

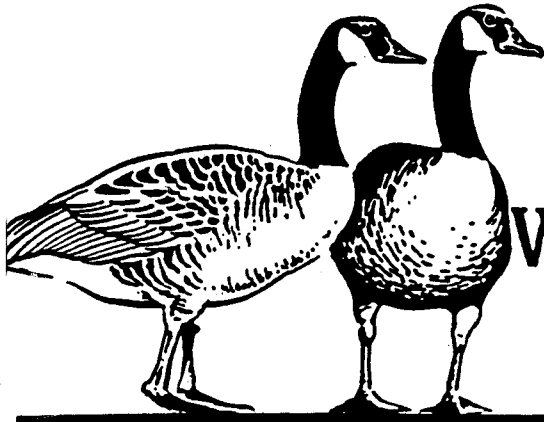


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PRODUCTION NOTE

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WATERFOWL PROGRAM

ILLINOIS DEPARTMENT OF CONSERVATION

DIVISION OF WILDLIFE RESOURCES

CANADA GOOSE HARVEST AND HUNTER ACTIVITY
IN THE SOUTHERN ILLINOIS QUOTA ZONE DURING
THE 1990 SEASON

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Abstract: The 1990 4-County Southern Illinois Quota Zone goose hunting season was split into two seasons for the first time. The first segment of the split season opened 10 November and closed 3 days later on 12 November. This coincided with the opening of the southern zone for duck hunting. The second segment of the split season opened 19 November and closed 67 days later on 24 January. The established season length was 70 days (56 days in 1989) or when a quota of 71,100 geese was harvested. A total of 31,319 Canada geese was harvested or approximately 44% of the quota. The daily bag limit was increased to 3 per day for the entire season. Goose hunters harvested 1,707 (5%) geese during the first segment of the split season and 29,612 (95%) during the second segment. Commercial clubs harvested 80% of the total harvest or 25,063 geese. Approximately 42% of the total harvest on commercial clubs occurred in Williamson/Jackson Counties (10,648), 29% in Alexander County (7,222), and 29% in Union County (7,193). Commercial licenses were issued to 124 clubs in the quota zone (19% greater than 1989). Goose hunters spent a total of 80,885 days afield (3% greater than 1989), and averaged .39 geese per trip (.54 in 1989). Commercial clubs in Union County and Williamson/Jackson Counties reported the highest success rates (.54). Commercial clubs in Alexander County reported a success rate of .35. A total of 1,467 geese was harvested by 3,644 hunters on the Union County Public Hunting Area. Goose hunters (1,406) on the Horseshoe Lake Public Hunting Area harvested 184 geese, and 3,938 hunters harvested 776 geese on the public hunting area at Crab Orchard NWR. Success rates for each of the three public hunting areas were .40, .13, and .20, respectively. The 1990 mid-December MVP Canada goose count in the quota zone and Mississippi Flyway was 342,000 (178,300 in 1989) and 939,700 (1.1 million in 1989), respectively. The major migration (300,000) of geese occurred during the period of 5-10 December. The population peaked at 540,000 (731,000 in 1989) in the quota zone on 14 January. The peak wintering population in southern Illinois and western Kentucky (820,000) was also recorded on 14 January (871,150 in 1989). Tail fans (n=3,424) collected from commercial pickers in Alexander, Union, and Williamson/Jackson Counties revealed an age ratio of 0.53:1 immatures/adult (1.5:1 in 1989). Horseshoe Lake Conservation Area accounted for 27% (9.6 million) of the goose use-days in southern Illinois. Crab Orchard

NWR accounted for 24% (8.5 million), and Union County Conservation Area recorded 18% (6.6 million) of the goose use-days. Goose use-days on the wintering refuges in southern Illinois and western Kentucky decreased from 38 million in 1989-90 to 35.6 million in 1990-91. No significant losses of waterfowl to disease were observed on the wintering refuges in southern Illinois in 1990-91.

INTRODUCTION

Alexander, Jackson, Union, and Williamson counties comprise the 4-county Southern Illinois Quota Zone. Located in this region are 3 major Canada goose wintering areas. The most important wintering area is the Horseshoe Lake Conservation Area in Alexander County. The area contains 7,900 acres and encompasses an ancient oxbow of the Mississippi River. Approximately 30 miles north of Horseshoe Lake is the 6,200 acre Union County Conservation Area. The northern-most wintering refuge in the 4-county zone is Crab Orchard National Wildlife Refuge. This area (44,000 acres) is approximately 35 miles northeast of Union County Conservation Area in Jackson and Williamson counties.

The quota zone system requires that all goose hunters hunting on licensed areas register and report their harvest daily. All commercial clubs (those receiving compensation for goose hunting) are required to apply for a license at a cost of \$15.00 per blind or pit. This system of hunter registration is recognized as one of the most intensive, efficient, and accurate methods of monitoring Canada goose harvest in areas where both geese and hunting pressure are heavily concentrated. The quota zone system has been in effect in southern Illinois since 1960 with only minor changes made in regulations through the years. Approximately 80% of the quota zone goose harvest in 1990 occurred on land licensed to commercial clubs.

Goose hunting regulations in the quota zone were amended in 1987 to allow 3 persons to occupy a pit or blind for taking or attempting to take Canada geese on commercial clubs. In the past, the number of hunters was restricted to 2, except in those blinds where a licensed guide accompanied the hunters. Guide licensing by the Department of Conservation was eliminated as part of the 1987 legislation change.

METHODS AND MATERIALS

All landowners applying for a commercial goose license in the quota zone received a registration packet containing daily registration sheets, club permits, administrative orders and self-addressed envelopes. Commercial clubs submitted daily harvest sheets bi-weekly throughout the season, and the zone harvest was updated at each interval by Union County field office personnel. All procedures in 1990 were the same as in 1989, including methods

of estimating harvest and hunting pressure on outlying non-commercial areas by using the mean percent harvest occurring on those areas in past years (Thornburg and Estel 1983).

An automatic answering machine was maintained in the phone system at the Union County Refuge office. Harvest information and results of the most recent aerial inventories were updated weekly as new information became available. Goose hunters, club operators and media representatives were able to get immediate information on the progress of the 1990 quota zone goose hunting season.

Canada goose populations on wintering areas in the quota zone, Rend Lake and Ballard County, Kentucky were monitored by aerial inventories starting 15 October and ending 4 February. Flights were conducted at weekly intervals, weather permitting. Biologists with the DOC and the USFWS conducted the inventories using the state's Cessna 210 or 337.

RESULTS AND DISCUSSION

The first segment of the split season in the quota zone opened 10 November and closed 3 days later on 12 November. This coincided with the opening of the southern zone for duck hunting which allowed hunters to harvest ducks and geese. The second split of the quota zone goose hunting season opened 19 November and closed 67 days later on 24 January. The assigned harvest quota increased 37% from 51,750 in 1989 to 71,100 in 1990. Season length increased from 56 days in 1989 to 70 days in 1990 (Table 1). The daily bag limit was increased to 3 per day for the entire season. Canada geese arrived on schedule at southern Illinois wintering refuges during the week of 16 - 22 September. The first major migration of geese from Wisconsin occurred during the period of 5 - 10 December when the population increased from 175,000 to 459,000 in southern Illinois and western Kentucky. Smaller migrations (100,000) occurred at weekly intervals through 14 January when the population peaked at 820,000 in southern Illinois and western Kentucky. Unseasonably warm temperatures and a large proportion of adults in the population resulted in the second lowest hunter success rate (.39) recorded since 1974. The final harvest of 31,319 was 39,781 geese below the assigned quota of 71,100. However, the goose harvest in the quota zone in 1990 represented the fourth highest harvest since 1974. Approximately 44% of the harvest quota was achieved in the 4-County Quota Zone.

Hunting Pressure

Goose hunters spent a total of 80,885 days afield during the 1990 season which was 3% greater than 1989 (Figure 1). A total of 45,092 hunters registered at commercial clubs in 1990 (1% greater than in 1989). An additional 8,988 hunters registered on the

public hunting areas at Horseshoe Lake, Union County and Crab Orchard NWR (7% greater than 1989). An estimated 26,805 hunter-trips occurred on non-commercial areas in 1990 (5% greater than in 1989) (Whitton 1991). The average daily number of hunters in 1990 (1,156) was significantly less than 1989 (1,405), however the season was 14 days longer.

Commercial licenses were issued to 124 clubs in the quota zone in 1990 (19% greater than in 1989). Commercial clubs were the most numerous in Williamson/Jackson Counties (61), while clubs in Alexander and Union Counties numbered 41 and 22, respectively.

Alexander County reported 38% of the hunter-trips on commercial clubs, followed by 37% in Williamson/Jackson Counties and 25% in Union County. Williamson/Jackson Counties had the greatest number of total hunter-trips (42,343) (6% greater than 1989) in the quota zone with 52%, followed by Alexander County 28% (22,548) (5% less than 1989), and Union County 20% (15,994) (6% greater than 1989) (Table 2).

Hunter use and harvest on the public hunting areas in the quota zone are included in the commercial club totals. These areas accounted for 17% (1% greater than 1989) of the hunting effort on commercial clubs in 1990. A total of 8,988 hunters registered on the three public hunting areas (7% greater than 1989). Crab Orchard NWR Public Hunting Area accounted for the most hunters (3,938). This represented 44% of the total hunting effort on public hunting areas in the quota zone. The Union County and Horseshoe Lake Public Hunting Areas registered 3,644 (40%), and 1,406 hunters (16%), respectively (Table 3).

Harvest

A total of 31,319 Canada geese was harvested in the quota zone during the 1990 season (26% less than 1989). This was 39,781 geese below the assigned harvest quota of 71,100. Goose hunters harvested 1,707 (5%) geese during the first segment of the split season and 29,612 (95%) geese during the second segment. During the first segment of the split season, commercial clubs were responsible for harvesting 74% of the geese (1,265). Commercial clubs in Williamson/Jackson Counties harvested 71% (900) of the commercial club harvest in the quota zone during the first segment of the split season. Commercial clubs in Alexander County followed with 15% (189) and Union County 14% (176). Commercial clubs harvested 80% (2% less than 1989) of the total harvest or 25,063 geese (Figure 2). Approximately 42% of the total harvest (includes both seasons) on commercial clubs occurred in Williamson/Jackson Counties (10,648), 29% in Alexander County (7,222), and 29% in Union County (7,193).

Public hunting areas reported a harvest of 2,427 geese in 1990 (16% less than 1989). The Union County Public Hunting Area reported 60% of the harvest (1,467), while 32% occurred at Crab Orchard NWR Public Hunting Area (776) and 8% at Horseshoe Lake Public Hunting Area (184) (Table 3). The contribution of the Canada goose harvest on public hunting areas in the quota zone represented 10% (2% greater than 1989) of the total commercial club harvest.

The 1990 goose harvest on the Union County Public Hunting Area (1,467) was 52% greater than the 1984-88, 5-year average and 11% greater than the harvest in 1989. The goose harvest at Horseshoe Lake Public Hunting Area in 1990 (184) was 47% less than the 1984-88, 5-year average and 76% less than the harvest in 1989 (Table 4). The goose harvest at Horseshoe Lake in 1990 was the second lowest since 1976. Despite hunting a total of 58 days at Horseshoe Lake in 1990, the most since 1979, the harvest and success rate continue to be very low.

The average daily goose harvest for the first segment of the split season was 569 geese and the entire season averaged 447 geese per day in 1990. This was 41% less than in 1989 (757), and 43% less than 1988 (787). However, the average daily goose harvest in 1990 (447) was 20% greater than 1987 (372). The greatest harvest occurred during the 4-day reporting period 31 December - 3 January, when 2,490 geese were harvested. The lowest harvest (339) occurred during the 3-day reporting period 23 - 25 November (Table 5).

Williamson/Jackson Counties harvested 50% (15,775) of the total goose harvest in 1990. Union County followed with 25% (7,861), and Alexander County 25% (7,683) (Table 6).

The estimated harvest on non-commercial lands in 1990 was 6,256 geese or 20% of the total geese harvested. Approximately 83% of the harvest occurred in Williamson/Jackson Counties (5,127). Eleven percent occurred in Union County (668), and 7% in Alexander County (461).

Hunter Success

Success rates for Canada goose hunters on commercial clubs in the quota zone decreased from .65 goose per trip in 1989 to .46 in 1990 (Table 7). Commercial clubs in the quota zone in 1990 reported some of the lowest success rates on record. Commercial clubs in Union and Williamson/Jackson Counties reported the highest success rates (.54), while Alexander County commercial clubs reported a success rate of .35 (Figure 3). Success rates on commercial clubs in 1990 were 22% below the 1985-89, 5-year average.

The Union County Public Hunting Area reported the highest success rate (.40) during 1990 (Table 8). The public hunting areas at Crab Orchard NWR and Horseshoe Lake each reported success rates of .20 and .13, respectively (Table 9).

Population Status

Canada geese arrived on schedule in southern Illinois during the week of 16 - 22 September. The first aerial inventory was conducted on 15 October and revealed that 28,575 (77,000 in 1989) geese were present in southern Illinois and western Kentucky. Small migrations of geese (< 20,000) occurred weekly from 15 October through 26 November. The number of Canada geese in southern Illinois and western Kentucky from 15 October - 26 November in 1990 was 30-50% less than in 1989 during the same time period. A total of 55,000 Canada geese was present in the quota zone by opening day (10 November) of the first segment of the split season. Only 56,600 (104,500 in 1989) Canada geese were present in the quota zone by opening day (19 November) of the second segment of the split season. The major, late winter migration occurred during the week of 5 - 10 December when the population in southern Illinois and western Kentucky increased from 175,000 to 459,200 (Table 10, Figure 4). The goose population in southern Illinois and western Kentucky surged (100,000) weekly from 10 December to 14 January when the population finally peaked at 820,000. The population peaked in the quota zone in 1990 at 540,000 (731,000 in 1989) (Figure 5). A late winter migration occurred during the week of 14 - 21 January when large flocks of Canada geese were observed migrating north. The aerial survey conducted on 22 January confirmed that 314,000 Canada geese departed southern Illinois and western Kentucky. The goose population decreased from a peak of 820,000 on 14 January to 506,000 on 22 January. The final aerial survey revealed that 411,000 Canada geese were present in southern Illinois and western Kentucky on 4 February.

Canada goose numbers at Horseshoe Lake peaked at 220,000 in 1990-91 (365,000 in 1989-90). Union County Refuge and Crab Orchard NWR reported peaks of 145,000 (210,000 in 1989-90) and 150,000 (150,000 in 1989-90), respectively (Figure 6).

The mid-December MVP goose survey in the quota zone and Mississippi Flyway was 342,000 (178,300 in 1989) and 939,700 geese (1.1 million in 1989), respectively (Bortner et al 1991).

Analysis of tail fans collected throughout the quota zone confirmed that production in 1990 was below average as a result of low nest success and high predation. Tail fans collected from commercial pickers in 1990-91 (n=3,424) in Alexander, Union and Williamson Counties revealed an age ratio of 0.53 immatures per adult (1.5 in 1989 and 1.9 in 1988) (Table 11). Tail fans analyzed

from geese harvested at Union County and Horseshoe Lake Public Hunting Areas (n=1,651) revealed age ratios of 0.7 and 0.4 immatures per adult, respectively (Table 12). Age ratios from the Union County and Horseshoe Lake Public Hunting Areas were significantly below the long-term average (Table 13). Collectively, tail fans (n=5,075) revealed an age ratio of 0.55 immatures per adult. The tail fan age ratio in 1990-91 was the lowest ever recorded in southern Illinois.

Goose use-days (GUD) and percent totals at 5 refuges in southern Illinois and western Kentucky are shown in Table 14. In 1990-91, Horseshoe Lake accounted for 9.6 million GUD (15.2 million in 1989-90) (27% of the total); Crab Orchard NWR had 8.5 million GUD (7.4 million GUD in 1989-90) (24% of the total); Rend Lake had 7.3 million GUD (3.7 million GUD in 1989-90) (20% of the total); Union County Refuge had 6.6 million GUD (7.0 million GUD in 1989-90) (18% of the total); and Ballard County, Kentucky accounted for 3.7 million GUD (4.5 million in 1989-90) (10% of the total). Goose use-days in southern Illinois and western Kentucky increased from 29.5 million in 1987-88 to 34.3 million in 1988-89 to 38 million in 1989-90 and decreased to 35.9 million in 1990-91. Individual refuges reported significant changes in the number of goose use-days from 1989 to 1990. Goose use-days in 1990-91 increased 97% at Rend Lake and 15% at Crab Orchard NWR. Goose use-days at Union County Refuge, Horseshoe Lake and Ballard County, Kentucky decreased 6%, 37%, and 18%, respectively.

No significant or detectable losses of waterfowl to disease were observed on the wintering refuges in southern Illinois in 1990-91.

CONCLUSIONS

Extremely high levels of the Mississippi and Ohio Rivers and their associated tributaries resulted in extensive flooding of agricultural fields in southern Illinois and western Kentucky. Canada geese in unprecedented numbers exploited this temporarily created habitat. Aerial inventories revealed that peak Canada goose populations (820,000) (871,150 in 1989) and goose use-days (35.9 million) (38 million in 1989-90) decreased on the wintering refuges in southern Illinois and western Kentucky in 1990-91.

The 1990 Illinois Waterfowl Hunter Questionnaire Survey revealed a statewide harvest estimate of 70,067 Canada geese (60,958 MVP, 87%) (Anderson 1991). The federal harvest estimate indicated that 93,705 Canada geese were harvested statewide (Table 15) (Gamble 1991).

The goose harvest (31,319) in the quota zone was 39,781 geese below the assigned quota. However, the goose harvest in 1990-91 represented the fourth highest harvest since 1966, but success

rates were the second lowest since 1974. Failure to achieve the quota can be attributed to a number of factors. Unseasonably warm temperatures, extensive flooding in southern Illinois and an unusually high proportion of adults in the flock contributed to poor hunting conditions. Large flocks of Canada geese established flight patterns which bypassed commercial hunting clubs in search of flooded croplands as far as 10-20 miles away from the refuges. The anticipated success of the late January hunting season which is favored by many commercial club owners failed to materialize as 314,000 Canada geese migrated north prior to the end of the hunting season. Approximately 44% and 41% of the harvest quotas were achieved in the 4-County and Rend Lake Quota Zones in 1990-91, respectively. Significant population increases in the MVP have resulted in substantial increases in the harvest quota assigned to the 4-County Quota Zone. The size of the quota is almost unattainable despite very liberal harvest regulations.

High predation and low nest success contributed to poor production in 1990. The goose harvest in the 4-County Quota Zone was poor despite very high expectations associated with the large fall flight forecast. Despite poor production in 1990, the large proportion of adults in the MVP should provide a fall flight in 1991 equal to or greater than 1990.

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Table 1. Annual Southern Illinois Quota Zone Goose Season Statistics, 1974-1990.

Year	Quota Size	Season Length	Date Open	Date Closed	Harvest	Avg. Daily		Pop. Peak	Hunter Trips	Comm. Clubs	Free Permits
						Success Rate	Peak				
1974	22,000	38	11/25/74	01/01/75	24,673	.49	217,000	49,971	60	230	
1975	22,000	30	11/23/75	12/23/75	25,075	.57	180,000	44,310	58	239	
1976	22,000	27	11/22/76	12/18/76	25,865	.59	316,000	44,080	61	296	
1977	29,000	44	11/21/77	01/03/78	30,747	.53	405,000	57,472	72	347	
1978	40,000	69	11/13/78	01/20/79	40,490	.57	253,000	70,983	146	290	
1979	29,000	70	11/09/79	01/17/80	29,193	.42	248,000	69,414	137	307	
1980	27,000	31	11/03/80	12/03/80	27,835	.68	220,000	40,888	113	332	
1981	24,000	50	11/09/81	12/28/81	25,328	.44	180,000	56,964	109	358	
1982	17,500	40	11/08/82	12/17/82	17,863	.42	166,000	42,432	106	---	
1983	17,500	35	11/14/83	12/18/83	18,164	.44	207,000	41,124	101	---	
1984	17,500	25	11/12/84	12/06/84	14,607	.46	272,000	31,515	92	---	
1985	17,500	31	11/11/85	12/11/85	21,767	.58	245,000	37,820	89	---	
1986	24,000	42	11/17/86	12/28/86	25,858	.51	239,000	50,663	97	---	
1987	26,300	50	11/16/87	01/04/88	18,585	.31	492,000	60,804	99	---	
1988	37,000	50	11/21/88	01/09/89	39,332	.56	560,000	70,460	95	---	
1989	51,750	56	11/20/89	01/14/90	42,254	.54	731,000	78,699	104	---	
1990	71,100	70	11/10/90 11/19/90	11/12/90 01/24/91	31,319	.39	540,000	80,885	124	---	

Table 2. Hunter-trips and Harvest of Canada Geese in the Southern Illinois Quota Zone during the 1990 Season.

	Number of Permits Issued	Hunter Trips	Percent By Permit	Percent By Counties	Harvest	Percent By Permit	Percent By Counties	Success Rate
<u>Alexander (Horseshoe Lake)</u>								
Licensed Clubs ^a	41	20,744	92		7,222	94		.35
Other Areas ^b		<u>1,804</u>	<u>8</u>	.28	<u>461</u>	<u>6</u>	.24	<u>.26</u>
		22,548	100		7,683	100		.34
<u>Union County</u>								
Licensed Clubs ^a	22	13,435	84		7,193	92		.54
Other Areas ^b		<u>2,559</u>	<u>16</u>	.20	<u>668</u>	<u>8</u>	.25	<u>.26</u>
		15,994	100		7,861	100		.49
<u>Williamson/Jackson (Crab Orchard NWR)</u>								
Licensed Clubs ^a	61	19,901	47		10,648	67		.54
Other Areas ^b		<u>22,442</u>	<u>53</u>	.52	<u>5,127</u>	<u>33</u>	.50	<u>.23</u>
		42,343	100		15,775	100		.37
<u>Grand Total</u>	124	80,885		100	31,319		100	.39

^aLicensed clubs are those areas that charge a daily fee for hunting and areas covered by lease or other monetary agreement. Number of hunter trips and harvest are reported directly by daily registration of hunters.

^bOther areas represent all other areas where goose hunting occurs. In 1982, the free permit was eliminated and hunters were no longer required to register to hunt on free areas. Number of hunter-trips and harvest were estimated using a 9-year mean percent harvest and percent hunter-trips occurring on free areas in each of the counties in past years.

Table 3. Contribution of Public Hunting Areas to the Hunting Effort and Harvest of Canada Geese during the 1990 Season.

County	Hunter Trips	Percent of County Commercial Club Total	Harvest (%)	Percent of County Commercial Club Total	Success Rate
Alexander ^a	1,406	6.7	184 (08)	2.5	.13
Union ^b	3,644	27.1	1,467 (60)	20.3	.40
Williamson/Jackson ^c	3,938	19.7	776 (32)	7.2	.20
All Counties	8,988	16.6	2,427	9.6	.27

^aHorseshoe Lake Public Hunting Area is a licensed club.

^bUnion County Public Hunting Area is a licensed club.

^cCrab Orchard NWR Public Hunting Area is a licensed club.

Table 4. Comparison of the 1990 Season on the Union County and Horseshoe Lake Public Hunting Areas with the 1989 Season and the 1984-1988, 5-Year Average.

	<u>Union County Public Hunting Area</u>			<u>Horseshoe Lake Public Hunting Area</u>		
	<u>5-Year</u> <u>Avg. (84-88)</u>	<u>1989</u>	<u>1990</u>	<u>5-Year</u> <u>Avg. (84-88)</u>	<u>1989</u>	<u>1990</u>
Percent of Total County Hunters	21	18	23	8	9	6
Percent of Total County Harvest	17	13	19	4	5	2
Number of Hunters	2,292	2,782	3,644	1,233	2,191	1,406
Average Number Hunters Per Day	73	62	57	41	49	24
Harvest	962	1,318	1,467	346	766	184
Success Rate	.42	.47	.40	.28	.35	.13

Table 5. Goose Harvest in the Quota Zone throughout the 1990 Season.

Date	Alexander		Canada Goose Harvest**		Will./Jackson		*Harvest Per Report Period Geese	*Total Harvest in Quota Zone Geese
	Hunters	Geese	Hunters	Geese	Hunters	Geese		
11-12-90	1,081	189	253	176	1,191	900	1,707	1,707
11-22-90	2,189	523	813	450	2,151	1,318	1,293	3,000
11-25-90	3,165	650	1,215	485	2,936	1,430	339	3,339
11-29-90	3,675	835	1,542	578	3,516	1,604	556	3,895
12-02-90	4,373	924	1,897	603	4,182	1,758	350	4,245
12-06-90	5,040	1,361	2,340	843	5,097	2,467	1,778	6,023
12-09-90	6,012	1,578	2,952	1,007	6,169	3,037	1,254	7,277
12-13-90	7,186	2,284	3,585	1,260	7,177	3,820	2,188	9,465
12-16-90	8,556	2,773	4,352	1,427	8,288	4,263	1,360	10,825
12-20-90	10,164	3,491	5,271	1,792	9,467	4,632	1,709	12,534
12-23-90	11,153	3,760	5,932	2,233	10,494	5,285	1,736	14,270
12-27-90	11,979	4,062	6,456	2,610	11,462	5,819	1,524	15,794
12-30-90	13,529	4,512	7,547	3,421	12,678	6,528	2,415	18,209
01-03-91	14,363	4,946	8,394	4,027	13,701	7,450	2,490	20,699
01-06-91	15,496	5,489	9,383	4,666	14,814	8,028	2,131	22,830
01-10-91	16,426	5,984	10,246	5,505	15,843	8,702	2,443	25,273
01-13-91	17,572	6,379	11,049	5,971	17,003	9,342	1,877	27,150
01-17-91	18,375	6,708	11,795	6,453	17,884	9,896	1,698	28,848
01-20-91	19,650	7,060	12,583	6,895	18,966	10,368	1,557	30,405
01-24-91	20,744	7,222	13,435	7,193	19,901	10,648	914	31,319

*Includes Harvest on Non-Commercial Areas
 **Reported Harvest by Commercial Clubs

Table 6. Total Harvest of Canada Geese by County in the Southern Illinois Quota Zone, 1987-1990.

County	1987		1988		1989		1990	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Alexander	5,427	29	12,391	32	13,806	33	7,683	25
Union	3,749	20	8,791	22	9,996	24	7,861	25
Williamson/Jackson	<u>9,409</u>	<u>51</u>	<u>18,150</u>	<u>46</u>	<u>18,452</u>	<u>43</u>	<u>15,775</u>	<u>50</u>
Total:	18,585	100	39,332	100	42,254	100	31,319	100

Table 7. Success Rates for Canada Goose Hunters on Commercial Clubs in Southern Illinois
Quota Zone 1983-1990.

County	1983	1984	1985	1986	1987	1988	1989	1990
Alexander	.49	.54	.60	.56	.31	.62	.59	.35
Union	.56	.53	.64	.69	.31	.66	.71	.54
Williamson/Jackson	.55	.57	.81	.60	.45	.73	.66	.54
All Counties	.53	.55	.67	.61	.36	.67	.65	.46

Table 8. Hunter Use, Harvest and Hunter Success on the Union County Public Hunting Area 1976-1990.

Year	No. Days Hunted	Number Hunters	Average Number Hunters Per Day	Geese Harvested	Success Rate
1976	27	2,302	99	1,832	.80
1977	44	3,045	82	962	.32
1978	69	4,998	83	3,441	.69
1979	70	5,524	81	2,800	.51
1980	31	2,681	86	2,325	.87
1981	47	3,647	78	1,927	.53
1982	34	2,327	68	1,098	.47
1983	35	2,269	76	1,074	.47
1984	21	1,696	81	735	.43
1985	26	2,073	80	969	.47
1986	33	2,628	80	1,052	.40
1987	39	2,446	63	391	.16
1988	39	2,618	65	1,664	.64
1989	45	2,782	62	1,318	.47
1990	64	3,644	57	1,467	.40

Table 9. Hunter Use, Harvest and Hunter Success on the Horseshoe Lake Public Hunting Area 1976-1990.

Year	No. Days Hunted	Number Hunters	Average Number Hunters Per Day	Geese Harvested	Success Rate
1976	27	2,154	94	562	.26
1977	44	2,439	66	678	.28
1978	69	3,381	56	1,457	.43
1979	70	2,514	37	434	.17
1980	31	1,427	46	1,194	.84
1981	47	1,986	42	494	.25
1982	34	1,097	32	146	.13
1983	35	1,153	38	374	.32
1984	21	1,070	51	404	.38
1985*	20	806	40	167	.21
1986	33	1,382	42	367	.27
1987	39	1,191	31	196	.16
1988	39	1,714	43	597	.35
1989	45	2,191	49	766	.35
1990*	58	1,406	24	184	.13

*Horseshoe Lake Public Hunting Area closed due to flooding from Nov. 21-29, 1985 and Jan. 3-8, 1991.

Table 10. Canada Goose Populations on Wintering Areas throughout the Fall and Winter of 1990-91.

Date	*Ballard Co.	Horseshoe Lake	Union Co.	Crab Orchard	Rend Lake	Campbell Pond	Carlyle Lake	Cache River Bottoms	Burning Star Mine	Total
10-15-90	2,300	12,000	4,000	6,500	3,500	200	--	50	25	28,575
10-22-90	2,300	20,000	5,500	9,000	5,000	400	--	--	500	42,700
10-30-90	3,800	21,000	11,000	9,000	12,000	200	--	--	600	57,600
11-07-90	4,900	22,000	13,000	16,500	13,000	2,000	--	--	1,500	72,900
11-13-90	5,500	25,000	15,000	16,000	15,000	1,200	--	--	200	77,900
11-19-90	4,950	27,000	10,000	19,000	12,000	400	--	--	200	73,550
11-26-90	8,400	29,000	12,000	20,000	12,000	300	--	--	500	82,200
12-05-90	12,500	35,000	27,000	44,000	43,000	8,500	3,000	--	2,000	175,000
12-10-90	32,500	130,000	75,000	115,000	70,000	20,000	12,000	2,200	2,500	459,200
12-19-90	22,000	135,000	115,000	130,000	80,000	25,000	40,000	12,000	6,000	565,000
12-31-90	75,300	147,000	145,000	150,000	125,000	2,500	4,500	40,000	27,000	716,300
01-14-91	62,000	220,000	130,000	90,000	136,000	42,000	--	82,000	58,000	820,000
01-22-91	82,000	95,000	40,000	65,000	112,000	10,000	48,000	40,000	14,000	506,000
02-04-91	80,000	85,000	46,000	35,000	90,000	7,000	55,000	12,000	1,000	411,000

*Includes Swan Lake, KY

Table 11. Age Ratio in the Illinois Canada Goose Harvest during the 1990 Season. Data Gathered from Tail Fans Collected throughout the Season from Commercial Pickers in Alexander County, Union County, and Williamson/Jackson Counties.

Area	Immatures	Adults	Ratio
Alexander County	799	1,222	0.65:1
Union County	244	700	0.35:1
Williamson/Jackson Counties	141	318	0.44:1
Total	1,184	2,240	0.53:1

Table 12. Age Ratio in the Canada Goose Harvest on the Union County and Horseshoe Lake Public Hunting Areas during the 1990 Season.

	Horseshoe Lake P.H.A. Age Ratio/Sample Size (50 Im./134 Ad.)		Union County P.H.A. Age Ratio/Sample Size (579 Im./888 Ad.)	
Nov. 19 ^a	0.0:1	03	1.5:1	50
Nov. 20 - Nov. 26	1.3:1	09	1.6:1	67
Nov. 27 - Dec. 03	0.7:1	05	1.5:1	53
Dec. 04 - Dec. 10	0.8:1	07	1.3:1	52
Dec. 11 - Dec. 17	0.9:1	43	2.0:1	74
Dec. 18 - Dec. 24	0.2:1	55	0.7:1	153
Dec. 25 - Jan. 31	0.3:1	33	0.9:1	209
Jan. 01 - Jan. 07	0.3:1	05	0.4:1	340
Jan. 08 - Jan. 14	0.2:1	18	0.5:1	257
Jan. 15 - Jan. 21	0.0:1	05	0.3:1	198
Jan. 22 - Jan. 24	0.0:1	01	0.8:1	14
Total 70-Day Season	0.4:1	184	0.7:1	1,467

^aFirst Day of Hunting

Horseshoe Lake was closed due to flooding Jan. 3-8, 1991.

Table 13. Age Ratios, Expressed as Immatures Per Adult, Among Canada Geese Harvested on the Horseshoe Lake and Union County Public Hunting Areas, 1965 to 1990.

Year	Horseshoe Lake	Union County
1965	---	3.7
1966	1.1	2.6
1967	0.8	2.6
1968	1.2	2.2
1969	0.9	1.2
1970	0.9	3.4
1971	1.4	2.8
1972	0.8	1.1
1973	0.8	1.6
1974	1.8	2.5
1975	2.6	4.1
1976	2.5	2.7
1977	1.7	1.3
1978	1.2	1.2
1979	---	2.8
1980	3.2	4.5
1981	2.6	2.2
1982	1.3	2.7
1983	1.0	0.9
1984	2.6	3.2
1985	1.7	1.8
1986	1.4	1.3
1987	0.9	1.0
1988	2.0	1.6
1989	1.5	1.2
1990	0.4	0.7
Mean	1.51	2.19

Table 14. Total Goose Use Days and Percent Total at 5 Refuges in Southern Illinois and Western Kentucky in 1990-91.

Week	UNION COUNTY		HORSESHOE LK.		CRAB ORCHARD		REND LAKE		BALLARD COUNTY		TOTAL Goose Use Days
	Goose Use Days	% Total	Goose Use Days	% Total	Goose Use Days	% Total	Goose Use Days	% Total	Goose Use Days	% Total	
10-15-90	28,000	14	84,000	43	46,900	24	24,500	12	14,000	7	1,974,000
10-22-90	38,500	13	140,000	48	65,800	22	35,000	12	14,000	5	293,300
10-30-90	77,000	19	147,000	37	64,400	16	84,000	21	24,500	6	396,900
11-07-90	91,000	18	154,000	31	129,500	26	91,000	18	32,200	6	497,700
11-13-90	105,000	19	175,000	32	120,400	22	105,000	19	35,000	6	540,400
11-19-90	70,000	14	189,000	37	135,800	27	84,000	16	31,500	6	510,300
11-26-90	84,000	15	203,000	36	142,100	25	84,000	15	56,000	10	569,100
12-05-90	189,000	16	245,000	21	367,500	31	301,000	26	77,000	7	1,179,500
12-10-90	525,000	17	910,000	30	945,000	31	490,000	16	196,000	6	3,066,000
12-19-90	805,000	23	945,000	27	1,085,000	31	560,000	16	119,000	3	3,514,000
12-25-90*	805,000	23	945,000	27	1,085,000	31	560,000	16	119,000	3	3,514,000
12-31-90	1,015,000	22	1,029,000	23	1,067,500	24	875,000	19	525,000	12	4,511,500
01-07-91*	1,015,000	22	1,029,000	23	1,067,500	24	875,000	19	525,000	12	4,511,500
01-14-91	91,000	19	1,540,000	32	924,000	19	952,000	20	434,000	9	4,760,000
01-22-91	280,000	10	665,000	24	525,000	19	784,000	28	560,000	20	2,814,000
01-28-91*	280,000	10	665,000	24	525,000	19	784,000	28	560,000	20	2,814,000
02-04-91	322,000	14	595,000	27	294,000	13	630,000	20	385,000	10	2,226,000
TOTAL	6,639,500	18	9,660,000	27	8,590,400	24	7,318,400	20	3,707,200	10	35,915,600

*No Survey Conducted, Values are Same as Previous Week.

Table 15. Canada Goose Harvest in Illinois, 1967-1990.

	Statewide Harvest Obj.	Season Lgth. Quota Z./Upstate	4-Co. Quotas (1,000s)	Statewide Harvest Fed. Est./State Est. (1,000s)	Quota Z. Harvest (1,000s)	Upstate Harvest Fed. Est. / State Est.		
1967	20,000	31	50	16.0 (80) ^a	35.4	20.2 (57) ^b	15.2 (43) ^b	
1968	20,000	42	50	16.0 (80)	21.2	21.4 (100)	---	(0)
1969	25,000	30	37	20.0 (80)	29.4	20.3 (69)	9.1	(31)
1970	35,000	44	55	28.0 (80)	37.7	27.5 (73)	10.2	(27)
1971	28,000	38	50	22.0 (80)	34.4	24.6 (72)	9.8	(28)
1972	28,000	52	70	22.0 (80)	33.7	15.8 (47)	17.9	(53)
1973	28,000	63	70	24.0 (85)	28.5	22.9 (80)	5.6	(20)
1974	28,000	38	70	22.0 (80)	47.1	24.7 (52)	22.4	(48)
1975	28,000	30	70	22.0 (80)	44.8	25.1 (56)	19.7	(44)
1976	28,000	27	70	22.0 (80)	53.7	25.9 (48)	27.8	(52)
1977	35,000	44	70	29.0 (80)	76.6	30.7 (40)	45.9	(60)
1978	50,000	69	70	40.0 (80)	118.7	40.5 (34)	78.2	(66)
1979	35,000	70	70	29.0 (80)	69.0	29.2 (42)	39.8	(58)
1980	33,000	31	70	27.0 (80)	57.7	27.8 (48)	29.9	(52)
1981	30,000	50	50	24.0 (80)	51.5	25.3 (49)	26.2	(51)
1982	27,000	40	40	17.5 (65)	27.2	17.9 (66)	9.3	(34)
1983	27,000	35	40	17.5 (65)	38.8	18.2 (44)	23.4	(56)
1984	27,000	25	20	17.5 (65)	31.0	14.6 (47)	16.4	(53)
1985	27,000	31	20	17.5 (65)	36.9	21.8 (59)	15.1	(41)
1986	48,000	42	40	24.0 (50)	48.9	25.9 (53)	23.0	(47)
1987	52,500	50	40	26.3 (50)	45.7	18.6 (41)	27.1	(59)
1988	74,000	50	50	37.0 (50)	91.0	39.3 (43)	51.7	(57)
1989	103,500	56	60	51.7 (50)	95.6	42.3 (44)	53.3	(56)
1990	142,200	70	70	71.1 (50)	93.7	31.3 (33)	62.4	(67)

^a Percent of Statewide Harvest Objective

^b Percent of Federal Estimate of Statewide Harvest

^c Percent of State Estimate of Statewide Harvest

1966-1973 Average Percent of Statewide Harvest Occurring Upstate - 29%

1974-1981 Average Percent of Statewide Harvest Occurring Upstate - 54%

1982-1985 Average Percent of Statewide Harvest Occurring Upstate - 48%

1986-1989 Average Percent of Statewide Harvest Occurring Upstate - 55%

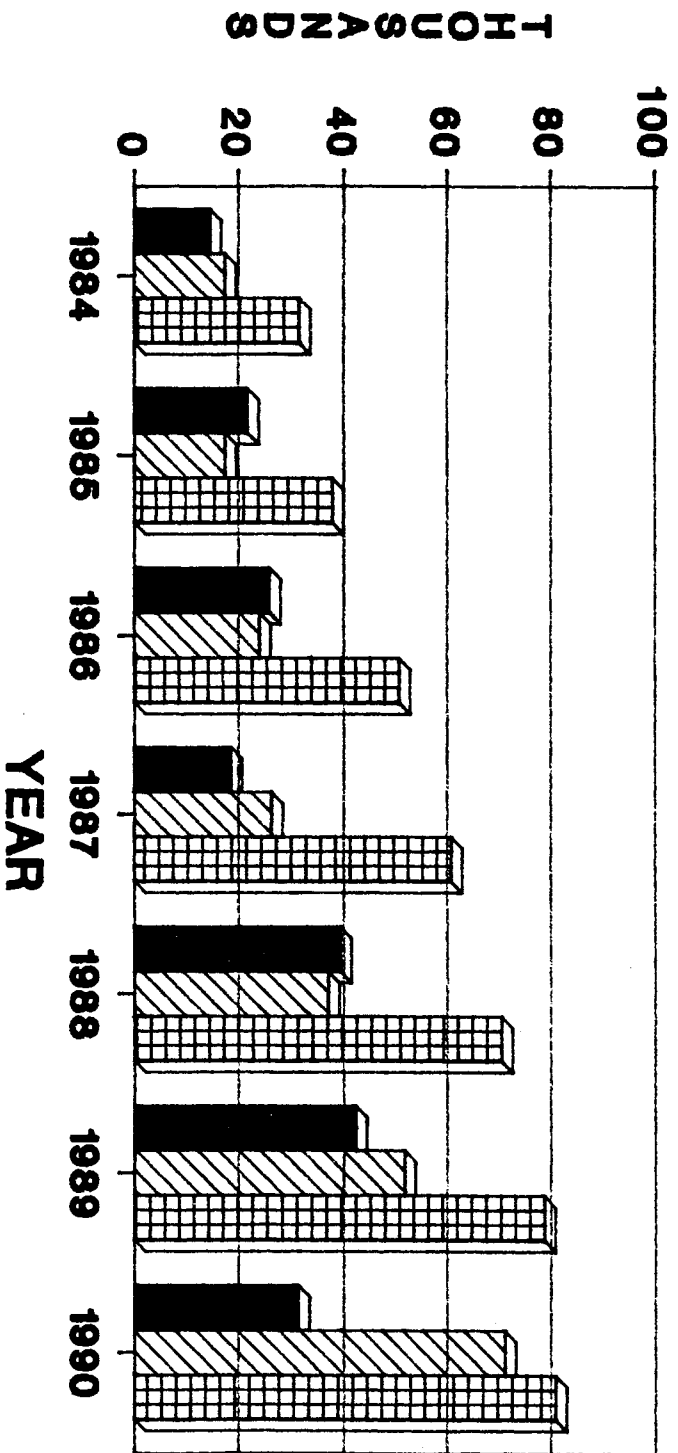


Figure 1. Number of geese harvested, assigned quota and number of hunters in the 4 County Quota Zone from 1984-1990.

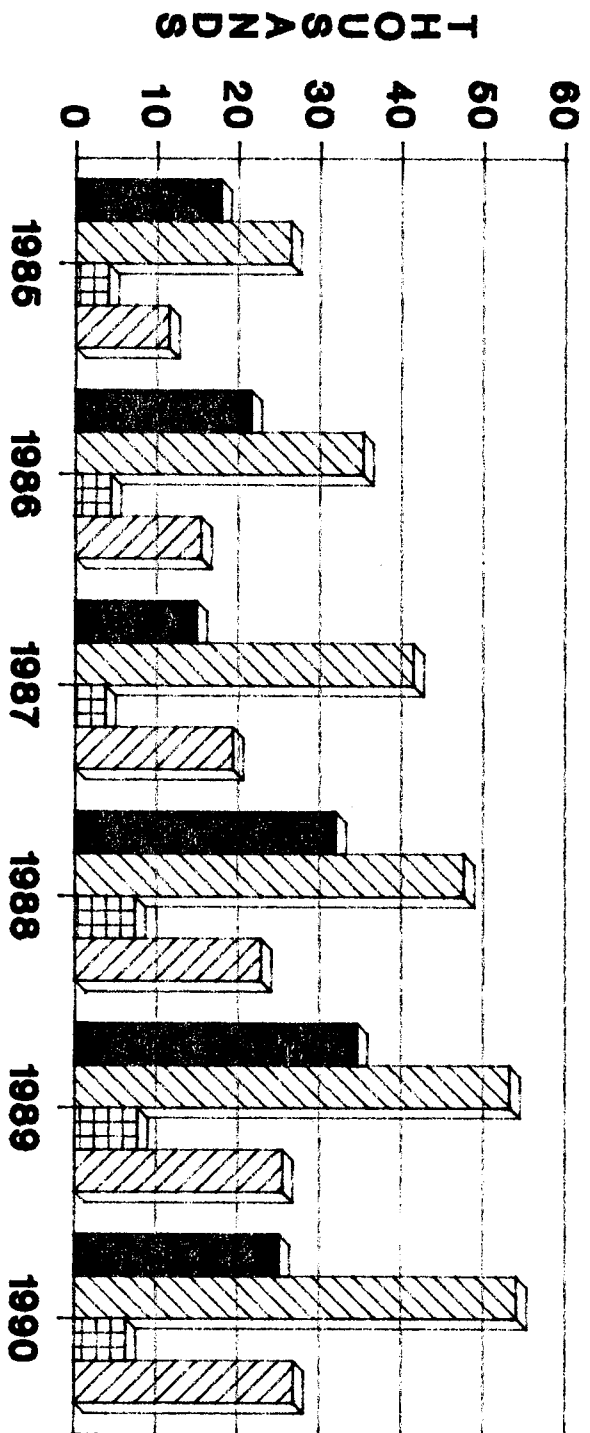


Figure 2 Number of commercial and non-commercial hunters and goose harvest from 1985-1990.

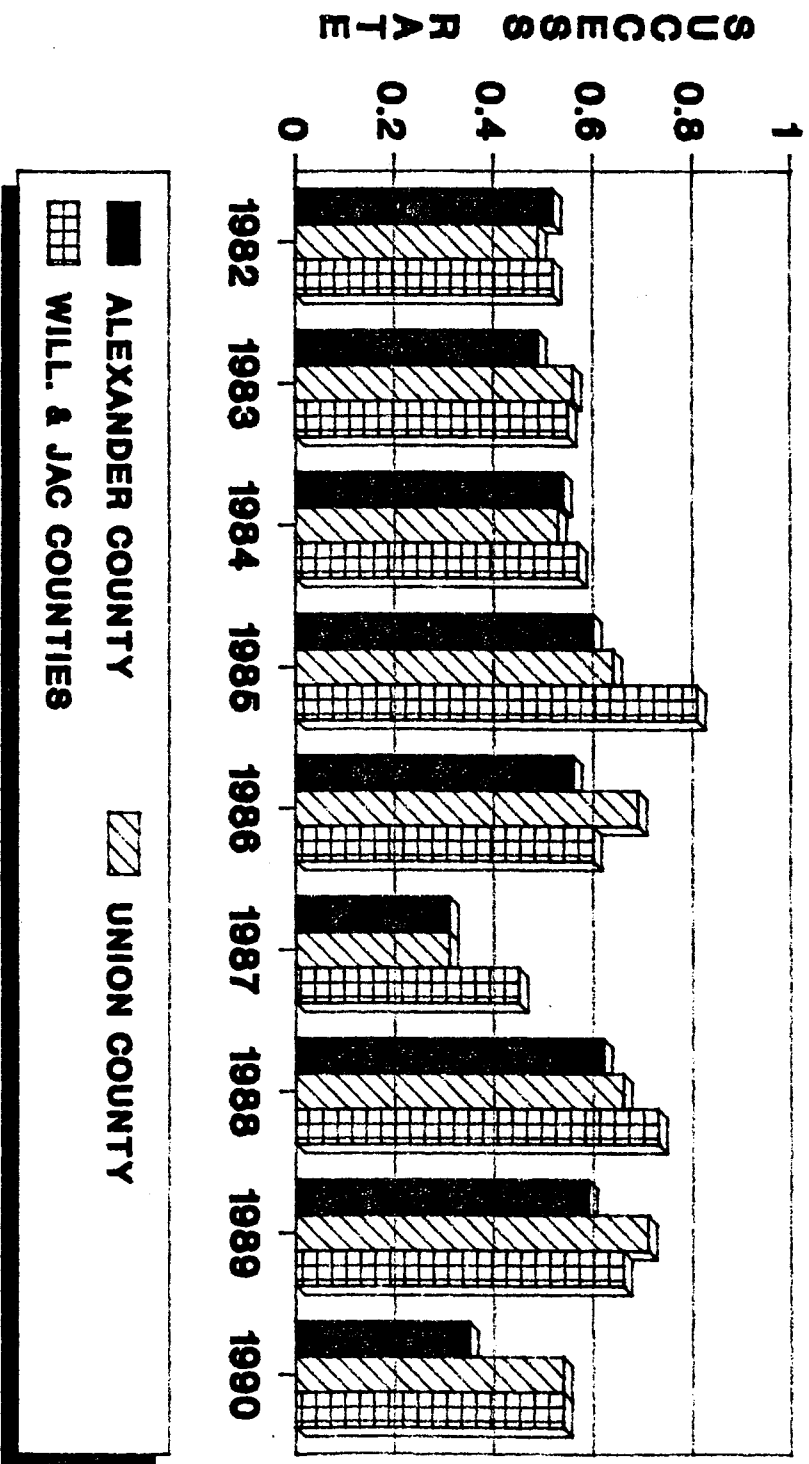


Figure 3. Success rates for Canada geese hunters on commercial clubs in the Southern Illinois Quota Zone, 1982-1990.

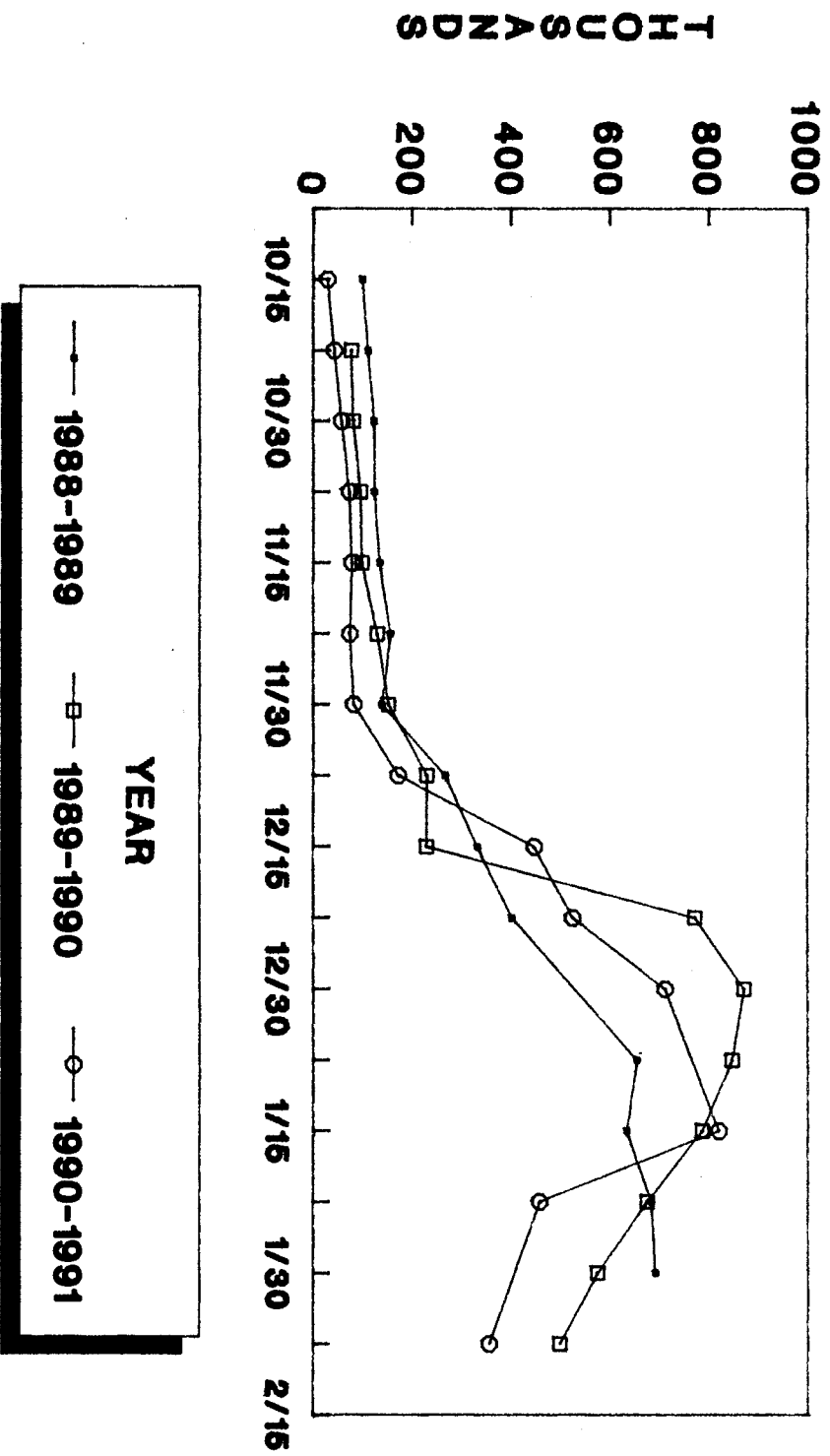


Figure 4. Number of Canada Geese in Southern Illinois and Western Kentucky during Fall and Winter, 1988-1991.

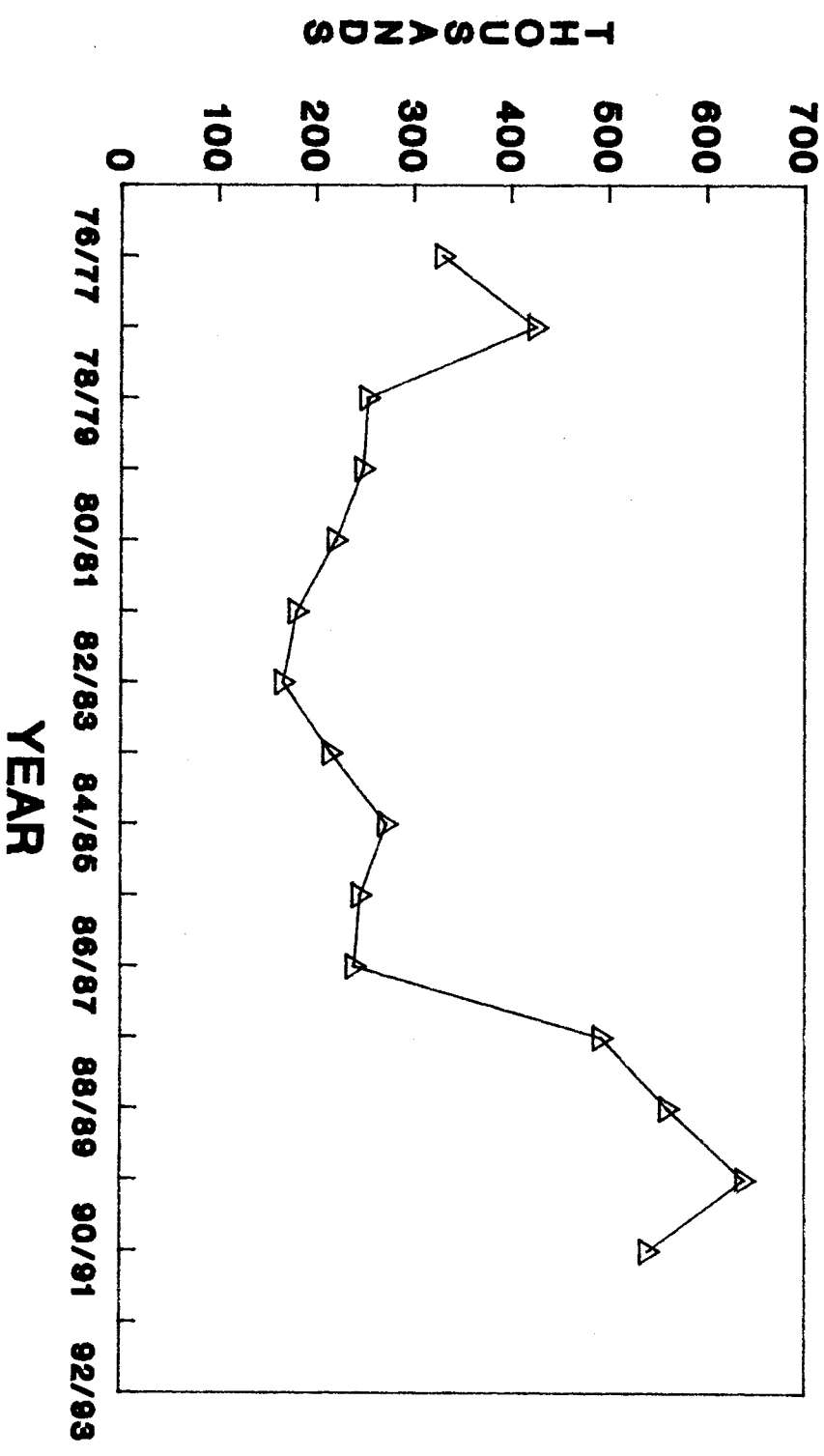


Figure 5. Peak populations of Canada Geese in the Southern Illinois Quota Zone, 1976-1991.

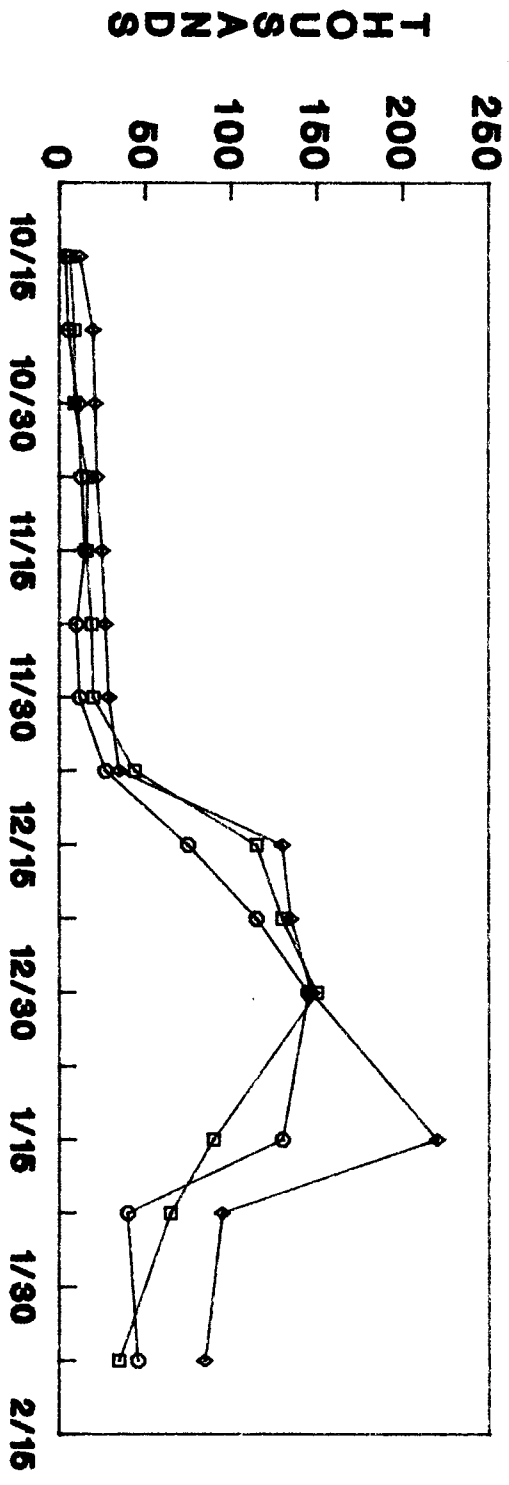


Figure 6. Numbers of Canada Geese on Three Refuges in the Southern Illinois Quota Zone During Fall and Winter, 1990.