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Purdue University Forestry and Natural Resources

Hoosier Farmland Wildlife Notes: Enhancing Your Farm for Northern Bobwhite Quail

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Northern bobwhite quail (*Colinus virginianus*) are a non-migratory, small game bird found throughout Indiana and the eastern United States. Once very common throughout the agricultural landscape, recent population indices of this native species continue to be at or near historical lows in Indiana (Figure 1).

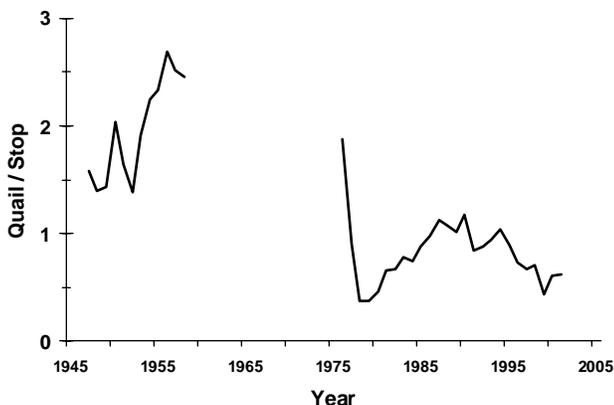


Figure 1. Average number of bobwhite quail heard during annual spring surveys throughout Indiana (From McCreedy C. 2001. *Breeding population index of northern bobwhite quail*. IDNR, Wildlife Management Research Notes). No data from 1959-1975.

Loss of habitat is most likely responsible for the declines in bobwhite quail over the past half century. A shift in agricultural practices during this time is the primary cause. When quail populations in Indiana and the Midwest were much higher in the 1950s, farming practices were different than today. Farms were generally divided into smaller parcels, field sizes were smaller and divided by fencerows, and production was more evenly distributed among row crops, small grains, and pastures. Today, "clean farming" dominates the agricultural landscape (Figure 2).

What do bobwhite quail require?

Bobwhite quail prefer a mixture of grassland, cropland, brushy areas, and woodland arranged in a manner that provides a lot of "edge" habitat, or areas where two or more habitat types meet. This arrangement will provide all of the essential habitat requirements for quail in a relatively small area. A covey of quail will typically occupy an area of about 20-40 acres.

Bobwhite quail eat a variety of seeds, nuts, berries, crop residues, leaves, stems, and insects. During the fall and winter, quail rely upon seeds of annual plants such as ragweeds, foxtails, panicgrass, sunflowers, and partridge pea.

Cover is important for bobwhite quail nesting, brood rearing, and winter survival. Generally, habitats with a mix of native grasses, forbs (non-woody plants other than grasses), and mast-producing (plants that produce nuts or berries) shrubs that provide overhead protection while allowing birds to move and forage on the ground is an essential feature of good quail cover.

What can you do on your property to enhance habitat for bobwhite quail?

Favor a mix of native grasses, forbs, and mast-producing shrubs. Many stress the importance of native warm season grasses for nesting cover. However, shrubs such as blackberries, dogwoods, and many other species are equally important because they provide ideal winter roost habitat (i.e., cover) and mast (i.e., food) close to ground-level.

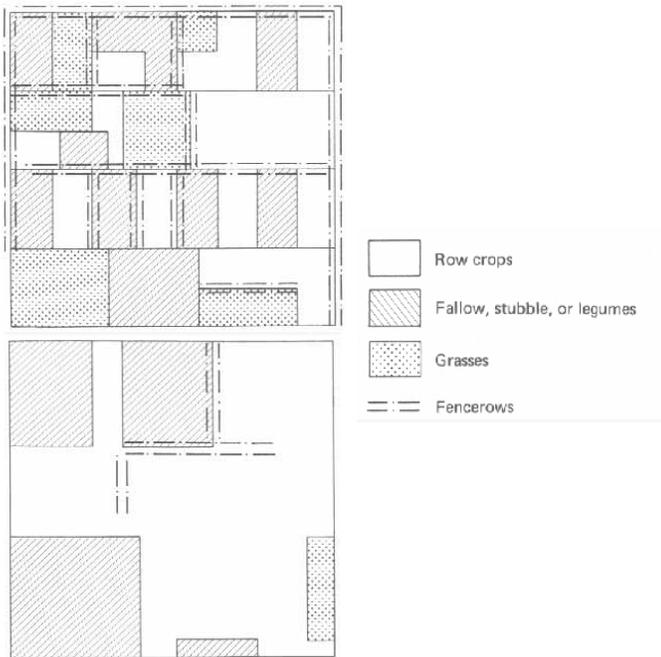


Figure 2. Changes in land use on a square mile of Illinois farmland between 1939 (top) and 1974 (bottom). The result is a seven-fold increase in soybeans and a virtual elimination of hayfields. (From Vance, D.R. 1976. *Changes in land use and wildlife populations in southeastern Illinois*. Wildlife Society Bulletin 4:11-15.)

Disturbance is important in maintaining and enhancing quality bobwhite quail habitat. Without disturbance such as mowing, disking, burning, or cutting, good quail habitat will become overgrown and too dense, or revert to later successional habitats (i.e., closed-canopy woodlands).

Habitat maintenance is just as important as establishing good wildlife habitat, yet is frequently overlooked. Would you plant a new lawn and not mow, water, or fertilize it? The same is true for other habitats. Without proper maintenance, good wildlife habitat can become poor wildlife habitat.

Fortunately, maintaining good wildlife habitat can be much simpler and more inexpensive than maintaining a well manicured lawn. Below are a few maintenance techniques to improve plantings for quail and other wildlife.

Disking. Quail must have walking access to all of their food, water, and cover needs. Disking breaks up areas too dense for quail to walk through while promoting establishment of annual food plants and improving quail brood habitat. Disk strips 3-4" deep and about 10-20' wide. Disk strips alternately on a 4- to 5-year rotation from January to March (i.e., disking each strip and waiting 4 or 5 years to disk again).

Burning. Prescribed burning of native warm season grasses removes excess litter (which limits quail movements), stimulates new and vigorous growth, and prevents excessive woody invasion. Divide your planting into small units (<5 acres) with fire breaks. Fire breaks, typically bare ground, cool-season grass/legume mix, small grains, or existing roads, should be at least 20 feet in width. Burn the units on a 3-year rotation, burning 1/3 of the total area each year.

Mowing. Mowing generally is not a substitute for disking or burning because it does not remove old growth and litter like burning or disking. Repeated mowing will create a grass-dominated system that lacks woody shrubs, vines, and bare ground. Research has demonstrated that the majority of quail nests are built at the base of brambles, sumac, sassafras, and other woody plants on sites that contain about 30% bare ground.

Mowing can substitute for disking on highly erodible slopes or burning on areas near buildings, or to control tree invasion on a spot-basis. Mow only these areas on a 4- to 5-year rotation in August, mowing 1/5 of the units each year. This will maintain an area in a mix of grasses, forbs, and shrubs, but prevent tree invasion.

Food Plots. Plantings of corn, sorghum, milo, sunflowers, cowpeas, and other crops are good high-energy foods that can help sustain quail and other wildlife through the winter. Food plot selection will depend upon local site conditions and your management goals. Seed bed preparation and fertilization is essential for the successful establishment of any food

plot. Food plots should be small (less than 1 acre) and planted adjacent to good cover. Rotate food plots in a 4- or 5-year rotation, leaving each food plot undisturbed for approximately 4 years until it is replanted.

What About Pen-Raised Quail?

The releasing of pen-raised quail is generally not a recommended practice to establish populations of bobwhite quail. Research has shown that a very small percentage of these birds will survive long enough to reproduce. If you establish and maintain quality habitat on your property, quail and other wildlife species will find it.

Additional Information

For additional information on assistance with conservation planning, cost-share opportunities, and wildlife incentive programs, contact your county Extension Office, the IDNR, Division of Fish & Wildlife (317) 232-4080, U.S. Fish & Wildlife Service (812) 334-4261, local USDA Service Center, or visit www.agriculture.purdue.edu/fnr/ and click on "extension".



Table 1. Summary of programs that provide assistance for establishing habitat for northern bobwhite quail, ring-necked pheasant, and other wildlife species (adapted from NRCS-Wildlife Habitat Management Institute Leaflet, No. 9, *Northern Bobwhite*).

| Program | Land Eligibility | Available Assistance | Contact |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Wildlife Habitat Incentives Program (WHIP) | Potential fish & wildlife habitats; no cropping history required. | Up to 75% cost-share for establishing conservation practices under 5- to 10-year contracts | NRCS local office or IDNR District Wildlife Biologist |
| Conservation Reserve Program (CRP) | Highly erodible lands, wetlands, and certain other lands with cropping history. Streamside areas in pasture lands. | 50% cost-share for establishing permanent cover and conservation practices, and annual rental payments for land enrolled in 10- to 15-year contracts. Additional financial incentives are available for some practices (i.e., Continuous CRP). | NRCS or FSA local office |
| Environmental Quality Incentives Program (EQIP) | Cropland, grazing land, and other agricultural land in need of treatment. | Up to 75% cost-share for conservation practices in accordance with 5- to 10-year contracts. Incentive payments for certain management practices. | NRCS local office |
| Wetlands Reserve Program (WRP) | Previously degraded wetland and adjacent upland buffer, with limited amount of natural wetland and existing or restorable riparian areas. | 75% cost-share for wetland restoration under 10-year contracts and 30-year easements. 100% cost-share for restoration under permanent easements. Payments up to \$1,000/acre for purchase of 30-year or permanent conservation easements. | NRCS local office |
| Wildlife Habitat Cost Share Program | Minimum of 10 ac. of land not part of a shooting preserve. | Up to 90% cost-share for establishing conservation practices. | IDNR District Wildlife Biologist |
| Game Bird Habitat Stamp Program | Minimum of 10 ac. of land not part of a shooting preserve. | Up to \$100/ac for establishing conservation practices for a minimum of 3 years on 5- to 40-ac parcels. | IDNR District Wildlife Biologist |
| Partners for Fish & Wildlife Program (PFW) | Most degraded fish and/or wildlife habitat, especially wetlands and native prairies. | Up to 100% financial and technical assistance to restore wildlife habitat under minimum 10-year cooperative agreements. | USFWS, Bloomington Field Office |

Related Publications and Technical References

Vist www.agriculture.purdue.edu/fnr/ and click on "extension" to view the Purdue Cooperative Extension Service publications found below and more, or call 1-888-EXT-INFO (398-4636) for ordering information.

FNR 87, Forestry and Wildlife Management Assistance Available to Indiana Landowners. Purdue Cooperative Extension Service, 2001.

FNR 175W, Assessing Your Land's Potential for Wildlife. Purdue Cooperative Extension Service, 2000.

FNR 188W, Warm Season Grasses, What's All the Fuss? Purdue Cooperative Extension Service, 2001.

Langell G., Montgomery B., and Stonebraker R. 1998. *Establishing Warm-Season Grasses in Indiana*, IDNR, Division of Fish & Wildlife.

USDA-NRCS. 1999. *Northern Bobwhite (Colinus virginianus)*. NRCS-Wildlife Habitat Management Institute Leaflet, No. 9. (www.ms.nrcs.usda.gov/whmi/technotes.htm).

USDA-NRCS. 2000. *Indiana NRCS Technical Guide - Early Successional Habitat/Development (645)*. (www.in.nrcs.usda.gov/planningandtechnology/FOTG/section4/section4.htm)

"Hoosier Farmland Wildlife Notes" is a joint effort of USDA Farm Service Agency, IDNR Div. of Fish and Wildlife, USDA Natural Resources Conservation Service, Purdue University Dept. of Forestry & Natural Resources, and U.S. Fish and Wildlife Service. Steering Committee: Ron Birt, Jeff Kiefer, Gary Langell, Brian MacGowan, Brian Miller, Bob Montgomery, and Dave Stratman.



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