



## RUFFED GROUSE AND AMERICAN WOODCOCK STATUS IN MICHIGAN, 2004

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Ruffed grouse (*Bonasa umbellus*) and American woodcock (*Scolopax minor*) are popular forest game birds that are pursued by about 103,000 Michigan hunters annually. Hunters spend an average of seven to eight days hunting grouse and woodcock each year, adding up to almost a million days of recreation in Michigan annually (Frawley 2004). Non-hunters also place a high value on grouse and woodcock. Many people enjoy listening to or watching drumming male grouse and the courtship displays of woodcock. Additionally, grouse and woodcock are important components of early successional forest habitat.

### METHODS

The Michigan Department of Natural Resources (DNR) uses several surveys to monitor ruffed grouse and woodcock populations, including hunter cooperator surveys, spring breeding surveys, and hunter mail surveys. Cooperator surveys are based on volunteer hunters who express an interest in participating and are willing to maintain hunting records every year. Cooperating hunters record numbers of hours hunted and ruffed grouse and woodcock flushed each day. Data obtained from cooperating hunters are summarized as the number of grouse or woodcock flushed per hour of hunting. Flush rates reported by cooperators provide an early indicator of harvest, but the final estimates of hunting effort and harvest come from a post-season mail survey of randomly selected hunters.

DNR personnel and volunteers conduct spring breeding surveys of ruffed grouse and woodcock using roadside routes. Each route has ten listening stops that are consistent from year to year. The number of ruffed grouse drums or woodcock heard during a fixed time interval (four and two minutes, respectively) is recorded at each stop. Because timing of breeding and habitat preferences differ for the two species, separate surveys are conducted. The woodcock breeding survey is coordinated by the United States Fish and Wildlife Service (USFWS) in cooperation with the DNR. Ruffed grouse survey routes were established in locations of known grouse populations. Similarly, before 1968, woodcock routes were established in locations of known woodcock populations. However, beginning in 1968, the USFWS established woodcock routes within randomly-chosen 10-minute blocks (Kelley 2004). Data for both surveys are summarized as the number of woodcock or grouse heard per survey route. In addition, volunteers band over 1,000 woodcock each spring to monitor recruitment and trends in survival (Krementz et al. 2003). The data are summarized as the number of woodcock chicks observed and banded per 100 hours of effort.



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## **RESULTS AND DISCUSSION**

### **Review of Recent Hunting Seasons**

#### ***Ruffed Grouse***

Hunter records were available from 230 cooperators who hunted in 2003. These hunters spent 5,805 hours afield. The number of ruffed grouse flushed per hour by cooperators in 2003 (1.63) increased 13.2% statewide compared to flush rates from 2002 (1.44). Grouse flush rates were highest in Zone 1 (Upper Peninsula), followed by Zones 2 (Northern Lower Peninsula), and 3 (Southern Lower Peninsula), respectively (Figure 1 and Appendix A). The highest average flush rates reported by cooperators were during October 16-31 in Zones 1 and 3. The highest average flush rates in Zone 2 were during December 1-15 (Table 1).

An estimated 358,000 grouse were harvested in Michigan during 2003 (Frawley 2004). Harvest of ruffed grouse seems to follow population cycles (Figures 1, 2, and 3). This population cycle appears similar to the fluctuations observed in Wisconsin and Minnesota (Figure 4).

#### ***American Woodcock***

The number of woodcock flushed per hour by cooperators in 2003 (1.51) increased 8.6% statewide compared to flush rates from 2002 (1.39). Woodcock flush rates were highest in Zone 2, followed by Zones 1 and 3, respectively (Figure 5 and Appendix B). Average flush rates peaked during October 1-15 and then declined or remained the same during the rest of the intervals in Zones 1 and 3 (Table 1). Flush rates peaked during the first week of woodcock hunting in Zone 2. Seasonal changes in woodcock flush rates most likely reflect southward fall migrations (Luukkonen et al. 1998) and pre-migratory concentration of woodcock. Preliminary research in Michigan revealed that the median migration date for radio-marked woodcock was October 22 in 2002. The earliest departure date was September 20 (Myatt and Krementz 2003).

Approximately 43,000 hunters harvested about 139,000 woodcock while spending 301,000 days afield in 2003 (Frawley 2004). This is approximately 64% lower than the record harvest of 390,000 woodcock in 1976. However, there were also more hunters (126,000) spending more days afield (908,000) in 1976 than in 2003 (Figure 6). The number of woodcock harvested per hunter day is actually higher now than before the harvest peak in 1976 (Figure 7).

## **Spring Breeding Surveys**

### ***Ruffed Grouse***

Ruffed grouse drumming counts were conducted statewide along 107 survey routes in April and May 2004. A statewide drumming survey was also conducted in 2003, which provided data from 121 routes. A paired t-test was performed using data from 95 routes run in both 2003 and 2004. Statewide, the number of drums heard per route was 9.61 in 2003 and 8.05 in 2004, indicating a decline of 16% (paired  $t=2.93$ ,  $P<0.05$ ). This trend was observed in both Zone 1 and Zone 2. The number of drums heard per route in Zone 1 was 10.85 in 2003 and 9.09 in 2004 ( $n=41$ , paired  $t=2.02$ ,  $P=0.05$ ). The number of drums heard per route in Zone 2 was 8.81 in 2003 and 7.49 in 2004 ( $n=45$ , paired  $t=1.75$ ,  $P=0.09$ ). The number of drums per route did not change in Zone 3; however the sample size was low ( $n=9$ , paired  $t=1.25$ ,  $P=0.25$ ). Including data from all routes run, the greatest number of drums heard per route was in Zone 1, followed by Zones 2 and 3 (Figure 3).

Ruffed grouse have ten-year cycles in abundance over much of Canada, Alaska, and the Great Lakes states of Wisconsin, Minnesota, and Michigan (Rusch et al. 1999). Biologists in Minnesota have conducted drumming surveys since 1949, and grouse cycles have peaked near the end of each decade (Dexter 1999, Figure 4). Both Wisconsin (Dhuey 2004) and Minnesota (Erb 2004) experienced declines in their grouse drumming indices between 2003 and 2004. Many theories have been proposed to explain these cycles including diseases, weather, forest fires, sunspots, starvation, crowding, predators, genetic changes, and chance (Rusch 1989).

The most recent low in grouse abundance occurred during 1992-1994 for most of the state (Figures 1, 2, and 3). The most recent high in grouse abundance occurred between 1998 and 2000 in Zone 1 (Figures 1 and 3). It appears that ruffed grouse may again be nearing a low in their cycle.

### ***American Woodcock***

Results of woodcock breeding surveys were based on preliminary analysis of data from 89 survey routes (Kelley 2004). Significant changes in the woodcock index for Michigan between 2003 and 2004 were not detected. An average of 3.33 singing males were heard per route. The central region index, consisting of information from Illinois, Indiana, Manitoba, Michigan, Minnesota, Ohio, Ontario, and Wisconsin, also demonstrated no significant change from 2003, with an average of 2.22 males heard per route (Kelley 2004). Although there was little change between 2003 and 2004, Michigan has experienced an average long-term decline of 1.7% per year since 1968 (Kelley 2004).

Woodcock banders in Michigan spent approximately 1,700 hours afield in 2004 and banded 993 chicks. The average brood size observed was 3.1, the same as 2002 and

2003. In 2004, there were 74.8 chicks observed and 54.6 chicks banded per 100 hours of search time, compared to 60.2 observed and 46 banded in 2003.

## **2004 Grouse and Woodcock Population Status and Hunting Forecast**

### ***Ruffed Grouse***

The outlook for the upcoming season does not look as promising as during the peak of the grouse population cycle between 1998 and 2000. The population is most likely on the downward slope of the cycle, but Michigan has an abundance of forested land. With favorable annual production, hunters could take up to 350,000 grouse this fall. Hunters should note that increased or decreased abundance of animals at a regional scale does not ensure the same trend locally. Areas of good habitat will continue to provide the best grouse hunting opportunities

### ***American Woodcock***

Woodcock hunters may expect a season similar to last year. The USFWS mandated that the woodcock hunting season open no earlier than the Saturday closest to September 22. This year the opening date is September 25 and hunters could take up to 140,000 woodcock this fall. While good numbers of grouse and woodcock can be found in all parts of Michigan, the highest densities are located in the northern two-thirds of the state.

The long-term reduction in the woodcock population index based on the breeding bird survey raises questions and concerns about available habitat and the effects of hunting. The declining availability of quality habitat is believed to be a primary cause for the decline in the population (Dessecker and Pursglove 2000). However, the USFWS has adjusted woodcock hunting season dates and reduced bag limits four times since 1968 in response to this population decline.

A three-year research study in Michigan, Minnesota, and Wisconsin is being conducted to document survival, sources of mortality, local movements, and habitat use of woodcock breeding in the western Great Lakes region (Bruggink et al 2004). Woodcock fall survival on both hunted and nonhunted (or lightly hunted) sites will be estimated during this period (Doherty and Anderson 2002). In Michigan, the study area in Dickinson County was closed to woodcock hunting beginning in 2002, and this area will remain closed through the 2004 hunting season. A map of this area can be found in the 2004-2005 Michigan Hunting and Trapping Guide. The results of this and other studies will be discussed at the Tenth Woodcock Symposium, which Michigan will be hosting in 2006. Researchers will convene to discuss woodcock status and current research. This event is held every four to eight years, and the attendees will include woodcock experts from across North America and Europe.

## ACKNOWLEDGEMENTS

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Table 1. Average ruffed grouse and American woodcock flushes per hour, by two-week intervals, as reported by cooperating hunters in 2003.

Species and dates	Zone <sup>a</sup>		
	1	2	3
Ruffed grouse			
September 15 - 30	1.55	2.10	0.80
October 1 - 15	1.89	1.51	0.82
October 16 - 31	2.15	1.55	0.97
November 1 - 14	1.52	1.72	0.92
December 1 - 15	0.91	2.22	0.93
December 16 - January 1	0.60	1.49	0.86
American woodcock			
September 15 - 30	1.48	3.33	1.00
October 1 - 15	1.53	2.36	1.87
October 16 - 31	1.06	1.90	1.87
November 1 - 14	0.24	0.85	1.16
December 1 - 15	0.00	0.00	0.00
December 16 – January 1	0.00	0.00	0.00

<sup>a</sup> See Appendix A for boundaries of Zones.

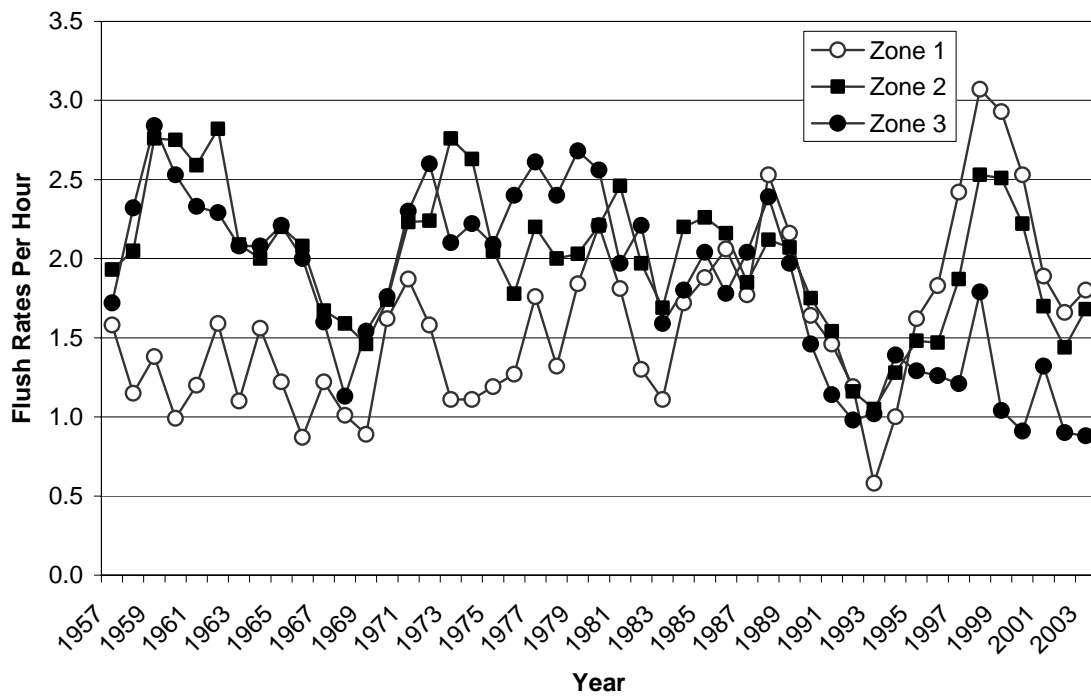


Figure 1. Ruffed grouse flush rates reported by cooperating hunters, 1957-2003.

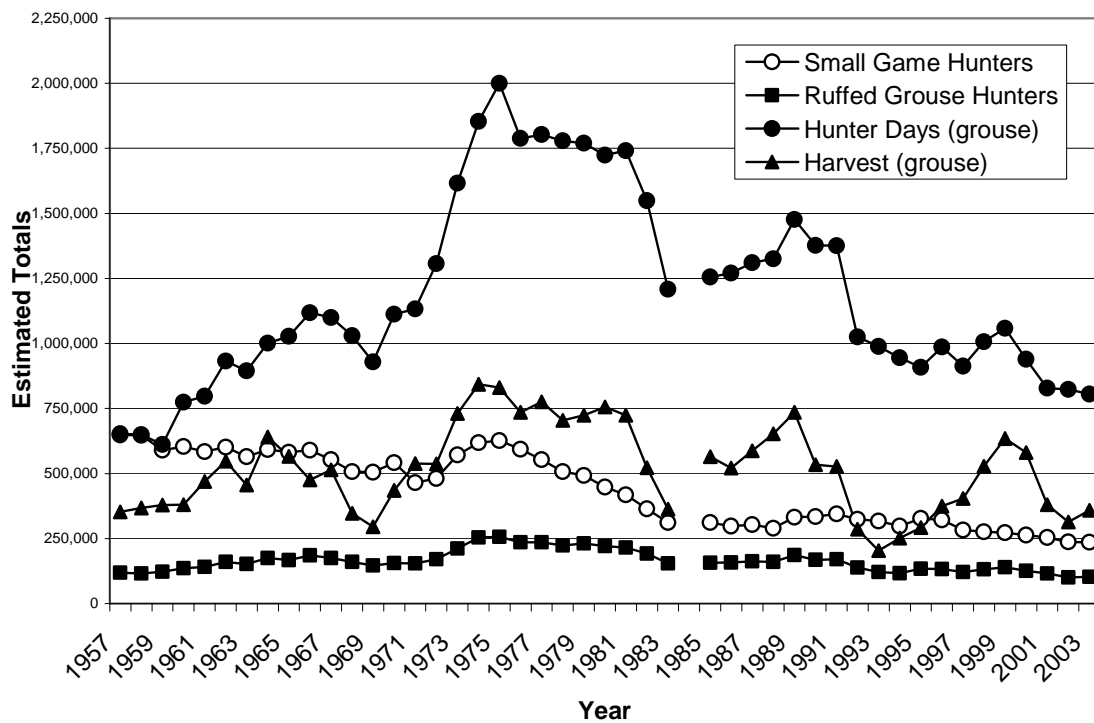


Figure 2. Mail survey estimates of the number of small game hunters and estimates of ruffed grouse hunters, harvest, and hunter days in Michigan, 1957-2003 (estimates are not available for 1984).



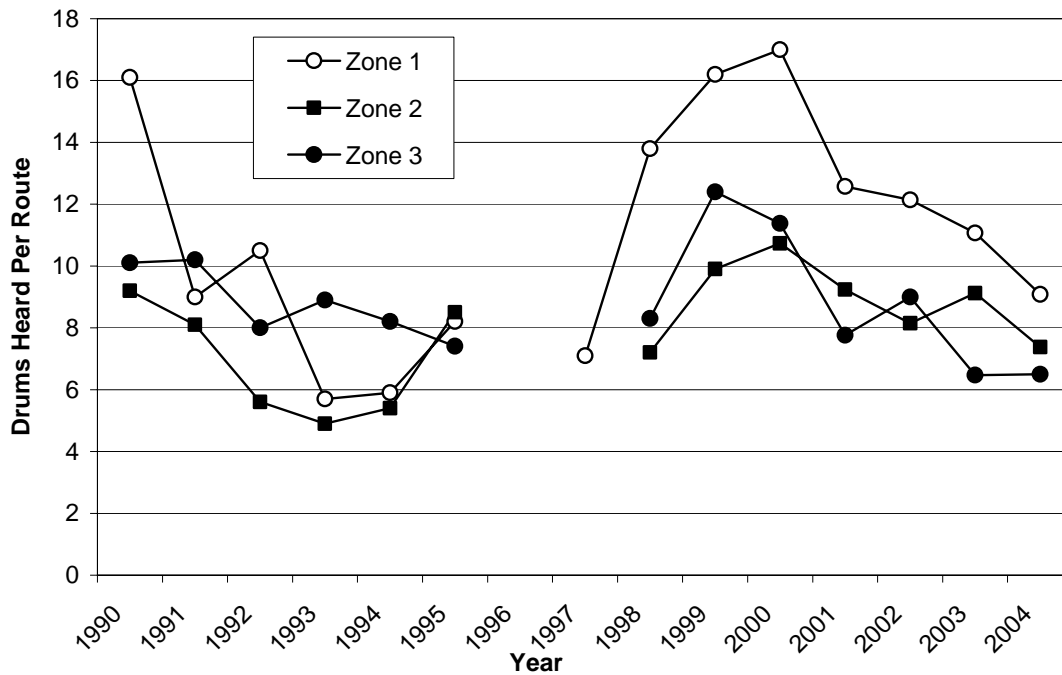


Figure 3. Ruffed grouse breeding population index (drums per route) in Michigan, 1990-2004. Drumming surveys were not conducted in 1996 and were conducted only in Zone 1 in 1997.

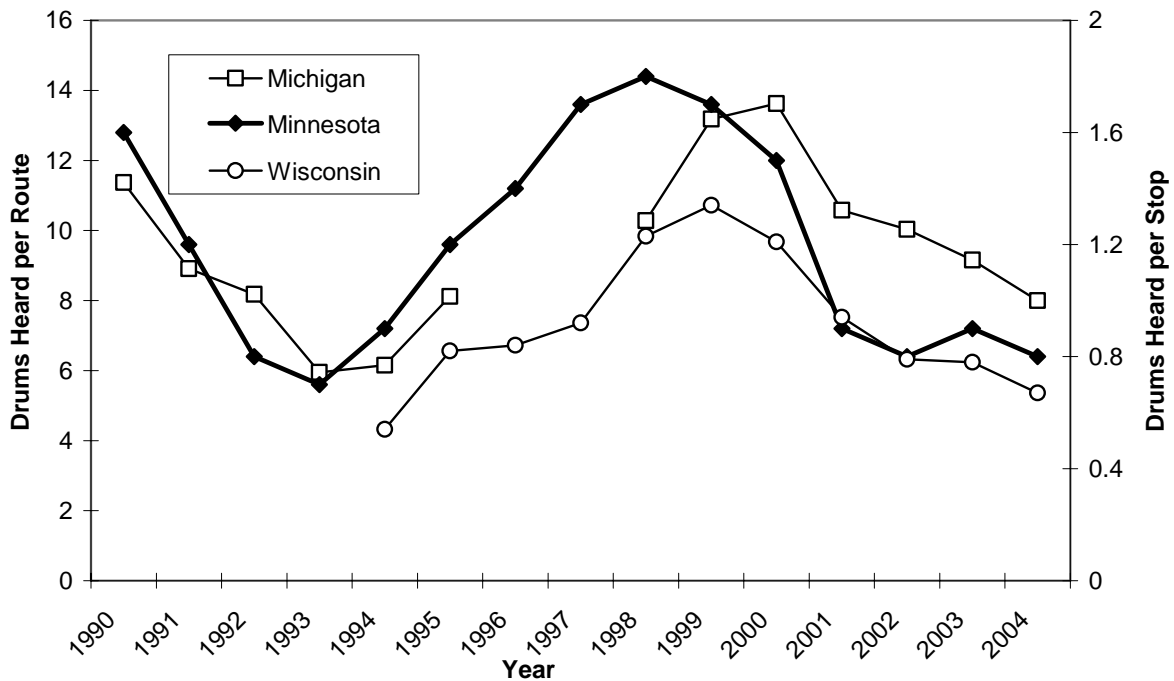


Figure 4. Ruffed Grouse breeding population indices from Michigan (drums per route) and Minnesota and Wisconsin (drums per stop), 1990-2004. Michigan statewide data are not available for 1996 and 1997.

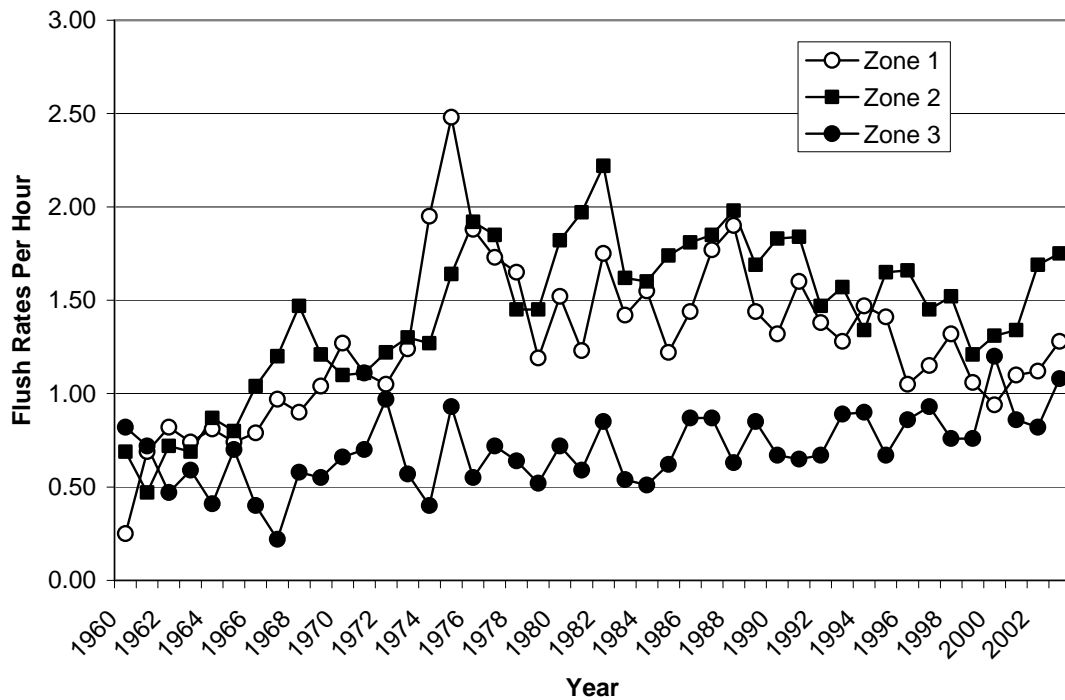


Figure 5. American woodcock flush rates reported by cooperating hunters, 1960-2003.

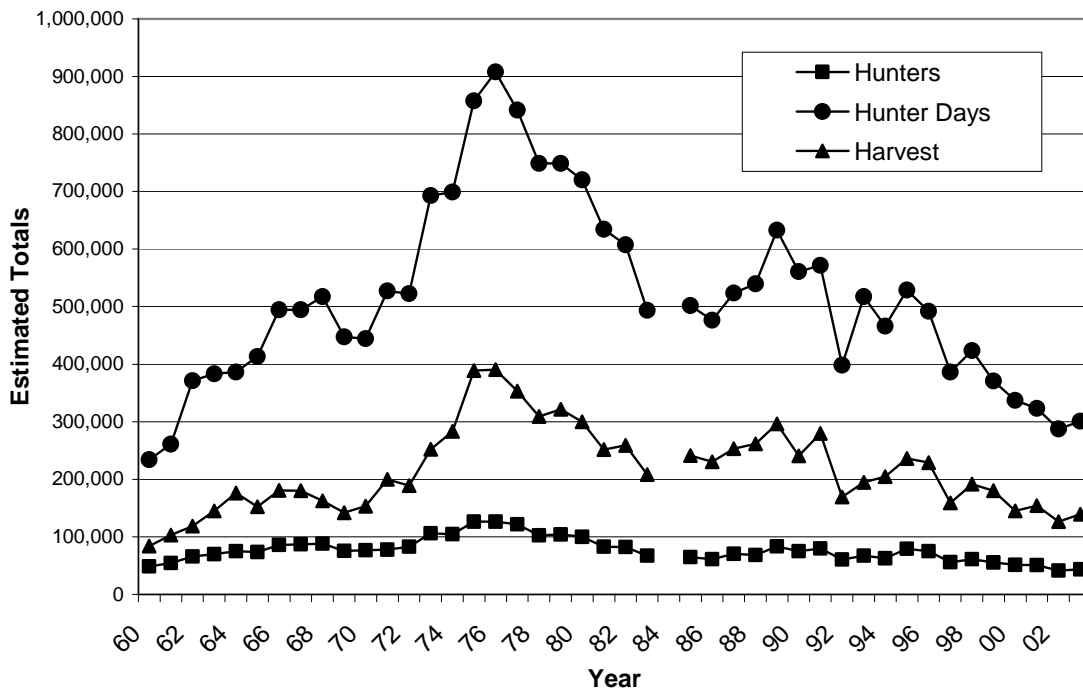


Figure 6. Mail survey estimates of the number of American woodcock hunters, hunter days, and harvest in Michigan, 1960-2003 (estimates not available for 1984).

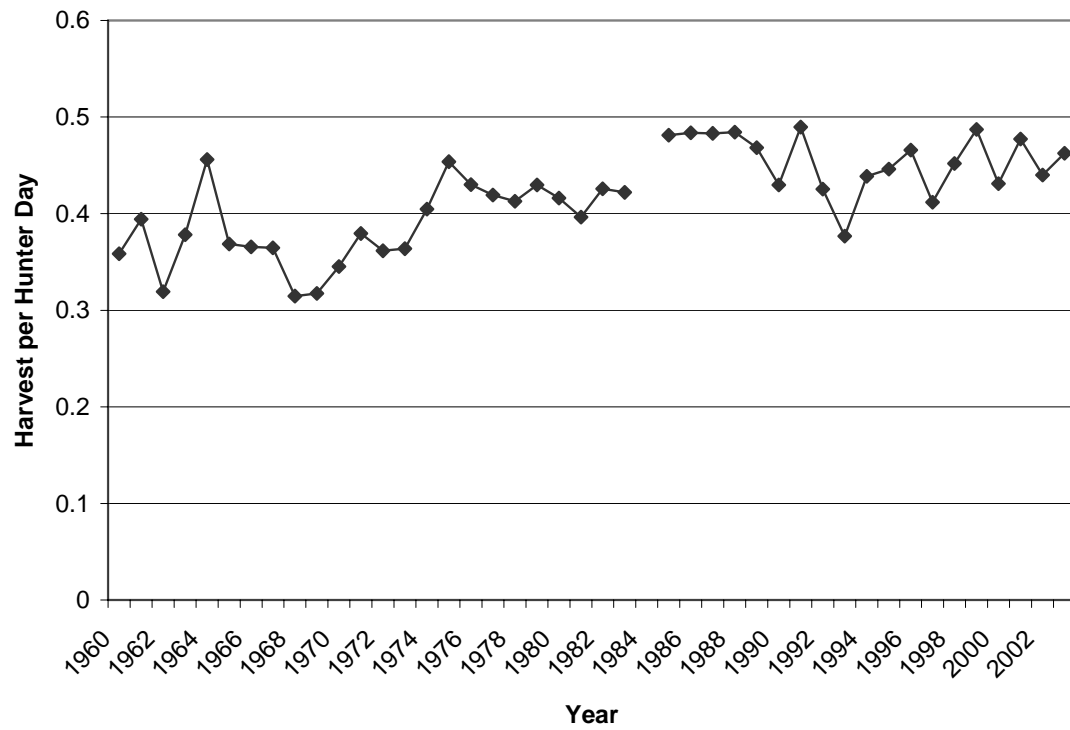
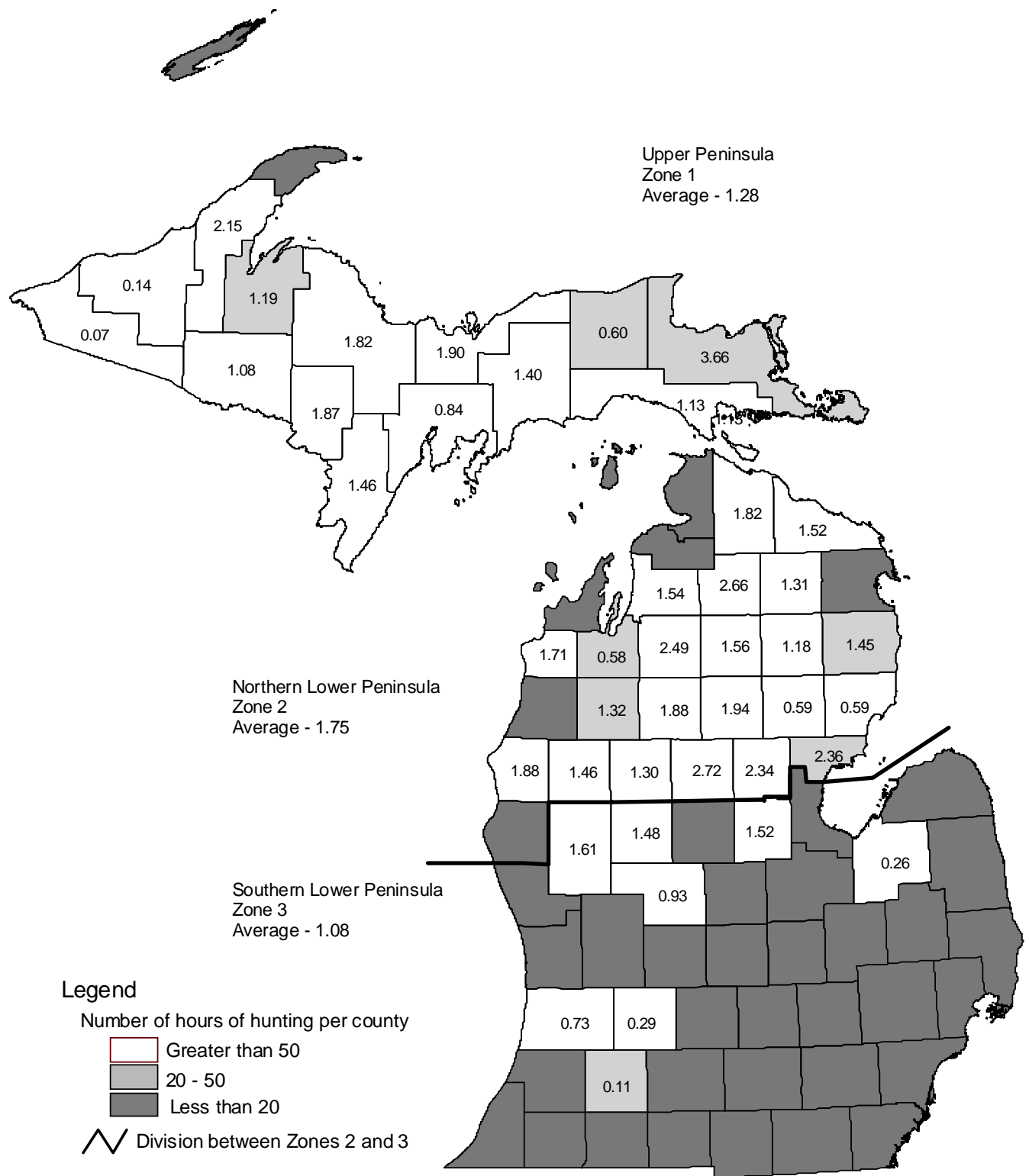


Figure 7. Mail survey estimates of woodcock harvest per hunter day in Michigan, 1960-2003 (estimates are not available for 1984).





Appendix B. Average American woodcock flushed per hour by cooperators in 2003.