

Movements, Habitat Use, Survival and Reproduction of Northern Bobwhites on Private Lands



SUMMARY

Farmland wildlife populations are sensitive indicators of environmental change and sustainability of modern agricultural practices. Northern bobwhite (*Colinus virginianus*) populations in Ohio and throughout the Midwest have both prospered and suffered from changes in the scale, intensity, and technology of contemporary production agricultural practices.

SITUATION

Northern bobwhite populations are in serious decline throughout most of their range and are threatened with extirpation from Midwestern agricultural landscapes. Large-scale agriculture production with simplified crop rotations supported by application of pesticides and use of large machinery has diminished the capacity of Midwestern farmlands to support viable bobwhite populations. Maturation and elimination of woodlots, wooded edges, and old fields negatively affect population density, survival, and reproduction of bobwhites.

RESPONSE

We have investigated movements, habitat use, survival, and reproduction of northern bobwhites on private lands in the core of the species' range in Ohio since 2007. Nesting success was sufficient to sustain the study population, supported largely by grasslands set aside from agricultural production under the Conservation Reserve Program of recent Farm Bills. Over-winter survival was among the lowest reported for any extant population of bobwhites and portends continued population decline, even in the best area remaining in Ohio to support bobwhite populations. We determined that winter survival was by far the most important vital rate causing negative population growth rates. Bobwhites experienced high levels of predation during adverse winter weather conditions when they were forced to move long distances from protective cover to feed after snowfall events.

IMPACT

Our research has attracted national attention because it fills a critical information gap for northern bobwhites in the upper Midwest. The findings from our study help inform strategic habitat conservation planning under the nationwide Northern Bobwhite Conservation Initiative. We recommend that habitat conservation strategies should emphasize enhancement of wooded edges near winter food sources. Periodic disturbance is needed to create protective cover in woodlots, fencerows, and riparian areas that are located near food sources in row crops and warm season grass plantings. Grassland habitats are necessary to restore populations of bobwhites and other edge- or early succession-dependent wildlife species. Grassland conservation should emphasize vegetation quality and fine-scale distribution within local landscapes over total area to optimize wildlife benefits and compatibility with agricultural production. More flexibility in allowable conservation practices is needed to increase the wildlife benefits of Conservation Reserve Program areas. Our findings and recommendations were disseminated to stakeholders via workshops, informational leaflets, mailing, and personal contact with private landowners in our study areas. Our research provided justification and impetus to implement an emerging habitat conservation practice known as "edge-feathering" on our study sites. The U.S. Fish and Wildlife Service, Ohio Division of Wildlife and Pheasants/Quail Forever secured funding to perform edge feathering and we will evaluate wildlife response to the practice. Our recommendations will become the model for conservation of edge-dependent wildlife across the Midwest, if we can demonstrate that edge feathering raises bobwhite population growth rates and is compatible with agricultural production on our study sites.

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