2012 Breeding Bobwhite Quail Call Survey Summary

Prepared by Ryan Myers, NCWRC Survey and Research Biologist, August 1, 2012

Breeding quail call surveys have been used to monitor quail abundance and population trends in North Carolina since 1957. In 2012, quail were surveyed on 15 road routes; 6 in the piedmont region, 9 in the coastal region, and none in the mountain region (Fig. 1). Following survey protocols, 3 routes (Burke, Haywood and Yadkin) were dropped from the previous survey year because no quail were heard for 2 consecutive years. Each route consisted of 21 stops spaced 1 mile apart, with a 3 minute listening period per stop. The survey was conducted during the last 2 weeks of June, 2012.

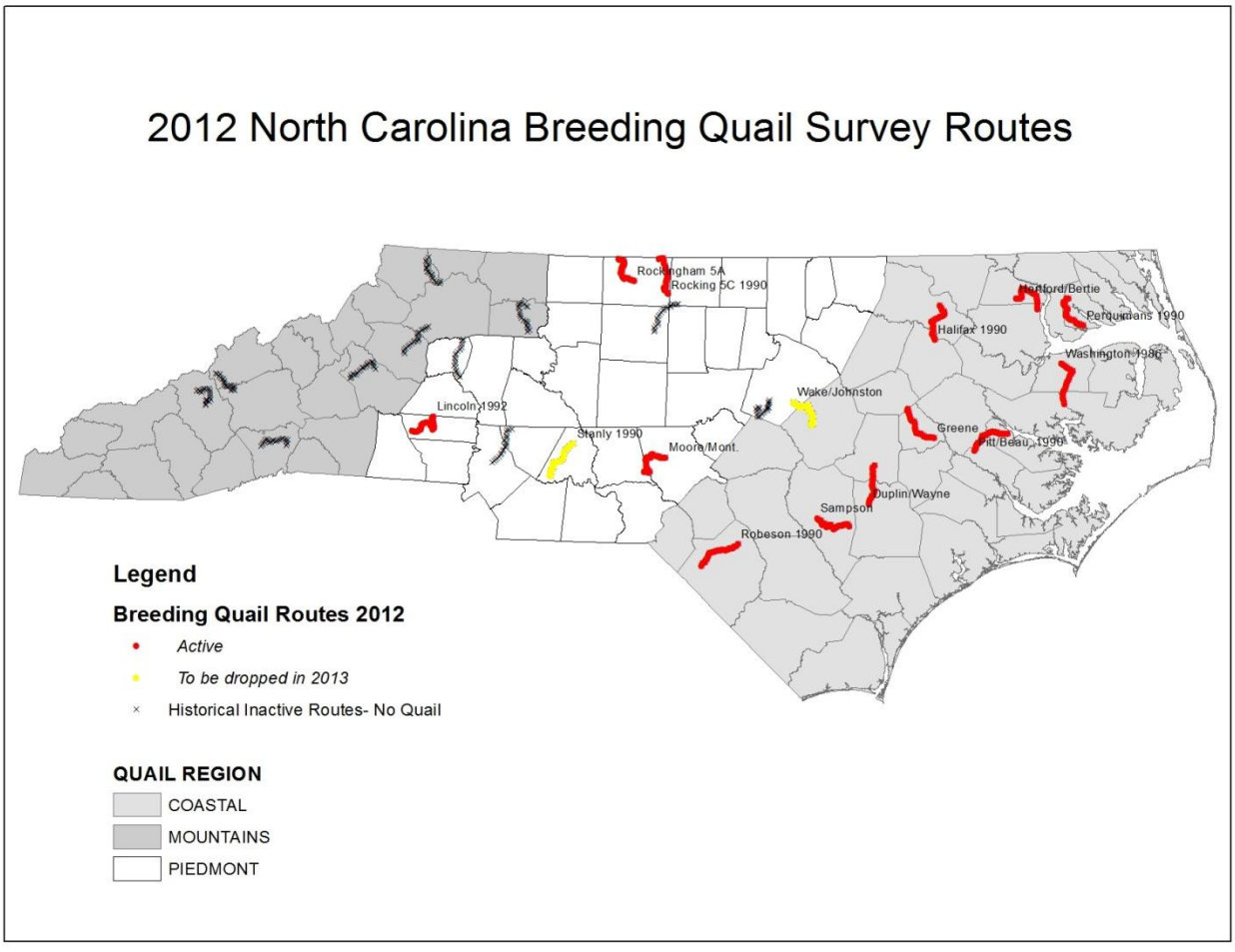


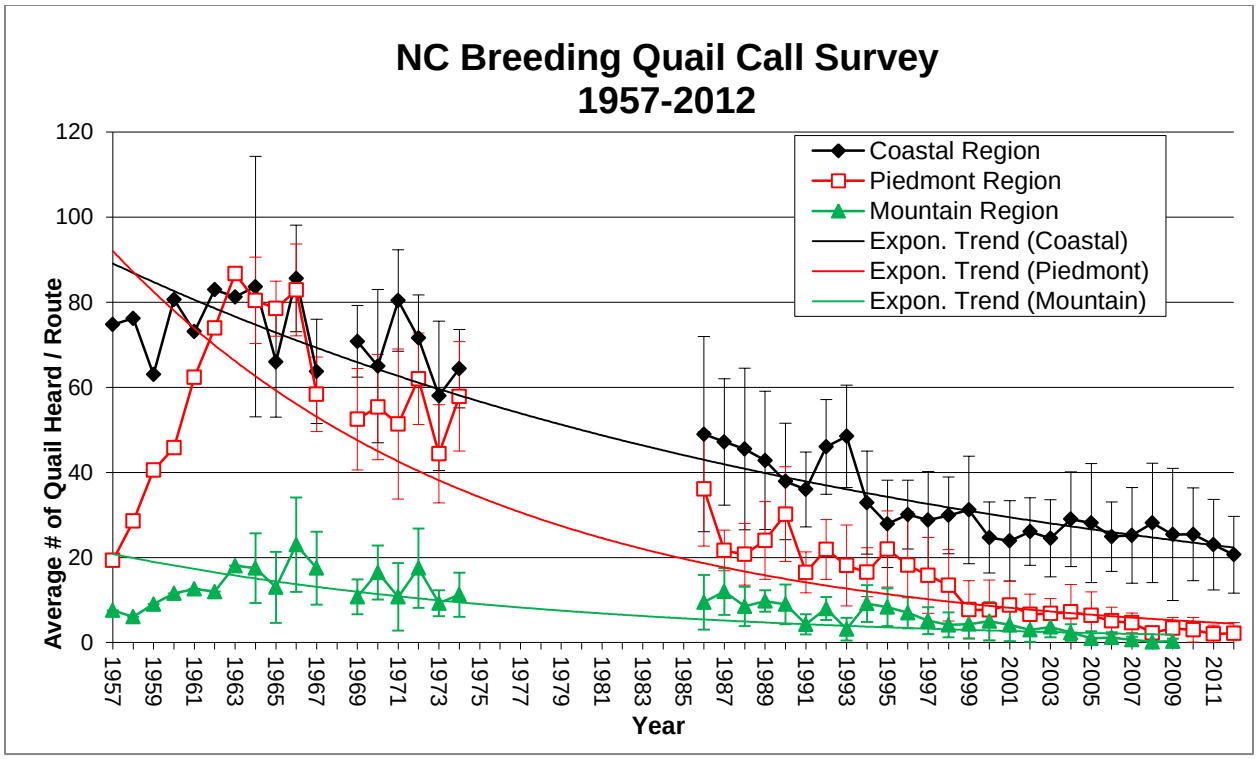
Figure 1. - North Carolina Breeding Quail Call Survey routes and quail management regions, June 2012.

A total of 210 calling male quail were detected statewide (Table 1). Quail were heard at 104 of the 315 active stops (33%). Quail were more abundant in the coastal region, averaging 20.7 birds per route. The most quail were heard on the Sampson route in the coastal region (40 birds). No quail were heard on 2 routes (Stanly and Wake/Johnston) for the second consecutive season.

Table 1. - Number of calling male quail detected by year and survey route, North Carolina Breeding Quail Survey, 2003-2012. Asterisks denote routes dropped because no quail were detected for 2 consecutive years, analysis assumes zero counts. (Regions: Coast (C), Mountain (M), and Piedmont (P)).

Route	Region	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CUMBERLAND	C	25	28	27	18	26					
EDGECOMBE-HALIFAX 1990	C	4	6	2	9	3	11	16	14	10	7
GREENE	C	22	23	26	27	26	15	13	13	9	11
HERTFORD/BERTIE	C	9	15	26	22	16	32	20	17	16	17
PERQUIMANS 1990	C	33	49	21	18	20	29	47	45	36	37
PITT-BEAUFORT 1990	C	16	13	6	14	10	7	10	12	15	11
ROBESON 1990	C	28	42	25	28	30	21	23	21	21	18
SAMPSON	C	51	54	49	46	52	49	42	42	39	40
WASHINGTON/HYDE 1986	C	42	51	81	49	59	74	79	54	54	38
WAYNE/DUPLIN	C	15	19	18	18	10	15	4	11	7	7
ASHE 1990	M	1	2	0	1	0	0	*	*	*	*
BUNCOMBE/MADISON	M	6	2	0	0	*	*	*	*	*	*
BURKE	M	6	10	5	0	4	0	1	0	0	*
CALDWELL/WILKES	M	9	7	1	5	0	0	0	*	*	*
HAYWOOD 1990	M	*	*	*	1	2	1	1	0	0	*
ALEXANDER	P	4	3	1	9	5	3	0	0	*	*
GUILFORD/CASWELL	P	3	0	1	3	4	1	0	0	*	*
LINCOLN 1992	P	20	31	29	12	11	2	4	2	7	9
MECK./CABARRUS	P	6	1	2	2	0	0	*	*	*	*
MOORE/MONT.	P	14	22	16	16	11	5	7	15	8	11
ROCKINGHAM (5A)	P	2	4	4	2	4	0	6	7	1	2
ROCKINGHAM (5C) 1990	P	2	0	6	6	5	6	13	4	6	2
STANLY 1990	P	6	3	1	2	2	3	2	2	0	0
WAKE	P	8	3	5	0	3	1	0	0	*	*
WAKE/JOHNSTON	P	5	8	4	2	5	3	3	3	0	0
YADKIN	P	1	4	5	5	1	1	3	0	0	*

Historic trends suggest the continued annual decline (-4.0%) of quail across the state (Fig. 2 and 3). However, annual estimates no longer provide an adequate degree of confidence for monitoring at this scale due to declining quail abundance and subsequent loss of survey routes. Downward trends appear to continue within all regions in North Carolina, but mountain and piedmont annual estimates are no longer valid, while precision of the coastal annual estimate is relatively weak. Small annual route-specific trend differences within regions are likely due to site-specific agricultural crop and forest management rotations.



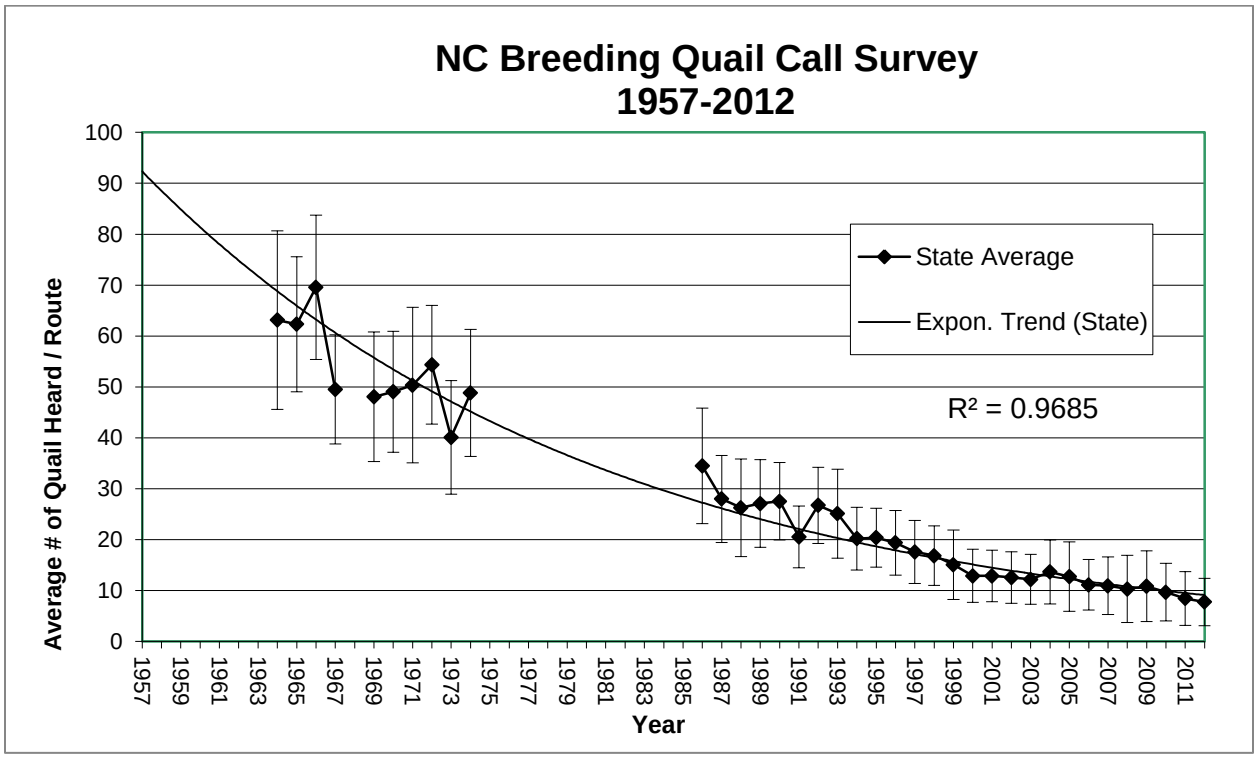


Figure 2 and 3. - North Carolina Breeding Quail Call Survey state and regional trends, 1957-2012.

Recommendations:

Due to the continued loss of routes and low quail abundance, this survey project no longer fulfills its original monitoring objectives at the statewide or regional level. Remaining route locations no longer represent the original landscape study design and low counts no longer provide adequate degree of precision to detect short-term trend changes (5 year averages). Other monitoring methodologies need to be considered given the available NCWRC monitoring resources, current quail abundance, and the quail's continued rate of decline.

An alternative quail monitoring reference may include the USGS Breeding Bird Survey (BBS). Despite minor differences in survey protocols and methodologies, BBS provides a more robust survey design, better statewide coverage, and more precise state and region abundance estimates. These surveys are conducted annually by volunteers using standardized national protocols. BBS long term quail trend estimates in North Carolina (-5.2%) have been similar to historic NCWRC estimates (-4.0%). Historic BBS datasets and online spatial modeling results also provide better analysis tools for biologists to track statewide quail abundance and population changes than those monitoring strategies previously developed by the NCWRC (Fig. 4).

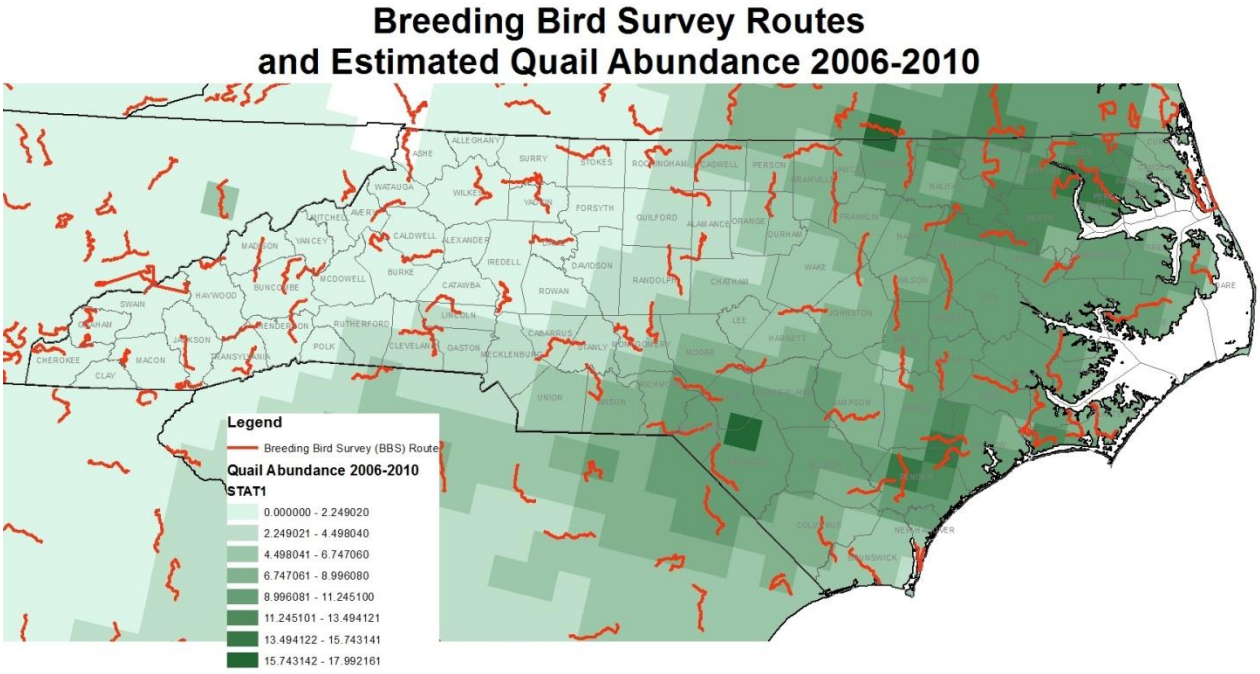


Figure 4. - Distribution of USGS Breeding Bird Survey (BBS) route locations and estimated relative quail abundance based on USGS Breeding Bird Survey Data smoothed modeling procedures, 2006-2010. Darker shading represents higher relative abundance.