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CANADA GOOSE HARVEST AND HUNTER ACTIVITY
IN THE 4-COUNTY QUOTA ZONE DURING
THE 1996 SEASON

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Abstract: The 1996 4-County Quota Zone (4CQZ) Canada goose hunting season opened 9 November and closed 31 January. The snow goose hunting season opened concurrently with the Canada goose season, however the season was split into 2 segments. The first split was 9 November - 31 January (84 days) and the second split was 8 February - 2 March (23 days). The goose season opened concurrently with the opening of the southern zone for duck hunting. The established season length for Canada goose hunting was 84 days (89 days in 1995) or when a quota of 36,600 geese was harvested with a daily bag limit of 2 Canada geese. Season length for snow, blue and ross geese was 107 days with a bag limit of 10. The 4CQZ is assigned 55% of the statewide MVP and 15% of the non-MVP Canada goose harvest allocation. The statewide Canada goose harvest allocation was 172,600 in 1995 and decreased 45% to 94,900 in 1996. A total of 25,091 Canada geese was harvested or 69% of the maximum allowable harvest. A total of 89 commercial clubs (89 in 1995) harvested 77% of the total harvest or 19,364 Canada geese. Goose hunters in Williamson/Jackson counties accounted for 61% (15,433) of the total quota zone harvest, while 21% (5,232) of the harvest occurred in Union county and 18% (4,426) in Alexander county. Goose hunters spent 60,801 days afield (12% less than 1995), and averaged 0.41 goose per trip (0.51 in 1995). Commercial clubs in Union county reported the highest success rates (0.58), followed by Williamson/Jackson and Alexander counties with success rates of 0.54 and 0.44, respectively. A total of 620 Canada geese was harvested by 2,054 hunters on the Union County Public Hunting Area (UCPHA). Goose hunters (850) on the Horseshoe Lake Public Hunting Area (HSLPHA) harvested 214 geese, and 1,772 hunters harvested 479 geese on the public hunting area at Crab Orchard National Wildlife Refuge (CONWR). Success rates for the Union County, Horseshoe Lake and CONWR Public Hunting Areas were 0.30, 0.27, and 0.25, respectively. The 1996 mid-December MVP Canada goose count in the quota zone and Mississippi Flyway was 68,500 (243,500 in 1995) and 155,023 (325,824 in 1995), respectively. Major migrations of Canada geese occurred between 26-28 November (61,300) and 16-18 January (176,000). The population finally peaked at 246,000 (298,000 in 1996) in the quota zone on 20 January. The peak wintering population in southern Illinois and western Kentucky was 310,100 Canada geese (20 January) compared to 332,200 in 1995-96. Tail fans (n=1,274) collected from commercial pickers in Alexander and Williamson/Jackson counties revealed an age ratio of 0.51 immatures/adult (0.51:1 in 1995). Horseshoe Lake Conservation Area (HSLCA) accounted for 30% (3.6 million) of the goose use-days (GUD) in southern Illinois. CONWR and Union County Conservation Areas (UCCA) accounted for 25% (3.0 million) and 22% (2.6 million) of the GUD, respectively. GUD on the wintering refuges in southern Illinois and western Kentucky decreased 37% from 19.0 million in 1995-96 to 12.0 million in 1996-97. No significant losses of waterfowl to disease were observed on the wintering refuges in southern Illinois in 1996-97.

INTRODUCTION

Alexander, Jackson, Union, and Williamson counties comprise the 4CQZ. Located in this region are three major Canada goose wintering areas. The most important and oldest wintering area is the HSLCA in Alexander County. The Department of Natural Resources (DNR) recognized the importance of Horseshoe Lake to Canada geese and established it as a refuge in 1927. Traditionally, the area records the largest amount of GUD in southern Illinois. However, in recent years a shift in refuge distribution is occurring as CONWR has been recording the largest amount of GUD. The HSLCA contains 9,550 acres and encompasses an ancient oxbow of the Mississippi River. Approximately 30 miles north of Horseshoe Lake is the 6,200 acre UCCA. The northern most wintering refuge in the 4CQZ is CONWR, (44,000 acres) which is located approximately 35 miles northeast of UCCA 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 77% of the quota zone goose harvest in 1996 occurred on land licensed as commercial clubs.

Goose hunting regulations in the 4CQZ were amended in 1987 to allow three 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 two, except in those blinds where a licensed guide accompanied the hunters. Guide licensing by the DNR was eliminated as part of the 1987 legislation change. The number of hunters allowed per pit or blind increased from a maximum of three to five in 1993. In addition, the frequency of reporting harvest and hunter activity on commercial clubs decreased from twice per week to once per week. Beginning in 1994, reporting frequencies and methods were changed as a result of exceeding the quota in 1993.

METHODS AND MATERIALS

All persons applying for a commercial goose license in the 4CQZ received a registration packet containing daily registration form, club permits, administrative orders, reporting frequencies and self-addressed, postage paid envelopes. Commercial clubs submitted daily harvest registration forms twice per month and telephoned their harvest and hunter activity twice per week (Monday - Thursday and Friday - Sunday) using a toll-free telephone number throughout the season. Nextlink Interactive of Portland, Oregon was contracted to implement the telephone reporting system at a cost of \$0.50 per call. The zone harvest was updated at each interval by Waterfowl Program Staff at UCCA. All procedures in 1996 were the same as in 1995, including methods of estimating harvest and hunting pressure on outlying noncommercial areas by using the mean percent harvest occurring on those areas from 1973-1981 (Thornburg and Estel 1983).

An automatic answering machine was maintained in the phone system at the UCCA office. Harvest information and results of the most recent aerial inventories were updated once per week as new information became available. Goose hunters, club operators and media representatives were able to get updated information by accessing the goose hotline (618-833-8711) on the progress of the 1996 quota zone goose hunting season.

Canada goose populations on wintering areas in the 4CQZ, Rend Lake and Ballard county, Kentucky were monitored by aerial inventories starting 15 October and ending 24 February. Flights were conducted at weekly intervals, weather permitting. DNR Biologists conducted the inventories using the state's Cessna 337.

RESULTS

Population Status, Habitat and Migration Chronology

Population Status

The 1996 spring population survey conducted by the Ontario Ministry of Natural Resources (OMNR) revealed an estimated population of 678,805 ($\pm 123,977$ at 95% CI) Mississippi Valley Population (MVP) - Canada geese on the breeding grounds. This represented a 26% decrease from the 1995 spring estimate of 915,764 and is 25% below the 1991-96 MVP Management Plan goal of 900,000 Canada geese (adults and non-breeders).

Habitat

Aerial surveys yielded estimates of 188,590 active nests ($\pm 27,675$ at 95% CI) in 1996 compared to 201,596 in 1995 (6% less). The number of nests has declined steadily since 1990.

Production surveys yielded estimates of 381,042 Canada geese in 1996 compared to 407,322 in 1995 (6% less). The projected fall flight for MVP Canada geese in 1996 was 1.06 million (Leafloor 1996). As a result of the MVP below the spring population (900,000) and fall flight goals (1.2 million) in 1996, harvest strategies were adopted which decreased bag limits and harvest allocations.

Migration Chronology

Canada geese began arriving at southern Illinois wintering refuges during the week of 16-22 September. The first aerial inventory was conducted on 15 October and revealed that 4,200 Canada geese (9,000 in 1995) were present in the 4CQZ. Canada goose numbers in the 4CQZ gradually increased from 7,800 on 28 October to 12,200 by opening day (9 November). The first major migration of geese from Wisconsin occurred between 26-28 November, when the population in the 4CQZ increased from 34,800 to 82,600 (Table 1). Another major migration occurred between 16-18 January when the population increased from 88,000 to 246,000. The goose population finally peaked on 20 January at 246,000 (298,000 in 1995-96) (Figure 1). The Canada goose population in southern Illinois and western Kentucky peaked at 310,100 on 20 January (332,200 in 1996) (Figure 2). Large numbers of Canada geese remained on the wintering refuges through 17 February when warm weather patterns initiated northward migrations to spring staging areas. A small number (51,000) of snow geese wintered in southern Illinois and western Kentucky, however major migrations occurred on 28 January, 18 February when the population increased from 139,000 to 335,000. Snow geese departed for spring staging areas in spectacular numbers on 22 February. The following survey (24 February) revealed only 34,500 in southern Illinois and western Kentucky.

Canada goose numbers at HSLCA peaked at 102,000 in 1996-97 (175,000 in 1995-96). UCCA and CONWR reported peaks of 70,000 (61,000 in 1995-96) and 62,000 (107,000 in 1995-96), respectively. The 1996 mid-December MVP goose survey in the 4CQZ and Mississippi Flyway was 68,500 (243,500 in 1995)

and 155,023 (325,824 in 1995). However, the survey was only partially completed because Wisconsin was unable to conduct aerial inventories.

GUD and percent totals at 5 refuges in southern Illinois and western Kentucky are shown in Table 2. GUD in southern Illinois and western Kentucky decreased 37% from 19.0 million in 1995-96 to 12.0 million in 1996-97. In 1996-97, HSLCA accounted for 3.6 million GUD (30% of the total), CONWR accounted for 3.0 million GUD (25% of the total), UCCA accounted for 2.6 million GUD (22% of the total), Rend Lake accounted for 1.2 million GUD (10% of the total) and Ballard county, Kentucky 1.5 million GUD (13% of the total).

4COZ Goose Season, Hunter Participation, Goose Harvest and Hunter Success

4COZ Goose Season

The 1996 4COZ Canada goose hunting season opened 9 November and closed 84 days later on 31 January (Table 3). The snow goose hunting season opened concurrently with the Canada goose season, however the season was split into 2 segments. The first segment was 9 November - 31 January (84 days) and the second segment was 8 February - 2 March (23 days). The Canada goose harvest allocation for Illinois decreased 45% from 172,600 in 1995 to 94,600 in 1996. The 4COZ annually receives 55% of the statewide MVP and 15% of the non-MVP Canada goose harvest allocation. The harvest quota assigned to the 4COZ decreased 42% from 62,691 in 1995 to 36,600 in 1996. Canada goose season length decreased from 89 days in 1995 to 84 days in 1996. The daily bag limit for Canada geese decreased from 3 in 1995 to 2 in 1996. Shooting hours were extended during the last 3 days of the Canada goose hunting season from 3 p.m. to sunset.

Hunter Participation

Goose hunters spent a total of 60,801 days afield during the 1996 season which was 12% less than 1995 (Figure 3). A total of 33,008 hunters registered at commercial clubs in 1996 (12% less than in 1995). An additional 3,826 hunters registered on the public hunting areas at Union county and CONWR (16% less than 1995). An estimated 23,967 days afield occurred on noncommercial areas in 1996 (10% less than 1995) (Whitton 1996). The average daily number of hunters in 1996 (724) was 6% less than in 1995 (772), however season length was 5 days less than in 1995.

Commercial licenses were issued to 89 clubs in the quota zone in 1996 (no change from 1995). Commercial clubs were the most numerous in Williamson/Jackson counties (51), while clubs in Alexander and Union counties numbered 26 and 12, respectively.

Williamson/Jackson counties reported 52% of the hunter-trips on commercial clubs. Approximately 26% of the hunter-trips on commercial clubs occurred in Alexander county, while the remaining 22% occurred in Union county. Williamson/Jackson counties had the greatest number of total hunter-trips (40,698) (10% less than 1995) in the quota zone with 67%, followed by Alexander county with 17% (10,239) (22% less than 1995) and Union county with 16% (9,864) (4% less than 1995) (Table 4).

Hunter use and harvest on the public hunting areas in the quota zone are included in the commercial club totals. The HSLPHA ceased charging hunters a fee for the privilege of hunting in 1992. Therefore, the area is considered a noncommercial area. The remaining two commercial public hunting areas (Union

County and CONWR) accounted for 10% of the hunting effort on commercial clubs in 1996. A total of 4,676 hunters registered on three public hunting areas associated with the major wintering refuges (15% less than 1995). UCPHA accounted for the most hunters (2,054), which represented 44% of the total hunting effort on public hunting areas in the 4CQZ. The CONWR and Horseshoe Lake Public Hunting Areas registered 1,772 (38%) and 850 hunters (18%), respectively (Table 5).

Harvest

A total of 25,091 Canada geese was harvested in the quota zone during the 1996 season (29% less than 1995) (Figure 3). This was 11,509 geese below the 36,600 Canada goose allocation. Commercial clubs accounted for 77% of the total harvest or 19,364 Canada geese (Figure 4). Approximately 54% of the total harvest on commercial clubs occurred in Williamson/Jackson counties (10,417), 25% in Union county (4,787) and 21% in Alexander county (4,160).

Incidental to the Canada goose harvest, 286 snow geese (136% greater than 1995), 166 white-fronted geese (25% greater than 1995), and 3,216 ducks (no change from 1995) were harvested throughout the 4CQZ. Alexander county accounted for 33% of the snow (94) and 48% of the white-fronted geese (80) harvested. Union county accounted for 29% of the snow (82) and 26% of the white-fronted geese (43) harvested. Williamson/Jackson counties reported 38% of the snow (110) and 26% of the white-fronted geese (43) harvested. Williamson/Jackson counties reported harvesting 55% (1,760) of the ducks, while 35% (1,114) occurred in Union county and 10% (342) in Alexander county. Mallards comprised 40% of the harvest (66% in 1995) while the remaining 60% consisted of a variety of species.

The three public hunting areas reported a harvest of 1,313 Canada geese in 1996 (43% less than 1995). The UCPHA reported 47% of the goose harvest (620), while 37% of the harvest was reported at CONWR Public Hunting Area (479), and 16% at HSLPHA (214) (Table 5). The Canada goose harvest (1,099) on the two commercial public hunting areas in the 4CQZ represented 6% (1% less than 1995) of the total commercial club harvest.

The 1996 goose harvest on the UCPHA (620) was 37% less than the 1990-94 average and 60% less than the harvest in 1995. The goose harvest at HSLPHA in 1996 (214) was 104% greater than the 1990-94 average, and 49% less than the harvest in 1995 (Table 6).

The average daily Canada goose harvest for the 1996 season was 299 geese per day. This was 25% less than in 1995 (398) and 41% less than 1994 (509). The greatest harvest occurred during the 4-day reporting period 20-23 January, when 3,451 geese were harvested (2,846 Canada geese harvested/day in 1995) (Table 7). The lowest harvest (62) occurred during the 3-day reporting period 22-24 November (159 Canada geese harvested/day in 1995) (Figure 5).

Williamson/Jackson counties accounted for 61% (15,433) of the total goose harvest in 1996. Union county followed with 21% (5,232) and Alexander county 18% (4,426) (Table 8).

The estimated harvest on noncommercial lands in 1996 was 5,727 Canada geese or 23% of the total geese harvested. Approximately 88% of the noncommercial harvest occurred in Williamson/Jackson counties (5,016), while 7% occurred in Union (445) and 5% in Alexander counties (266).

The 1996 Illinois Waterfowl Hunter Questionnaire Survey revealed a statewide harvest estimate of 65,864 Canada geese (Anderson 1997). The federal harvest estimate indicated that 100,500 Canada geese

were harvested statewide (Table 9) (Gamble 1997). The federal harvest estimate (29,109) for the 4CQZ was 14% greater than the state estimate (25,091) which is derived from daily registration forms.

Tail fans collected from commercial pickers in 1996-97 (n=1,930) in Alexander and Williamson counties revealed an age ratio of 0.51 immatures per adult (0.51 in 1995 and 0.82 in 1994) (Table 10). Tail fans analyzed from geese harvested at UCPHA and HSLPHA (n=834) revealed age ratios of 1.81 immatures per adult (Table 11). Age ratios from the UCPHA were above the long-term average, while the age ratio at HSLPHA in 1996 was below the long-term average (Table 12). Collectively, tail fans (n=2,764) revealed an age ratio of 0.76 immatures per adult (0.74 in 1995).

Hunter Success

Success rates for Canada goose hunters on commercial clubs in the quota zone decreased from 0.65 goose per trip in 1995 to 0.52 in 1996 (Table 13). Commercial clubs in Union county reported the highest success rates (0.58), while commercial clubs in Williamson/Jackson and Alexander counties reported success rates of 0.54 and 0.44, respectively (Figure 6).

The UCPHA reported the highest success rate (0.30) on public hunting areas in 1996 (Table 14). The public hunting areas at CONWR and HSLPHA reported success rates of 0.27 and 0.25, respectively (Table 15).

DISCUSSION

For the second consecutive year, cool wet planting conditions occurred throughout the spring and into the early summer resulting in reduced crop acreages and yields in southern Illinois. Normal weather patterns returned throughout the remainder of the growing season. However, below average temperatures with above average precipitation delayed crop harvest throughout southern Illinois.

Southern Illinois experienced temperatures below average with above average snowfall accumulations throughout December and January. Extended periods of below zero temperatures reduced hunter activity and harvest. Canada goose body weights decreased to precipitously low levels during these extremely cold periods. Major Canada goose migrations occurred between 26-28 November and 16-18 January. The peak population of Canada geese (246,000) in the quota zone in 1996 represented the lowest number surveyed since 1986. The peak population of Canada geese in the 4C QZ was 17% less than 1995 and 27% below the 20-year average. Increasingly, larger numbers of Canada geese are spending greater amounts of time and perhaps even wintering in central and northern latitudes of Illinois. Major snow goose arrivals and departures occurred on 28 January and 18 February (arrival) and 22 February (departure), respectively. For the third consecutive year, increasingly larger numbers of snow geese are staging at Southern Illinois refuges. A record number of snow geese (335,000) were surveyed on 18 February. GUD decreased at all wintering refuges except Ballard County.

Overall, the 1996 Canada goose harvest in Illinois (65,864) was below the statewide allocation of 94,900 Canada geese, but was 8 greater than the 16-year (1981-1996) average harvest (60,400). Snow goose hunting continued after the close of the 84 day Canada goose and 70 day white-fronted goose hunting seasons. Snow goose hunters were given an opportunity to hunt an additional 23 days in February to fulfill the 107-day maximum allowable hunting framework. However, approximately 25% of 2 counties

(Alexander and Union) were closed to snow goose hunting in February to avoid exposing hunters near each refuge to a "baited situation" which involved artificial manipulation of a food resource. Commercial club operators requested that the long-term practice of mowing standing corn after the Canada goose hunting season continue at UCCA (Union county) and HSLCA (Alexander county). No detectable disease losses of waterfowl were observed on the wintering refuges in southern Illinois in 1996-97.

The telephone harvest reporting system was used for the third consecutive year in 1996. Fewer user problems occurred, most likely a result of club operators becoming experienced using the toll-free number (1-800-TO-RELICENSE) and voice menu recording system. The number of Canada geese harvested that was reported by telephone totaled 24,650 which resulted in a compliance rate of 98.2% (97.7% in 1995). Canada geese harvested on commercial clubs which failed to report telephone periods were determined from cross referencing data from daily registration forms. Overall, 29 (40 in 1995) commercial clubs failed to telephone in 92 (116 in 1995) reporting periods. An additional 342 Canada geese and 644 hunters or 1.8% were not reported using the telephone system.

The results of the 1996 MVP Canada goose spring population and production surveys did not meet MVP management plan goals. Despite reductions in harvest allocation, Illinois was able to maintain liberal season lengths (84-94 days) due to approximately 75% of the state utilizing a telephone harvest monitoring system. Even more conservative seasons may be necessary in 1997 if recruitment is average or below in order to achieve MVP plan goals.

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Table 1. Canada goose populations on wintering areas in southern Illinois and western Kentucky throughout the fall and winter of 1996-97.

Date	Burning Star Mine	Campbell Pond	Crab Orchard NWR	Horseshoe Lake CA	Union County CA	Quota Zone Subtotal	Ballard Co. Ky ^a	Cypress Creek NWR	Carlyle Lake	Rend Lake	S. Illinois W. Kentucky Total ^b
10-15-96	100	0	1,200	2,000	900	4,200	300	13	0	600	5,113
10-28-96	600	0	2,500	3,200	1,500	7,800	250	0	0	800	8,850
11-04-96	500	200	4,000	5,200	2,300	12,200	900	0	0	1,000	14,100
11-12-96	100	300	4,000	3,400	1,800	9,600	1,000	100	0	1,200	11,900
11-18-96	300	0	3,500	4,500	3,200	11,500	750	0	0	3,000	15,250
11-26-96	500	300	14,000	8,000	12,000	34,800	900	100	0	5,000	43,000
12-02-96	400	200	35,000	27,000	20,000	82,600	4,300	400	0	17,000	104,300
12-09-96	3,500	0	26,000	22,000	17,000	68,500	4,500	300	0	11,500	88,300
12-17-96	1,700	400	25,000	14,500	16,000	57,600	3,200	550	500	4,000	65,850
12-24-96	1,100	800	22,000	16,500	18,500	58,900	6,900	1,500	0	3,500	71,500
01-06-97	4,000	5,000	37,000	23,000	19,000	88,000	8,500	1,000	0	11,000	110,500
01-13-97	8,500	0	43,000	32,000	24,000	107,500	19,700	200	0	3,100	134,100
01-20-97	12,000	0	62,000	102,000	70,000	246,000	47,500	300	0	10,500	310,100
01-28-97	12,000	2,000	57,000	55,000	48,000	174,000	45,000	7,500	0	32,500	278,000
02-03-97	9,000	3,000	33,000	77,000	40,000	162,000	22,000	8,000	7,500	29,000	231,500
02-10-97	6,000	1,200	22,000	49,000	42,000	120,200	15,500	4,000	5,200	23,000	186,500
02-17-97	11,000	4,000	14,000	42,000	17,000	88,000	21,200	3,500	42,000	11,000	183,800
02-24-97	4,500	500	8,000	5,500	7,500	26,000	4,000	200	1,300	3,500	40,200

^a Includes Swan Lake, KY.

^b Includes Vandalia Lake, Keck's Marsh and Ten Mile Creek.

Table 2. Canada goose use-days and percent total at 5 refuges in southern Illinois and western Kentucky in 1996-97.

Week	Union County		Horseshoe Lk.		Crab Orchard		Rend Lake		Ballard County		Total Goose Use Days
	Goose Use Days	%	Goose Use Days	%	Goose Use Days	%	Goose Use Days	%	Goose Use Days	%	
10-15-96	11,700	18	26,000	40	15,600	24	7,800	12	3,900	6	65,000
10-28-96	10,500	18	22,400	39	17,500	30	5,600	10	1,750	3	57,750
11-04-96	18,400	17	41,600	39	32,000	30	8,000	7	7,200	7	107,200
11-12-96	10,800	16	20,400	30	24,000	35	7,200	11	6,000	8	68,400
11-18-96	25,600	22	36,000	30	28,000	23	24,000	20	6,000	5	119,600
11-26-96	72,000	30	48,000	20	84,000	35	30,000	13	5,400	2	239,400
12-02-96	140,000	20	189,000	26	245,000	34	119,000	16	30,100	4	723,100
12-09-96	136,000	21	176,000	27	208,000	32	92,000	14	36,000	5	648,000
12-17-96	112,000	26	101,500	23	175,000	40	28,000	6	22,400	5	438,900
12-24-96	240,500	28	214,500	24	286,000	33	45,500	5	89,700	10	876,200
01-06-97	133,000	19	161,000	23	259,000	38	77,000	11	59,500	9	689,500
01-13-97	168,000	20	224,000	26	301,000	35	21,700	3	137,900	16	852,600
01-20-97	560,000	24	816,000	35	496,000	21	84,000	4	380,000	16	2,336,000
01-28-97	288,000	20	330,000	23	342,000	24	195,000	14	270,000	19	1,425,000
02-03-97	280,000	20	539,000	38	231,000	17	203,000	14	154,000	11	1,407,000
02-10-97	294,000	28	343,000	32	154,000	15	161,000	15	108,500	10	1,060,500
02-17-97	119,000	16	294,000	40	98,000	13	77,000	11	148,400	20	736,400
02-24-97	52,500	27	38,500	19	56,000	28	24,500	12	28,000	14	199,500
Total	2,672,000	22	3,620,900	30	3,052,100	25	1,210,300	10	1,494,750	13	12,050,050

Table 3. Annual 4-County Quota Zone Canada goose season statistics, 1977-1996.

Year	Quota Size	Season Length	Date Open	Date Closed	Harvest	Percent Success Rate	Pop. Peak	Hunter Use-Days	Comm. Clubs	Free Permits
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	—
1991	72,400	84	11/09/91	01/31/92	26,403	38	350,000	70,210	127	—
1992	39,500	79	11/14/92	01/31/93	17,255	30	372,000	57,877	107	—
1993	30,600	51	11/27/93	01/16/94	36,679	67	475,000	54,437	80	—
1994	39,800	51	12/03/94	01/22/95	25,956	40	294,100	65,559	92	—
1995	62,691	89	11/04/95	01/31/96	35,414	51	298,000	68,759	89	—
1996	36,600	84	11/09/96	01/31/97	25,091	41	246,000	60,801	89	—
20-yr. Avg.	35,537	55	—	—	27,507	47	339,655	58,388	103	—

Table 4. Hunter-trips and harvest of Canada geese in the 4-County Quota Zone during the 1996 season.

	Number of Permits Issued	Hunter Trips	Percent By Permit	Percent By Counties	Harvest	Percent By Permit	Percent By Counties	Success Rate
<u>Alexander County (Horseshoe Lake CA)</u>								
Licensed Clubs ^a	26	9,420	92		4,160	94		44
Other Areas ^b	0	819	8		266	6		32
Total	26	10,239	100	17	4,426	100	18	43
<u>Union County (Union County CA)</u>								
Licensed Clubs ^a	12	8,286	84		4,787	92		58
Other Area ^b	0	1,578	16		445	8		28
Total	12	9,864	100	16	5,232	100	21	53
<u>Williamson/Jackson Counties (Crab Orchard NWR)</u>								
Licensed Clubs ^a	51	19,128	47		10,417	68		54
Other Areas ^b	0	21,570	53		5,016	32		23
Total	51	40,698	100	67	15,433	100	61	38
Grand Total	89	60,801		100	25,091		100	41

^a Licensed 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.

^b Other 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 5. Contribution of public hunting areas to the hunting effort and harvest of Canada geese during the 1996 season.

County	Hunter Trips	Percent of County Commercial Club Total	Harvest (%)	Percent of County Commercial	Percent Success Rate	Incidental Harvest		
						Ducks	Snow Geese	White-fronted Geese
Horseshoe Lake ^a	850	—	214 (16)	—	25	30	1	4
Union ^b	2,054	24.7	620 (47)	12.9	30	178	3	8
Williamson/Jackson ^b	1,772	9.2	479 (37)	4.5	27	273	0	0
All Counties	4,676	17.0	1,313	8.6	28	481	4	12

^a Horseshoe Lake Public Hunting Area became a non-commercial area in 1993.

^b Union County and Crab Orchard NWR Public Hunting Areas are licensed clubs.

Table 6. Comparison of the 1996 Canada goose season on the Union County and Horseshoe Lake Public Hunting Areas with the 1995 Canada goose season and the 1990-1994, 5-year average.

	Union County Public Hunting Area (1990-94)			Horseshoe Lake Public Hunting Area (1990-94)		
	1995	1996		1995	1996	
Percent of Total County Hunters	26	24	21	4	7	8
Percent of Total County Harvest	18	17	12	1	5	5
Number of Hunters	2,830	2,472	2,054	731	929	850
Average Number Hunters Per Day	49	33	30	12	15	15
Harvest	990	1,025	620	105	420	214
Percent Success Rate	36	41	30	17	28	25

Table 7. Canada goose harvest in the 4-County Quota Zone throughout the 1996 season.

Date	Alexander		Union		Will/Jackson		Number Geese Harvested Per Report Period	Total Goose ^a Harvest in Quota Zone
	Hunters	Geese	Hunters	Geese	Hunters	Geese		
11/09-10	100	6	190	30	1,289	658	694	694
11/11-14	15	15	138	52	604	227	294	988
11/15-17	27	3	88	5	645	204	212	1,200
11/18-21	9	1	77	5	453	124	130	1,330
11/22-24	21	0	33	1	464	61	62	1,392
11/25-28	41	21	80	27	915	410	458	1,850
11/29-01	364	140	230	73	1,206	324	537	2,387
12/02-05	262	136	168	73	1,102	588	797	3,184
12/06-08	203	16	183	38	1,109	317	371	3,555
12/09-12	423	161	302	207	1,451	504	872	4,427
12/13-15	422	112	414	129	1,774	323	564	4,991
12/16-19	583	187	587	200	2,104	482	869	5,860
12/20-22	456	219	482	226	1,776	253	698	6,558
12/23-26	422	117	376	203	1,632	471	791	7,349
12/27-29	776	228	765	378	2,594	673	1,279	8,628
12/30-02	517	179	578	280	2,213	568	1,027	9,655
01/03-05	542	96	652	299	2,513	649	1,044	10,699
01/06-09	460	237	598	356	2,200	1,105	1,698	12,397
01/10-12	383	38	464	140	1,658	521	699	13,096
01/13-16	354	155	523	487	1,455	879	1,521	14,617
01/17-19	701	286	556	430	2,249	975	1,691	16,308
01/20-23	907	813	648	565	2,764	2,073	3,451	19,759
01/24-26	1,063	701	764	433	3,002	1,545	2,679	22,438
01/27-31	1,188	559	968	595	3,526	1,499	2,653	25,091
Total	10,239	4,426	9,864	5,232	40,698	15,433	25,091	25,091

^a Includes harvest on non-commercial areas.

Table 8. Total harvest of Canada geese by county in the 4-County Quota Zone, 1993-1996.

County	1993		1994		1995		1996	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Alexander	7,046	19	4,604	18	7,872	22	4,426	18
Union	5,285	15	4,891	19	5,874	17	5,232	21
Williamson/Jackson	<u>24,348</u>	<u>66</u>	<u>16,461</u>	<u>63</u>	<u>21,668</u>	<u>63</u>	<u>15,433</u>	<u>61</u>
Total	36,679	100	25,956	100	35,414	100	25,091	100

Table 9. Canada goose harvest in Illinois, 1977-1996.

Year	Statewide Harvest Obj.	Season Length Quota Z./Upstate	4-Co. Quotas (1,000's)	Statewide Harvest Fed Est./State Est. (1,000's)	Quota Zone Harvest (1,000's)	Upstate Harvest (1,000's) Fed. Est. / State Est.
1977	35,000	44	29.0 (80) ^a	76.6	30.7 (40) ^b	45.9 (60)
1978	50,000	69	40.0 (80)	118.7	40.5 (34)	78.2 (66)
1979	35,000	70	29.0 (80)	69.0	29.2 (42)	39.8 (58)
1980	33,000	31	27.0 (80)	57.7	27.8 (48)	29.9 (52)
1981	30,000	50	24.0 (80)	51.5	25.3 (49)	26.2 (51)
1982	27,000	40	17.5 (65)	27.2	17.9 (66)	9.3 (34)
1983	27,000	35	17.5 (65)	38.8	18.2 (44)	23.4 (56)
1984	27,000	25	17.5 (65)	31.0	14.6 (47)	16.4 (53)
1985	27,000	31	17.5 (65)	36.9	21.8 (59)	15.1 (41)
1986	48,000	42	24.0 (50)	48.9	25.9 (53)	23.0 (47)
1987	52,500	50	26.3 (50)	45.7	18.6 (41)	27.1 (59)
1988	74,000	50	37.0 (50)	91.0	39.3 (43)	51.7 (57)
1989	103,500	56	51.7 (50)	95.6	42.3 (44)	53.3 (56)
1990	142,200	70	71.1 (50)	93.7	31.3 (33)	62.4 (67)
1991	144,800	84	72.4 (50)	95.4	26.4 (28)	69.0 (72)
1992	79,000	79	39.5 (50)	76.7	17.2 (22)	65.8 (78)
1993	61,300	51	30.6 (50)	94.8	36.6 (39)	76.5 (81)
1994	109,600	51	39.8 (55-15) ^d	77.4	25.9 (38)	65.5 (85)
1995	172,600	89	62.6 (55-15)	104.7	35.4 (34)	73.9 (71)
1996	94,900	84	36.6 (55-15)	100.5	25.1 (25)	71.4 (71)
20-yr. Avg.	68,670	55	35.5	71.5	27.5	46.1
				60.4 ^e		33.5 ^e

^a Percent of statewide harvest allocation.

^b Percent of federal estimate of statewide harvest.

^c Percent of state estimate of statewide harvest.

^d 4-County Quota Zone receives 55% of statewide MVP allocation and 15% non-MVP.

^e 16 year average.

Table 10. Age ratio in the Illinois Canada goose harvest during the 1996 season. Data gathered from tail fans (n = 1,930) collected throughout the season from commercial pickers in Alexander and Williamson counties.

County	Immatures	Adults	Ratio
Alexander	503	933	0.54:1
Williamson	153	341	0.45:1
Total	656	1,274	0.51:1

Table 11. Age ratio in the Canada goose harvest (n = 834) on the Union County and Horseshoe Lake Public Hunting Areas during the 1996 season.

	Union County Age Ratio(Sample Size) (441 Im./179 Ad.)	Horseshoe Lake Age Ratio(Sample Size) (97 Im./117 Ad.)
Nov. 09 - Nov. 10	4.00:1 (5)	0.00:0 (0)
Nov. 11 - Nov. 17	0.00:1 (0)	0.00:0 (0)
Nov. 18 - Nov. 24	1.00:1 (1)	0.00:0 (0)
Nov. 25 - Dec. 01	3.00:1 (3)	0.00:0 (0)
Dec. 02 - Dec. 08	1.00:1 (16)	0.00:0 (0)
Dec. 09 - Dec. 15	3.63:1 (51)	2.33:1 (10)
Dec. 16 - Dec. 22	1.54:1 (28)	1.33:1 (21)
Dec. 23 - Dec. 29	5.50:1 (52)	0.80:1 (47)
Dec. 30 - Jan. 05	2.75:1 (60)	0.33:1 (12)
Jan. 06 - Jan. 12	1.91:1 (67)	2.16:1 (19)
Jan. 13 - Jan. 19	2.35:1 (104)	0.33:1 (4)
Jan. 20 - Jan. 26	2.15:1 (145)	0.76:1 (69)
Jan. 27 - Jan. 31	2.66:1 (88)	0.39:1 (32)
	2.46:1 (620)	0.82:1 (214)
Days Hunted	69	57

Table 12. Age ratios, expressed as immatures per adult, among Canada geese harvested on the Horseshoe Lake and Union County Public Hunting Areas, 1965 to 1996.

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
1991	1.0	1.4
1992	0.5	1.1
1993	1.8	2.3
1994	1.5	2.1
1995	0.6	1.5
1996	0.8	2.4
30 -Yr. Avg.	1.41	2.03

Table 13. Success rates for Canada goose hunters on commercial clubs in the 4-County Quota Zone 1987-1996.

County	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	10-Yr. Avg.
Alexander	.31	.62	.38	.59	.35	.38	.71	.39	.61	.44	.40
Union	.31	.66	.71	.54	.46	.36	.77	.52	.62	.58	.50
Williamson/Jackson	.45	.73	.66	.54	.52	.42	.95	.55	.69	.54	.60
All Counties	.36	.67	.65	.46	.45	.36	.85	.50	.65	.52	.50

Table 14. Hunter use, harvest and success rates on the Union County Public Hunting Area 1977-1996.

Year	No. Days Hunted	Number Hunters	Average Number Hunters Per Day	Geese Harvested	Success Rate
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
1991	81	3,571	44	1,062	.30
1992	65	2,618	40	605	.23
1993	44	2,920	73	1,500	.51
1994	43	2,255	52	802	.36
1995	74	2,472	33	1,025	.41
1996	69	2,054	30	620	.30
20 Yr. Avg.	49	2,913	66	1,342	.40

Table 15. Hunter use, harvest and success rates on the Horseshoe Lake Public Hunting Area 1977-1996.

Year	No. Days Hunted	Number Hunters	Average Number Hunters Per Day	Geese Harvested	Success Rate
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 ^a	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 ^a	58	1,406	24	184	.13
1991	81	1,005	12	164	.16
1992	65	746	11	61	.08
1993	41	335	8	42	.12
1994	43	375	9	75	.20
1995	61	929	15	420	.45
1996	57	850	15	214	.25
20 Yr. Avg.	47	1,400	33	422	.25

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

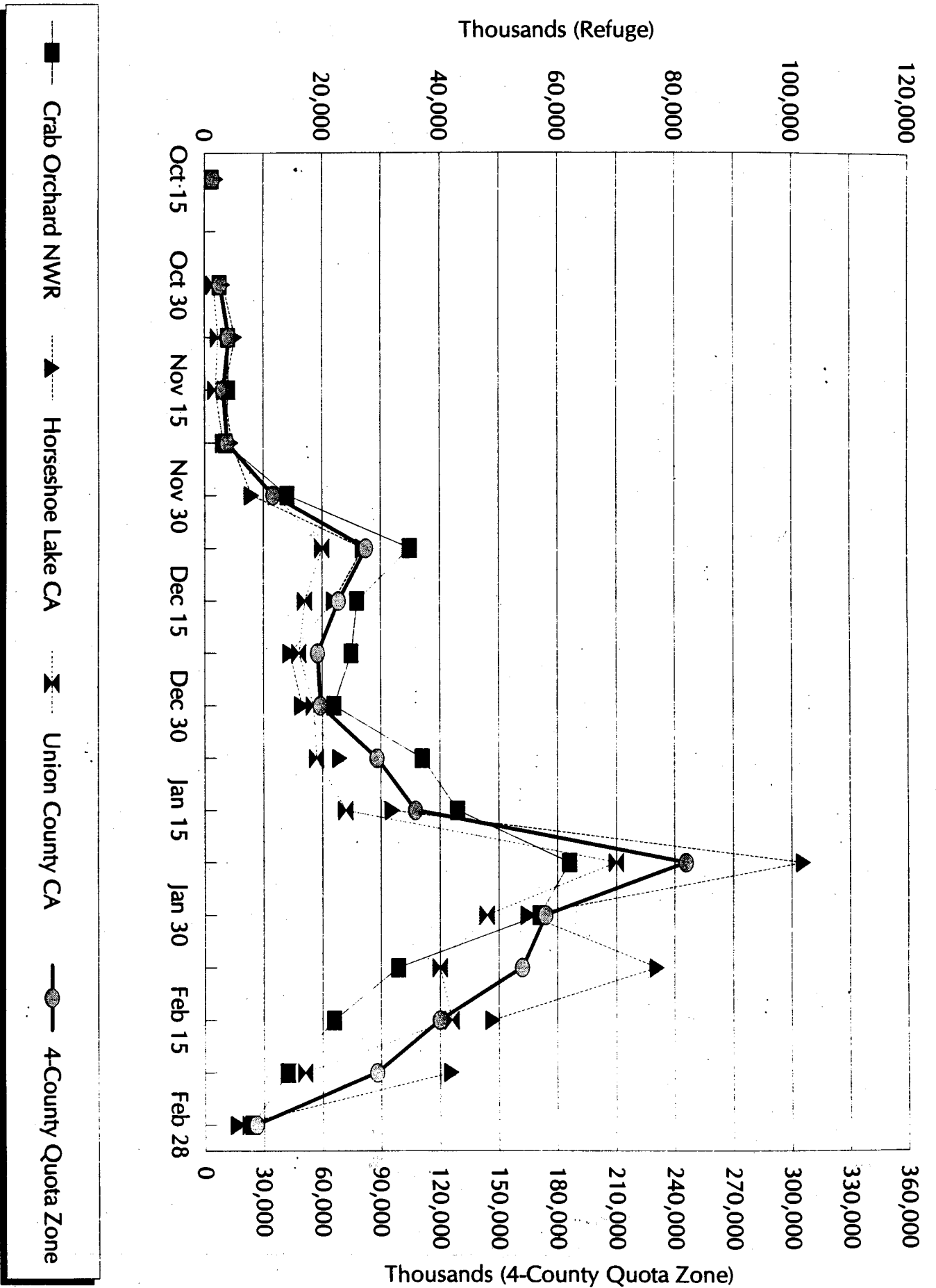


Figure 1. Numbers of Canada geese on three refuges in the 4-County Quota Zone during 1996-97.

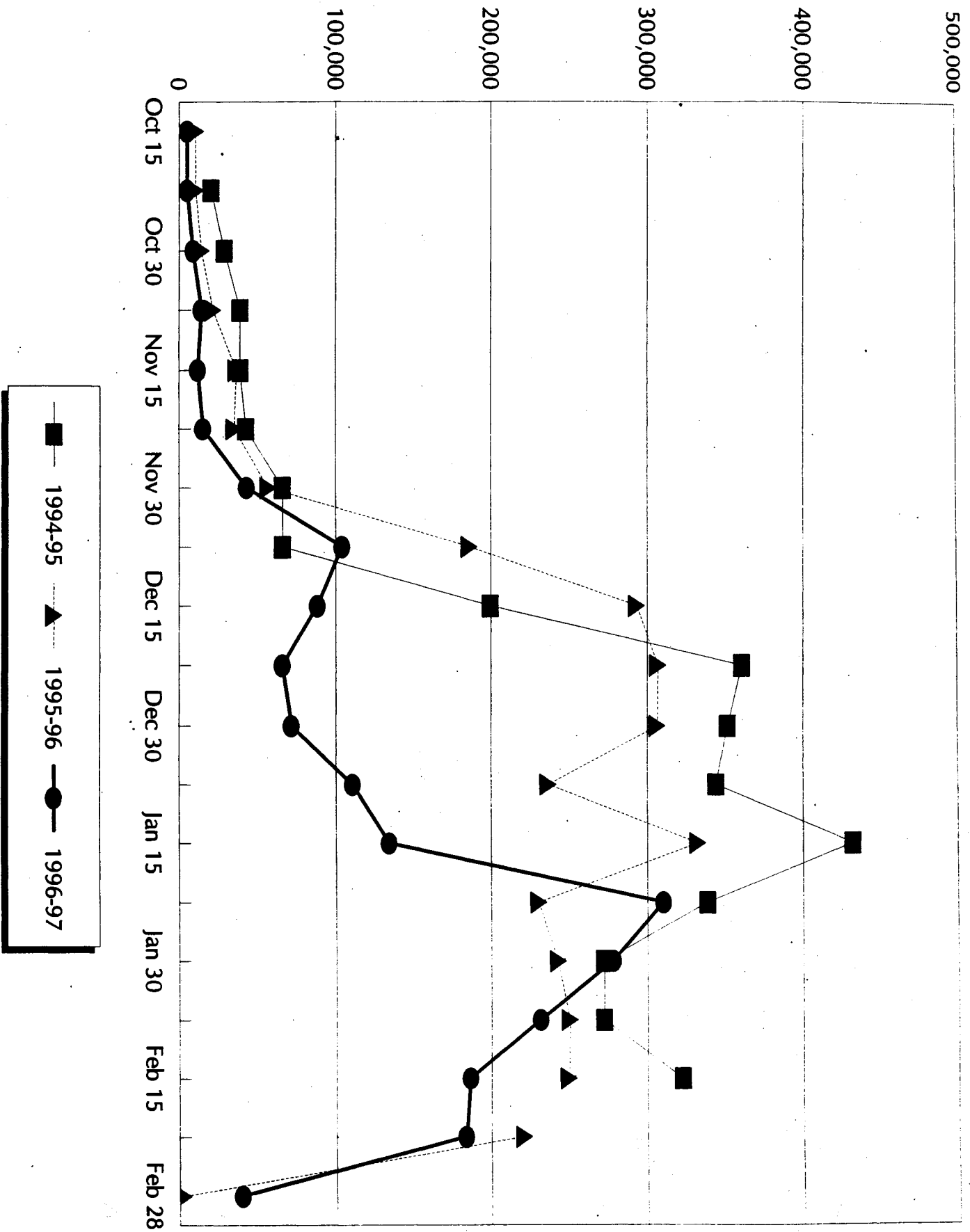


Figure 2. Number of Canada geese in southern Illinois and western Kentucky during fall and winter, 1994-97.

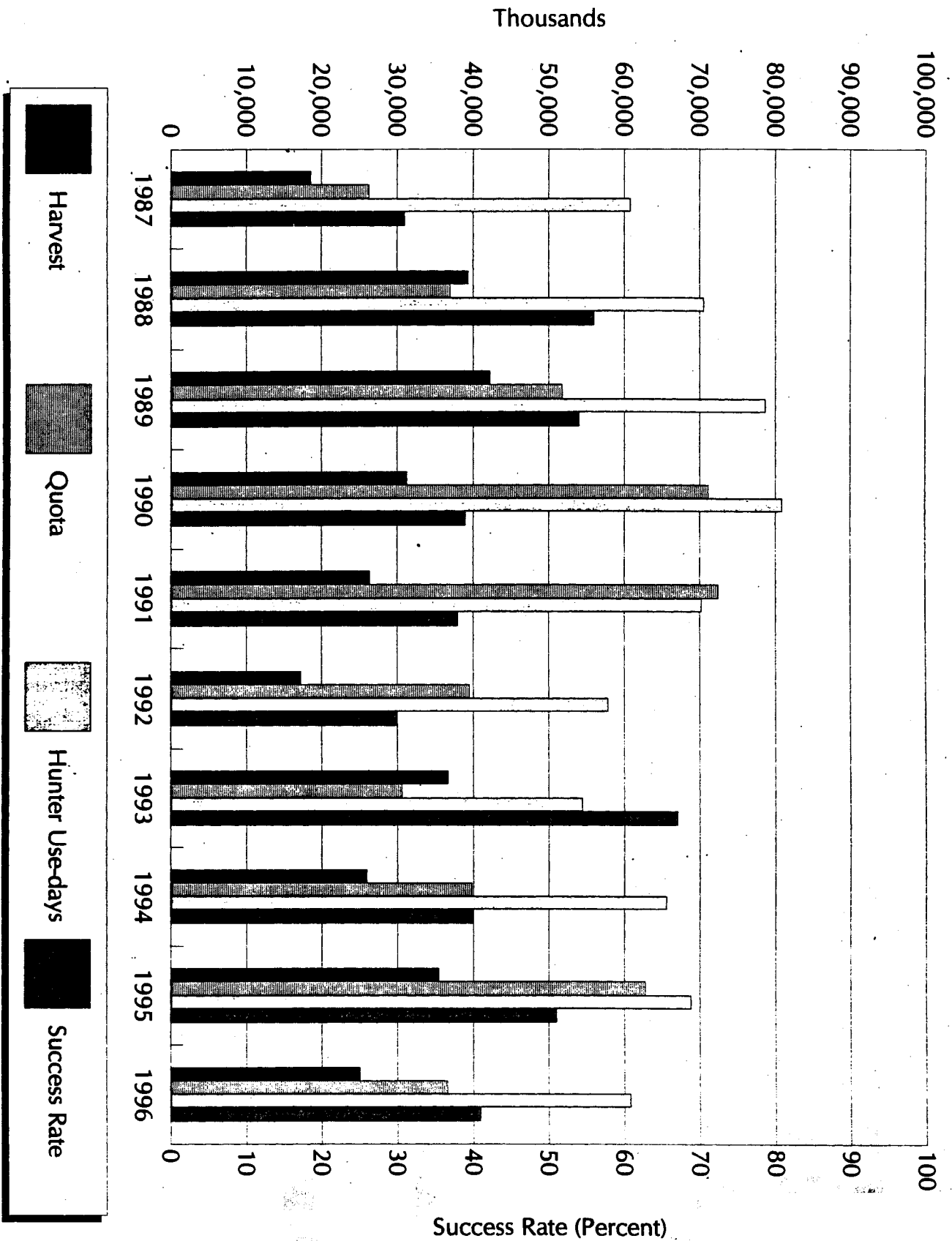


Figure 3. Number of Canada geese harvested, assigned quota, hunter use-days and success rate in the 4-County Quota Zone, 1987-1996.

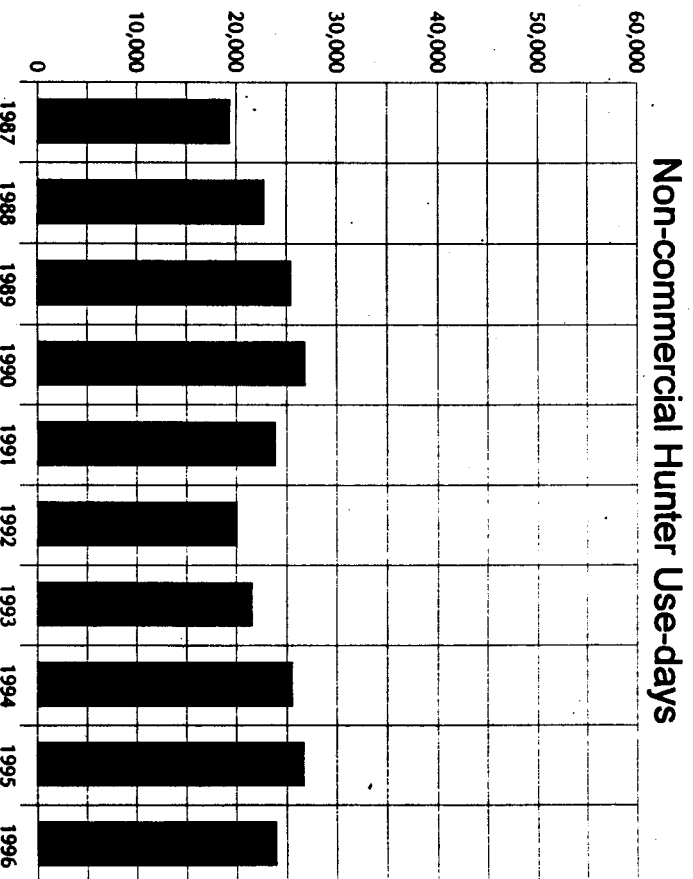
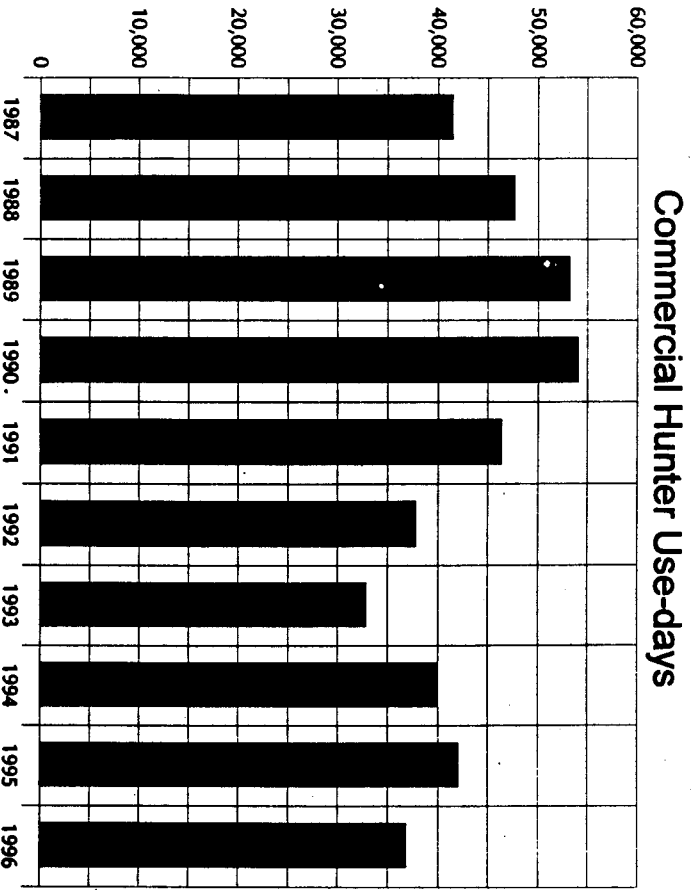
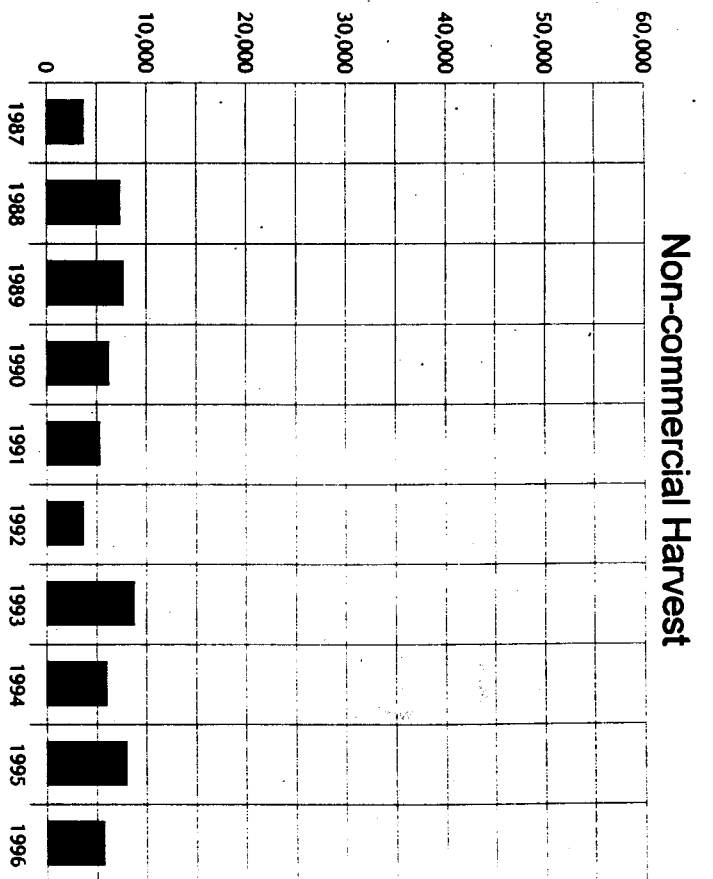
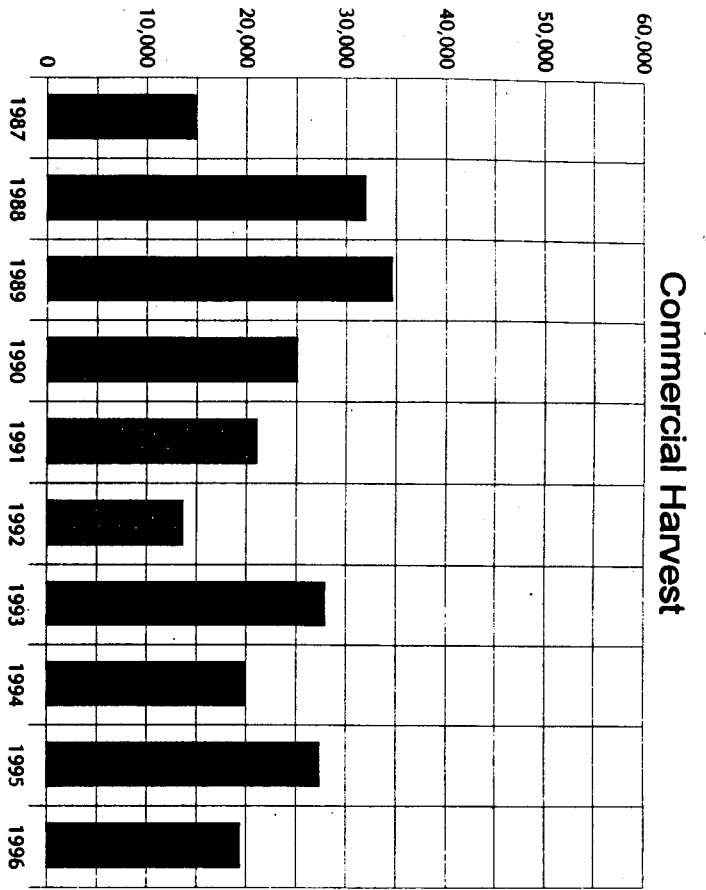


Figure 4. Canada goose harvest and hunter use-days on commercial and non-commercial areas in 1987-1996.

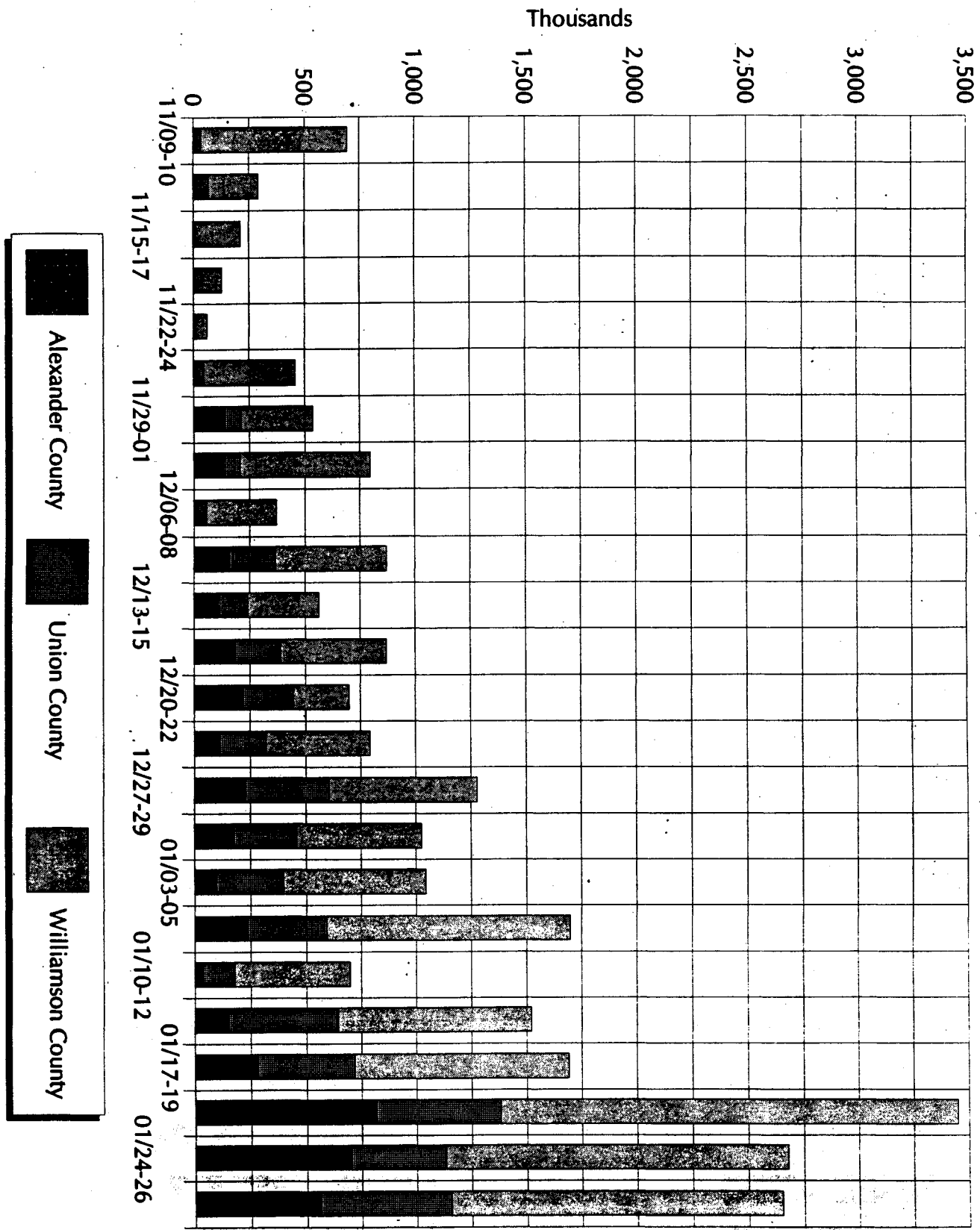


Figure 5. Number of Canada geese harvested per bi-weekly reporting period in the 4-County Quota Zone during 1996-97.

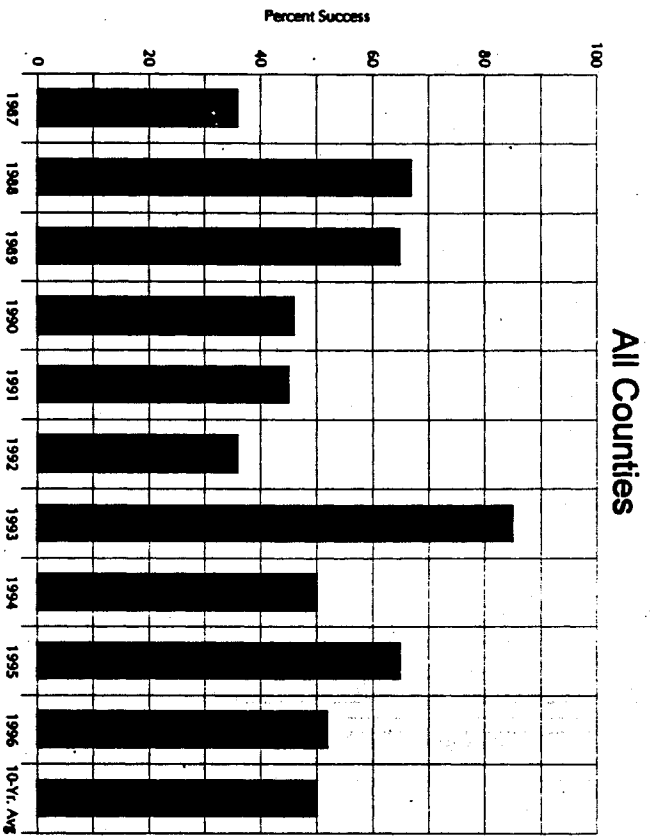
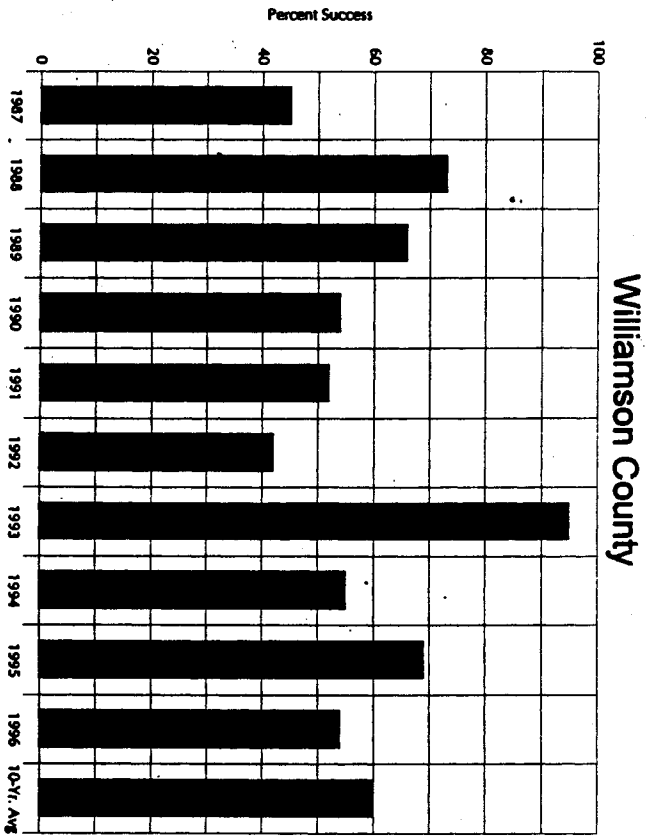
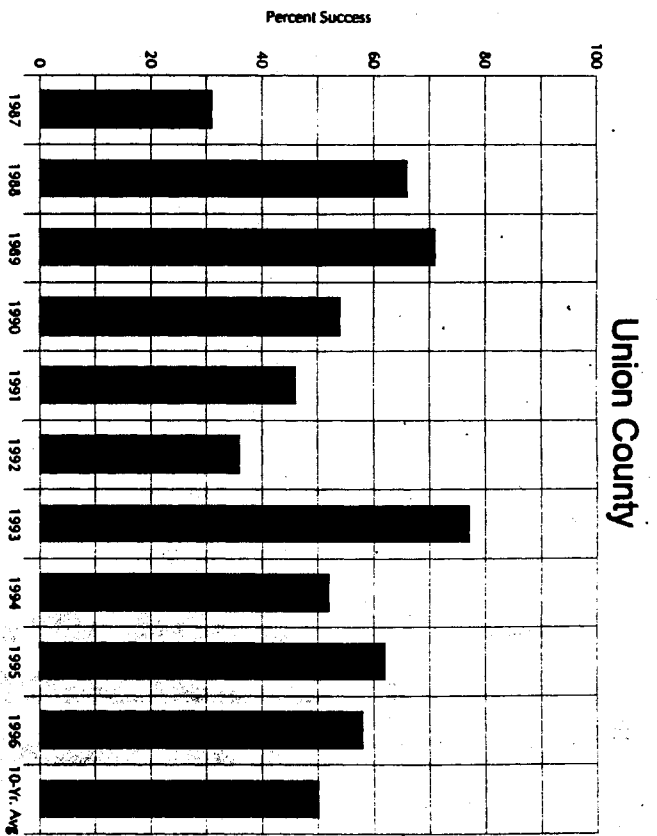
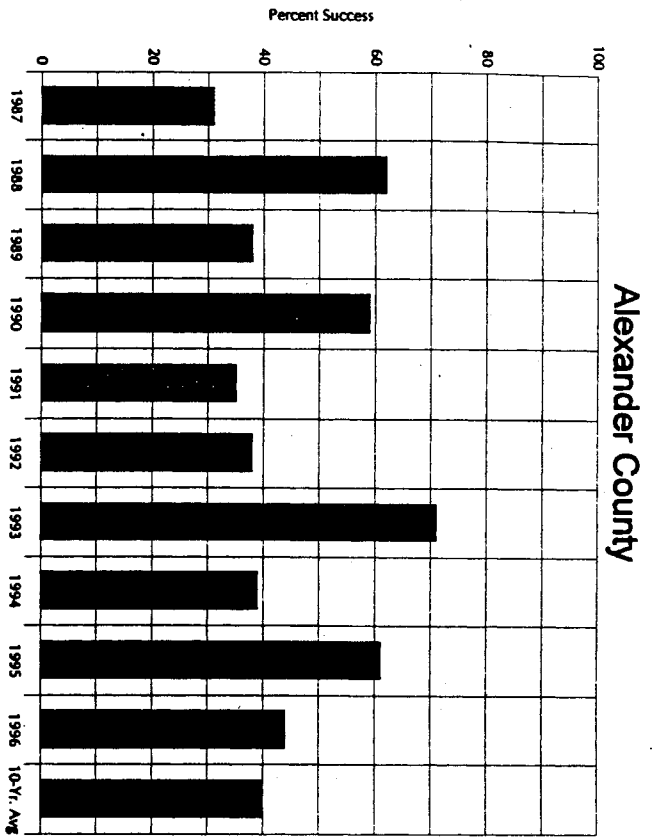


Figure 6. Success rates for Canada goose hunters on commercial clubs in the 4-County Quota Zone, 1987-1996.