



RUFFED GROUSE AND AMERICAN WOODCOCK STATUS IN MICHIGAN, 2014



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ABSTRACT

Hunter cooperator surveys, spring breeding surveys, and mail harvest surveys are conducted each year to monitor Ruffed grouse (*Bonasa umbellus*) and American woodcock (*Scolopax minor*) populations. Yearly data comparisons are described for hunter cooperator surveys (2012–2013), spring breeding surveys (2013-2014), and mail harvest surveys (2010-2011). Cooperators hunting the first 4 days of ruffed grouse season reported an average 1.4 grouse per hour in 2013 compared to 1.7 grouse per hour in 2012. Hunter’s opinion’s about the 2013 ruffed grouse population showed significant variability; 16% of the respondents thought the grouse population was up or slightly up from 2012 in the areas they hunted, with 29% reported the population was the same and 55% reported ruffed grouse were down or slightly down. Significant changes in the Michigan woodcock index based in the singing-ground survey from 2013 to 2014 were detected. There also were significant changes in the number of singing woodcock males detected in Michigan and Central Region during 2004-2014 and significant long-term (1968-2014) declines were detected, respectively. Woodcock banders in Michigan spent 1,621 hours afield in 2014 and banded approximately 868 chicks. There were about 72 chicks observed and 54 chicks banded per 100 hours of search time, compared to 53 chicks observed and 37 banded in 2013. There were 105 ruffed grouse drumming routes surveyed in 2014 and 97 in 2013. Statewide there was a 17% increase in the average number of drums heard per route among 90 (n=90; t=1.83, P=0.07) identical routes run between 2013 (10.44) and 2014 (12.19). An estimated 260,741 grouse were harvested in Michigan during the 2011 which was not significantly different then the number harvested in 2010 (260,207).

INTRODUCTION

Ruffed grouse and American woodcock are forested game birds that are pursued and appreciated from many people. In 2011, about 77,283 hunters pursued grouse and 32,254 pursued woodcock in the State of Michigan (Frawley 2014). In 2013, about 30,000 hunters pursued woodcock (Cooper & RAU 2014).



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In addition, the federal Harvest Information Program indicates that Michigan leads the nation in the number of active woodcock hunters and harvest (Cooper & Rau 2014). Non-hunters also value ruffed grouse and American woodcock. Bird watchers, hikers, bikers, campers, and others familiar with Michigan's woods know ruffed grouse well for the soft beat of a drumming male and the surprising start of an explosive grouse flush. Bird watchers explore open areas on spring mornings and evenings to observe the woodcock's unique and entertaining courtship display. For these and many other reasons, ruffed grouse and American woodcock are valuable Michigan wildlife resources.

The Department of Natural Resources (DNR) uses several surveys to monitor ruffed grouse and woodcock populations. Hunter cooperator surveys, spring breeding surveys, and harvest surveys contribute valuable management information each year. Ruffed grouse and woodcock spring surveys are conducted by DNR staff, biologists from other agencies, and volunteers. The hunter cooperator survey is made possible through data collected by volunteer hunters and shared with the DNR. Harvest information is collected from a random sample of license buyers after the end of each hunting season. The results from 2012 through 2013 hunting seasons and 2013 and 2014 breeding seasons are described in this report.

METHODS

2010 – 2011

Harvest Survey

Each year, questionnaires are sent to a randomly selected set of people who had purchased a small game hunting license during the previous hunting seasons. Detailed methods and results from the 2011 small game harvest survey are compiled in a separate report (Frawley 2014). Findings pertaining to ruffed grouse and woodcock have been summarized in the results section of this report.

2012 – 2013 Comparisons

Hunter Cooperator Surveys

Hunter Cooperator surveys rely on volunteer hunters that record numbers of hours hunted and ruffed grouse and woodcock flushed each day of hunting. Data obtained from cooperating hunters are summarized by county and by two-week intervals as the average number of grouse or woodcock flushed per hour of hunting. Hunting data were excluded from analyses when effort was <20 hours. 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 (Frawley, et al. 2010). Full season data from 2012 and 2013 were available for analyses. Early season reports from ruffed grouse and American woodcock cooperators allow biologists to quickly assess hunter success and local field conditions across the state of Michigan at the beginning of the grouse season.

2012 – 2013 Comparisons

Spring Breeding Surveys

Department of Natural Resources personnel and volunteers conduct spring breeding surveys of ruffed grouse and woodcock along 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 singing-ground survey is coordinated by the United States Fish and Wildlife Service (USFWS) in cooperation with the DNR. The grouse drumming survey is coordinated by 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 (Cooper and RAU 2014). Data for both surveys are summarized as the number of woodcock or grouse heard per survey route.

In addition, volunteers band woodcock each spring to monitor recruitment and trends in survival. The data are summarized as the number of woodcock chicks observed and banded per 100 hours of effort.

RESULTS

2010 – 2011 Comparisons

Harvest Surveys

An estimated 260,741 grouse were harvested in Michigan during 2011 which was not significantly different than 260,207 harvested in 2010 (Frawley 2014) (Figure 6). Approximately 77,283 grouse hunters spent nearly 579,171 days afield hunting grouse in Michigan during 2011 hunting season (Figure 6).

Approximately 32,254 hunters harvested about 94,657 woodcock and spent 207,295 days afield in 2011 (Frawley 2014). The number of woodcock hunters in 2011 was not statistically significant from 2010. The 2011 harvest was approximately 75% lower than the record harvest of 390,000 woodcock in 1976. However, there also were more hunters (126,000) spending more days afield (908,000) in 1976 than in 2011 (Figure 1). The average number of woodcock harvested per hunter day was higher in 2011 than in 1976, respectively (Figure 2).

2012 – 2013 Comparisons

Hunter Cooperator Surveys

Hunter records were available from 128 cooperators who spent 4,400 hours afield in 2013 and 143 cooperators who spent 5,538 hours afield in 2012. The average number of ruffed grouse flushed per hour by cooperators in 2013 (1.64) was slightly lower than the number of ruffed grouse flushed per hour in 2012 (1.66). Ruffed grouse flush rates were the highest in Zone 1 (Upper Peninsula; 2.00), followed by Zone 2 (Northern Lower Peninsula; 1.52) and Zone 3 (Southern Lower Peninsula; 0.87), respectively (Figure 3 and appendix A). The highest average flush rate was during October 16th – 31st in Zone 1 (table 1).

The average number of American woodcock flushed per hour statewide by cooperators was slightly lower in 2013 (1.57) than 2012 (1.58), respectively. American woodcock flush rates were highest in Zone 2 (2.04), followed by Zone 3 (1.35) and Zone 1 (1.02), respectively (Figure 4 and appendix B). Average flush rates peaked during September 15th-30th in Zone 2.

Cooperators returned 83 useable surveys. They hunted approximately 465 hours in 39 counties during the survey period. Respondents hunted most in Zone 2, followed by Zone 1, and Zone 3. Hunters reported the highest flush rates for grouse in Zone 2, respectively (Table 3). Individual counties having at least 10 hours of hunting with the highest flush rates for grouse were Lake, Mason, Kalkaska, Newaygo and Marquette. Although the woodcock season was not open during the survey

period, cooperators were asked to also count woodcock flushes. Individual counties having at least 10 hours of hunting with the highest flush rates for woodcock were Grand Traverse, Kalkaska, Lake, Wexford and Mason.

About 16% of the respondents thought grouse populations were up or slightly up from last year in the areas they hunted, with 29% reporting populations about the same as the previous year and 55% describing them as down or slightly down (Table 3). About 25% of the respondents thought woodcock populations were up or slightly up from last year, while about 50% thought they were the same as last year and 25% thought they were down or slightly down (Table 3).

2013 – 2014 Comparisons

Spring Breeding Surveys

Ruffed Grouse Drumming Survey

Ruffed grouse drumming counts were conducted statewide from 105 survey routes during April and May 2014. Significant weather conditions during the survey periods delayed couple route regionally in 2014. There was an average of 12.43 drums heard per routes statewide, a 16% increase from 2013 (10.77) average (Figure 8). Highest drumming counts were in Zone 1 (Upper Peninsula; 14.86), following Zone 2 (Northern Lower Peninsula; 11.64) and Zone 3 (Southern Lower Peninsula; 4.14) (Figure 7).

In 2013, 97 survey routes were conducted statewide and paired t-test were performed to statistically compare data from 90 identical routes run in both 2013 and 2014. Statewide there was a 17% increase ($n=90$; $t=1.83$, $P=0.07$) in the average number of drums heard per route between 2013 (10.44) and 2014 (12.19). Analysis at the regional scale indicated there was no significant difference ($n=32$; $t=-0.06$, $P=0.95$) in the number of drums heard per route in Zone 1 (Upper Peninsula) between 2013 (14.41) and 2014 (14.31). There was a significant difference in the average number of drums heard per route in Zone 2 (Northern Lower Peninsula) between 2013 (8.62) and 2014 (11.83; $n=52$; $t=2.44$, $P=0.02$). In Zone 3, there were 6 routes conducted in both 2013 and 2014. Due to the low sample size, statistical analysis at the Zone 3 regional scale is not appropriate.

Woodcock Singing-ground Survey

Results of Michigan Woodcock singing-ground survey were based on preliminary analysis of data from 95 survey routes (Cooper and Rau 2014). There was significant changes in the woodcock index for Michigan in 2013 and 2014 were detected. An average of 5.43 and 5.20 singing males were heard per route in 2013 and 2014, respectively. The 2013 Central Region index, consisting of information from Illinois, Indiana, Manitoba, Michigan, Minnesota, Ohio, Ontario and Wisconsin, was significantly different from 2013 ($n=408$, $P<0.05$). In the Central Region, there was an average of 2.70 and 2.57 singing males heard per route in 2013 and 2014, respectively (Cooper and Rau 2014). Significant declines in the number of singing males were detected in Michigan and Central Region during 2004-2014. This is the first time in three years that the trend has shown a decline in the Central Region (Cooper and Rau 2014). Michigan and the Central Region have experienced an average Long-term decline of 0.77% and 0.90% per year, respectively, since 1968 ($P<0.05$; Cooper and Rau 2014).

Woodcock Banding Activities

For 2014, 68 woodcock banders spent 1621.13 hours afield, located and banded 904 birds. Average brood size for 2014 was 2.99 chicks. The number of chicks banded per 100 hours afield was 53.54 and the number of chicks observed per 100 hours afield was 71.86. In 2013, 76 woodcock banders spent 2204.80 hours afield, located 385 broods and banded 808 birds. Average brood size for 2013

was 3.00. The number of chicks banded per 100 hours afield was 36.7 and the number of chick observed per 100 hours afield was 53.2 in 2013.

DISCUSSION

2014 Grouse Population Status

Ruffed grouse are early successional forest specialists that thrive in landscapes with even distribution of habitat types and interspersed among even-aged habitats. Despite having quality characteristic and components grouse may need to thrive in; Ruffed grouse have approximately ten-year cycles in abundance over much of Canada, Alaska and the Great Lake States of Wisconsin, Minnesota and Michigan (Rusch et al. 1999). This cycle is evident throughout the Midwestern states such as Michigan, Minnesota and Wisconsin (Figure 5). Over the years, many theories have been proposed to explain these cycles including diseases, weather, forest fires, sunspots, starvation, crowding, predators, genetic changes, and chance (Rusch 1989). Another possible contributing factor of population fluctuations may involve food options. Quaking aspen (*Populus tremuloides*) is an important food source for grouse, especially during the winter and early spring (Svoboda and Gullion 1972). Aspen produces a compound called coniferyl benzoate (CB) that acts as a natural feeding deterrent for grouse and other birds, and this level can vary between years and between trees (Jakubas and Gullion 1991). Grouse have tendencies to use specific or clones of aspen due to their history of having low concentrations of the deterrent (Jakubas and Mason 1991). Lack of suitable aspen in the winter may cause grouse to expend more energy and to be more susceptible to predation when feeding on other food sources (Jakubas and Gullion 1991). With the snowshoe hare and ruffed grouse having synchronized cycles, Donald Rusch found predation mortality on ruffed grouse climbed when large fluxes of raptors migrate south into the northern United States during a decline in snowshoe hares in their Canadian home range (Rusch 1982).

Michigan experienced snow fall that extended into April in the Southern portions and May in the Northern portions of Michigan. Researchers report that grouse in snow roosts use at least 30 percent less energy than grouse in the open during the same weather conditions (RGS 2008). In 2014, spring showed above average precipitation throughout Michigan and below average temperatures, respectively. Based on current survey data, hunters may expect a season similar or have a slight up following the peak of the cycle in 2010 and should note the decreased abundance of animals at a regional scale does not ensure the same trend locally. The ruffed grouse season begins on September 15, statewide. With favorable annual production, hunters could take approximately 260,000 grouse in 2014.

Areas of good habitat will continue to provide the best grouse hunting opportunities. Grouse are most abundant in areas where dense young forest habitats (5-15 years old) are common (Association of Fish and Wildlife Agencies Resident Game Bird Working Group 2006). The best grouse cover is usually provided by dense aspen stands 6 to 15 years old or older stands with dense understories of alder or hazel (Thompson and Dessecker 1997).

With the help from hunters and partners, the Department of Natural Resources is developing a series of intensively managed, walk-in access ruffed grouse hunting areas across the Northern Lower and Upper Peninsulas. These Grouse Enhanced Management Systems (GEMS) will provide an amazing and adventurous opportunity for a variety of hunter types – youth, adults new to the sport and seniors all have the capability of being more comfortable with easily marked trails and maps. This new management system promotes hunter recruitment and retention while expanding local economies and accelerate timber harvest opportunities.

2014 Woodcock Population Status

The long-term decline in the woodcock population index 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). Also, the declines in young forest habitats and the isolation of these habitats in some landscapes may be limiting ruffed grouse and woodcock recruitment and therefore population densities (Dessecker & McAuley 2001). Game population surveys have indicated woodcock populations have are currently among their lowest recorded levels since 1960s. Although many game species are not as abundant today as during previous decades, the mean number of animals taken per hunting effort has not paralleled changes in the populations in Michigan, respectively (Frawley 2014). Moist soils are an important component of quality woodcock habitat as they ensure that earthworms, which comprise nearly 80% of their diet (Sperry 1940), are at or near the soil surface and available to foraging woodcock (Dessecker & McAuley 2001).

A North American Woodcock Conservation Plan was written to help guide woodcock management in each region of the continent within woodcock range. The document is available online at www.michigan.gov/dnr or www.timberdoodle.org. Professionals are also working on developing habitat initiatives where the plan will be used to guide the creation of quality habitat that will benefit woodcock as well as other species that have similar habitat requirements.

More woodcock are banded in Michigan than in any other state or Canada. In fact, Michigan banders have banded greater than 20,000 more woodcock than the next largest banding state (Maine) since 1981 (Mayhew and Luukkonen 2010). Woodcock survival estimates based on Michigan woodcock banding data analyses is reported by Krementz et al. (2003) and Mayhew and Luukkonen (2010).

The USFWS has adjusted woodcock hunting season dates and reduced bag limits four times since 1968 in response to the general status of woodcock. In 2014, the opening date for woodcock hunting will be September 20th. The USFWS framework for Michigan allows for the woodcock hunting season to open no earlier than the Saturday closest to September 21 and to run for no more than 45 days. American woodcock populations were down a bit from last year but not unexpected due to a cold, wet spring in 2013. Prolonged winter conditions in 2014 may have impacted Michigan woodcock production. Actual spring production this year will determine the fall harvest outcome. With above average precipitation and lower than average temperature regionally, woodcock hunters may expect a season similar to last year. While good numbers of woodcock can be found in all parts of Michigan, the highest densities are located in the northern two-thirds of the state.

We encourage hunters in Michigan to use the DNR's online mapping application, MI-Hunt, to search for habitat types on public hunting lands. There are multiple layers of information that can be turned on or off, depending on your needs. For example, you can view the different forest types, topography, satellite imagery, and road layers to help plan your trip. See www.michigan.gov/mihunt for more details about this interactive mapping application.

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copied in whole or in part from previous status reports. Similar reports may be found at www.michigan.gov/dnr.

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Table 1. Average ruffed grouse and American woodcock flushes per hour^a, by two-week intervals, as reported by cooperating hunters in 2013.

Species and Dates	Zone		
	<u>1</u>	<u>2</u>	<u>3</u>
Ruffed Grouse			
September 15-30	1.42	1.51	1.06
October 1-15	2.01	1.36	0.96
October 16-31	2.48	1.63	0.85
November 1-14	1.64	1.62	0.77
December 1-15	N/A	2.03	0.78
December 16-January 1	N/A	1.30	N/A
American Woodcock			
September 15-30	0.88	2.54	1.40
October 1-15	1.24	2.43	1.41
October 16-31	1.09	1.92	2.02
November 1-14	0.20	0.78	0.89
December 1-15	N/A	0.01	0.00
December 16-January 1	N/A	0.04	N/A

Does not include hunting data when effort was <20 hours.

See Appendix A for Boundaries of Zones.

Table 2. Ruffed grouse and American woodcock flush rates reported by zone and year for September 15-18.

Zone	2012			2013		
	Hours	Grouse / hour	Woodcock / hour	Hours	Grouse / hour	Woodcock / hour
1	174	2.2	0.6	112	1.0	0.3
2	402	1.6	1.5	230	1.7	2.2
3	27	1.3	1.2	35	0.9	1.1
State	604	1.7	1.2	466	1.4	1.7

Table 3. Hunter opinions about ruffed grouse and American woodcock populations.

Trend	Ruffed grouse		Woodcock	
	2012	2013	2012	2013
Up	13%	4%	16%	13%
Slightly Up	14%	12%	17%	12%
Same	41%	28%	37%	49%
Slightly Down	17%	26%	16%	10%
Down	15%	30%	14%	16%

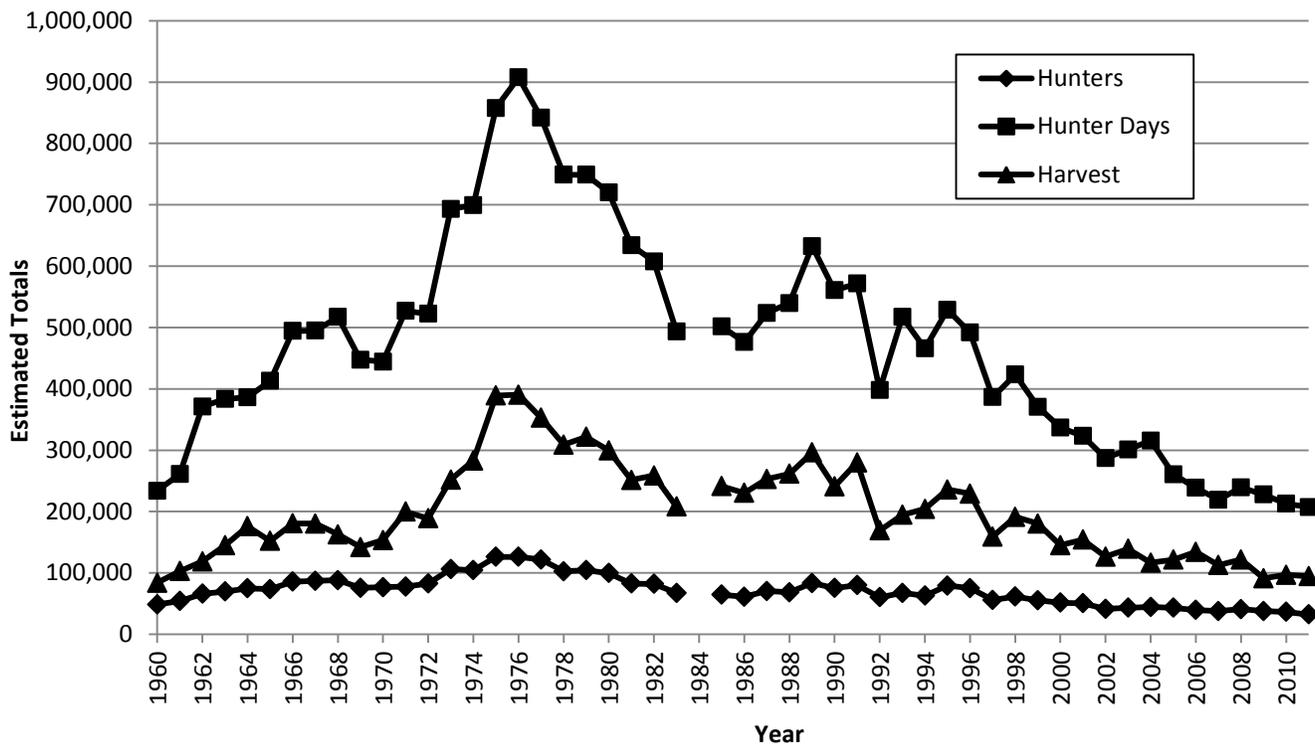


Figure 1. Mail survey estimates of the number of American woodcock hunters, hunter days, and harvest in Michigan, 1960-2011 (estimates not available for 1984).

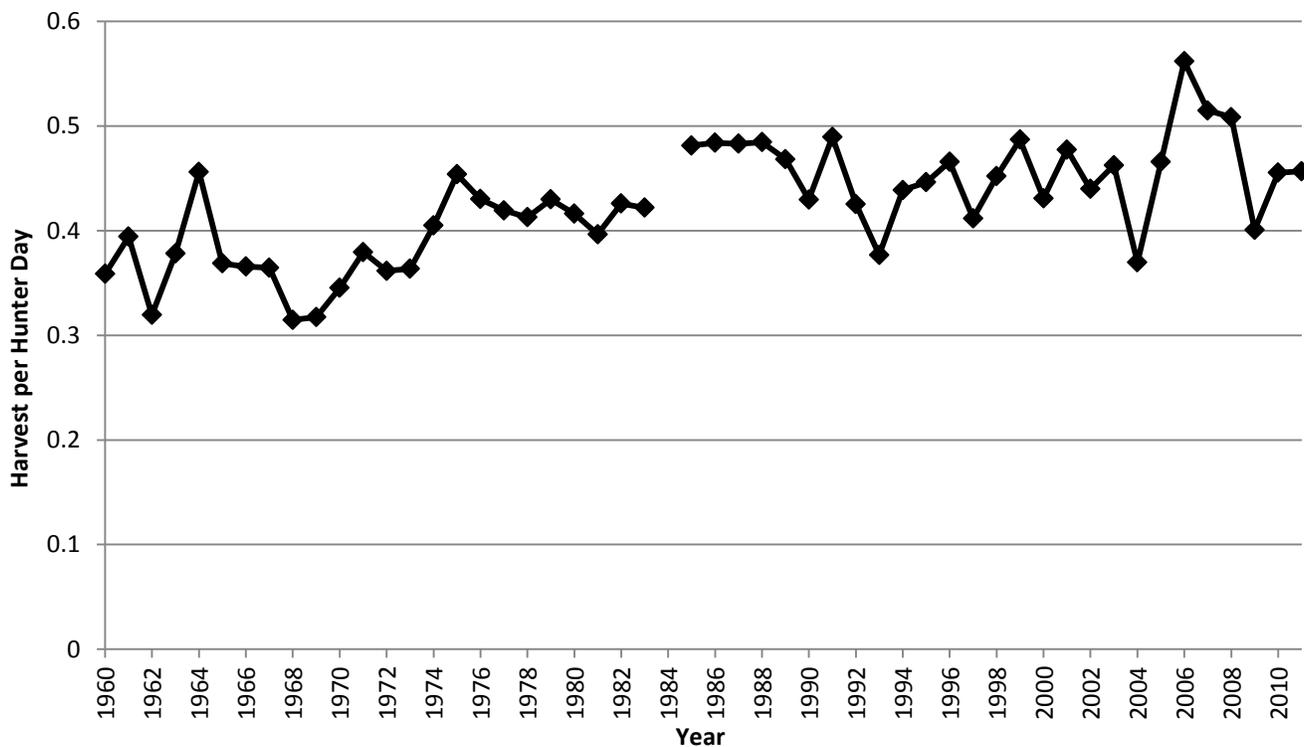


Figure 2. Mail survey estimates of woodcock harvest per hunter day in Michigan, 1960-2011 (estimates are not available for 1984).

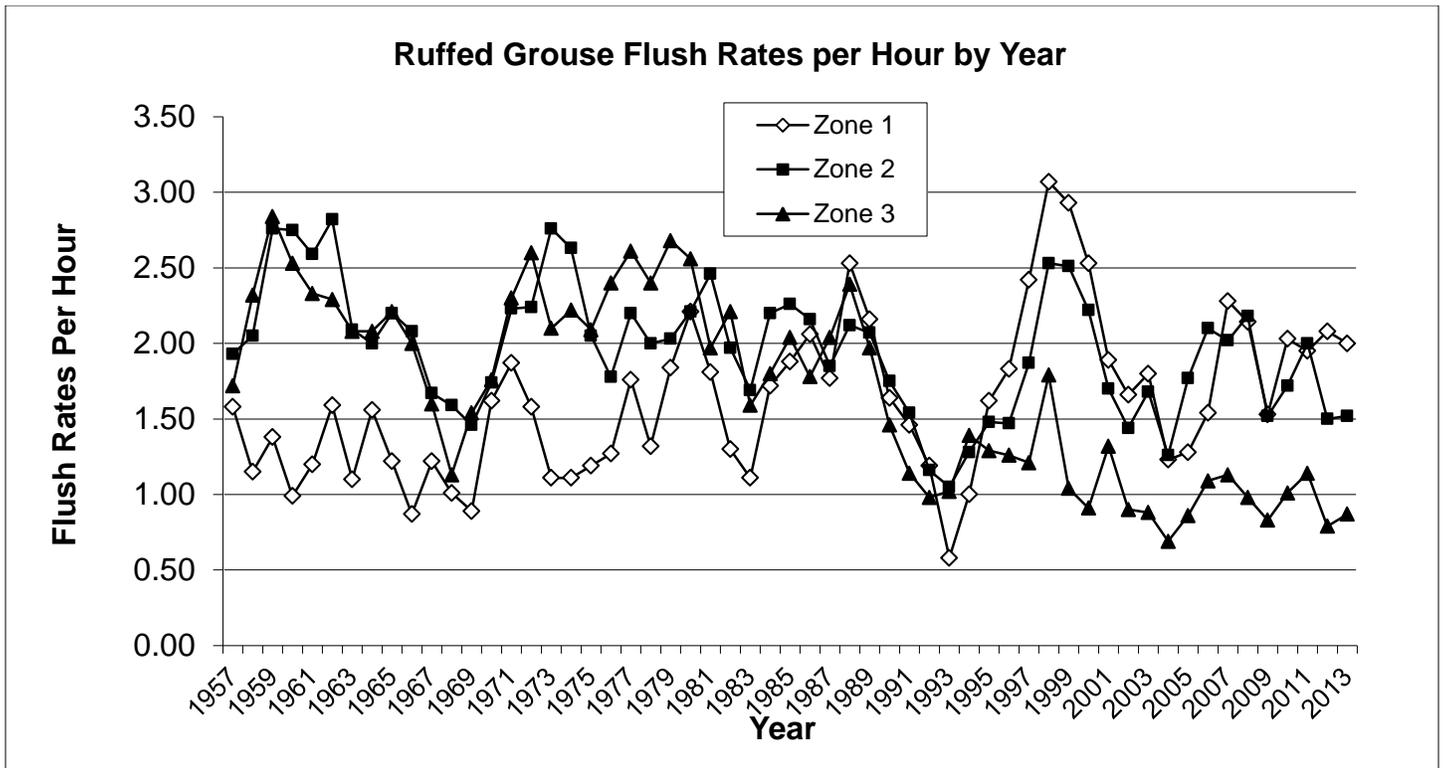


Figure 3. Ruffed grouse flush rates reported by cooperating hunters, 1957-2013.

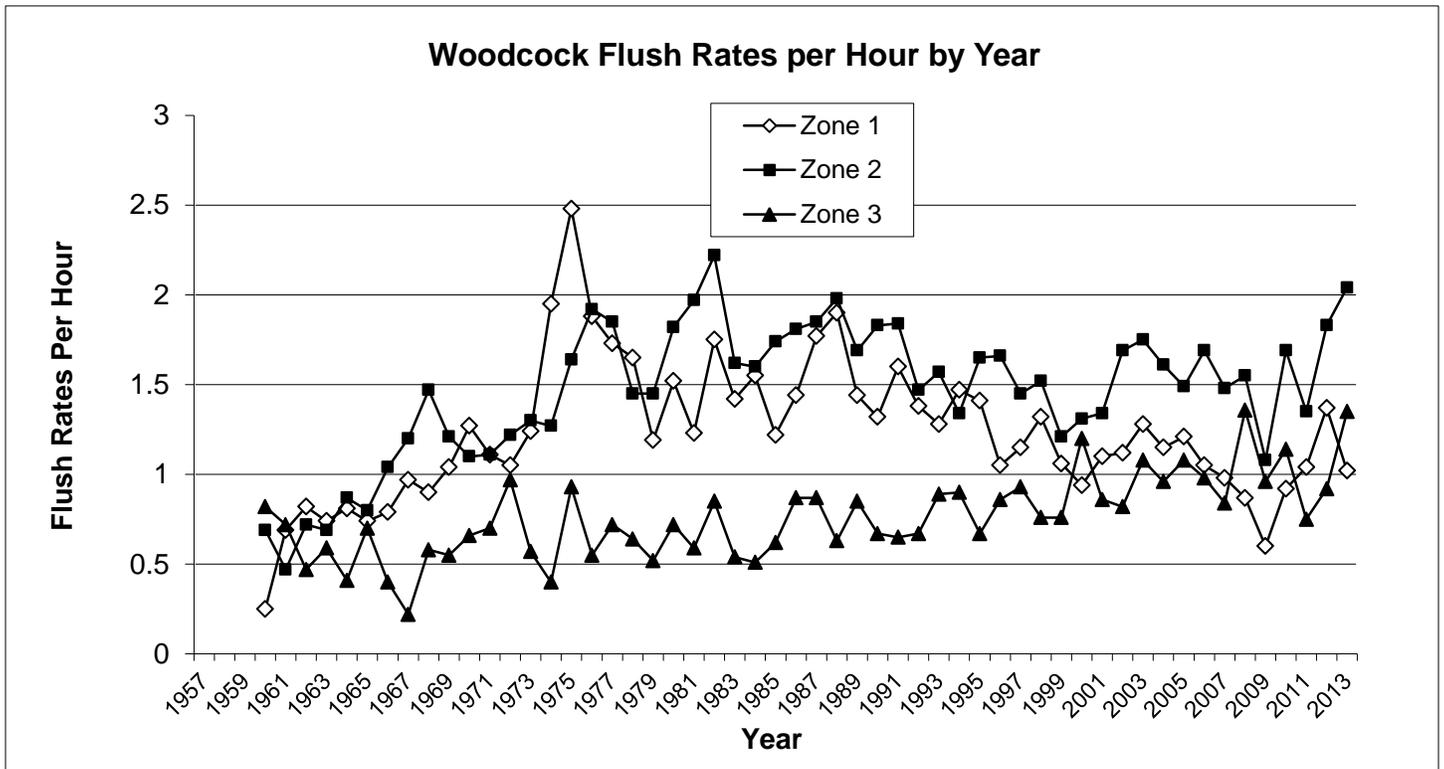


Figure 4. American Woodcock flush rates reported by cooperating hunters, 1957-2013

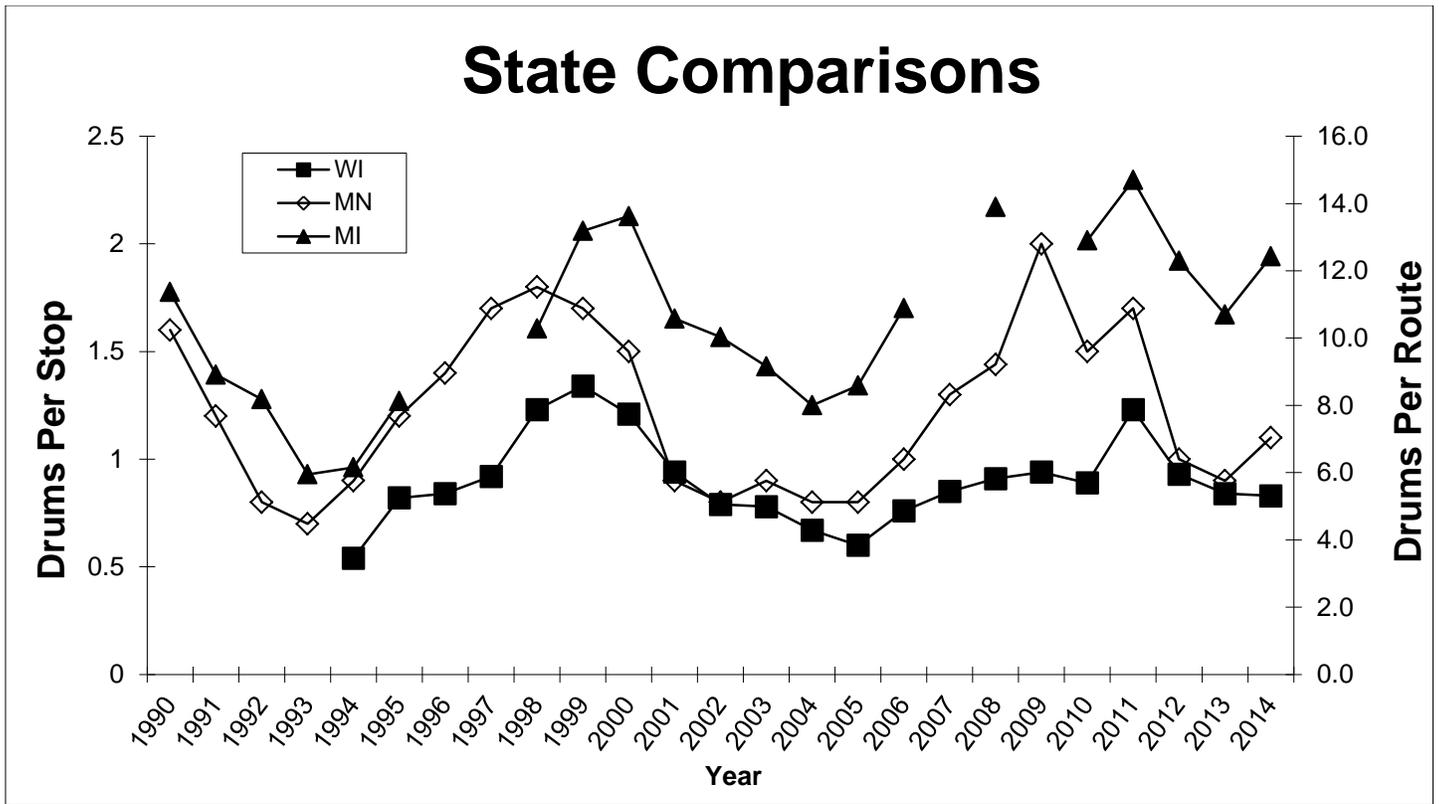


Figure 5. Ruffed grouse breeding population indices from Michigan (drums per route), Minnesota and Wisconsin (drums per stop), 1990-2014. Michigan statewide data is not available for 1996, 1997, 2007 and 2009.

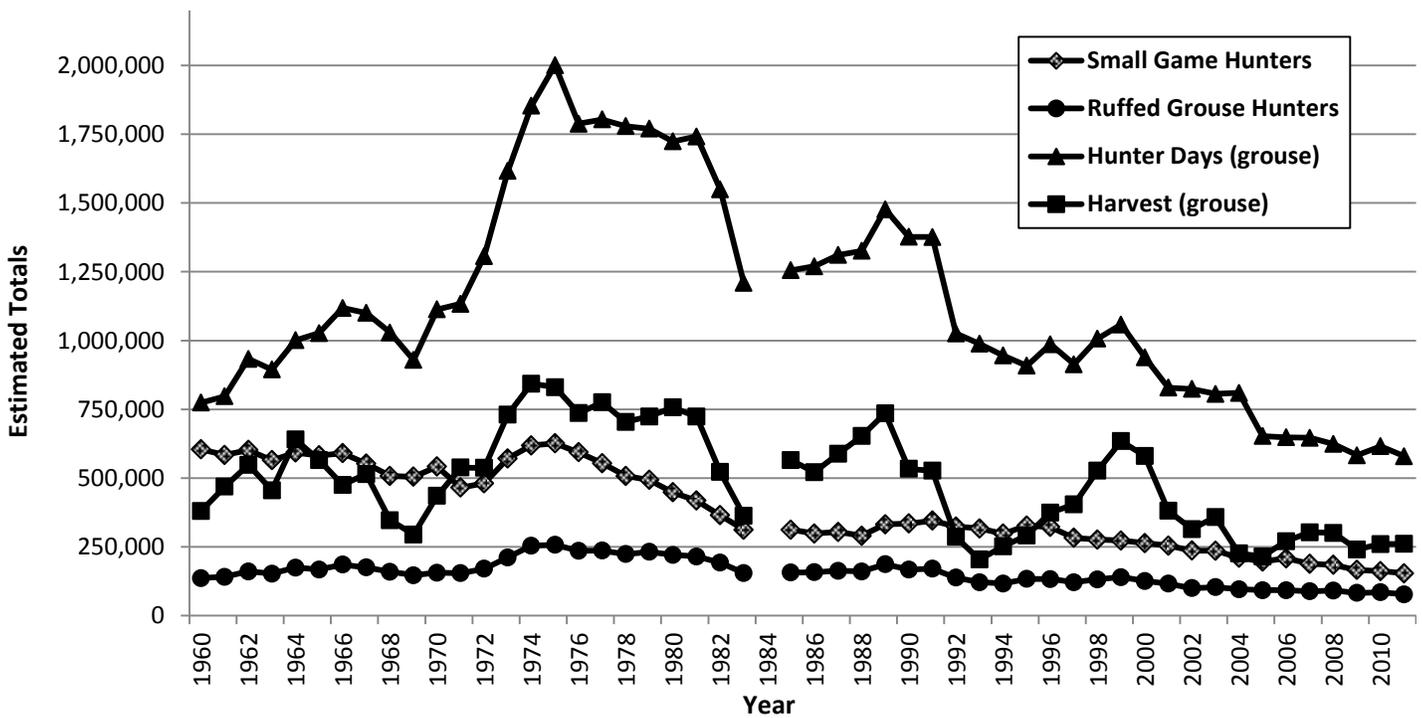


Figure 6. Mail Survey estimates of the number of small game hunters and estimates of ruffed grouse hunters, harvest, and hunter days in Michigan, 1960-2011 (estimates are not available for 1984).

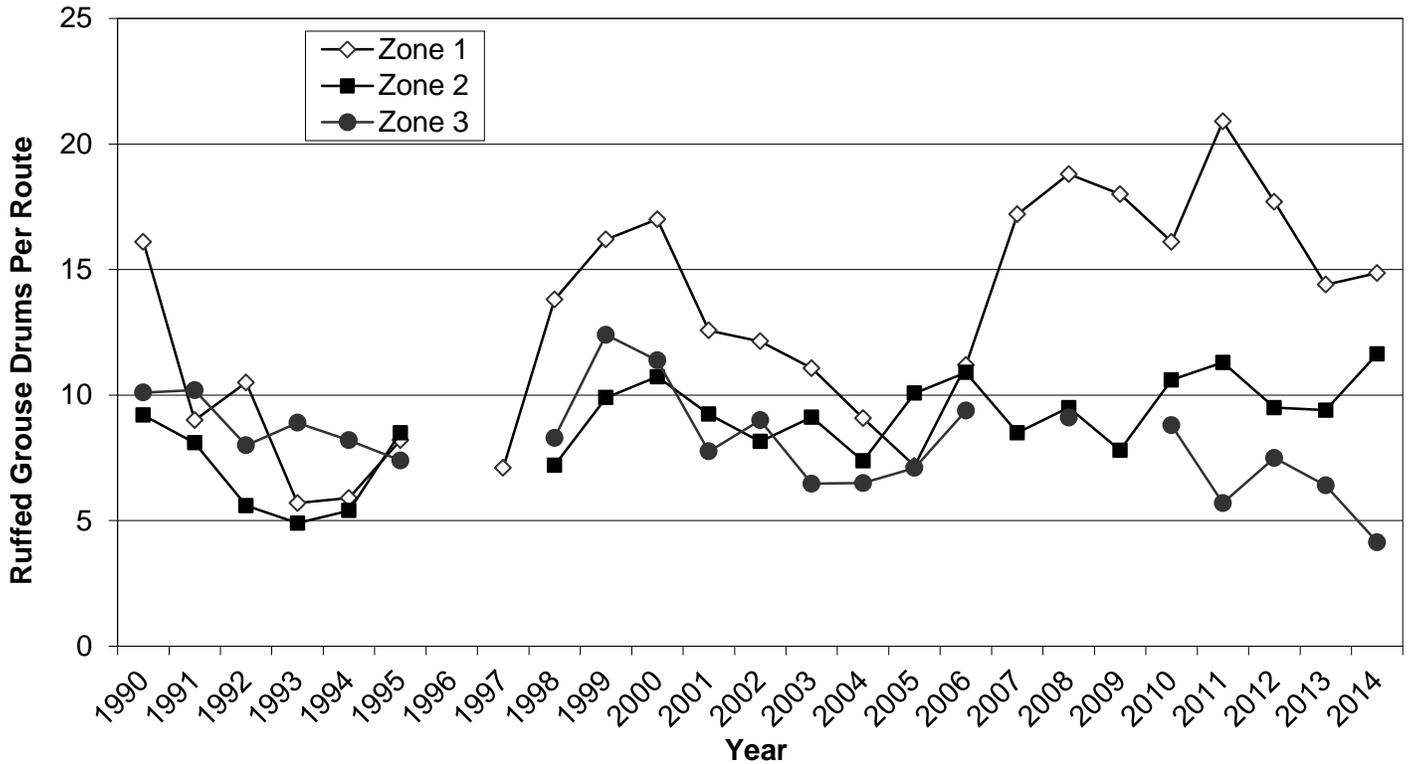


Figure 7. Ruffed grouse breeding population index (average number of drums per route by Zone) in Michigan, 1990-2014. Drumming surveys were not conducted statewide in 1996, 1997 (Zone 2 & 3), 2007 and 2009 (Zone 1).

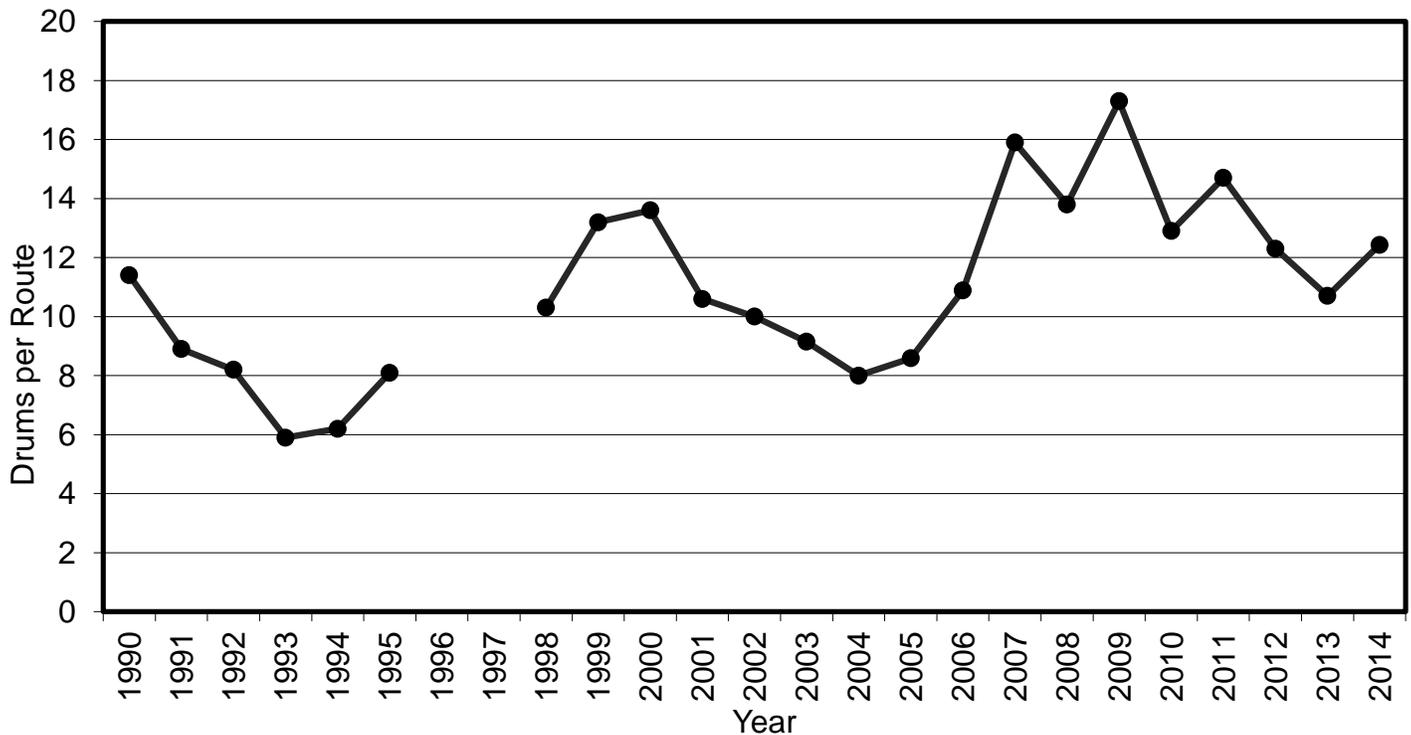
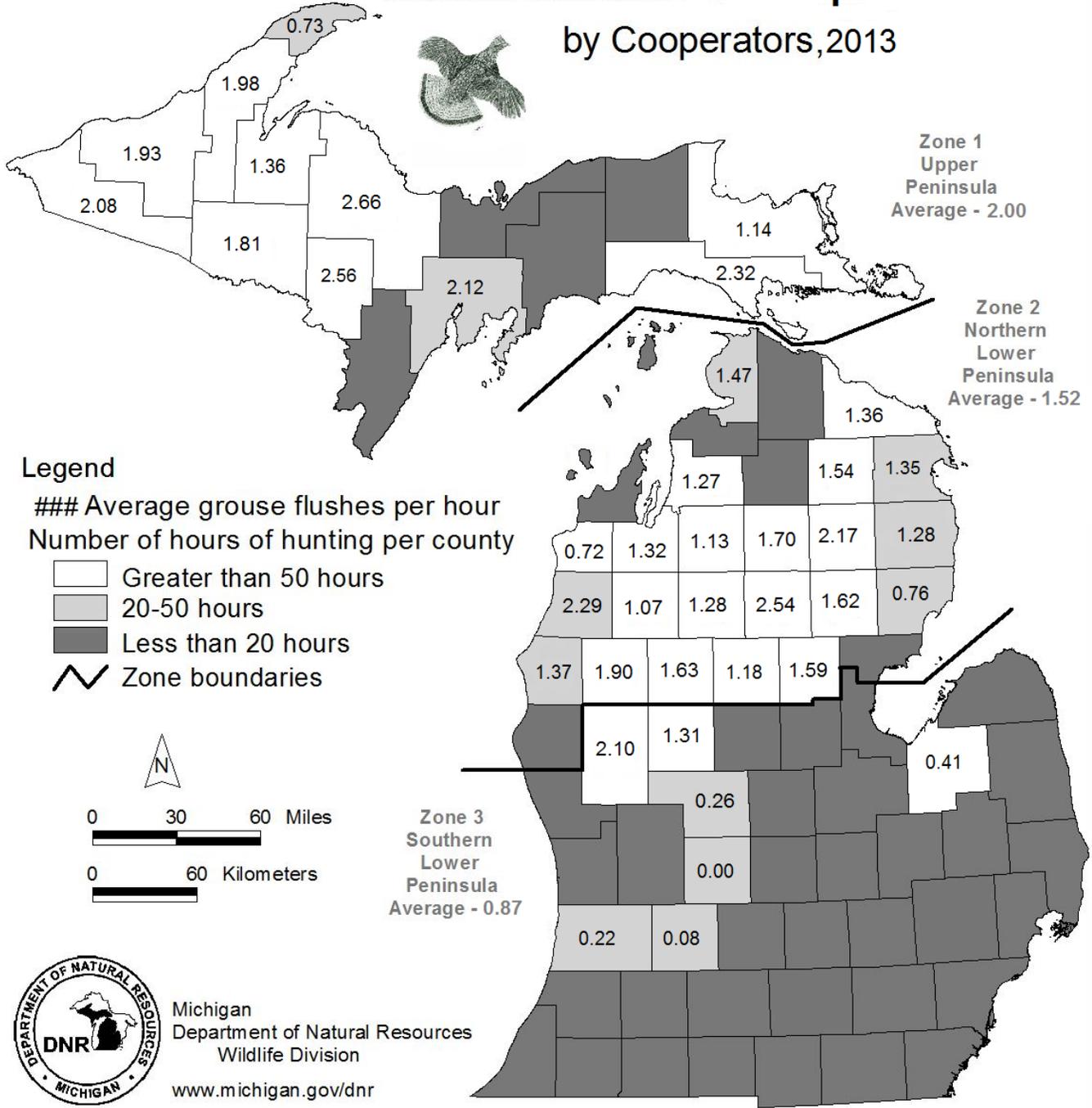


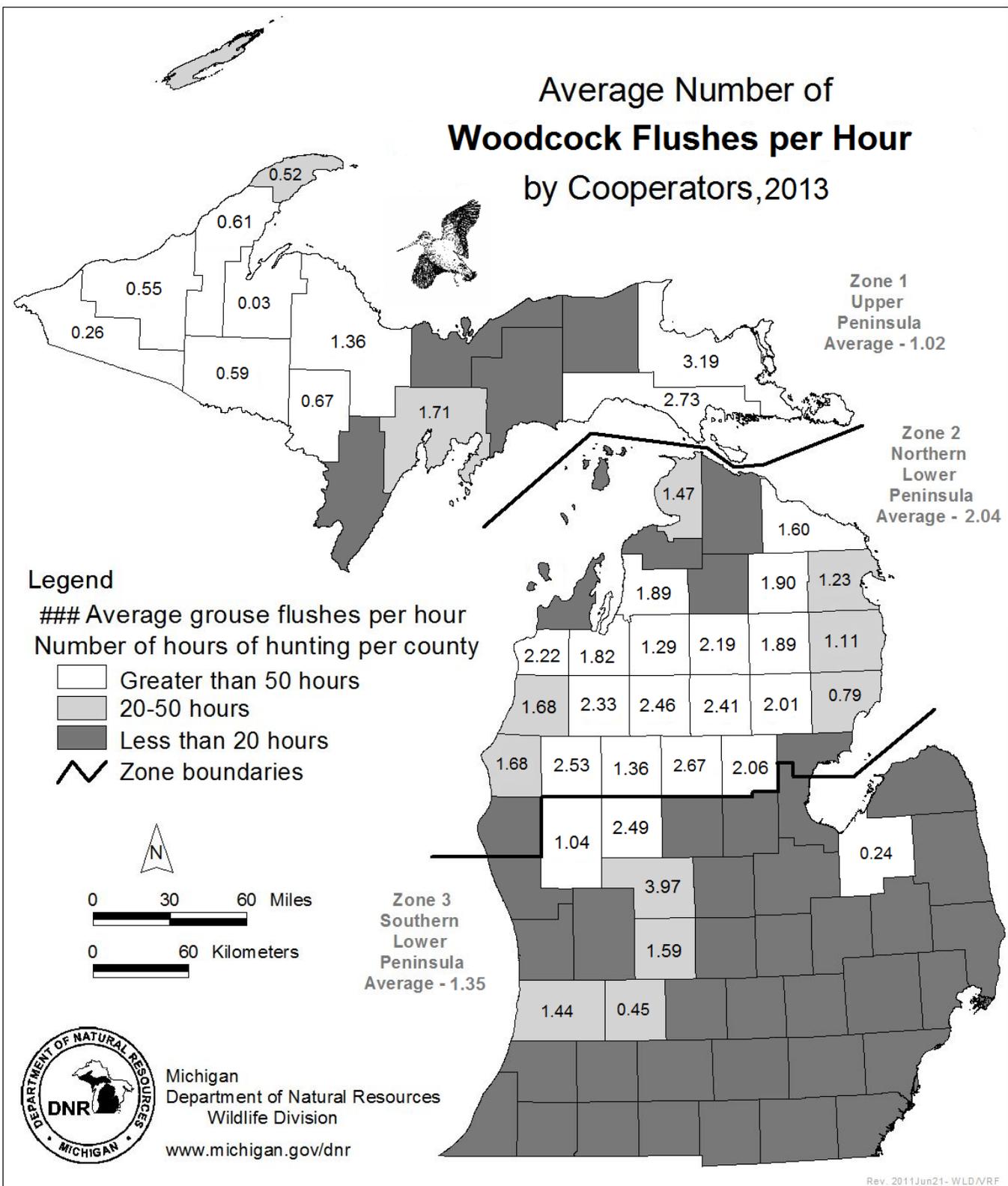
Figure 8. Ruffed grouse breeding index (average number of drums per route statewide) in Michigan, 1990-2014. Drumming survey were not conducted statewide in 1996 & 1997. Only Zone 1 & 2 in 2007 and 2009 were conducted statewide.

Average Number of Ruffed Grouse Flushes per Hour by Cooperators, 2013



Appendix A. Average number of ruffed grouse flushed per hour by cooperators in 2013.

Average Number of Woodcock Flushes per Hour by Cooperators, 2013



Appendix B. Average number of American woodcock flushed per hour by cooperators in 2013.