
2000

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Recommended Citation

Brennan, Leonard A.; Lee, Jeffrey M.; and Fuller, R. Shane (2000) "Long-Term Trends of Northern Bobwhite Populations and Hunting Success on Private Shooting Plantations in Northern Florida and Southern Georgia," *National Quail Symposium Proceedings*: Vol. 4 , Article 16.

<https://doi.org/10.7290/nqsp04m7c5>

Available at: <https://trace.tennessee.edu/nqsp/vol4/iss1/16>

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LONG-TERM TRENDS OF NORTHERN BOBWHITE POPULATIONS AND HUNTING SUCCESS ON PRIVATE SHOOTING PLANTATIONS IN NORTHERN FLORIDA AND SOUTHERN GEORGIA

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ABSTRACT

Nearly all broad-scale assessments (U.S. Department of the Interior, Fish and Wildlife Service [USDI-FWS], Breeding Bird Surveys, Audubon Society Christmas Bird Counts, and state game agency harvest surveys) of northern bobwhite (*Colinus virginianus*) population trends during the past 30 to 50 years point to widespread declines at local, regional and national scales. Long-term records of populations that do not show long-term bobwhite declines are rare. Landowners and managers in the shooting plantation country between Tallahassee, Florida and Thomasville, Georgia have been recording quail hunting and bag records for many years. Such information can provide valuable insight into the long-term trends of bobwhite populations. We therefore analyzed bag records from 5 different properties where data had been collected for periods ranging from 14 to 80+ years. Trends from these data were completely opposite from long-term trends shown from other sources such as Breeding Bird Survey and Christmas Bird Count data. These data indicate that a long-term, continuous approach to habitat management (primarily burning with prescribed fire, and frequent soil disturbance from disking) can sustain abundant bobwhite populations and high-quality shooting. These data also call into question alternative hypotheses such as invasion of the red imported fire ant and range expansion of the coyote as being responsible for the long-term bobwhite decline. Both fire ants and coyotes are common in the Thomasville-Tallahassee area, yet, abundant bobwhite populations persist, presumably as a function of high-quality habitat management.

Citation: Brennan, L.A., J.M. Lee, and R.S. Fuller. 2000. Long-term trends of northern bobwhite populations and hunting success on private shooting plantations in northern Florida and southern Georgia. Pages 75–77 in L.A. Brennan, W.E. Palmer, L.W. Burger, Jr., and T.L. Pruden (eds.). Quail IV: Proceedings of the Fourth National Quail Symposium. Tall Timbers Research Station, Tallahassee, FL.

INTRODUCTION

Nearly all broad-scale assessments of northern bobwhite population trends during the past 30 to 50 years indicate widespread declines ranging from 70 to >90 percent (Droege and Sauer 1990, Brennan 1991, Brennan and Jacobson 1992, Church et al. 1993, Brennan 1999). Long-term records that do not show significant northern bobwhite population declines are rare.

Several private shooting plantations in the Tallahassee, FL and Thomasville, GA region have been keeping records of annual bags and hunting efforts for many years. These data represent some of the longest continuous records of bobwhite hunting success and relative population abundance in the world. Such in-

formation may provide insight into factors that have caused the broad scale bobwhite population declines. Therefore, our objective was to compile and analyze game book data from 5 private shooting plantations, and compare the trends from these data sets to long-term northern bobwhite trends in Florida and Georgia documented from the USFWS Breeding Bird Survey (Sauer et al. 1996).

METHODS

We compiled records from plantation game books that ranged from 14 to 89 years. Data recorded were: total number of bobwhite coveys seen, and amount of time hunted. The variable "coveys seen per hour of hunting" is both a relative measure of hunting success, and relative population abundance, over time. Such data do not represent absolute abundance or population density, but they do represent relative changes over time, especially when standardized by hunting effort. Because of different hunting methods and rituals, com-

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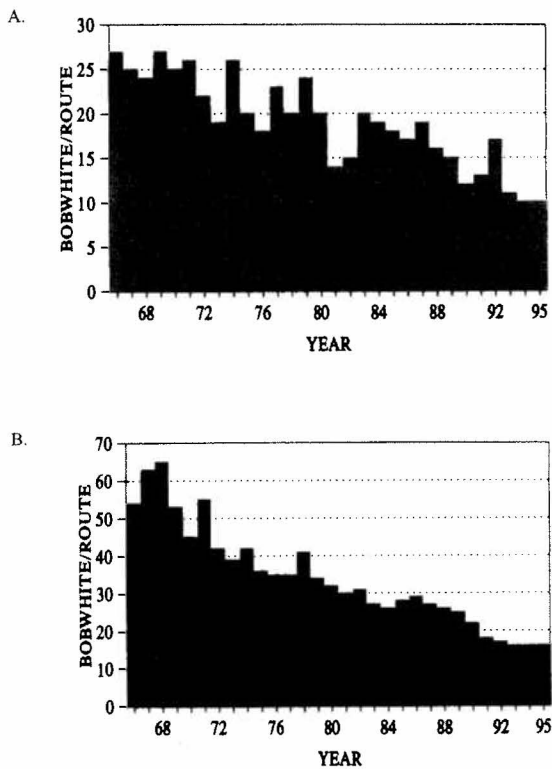


Fig. 1. (A) Northern bobwhite Breeding Bird Survey data from Florida (1966 to 1995); (B) Breeding Bird Survey data from Georgia (1966 to 1995); from Sauer et al. (1996).

parisons are made only within a particular property and not among or across different properties.

RESULTS

Compared to broad-scale estimates (Figures 1a and 1b) from the USFWS Breeding Bird Survey (BBS), the bobwhite trend data from the 5 properties we studied (Figures 2a through 2e) did not show evidence of long-term declines. Regression analyses of BBS data (Figures 1a and 1b) indicated that the slope of the regression line was negative and significantly different from zero. Regression analyses of the plantation game book data (Figures 2a through 2e) indicated that the slope of all 5 regression lines was not

significantly different from zero. Time series analyses of data from Figures 2d and 2e indicated an auto correlation function that showed more-or-less random fluctuation around stable mean values.

DISCUSSION

Long-term data on population trends derived from hunting efforts have provided critical insight into how land use changes have influenced game bird populations in the United Kingdom (Tapper 1992). Unfortunately, similar long-term data sets from private hunting properties in the U.S. are quite rare. It can be argued that the lack of such data has compromised our ability to definitively link the northern bobwhite decline of the past 30–50 years with loss of habitat from changing land use patterns.

Long-term northern bobwhite hunting data from the Tallahassee, FL-Thomasville, GA region show long-term trends in relative abundance that contrast with most broad-scale population estimates for this bird. These data provide support for the hypothesis that habitat loss from changing land use is responsible for the widespread bobwhite population declines observed throughout the Southeastern Coastal Plain. Ongoing northern bobwhite habitat management on the properties used in this study is conducted annually, and at a high level of intensity. Annual use of prescribed fire, disking, planting, thinning pine timber, removal of invasive hardwoods, and predator control, apparently provide relatively large amounts of useable habitat space consistently over time (Guthery 1997) for the birds.

The private shooting plantations used in this study have also experienced the widespread increase of coyotes (*Canis latrans*), fire ants (*Solenopsis* sp.) and other factors that people in the Southeast often attribute as being responsible for the bobwhite decline. Most likely, such factors are epiphenomena, as least as far as the bobwhite decline is concerned.

Variation in rainfall is responsible for about 25% of the annual variation in Coastal Plain bobwhite numbers (Brennan et al. 1997). Thus, data from this study may be useful in evaluating the potential role of other factors, such as global warming (Guthery et al. *this volume*) on bobwhite numbers.

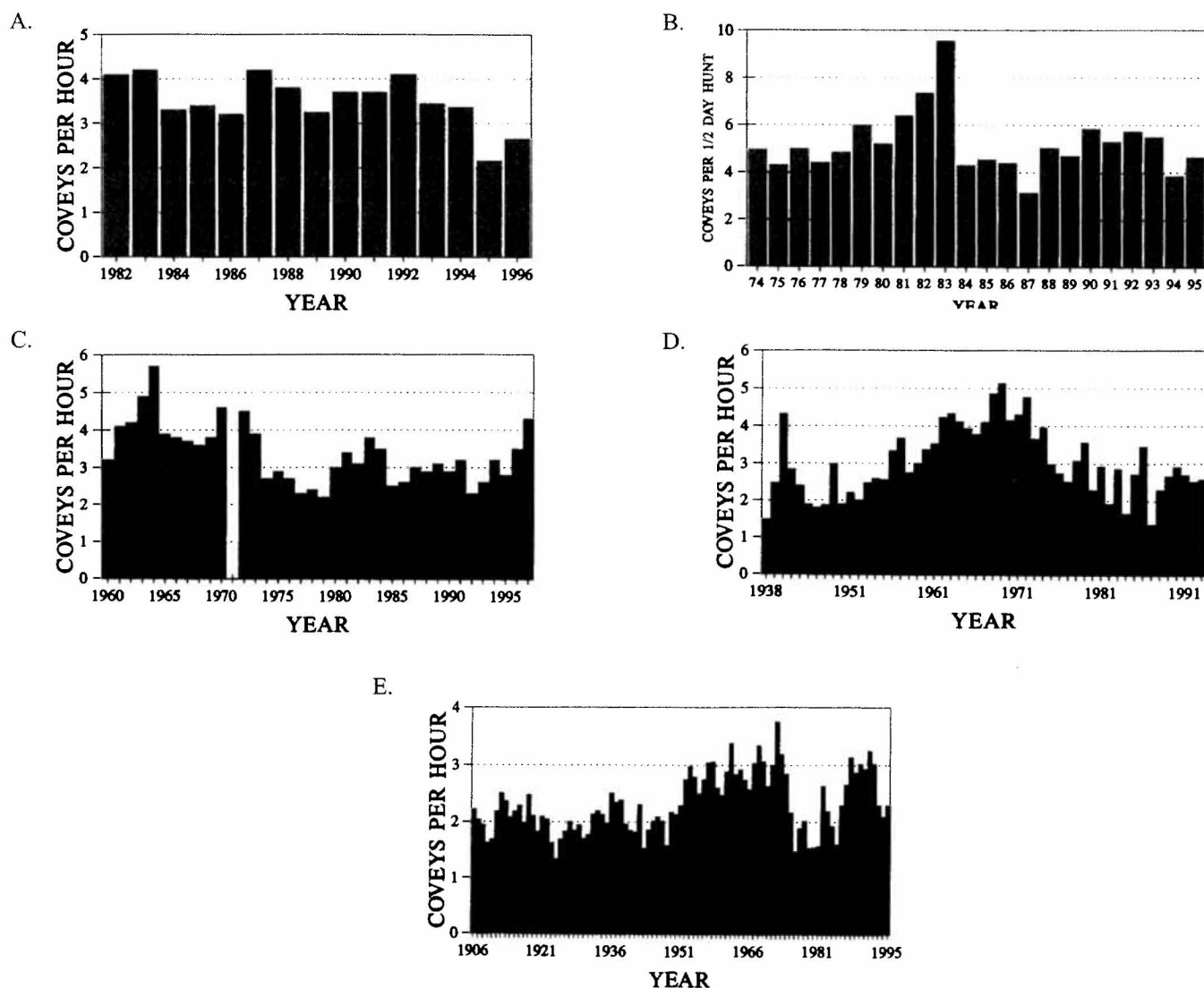


Fig. 2. Northern bobwhite hunting data, expressed as covey finds standardized in relation to hunting effort from 5 private shooting plantations (A through E) in the Tallahassee, FL and Thomasville, GA region.

ACKNOWLEDGMENTS

We thank local plantation owners who shared game book data for this study. Kaye Gainey compiled the figures and the final version of the manuscript. Bill Palmer provided helpful editorial and review comments.

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