

# PENNSYLVANIA RUFFED GROUSE HARVEST MANAGEMENT FRAMEWORK

[FRAMEWORK INITIATED 2017, by Lisa Williams, former Grouse Biologist and supported by BOC]

Ruffed grouse populations in Pennsylvania have declined since the early 2000s, with record-low (or near record-low) indices of abundance (flushes/hour) and production (summer grouse sightings) occurring most years since 2017. While harvest management alone will not reverse these trends, limiting direct (harvest) and indirect (disturbance-induced) late-winter mortality of grouse through restricted or closed winter hunting seasons may be an important conservation tool. Current research conducted in Maine (E. J. Blomberg), has indicated monthly winter survival of adults and juveniles is high enough in Jan-March (87% and 82% respectively) that reduced late-winter harvest may allow for carry-over of more birds into the spring breeding population. For 2017-18, the post-Christmas grouse season segment was eliminated as an emergency measure in response to record-low brood observations. When making this recommendation, the Game Bird Section committed to development of a data-driven harvest management framework that would be responsive to population changes, so that harvest opportunity can again be increased when and where grouse populations recover. Pennsylvania was the first state in the nation to undertake responsive management for grouse starting with the 2018-19 season.

The basic elements of the framework are as follows:

1. The length of the post-Christmas grouse season will vary based on grouse population indices:
  - a. Low grouse population indices trigger a “restrictive” season structure (no post-Christmas hunting).
  - b. Moderate grouse population indices trigger a “moderate” season structure (1 week of post-Christmas hunting). Analysis of patterns of hunter effort and harvest suggests that this season length will likely produce approximately 50% of the total hunter effort and harvest that occurs with a 4-week late season.
  - c. High population indices trigger a “liberal” season structure (4 weeks of post-Christmas hunting).
2. Use of 2 groups of WMUs in northern and southern Pennsylvania, called “Grouse Management Zones,” to analyze population index data and make season recommendations (Figure 1). This way, hunting opportunity in the North Zone (representing grouse strongholds in PA) will not be penalized by low numbers in the South Zone. Likewise, grouse populations in the South Zone will undergo season-setting decisions that are more appropriate to southern population conditions.

At time of BOC decision-making, the two primary indices to be used for determining grouse season length will be estimates of relative abundance and production. Abundance will be indexed by fall (i.e., October through December 24) hunter flush rates from the most recent season. To maintain year-to-year consistency in analyses, late season flush rates from years when a late season is held will be omitted from the calculations. Production will be indexed by the most recent summer grouse sighting survey. When these measures indicate different season outcomes (e.g., when abundance is HIGH but production is MODERATE, or vice versa), then an additional index of West Nile virus (WNV) severity will

be applied to determine the season recommendation. The WNV index is directly relevant to grouse management because year-to-year variation in WNV prevalence has been shown to affect both flush rates (in both the same year and the year following high WNV prevalence) and summer sightings (in the same year as high WNV prevalence). See Figure 2 below for a schematic of how grouse season-setting recommendations are developed.

This framework alters several aspects of the traditional approach to grouse management in Pennsylvania. However, harvest frameworks in which season structure varies by geographic zone and in response to population changes are not new. The elements of this approach are already used and well-accepted at the state level in managing big game, ring-necked pheasants, and some furbearers, as well as at the federal level for migratory game birds such as woodcock, mourning doves, and waterfowl.

Several states have shortened or closed their grouse season after grouse populations crashed. This framework represents an effort to proactively revise Pennsylvania's season-setting process to respond to declines while we still have a functional statewide population that allows us to retain hunting opportunity. Grouse population response will be closely monitored for five years under this framework to assess whether it is producing the desired population benefits.

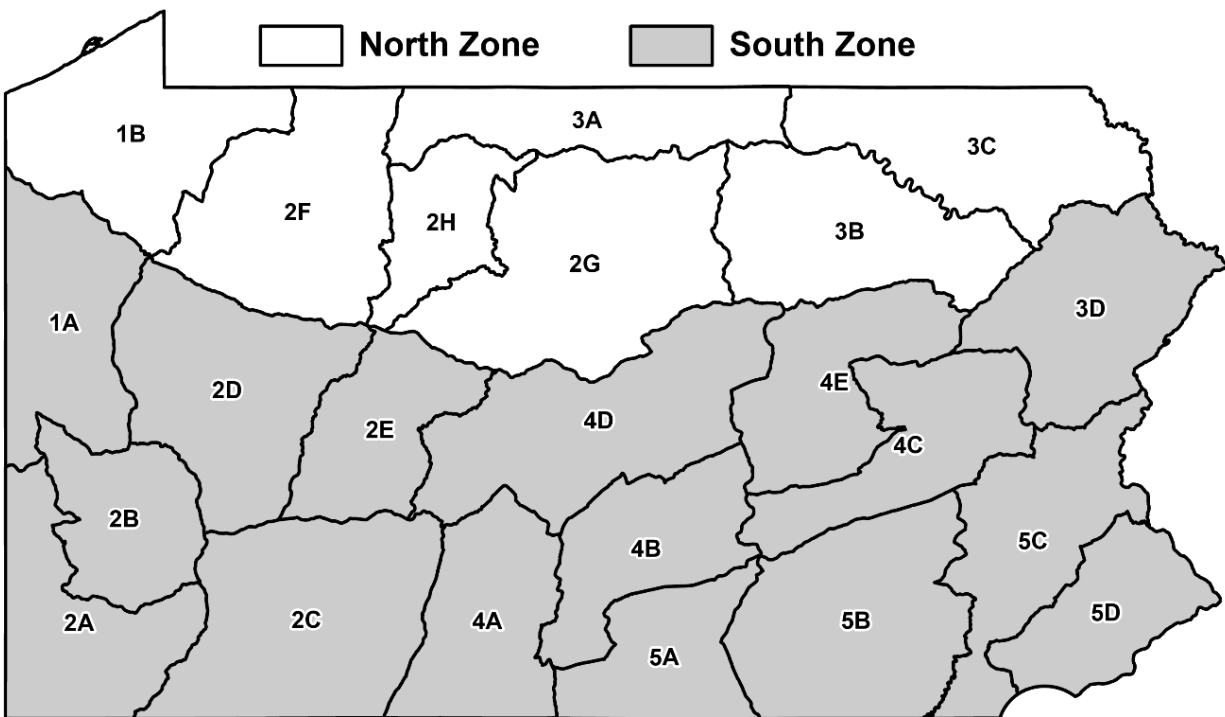


Figure 1. Grouse Management Zones in Pennsylvania.



Figure 2. Responsive Harvest Framework used to develop recommendation for the length of the post-Christmas ruffed grouse hunting season in Pennsylvania.

Table 1. Thresholds, based on 2000-2016 population index quartiles, used to identify Low, Moderate, and High population indices within the Responsive Harvest Framework used to develop recommendation for the length of the post-Christmas ruffed grouse hunting season in Pennsylvania.

<b>Population Threshold</b>	<b>Scale of Index</b>	<b>Low</b>	<b>Moderate</b>	<b>High</b>
<b>Fall Abundance</b> (Grouse Flushed per Hour Hunted)	<b>North Grouse Zone</b> (WMUs: 1B, 2F, 2G, 3A, 3B, 3C)	≤ 1.17 flushes/hour	1.18 – 1.57 flushes/hour	≥ 1.58 flushes/hour
	<b>South Grouse Zone</b> (WMUs: 1A, 2A, 2B, 2C, 2D, 2E, 3D, 4A, 4B, 4C, 4D, 4E, 5A, 5B, 5C, 5D)	≤ 0.68 flushes/hour	0.69 – 0.97 flushes/hour	≥ 0.98 flushes/hour
<b>Summer Production</b> (Total Grouse per 100 Observation Days)	<b>Statewide</b>	≤ 26 grouse/100-days	26.1 – 39.3 grouse/100-days	≥ 39.4 grouse/100-days
<b>West Nile virus Vector Index (PA-DEP)</b>	<b>Statewide</b>	≤ 106 VI Max	107-270 VI Max	≥ 271 VI Max