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## **2005 SMALL GAME HARVEST SURVEY**

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### **Abstract**

*A sample of small game license buyers was contacted after the 2005 hunting seasons to estimate the number of people hunting small game, their days afield, and harvest. The survey also was used to investigate hunter satisfaction. In 2005, about 196,500 people hunted small game species, a decline of 7% from 2004. Small game hunters most often sought ruffed grouse, cottontail rabbits, and tree squirrels. For most species, the number of hunters and their harvest did not change significantly between 2004 and 2005. The exceptions included fewer people hunting cottontail rabbits (-8%) and squirrels (-7%). Hunting effort statewide declined significantly among hunters pursuing cottontail rabbits (-21%), squirrels (-20%), and ruffed grouse (-19%). Harvest declined significantly statewide for only cottontail rabbits (-18%). More than 50% of the small game hunters that participated in 2005 indicated they were satisfied with their overall hunting experience and the length of the hunting seasons; however, nearly 50% of the small game hunters were dissatisfied with the amount of small game seen and harvested in 2005. The number of people hunting small game has declined about 70% since the mid-1950s. Most small game license buyers (59%) indicated small game hunting was an important form of recreation for them. About 48% of small game license buyers in 2005 reported they hunted small game on fewer days in 2005 than five years ago. Most small game license buyers felt the amount of small game seen and harvested in Michigan had declined over the last five years.*



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## INTRODUCTION

The Natural Resources Commission and Michigan Department of Natural Resources (DNR) have 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 woodcock (*Scolopax minor*). Harvest surveys are one of the management tools used by the DNR to accomplish its statutory responsibility. 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 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 2005). 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 have been required to register with the National Migratory Bird Harvest Information Program (HIP) since 1995. Landowners and their families that hunted small game on their property where they resided could hunt without a hunting license, although they still needed to register with HIP if they hunted woodcock.

The HIP is a cooperative effort between state wildlife agencies and the USFWS, implemented to improve knowledge about harvest of migratory game birds (e.g., 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. The 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. Questions were added to the questionnaire to investigate hunter satisfaction with the 2005 hunting season and to determine whether satisfaction has changed during the last five years. In addition, the rate of compliance with HIP registration was determined for woodcock hunters.

## METHODS

Following the 2005 hunting seasons, a questionnaire was sent to 9,986 randomly selected people that had purchased a small game hunting license. All licensees had an equal chance of being included in the random sample. Up to two follow-up questionnaires were sent to non-respondents. Questionnaires were undeliverable to 246 people, primarily because of changes in residence. Questionnaires were returned by 5,739 of 9,740 people receiving the questionnaire (59% response rate).

Estimates were calculated using a stratified random sampling design (Cochran 1977). After the sample was selected, licensees were grouped into one of four strata on the basis of their residence. Residents of the Upper Peninsula (UP), northern Lower Peninsula (NLP), southern Lower Peninsula (SLP), and nonresidents were grouped into separate strata (Figure 1). Statewide estimates were derived by combining strata estimates so the influence of each stratum matched the frequency 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 similar estimates should be obtained if this survey were to be repeated.

Estimates were calculated along with their 95% confidence limit (CL). In theory, this CL 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 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. Thus, estimates were not adjusted for possible bias. 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.

Statistical tests are used routinely to determine the likelihood the differences among estimates are larger than expected by chance alone. The overlap of 95% confidence intervals was used to determine whether estimates differed. Non-overlapping 95% confidence intervals was equivalent to stating the difference between the means was larger than would be expected 995 out of 1,000 times ( $P < 0.005$ ), if the study had been repeated (Payton et al. 2003).

## **RESULTS AND DISCUSSION**

### **License sales and hunter participation**

In 2005, 287,562 people purchased a small game hunting license, a decline of about 6% from 2004 (Table 2). About 68% ( $\pm 1\%$ ) of the licensees actually hunted (Table 3). An estimated 196,501 people hunted small game species in 2005, a decline of about 7% from 2004 (Table 3). About 97% of the small game hunters were males (Table 3). Hunters most often sought ruffed grouse, cottontail rabbits, and tree squirrels (Table 4). In 2005, the average age of small game license buyers was 41 years (Figure 2). Nearly 11% (31,157) of the license buyers were younger than 17 years old.

### **Harvest and hunting trends**

Significantly fewer hunters pursued cottontail rabbits (8% decline) and squirrels (7% decline) in 2005 than during 2004 (Table 4). Hunting effort statewide declined significantly among hunters pursuing cottontail rabbits (21% decline), squirrels (20% decline), and ruffed grouse

(19% decline) between 2004 and 2005 (Table 5). Harvest declined significantly statewide for only cottontail rabbits (18% decline) between 2004 and 2005 (Table 6).

The number of small game hunters in Michigan has declined about 70% since the mid-1950s (Figure 3). This trend has been previously reported in Michigan and nationally (Brown et al. 2000, Enck et al. 2000, Frawley 2006, U.S. Department of the Interior 2002). Hawn (1979) speculated 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 about 90% between the mid-1950s and recent years (Figure 4). 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 also has been noted among hunters pursuing cottontail rabbits (-75%), snowshoe hare (-70%), and squirrels (-60%). Changes in hunter participation and harvest were generally similar.

Changes in the harvest of game species and hunter participation usually track changes in game populations. The number of hunters that pursued pheasants, rabbits, snowshoe hares, and squirrels was near record low levels during recent years (Figure 4). Game population surveys have indicated pheasant, quail, and woodcock populations are currently among their lowest recorded levels since the 1960s (Tuovila et al. 2003, Frawley et al. 2004, Kelley and Rau 2006). 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 lasting about 10 years, and currently, the grouse population appears to be near the lows in the cycle (Frawley et al. 2004). 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 5). For example, hunting efficiency has been high among hunters despite declining numbers of pheasant and woodcock.

About 31% of the small game hunters hunted on private lands only, 20% hunted on public lands only, and 43% hunted on both private and public lands (Table 7). Private lands served as the primary area for hunters pursuing pheasants, cottontail rabbits, and crows (Tables 7 and 8). While public lands were most popular among hunters pursuing grouse and woodcock.

### **Extended pheasant hunting season**

In 2005, the pheasant season was extended in Zone 3 (Figure 1) from December 15 to January 1. About 25% of the pheasant hunters statewide participated in the late season (Table 9). The hunting effort by these hunters represented about 15% of the hunting effort statewide, and these hunters harvested about 15% of the pheasants statewide.

## **Hunter satisfaction and assessment of small game populations**

Most small game license buyers ( $59 \pm 1\%$ ) indicated small game hunting was an important form of recreation for them. (About 10% reported it was their most important recreational activity and 49% listed it as one of their most important). Nearly  $26 \pm 1\%$  reported small game hunting was no more important than their other forms of recreation. In contrast,  $12 \pm 1\%$  of licensees reported small game hunting was less important than their other forms of recreation, and  $3 \pm 1\%$  reported it was not an important activity.

In contrast to small game hunters, deer hunters in Michigan are more likely to report deer hunting is an important form of recreation. In 2003, 84% of deer hunters indicated deer hunting was their most important activity or one of their most important recreational activities (Bull et al. 2006). These observations also are consistent with hunting participation trends indicating deer hunters are more devoted to their sport than small game hunters (Frawley 2006). For example, small game hunters less frequently purchase hunting licenses in consecutive years than deer hunters.

About  $48 \pm 1\%$  of small game license buyers in 2005 reported they hunted small game on fewer days in 2005 than five years ago. In contrast,  $24 \pm 1\%$  of the 2005 small game licensees reported they hunted more often in 2005 than five years ago, and  $15 \pm 1\%$  had hunted about the same amount. An estimated  $14 \pm 1\%$  of the 2005 license buyers were not hunting small game five years ago. This declining effort by small game hunters during the last five years appears consistent with the observed long-term decline in the number of license buyers.

More than 50% of the small game hunters that participated in 2005 indicated they were satisfied with their overall hunting experience and the length of the hunting seasons (Table 10). Although small game hunters indicated harvesting game is not their primary reason for hunting small game (Frawley 2005), nearly 50% of the small game hunters were dissatisfied with the amount of small game seen and harvested in 2005 (Table 10). Thus, it appears seeing and harvesting game may be an important factor for retaining small game hunters.

Overall hunter satisfaction with the 2005 season generally was highest among the youngest hunters (Figures 6 and 7). Although younger hunters are generally believed to place greater emphasis on taking game than older hunters (Responsive Management 2003, Frawley 2005), younger hunters were not significantly less satisfied with the amount of game harvested in 2005 than older hunters (Figure 8).

Most small game license buyers felt the amount of small game seen and harvested in Michigan had declined over the last five years (Table 11). The most commonly held view among license buyers was the quality of small game hunting had declined during this period; this opinion was held by  $46 \pm 1\%$  of licensees. In addition, a large proportion of licensees ( $41 \pm 1\%$ ) believed small game habitat had become worse over the last five years. Older

hunters were more likely to indicate conditions had worsened over the last five years than younger hunters (Figures 9-11).

Small game license buyers were asked whether they believed interference with other hunters and nonhunting recreationists had changed over the last five years. Most license buyers estimated the levels of interference from these sources had not changed (Table 12). Licensees were also asked to indicate whether it was more difficult to find time to go small game hunting and whether it was more difficult to find a hunting partner. Nearly one-third of licensees reported conditions had not changed over the last five years; however, nearly one-third of the licensees reported it was more difficult to find time and partners for hunting.

Hunters between the ages of 20 and 40 reported the highest level of difficulty finding time to hunt small game over the last five years (Figure 11). This pattern was consistent with lower levels of participation observed among this age group for most forms of hunting (Frawley 2006).

### **Harvest Information Program compliance among woodcock hunters**

In 2005, an estimated  $81 \pm 3\%$  of the Michigan small game hunters that hunted woodcock had registered with HIP. This level was unchanged from the rate of compliance reported in 2004 (Frawley 2005). Hunters registered with HIP were responsible for an estimated 91% of the woodcock taken in 2005 (Table 13). Similarly, registered hunters were responsible for 82% of the woodcock hunting trips.

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Table 1. Small game hunting seasons in Michigan, 2005-2006.

Species, season, and area <sup>a</sup>	Season dates
Ring-necked pheasant	
Upper Peninsula	Oct. 10 – 31
Lower Peninsula	Oct. 20 – Nov. 14 and Dec. 1 – Jan. 1
Northern bobwhite	
Southern Lower Peninsula	Oct. 20 – Nov. 14
Ruffed grouse	
Statewide	Sept. 15 – Nov. 14 and Dec. 1 – Jan. 1
American woodcock	
Statewide	Sept. 25 – Nov. 8
Cottontail rabbit	
Statewide	Sept. 15 – March 31
Snowshoe hare	
Statewide	Sept. 15 – March 31
Squirrels	
Statewide	Sept. 15 – March 1
American crow	
Upper Peninsula	Aug. 1 – Sept. 30
Lower Peninsula	Aug. 1 – Sept. 30 and Feb. 1 – March 31

<sup>a</sup>See Figure 1 for boundaries of hunt areas.



Table 2. Number of small game hunting licenses sold in Michigan, 2001-2005.

Item	Year					2004-2005 % Change
	2001	2002	2003	2004	2005	
Number of licenses sold <sup>a</sup>	352,059	331,381	331,299	311,002	291,948	-6.1
Number of people buying a hunting license <sup>b</sup>	347,429	327,279	327,071	306,526	287,562	-6.2

<sup>a</sup>The number of licenses sold is higher than the number of people buying licenses because some people purchased multiple licenses.

<sup>b</sup>A person was counted only once, regardless of how many licenses they purchased.

Table 3. Estimated sex and age of active small game hunters in Michigan, 2001-2005.<sup>a</sup>

Variable	2001	2002	2003	2004	2005	
					Estimate	95% CL
Hunters <sup>b</sup>	232,054	213,406	212,593	210,455	196,501	3,417
Males (%)	96.8	97.5	97.0	97.1	96.9	1.0
Females (%)	3.2	2.5	3.0	2.9	3.1	1.0
Age (Years) <sup>c</sup>	40.6	41.3	41.7	42.0	43.3	0.5

<sup>a</sup>Analyses included only those people that hunted.

<sup>b</sup>People that hunted American crow, American woodcock, cottontail rabbit, northern bobwhite quail, ring-necked pheasant, ruffed grouse, snowshoe hare, or tree squirrels.

<sup>c</sup>The mean age was incorrectly reported for 2002 and 2003 in previous annual reports (Frawley 2003, 2004).

Table 4. Estimated number of small game hunters by species and region in Michigan, 2002-2005.<sup>a</sup>

Species and region	2002	2003	2004	2005		2004-05 % Change
				No.	95% CL	
Ring-necked pheasants <sup>b</sup>						
UP	1,312	2,058	1,454	1,352	484	-7
NLP	21,329	21,330	20,865	21,386	1,821	2
SLP	43,301	39,236	38,859	36,014	2,327	-7
Statewide	62,460	59,145	57,373	55,590	2,882	-3
Northern bobwhite quail						
UP						
NLP	572	742	556	649	273	17
SLP	2,105	1,983	1,562	2,964	586	90*
Statewide	2,551	2,685	2,117	3,264	781	54
Ruffed grouse						
UP	42,096	43,913	39,526	35,516	1,839	-10*
NLP	51,962	53,666	52,828	51,082	2,694	-3
SLP	13,833	13,729	11,880	13,658	1,532	15
Statewide	100,298	103,279	96,117	92,428	3,229	-4
American woodcock						
UP	11,713	12,263	12,531	12,286	1,380	-2
NLP	25,407	26,522	28,249	27,158	2,080	-4
SLP	8,401	8,446	7,867	7,715	1,162	-2
Statewide	41,512	43,270	44,525	43,286	2,601	-3
Cottontail rabbits						
UP	3,801	4,244	4,884	4,869	898	0
NLP	29,976	30,726	31,617	30,476	2,097	-4
SLP	65,761	67,022	68,966	62,725	2,819	-9*
Statewide	94,977	95,758	99,503	91,525	3,374	-8*
Snowshoe hares						
UP	10,649	10,192	10,468	11,392	1,316	9
NLP	11,388	10,322	11,940	11,033	1,351	-8
SLP	1,411	1,289	1,289	1,554	527	21
Statewide	22,915	21,137	22,949	23,277	1,956	1
Squirrels						
UP	4,217	5,582	6,114	5,210	915	-15
NLP	36,549	43,795	39,457	38,602	2,334	-2
SLP	54,863	59,833	58,243	53,288	2,665	-9
Statewide	90,074	101,141	97,427	90,324	3,373	-7*
American crows						
UP	1,575	1,304	1,816	1,293	474	-29
NLP	6,363	6,321	6,532	7,471	1,116	14
SLP	9,902	8,886	9,953	10,858	1,370	9
Statewide	17,179	15,743	17,703	19,021	1,827	7

<sup>a</sup>The number of hunters does not add up to the statewide total because hunters can hunt in more than one region.

<sup>b</sup>Included both regular and late seasons; see Table 9 for separate estimates for each season.

\*Non-overlapping 95% confidence intervals indicated estimates differed significantly ( $P < 0.005$ ).

Table 5. Estimated level of small game hunter effort (days afield) by species and region, 2002-2005.

Species and region	2002	2003	2004	2005		2004-05 % Change
				No.	95% CL	
Ring-necked pheasants <sup>a</sup>						
UP	4,701	10,709	7,034	6,956	3,161	-1
NLP	79,316	75,451	86,561	87,349	11,508	1
SLP	181,130	158,569	175,842	170,933	18,527	-3
Statewide	265,147	244,729	269,437	265,238	22,949	-2
Northern bobwhite quail						
UP						
NLP	2,187	2,140	1,700	3,658	2,484	115
SLP	9,002	8,802	5,145	9,466	3,073	84
Statewide	11,189	10,942	6,845	13,124	4,856	92
Ruffed grouse						
UP	400,064	399,926	411,602	298,039	31,064	-28*
NLP	348,828	326,222	332,652	291,457	29,381	-12
SLP	75,240	79,709	65,337	63,366	13,078	-3
Statewide	824,131	805,857	809,591	652,861	46,303	-19*
American woodcock						
UP	87,336	81,133	106,482	76,952	14,684	-28
NLP	158,382	172,575	172,731	146,969	20,335	-15
SLP	41,632	47,334	36,521	36,886	10,037	1
Statewide	287,350	301,043	315,734	260,807	28,428	-17
Cottontail rabbits						
UP	26,385	27,346	43,963	37,053	21,122	-16
NLP	201,293	192,501	236,673	176,525	28,358	-25*
SLP	437,672	488,554	502,642	408,930	44,166	-19*
Statewide	665,350	708,401	783,277	622,508	57,811	-21*
Snowshoe hares						
UP	78,592	66,290	82,961	86,254	19,889	4
NLP	89,101	64,906	88,711	53,472	11,996	-40*
SLP	5,675	9,124	6,479	7,776	4,139	20
Statewide	173,368	140,320	178,151	147,502	24,106	-17
Squirrels						
UP	39,827	52,151	59,363	31,883	10,381	-46
NLP	225,554	292,974	273,883	217,342	26,337	-21
SLP	322,951	402,981	378,893	321,882	40,144	-15
Statewide	588,333	748,107	712,139	571,106	49,844	-20*
American crows						
UP	7,695	7,228	10,266	8,581	5,406	-16
NLP	29,941	47,419	33,664	28,820	7,584	-14
SLP	53,665	45,776	69,872	42,323	9,431	-39
Statewide	91,301	100,423	113,802	79,724	13,436	-30

<sup>a</sup>Included both regular and late seasons; see Table 9 for separate estimates for each season.

\*Non-overlapping 95% confidence intervals indicated estimates differed significantly ( $P < 0.005$ ).

Table 6. Estimated small game harvest by species and region in Michigan, 2002-2005.

Species and region	2002	2003	2004	2005		2004-05 % Change
				No.	95% CL	
Ring-necked pheasants <sup>a</sup>						
UP	1,539	6,289	1,208	2,111	1,414	75
NLP	37,134	43,044	35,603	35,560	6,493	0
SLP	72,371	86,829	64,647	56,346	7,985	-13
Statewide	111,043	136,162	101,458	94,017	11,083	-7
Northern bobwhite quail						
UP						
NLP	538	689	227	577	492	154
SLP	2,336	1,672	2,737	2,980	919	9
Statewide	2,874	2,361	2,964	3,557	1,686	20
Ruffed grouse						
UP	171,268	211,514	119,183	105,564	14,273	-11
NLP	126,797	126,846	90,028	94,109	14,895	5
SLP	16,238	19,967	16,720	15,625	4,244	-7
Statewide	314,303	358,326	225,930	215,298	21,376	-5
American woodcock						
UP	34,130	37,290	26,556	37,743	11,650	42
NLP	76,407	83,047	71,219	67,168	12,875	-6
SLP	15,845	18,894	18,898	16,525	5,848	-13
Statewide	126,382	139,231	116,673	121,437	19,024	4
Cottontail rabbits						
UP	6,988	9,697	17,227	9,206	3,521	-47
NLP	100,707	123,705	101,699	76,337	12,876	-25
SLP	362,398	412,205	393,882	334,276	42,307	-15
Statewide	470,093	545,607	512,808	419,820	45,225	-18*
Snowshoe hares						
UP	31,740	40,121	22,907	28,339	3,148	24*
NLP	20,349	25,344	19,100	14,904	1,551	-22*
SLP	3,474	3,258	1,587	2,790	12,189	76
Statewide	55,563	68,723	43,594	46,033	10,836	6
Squirrels						
UP	22,786	49,062	36,271	32,352	12,189	-11
NLP	205,393	289,581	209,168	195,545	25,896	-7
SLP	318,984	376,294	329,735	285,000	30,328	-14
Statewide	547,164	714,937	575,174	512,898	42,312	-11
American crows						
UP	4,666	9,668	5,144	6,271	3,473	22
NLP	37,841	27,341	20,714	46,955	26,368	127
SLP	50,235	42,603	60,906	55,839	20,091	-8
Statewide	92,742	79,612	86,764	109,066	33,836	26

<sup>a</sup>Included both regular and late seasons; see Table 9 for separate estimates for each season.

\*Non-overlapping 95% confidence intervals indicated estimates differed significantly (P&lt;0.005).

Table 7. Estimated number and proportion of hunters hunting on private and public lands during the 2006 small game hunting season, summarized by species.

Species	Land type															
	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL
Ring-necked pheasant	33,096	2,340	60	3	6,531	1,098	12	2	13,848	1,575	25	3	2,115	631	4	1
Northern bobwhite quail	1,360	507	42	12	853	401	26	11	949	422	29	11	101	139	3	4
Ruffed grouse	14,512	1,605	16	2	36,265	2,409	39	2	38,199	2,355	41	2	3,452	802	4	1
American woodcock	5,695	1,025	13	2	17,589	1,747	41	3	15,944	1,668	37	3	4,059	869	9	2
Cottontail rabbit	48,937	2,738	53	2	13,648	1,567	15	2	24,925	2,069	27	2	4,015	865	4	1
Snowshoe hare	4,870	945	21	4	7,404	1,158	32	4	9,314	1,272	40	4	1,690	560	7	2
Squirrels	38,124	2,489	42	2	21,780	1,945	24	2	24,496	2,051	27	2	5,924	1,047	7	1
American crow	10,769	1,397	57	5	2,004	613	11	3	4,791	941	25	4	1,457	524	8	3
Combined	61,453	2,996	31	1	38,835	2,489	20	1	85,322	3,317	43	2	10,890	1,407	6	1

Table 8. Estimated number of days of hunting effort on private and public lands during the 2006 small game hunting season in Michigan, summarized by species.<sup>a</sup>

Species	Land type							
	Private lands		Public lands		Both private and public lands		Unknown	
	Total	95% CL	Total	95% CL	Total	95% CL	Total	95% CL
Ring-necked pheasant	145,052	14,974	37,922	8,877	72,209	13,014	10,055	4,494
Northern bobwhite quail	4,373	2,500	5,168	3,126	3,485	2,510	98	189
Ruffed grouse	72,642	10,851	262,985	28,669	297,376	34,179	19,859	7,103
American woodcock	28,041	9,063	103,701	16,834	103,369	19,046	25,696	7,856
Cottontail rabbit	289,172	35,577	102,056	20,809	202,858	39,156	28,422	9,866
Snowshoe hare	23,987	7,960	41,762	12,049	71,311	18,625	10,442	5,635
Squirrels	216,023	33,169	147,568	21,534	167,608	28,432	39,907	11,626
American crow	40,744	9,525	10,906	4,755	22,055	7,334	6,020	2,724

<sup>a</sup>People that hunted small game on both private and public lands were not asked to record the amount of effort separately for each land type; thus, it was not possible to estimate the total amount or proportion of effort devoted to either private or public lands separately.

Table 9. Estimated number of pheasant hunters, pheasants harvested, and hunting effort (days afield) in the regular and late hunting seasons in Michigan, 2005.

Season and region	Hunters		Days afield		Harvest	
	No.	95% CL	No.	95% CL	No.	95% CL
Regular <sup>a</sup>						
UP	1,345	484	6,944	3,161	2,114	1,414
NLP	20,533	1,790	79,192	10,261	32,007	6,136
SLP	33,590	2,269	138,031	14,794	45,411	6,571
Statewide	52,709	2,825	224,167	19,098	79,532	9,875
Late <sup>b</sup>						
NLP	3,043	728	8,098	3,277	3,566	1,546
SLP	11,114	1,386	32,973	6,327	10,920	2,945
Statewide	13,907	1,578	41,071	7,419	14,485	3,392

<sup>a</sup>Regular season was October 10-31 in the UP and October 20-November 14 in the LP.

<sup>b</sup>December 1 – January 1 in the LP.

Table 10. Level of satisfaction among active small game hunters (% of hunters) with the 2005 small game hunting season in Michigan.<sup>a</sup>

Index used to measure season satisfaction	Level of satisfaction									
	Very satisfied		Somewhat satisfied		Neutral		Somewhat dissatisfied		Very dissatisfied	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Small game seen	10	1	26	1	18	1	27	1	19	1
Small game harvested	8	1	20	1	24	1	24	1	24	1
Length of season	30	1	26	1	31	1	8	1	4	1
Overall experience	23	1	33	1	22	1	14	1	8	1

<sup>a</sup>Analyses limited to small game license buyers that actually hunted in 2005 and indicated a level of satisfaction.

Table 11. An assessment of changes to small game populations and hunting seasons over the last five years by small game license buyers (% of licensees) in Michigan.<sup>a</sup>

Index used to measure status of small game populations and hunting seasons	Level of change in index											
	Much better		Somewhat better		Same		Somewhat worse		Much worse		Don't know	
	95%		95%		95%		95%		95%		95%	
	%	CL	%	CL	%	CL	%	CL	%	CL	%	CL
Small game habitat	3	<1	11	1	38	1	26	1	15	1	7	1
Small game seen	2	<1	9	1	25	1	31	1	26	1	6	1
Small game harvested	1	<1	5	1	28	1	29	1	27	1	9	1
Length of season	4	1	10	1	62	1	7	1	6	1	10	1
Quality of hunting	2	<1	9	1	35	1	27	1	19	1	8	1

<sup>a</sup>Analyses included all small game license buyers except licensees that failed to provide an answer.



Table 12. An assessment of problems which may have affected small game hunting participation over the last five years by small game license buyers (% of licensees) in Michigan.<sup>a</sup>

Problem	Level of change in problem											
	Much more		Somewhat more		Same		Somewhat less		Much less		Don't know	
	95%		95%		95%		95%		95%		95%	
	%	CL	%	CL	%	CL	%	CL	%	CL	%	CL
Interference from other small game hunters	2	<1	8	1	52	1	12	1	12	1	14	1
Interference from deer hunters	5	1	10	1	51	1	8	1	11	1	15	1
Interference from non-hunting recreationists	7	1	18	1	43	1	5	1	10	1	17	1
Finding time to hunt small game	16	1	21	1	33	1	12	1	12	1	7	1
Finding partner to hunt small game	14	1	21	1	35	1	12	1	12	1	6	1

<sup>a</sup>Analyses included all small game license buyers except licensees that failed to provide an answer.

Table 13. Estimated number of Michigan woodcock hunters, woodcock harvested, and hunting effort (days afield) among people that registered with the Harvest Information Program, 2005.<sup>a</sup>

Variable	No.	95% CL
Hunters	35,254	2,384
Days afield (effort)	214,088	26,014
Harvest	110,743	18,610

<sup>a</sup>Analyses limited to people that registered with HIP and hunted woodcock.

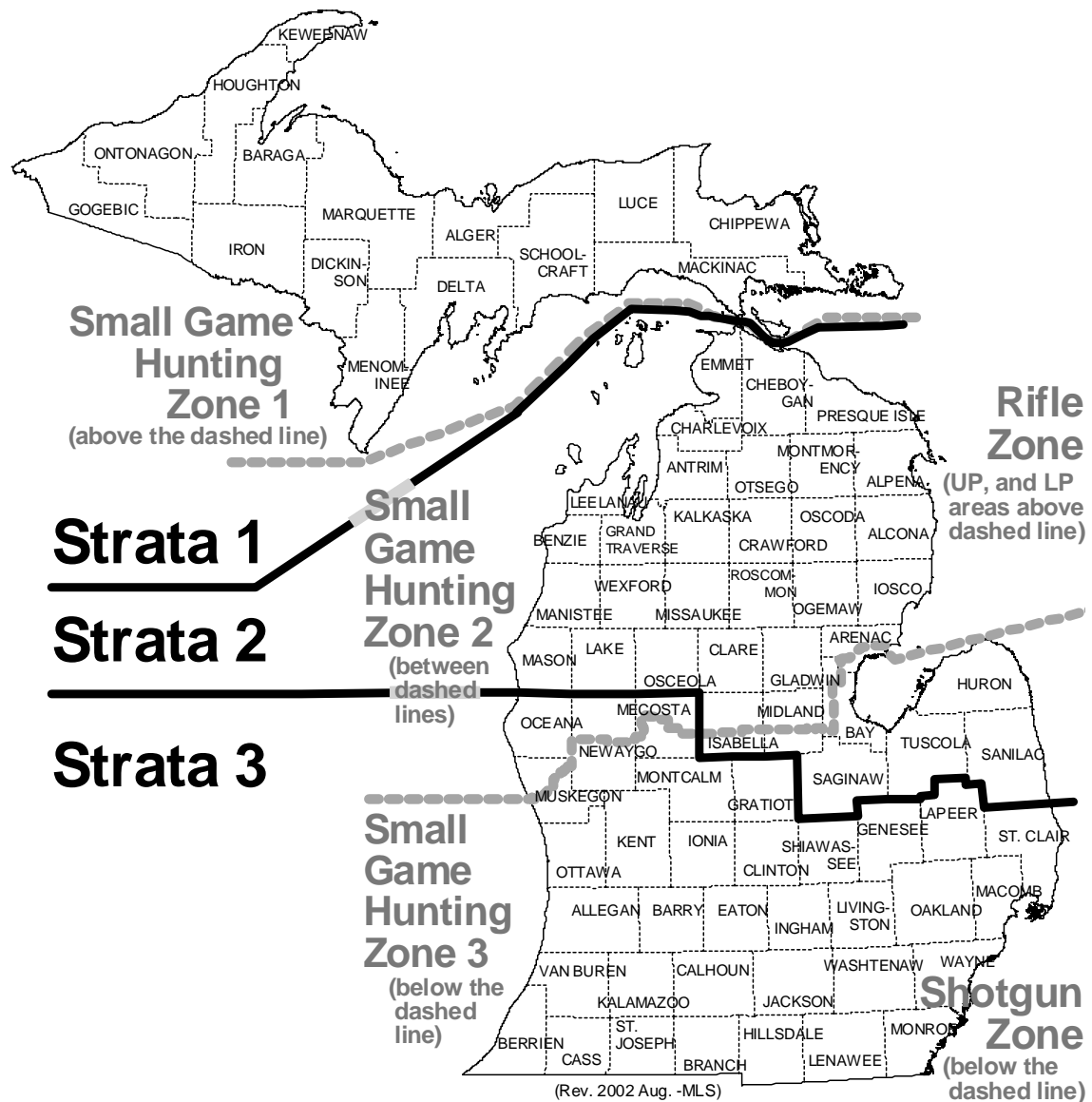


Figure 1. Areas (strata) used to summarize the survey data (top). Stratum boundaries did not match the small game management hunting zones.

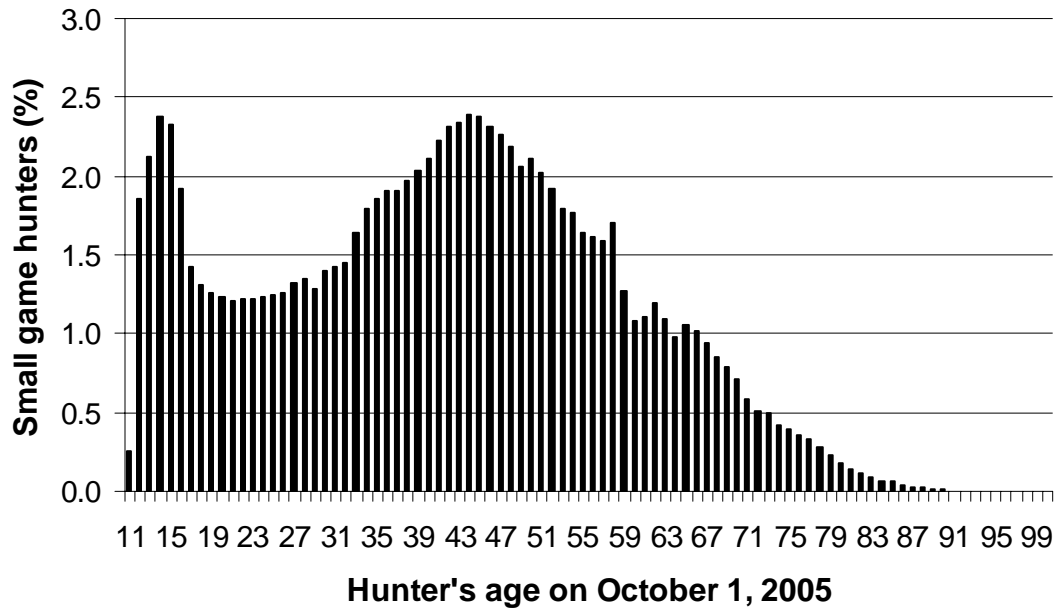


Figure 2. Age of people that purchased a small game hunting license in Michigan for the 2005 hunting seasons ( $\bar{x}$  = 41 years).



Figure 3. Estimated number of small game hunters in Michigan, 1954-2005 (estimate of the number of people that went afield). No estimate was available for 1984.

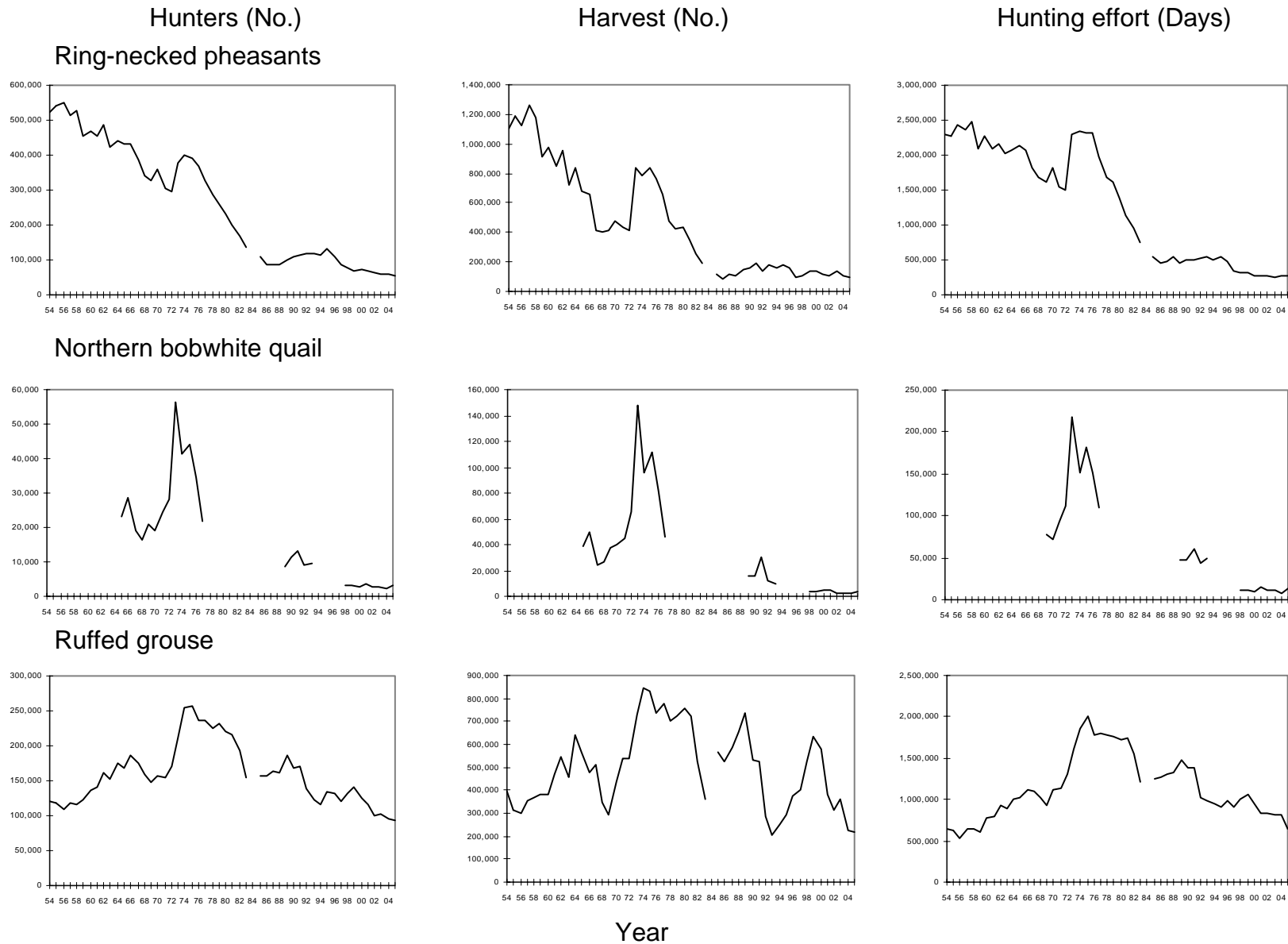


Figure 4. Estimated number of hunters, harvest, and hunting effort in Michigan during the small game hunting seasons, 1954-2005. No estimates were available or no seasons existed during years when no data are plotted.

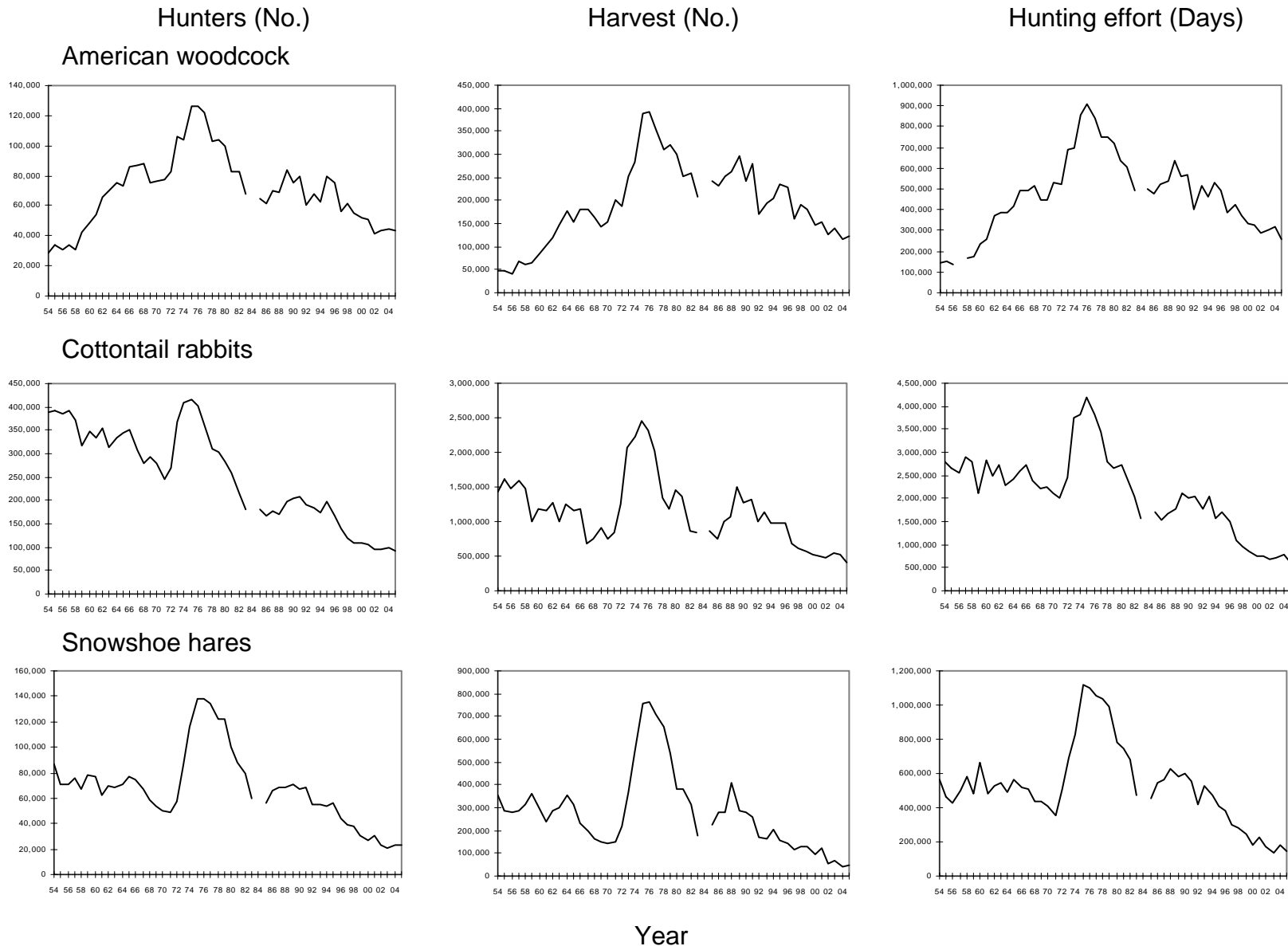


Figure 4 (continued). Estimated number of hunters, harvest, and hunting effort in Michigan during the small game hunting seasons, 1954-2005. No estimates were available or no seasons existed during years when no data are plotted.

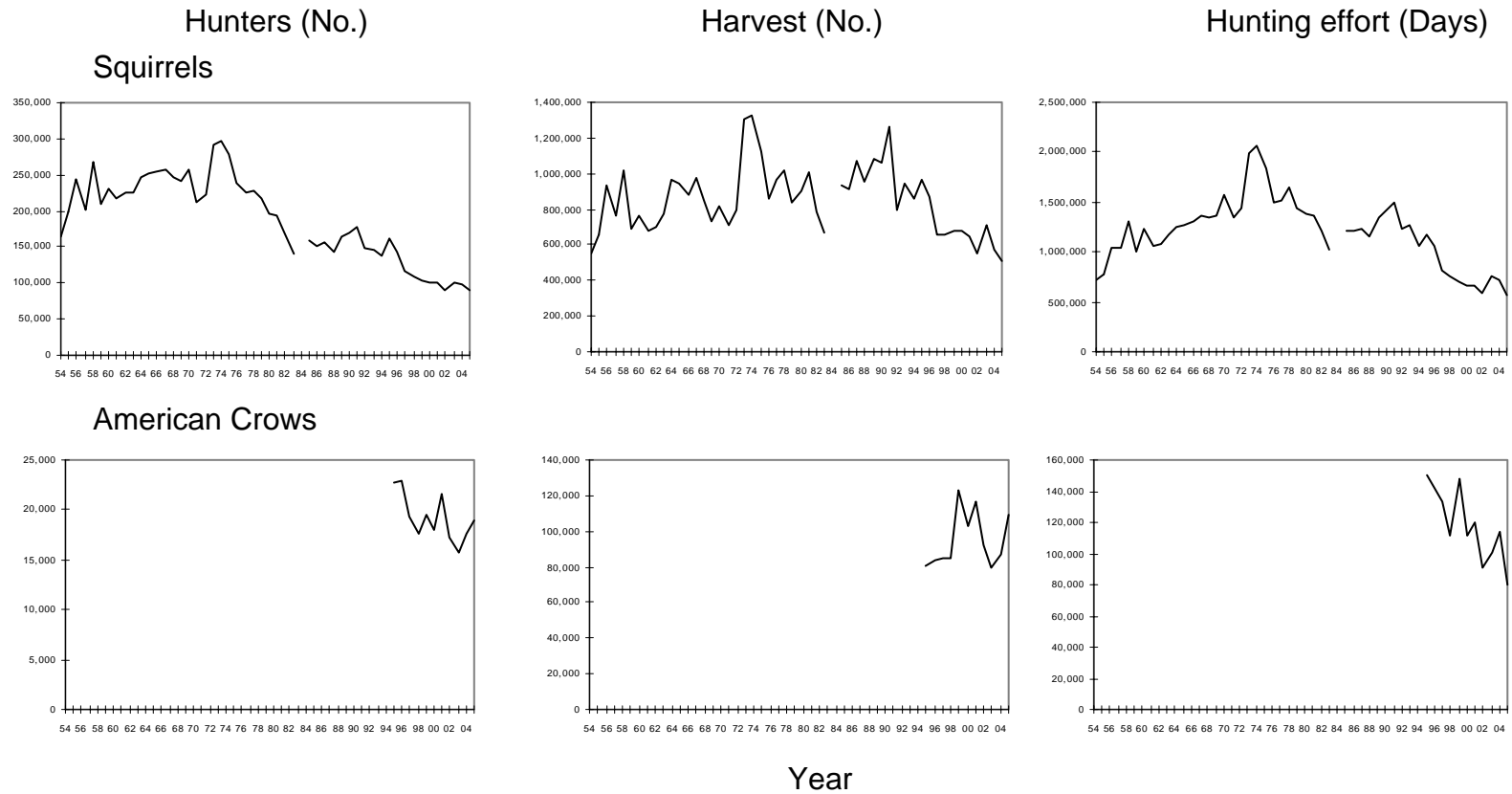


Figure 4. (continued) Estimated number of hunters, harvest, and hunting effort in Michigan during the small game hunting seasons, 1954-2005. No estimates were available or no seasons existed during years when no data are plotted.

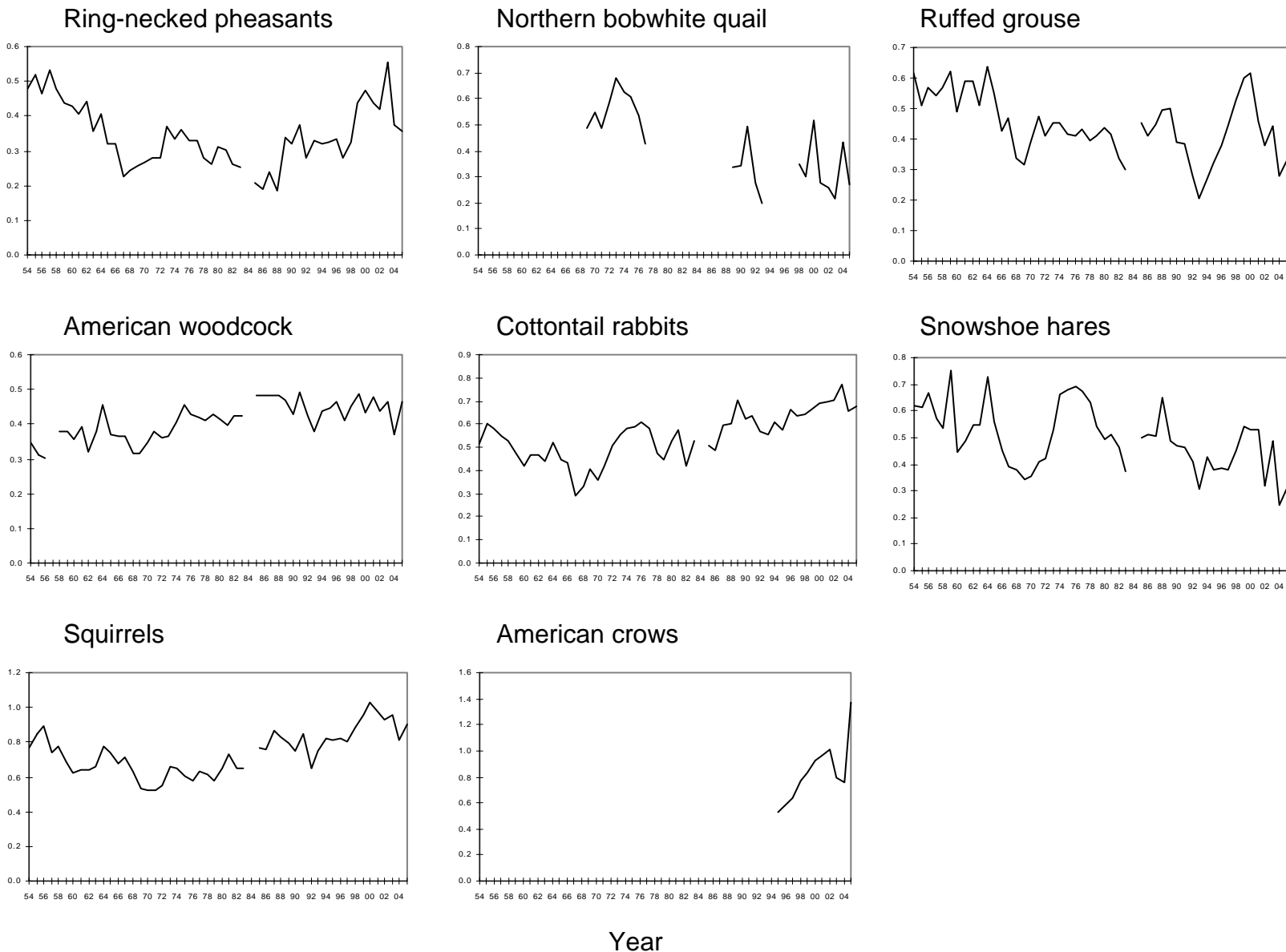


Figure 5. Estimated harvest per effort in Michigan during the small game hunting seasons, 1954-2005. No estimates were available or no seasons existed during years when no data are plotted.



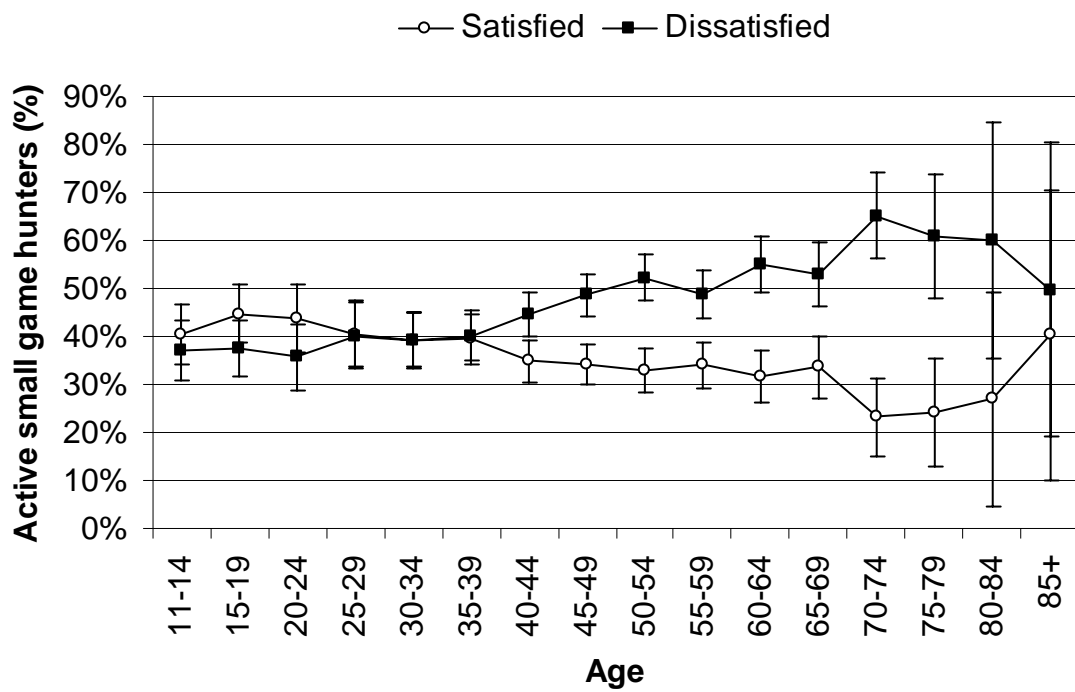


Figure 6. Proportion of active small game hunters that were satisfied or dissatisfied with the amount of small game seen in Michigan during the 2005 hunting season, summarized by age of licensee in 2005.

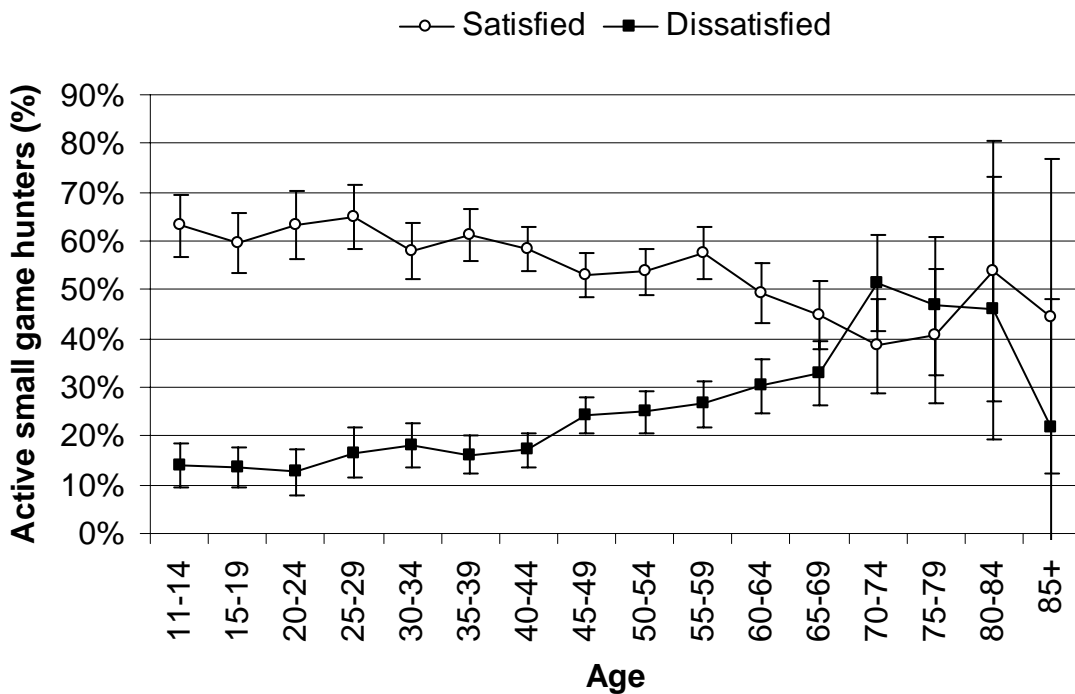


Figure 7. Proportion of active small game hunters that were satisfied or dissatisfied with their overall hunting experience in Michigan during the 2005 season, summarized by age of licensee in 2005.

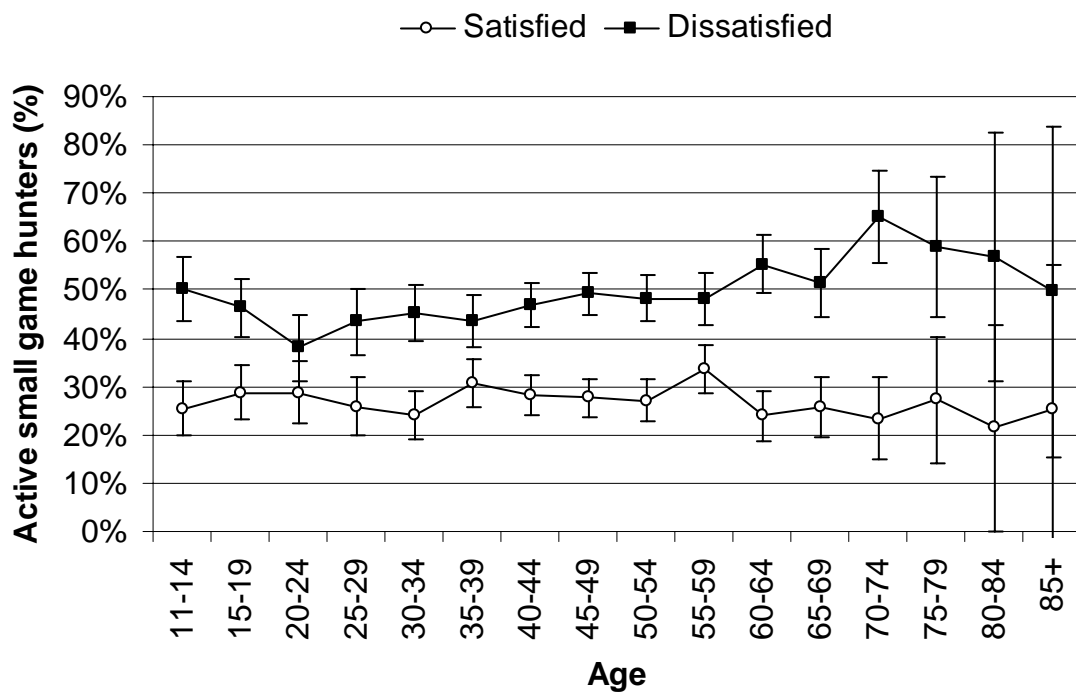


Figure 8. Proportion of active small game hunters that were satisfied or dissatisfied with the amount of small game harvested in Michigan during the 2005 hunting season, summarized by age of licensee in 2005.

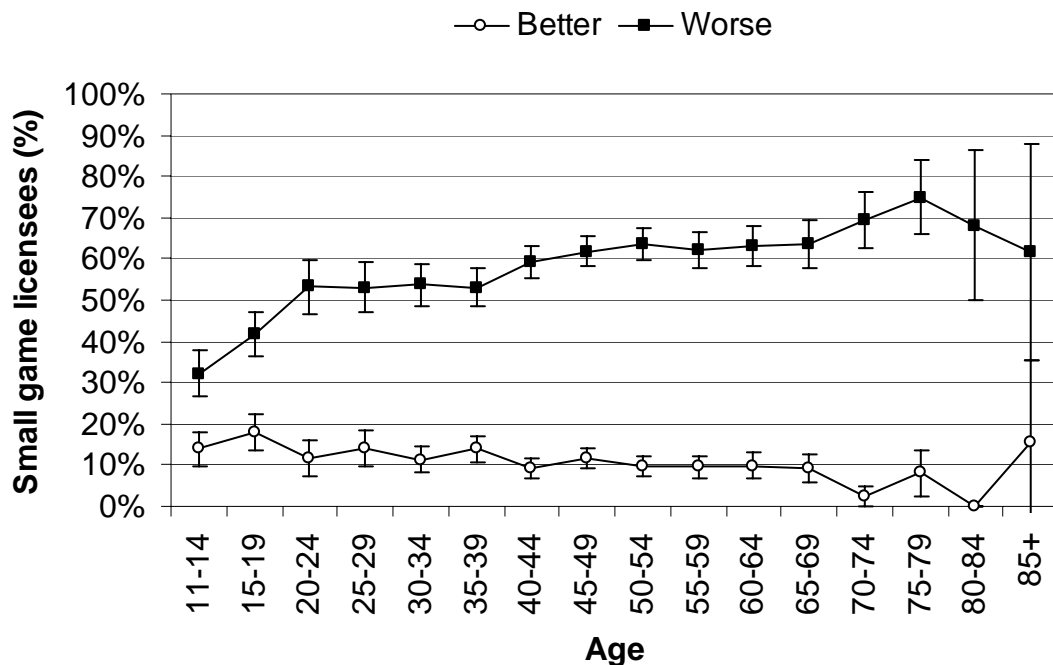


Figure 9. Proportion of small game licensees that believed that the amount of small game seen had become better or worse over the last five years in Michigan, summarized by age of licensee in 2005.

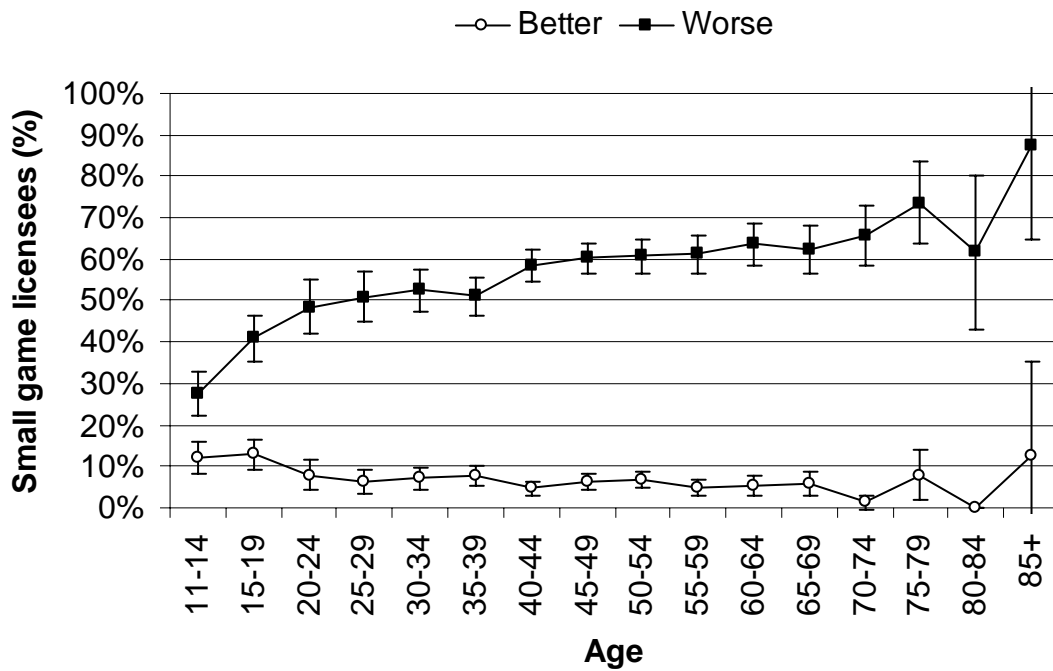


Figure 10. Proportion of small game licensees that believed that the amount of small game harvested had become better or worse over the last five years in Michigan, summarized by age of licensee in 2005.

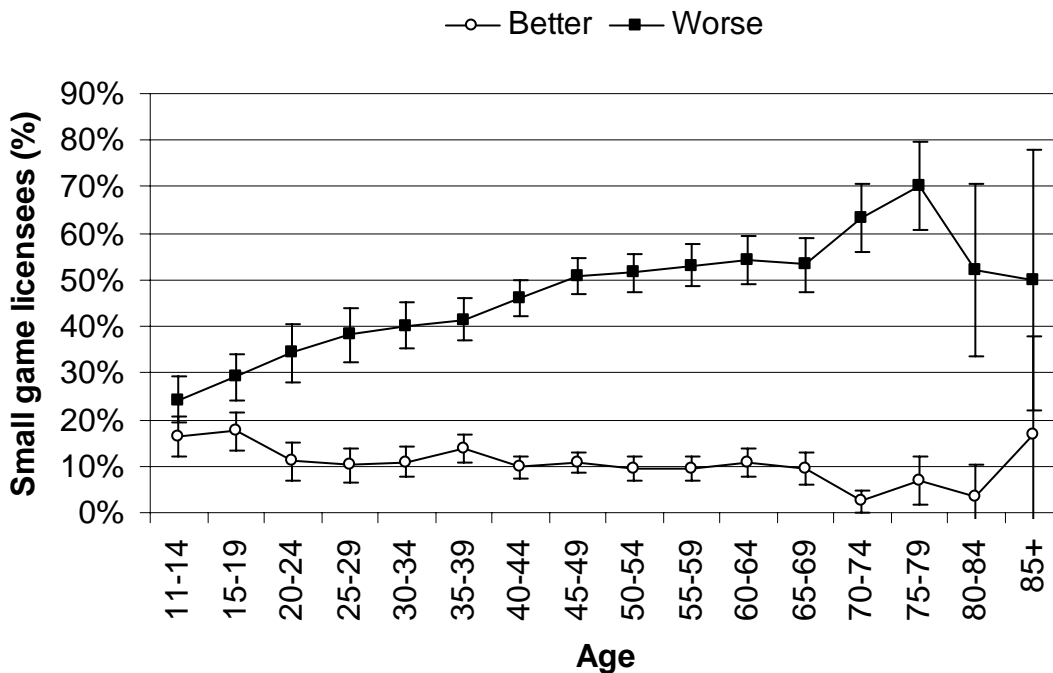


Figure 11. Proportion of small game licensees that believed that the overall quality of small game hunting had become better or worse over the last five years in Michigan, summarized by age of licensee in 2005.

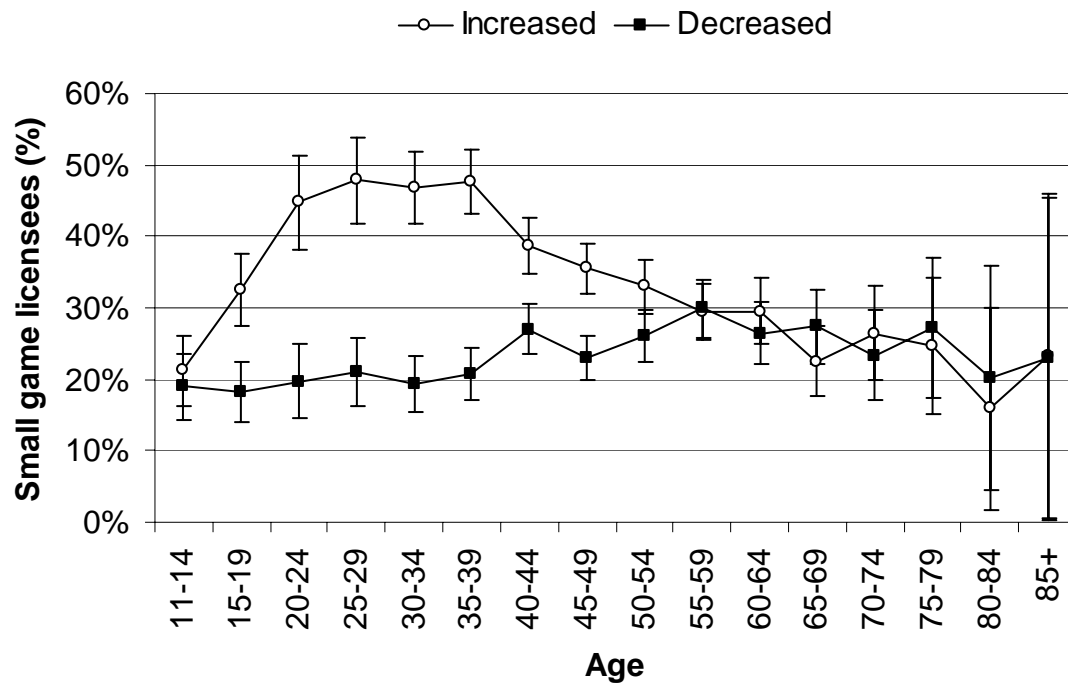


Figure 12. Proportion of small game licensees that believed the problem of finding time to hunt small game had increased or decreased over the last five years in Michigan, summarized by age of licensee in 2005.