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2003 MICHIGAN SMALL GAME HARVEST SURVEY

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ABSTRACT

A sample of small game license buyers was contacted after the 2003 hunting seasons to estimate the number of people hunting upland game and waterfowl, their days afield, and harvest. Grouse and squirrel hunting seasons were expanded in 2003; thus, additional estimates were calculated for both the expanded and entire seasons. The survey also was used to check whether migratory bird hunters registered with the Harvest Information Program (HIP) and to determine the preferred date for the opening of the 2004 duck hunting season in Michigan. In 2003, about 213,000 people hunted upland game species, while 61,000 people hunted waterfowl. Upland game hunters most often sought grouse, squirrels, and rabbits. For most species, the number of hunters and their harvest did not change significantly between 2002 and 2003. The exceptions included greater numbers of hunters and harvest for squirrels and geese. This increased participation and harvest was likely the result of expanded seasons for these species. The number of people hunting small game (upland game and waterfowl combined) was nearly unchanged from 2002 but has declined about 65% since the mid-1950s. About 88% of the people hunting migratory birds (waterfowl and woodcock) registered with HIP in 2003. About 8% of grouse hunters and 44% of squirrel hunters statewide hunted during the extended seasons. About 4% of the statewide grouse harvest and 20% of the statewide squirrel harvest occurred during the extended seasons. Duck hunters in the North Zone most commonly selected September 25 as their preferred opening date for the duck season; whereas, duck hunters in the Middle Zone did not have a preferred date. Hunters in the South Zone most commonly selected October 9 as their preferred date to opening the season, but September 25 was also a popular opening date for this zone.

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INTRODUCTION

The Michigan Department of Natural Resources (DNR) has the authority and responsibility to protect and manage the wildlife resources of the State of Michigan. This responsibility is shared with the U.S. Fish and Wildlife Service (USFWS) for the management of migratory species such as ducks (Anatinae), geese (*Branta* and *Anser* spp.), and woodcock (*Scolopax minor*). Harvest surveys are one of the management tools used by the Wildlife Division to accomplish its statutory responsibility. Estimating harvest and hunting effort are among the primary objectives of these surveys. Estimates derived from harvest surveys, as well as breeding bird counts and population modeling, are used to monitor game populations and establish harvest regulations.

Since the 1950s, the primary upland small game species harvested in Michigan have been ring-necked pheasant (*Phasianus colchicus*), ruffed grouse (*Bonasa umbellus*), American woodcock, cottontail rabbit (*Sylvilagus floridanus*), snowshoe hare (*Lepus americanus*), tree squirrels (*Sciurus* spp. and *Tamiasciurus hudsonicus*), and American crow (*Corvus brachyrhynchos*) (Frawley 2003). Most of these animals could be harvested during fall and early winter (Table 1) by a person possessing a small game hunting license (includes resident, nonresident, 3-day nonresident, resident junior, and senior small game hunting licenses). Woodcock hunters also were required to register with the National Migratory Bird Harvest Information Program (HIP) since 1995.

People purchasing a small game license could also hunt ducks and geese if they obtained a waterfowl hunting license, federal waterfowl stamp, and registered with HIP. Hunters younger than 16 years of age could hunt waterfowl without a waterfowl hunting license and a federal waterfowl stamp; however, they still were required to purchase a small game license and register with HIP. Landowners and their families that hunted upland game and waterfowl on their property could hunt without a hunting license, although they still needed to obtain a federal waterfowl stamp and register with HIP if they hunted migratory species.

The Harvest Information Program is a cooperative effort between state wildlife agencies and the U.S. Fish and Wildlife Service. It was implemented to improve knowledge about harvest of migratory game birds (e.g., ducks, geese, and woodcock). Beginning in 1995, any person who hunted migratory game birds in Michigan was required to register with HIP and answer several questions about their hunting experience during the previous year. HIP provided the USFWS with a national registry of migratory bird hunters from which they can select participants for harvest surveys.

Estimating harvest, hunter numbers, and hunting effort were the primary objectives of the small game harvest survey. This survey also provided an opportunity to collect information about management issues. In 2003, the ruffed grouse season was expanded in the Upper Peninsula to include December 1-January 1. Also, the squirrel season was extended statewide to include January 2-March 1. Questions were added to the questionnaire to estimate harvest and the number of people hunting during these extended seasons. In addition, the rate of compliance with HIP registration was determined for migratory bird

hunters, and duck hunters were asked to indicate their preferred date to open a 60-day duck hunting season in Michigan during 2004.

METHODS

Following the 2003 hunting seasons, a questionnaire was sent to 13,023 randomly selected people that had purchased a small game hunting license. All licensees had an equal chance of being included in the random sample. After the sample was selected, licensees were grouped into 1 of 8 strata on the basis of their residence and licenses purchased. Residents of the Upper Peninsula (UP), northern Lower Peninsula (NLP), southern Lower Peninsula (SLP), and nonresidents were grouped into separate strata (Figure 1). Furthermore, hunters were divided into groups on the basis of whether they had purchased a waterfowl hunting license. Up to two follow-up questionnaires were sent to non-respondents. Questionnaires were undeliverable to 290 people, primarily because of changes in residence. Questionnaires were returned by 8,299 of 12,733 people receiving the questionnaire (65% response rate).

Estimates were calculated using a stratified random sampling design (Cochran 1977). Using stratification, hunters were placed into similar groups (strata), and then estimates were derived for each group. The statewide estimate was then derived by combining group estimates so that the influence of each group matched the frequency that its members occurred in the population of hunters. The primary reason for using a stratified sampling design was to produce more precise estimates. Improved precision means that similar estimates should be obtained if this survey was repeated.

Estimates were calculated along with their 95% confidence limit (CL). In theory, this confidence limit can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implies that the true value would be within this interval 95 times out of 100. Unfortunately, there are several other possible sources of error in surveys that are probably more serious than theoretical calculations of sampling error. They include failure of participants to provide answers (nonresponse bias), question wording, and question order. It is very difficult to measure these biases. Furthermore, harvest estimates did not include animals taken legally outside the open season (e.g., nuisance animals) and by unlicensed landowners and their family that legally hunted on their own land.

RESULTS AND DISCUSSION

License sales and hunter participation

In 2003, 327,766 people purchased small game or waterfowl hunting licenses (Table 2). About 72% (±1%) of the licensees actually hunted (Table 3). An estimated 212,593 people hunted upland game species in 2003, while 60,805 people pursued waterfowl (Table 3). About 97% of the upland game hunters were males, and 98% of the waterfowl hunters were males (Table 4). Hunters most often sought ruffed grouse, cottontail rabbits, and tree squirrels (Tables 5-7).

In 2003, the average age of small game license buyers was 40 years (Figure 2). Nearly 11% (36,781) of the license buyers were younger than 17 years old. The average age of the licensees that purchased a waterfowl hunting license was 41 years (Figure 3). About 2% (1,000) of the waterfowl license buyers were younger than 17 years old, although hunters 12-15 years of age could legally hunt waterfowl without a waterfowl hunting license.

Harvest and hunting trends

The number of people going afield to hunt changed less than 10% for most species between 2002 and 2003 (Table 5). The exceptions included more duck hunters in the late season (11%), greater numbers of squirrel hunters (12%), and additional goose hunters during the regular season (25%). Expanded seasons were likely the major reason for the increased numbers of squirrel and goose hunters. Sixty days were added to the squirrel season, and 34 days were added to the regular goose season in the Mississippi Valley Population (MVP) zone in 2003.

The number of people hunting small game (upland game and waterfowl combined) was nearly identical to the number reported in 2002 (Table 3) but has declined 65% since the mid-1950s (Figure 4). This trend has been previously reported in Michigan and nationally (Brown et. al. 2000, Enck et al. 2000, Frawley 2001, U.S. Department of the Interior 2002). Hawn (1979) speculated that declining ring-necked pheasant populations was the primary reason for declining small game hunter numbers in Michigan. The number of people hunting pheasants has declined by nearly 90% between the mid-1950s and recent years (Figure 5). Many other factors have contributed to the decline of small game hunting, including increased urbanization of the human population, increased competition between hunting and other leisure activities, and loss of wildlife habitat (Brown et al. 2000).

Declining participation since the mid-1950s has also been noted among hunters pursuing cottontail rabbits (-75%), snowshoe hare (-70%), squirrels (-60%), and ducks (-60%). Only the number of people hunting geese has been relatively stable since the mid-1950s. Changes in hunter participation and harvest were generally similar, except for ducks (Figure 5). Despite fewer hunters pursuing ducks, duck harvest in 2003 was near the average number taken annually since the 1950s.

Harvest for most species changed less than 25% between 2002 and 2003 (Table 7). The exceptions included more geese taken during the regular goose season (48%) and greater numbers of squirrel harvested (31%). Expanded seasons were likely the major reason for the increased harvest of squirrel and geese (goose season expanded in the MVP Zone, Soulliere and Luukkonen 2004).

Harvest of game species and hunter participation usually track changes in game populations. The number of hunters that pursued pheasants, rabbits, snowshoe hares, and squirrel was near record low levels during recent years (Figure 5). Population surveys have indicated that pheasant, quail, and woodcock populations are currently among their lowest recorded levels since the 1960s (Kelley 2003, Tuovila et al. 2003a, 2003b). The abundance of rabbit, hare,

and squirrels was not monitored annually; thus, it was not possible to determine whether harvest and population trends were similar. Michigan's grouse population generally follows a cyclic pattern that lasts about 10 years, and currently, the grouse population appears to be near the lows in the cycle (Tuovila et al. 2003a). Hunter numbers and the number of grouse harvested have followed a similar cyclic pattern.

Although many small game species are not as abundant today as during previous decades (e.g., pheasant, quail, woodcock), the mean number of animals taken per hunting effort has not paralleled changes in the population (Figure 6). Thus, hunting efficiency is higher despite declining numbers of pheasant, quail, and woodcock.

Goose harvest and the mean number of geese taken per hunting effort have increased gradually since the 1970s (Figure 6). In contrast, the number of duck hunters and duck harvest has decreased since 1970 (Figure 5); however, duck harvest per effort has increased significantly (Figure 6).

Michigan's goose harvest usually consists of nearly all Canada geese (*Branta canadensis*) (U.S. Fish and Wildlife Service 2003). During recent years, about 70% of the goose harvest was considered resident Canada geese (Soulliere and Luukkonen 2004). Numbers of resident geese have declined in recent years but were still near the long-term (1991-2003) average in 2003 (Soulliere and Luukkonen 2004). The number of geese harvested in 2003 during all seasons combined increased 16%, but this increase probably reflected an expanded hunting season in the MVP zone rather than increased goose numbers.

Harvest and participation in extended grouse and squirrel seasons

About 8% ±1% (8,052 ± 1,177 hunters) of ruffed grouse hunters statewide hunted during the extended season (December 1 - January 1) in the Upper Peninsula. Grouse hunters in the UP hunted 33,069 (±6,235) days and harvested 15,131 (±4,155) grouse. The extended season accounted for about 4% of the statewide hunting effort and harvest of grouse.

An estimated 44% ± 2% (44,493 ± 2,605 hunters) of squirrel hunters statewide pursued tree squirrels during the extended season (January 2-March 1). Hunters in the extended season hunted 177,944 (±18,146) days and harvested 143,688 (±18,507) tree squirrels. About 24% of the statewide hunting effort and 20% of the statewide harvest occurred during the extended squirrel season.

HIP compliance

In 2003, an estimated 88% of the Michigan hunters that hunted migratory birds (waterfowl and woodcock) had registered with HIP. This was the highest level of compliance noted since 1997 (Table 8). Hunters that had registered with HIP were responsible for an estimated 98% of the geese harvested, 97% of the ducks harvested, and 86% of the woodcock taken in 2003 (Table 9). Similarly, registered hunters were responsible for 98% of the days spent afield pursuing geese, 97% of the duck hunting effort, and 80% of the woodcock hunting trips.

Opening date for the duck hunting season

Duck hunters were asked to indicate their desired opening date in their preferred hunting zone (North, Middle, or South zones), assuming that the 2004 duck hunting season will be 60 days. Hunters could select from three opening dates (September 25, October 2, or October 9) or indicate that they did not have a preferred date. The most commonly selected choice among hunters in the North Zone was September 25 (41 ± 5% preferred this date), although no choice was selected by a majority of the hunters (Figure 7). Among hunters in the Middle Zone, none of these dates was preferred over another date. Hunters in the South Zone most commonly selected October 9 (37 ± 3%) as their preferred opening date, followed by September 25 (26 ± 2%).

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Table 1. Upland game and waterfowl hunting seasons in Michigan, 2003-2004.

Species, season, and area[a]	Season dates
Pheasant	
Upper Peninsula	Oct. 10 – 31
Lower Peninsula	Oct. 20 – Nov. 14 and Dec. 1 – 15
Northern bobwhite[b]	
Southern Lower Peninsula	Oct. 20 – Nov. 11
Ruffed grouse	
Statewide	Sept. 15 – Nov. 14 and Dec. 1 – Jan. 1
Woodcock	
Statewide	Sept. 20 – Nov. 3
Cottontail rabbit	
Statewide	Sept. 15 – March 31
Snowshoe hare	
Statewide	Sept. 15 – March 31
Squirrels	
Statewide	Sept. 15 – March 1
Crow	
Upper Peninsula	Aug. 1 – Sept. 30
Lower Peninsula	Aug. 1 – Sept. 30 and Feb. 1 – March 31
Ducks[c]	
North Zone (UP)	Sept. 27 – Nov. 25
Middle Zone (NLP)	Oct. 4 – Nov. 30 and Jan. 3 – 4
South Zone (SLP)	Oct. 11 – Dec. 7 and Jan. 3 – 4
Canada geese[c,d]	
Early seasons	
Upper Peninsula and Thumb area	Sept. 1 – 10
Lower Peninsula	Sept. 1 – 15
Regular seasons	
Southern James Bay Population (SJBP) Management Area	Sept. 20 – Oct. 12 and Dec. 13 – 19
Mississippi Valley Population (MVP) Management Area	Sept. 20 – Nov. 6 and Dec. 13 – 19
Late seasons	
Southern Lower Peninsula	Jan. 3 – Feb. 1

[a]See Figure 1 for boundaries of hunt areas.
[b]*Colinus virginianus*.
[c]Ducks and geese could also be taken during a special 2-day Youth Season (September 20-21).
[d]Special goose hunting seasons also occurred on Goose Management Units, but these seasons affected a relatively small area.

Table 2. Number of small game and waterfowl hunting licenses sold, 1999-2003.

Item	Year 1999	2000	2001	2002	2003	2002-2003 % Change
Number of licenses sold[a]						
Small game	368,777	358,727	352,059	331,381	331,299	0.0%
Waterfowl	69,187	66,583	66,472	65,050	65,457	0.6%
Combined	437,964	425,310	418,531	396,431	396,756	0.1%
Number of people buying a hunting license[b]						
Small game[c]	364,451	354,906	347,429	327,279	327,071	-0.1%
Waterfowl[d]	68,693	66,115	65,966	64,582	65,024	0.7%
Combined	365,655	355,842	348,273	328,048	327,766	-0.1%

[a]The number of licenses sold is higher than the number of people buying licenses because some people purchased multiple licenses.
[b]A person was counted only once, regardless of how many licenses they purchased.
[c]Hunters purchasing a small game hunting license could harvest American crow, American woodcock, cottontail rabbit, northern bobwhite, ring-necked pheasant, ruffed grouse, snowshoe hare, and tree squirrels.
[d]Hunters purchasing both small game and waterfowl hunting licenses could harvest all the animals that could be taken with the small game hunting license plus ducks and geese. Hunters 12-15 years of age could legally hunt waterfowl without a waterfowl hunting license.

Table 3. Estimated number of people that hunted upland game and waterfowl in Michigan, 1999-2003.

Hunters	1999	2000	2001	2002	2003 No.	2003 95% CL	2002-2003 % Change
Upland game[a]	250,710	242,458	232,054	213,406	212,593	3,536	0%
Waterfowl[b]	63,911	60,767	63,966	58,944	60,805	1,618	3%
Combined[c]	273,125	263,649	254,687	236,695	235,956	3,413	0%

[a]Includes American crow, American woodcock, cottontail rabbit, northern bobwhite, ring-necked pheasant, ruffed grouse, snowshoe hare, and tree squirrels.
[b]Includes ducks and geese.
[c]A person was counted only once, although they may have hunted both upland game and waterfowl.

Table 4. Estimated sex and age of upland game and waterfowl hunters in Michigan, 1999-2003.[a]

Hunters	1999	2000	2001	2002	2003 Estimate	2003 95% CL
Upland game[b]						
Males (%)	97.0%	97.0%	96.8%	97.5%	97.0%	1.0%
Females (%)	2.9%	3.0%	3.2%	2.5%	3.0%	1.0%
Age (Years)	40.7	40.3	40.6	40.3	40.6	0.5
Waterfowl[c]						
Males (%)	98.0%	97.8%	98.0%	97.8%	97.5%	1.0%
Females (%)	2.0%	2.2%	2.0%	2.2%	2.5%	1.0%
Age (Years)	38.5	38.5	38.3	38.2	38.3	0.6
Combined						
Males (%)	97.1%	97.0%	96.9%	97.4%	97.0%	0.0%
Females (%)	2.9%	3.0%	3.1%	2.6%	3.0%	0.0%
Age (Years)	40.8	40.4	40.6	40.2	40.5	0.4

[a]Analyses included only those people that hunted.
[b]People that hunted American crow, American woodcock, cottontail rabbit, northern bobwhite, ring-necked pheasant, ruffed grouse, snowshoe hare, or tree squirrels.
[c]People that hunted ducks or geese.

Table 5. Estimated number of small game hunters by species and region in Michigan, 2000-2003.[a]

Species	2000	2001	2002	2003 No.	2003 95% CL	2002-2003 % Change
Pheasants[b]						
UP	1,521	2,006	1,312	2,058	636	57%
NLP	24,990	23,279	21,329	21,330	1,756	0%
SLP	48,096	48,704	43,301	39,236	2,337	-9%
Statewide	70,937	70,051	62,460	59,145	2,844	-5%
Northern bobwhite quail						
UP	0	0	0	0	0	
NLP	291	1,000	572	742	311	30%
SLP	2,560	2,672	2,105	1,983	539	-6%
Statewide	2,847	3,541	2,551	2,685	652	5%
Ruffed grouse						
UP	54,140	46,455	42,096	43,913	1,994	4%
NLP	64,844	61,441	51,962	53,666	2,639	3%
SLP	16,786	17,252	13,833	13,729	1,468	-1%
Statewide	125,858	116,008	100,298	103,279	3,240	3%
Woodcock						
UP	14,913	15,379	11,713	12,263	1,390	5%
NLP	31,214	29,397	25,407	26,522	1,945	4%
SLP	10,108	10,587	8,401	8,446	1,143	1%
Statewide	51,499	50,618	41,512	43,270	2,480	4%
Cottontail rabbits						
UP	5,163	4,878	3,801	4,244	883	12%
NLP	34,591	36,036	29,976	30,726	2,059	3%
SLP	73,842	71,978	65,761	67,022	2,840	2%
Statewide	107,714	106,378	94,977	95,758	3,368	1%
Snowshoe hares						
UP	12,489	14,202	10,649	10,192	1,295	-4%
NLP	13,897	16,040	11,388	10,322	1,275	-9%
SLP	1,293	1,658	1,411	1,289	482	-9%
Statewide	26,929	30,855	22,915	21,137	1,849	-8%
Squirrels						
UP	5,533	5,261	4,217	5,582	969	32%
NLP	43,859	45,589	36,549	43,795	2,396	20%
SLP	58,891	56,705	54,863	59,833	2,734	9%
Statewide	101,643	100,597	90,074	101,141	3,441	12%

[a]The number of hunters does not add up to the statewide total because hunters can hunt in more than one region.
[b]Included both regular and late seasons.

Table 5 (continued). Estimated number of small game hunters by species and region in Michigan, 2000-2003.[a]

Species	2000	2001	2002	2003 No.	2003 95% CL	2002-2003 % Change
Crows						
UP	1,612	1,922	1,575	1,304	491	-17%
NLP	5,915	7,880	6,363	6,321	987	-1%
SLP	11,595	12,638	9,902	8,886	1,147	-10%
Statewide	18,086	21,641	17,179	15,743	1,555	-8%
Ducks (Regular season)						
UP	6,827	6,293	6,644	7,295	707	10%
NLP	20,009	19,615	19,126	19,086	1,086	0%
SLP	28,491	31,734	27,152	28,278	1,299	4%
Statewide	49,452	51,908	47,277	48,992	1,574	4%
Ducks (Late season)						
UP						
NLP	562	875	2,119	2,357	444	11%
SLP	7,324	9,150	8,927	9,777	824	10%
Statewide	7,866	10,003	10,916	12,096	929	11%
Geese (Early season)						
UP	2,671	2,177	1,964	2,600	428	32%
NLP	7,242	7,924	7,756	7,558	743	-3%
SLP	17,785	19,251	17,219	16,088	1,056	-7%
Statewide	26,791	28,352	26,123	25,474	1,309	-2%
Geese (Regular season)						
UP	4,256	3,869	3,381	4,859	565	44%
NLP	8,594	9,629	8,277	10,775	845	30%
SLP	12,888	16,673	13,442	15,895	1,055	18%
Statewide	24,840	28,907	24,206	30,171	1,368	25%
Geese (Late season)						
UP	0	0	0	0	0	
NLP	467	1,041	984	1,043	296	6%
SLP	8,329	12,283	9,682	9,408	830	-3%
Statewide	8,788	13,190	10,526	10,373	879	-1%

[a]The number of hunters does not add up to the statewide total because hunters can hunt in more than one region.

Table 6. Estimated amount of small game hunter effort (days afield) by species and region, 2000-2003.

Species	2000	2001	2002	2003 No.	2003 95% CL	2002-2003 % Change
Pheasants[a]						
UP	6,577	8,407	4,701	10,709	4,066	128%
NLP	93,400	88,541	79,316	75,451	8,435	-5%
SLP	182,090	180,933	181,130	158,569	15,631	-12%
Statewide	282,067	277,880	265,147	244,729	18,542	-8%
Northern bobwhite quail						
UP	0	0	0	0	0	
NLP	875	3,901	2,187	2,140	1,202	-2%
SLP	9,172	11,811	9,002	8,802	3,866	-2%
Statewide	10,047	15,712	11,189	10,942	4,094	-2%
Ruffed grouse						
UP	475,315	404,393	400,064	399,926	31,994	0%
NLP	385,363	339,643	348,828	326,222	26,549	-6%
SLP	78,334	84,600	75,240	79,709	14,022	6%
Statewide	939,011	828,636	824,131	805,857	44,490	-2%
Woodcock						
UP	106,677	105,801	87,336	81,133	14,528	-7%
NLP	187,535	162,176	158,382	172,575	19,483	9%
SLP	42,757	55,196	41,632	47,334	9,897	14%
Statewide	336,969	323,173	287,350	301,043	27,460	5%
Cottontail rabbits						
UP	32,419	27,305	26,385	27,346	9,204	4%
NLP	220,751	229,330	201,293	192,501	26,888	-4%
SLP	495,311	478,608	437,672	488,554	49,069	12%
Statewide	748,481	735,243	665,350	708,401	57,811	6%
Snowshoe hares						
UP	83,588	99,217	78,592	66,290	13,403	-16%
NLP	92,062	110,851	89,101	64,906	13,684	-27%
SLP	10,241	21,218	5,675	9,124	5,977	61%
Statewide	185,891	231,286	173,368	140,320	20,496	-19%
Squirrels						
UP	42,973	32,955	39,827	52,151	14,430	31%
NLP	268,069	275,349	225,554	292,974	30,322	30%
SLP	347,482	350,533	322,951	402,981	42,413	25%
Statewide	658,524	658,837	588,333	748,107	55,084	27%

[a]Included both regular and late seasons.

Table 6 (continued). Estimated amount of small game hunter effort (days afield) by species and region, 2000-2003.[a]

Species	2000	2001	2002	2003 No.	2003 95% CL	2002-2003 % Change
Crows						
UP	9,211	9,189	7,695	7,228	3,654	-6%
NLP	43,228	38,371	29,941	47,419	26,851	58%
SLP	58,533	72,658	53,665	45,776	9,584	-15%
Statewide	110,972	120,219	91,301	100,423	28,825	10%
Ducks (Regular season)						
UP	44,561	37,721	38,871	49,500	7,411	27%
NLP	122,269	125,364	119,508	125,430	11,259	5%
SLP	180,288	211,935	168,292	184,763	12,554	10%
Statewide	347,118	375,020	326,671	359,693	18,271	10%
Ducks (Late season)						
UP						
NLP	877	1,356	3,397	3,802	816	12%
SLP	11,056	14,864	13,397	14,708	1,365	10%
Statewide	11,933	16,220	16,794	18,510	1,588	10%
Geese (Early season)						
UP	9,350	8,513	7,898	9,933	2,181	26%
NLP	29,181	32,953	31,276	28,020	3,348	-10%
SLP	69,454	79,788	70,166	64,401	5,646	-8%
Statewide	107,986	121,254	109,340	102,355	6,951	-6%
Geese (Regular season)						
UP	18,348	16,520	14,813	30,456	5,033	106%
NLP	43,587	45,666	40,607	52,377	6,149	29%
SLP	51,609	62,621	53,929	69,092	6,697	28%
Statewide	113,544	124,807	109,348	151,925	10,588	39%
Geese (Late season)						
UP	0	0	0	0	0	
NLP	1,589	3,403	3,276	2,794	1,002	-15%
SLP	32,629	48,923	36,439	34,390	4,475	-6%
Statewide	34,218	52,326	39,715	37,184	4,592	-6%

Table 7. Estimated small game harvest by species and region in Michigan, 2000-2003.

Species	2000	2001	2002	2003 No.	2003 95% CL	2002-2003 % Change
Pheasants[a]						
UP	4,256	4,781	1,539	6,289	3,132	309%
NLP	46,027	36,400	37,134	43,044	4,942	16%
SLP	83,129	80,502	72,371	86,829	11,511	20%
Statewide	133,411	121,682	111,043	136,162	42,494	23%
Northern bobwhite quail						
UP	0	0	0	0	0	
NLP	221	1,124	538	689	591	28%
SLP	4,993	3,263	2,336	1,672	976	-28%
Statewide	5,214	4,387	2,874	2,361	1,174	-18%
Ruffed grouse						
UP	344,301	219,541	171,268	211,514	21,772	23%
NLP	209,088	136,760	126,797	126,846	14,055	0%
SLP	27,013	24,555	16,238	19,967	5,512	23%
Statewide	580,402	380,857	314,303	358,326	27,136	14%
Woodcock						
UP	40,755	46,658	34,130	37,290	10,632	9%
NLP	82,638	82,266	76,407	83,047	12,651	9%
SLP	21,803	25,331	15,845	18,894	5,411	19%
Statewide	145,196	154,255	126,382	139,231	18,094	10%
Cottontail rabbits						
UP	10,587	3,954	6,988	9,697	4,527	39%
NLP	130,381	122,253	100,707	123,705	20,195	23%
SLP	374,710	385,028	362,398	412,205	44,824	14%
Statewide	515,678	511,235	470,093	545,607	50,648	16%
Snowshoe hares						
UP	52,251	61,760	31,740	40,121	2,889	26%
NLP	39,036	46,871	20,349	25,344	1,671	25%
SLP	6,897	13,717	3,474	3,258	17,664	-6%
Statewide	98,184	122,349	55,563	68,723	16,484	24%
Squirrels						
UP	48,803	43,019	22,786	49,062	17,664	115%
NLP	295,368	279,005	205,393	289,581	34,670	41%
SLP	333,416	322,510	318,984	376,294	36,393	18%
Statewide	677,586	644,534	547,164	714,937	54,295	31%

[a]Included both regular and late seasons.

Table 7 (continued). Estimated small game harvest by species and region in Michigan, 2000-2003.

Species	2000	2001	2002	2003 No.	2003 95% CL	2002-2003 % Change
Crows						
UP	9,283	8,824	4,666	9,668	458	107%
NLP	32,985	31,725	37,841	27,341	5,476	-28%
SLP	60,825	75,599	50,235	42,603	3,758	-15%
Statewide	103,093	116,148	92,742	79,612	17,519	-14%
Ducks (Regular season)						
UP	47,325	39,105	61,573	55,296	9,658	-10%
NLP	136,118	154,453	149,864	163,060	22,697	9%
SLP	198,232	226,820	191,924	210,061	23,702	9%
Statewide	381,676	420,378	403,361	428,417	34,671	6%
Ducks (Late season)						
UP						
NLP	1,140	1,643	5,472	5,772	2,120	5%
SLP	17,057	25,969	19,684	19,210	2,710	-2%
Statewide	18,197	27,611	25,156	24,982	3,472	-1%
Geese (Early season)						
UP	9,262	5,885	7,942	10,444	3,739	32%
NLP	23,552	24,495	26,366	22,619	4,268	-14%
SLP	55,770	69,247	60,208	59,135	7,926	-2%
Statewide	88,584	99,627	94,516	92,198	9,802	-2%
Geese (Regular season)						
UP	13,063	8,053	8,090	23,667	5,476	193%
NLP	18,332	18,055	19,270	24,658	3,758	28%
SLP	23,895	33,278	28,164	34,034	4,870	21%
Statewide	55,290	59,385	55,524	82,359	8,336	48%
Geese (Late season)						
UP	0	0	0	0	0	
NLP	224	1,624	1,945	2,246	1,387	15%
SLP	18,761	33,359	23,399	26,497	6,080	13%
Statewide	18,985	34,983	25,344	28,743	6,238	13%

Table 8. Estimated number and proportion of Michigan migratory bird hunters that registered with the Harvest Information Program during 1997-2003.[a]

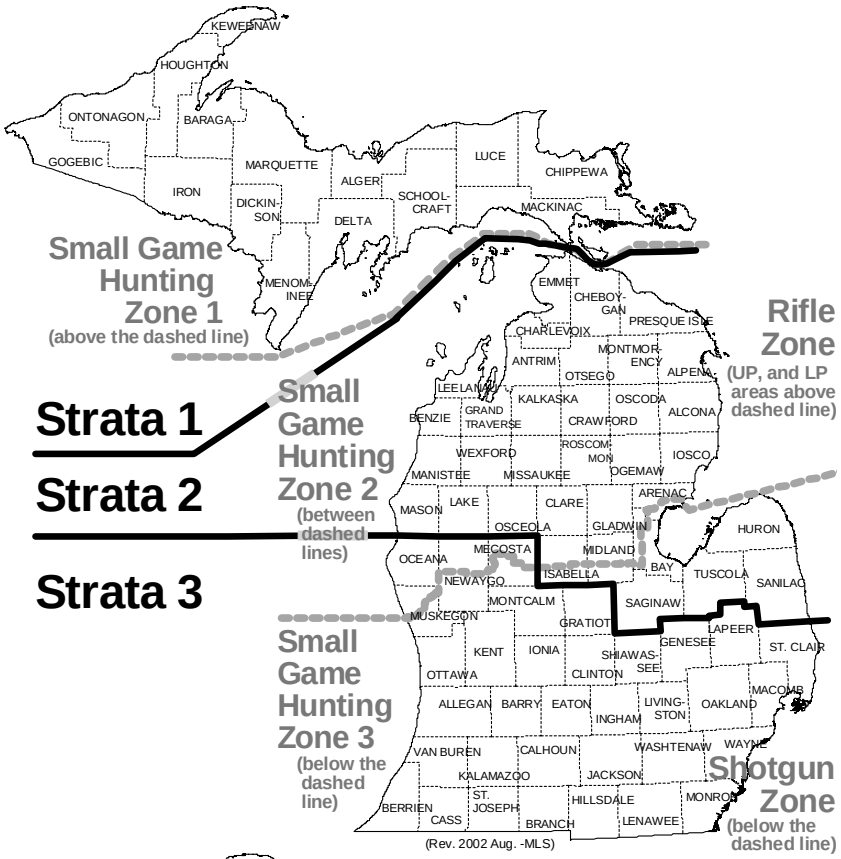
Year and hunters	No.	95% CL	%	95% CL
1997				
Waterfowl	41,128	1,589	63%	2%
Woodcock	19,672	1,731	38%	3%
Combined	52,698	2,153	51%	2%
1998				
Waterfowl	48,535	2,151	70%	2%
Woodcock	20,580	1,967	34%	3%
Combined	58,376	2,504	51%	2%
1999				
Waterfowl	58,811	1,900	92%	2%
Woodcock	20,961	1,945	39%	3%
Combined	69,571	2,225	65%	2%
2000				
Waterfowl	56,352	1,390	93%	1%
Woodcock	19,741	1,491	40%	3%
Combined	65,561	1,788	66%	2%
2001				
Waterfowl	40,228	1,464	63%	2%
Woodcock	19,279	1,604	39%	3%
Combined	51,853	1,992	51%	2%
2002				
Waterfowl	46,120	1,480	78%	2%
Woodcock	25,422	1,957	62%	3%
Combined	64,598	2,279	71%	2%
2003				
Waterfowl	58,614	1,490	96%	1%
Woodcock	33,264	2,150	78%	3%
Combined	81,174	2,374	88%	1%

[a]Analyses limited to licensees that hunted.

Table 9. Estimated number of Michigan hunters, animals harvested, and hunting effort (days afield) among people that registered with the Harvest Information Program, 2003.[a]

	Hunters		Harvest		Days afield	
Species	No.	95% CL	No.	95% CL	No.	95% CL
Woodcock	33,763	2,166	119,046	16,842	241,559	24,674
Ducks (Regular season)	47,178	1,464	420,569	34,432	350,836	17,831
Ducks (Late season)	11,825	899	24,022	3,096	18,015	1,500
Geese (Early season)	24,731	1,252	89,289	9,453	99,580	6,677
Geese (Regular season)	29,269	1,302	80,622	8,230	148,301	10,365
Geese (Late season)	10,213	861	27,997	6,152	36,172	4,396

[a]Analyses limited to people that registered with HIP and hunted.



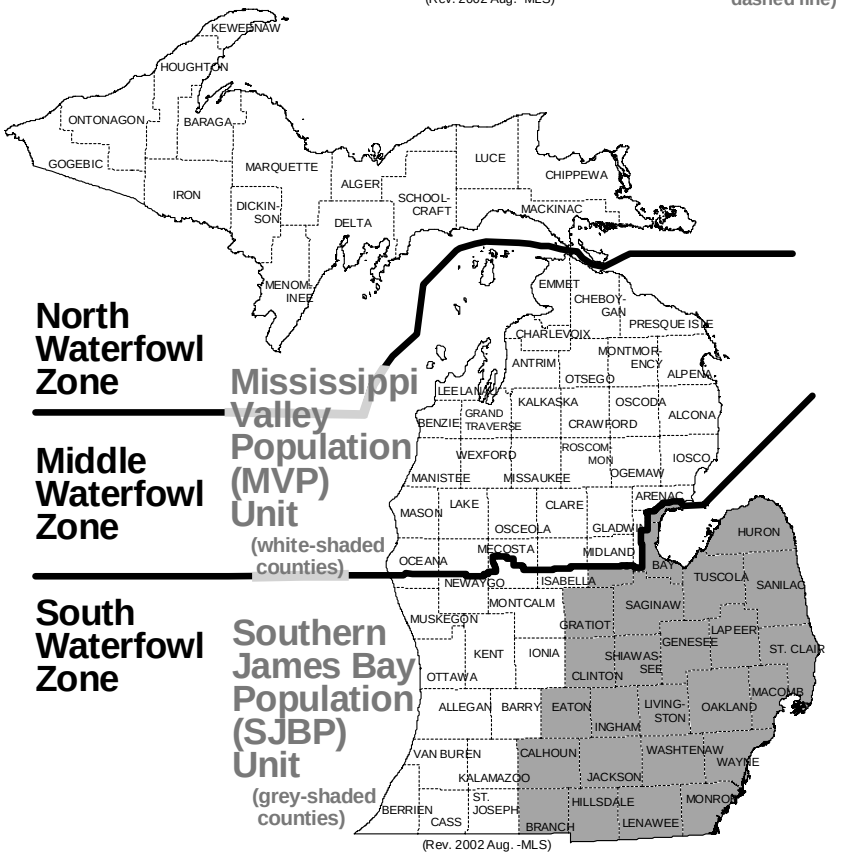


Figure 1. Areas (strata) used to summarize the survey data (top). Stratum boundaries did not entirely match either the small game (top) or the waterfowl (bottom) management hunting zones.

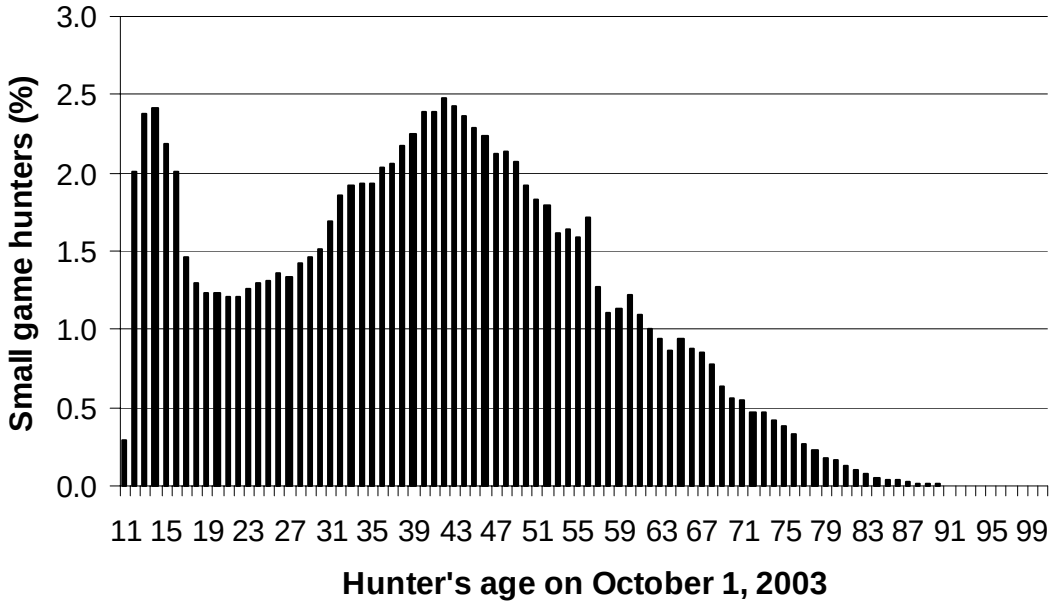


Figure 2. Age of people that purchased a small game hunting license in Michigan for the 2003 hunting seasons ($\bar{x}$ = 40 years).

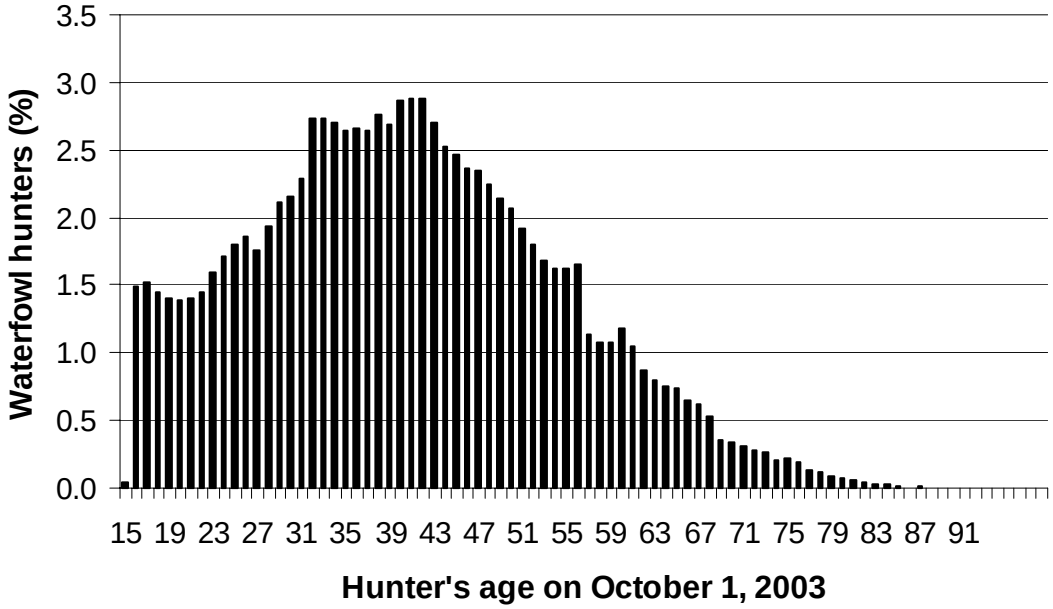


Figure 3. Age of people that purchased a waterfowl hunting license in Michigan for the 2003 hunting seasons ($\bar{x}$ = 41 years). Hunters 12-15 years of age could legally hunt waterfowl without a waterfowl hunting license.

Figure 4. Estimated number of small game hunters in Michigan, 1954-2003 (estimate of the number of people that went afield). No estimate was available for 1984.

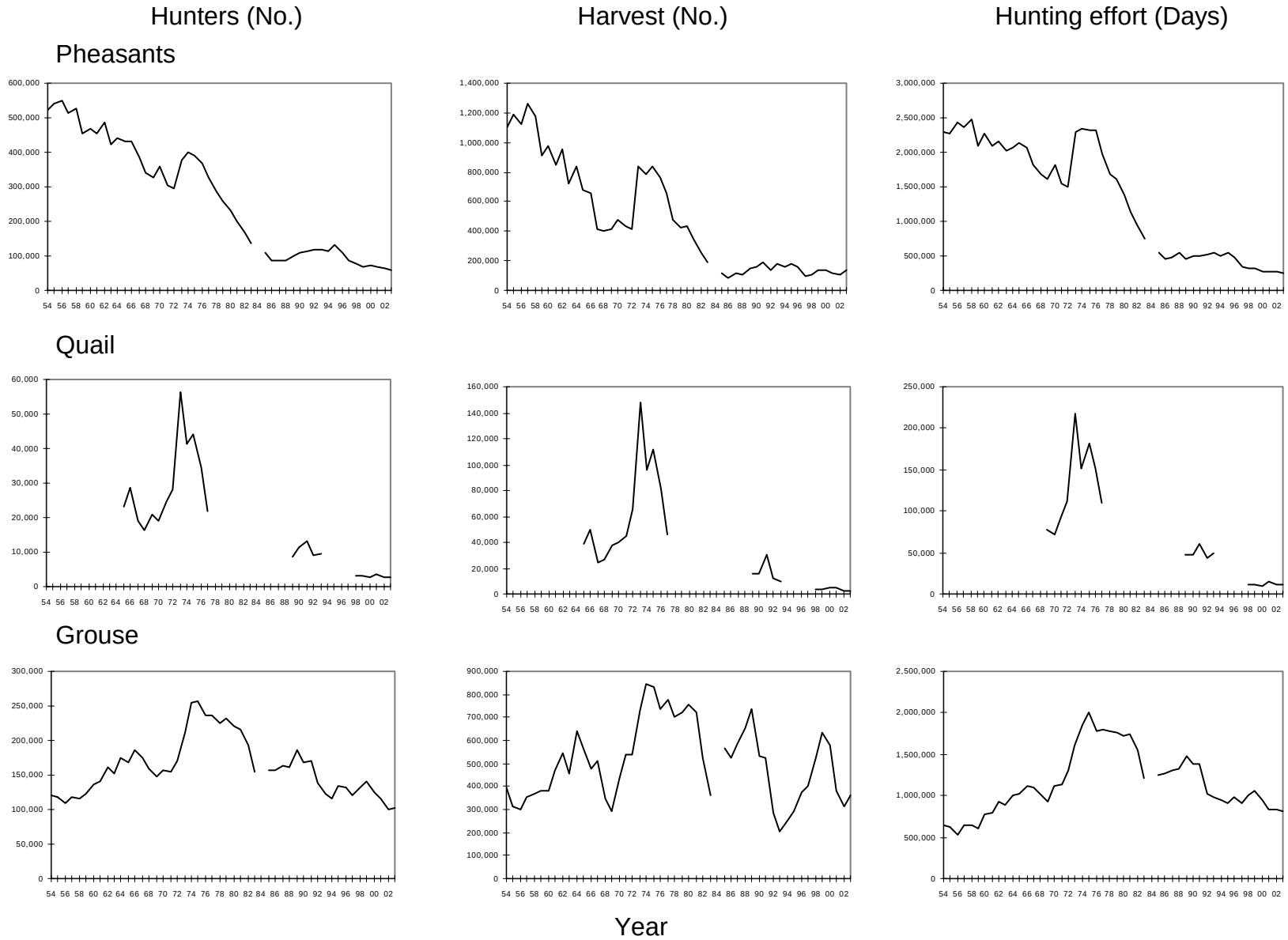


Figure 5. Estimated number of hunters, harvest, and hunting effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2003. No estimates were available or no seasons existed during years when no data are plotted.

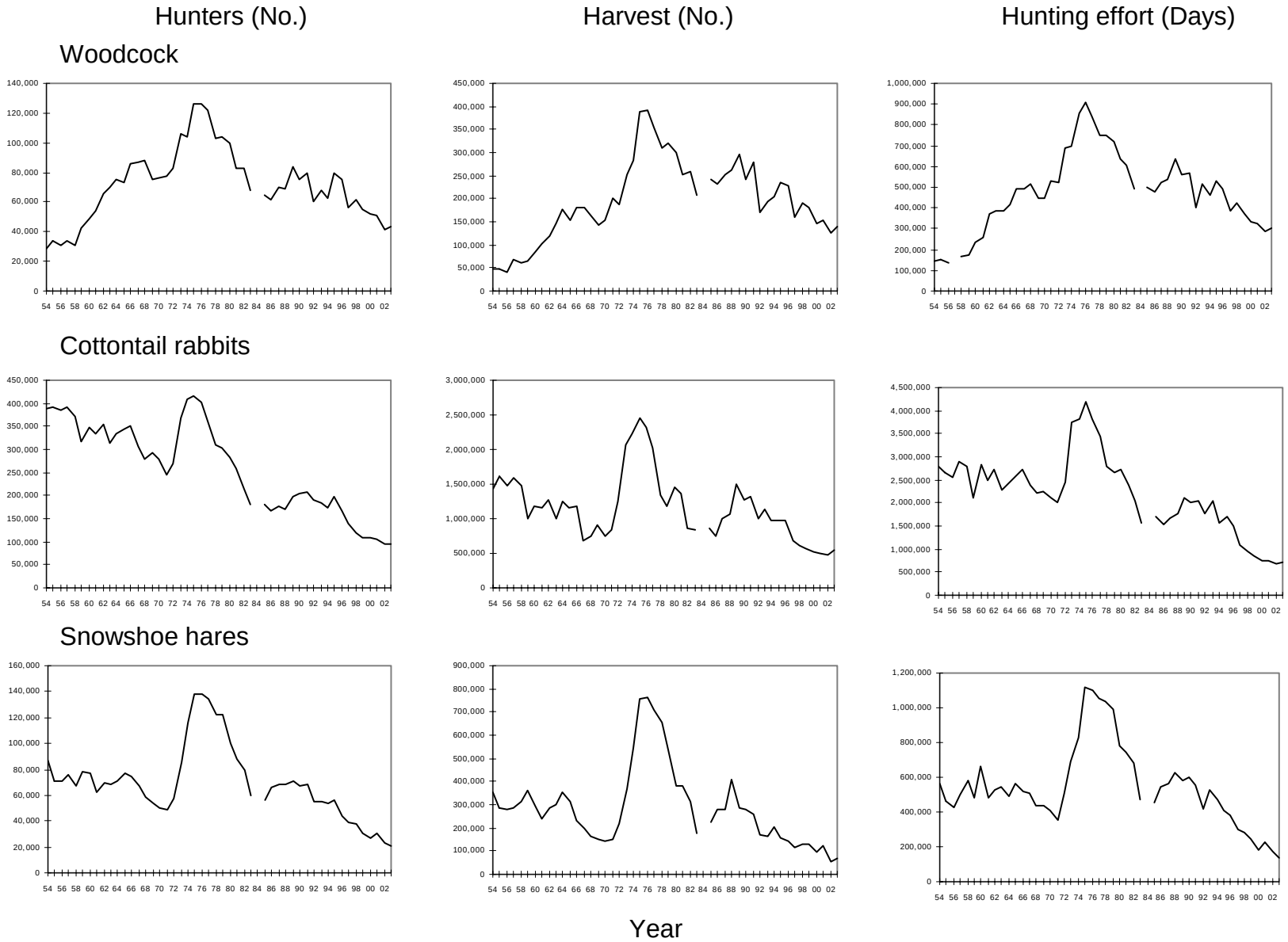


Figure 5 (continued). Estimated number of hunters, harvest, and hunting effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2003. No estimates were available or no seasons existed during years when no data are plotted.

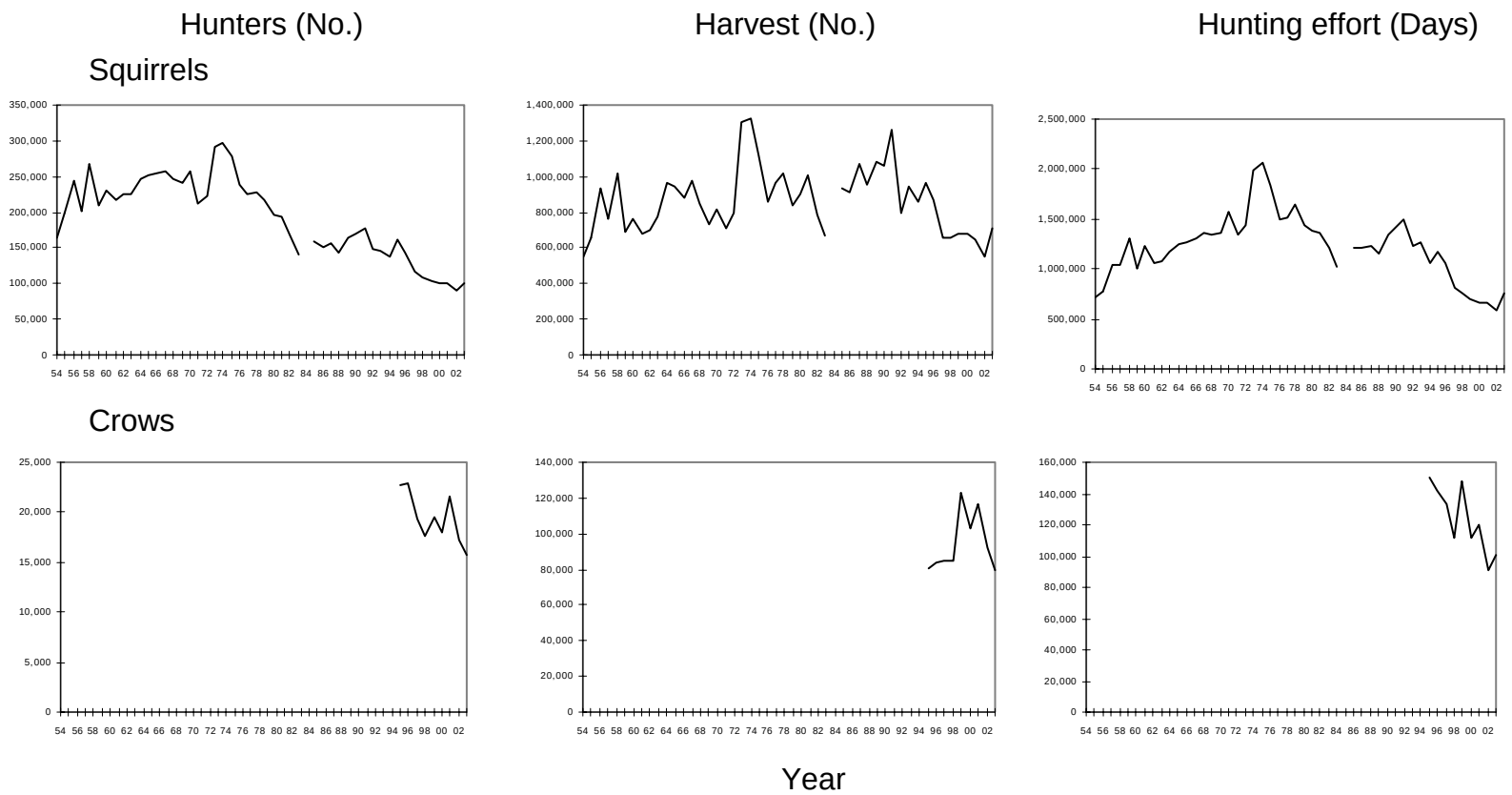


Figure 5. (continued) Estimated number of hunters, harvest, and hunting effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2003. No estimates were available or no seasons existed during years when no data are plotted.

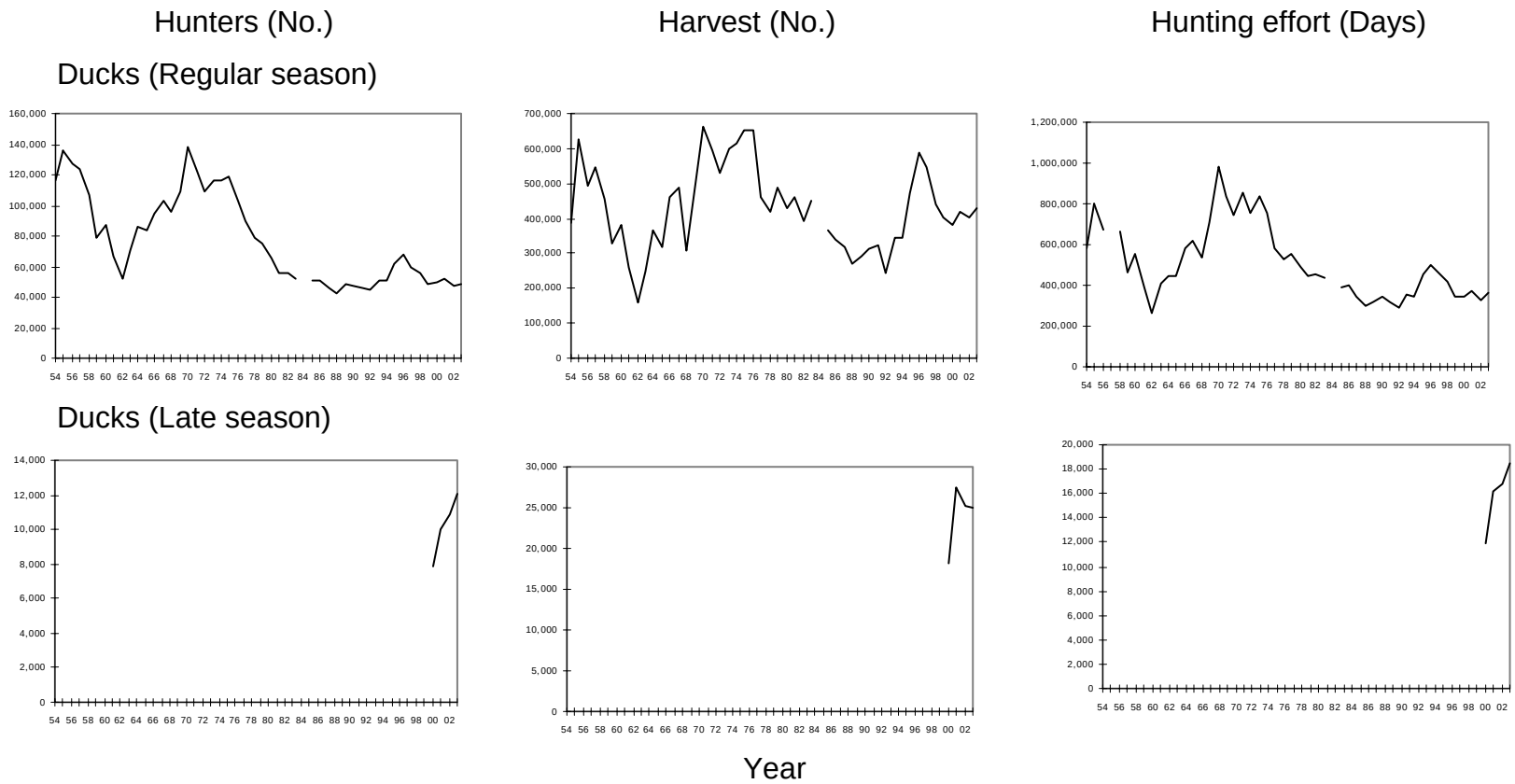


Figure 5 (continued). Estimated number of hunters, harvest, and hunting effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2003. No estimates were available or no seasons existed during years when no data are plotted.

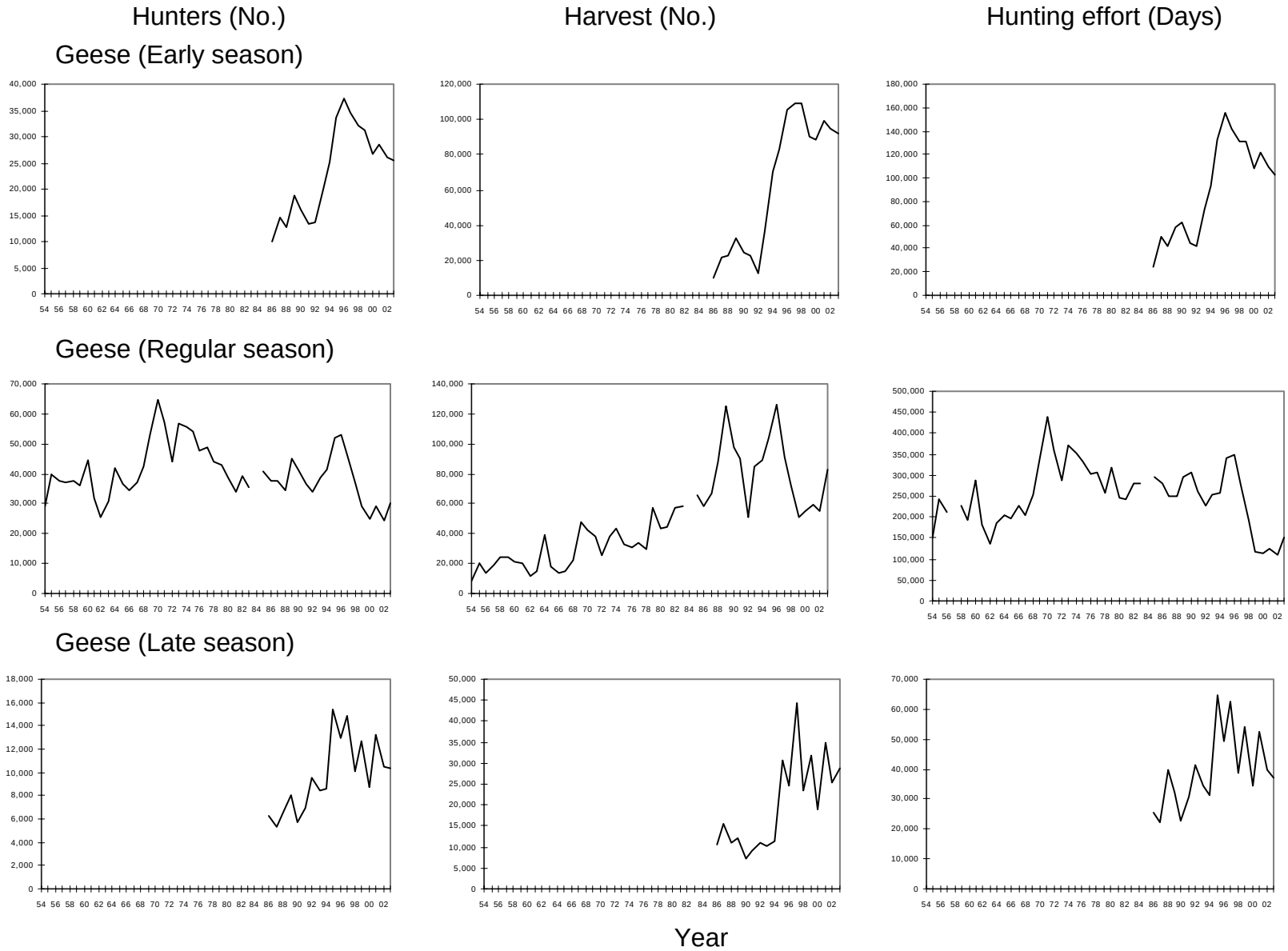


Figure 5 (continued). Estimated number of hunters, harvest, and hunting effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2003. No estimates were available or no seasons existed during years when no data are plotted.

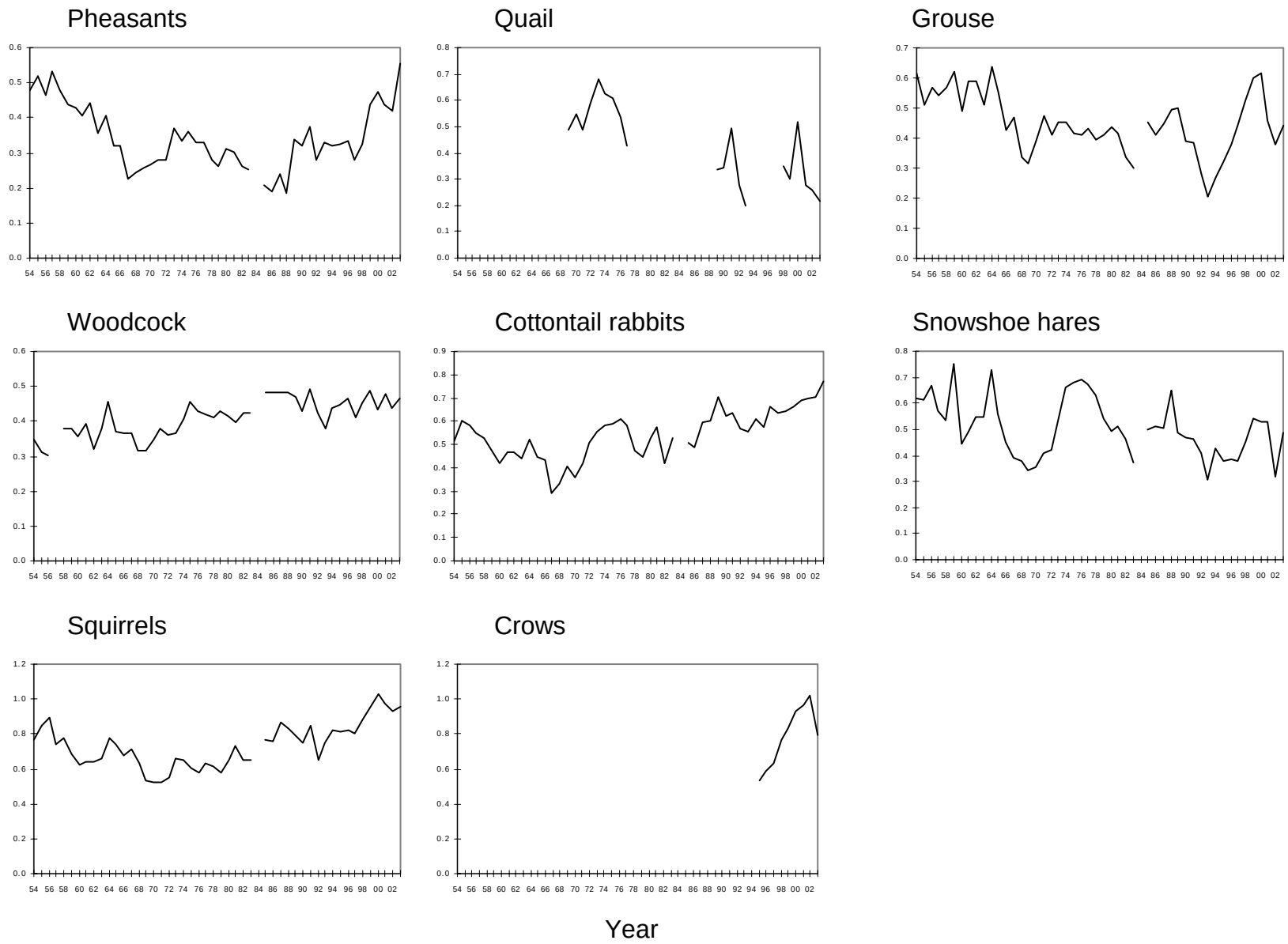


Figure 6. Estimated harvest per effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2003. No estimates were available or no seasons existed during years when no data are plotted.

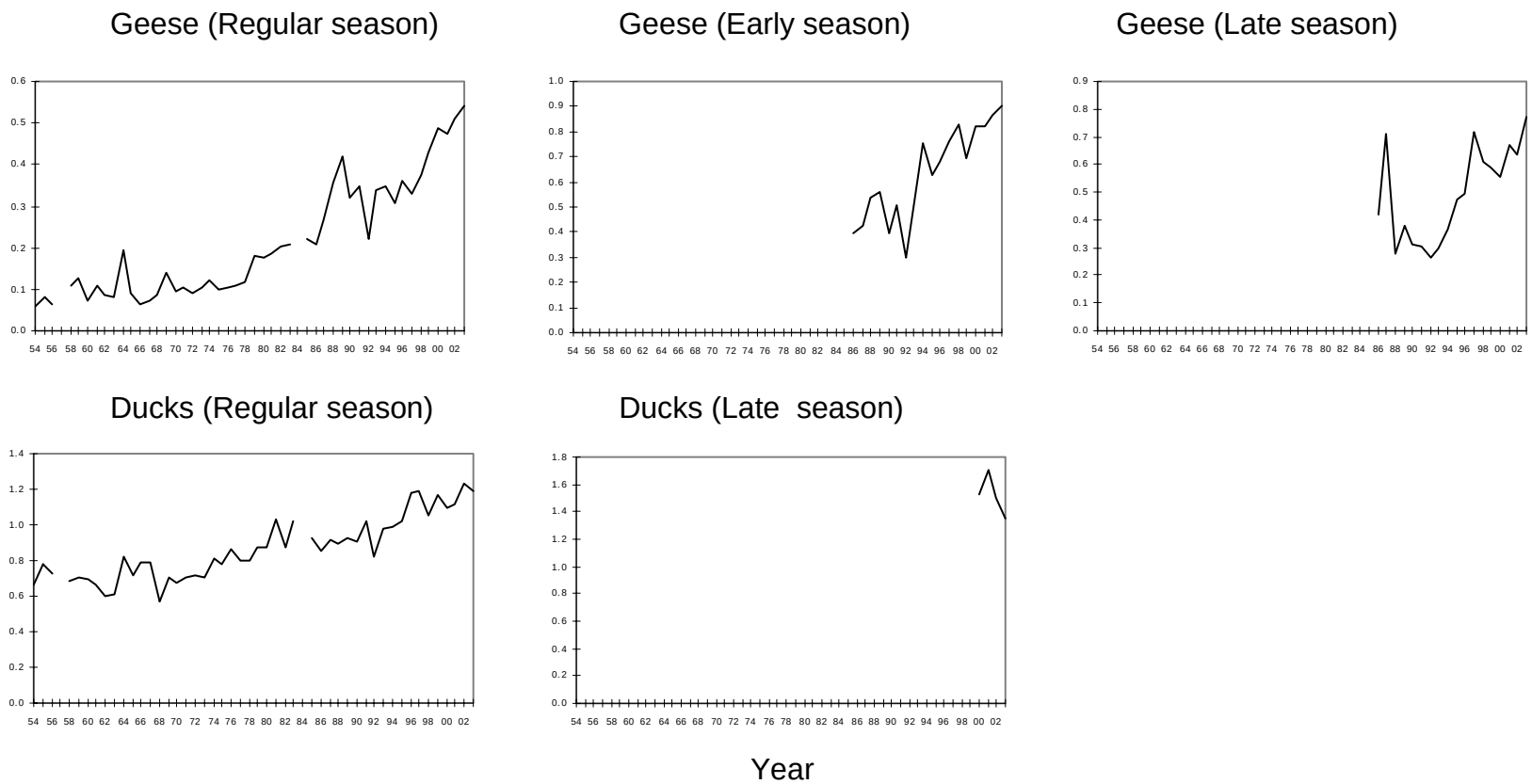


Figure 6 (Continued). Estimated harvest per effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2003. No estimates were available or no seasons existed during years when no data are plotted.

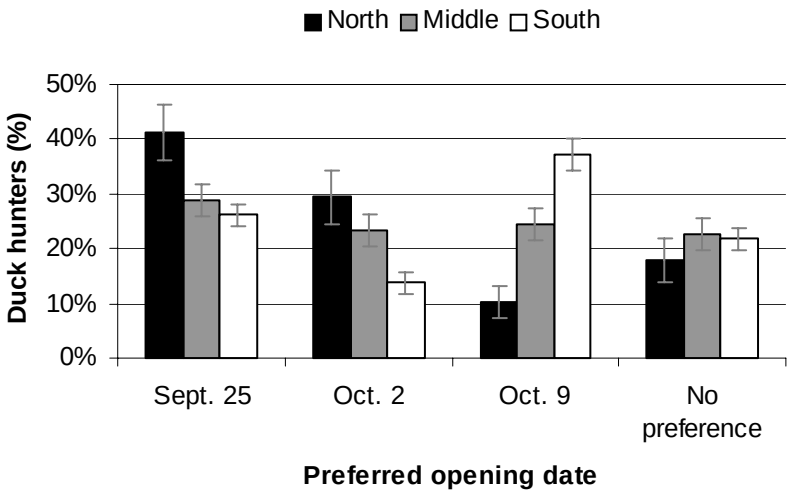


Figure 7. The preferred date for the opening of the 2004 duck hunting season in Michigan, summarized by hunter's preferred hunting zone. See Figure 1 for boundaries of duck hunting zones.