

2023-2024 Ruffed Grouse Status Summary

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One of the Department's key mission statements is: conserve and manage wildlife populations and habitat for the benefit of present and future generations. This report focuses on the Department's efforts to monitor ruffed grouse populations.

Fall and spring surveys were conducted to monitor ruffed grouse population trends. Surveys of grouse hunters were conducted in the fall. Cooperating grouse hunters provided a daily log of their hunting and submitted feathers from birds they harvested so the age and sex of the survey population could be determined.

In the spring, a Roadside Drumming survey was conducted by staff from the Department of Wildlife Resources (Department), US Forest Service, and volunteers. Roadside Drumming Surveys routes are 10 miles in length; observers count the number of drums heard during a 4-minute period at 1-mile intervals along a set route. The routes were randomly selected based on the criteria the US Fish and Wildlife Service use to locate woodcock singing ground surveys.

Spring 2024 Breeding Population Indices

2024 Spring Drumming Survey. The spring drumming index has remained fairly static over the past several years according to our staff roadside drumming survey (Fig. 1). The number of drums heard per route (0.71) was up slightly from the 5-year average in 2023, but still well below the historic average. The 2024 survey once again dropped below that 5-year average at 0.35 drums per route. However, once again, several routes were not completed due to staff obligations and vacancies. We believe this resulted in a significantly lower average as a result.

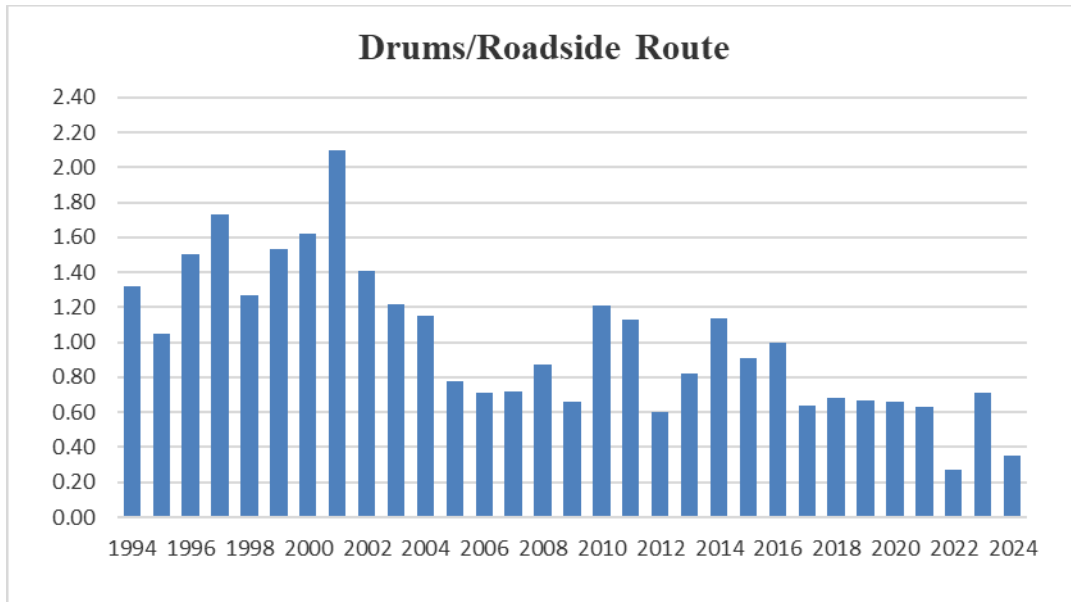
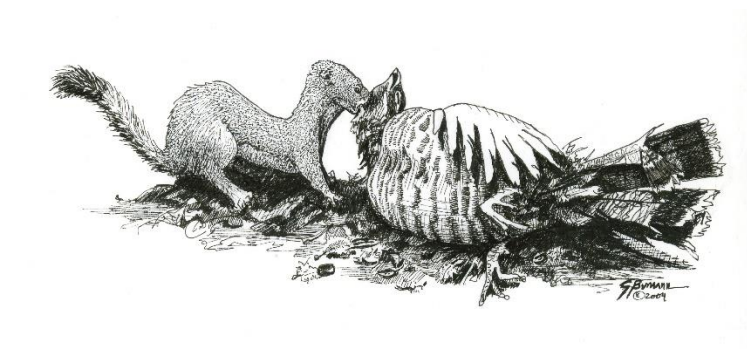


Figure 1. Average number of drums heard during 10-mile routes in grouse range in Virginia.



Reproduction in 2023

Percent Juveniles in the 2023-2024 Fall Harvest. Hunters submitted twenty (20) grouse wing and tail feathers during the 2023-2024 grouse season to provide an estimate of recruitment. The percent juvenile (50%) indicates that reproduction was just over the 20-year average of (43%). Since the introduction of WNV (~2000), the reproduction index has actually been higher (44%) than the years before (40%, 1974-1999). The 2015-16 season index was the best recruitment year seen in the survey.

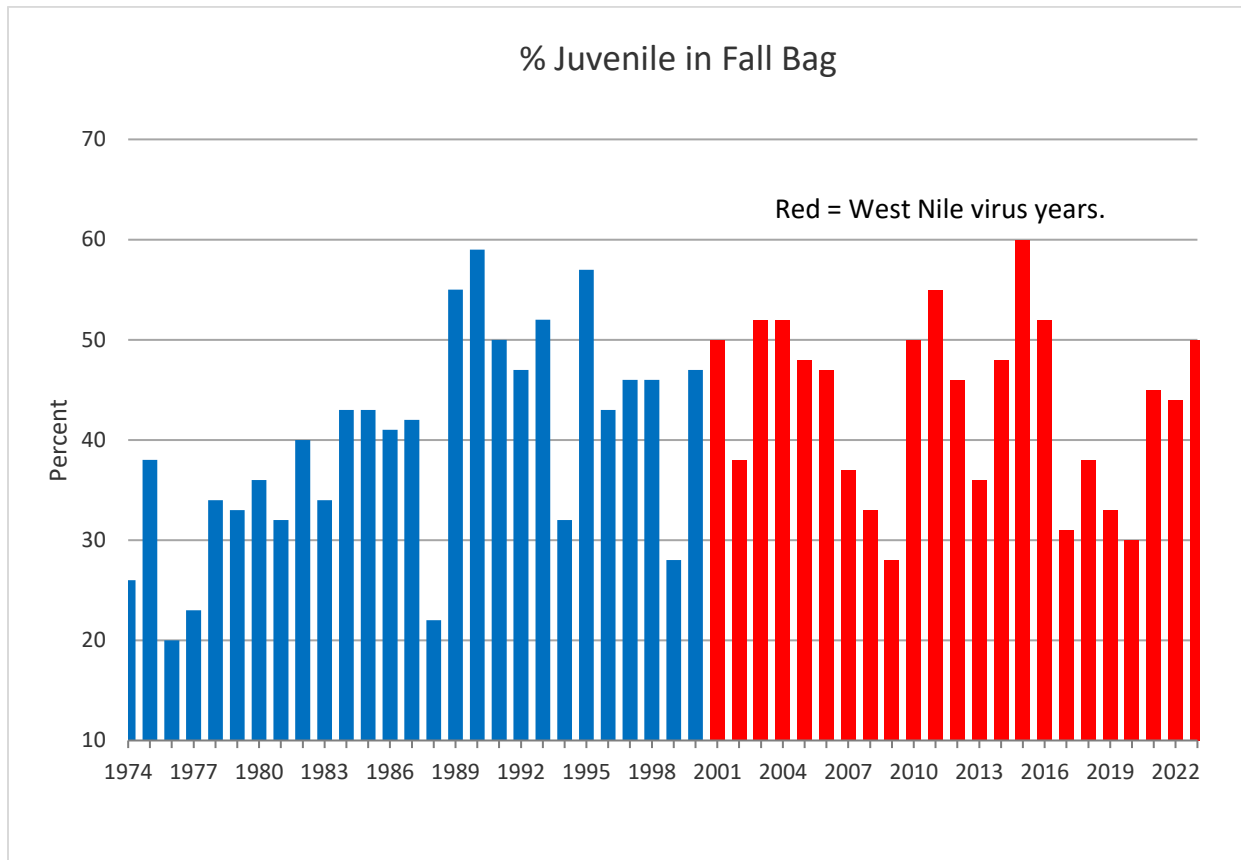
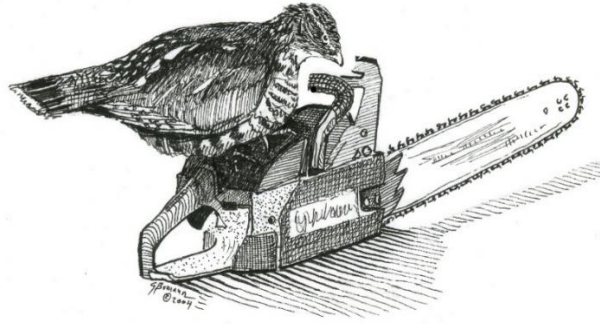


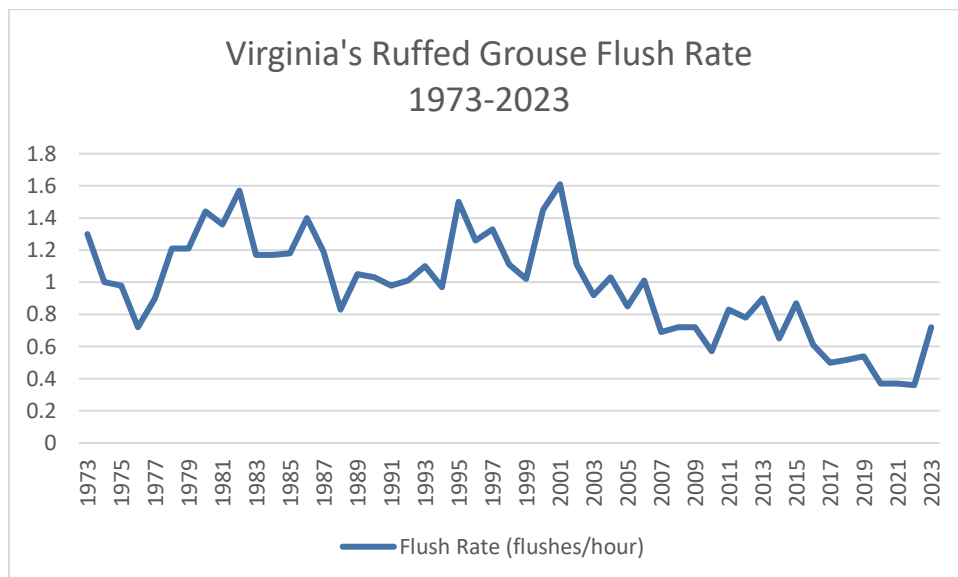
Fig. 2. Percentage of juvenile grouse from avid grouse hunter bag submitted from 1974-2023.



Fall 2023-2024 Grouse Population and Grouse Hunting

2023-2024 Grouse Hunter Survey. During the 2023-24 season, 18 avid grouse hunters reported data from 153 hunts. Cooperating grouse hunters reported flushing 0.72 birds per hour, above the flush rate reported over the past several years. This flush rate represents the highest flush rate since 2015 when we had a reported flush rate of 0.87. The 2023-24 flush rate exceeds both the five- and ten-year average (0.47 and 0.55). Since 2002, flush rates have declined 4% annually ($P < 0.01$, $r^2 = 0.61$). Ten-year trends are no longer showing a statistically significant negative trend but have decreased 5.1% annually since 2014 ($P=0.12$, $r^2 = 0.27$). Prior to the introduction of West Nile Virus (WNV), 1973-99, grouse flush rates were stable ($P=0.70$, $r^2 = 0.006$).

Flushing rates (grouse/hr.) by month in the 2023-24 season were: October (0.50), November (0.67), December (0.71), January (0.51), and February (1.05). Cooperators hunting on privately-owned lands (0.88) flushed more birds than federal owned lands (0.71) and state-owned lands (0.61).



Summary

Virginia's grouse populations have continued to decline over the past two decades. This decline can be attributed to the declines in young forest habitat as well as the arrival of West Nile Virus. Although the direct impacts of West Nile Virus are largely unknown, there does appear to be a connection to the grouse declines. The declines seem to have stabilized over the past 5 years, although at a much lower level than desired. There is some hope that we may be seeing a slight rebound within the population but time will tell if that is a short rebound or the start of a longer term increase.

What To Expect This Fall...

Mast

Acorn production across the state in 2024 can be categorized overall as variable with pockets of excellent white and red oak production along with contrasting areas of poor production (Figures 1-4). Based on the annual hard mast survey, white oak routes rebounded from an all-time low in 2023 (3.3) to near average at 8.6. While the long-term median production from 2007 to 2024 is 9.7, the 10-year median of 8.9 is more reflective of masting conditions over the past decade.

This year's white oak index of 8.6 approaches this new "normal". Red oaks surveyed nearly identical to their index of 2023 (19.7) at 19.3 which sits in line with the long-term median of 19.5 and above the 10-year median of 18.2. White oak production was highly variable this year across all sites with little consistency across geographic regions. The best production was found in the southern piedmont and southern mountains and the lowest production in the northern mountains and northern piedmont regions. The poor production in our more northern study areas was not unexpected due to their above average production in 2023. This coincided with excellent production in states to our north such as Pennsylvania, New Hampshire, and Connecticut.

Red oak production was average or above average in all areas except for the northern mountains and tidewater regions (which both fell well below the long-term average). While red oak acorns are not generally preferred by many wildlife species due to their tannin content (and size), in years of poor white oak production, these acorns will often be readily consumed, especially later in the season.

As with all years, acorn production is highly variable and very site dependent. Many routes had areas of "bumper" mast production even if their overall site average was below average. This variability is due to many reasons (weather, insects, tree species), but for some of our survey sites we are probably approaching the biological end of production due to tree age. Unfortunately, finding "new" stands of mature oak in the 50-70 year age range is becoming more and more difficult due to aging forests and lack of sufficient regeneration. Replacing aging trees/survey sites could be quite a challenge moving forward. The drought experienced during the summer of 2024 early in the growing season, particularly in the northern mountains and piedmont areas, could also have impacted production, particularly for white oak. It was noted at several survey sites that small, underdeveloped red oak acorns were found in

abundance at the base of trees early in the survey period. This may have been a symptom of drought stressed trees as well.

Mountains – White Oak: White oak production across most of the mountain region (18 survey sites) was poor in the northern areas and average to slightly above average in the southern mountains. Several northern routes averaged zero trees with any acorn production across the entire route (40+ trees surveyed per route). Many of the southern mountain routes were above average, with excellent production noted primarily on the lower slopes. Oak regeneration is a serious conservation issue in all of these areas and ongoing habitat management efforts have been underway by DWR and partner agencies to enhance areas with significant oak decline.

Mountains - Red Oak: Red oak production was close to average or above average across many of the mountain sites, although the most northern routes fell well below the long-term average. The southern mountain routes had the best production for the mountain region along with mid slope routes in the central mountain region.

While certainly other species of mast contribute to grouse movement and survival, acorns have been shown to have such a dramatic impact on survival and reproduction that we closely monitor mast conditions for these species.

Reproduction and survival:

Our over winter survival was a significant concern given the low drumming counts observed on the drumming survey routes. We have had a number of staff vacancies on our survey routes over the past several years and that seems to be driving a lot of the lower reports. Many of the more difficult or more remote survey routes were not run due to those vacancies – and those are often the routes where grouse are more likely to occur. We are also looking at this survey to determine if there are any shifts in the timing of drumming or if there may be improved methods to better collect these data as staffing will continue to be an issue moving forward.

In spite of these low drumming survey numbers, I am very optimistic for this upcoming season. Our summer brood survey yielded numerous grouse reports from field staff this summer, much higher numbers than I recall. In fact, one survey participant needed a second data sheet for just grouse observations this summer! Given the slight uptick in flush rates last year and this potential increase in reproduction, I think we might match last season's flush rate if all goes well.

While the work being done to help our grouse remains largely behind the scenes, I can assure you we are working towards improving forest conditions for grouse. We are continuing to work with partners here in Virginia to identify locations and joint projects where we can see measurable impacts. We are also working with regional state biologists to ensure that the Eastern region grouse initiative is successful and that we can work to improve grouse habitat conditions across the entire eastern range for grouse. This group is focused on developing strategies to turn the attention and focus to grouse and the population declines. While it may not be as direct as on the ground habitat creation, this is work that will pave the way for additional habitat management in the near term. By working across multiple states, we are able to use the collective strength to draw the focus on the declines and hopefully get the attention trained to habitat management that would help bolster the populations.

I will also add that through a grant opportunity VDWR is partnering with the Ruffed Grouse Society to improve forest management on several WMAs in western and south-western Virginia. They recently hired a forester that is currently on-board to augment our staff and assist in getting more habitat delivered on the ground in those areas. While the work will primarily be focused on state lands, we believe in leading by example. If we can demonstrate benefits to grouse and other species through this work, then we can hopefully expand that footprint by showing these successes to partners and private landowners.

Appendix A. Avid grouse hunter statistics in Virginia between 1990-91 and 2022-23 hunting seasons.

	Coop	Hunts	Hunts/Season	Avg Hrs	Grouse/Season	Kill/hr	Flush/hr	Hunt Quality
1990-91	110	1241	11.3	4.1	5.5	0.12	1.03	
1991-92	93	1204	12.9	4	5.2	0.1	0.98	
1992-93	81	1106	13.7	4	6.1	0.11	1.01	
1993-94	61	668	11	3.6	3.6	0.09	1.1	
1994-95	84	1040	12.4	3.9	5.3	0.11	0.97	
1995-96	70	780	11.1	3.7	4.8	0.12	1.5	3.2
1996-97	114	1269	11.1	3.9	5.4	0.13	1.26	3.2
1997-98	87	1098	12.6	3.7	5.8	0.12	1.33	3.6
1998-99	69	963	13.9	3.3	5.5	0.12	1.11	3.4
1999-00	93	1013	10.9	3.7	4.5	0.11	1.01	2.8
2000-01	62	904	14.5	3.7	7.9	0.15	1.45	3.6
2001-02	80	1082	13.5	3.7	8.9	0.18	1.61	4
2002-03	64	851	13.3	3.6	6.1	0.13	1.11	3.2
2003-04	60	779	13	3.5	4.5	0.1	0.92	2.7
2004-05	94	1275	13.6	3.3	4.8	0.11	1.03	3.1
2005-06	63	888	13.8	3.3	4.5	0.1	0.85	3
2006-07	54	830	15.4	3.4	5.9	0.11	1.01	3
2007-08	75	887	11.8	3.5	2.7	0.07	0.69	2.9
2008-09	53	748	14.1	3.4	2.8	0.06	0.72	2.8
2009-10	58	418	7.2	3.2	1.5	0.06	0.72	3
2010-11	43	454	10.6	3.2	1.7	0.05	0.57	2.6
2011-12	53	634	12	3.4	3.3	0.08	0.77	3.3
2012-13	44	472	9.7	3.3	2.5	0.08	0.78	3.5
2013-14	23	209	9.1	3.1	1	0.06	0.9	3.7
2014-15	57	569	10	3.4	1.5	0.06	0.65	3.1
2015-16	47	512	10.9	3.4	2.5	0.07	0.87	3.2
2016-17	38	447	11.8	3.1	2.3	0.06	0.61	2.8
2017-18	40	376	9.4	3.1	2	0.07	0.5	1.1
2018-19	33	350	10.61	3.15	2.61	0.08	0.52	3.1
2019-20	21	272	12.9	3.2	3.7	0.09	0.54	2.8
2020-21	27	279	10.3	2.9	1	0.03	0.37	2.9
2021-22	19	169	8.9	2.9	0.52	0.02	0.37	3.3
2022-23	22	207	9.4	2.7	0.91	0.03	0.36	2.7
2023-24	18	153	8.5	3.0	1.05	0.04	0.72	3.8
5-yr Avg	21.4	216	10.4	2.9	1.4	0.04	0.47	3.1
10-yr Avg	32	333	10.3	3.08	1.81	0.05	0.55	2.88

Hunt Qlty.¹ = Hunting quality based on a scale of 1 (poor) to 7 (excellent).