2017 BOBWHITE QUAIL POPULATION STATUS REPORT
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Summary: Ohio’s bobwhite quail population has experienced a decline in distribution of about 69% since 2002. Remaining populations are highly fragmented with 2 main populations in 1) Preble and Butler Counties and 2) Adams, Brown, Clinton, and Highland Counties. Small population fragments can be found in Fayette, Ross, Jackson, and Gallia Counties. Quail are found rarely elsewhere in southern Ohio. Population estimates from surveys conducted 2014-2017 are between 448 and 62,325 quail (95% confidence limits). Population densities across southern Ohio averaged 2.6 quail per 100 acres where quail were detected. Densities of 20 quail per 100 acres need to be maintained to withstand any harvest.

Methods: Wildlife Management and Research Staff completed 325 roadside survey routes among 27 counties in southern Ohio from 2014-2017 (Figure 1). These randomly selected routes consisted of 6 survey stops each and were conducted from mid-May to late June annually. Staff recorded quail seen or heard during each of 6, 1-minute survey intervals. Time-of-detection analysis (Alldredge et al. 2007) using closed-capture models in Program Mark (White and Burnham 1999) were used to estimate population size. Because the majority of quail observations were of whistling males, population estimates based on whistle counts were doubled, assuming a 1:1 sex ratio in the population. Quail counts (males/stop) were used to develop predicted abundance maps utilizing ordinary Kriging methods within ArcGIS 10.3 for comparison to similar maps generated by Spinola and Gates (2008).

Results: Bobwhite quail were observed on 136 of 1,950 (6.9%) roadside stops surveyed during 2014-2017. A total of 224 bobwhites (0.115 birds per stop) were heard on surveys over the 4 years. Time-of-detection analysis estimated the Ohio population of whistling males in areas they were present at 250.5 males with 95% confidence limits of 224 and 31,178 males, respectively. A population sex ratio of 1:1 was assumed to
estimate the total Ohio bobwhite population at no greater than 62,325 birds. A simple average density estimate based on stops where quail were detected and a 400 m detection radius was 0.026 birds/acre, or 2.6 quail per 100 acres. No quail were observed during surveys in Athens, Fairfield, Greene, Hocking, Meigs, Montgomery, Morgan, Perry, Pickaway, Scioto, Vinton, or Washington Counties. A predicted abundance map (Figure 2) reflects the absence of quail in many southeast Ohio counties. Quail were detected in Clermont, Fayette, Gallia, Jackson, Lawrence, Pike, Ross, and Warren counties, but detected populations were generally in extremely low numbers and isolated from remaining core populations.

Figure 2. Map of bobwhite index of abundance (individuals heard per stop) during 2014-2017 in Ohio.

Figure 3. Map of bobwhite index of abundance (individuals heard per stop) during 2002 in Ohio (from Spinola and Gates 2008).

Discussion: Predicted abundance maps generated from 2002 survey data (Figure 3, Spinola and Gates 2008) showed an Ohio bobwhite population that was highly variable in abundance, but generally contiguous in its distribution throughout southern Ohio. In 2002, quail were distributed across 9.4% of survey stops and averaged 0.2 males per stop, nearly 10 times the estimate from 2014-2017. Population declines over the past 12-15 years have resulted in the reduction of a strong core population once centered in Highland and Brown
Counties, bobwhite populations below levels detectable by standardized surveys in many southeastern Ohio counties, and division of remaining populations into scattered fragments.

Remaining bobwhite populations can now be described as belonging to discrete, isolated populations scattered across southern Ohio. Specifically, these include 1) a remaining core population distributed across parts of Adams, Brown, Clinton, and Highland counties, 2) a population fragment in Butler and Preble counties of southwest Ohio, 3) small population clusters in southern Fayette and northwestern Ross counties (typically on or near Division-managed WPA’s), 4) a small population in southern Jackson county in the vicinity of Cooper Hollow Wildlife Area, and 5) quail in the immediate vicinity of Crown City Wildlife Area (Gallia and Lawrence counties).

Population viability modelling of populations susceptible to heavy winter mortality has shown that population fragments are extremely vulnerable to extinction. Populations may be resilient to environmental extremes and mild harvest when populations are maintained at levels above 20 quail per 100 acres (Guthery et al. 2000).

References:


