

## **GROUSE HUNTER COOPERATOR RESULTS, 2010-11<sup>1</sup>**

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Since 1972 the Division of Wildlife has maintained a database of cooperating grouse hunters who have provided information on their Ohio grouse hunts. Grouse flush rates derived from these cooperator reports provide an annual index to grouse population status. This report summarizes results of the 2010-11 cooperator diaries and shows the trend in cooperator flush rates from 1972 through 2010.

### **METHODS**

I mailed a "Grouse Hunting Diary" to 338 cooperating hunters just prior to the 9 October 2010 through 31 January 2011 Ohio ruffed grouse season. Hunters were instructed to keep records of each grouse hunting trip by recording the date, county, township, hours hunted, grouse flushed, and grouse harvested in their hunting diary. Hunters were also instructed to not count reflushes or birds flushed by others in their hunting party. Immediately following the close of the grouse season, I sent cooperators a diary recall notice. I key-entered diary data and summarized total hours hunted, flushes per hour, and kill per hour by county, region, and total occupied range.

### **RESULTS AND DISCUSSION**

A total of 251 (74%) of the cooperators responded to the survey this year, but only 103 cooperators (30%) submitted data from grouse hunts in Ohio during the 2010-11 season. Many respondents have indicated they wish to remain on the survey mailing list, but will not grouse hunt in Ohio until populations improve. During the 39 years this survey has been conducted, response rates have ranged from a low of 30% to a high of 71%. Considering that the diaries are maintained for nearly 4 months, this is a suitable response rate and a tribute to the dedication and enthusiasm of these cooperating hunters.

Cooperators reported hunting a total of 1,279 hours during the grouse hunting season (Table 1). The number of hunting hours reported was 14% lower than in the 2009-10 season. Hunting opportunity was 108 days as compared to 105 days in the previous season. Hunting effort was not distributed equally throughout the 2010-11 season – 48% of effort occurred in January.

The range-wide grouse hunter flush rate was 0.31 flushes/hour, a slight decline from last season's 0.34 flushes/hour (Fig. 1). Hunters reported killing 0.03 grouse/hour meaning it required more than 33 hours of hunting for each grouse harvested. Hunters killed grouse on 8% of flushes.

Cooperators reported hunting ruffed grouse in 29 Ohio counties, but only 9 counties had 50 or more hunting hours reported (Fig. 2). Respondents hunted more in Vinton (179 hrs) than in any other county within ruffed grouse range.

A wide variation in flush rates occurred among counties in which cooperators hunted at least 50 hours (range: 0.10-0.65; Fig. 2). Ross county had the highest flush rate (0.65 flushes/hour) among individual counties. Regional flush rates were 0.16 flushes/hour in 4 Northeast counties, 0.29 flushes/hour in 10 East-

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<sup>1</sup>Contribution from Federal Aid in Wildlife Restoration, Project W-134-P, Wildlife Management in Ohio (State Project WFPR05).

Central counties, and 0.34 flushes/hour in 14 Southeast and South-Central counties. Grouse populations have not demonstrated a consistent positive response to habitat improvements resulting from the 2003 ice storm damage and salvage timber harvests in portions of Adams, Scioto, Lawrence, and Gallia counties. Studies of grouse habitat use in Ohio (Stoll et al. 1999) and Pennsylvania (Storm et al. 2003) indicated ruffed grouse colonized regenerating clearcuts 5-7 years after timber harvests.

Starting in the 2009-10 hunting season, the Division of Wildlife shortened the ruffed grouse hunting season to end on January 31 (a reduction of 28 days from previous hunting seasons) and reduced daily bag limits from 3 to 2 ruffed grouse. While no improvement in flush rates has occurred in the first 2 seasons following this regulation change, drumming counts increased by 100% in spring 2011. The Division of Wildlife will continue to monitor spring drumming surveys and hunter flush rates to determine if the reduced season length and bag limit has a positive impact on ruffed grouse populations over the next few years.

The 2010-11 range-wide cooperators flush rate was 69% below the 1972-2010 long-term average of 0.99 flushes per hour. The average flush rate was 1.26 grouse per hour in the 1970s, 1.24 grouse per hour during the 1980s, 0.98 grouse per hour during the 1990s, and 0.59 grouse per hour in the current decade.

Ohio grouse populations were high in the early 1970s, declined in the mid-1970s, and peaked again in the late 1970s and early 1980s. However, early-successional habitat created by farm abandonment began to mature into older forest age classes by the late 1970s. In 1983, grouse populations dropped sharply and have continued to slowly decline during the past 2 decades. The most recent Forest Inventory Analysis data conducted in 2006 by the U.S. Forest Service demonstrates the continued decline in the sapling forest age class in Ohio (Fig. 3). Without an increase in forest management activities or large-scale disturbances that create early-successional forests on public and private lands in Ohio, grouse populations are likely to remain low and may even be extirpated from some counties within their historic range.

Acknowledgments. A special thanks is extended to the grouse hunters who provided information on their hunts. Several of the cooperators have participated in all 39 years of this survey.

#### LITERATURE CITED

- Stoll, R. J., Jr., W. L. Culbertson, M. W. McClain, R. W. Donohoe, and G. Honchul. 1999. Effects of clearcutting on ruffed grouse in Ohio's oak-hickory forests. Ohio Fish and Wildlife Report 14. Ohio DNR, Division of Wildlife, Columbus, OH, USA.
- Storm, G. L., W. L. Palmer, and D. R. Diefenbach. 2003. Ruffed grouse responses to management of mixed oak and aspen communities in central Pennsylvania. Grouse Research Bulletin No. 1, Pennsylvania Game Commission, Harrisburg, PA, USA.

Table 1. Monthly distribution of hunting effort and success by cooperating Ohio grouse hunters, 2010-11.

Parameter	Oct	Nov	Dec	Jan	Season
<i>Hunter effort</i>					
Hunting hours in sample	166	240	256	604	1279
No. eligible hunting days	23	28	26	31	108
<i>Hunter success</i>					
Flushes/hour	0.10	0.26	0.38	0.35	0.31
Kill/hour	0.01	0.03	0.02	0.03	0.03

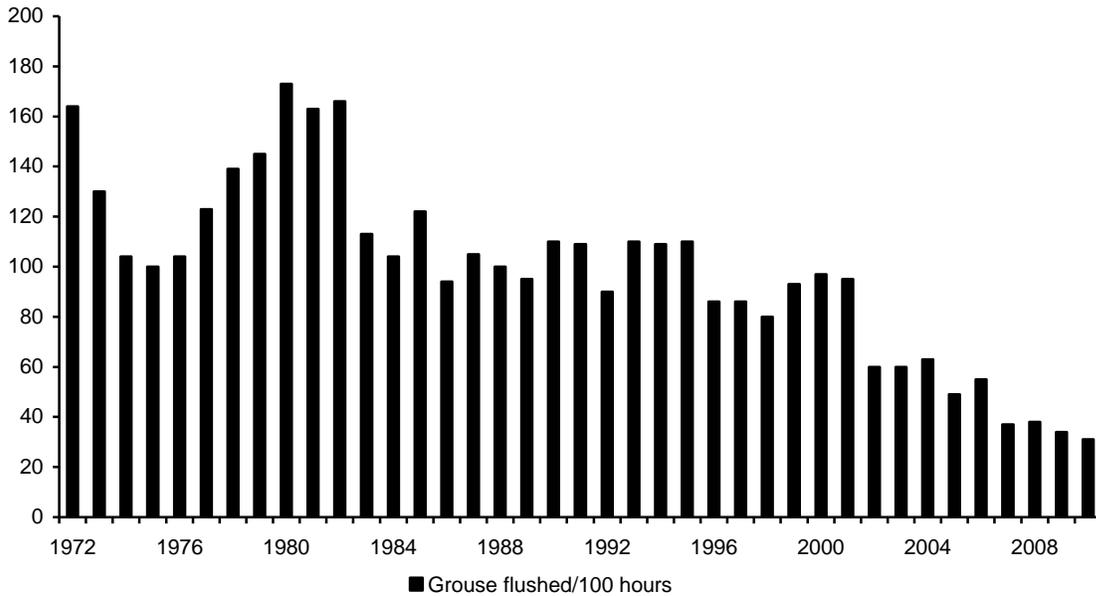


Fig. 1. Ohio ruffed grouse cooperators' flush rates, 1972-2010.

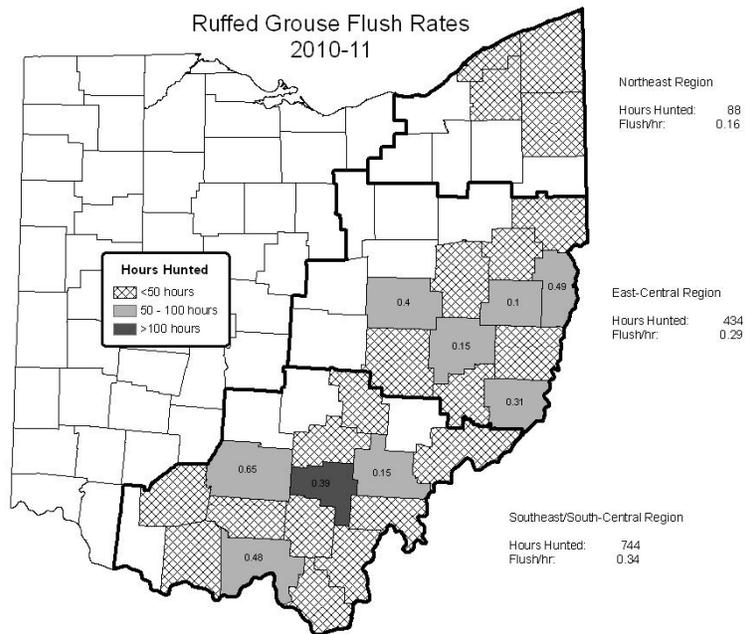


Fig. 2. Ruffed grouse flush rates by county and region based on cooperator hunter diaries, Ohio, 2010-11.

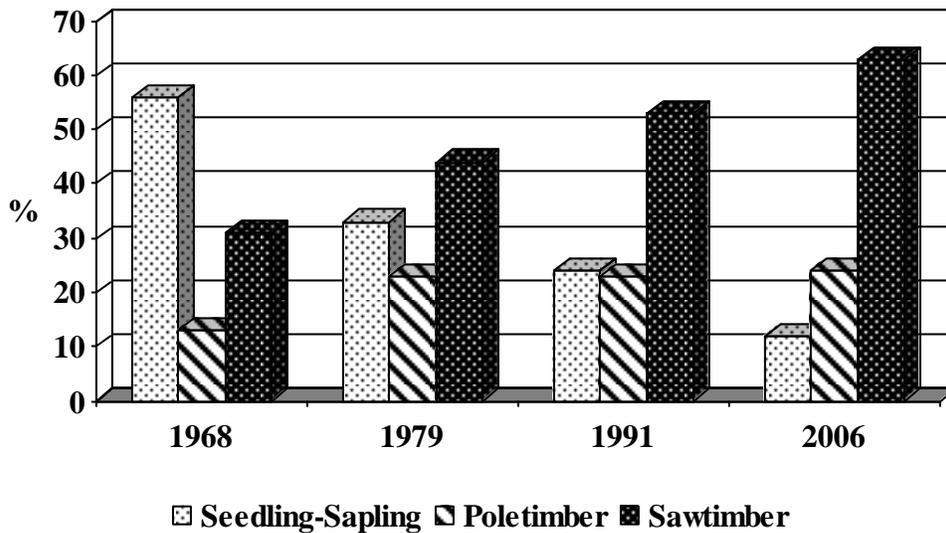


Fig. 3. Size class distribution of Ohio's forest resources, 1968-2006, Forest Inventory Analysis, USFS.

## **GROUSE HUNTER COOPERATOR RESULTS, 2011-12<sup>1</sup>**

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Since 1972 the Division of Wildlife has maintained a database of cooperating grouse hunters who have provided information on their Ohio grouse hunts. Grouse flush rates derived from these cooperator reports provide an annual index to grouse population status. This report summarizes results of the 2011-12 cooperator diaries and shows the trend in cooperator flush rates from 1972 through 2011.

### **METHODS**

I mailed a "Grouse Hunting Diary" to 314 cooperating hunters just prior to the 8 October 2011 through 31 January 2012 Ohio ruffed grouse season. Hunters were instructed to keep records of each grouse hunting trip by recording the date, county, township, hours hunted, grouse flushed, and grouse harvested in their hunting diary. Hunters were also instructed to not count reflushes or birds flushed by others in their hunting party. Immediately following the close of the grouse season, I sent cooperators a diary recall notice. I key-entered diary data and summarized total hours hunted, flushes per hour, and kill per hour by county, region, and total occupied range.

### **RESULTS AND DISCUSSION**

A total of 216 (69%) of the cooperators responded to the survey this year, but only 84 cooperators (27%) submitted data from grouse hunts in Ohio during the 2011-12 season. Many respondents have indicated they wish to remain on the survey mailing list, but will not grouse hunt in Ohio until populations improve. During the 40 years this survey has been conducted, response rates have ranged from a low of 30% to a high of 71%. Considering that the diaries are maintained for nearly 4 months, this is a suitable response rate and a tribute to the dedication and enthusiasm of these cooperating hunters.

Eighty-four cooperators reported hunting a total of 950 hours during the grouse hunting season (Table 1). The total number of hunting hours reported was 26% lower than in the 2010-11 season. Hunting opportunity was 109 days as compared to 108 days in the previous season. Hunting effort was not distributed equally throughout the 2011-12 season; 40% of hunting effort occurred in January.

The range-wide grouse hunter flush rate was 0.23 flushes/hour, a record low since the survey was established in 1972 (Fig. 1). Cooperators reported hunting ruffed grouse in 33 Ohio counties, but only 2 counties had 50 or more hunting hours reported (Fig. 2). Respondents hunted more in Vinton (141 hrs) than in any other county within ruffed grouse range.

Regional flush rates were 0.08 flushes/hour in 4 Northeast counties, 0.25 flushes/hour in 13 East-Central counties, and 0.50 flushes/hour in 16 Southeast and South-Central counties (Fig. 2). Scioto County had the highest flush rate (0.58 flushes/hour) among individual counties and has consistently been among the top counties in the past few years.

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<sup>1</sup>Contribution from Federal Aid in Wildlife Restoration, Project W-134-P, Wildlife Management in Ohio (State Project WAPS01).

The 2011-12 range-wide cooperators flush rate was 76% below the 1972-2011 long-term average of 0.97 flushes per hour. The average flush rate was 1.26 grouse per hour in the 1970s, 1.24 grouse per hour during the 1980s, 0.98 grouse per hour during the 1990s, and 0.59 grouse per hour during the 2000s.

Studies of grouse habitat use in Ohio (Stoll et al. 1999) and Pennsylvania (Storm et al. 2003) reported that ruffed grouse colonized regenerating clearcuts 5-7 years after timber harvests. Salvage timber harvests that have occurred following the 2003 ice storm and 2009 wildfire on the 63,000-acre Shawnee State Forest in Scioto and Adams counties have created excellent habitat conditions for ruffed grouse and populations should continue to increase within this forested landscape.

The Division of Wildlife shortened the ruffed grouse hunting season to end on January 31 (a reduction of 28 days from previous hunting seasons) and reduced daily bag limits from 3 to 2 ruffed grouse in the 2009-10 hunting season. While no improvement in flush rates has occurred in the first 3 seasons under the new regulations in the Northeast, East-Central, or statewide, flush rates did increase this year in the Southeast/South-Central region (Table 2). Spring drumming counts did not increase in 2010, but increased by 100% in 2011, but declined by 26% in 2012. The Division of Wildlife will continue to monitor spring drumming surveys and hunter flush rates to determine if the reduced season length and bag limit has a positive impact on ruffed grouse populations over the next few years.

Ohio grouse populations were high in the early 1970s, declined in the mid-1970s, and peaked again in the late 1970s and early 1980s. However, early-successional habitat created by farm abandonment began to mature into older forest age classes by the late 1970s. In 1983, grouse populations dropped sharply and have continued to slowly decline during the past 2 decades. The most recent Forest Inventory Analysis data conducted in 2006 by the U.S. Forest Service demonstrates the continued decline in the sapling forest age class in Ohio (Fig. 3). Without an increase in forest management activities or large-scale disturbances that create early-successional forests on public and private lands in Ohio, grouse populations are likely to remain low and may even be extirpated from some counties within their historic range.

Acknowledgments. A special thanks is extended to the grouse hunters who provided information on their hunts. Several of the cooperators have participated in all 40 years of this survey.

#### LITERATURE CITED

- Stoll, R. J., Jr., W. L. Culbertson, M. W. McClain, R. W. Donohoe, and G. Honchul. 1999. Effects of clearcutting on ruffed grouse in Ohio's oak-hickory forests. Ohio Fish and Wildlife Report 14. Ohio DNR, Division of Wildlife, Columbus, OH, USA.
- Storm, G. L., W. L. Palmer, and D. R. Diefenbach. 2003. Ruffed grouse responses to management of mixed oak and aspen communities in central Pennsylvania. Grouse Research Bulletin No. 1, Pennsylvania Game Commission, Harrisburg, PA, USA.

Table 1. Monthly distribution of hunting effort and success by cooperating Ohio grouse hunters, 2011-12.

<b>Parameter</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Season</b>
<i>Hunter effort</i>					
Hunting hours in sample	126	219	203	382	950
No. eligible hunting days	24	27	27	31	109
<i>Hunter success</i>					
Flushes/hour	0.18	0.16	0.35	0.23	0.23
Kill/hour	0.01	0.01	0.03	0.02	0.02

Table 2. Grouse hunter flush rates by region and statewide in the 3 hunting seasons prior to and the 3 hunting seasons after ruffed grouse hunting restrictions were enacted in the 2009-10 hunting season, Ohio.

Hunting season	Regions			Statewide
	NE	EC	SE/SC	
2006-07	0.27	0.49	0.61	0.55
2007-08	0.09	0.41	0.42	0.37
2008-09	0.10	0.41	0.39	0.38
2009-10	0.13	0.43	0.33	0.34
2010-11	0.16	0.29	0.34	0.31
2011-12	0.08	0.25	0.50	0.23

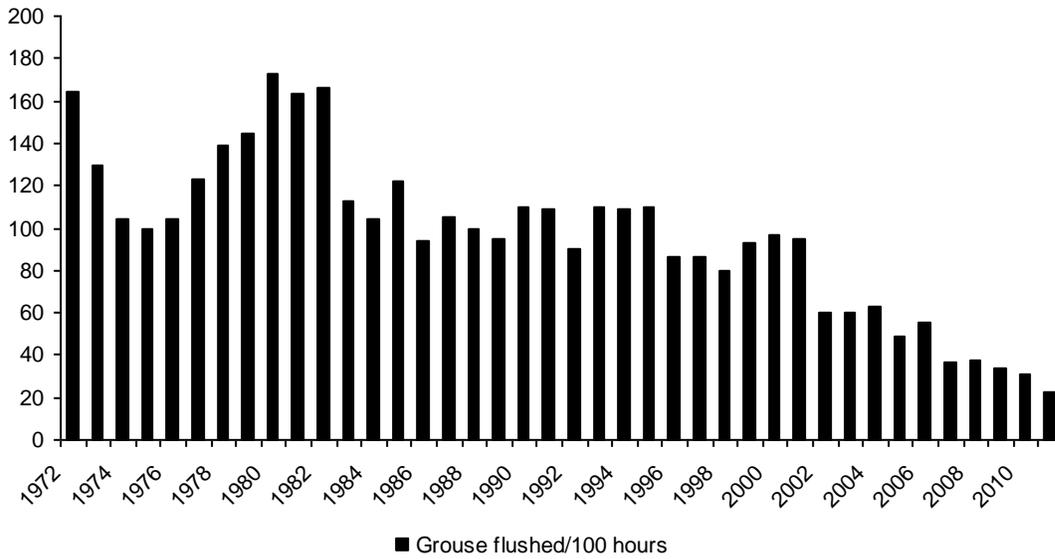


Fig. 1. Ohio ruffed grouse cooperator hunter flush rates, 1972-2011.

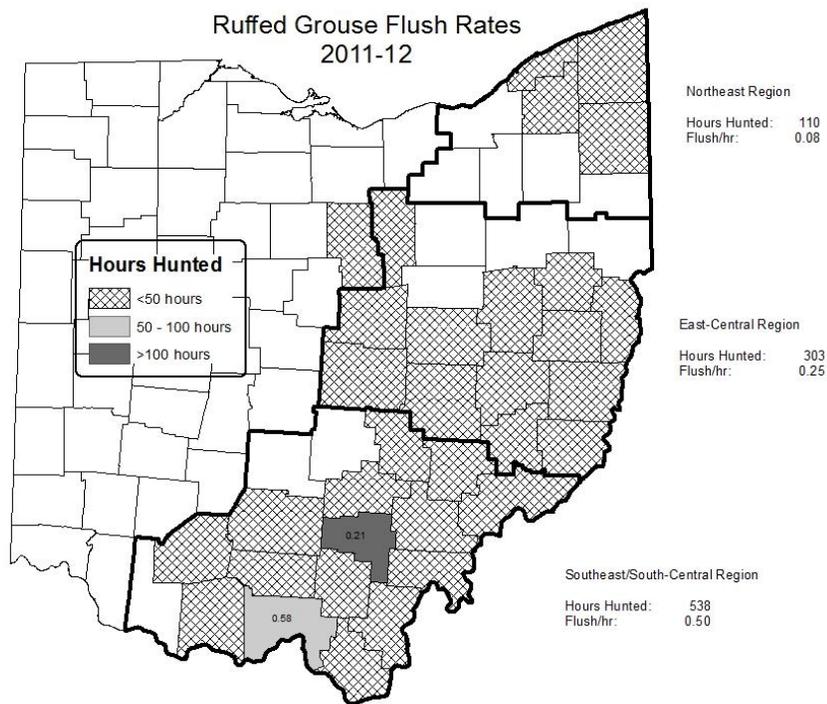


Fig. 2. Ruffed grouse flush rates by county and region based on cooperator hunter diaries, Ohio, 011-12.

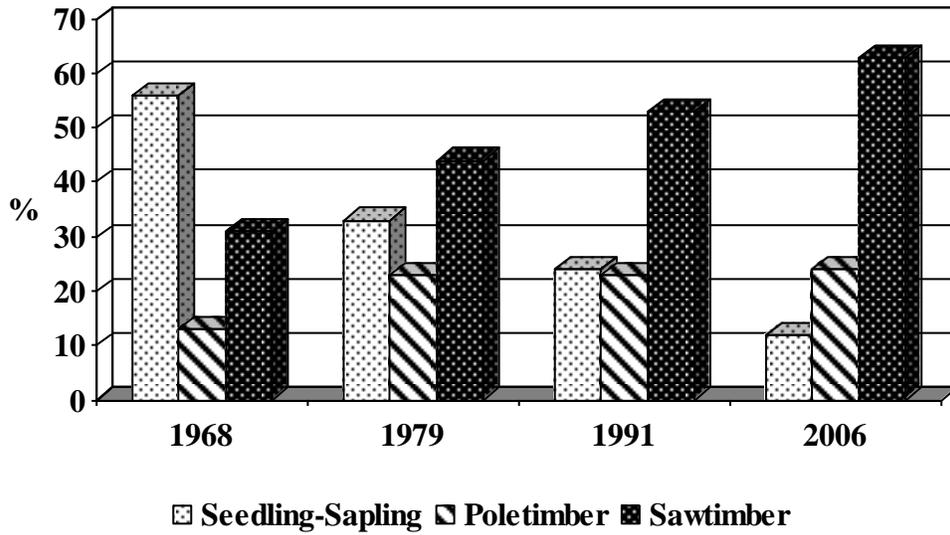


Fig. 3. Size class distribution of Ohio's forest resources, 1968-2006, Forest Inventory Analysis, USFS.

## **GROUSE HUNTER COOPERATOR RESULTS, 2012-13<sup>1</sup>**

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Since 1972 the Division of Wildlife has maintained a database of cooperating grouse hunters who have provided information on their Ohio grouse hunts. Grouse flush rates derived from these cooperator reports provide an annual index to grouse population status. This report summarizes results of the 2012-13 cooperator diaries and shows the trend in cooperator flush rates from 1972 through 2012.

Based on the decline in grouse populations and usable hunting data submitted in recent years, the 2013-14 hunting season will likely be the final year of the grouse hunter cooperator survey. However, the Division of Wildlife will continue to monitor ruffed grouse populations with spring drumming surveys and implement a post-season small game hunter survey to annually estimate the number of grouse hunters, hunting effort, and grouse harvest.

### **METHODS**

I mailed a "Grouse Hunting Diary" to 298 cooperating hunters prior to the 13 October 2012 through 31 January 2013 Ohio ruffed grouse season. Hunters were instructed to keep records of each grouse hunting trip by recording the date, county, township, hours hunted, grouse flushed, and grouse harvested in their hunting diary. Hunters were also instructed to not count reflushes or birds flushed by others in their hunting party. Immediately following the close of the grouse season, I sent cooperators a diary recall notice. I key-entered diary data and summarized total hours hunted, flushes per hour, and kill per hour by county, region, and total occupied range.

### **RESULTS AND DISCUSSION**

A total of 157 (53%) of the cooperators responded to the survey this year, but only 70 cooperators (23%) submitted data from grouse hunts in Ohio during the 2012-13 season. Many respondents have indicated they wish to remain on the survey mailing list, but will not grouse hunt in Ohio until populations improve. During the 41 years this survey has been conducted, response rates have ranged from a low of 27% to a high of 71%.

Seventy cooperators reported hunting a total of 790 hours during the grouse hunting season (Table 1). The total number of hunting hours reported was 17% lower than in the 2011-12 season. Hunting opportunity was 104 days as compared to 109 days in the previous season. Hunting effort was not distributed equally throughout the 2012-13 season; 40% of hunting effort occurred in January.

The range-wide grouse hunter flush rate was 0.23 flushes/hour, the same as in the 2011-12 and tied for the record low since the survey was established in 1972 (Fig. 1). Cooperators reported hunting ruffed grouse in 33 Ohio counties, but only 2 counties had 50 or more hunting hours reported (Fig. 2). Respondents hunted more in Vinton (140 hrs) than in any other county within ruffed grouse range.

Regional flush rates were 0.04 flushes/hour in 5 Northeast counties, 0.18 flushes/hour in 12 East-Central counties, and 0.29 flushes/hour in 15 Southeast and South-Central counties (Fig. 2). Scioto County had the highest flush rate (0.49 flushes/hour) among individual counties with greater than 50 hours hunted and has

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<sup>1</sup>Contribution from Federal Aid in Wildlife Restoration, Project W-134-P, Wildlife Management in Ohio (State Project WAPS01).

consistently been among the top counties in the past few years.

The 2012-13 range-wide cooperators flush rate was 76% below the 1972-2012 long-term average of 0.95 flushes per hour. The average flush rate was 1.26 grouse per hour in the 1970s, 1.24 grouse per hour during the 1980s, 0.98 grouse per hour during the 1990s, and 0.59 grouse per hour during the 2000s.

In the 2009-10 hunting season, the Division of Wildlife shortened the ruffed grouse hunting season to end on January 31 (a reduction of 28 days from previous hunting seasons) and reduced daily bag limits from 3 to 2 ruffed grouse. While no regional or statewide improvement in flush rates are apparent after 4 years of a shortened hunting season and a reduced bag limit (Table 2), habitat conditions and grouse populations in localized areas may be improving. Spring drumming counts have not consistently increased following hunting regulation changes, but more drummers were detected on new survey routes in areas with improving habitat conditions than on traditional survey routes. The Division of Wildlife will continue to monitor spring drumming surveys to determine if the reduced season length and bag limit has a positive impact on ruffed grouse populations over the next few years.

Studies of grouse habitat use in Ohio (Stoll et al. 1999) and Pennsylvania (Storm et al. 2003) reported that ruffed grouse colonized regenerating clearcuts 5-7 years after timber harvests. Salvage timber harvests that have occurred following the 2003 ice storm and 2009 wildfire on the 63,000-acre Shawnee State Forest in Scioto and Adams counties have created good habitat conditions for ruffed grouse and populations should continue to increase within this forested landscape. I have enclosed a map of recent timber harvests at Shawnee State Forest that was developed by the Ohio Division of Forestry in cooperation with the Ruffed Grouse Society.

Ohio grouse populations were high in the early 1970s, declined in the mid-1970s, and peaked again in the late 1970s and early 1980s. However, early-successional habitat created by farm abandonment began to mature into older forest age classes by the late 1970s. In 1983, grouse populations dropped sharply and have continued to slowly decline during the past 3 decades. The most recent Forest Inventory Analysis data conducted in 2006 by the U.S. Forest Service demonstrates the continued decline in the sapling forest age class in Ohio (Fig. 3). Without an increase in forest management activities or large-scale disturbances that create early-successional forests on public and private lands in Ohio, grouse populations are likely to remain low and may even be extirpated from some counties within their historic range.

Acknowledgments. A special thanks is extended to the grouse hunters who provided information on their hunts. Several of the cooperators have participated in all 41 years of this survey.

#### LITERATURE CITED

- Stoll, R. J., Jr., W. L. Culbertson, M. W. McClain, R. W. Donohoe, and G. Honchul. 1999. Effects of clearcutting on ruffed grouse in Ohio's oak-hickory forests. Ohio Fish and Wildlife Report 14. Ohio DNR, Division of Wildlife, Columbus, OH, USA.
- Storm, G. L., W. L. Palmer, and D. R. Diefenbach. 2003. Ruffed grouse responses to management of mixed oak and aspen communities in central Pennsylvania. Grouse Research Bulletin No. 1, Pennsylvania Game Commission, Harrisburg, PA, USA.

Table 1. Monthly distribution of hunting effort and success by cooperating Ohio grouse hunters, 2012-13.

<b>Parameter</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Season</b>
<i>Hunter effort</i>					
Hunting hours in sample	77	202	192	319	790
No. eligible hunting days	19	30	24	31	104
<i>Hunter success</i>					
Flushes/hour	0.05	0.30	0.22	0.24	0.23
Kill/hour	0.02	0.00	0.02	0.03	0.02

Table 2. Grouse hunter flush rates by region and statewide in the 3 hunting seasons prior to and the 4 hunting seasons after ruffed grouse hunting restrictions were enacted in the 2009-10 hunting season, Ohio.

Hunting season	Regions			Statewide
	NE	EC	SE/SC	
2006-07	0.27	0.49	0.61	0.55
2007-08	0.09	0.41	0.42	0.37
2008-09	0.10	0.41	0.39	0.38
2009-10	0.13	0.43	0.33	0.34
2010-11	0.16	0.29	0.34	0.31
2011-12	0.08	0.25	0.50	0.23
2012-13	0.04	0.18	0.29	0.23

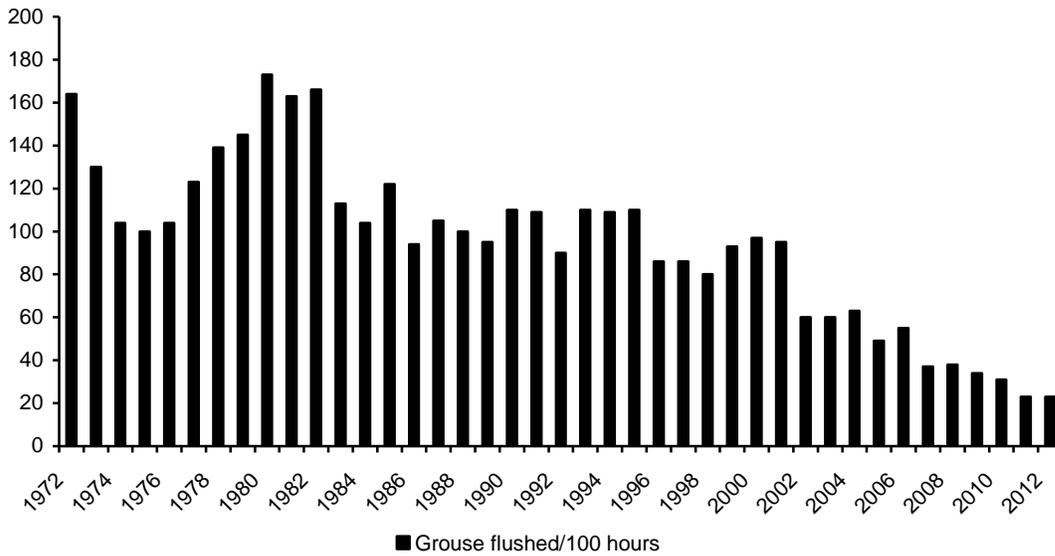


Fig. 1. Ohio ruffed grouse cooperator hunter flush rates, 1972-2012.

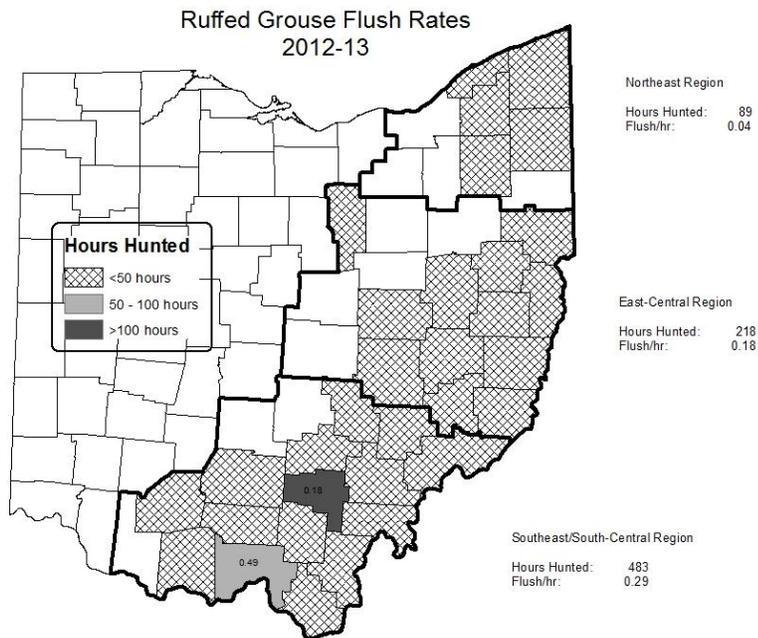


Fig. 2. Ruffed grouse flush rates by county and region based on cooperator hunter diaries, Ohio, 2012-13.

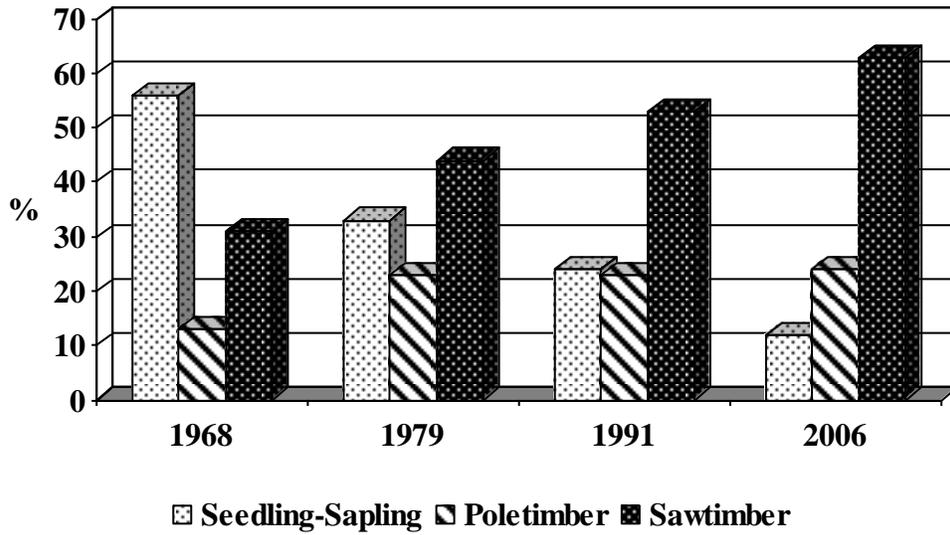


Fig. 3. Size class distribution of Ohio's forest resources, 1968-2006, Forest Inventory Analysis, USFS.

**Ohio Department of Natural Resources  
Division of Wildlife**

**GROUSE HUNTING COOPERATOR RESULTS, 2013-14<sup>1</sup>**

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**Michael C. Reynolds, Division of Wildlife, 2045 Morse Road, Columbus, OH 43229**

Since 1972, the Ohio Division of Wildlife (ODW) has maintained a database of cooperating grouse hunters (cooperators) who provide information on their Ohio grouse hunts. Grouse flush rates derived from cooperators' diaries provide an annual index of grouse population status. This report summarizes results of the 2013-14 diaries and shows the trend in flush rates from 1972 through the 2013-14 season.

**METHODS**

We mailed a "Grouse Hunting Diary" to 238 cooperators during the 2013-14 grouse season. Diary mailings were variably delayed compared to previous years. We included date, county, township, hours hunted, grouse flushed, and grouse harvested in the diary information. We instructed hunters to omit reflashes or birds flushed by others in their hunting party. We mailed recall envelopes to all diary recipients after the season in 2014, though some recall envelopes were sent as late as April, 2014. A letter accompanied the recall envelopes introducing Mark Wiley as the new contact for the diary program.

We key entered diary data and summarized total hours hunted, flushes/100 hours and kills/100 hours by county, region, and total occupied range. We omitted diary entries missing pertinent information (e.g. hours hunted) or containing activities outside of the open season (October 10, 2013-January 31, 2014).

**RESULTS AND DISCUSSION**

We received diaries from 75 (31.5%) cooperators, but only 31 (13.0%) submitted data from Ohio grouse hunts. In 2012-13, 157 of 298 (53%) cooperators returned diaries, and 70 (23%) submitted data from Ohio grouse hunts. Several cooperators returned letters stating that they hunted grouse in Ohio during 2013-14, but did not record or submit hunt information due to the late arrival of diaries. Many cooperators indicated they would like to remain on the mailing list, but are not likely to hunt in Ohio until grouse populations improve.

The 31 active hunters reported hunting a total of 313.3 hours during Ohio's 2013-14 grouse season, down from 790 total hours reported in 2012-13. Hunting opportunity was 105 days and 104 days in 2013-14 and 2012-13 respectively. In 2013-14, hunting effort was evenly distributed throughout November, December, and January (28.8%, 31.0%, and 31.2% respectively), though only 9.0% of reported hours occurred in October (Table 1).

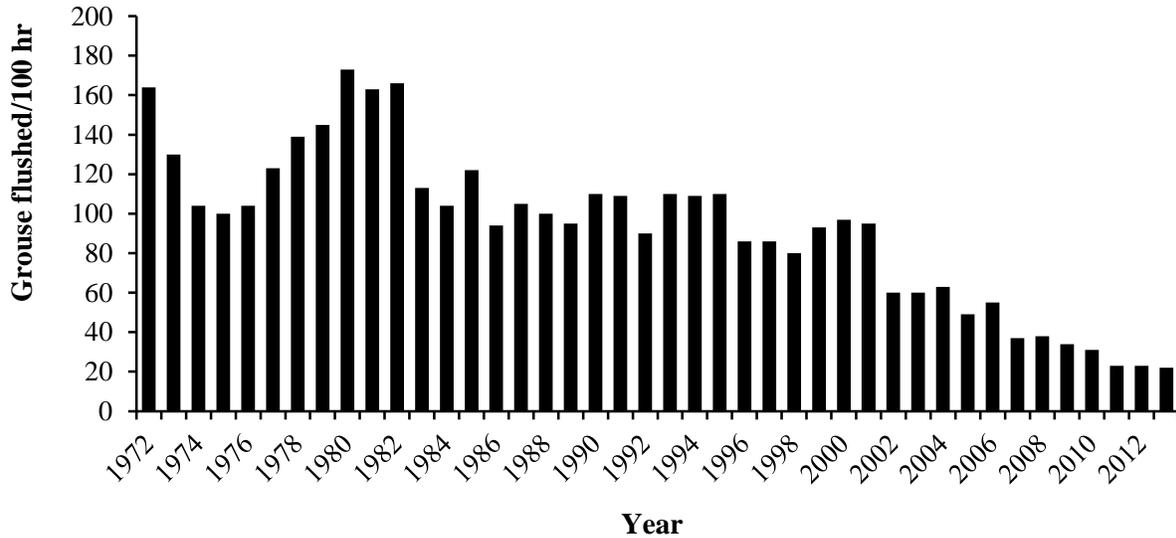
**Table 1.** Monthly hunting effort (reported hours) and success by cooperating ruffed grouse hunters in Ohio during 2013-14.

		<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Season total</b>
<i>Hunter effort</i>	Hunting hours in sample	28.0	90.3	97.3	97.8	313.3
	No. eligible hunting days	20	30	24	31	105
<i>Hunter success</i>	Flushes/100 hours	3.6	17.7	18.5	34.8	22.0
	Kills/100 hours	0.0	0.0	0.0	5.1	1.6

<sup>1</sup>Contribution from Federal Aid in Wildlife Restoration, Project W 134 P, Wildlife Management in Ohio (State Project WAPS01).

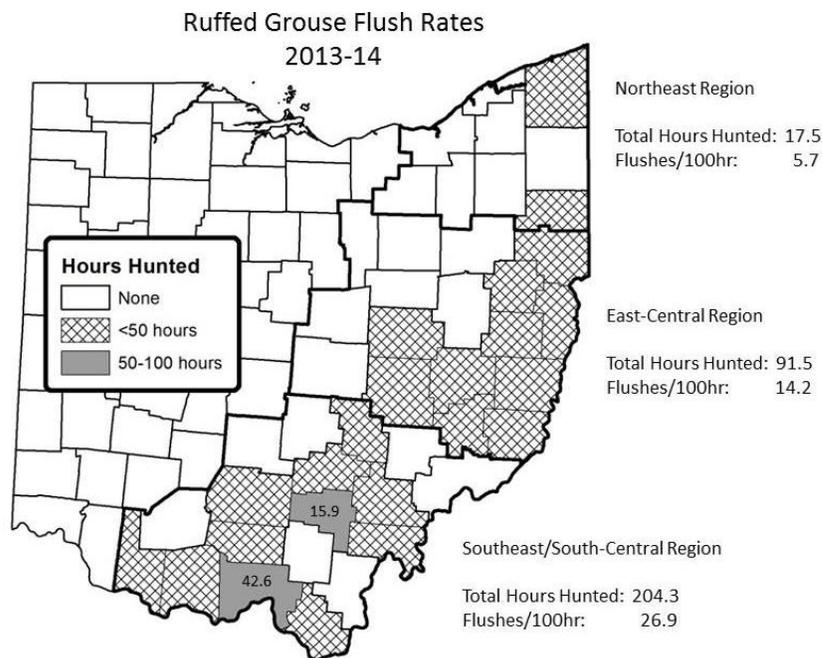
The range-wide flush rate was 22 flushes/100 hours, compared to 23 flushes/100 hours during both 2011-12 and 2012-13. The 2013-14 flush rate is a record low since 1972 (Figure 1). The average flush rate was 126 flushes/100 hours in the 1970's, 124 flushes/100 hours in the 1980's, 98 flushes/100 hours in the 1990's, 59 flushes/100 hours in the 2000's, and currently 25 flushes/100 hours during the 2010's.

**Figure 1.** Ruffed grouse flush rates by Ohio cooperating hunters during 1972-2013.



Cooperators reported hunts in 23 Ohio counties, but only Scioto and Vinton had 50 or more reported hours (61.0 and 56.5, respectively). Regional flush rates were 5.7 flushes/100 hours in Northeast counties, 14.2 flushes/100 hours in East-central counties, and 26.9 flushes/100 hours in Southeast and South-central counties (Figure 2). Scioto County had the highest flush rate (42.6 flushes/100 hours) among counties with more than 50 hours hunted.

**Figure 2.** Ruffed grouse flush rates by Ohio county and region based on 2013-14 cooperator diaries.



<sup>1</sup>Contribution from Federal Aid in Wildlife Restoration, Project W 134 P, Wildlife Management in Ohio (State Project WAPS01).

In the 2009-10 hunting season, the DOW shortened the ruffed grouse season by 28 days and reduced daily bag limits from 3 to 2. No regional or statewide improvements in flush rates are apparent after 5 years of a shortened hunting season and a reduced bag limit (Table 2). Similarly, spring drumming counts have not consistently increased following hunting regulation changes. However, encouraging numbers of drummers detected outside of traditionally surveyed areas suggest that populations in a few localized areas may be stable or improving. Unfortunately, without widespread increases in forest management activities or large-scale disturbances that create young forests on public and private lands, grouse populations in Ohio are likely to remain low. Grouse may even be extirpated from some counties within their historic range in the state. The DOW will continue to monitor current drumming survey routes and will explore new techniques for monitoring and managing “pockets” of grouse, which persist in areas with localized habitat improvements.

**Table 2.** Grouse hunter flush rates/100 hours, by region and statewide in the 3 hunting seasons prior to and the 5 hunting seasons after ruffed grouse hunting restrictions were enacted in Ohio’s 2009-10 hunting season.

<b>Hunting season</b>	<b>Regions<sup>a</sup></b>			<b>Statewide</b>
	<b>NE</b>	<b>EC</b>	<b>SE/SC</b>	
2006-07	27	49	61	55
2007-08	9	41	42	37
2008-09	10	41	39	38
2009-10	13	43	33	34
2010-11	16	29	34	31
2011-12	8	25	50	23
2012-13	4	18	29	23
2013-14	6	14	27	22

<sup>a</sup>NE - Northeast, EC - East-Central, SE/SC - Southeast/South-Central

As grouse numbers have declined in the state, so too has grouse hunting and cooperator activity. Despite poor participation rates in 2013-14, the diary program will continue into the 2014-15 season. Sample size is expected to increase in 2014-15 with return to the customary mailing schedule and the addition of new cooperators. The DOW has also introduced an online diary option in an effort to increase the program’s efficacy. In addition, the DOW will continue to monitor grouse hunting pressure through a random post-season small game hunting survey.

#### ACKNOWLEDGEMENTS

We extend sincere thanks to the dedicated grouse hunters who submitted diaries during the 2013-14. Several of the cooperators have participated in all 42 years of this survey.

<sup>1</sup>Contribution from Federal Aid in Wildlife Restoration, Project W 134 P, Wildlife Management in Ohio (State Project WAPS01).

## Ohio Department of Natural Resources, Division of Wildlife

## GROUSE HUNTING COOPERATOR RESULTS, 2014-15

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Since 1972, the Ohio Department of Natural Resources, Division of Wildlife (DOW) has maintained a database of cooperating grouse hunters (cooperators) who provide information on Ohio grouse hunts. Grouse flush rates derived from cooperators' diaries provide an annual index of population status. This report summarizes the 2014-15 diaries and shows trends in flush rates from the last 43 hunting seasons.

## METHODS

I issued a request for new cooperators through The Ruffed Grouse Society shortly after the 2013-14 hunting season, yielding 21 new cooperators. I mailed a wallet-sized "Grouse Hunting Diary" to all cooperators ( $n=259$ ) in early-October, 2014. Concurrently, I emailed an invitation to an online diary to all cooperators with email addresses on file ( $n=139$ ). The mail and online versions of the diary were nearly identical and were designed to record the date, county, hours hunted, grouse flushed, and grouse harvested for each hunt. The mailed diary also asked for township, while the online diary instead asked for the type of land hunted (i.e. public or private). I instructed hunters to omit reflashes or birds flushed or harvested by others in their hunting party. Shortly after the close of the season, I mailed postage-paid recall envelopes to all diary recipients that had not previously submitted hunt information online.

I summarized total hours hunted, flushes/100 hours, and kills/100 hours by county, region, and total occupied range. I provided county flush rates for all counties with 50 or more reported hours. I omitted diary entries which were missing pertinent information (e.g. date, county) or contained activities outside of the open season (October 11, 2014-January 31, 2015).

## RESULTS AND DISCUSSION

I received responses from 175 cooperators (67.6%). Of those, 131 responded by mail and 44 responded online. In all, 53 cooperators (20.5%) submitted data from Ohio grouse hunts during the 2014-15 season. In 2013-14, 238 cooperators were contacted, 75 (31.5%) responded, and 31 (13.0%) submitted data from Ohio grouse hunts. Many cooperators asked to remain on the mailing list, but stated they are not likely to hunt in Ohio until grouse populations improve. I removed 35 cooperators from the mailing list upon their request or the request of a surviving family member. Three diary entries were omitted from analyses.

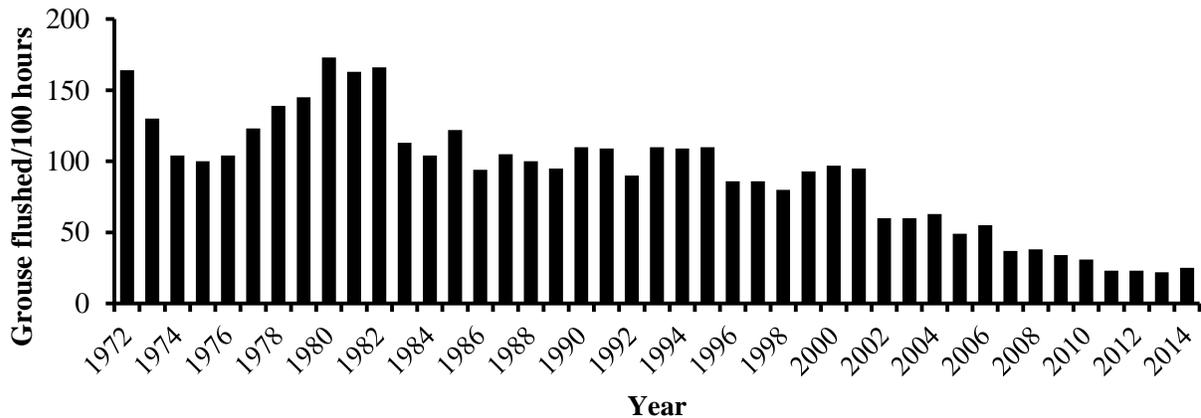
The 53 active hunters reported 647.5 total hours afield during Ohio's 2014-15 grouse season, up from 313.3 total hours in 2013-14. Hunting opportunity was 106 days in 2014-15 and 105 days 2013-14. The monthly proportion of reported hours was relatively low in October (10.1%), moderate throughout November and December (23.8% and 23.4% respectively), and fairly high in January (42.7%; Table 1).

**Table 1.** Monthly hunting effort (reported hours) and success by cooperating ruffed grouse hunters in Ohio during 2014-15.

		Oct	Nov	Dec	Jan	Season total
<i>Hunter effort</i>	Hunting hours in sample	65.5	154.0	151.5	276.5	647.5
	No. eligible hunting days	21	30	24	31	106
<i>Hunter success</i>	Flushes/100 hours	13.7	28.6	21.8	27.8	25.4
	Kills/100 hours	0.0	3.2	3.3	2.5	2.7

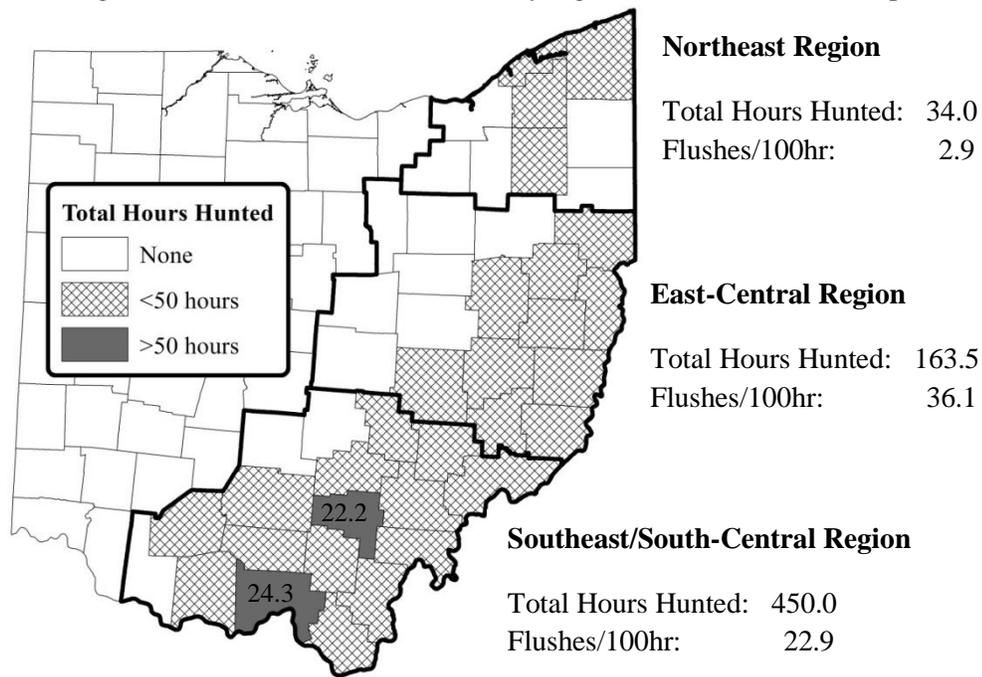
The range-wide flush rate was 25 flushes/100 hours, compared to 22 flushes/100 hours during 2013-14. This is the first flush rate increase since the 2008-09 season, though the flush rate remains quite low compared to previous decades (Figure 1). The average flush rate was 126 flushes/100 hours in the 1970's, 124 flushes/100 hours in the 1980's, 98 flushes/100 hours in the 1990's, 59 flushes/100 hours in the 2000's, and currently 25 flushes/100 hours during the 2010's.

**Figure 1.** Ruffed grouse flush rates by Ohio cooperating hunters during 1972-2014.



Cooperators reported hunts in 29 Ohio counties, but only Scioto and Vinton had 50 or more reported hours (90.5 and 153.0, respectively). Regional flush rates were 2.9 flushes/100 hours in Northeast counties, 35.5 flushes/100 hours in East-Central counties, and 23.0 flushes/100 hours in Southeast and South-Central counties (Figure 2). Scioto County had the highest flush rate (24.3 flushes/100 hours) among counties with more than 50 hours hunted. Athens, Columbiana, Jefferson, and Morgan counties each had flush rates above the statewide average, but cooperators only reported a total of 20-44.5 hours in these counties.

**Figure 2.** Ohio ruffed grouse flush rates (flushes/100 hrs) by region based on 2014-15 cooperator diaries.



Prior to the 2009-10 hunting season, the DOW shortened the ruffed grouse season by 28 days and reduced daily bag limits from 3 to 2. No consistent improvements in regional or statewide flush rates are apparent after 6 years, although this season marks the first statewide increase since the regulation change (Table 2). Encouraging flush rates reported by several cooperators suggest that populations in a few counties may be improving. These “pockets” of grouse appear to persist in areas with localized habitat improvements. Unfortunately, without widespread increases in forest management activities or large-scale disturbances that create young forests on public and private lands, grouse populations in Ohio are likely to remain low. Grouse may even be extirpated from some counties within their historic range in the state.

**Table 2.** Regional and statewide grouse flush rates (flushes/100 hrs) in the 3 hunting seasons prior to and the 6 hunting seasons after ruffed grouse hunting restrictions were enacted in Ohio in 2009.

<b>Hunting season</b>	<b>Regions<sup>a</sup></b>			<b>Statewide</b>
	<b>NE</b>	<b>EC</b>	<b>SE/SC</b>	
2006-07	27	49	61	55
2007-08	9	41	42	37
2008-09	10	41	39	38
2009-10	13	43	33	34
2010-11	16	29	34	31
2011-12	8	25	50	23
2012-13	4	18	29	23
2013-14	6	14	27	22
2014-15	3	36	23	25

<sup>a</sup>NE - Northeast, EC - East-Central, SE/SC - Southeast/South-Central

As grouse numbers have declined in the state, so too has grouse hunting and cooperator activity. Fortunately, the program added several active cooperators this season. Despite this much needed increase in participation, sample sizes remain fairly low. The DOW will continue to monitor grouse populations through various means (e.g. hunter diaries, hunter surveys, spring drumming routes, and summer brood reports), and will also explore ways to improve monitoring and management of grouse in the state.

#### ACKNOWLEDGEMENTS

I extend sincere thanks to the dedicated grouse hunters who submitted diaries during the 2014-15 season. Several of the cooperators have participated in all 43 years of this survey. I would also like to thank the Ruffed Grouse Society for assisting with the recruitment of new cooperators.