



RING-NECKED PHEASANT POPULATION STATUS REPORT

October 2022

Summary

Annual roadside crow-count surveys are used to estimate Ohio's ring-necked pheasant (hereafter pheasant) population. In 2022, survey results estimated a statewide population of 3,971 (95% confidence interval: 2,722–5,916) pheasants, assuming a 1:1 sex ratio. Pheasant populations are highly fragmented with highest concentrations found in portions of south-central Ohio and northwestern Ohio. Current population estimates represent a significant range contraction and decline in Ohio pheasant numbers reported a decade ago. Efforts to increase grassland, especially through the Conservation Reserve Program, continue to be the best approach to support remaining pheasant populations.

Introduction

Pheasants were first introduced into Ohio in the 1880s and 1890s. Populations were considered established by 1916. Pheasant populations in Ohio peaked in the 1930s and 1940s, with an estimated population near 5 million birds. Pheasant populations have declined steadily, with breeding bird surveys indicating a 5.3% decrease each year from 1966–2019. *The Second Atlas of Breeding Bird in Ohio* estimated a statewide population of 35,000 (Rodewald et al. 2016). Changes in agricultural practice and land use have likely led to pheasant population declines.

Methods

Division of Wildlife staff completed 112 roadside survey routes throughout central and northwestern Ohio in 2022 (Fig. 1). Routes were randomly selected and consisted of six survey stops each and were conducted from April 1 to May 5. Staff recorded any pheasants seen or heard during each of the four-minute surveys and estimated how far away the bird was from their location. Distance sampling was used to assess abundance and the 'gdistsamp' function was used in the package *unmarked* in program R, version 4.2.0 (Fiske and Chandler 2011, Chandler et al. 2011, R Core Team 2021, Royle et al. 2004). A model was used to estimate density in two distinct regions of the state: central and northwest Ohio. Once density was derived from the model, the results were

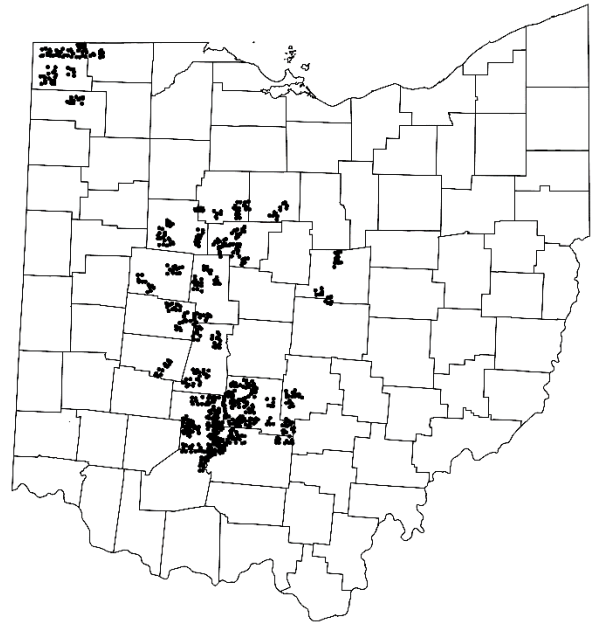


Figure 1. Pheasant survey distribution in Ohio during 2022. Each black dot represents one stop location.

extrapolated to each region of the state. Almost all pheasant observations were of crowing males; therefore, population estimates were doubled, assuming that there is a 1:1 sex ratio in the population.

In 2021, the Division of Wildlife sampled the predicted distribution of pheasant from *The Second Atlas of Breeding Birds of Ohio* (Fig. A1; Rodewald et al. 2016). Pheasant counts (males/stop) from 2021 were used to develop predicted range maps for comparison to similar maps from Rodewald (et al. 2016) that used data from 2011. To develop the predicted pheasant range, the *automap* package in R (Hiemstra et al. 2009; R Core Team 2021) was used, which fit an interpolated surface to the number of detected pheasant across the surveyed area in Ohio.

To estimate hunters and harvest, the Ohio Hunter Questionnaire was distributed to a random sample of adult license holders in Ohio following the 2021–22 hunting season. Number of hunters pursuing pheasants was calculated by dividing the number of hunters indicating they pursued

pheasants by the total number of responses, this was then extrapolated to the pool of hunters from which the sample was drawn. Confidence intervals were derived by bootstrap resampling the data 5,000 times. All analyses were done in program R (Version 4.2.0; R Core Team 2022).

Results and Discussion

A total of 151 pheasants were detected among 788 route stops in 2022, for an index of 0.19 pheasant/stop. An additional 149 pheasant observations on 1,752 route stops surveyed in 2021 were used to generate a predicted pheasant range for 2021.

The density estimate for northwestern Ohio was 0.0048 male pheasant/ha (95% confidence interval: 0.0025–0.0092; 0.0019 pheasant/acre). Accounting for a 1:1 sex ratio yields an estimated density of 0.0096 pheasant/ha (95% confidence interval: 0.0051–0.0183; 0.0039 pheasant/acre). In northwestern Ohio, 99,094 ha (244,866 acres) were sampled, yielding a population estimate of 955 pheasants (95% confidence interval: 502–1817 pheasants). In Central Ohio, the density estimate was 0.0021 male pheasants/ha (95% confidence interval: 0.0016–0.0029; 0.0009 pheasant/acre). Accounting for a 1:1 sex ratio yields an estimated density of 0.0042 pheasant/ha (95% confidence interval: 0.0031–0.0058; 0.0017 pheasant/acre). In central Ohio, 707,565 ha (1,748,429 acres) were sampled, yielding a population estimate of 3,017 pheasants (95% confidence interval: 2,222–4,099 pheasants). Adding the central and northwestern population estimates yields a statewide population estimate of 3,972 pheasants (95% confidence interval: 2,723–5,916).

Wild pheasants were pursued by 2.0% of questionnaire respondents and there were an estimated 6,477 pheasant hunters in Ohio during the 2021–22 season. Wild pheasant hunters averaged 4.3 days afield. Of the respondents that pursued wild pheasant, 42.9% hunted solely on private land, 40.0% hunted solely on public land, and 17.2% hunted on both public and private land. Of all respondents that hunted wild pheasants, 53.8% pursued wild pheasant on wildlife areas and 2.8% hunted in Ohio state parks. Questionnaire respondents flushed an average of 1.1 wild pheasants per day during the 2021–22 season. Wild pheasant hunters harvested an average of 0.4 wild pheasants per hunter during the 2021–22 hunting season. Total estimated harvest of pheasant was 2,519 during the 2021–22 season (Table 4).

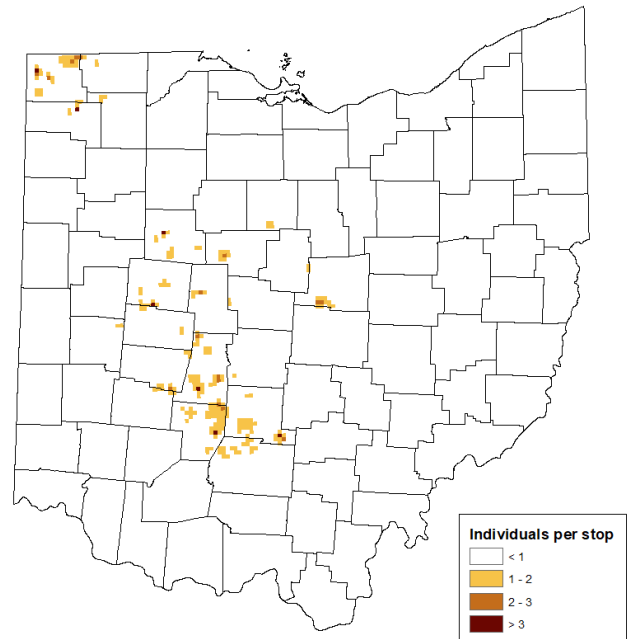


Figure 2. Predicted ring-necked pheasant distribution (number of pheasants/stop) developed using 2021 roadside surveys.

The pheasant distribution in Ohio is highly fragmented, with few core populations remaining (Fig. 2). Populations remain scattered in central and northwestern Ohio. The predicted distribution from 2021 suggests that Ohio's pheasant population has become much more fragmented since 2011 (Fig. A1). As pheasant populations have become more fragmented, connectivity between populations becomes less likely and more challenging to overcome.

The statewide population estimate of pheasant in *The Second Atlas of Breeding Birds in Ohio* was 35,000 (95% confidence interval: 8,700–10,100; Rodewald et al. 2016). Over the past 12 years, Ohio's pheasant population has decreased 88%, or an average decline of 17.9% each year. The decline is likely a result of continued habitat loss and degradation. For example, cover of perennial grasses and forbs have decreased 43%, 34%, 41%, and 64% in Madison, Marion, Union, and Williams counties, respectively, from 2011–2021 (Figs. A2–A5; [Rangeland Analysis Platform](#); Allred et al. 2021). All four counties are within the pheasant range.

Efforts to improve pheasant habitat should be focused in areas where populations of wild pheasant exist in Ohio, ideally focusing directly within occupied regions of the state. Establishing fields with sufficient grass cover provides suitable nesting habitat. Areas with bare ground and forbs

(i.e., wildflowers) provides cover for female pheasants with broods. Placing suitable cover for broods in proximity to nesting cover will assist in chick survival.

Previous work suggests that approximately 15% of a township needs to be within grassland cover to maintain pheasant populations. Pheasants reach maximum abundance when the landscape is composed of 50% grassland and 50% cropland cover. These figures provide loose targets for enhancing landscapes with established pheasant populations and adjacent areas surrounding occupied areas of the state.

References

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Appendix 1. Historic predicted abundance and distribution of ring-necked pheasant in Ohio.

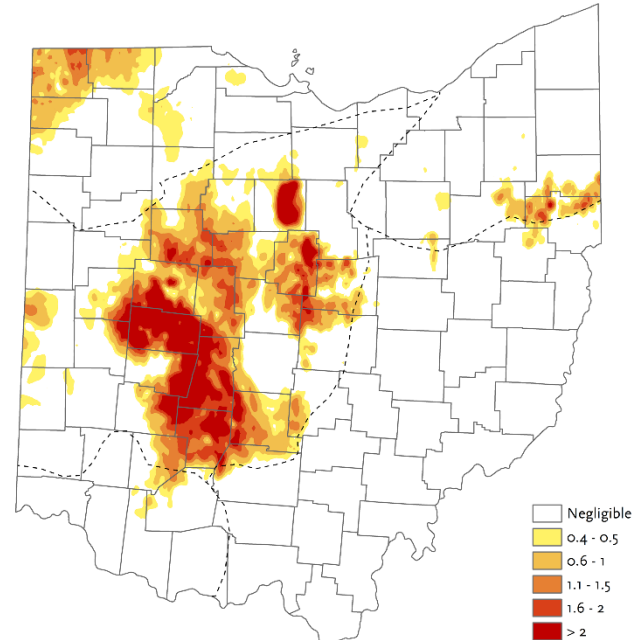


Figure A1. Ring-necked pheasant distribution in 2010 from *The Second Atlas of Breeding Birds in Ohio* (Rodewald et al. 2016; used with permission).

Appendix 2. Change in cover of perennial grasses and forbs for select Ohio counties, as estimated by the Rangeland Analysis Platform (Allred et al. 2021).

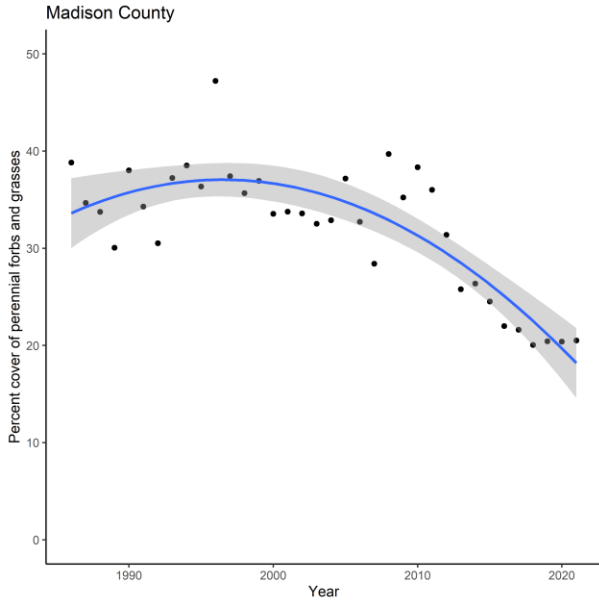


Figure A2. Percent cover of perennial grasses and forbs for Madison County, Ohio, 1986–2021.

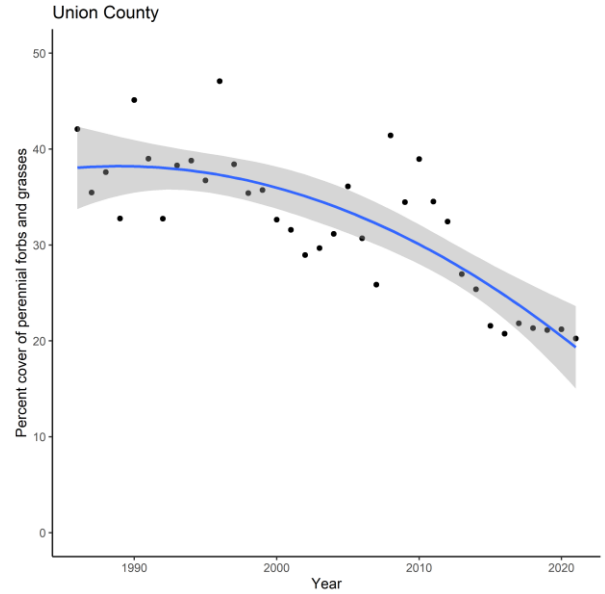


Figure A4. Percent cover of perennial grasses and forbs for Union County, Ohio, 1986–2021.

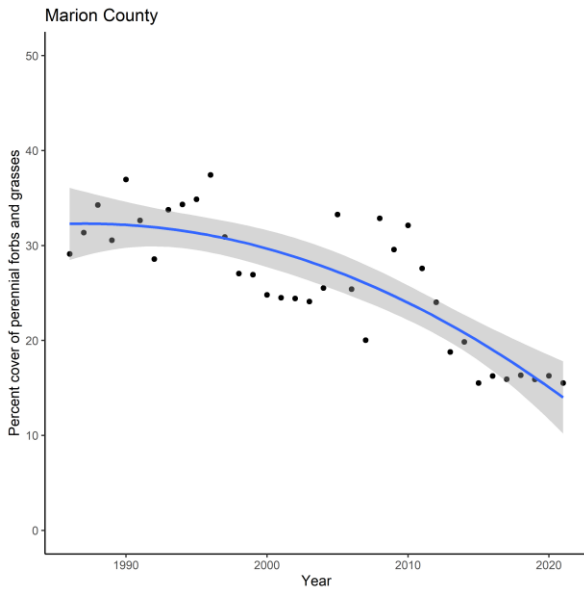


Figure A3. Percent cover of perennial grasses and forbs for Marion County, Ohio, 1986–2021.

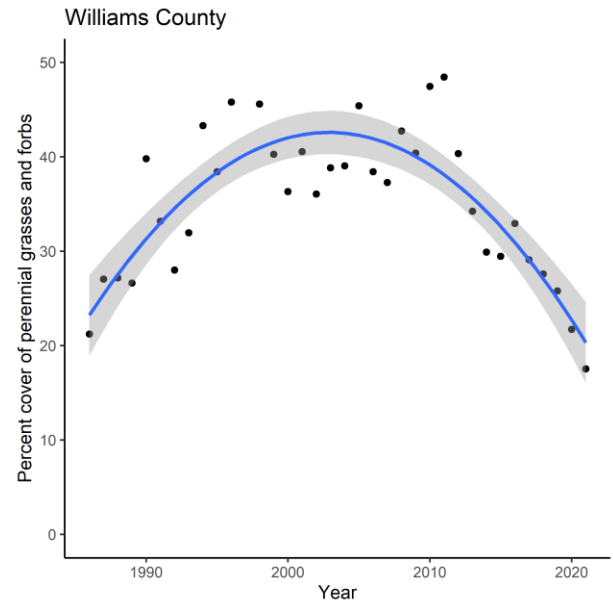


Figure A5. Percent cover of perennial grasses and forbs for Union County, Ohio, 1986–2021.