hunters indicated that they hunted Canada geese in Illinois during the 1971 season. Another 10,205 reported that, although they obtained a permit, they did not hunt geese during the 1971 season. It was assumed, for the present study, that the population of hunters hunting Canada geese in Illinois totaled 40,435 individuals. This population figure was used in all harvest projections made as a result of the present survey. A degree of caution must be exercised in interpreting this harvest projection in that the actual population of Illinois goose hunters may be larger than the assumed population size. This caution is based on the fact that some 60,000 permits were used during the 1971 season, which indicates that approximately 19,500 used permits were not returned at the end of the season. Part of these 19,500 permits represented duplicate permits issued to hunters who needed a second or third permit for one reason or another. In addition, part of the 19,500 permits were never issued to hunters but are not accounted for. As a result, it is not possible to tell what proportion of the 19,500 permits unaccounted for actually represent hunters who did not return their permit.

Sample

During the 1972 Illinois goose season, a harvest survey similar to the present one was conducted. The sample for the 1972 harvest survey consisted of 5,655 individuals. Of these 5,655 individuals, 5,141 were selected from the 30,230 individuals who indicated they had hunted during the 1971 season, while 514 represented the 10,205 individuals who did not hunt during the 1971 season. The sample was selected as a proportional stratified random sample with the population being stratified according to Illinois county of residence. All non-Illinois residents were grouped together to form a single category called "out-of-state" hunters.

Because the 1971 Illinois goose hunting permits were accidentally destroyed after the 1972 sample was selected, the sample for the present harvest survey had to be selected from the individuals who had been included in the 1972 harvest survey. The 1973 sample was selected, by computer, as a proportional stratified random sample of hunters who had been included in the 1972 sample with stratification again being on the basis of county of residence. In total, the 1973 sample consisted of 2,028 individuals. The number of hunters included from each Illinois county and from "out-of-state" is presented in Figure 1.

Since the sample selected for the 1973 survey had been included in the previous sample and since it had been two years since the original permits were completed, there was concern that a large proportion of the hunters in the present sample would not be able to participate in the 1973 harvest survey. Consequently, it was determined that individuals who knew in advance that they would not hunt Canada geese during the 1973 season should be replaced in the sample. Each individual who knew, when he received the harvest survey questionnaire, that he would not hunt during the 1973 Illinois goose season was asked to return the questionnaire immediately. He was then replaced in the sample by another individual who was randomly selected from the same Illinois county of residence or from "out-of-state" Approximately 300 persons were so replaced in the sample with the total sample size

and proportion from each Illinois county and "out-of-state" remaining unchanged from the original sample specifications.

Procedure

A letter¹ was sent to each of the 2,028 sample members on October 17, 1973. The purpose of the letter was to alert the sample members to the upcoming survey. Included in the letter was a "daily hunting record" on which the hunter was asked to record the date, location, and bag of each of his Canada goose hunting trips during the 1973 season. In addition, he was asked to record the date, location, and bag of all duck hunting trips on which Canada geese were killed. Since this "daily hunting record" constituted the questionnaire for this survey, the sample member was asked to return it at the close of the 1973 Canada goose hunting season.

Upon the close of the 1973 Canada goose hunting season, a card¹ was mailed to each individual in the sample reminding him to return his "daily hunting record". Two weeks later a second reminder card¹ was sent to those sample members who still had not returned their "daily hunting record".

Data Analysis

Information provided by questionnaire respondents was transferred to standard data coding forms. These forms were then machine scored and the data transferred to magnetic tape for the purpose of analysis. The greatest part of the data analysis consisted of preparing descriptive statistics and tables on the sample data. The descriptive information was compiled, for the most part, by computer at Southern Illinois University and is presented in the results section.

The information provided by the respondents was also used to make projections as to the total harvest of Canada geese in Illinois during the 1973 season. Essentially, these projections were arrived at as follows:

1. First, the total harvest reported by the sample was adjusted downward to correct for prestige bias, etc. The U. S. Fish and Wildlife Service recommended correction factor was used.
2. The percentage of the total population of hunters represented in the sample was determined.
3. The adjusted Canada goose harvest for the sample was expanded according to the percentage in step two, to arrive at an estimate of the total Illinois harvest.

Once the statewide harvest projection was known, county harvest projections were made according to the percentage of the sample harvest which were taken in each county (more detailed description of the projection procedures are on file at the Union County Field Office).

RESULTS AND DISCUSSION

Of the 2,028 questionnaires mailed, 964 were returned for a return rate of 48 percent. The number of questionnaires mailed and percent of returns for each county is found in Figure 1.

¹This material on file at the Union County Field Office

Hunter Characteristics and Origin

Of those returning questionnaires, 47 percent or 450 hunters did not hunt in 1973. There were 514 active hunters in 1973 or 53 percent on which to base harvest projections. Some 42 percent of hunters active in 1971 did not hunt in 1972. Of hunters active in 1972 there were 28 percent who did not hunt in 1973. Of the hunters who were not active in 1972 some 10 percent became active again in 1973. These figures seem to suggest that goose hunting is a sporadic activity for some hunters (Kennedy et al., 1973).

The average number of Canada goose hunting trips per individual was 1.46 in 1973. In 1972 the average number of trips was 5.22 but this included duck hunts and is a reflection of different wording in the survey instrument. The 1973 figure is considered the more accurate indication of hunter trips.

Of those who hunted in 1973, 59 percent went three times or less (Table 1). The most frequent number of trips was two by 23.5 percent of the hunters. Fourteen percent of the hunters went more than 10 times.

The sample indicates that 52 percent of active hunters in 1973 took no geese and some 28 percent of the hunters took one or two birds (Table 2). About 11 percent of the hunters took three or four birds and about one percent took more than 20 geese.

Alexander County is the most popular goose hunting county in the state absorbing 27 percent of the 1973 hunting trips reported. Williamson and Union Counties were next with 24 and 20 percent respectively. The quota zone counties together accounted for 74 percent of trips made for goose hunting. Counties which accounted for about two or three percent of the goose hunting trips were Tazewell, Jackson, Lake, Henderson, and Mason (Figure 2). Responses indicated that specific trips for goose hunting took place in 57 counties throughout Illinois (Figure 2). Also, there were 64 counties in which geese were taken on duck hunting trips (Figure 3). Seventy-five counties of the 102 in Illinois had sufficient goose activity to elicit goose hunting trips or to have geese harvested while on duck hunting trips.

The county origin of individuals hunting in the quota zone is found in Table 3. The counties represented are basically the same as in the 1972 survey but with a notable change in use patterns. Hunters from Jackson, Williamson, and Union Counties showed a percentage decrease from 1972. Hunters from the population centers or out-of-state recorded percentage increases in trips to the quota zone. This may be due to a recognition of a relatively poor season on the part of hunters who reside in the quota zone while distant hunters took advantage of more days in the season without regard to local conditions. Hunters from Alexander County increased their trips from 1972 (Table 3). This increase is accounted for by a 36 percent increase in harvest over 1972. The decreasing activity by residents of the other quota zone counties is reflected in a percentage decrease in harvest by these hunters (Table 4).

The harvest in the quota zone is taken primarily by hunters from the population centers and from "out-of-state" (Table 4). Some 72 percent of the 1973 quota zone harvest was taken by residents from 15 counties and "out-of-state" hunters. Residents from the quota zone counties took 25 percent of the harvest in the four counties. Quota zone residents in 1972 took 37 percent of the harvest. "Out-of-state" hunters, as a group, led the 1973 statewide harvest with 15 percent of the sample (Table 5). Jackson county residents who led the statewide harvest in 1972 dropped to the 7th position in 1973.

Specific hunting trips for geese away from the quota zone were equally dis-

tributed throughout the duck season and accounted for 77 percent of these trips. The remaining 23 percent were trips for geese after the duck season closed. These late hunts occurred in 22 counties centered around goose concentration areas such as the quota zone, Hovey Lake (Indiana), Willow Slough (Indiana), Calhoun Division of the Mark Twain NWR, Sangchris Lake and Sanganois Refuge (Figure 4).

In 1973 the number of counties showing goose hunting activity after the duck season closed was 22 (Figure 4). The later fall and later than normal migrations may have accounted for this late season hunter activity. However, this data may suggest an interest in late season goose hunting upstate. This contention is supported by the fact that 34 percent of the harvest upstate was taken after the duck season closed.

Harvest

Questionnaire respondents reported the harvest of 824 Canada geese, 663 (80 percent) from the quota zone and 161 (20 percent) from the remainder of the state. The sample figures from the questionnaire were projected to provide a statewide harvest estimate of 29,075 Canada geese. The projected harvest by county and the percent of total harvest is found in Figure 5. The 95 percent confidence interval on the total projected harvest was 28,528 to 29,632. By percentage of harvest inside and outside the zone, the quota zone projection is 23,260 with an upstate harvest of 5,815. The projections for the quota zone are extremely close to the actual harvest as recorded by the quota zone registration regulations (Table 6).

The 1973 goose season was atypical, both upstate and in the quota zone. Weather was extremely mild and the migration from the Horicon NWR was about 10 days later than usual. The season in the quota zone began November the 19th and ran until January 20, 1974, or 63 days. This was the longest season in recent years. The quota of 24,000 in the zone was not reached by the end of the season framework.

Hunters responding to the questionnaire had a seasonal success rate of .85 compared to .86 in 1971 and .75 in 1972. These ratios are consistent with harvests in the quota zone where the registered harvest for those years was 24,572 in 1971; 15,822 in 1972 and 22,871 in 1973.

The differential pattern for the early and late harvest upstate that was reported from the 1972 survey appears to remain in the 1973 results. Geese taken early (October 20 through November 18) were reported from the Illinois and Mississippi River Valleys, northeastern counties and a substantial block of counties in south central and southeastern Illinois. For the middle (Nov. 19 to Dec. 3) period it appears the harvest was concentrated in central Illinois in a direct route from the Horicon NWR to southern Illinois refuges. Early migrants seem to have a broader route with a noticeable segment arriving from the northeast across the southeastern part of Illinois. This is in agreement with the suggestions of Kennedy and Arthur (1974).

Of the sample harvest of 824 geese, 75 or nine percent, were taken on duck hunting trips (Figure 3). On those trips success from respondents was greater the first 30 days of the seasons than the latter 15. Respondents reported 56 geese during the early period and 19 during the later period.

CONCLUSIONS AND RECOMMENDATIONS

The 1971 goose permit and the 1972 and 1973 questionnaires indicate that Canada goose harvest away from the Southern Illinois quota zone is greater than the 4,000 birds that has recently been allocated for upstate harvest. Under recent state quotas of 28,000 geese the upstate portion amounts to 14.3 percent. During the years of this study the reported percentage for the upstate harvest was 5 percent for 1972 and 20 percent for 1973. The mandatory permit of 1971 showed that 17 percent of the total harvest came from outside the quota zone but in that survey there was no adjustment for reporting biases or non-respondents.

Given the larger number of Canada geese being harvested upstate than quota allotments have previously allowed for, we feel that allotment should become a fixed percentage of the total state quota. The upstate portion should be 20 percent, rounded to the nearest one thousand, of the total state quota. Therefore, under current population levels and a state quota of 28,000 geese the upstate portion would be 5,600 rounded to 6,000 birds. This figure would change proportionally as state quotas are increased or decreased.

In years of high populations and expanding quotas the 20 percent arrangement for upstate seems to have a reasonable margin of error. However, in years of lower populations and decreasing quotas the uncontrolled nature of the upstate harvest becomes critical to overall harvest regulations. The variables of good migration habitat, high numbers of vulnerable young birds, and the attractiveness of the duck season, in some years, could produce a Canada goose harvest in excess of the upstate allotment. Consequently, if in future years, the state quota should fall to 20,000 or below we recommend restrictive measures such as decrease in bag size and/or length of season to maintain the upstate harvest within 20 percent allotment.

In summary for the 1974 season and subsequent years at the current population level the quota zone harvest should be 22,000 geese with 6,000 geese allotted to upstate harvest.

Also the regulation which permits goose hunting beyond the close of duck season apparently offers additional high quality opportunity without adding excess harvest. This type season should be continued but must be monitored in counties adjacent to the quota zone and other concentration areas.

LITERATURE CITED

- Kennedy, D. D., E. Lewis and G. C. Arthur. 1973. The 1972 Canada goose harvest in Illinois from the mail questionnaire survey. Illinois Dept. Conservation, Migratory Bird Sect., Periodic Rpt. No. 2. 17pp.
- _____ and G. C. Arthur. 1974. Subflocks in Canada geese of the Mississippi valley population. Wildl. Soc. Bull., 2(1):8-12.

Table 1. Distribution of hunters who hunted in 1973 by the number of hunting trips.

Number of Hunting Trips	Percent of Hunters
1	21.4
2	23.5
3	14.2
4	8.8
5	5.8
6	3.5
7	3.9
8	2.7
9	1.8
10	0.8
11-15	6.0
16-20	4.5
21-25	1.2
26-30	1.2
31-35	.2
36-40	.2
41-45	.6
Total	100.3

Table 2. Distribution of hunters by seasonal Canada goose bag size during 1973.

Number of Geese Harvested	Percent of Total Hunters
0	.52
1	.17
2	.11
3	.05
4	.06
5	.02
6	.02
7	T
8	.01
9	T
10	T
11-15	.01
16-20	.01
21-25	.01
Total	.99

Table 3. County origin of quota zone hunters in 1973 compared to 1972.

Home County	Percent of Total Hunting Trips in the Quota Zone		Direction of Change from 1972 to 1973
	1972	1973	
Out-of-State	.06	.10	+
Jackson	.17	.10	-
Cook	.07	.09	+
St. Clair	.06	.08	+
Alexander	.03	.06	+
Franklin	.04	.05	+
Madison	.06	.05	-
Johnson	---	.04	+
Williamson	.16	.04	-
Dupage	.02	.03	+
Gallatin	---	.03	+
Marion		.02	+
Peoria	.01	.02	+
Sangamon		.02	+
Union	.05	.02	-
White		.02	+
Will	.02	---	-
Randolph	.02	---	-
Massac	.01	---	-
Tazewell	.01	---	-
Clinton	.01	---	-
All others	<u>.19</u>	<u>.23</u>	+
Total	.99	1.00	

Table 4. Harvest of Canada geese in the quota zone by hunters' county of residence comparing the 1972 and the 1973 season.

Home County	Percent of Quota Zone Harvest		Direction of Change from 1972 to 1973
	1972	1973	
Out-of-State	.08	.16	+
Jackson	.14	.07	-
Cook	.08	.07	-
St. Clair	.06	.07	+
Alexander	.05	.07	+
Williamson	.11	.07	-
Madison	.06	.06	=
Union	.07	.04	-
Peoria	.01	.03	+
Mason	---	.02	
Kane	---	.02	
Piatt	---	.02	
Johnson	---	.02	+
Franklin	.03	.02	-
Dupage	.02	.01	-
Tazewell	.02	.01	-

Table 5. Canada goose harvest by residents of important counties in Illinois and out-of-state hunters in 1973.

Home County	Sample Harvest	Percent of Total State Harvest
Out-of-state	125	.15
Cook	63	.08
Madison	63	.08
St. Clair	57	.07
Williamson	46	.06
Alexander	44	.05
Jackson	42	.05
Union	26	.03
Peoria	24	.03
Mason	19	.02
Franklin	18	.02
Johnson	15	.02
Total		<u>.66</u>

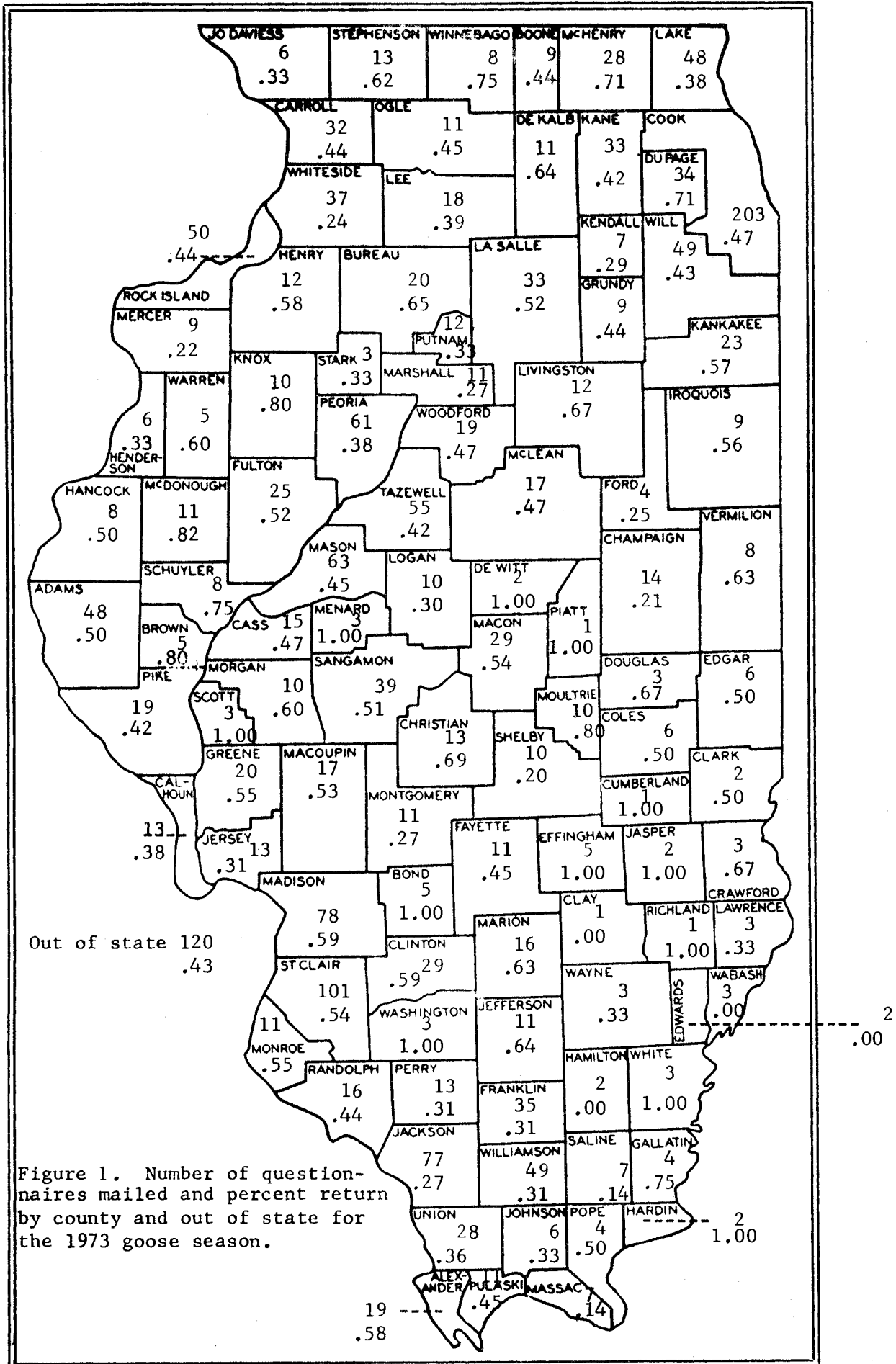
Table 6. A comparison of actual registered harvest in the four county quota zone to the projected harvest from mail questionnaires

County	Registered Harvest	Projected Harvest from Questionnaires
Alexander	9,438	10,118
Union	6,626	5,495
Jackson and Williamson	<u>6,807</u>	<u>7,763</u>
Total	22,871	23,376

Table 7. A comparison of quota zone versus upstate projected harvest for 1971, 1972 and 1973.

Year	Quota Zone	Percent	Upstate	Percent	Total Illinois Harvest
1971	22,520	83	4,719	17	27,239
1972 ¹	16,370	69	7,389	31	23,759
1973	23,260	80	5,815	20	29,075

¹ Figures and percentages are from the projected harvest which included unknown species of geese. The percentage split of quota zone and upstate harvest from known Canada geese in the sample was 75 (zone) and 25 (upstate).



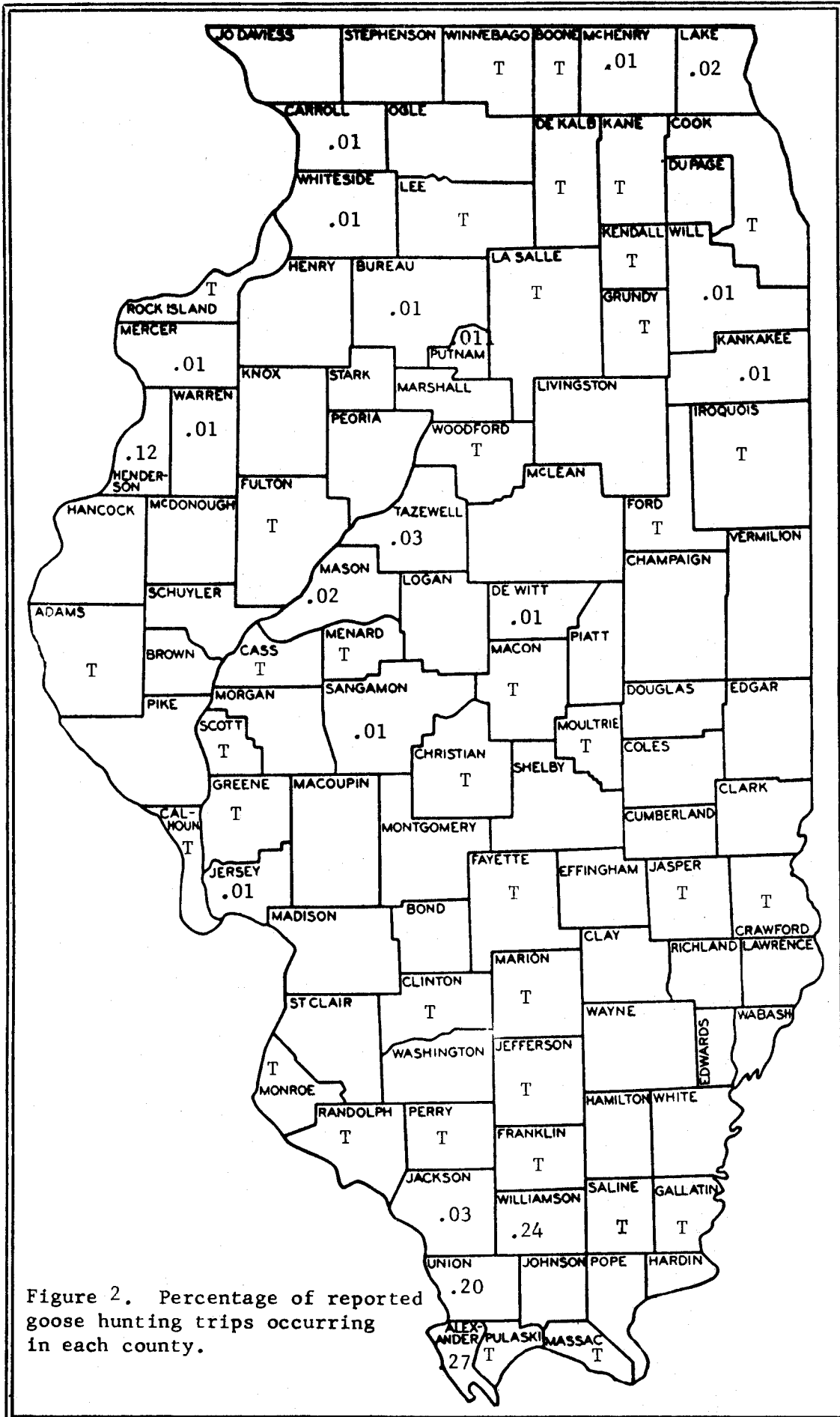


Figure 2. Percentage of reported goose hunting trips occurring in each county.

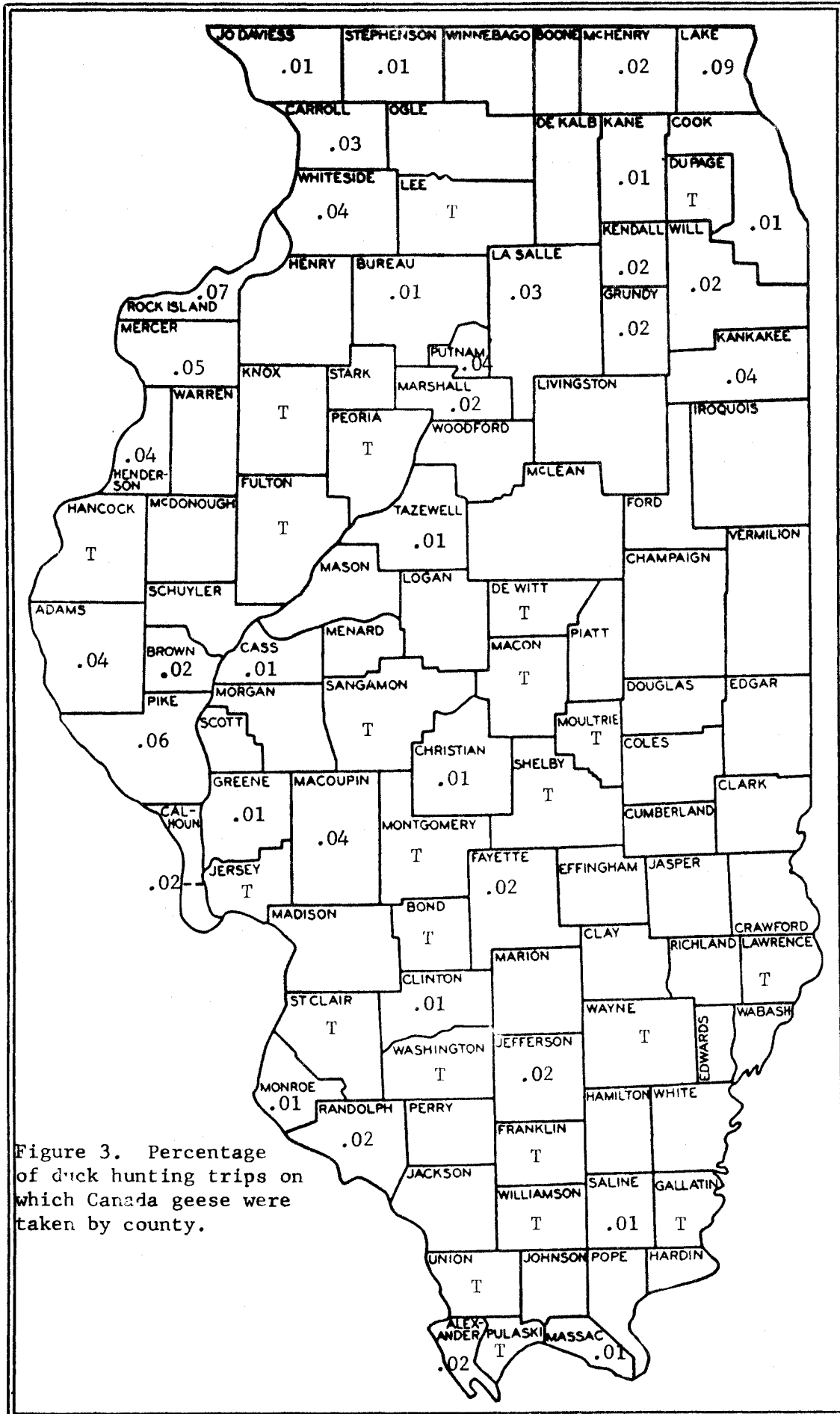


Figure 3. Percentage of duck hunting trips on which Canada geese were taken by county.

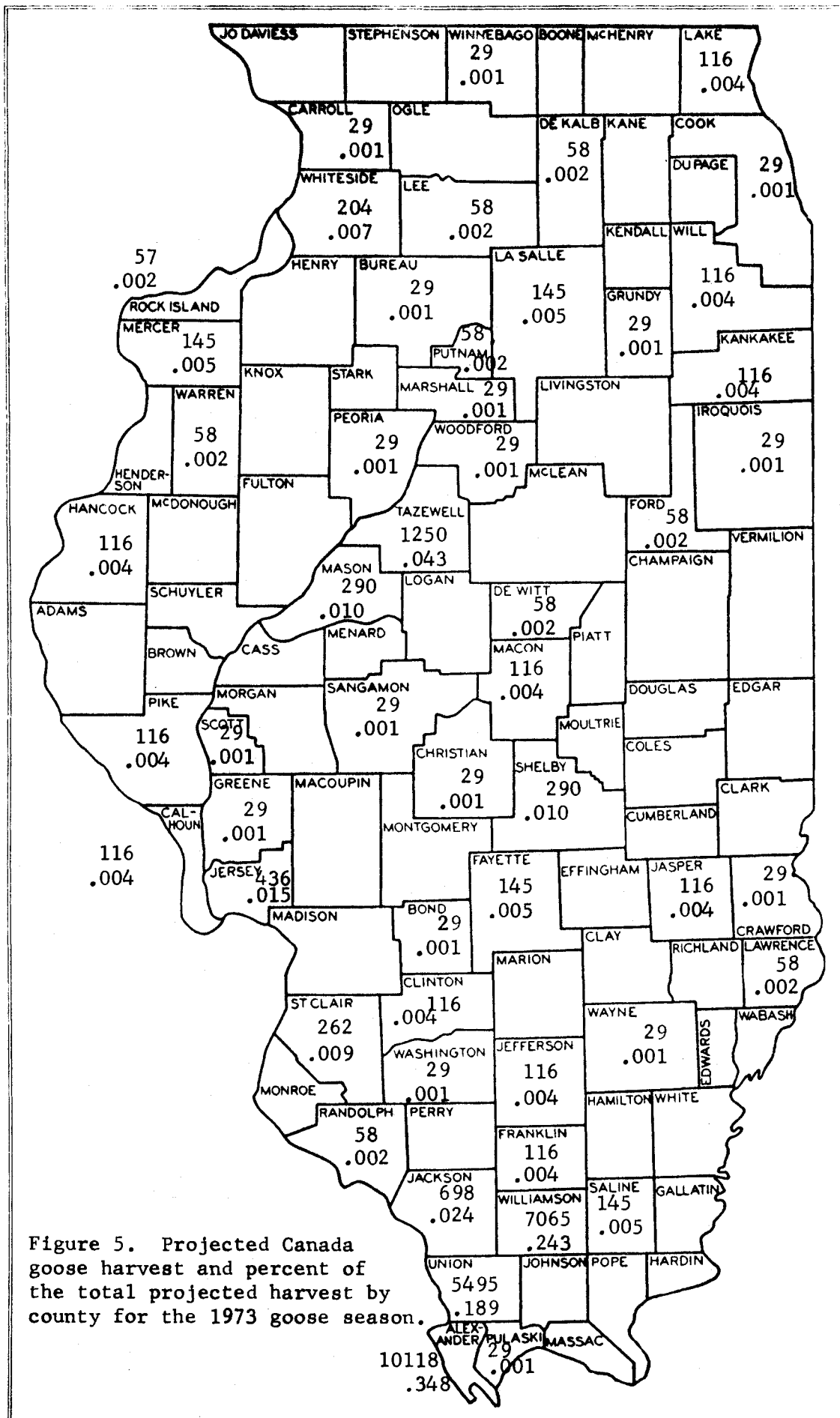


Figure 5. Projected Canada goose harvest and percent of the total projected harvest by county for the 1973 goose season.