

Gaining Ground for Bobwhites

Georgia Bobwhite Quail Initiative

2024-2033

BOBWHITE QUAIL INITIATIVE



Executive Summary

The northern bobwhite (hereafter bobwhite) occupies a prominent place in Georgia's wildlife heritage. In 1970 the Georgia General Assembly formally designated the bobwhite as the State Gamebird. During the 1800s through the mid-1900s from Georgia's mountain valleys to the coast, quality early successional habitat (ESH; native grasses, forbs, legumes, and shrubs) occurred as a by-product of the extensive, low-intensity agricultural and forestry practices. This resulted in widespread bobwhite abundance and earned Georgia the reputation as the quail capital of the world. However, since that time bobwhite populations across their range have experienced severe long-term declines, some more than 90% since 1966.

This decline is the result of widespread changes in land use, which have greatly reduced the abundance and distribution of native ESH. Collectively, these landscape changes have fragmented what was once a sea of habitat into habitat islands that are becoming increasingly smaller in size and farther apart. The overall result of this habitat loss and fragmentation is severely reduced bobwhite survival and productivity.

Bobwhites are not the only species suffering from this landscape-scale habitat change. Georgia's State Wildlife Action Plan (SWAP) identifies around 45 animal and 132 plant species that, like bobwhites, are associated with ESH ranging from croplands to woodlands and savannas and are of priority conservation concern. Forest degradation is a key driver of the decline of bird biodiversity across the US with a loss of eastern forest birds of over 17% (Rosenberg et al., 2019). The bobwhite serves as an indicator for an entire association of species at risk due to widespread habitat degradation. Additionally, quality ESH benefits many other wildlife species that are more abundant and adaptable than bobwhites (e.g., Eastern wild turkey, white-tailed deer, and cottontail rabbit) and are important to Georgia's hunters and other citizens.

The bobwhite decline is an indicator of a dramatic ecological change with widespread economic and recreational impacts. Since 1964, Georgia's bobwhite hunter numbers have declined by over 75% with a similar decline in hunter harvest. Across much of Georgia, bobwhite densities have fallen below the levels needed to attract and sustain hunter interest, and in some landscapes, viable bobwhite populations are no longer apparent.

Due to the severity of the bobwhite decline, in 1998, a grassroots effort through the Georgia General Assembly and Georgia Department of Natural Resources (DNR) Board led to the development of the Wildlife Resources Division Game Management Section (WRD) Bobwhite Quail Initiative (BQI). BQI is a proactive effort to restore and maintain bobwhite habitat on private and public lands, focused across Georgia's Upper Coastal Plain.

Since its inception, BQI has advanced bobwhite restoration in Georgia and across the Southeast and revealed: 1) within appropriate landscapes, bobwhite numbers can be increased through judicious habitat restoration across working farms and forestlands; 2) landowner demand for bobwhites is high but adequate levels of financial incentives and qualified technical staff are

essential for success; and 3) habitat restoration must be focused into spatially explicit landscapes to produce and sustain landscape scale bobwhite population responses. Based on these lessons, the 2013-2023 BQI plan was established. This plan broadened the scope of BQI while providing a targeted approach in designated priority areas. These priority areas were developed as part of a 25-state bobwhite habitat and population recovery plan through the National Bobwhite Conservation Initiative (NBCI), Tall Timbers Research Station and with input from biologists and managers from WRD and other conservation organizations in Georgia.

The main goal of that plan and the new BQI plan is to restore and maintain quality ESH and woodland and savanna habitats in as many Focal Landscapes as feasible, to increase and maintain viable and huntable populations of wild bobwhites; while providing habitat for other grassland obligate wildlife species of priority conservation concern. This plan necessitates collaborative work on both private and public lands. Since 93% of Georgia is under private ownership, private land implementation remains the key to achieving success.

The original plan addressed the following strategies for WRD's future bobwhite restoration:

- Working at national, state, and local levels to influence agriculture and forest policies that will increase opportunities for bobwhite habitat restoration and management.
- Linking BQI with the: Georgia WRD SWAP, Georgia Forestry Commission State Forest Assessment and Strategies, Georgia Natural Resources Conservation Service State Resources Assessment, U.S. Fish and Wildlife Service Partners For Fish and Wildlife Plan, America's Longleaf Initiative and similar plans of national or regional importance to leverage additional manpower and funding inputs and optimize bobwhite and other natural resource outputs.
- Providing training and outreach to landowners and managers of private and public lands for the restoration and maintenance of native woodlands, savannas, and ESH.
- Promoting and delivering state, federal and NGO private lands program practices, funding, and technical assistance into BQI Focal Landscapes to establish and sustain viable and huntable bobwhite populations.
- Tracking bobwhite habitat restoration and monitoring population response at the Focal Area scale across a sample of Focal Landscapes.
- Refining BQI efforts based on monitoring feedback from habitat implementation, bobwhite population response, and measures of hunter and/or landowner satisfaction. We recommend the BQI plan be revised every 5 years guided by this adaptive feedback process.

BQI staff did a good job addressing each of these strategies but did not have a good system in place for quantifying all the results. Additionally, we were unable to meet the 5-year revision goal. While working to promote and deliver federal programs, mainly EQIP, the focus on priority areas became slightly shifted based on contracts with NRCS and their targets for providing cost

share on the landscape. Under the 2024-2034 plan, the goal is to return to a more targeted approach while continuing to utilize federal, state, NGO and grant funding as available to target bobwhite restoration into Focal Landscapes as determined by staff availability, habitat conditions and landowner participation to maximize restoration success.

Working with the University of Georgia and other conservation partners around the state, five fundamental objectives were established with performance measures and action for each objective. The new BQI plan includes a comprehensive strategy that addresses bobwhite conservation at three spatial scales: state-wide, physiographic, and focal geographic (private and public) scales, and a strategy for private and public lands at focal geographic scales that increases bobwhite populations to a level that reflects stakeholder values. This strategy considers the constraints that exist for BQI and GA DNR including staff and funding and tries to reflect the best available science.

The 2024-2034 BQI plan continues to be about far more than bobwhites as it addresses the restoration and sustainability of healthy native ecosystems. Specifically, it is a plan for working farms and forests to provide native ESH, woodlands, and savannas for the full complement of wildlife and plants while yielding an array of ecosystem goods and services to present and future generations of Georgians.

The BQI Implementation Plan and additional information on bobwhite quail management is available on the GA DNR Bobwhite Quail webpage. Georgiawildlife.com/bobwhite-quail

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AUTHORS

Dallas Ingram, Georgia DNR, Wildlife Resources Division, Bobwhite Quail Initiative

James A. Martin, PhD, Professor, University of Georgia, Warnell School of Forestry and
Natural Resources

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Introduction

The northern bobwhite (*Colinus virginianus*, hereafter bobwhite) occupies a prominent place in Georgia's wildlife heritage. In fact, in 1970 the Georgia General Assembly formally designated bobwhites as the State Gamebird and Georgia was once considered as a premier destination for wild bobwhite hunting.

Bobwhites are grassland/shrub birds, meaning they require and depend on a habitat type commonly referred to as early successional (ESH). Quality ESH is comprised of annual and perennial forbs (e.g., native weeds such as ragweed), legumes (e.g., beggarweed, native lespedezas, and partridge pea), native warm season grasses (e.g., bluestems) and clumps of brambles (e.g., blackberry), vines (e.g., trumpet creeper), and shrub thickets (e.g., plum and wax myrtle). Native grasses provide nesting cover, forbs and legumes provide brood range with bare ground and food, and briar and shrub thickets provide escape cover and loafing areas. A good rule of thumb is to manage landscapes for a mosaic of about 1/3 each of nesting cover, brood range and escape/loafing cover. Bobwhite population densities are highest and respond best to management across sites (>1,500 acres) where a contiguous distribution of suitable habitat is maintained with periodic disturbance (e.g., frequent fire, rotational winter disking or herbicides).

During the 1800s up through the mid-1900s from Georgia's mountain valleys to the coast, quality ESH occurred as a by-product of the extensive, low-intensity agriculture and forestry practices of the day. This resulted in an abundance of bobwhites and earned Georgia the reputation as the quail capital of the world. However, since that time bobwhite populations have experienced severe long-term declines. Breeding Bird Survey data showed Georgia's bobwhite population declining by 5.76% per year from 1966 through 2007 (Sauer et al. 2022), equating to a population reduction of over 85% (Figure 1). Since 2007 we have seen a 78% increase in Georgia's population, but the population is still down by 75%.

As bobwhite populations continue to decline in the mountain and piedmont regions of Georgia, populations in the coastal plain have been stationary or increasing since about 2007. It is uncertain what specific actions led to the reversal in the decline for the coastal plain, but it is possible that increased application of prescribed fire, forest stand improvement, and fallowing of marginal cropland were factors.

Ultimately, this decline is the result of widespread changes in land use, which have greatly reduced the abundance and distribution of ESH (Klimstra 1982, Brennan 1991, Burger 2002). Factors that have contributed to bobwhite habitat loss include 1) increased urban and suburban sprawl; 2) lack of frequent fire needed to maintain woodlands and savannas; 3) increased abundance and distribution of closed canopy woodlands/pine plantations as well as natural pine and hardwood forests; 4) increased conversion of fields to introduced, invasive grasses (e.g., bermudagrass, fescue and bahiagrass); and 5) clean farming (i.e., large fields that are often

multi-cropped, treated with pesticides to control weeds and insects, and void of native field borders and/or hedgerows). Additionally, these changes have resulted in increased habitat availability and populations of a variety of predators that prey on bobwhites and/or their eggs (Peoples et al. 1995, Rollins and Carroll 2001, Carroll et al. 2007).

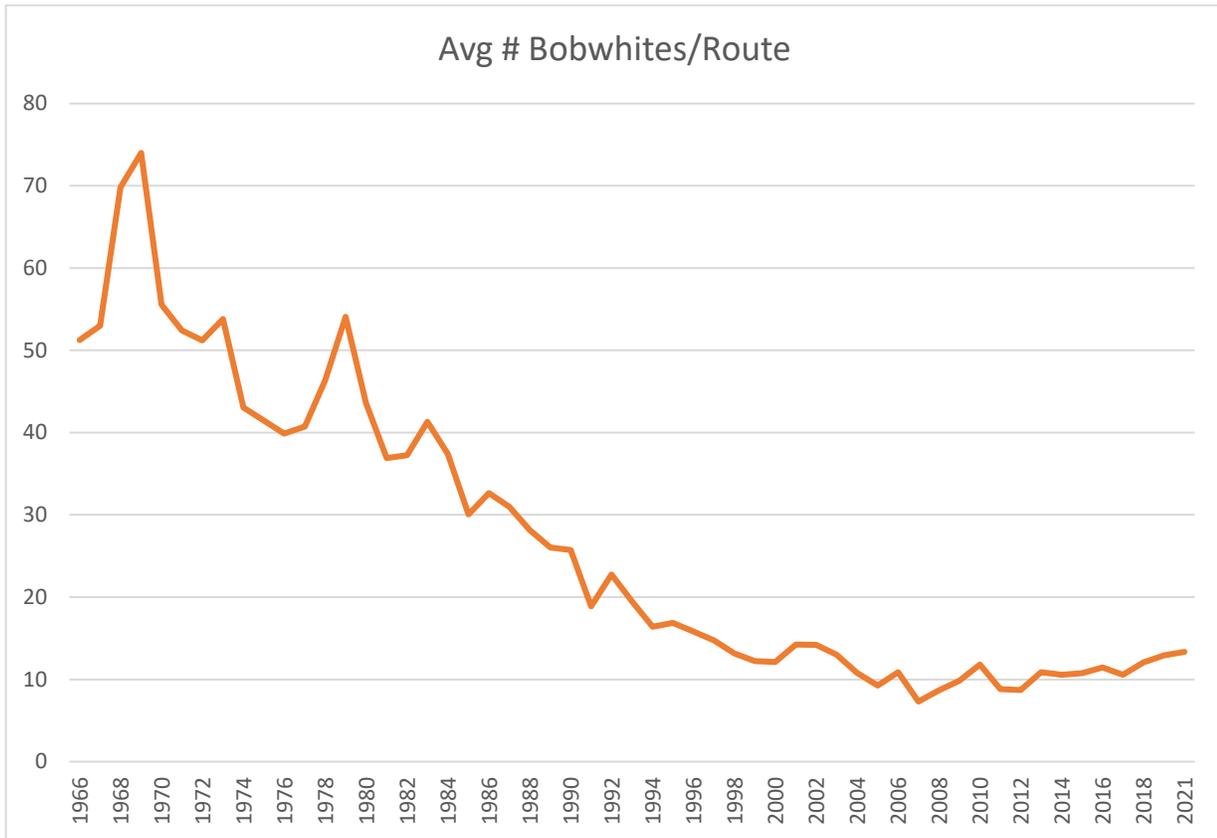


Figure 1. Analysis of Breeding Bird Survey data estimates that Georgia's bobwhite quail have declined by more than 75% since the survey began in 1966.

Collectively, these landscape changes have fragmented what was once a “sea” of ESH, woodland, and savanna into “islands” of suitable habitat that are becoming increasingly smaller in size and farther apart (Figure 2). The overall result of this habitat loss and fragmentation is greatly reduced bobwhite survival and productivity. These landscape-scale habitat changes have affected more than just bobwhites. Georgia’s State Wildlife Action Plan (SWAP) identifies 45 animal and 132 plant species that, like bobwhites, utilize habitats ranging from croplands to woodlands, and savannas and are of priority conservation concern (Georgia Department of Natural Resources 2015). Essentially, the bobwhite serves as an indicator or “canary in the mine” for an entire guild of species at risk due to widespread habitat degradation.

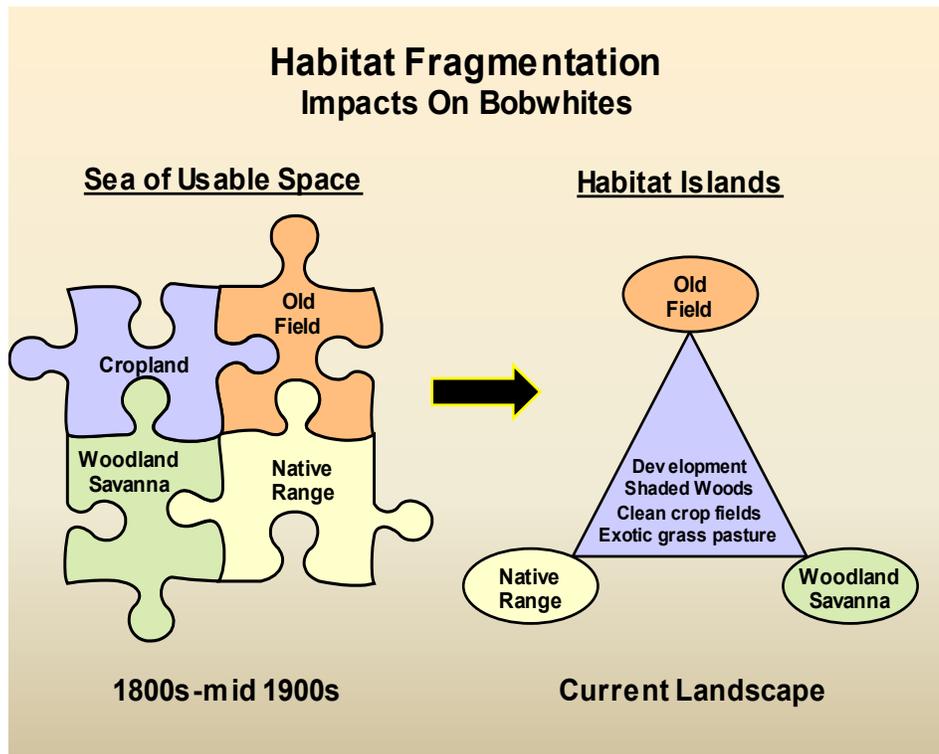


Figure 2. Illustration of the changes in Georgia’s land cover/land use over the past 100 years that have led to increased habitat fragmentation and a severe decline of northern bobwhite and other wildlife species.

The bobwhite decline is an indicator of a dramatic ecological change with widespread economic and recreational impacts. (Burger et al. 1999, Thackston and Whitney 2001). In 1964, 127,000 bobwhite hunters comprised 47% of the state’s licensed resident hunters and harvested an estimated 3,365,000 bobwhites (Georgia Game and Fish Commission 1965). By the 2021-2022 hunting season, the number of bobwhite hunters dropped to 12203 and comprised only 2% of licensed resident hunters. Notably, these hunters harvested an estimated 373,193 bobwhites, of which, approximately 80% were reported as pen-reared. The percentage of pen-reared birds harvested has declined since 2009 but the total number of birds harvested has also decreased by 54% (Duda et al. 2022). Across much of Georgia, bobwhite densities have fallen below levels needed to attract and sustain hunter interest, and in some landscapes, particularly in the northern half of the state, viable bobwhite populations are no longer apparent. This decline in bobwhite hunting opportunities and interest has been estimated to result in a loss of over \$40 million annually from Georgia’s economy, particularly in rural areas.

Georgia's Bobwhite Quail Initiative

In 1998, a grassroots effort through the Georgia General Assembly and Georgia Department of Natural Resources (DNR) Board led to the development of the Wildlife Resources Division Game Management Section (WRD) Bobwhite Quail Initiative (BQI). BQI is a proactive effort to restore, improve and maintain bobwhite habitat on private lands. Secondary objectives include increasing and improving habitat for other ESH-dependent wildlife and increasing and improving bobwhite hunting and wildlife viewing. This work is done by working with conservation partners to identify and prioritize spatially explicit landscapes over which to set quantitative bobwhite habitat and population objectives, focus management programs, funding, manpower and monitoring efforts. Funding is provided through the sale of BQI vehicle license plates (Figure 3) and matching grants.



Figure 3. A portion of the proceeds from the sale of "Support Wildlife" license tags fund the Bobwhite Quail Initiative.

During the initial phase, BQI provided landowners with technical assistance (TA) and, within specific guidelines, financial incentives, or assistance (FA) to establish and maintain bobwhite habitat on working farms and forestlands across 15 counties of Georgia's Upper Coastal Plain. Habitat practices included field borders, hedgerows, filter strips, fallow patches, conservation tillage, and thinning and prescribed burning of associated pine stands. Research and monitoring showed a positive response of bobwhites and songbirds to BQI practices at the farm scale. A 2004 BQI cooperator survey indicated high customer satisfaction and a strong perception that BQI practices improved bobwhite and songbird populations, as well as the environmental condition of cooperator farms. Overall, BQI showed that: 1) bobwhite numbers can be increased on working farms and forestlands through judicious application of habitat practices across suitable landscapes and at the appropriate scale; 2) landowner demand for

bobwhites is high, but adequate levels of FA and qualified technical staff are essential for habitat implementation success; and 3) habitat restoration must be focused into spatially explicit landscapes ($\geq 1,500$ acres) to produce and sustain a bobwhite population response (Thackston and Tomberlin 2010).

Due to changes in the tag funding structure, the last BQI contract under the original plan was signed in 2010 and the last payment was made in 2012. From 2000-2012, BQI cooperators received over \$2.1 million in FA to implement habitat practices and BQI biologists provided TA to over 200 landowners that managed over 800,000 acres.

From 2010-2016, BQI focused on providing education and outreach on bobwhite quail habitat and technical assistance to private landowners. In 2016, through an agreement with NRCS, BQI began offering additional FA to selected landowners enrolled in the EQIP Bobwhite/Pine Savanna funding pool. A ranking system was developed based on land use, practices being implemented and wildlife priorities. This agreement also placed biologists in NRCS offices to assist with TA and conservation planning. Efforts were initially focused on priority bobwhite and gopher tortoise areas in the state, but as GA NRCS funding shifted, BQI FA efforts were also forced to shift to a broader area. This shift also resulted in a higher workload for biologists as the demand for program assistance increased. From 2016-2019, BQI contracted over \$224,000 to 69 cooperators for over 11,000 acres of habitat work.

In 2020, GA NRCS consolidated state EQIP funding pools resulting in one general wildlife funding pool. BQI continued to provide conservation planning under this funding pool and the nationally funded WLFW gopher tortoise program. Contracts funded through these pools continued to be ranked by BQI for additional funding. In 2020 and 2021, BQI contracted just over \$113,000 for 8034 acres of habitat work.

In 2022, BQI began to shift FA away from EQIP and instead of providing supplemental funding to those with EQIP contracts, provided funding to landowners that had wildlife-focused conservation plans but did not receive NRCS funds that year.

The initial phases of BQI laid a solid foundation for bobwhite restoration in Georgia and provided valuable information in refining restoration goals and objectives and guiding future restoration strategies. During these years, BQI continued to see positive increases in quality habitat but, the reduced focus on resource allocation and increased demand for TA with limited staff did not result in the amount of landscape-level responses that are needed for long-term restoration.

BQI generates many additional benefits such as leveraging grant funding for management and research, increasing quail hunting opportunities, and educational outreach regarding the bobwhite decline and effective restoration techniques.

Farm Bill conservation programs and practices that can be used to benefit bobwhites and other grassland species are vital to achieving BQI goals and objectives. For example, as of August

2023, the Conservation Reserve Program has 91,839 acres enrolled in Longleaf Pine (CP36) and 19,257 acres enrolled in State Acres for Wildlife Enhancement (SAFE – CP38C) to restore pine savanna habitat. The Environmental Quality Incentive Program and Conservation Stewardship programs have also helped improve hundreds of thousands of acres for wildlife and forest health from 2013-2023. For example, over 660,000 acres of prescribed fire, 71,800 acres of timber stand improvement, 115,000 acres of brush management, and 46,000 of early successional habitat management have been contracted from 2013-2022. Specifically, the Working Lands for Wildlife (WLFW) initiative of EQIP has impacted thousands of acres to improve habitat for Gopher Tortoise, quail, and other pine savanna species (Table 1).

Table 1. Practices and contracted acres through the Working Lands for Wildlife (WLFW) program from 2013-2022 in Georgia.

Practice	Acres
Brush Management	19,824
Conservation Cover	1,890
Early Successional Habitat Development/Management	7,526
Forest Stand Improvement	16,427
Herbaceous Weed Control	5,134
Prescribed Burning	83,131
Tree/Shrub Establishment	17,109

In addition to Farm Bill, other programs like Quail Forever’s technical assistance program, and the US Fish and Wildlife Service (USFWS) Partners for Fish and Wildlife (PFW) have made and continue to make strong contributions to bobwhite restoration and management.

BQI did see added support from various partners and through a partnership with Quail Forever, an increase in staffing to reduce biologist workloads and provide increased service to customers. This partnership also resulted in the formation of a QF habitat crew to provide on-the-ground management assistance such as prescribed burning and brush management to landowners who have worked with a biologist. There was also additional effort from multiple organizations and agencies to increase prescribed fire application on private lands. These efforts have resulted in improved habitat and opportunities to work with landowners to provide management recommendations. All these efforts, while positive, have highlighted the need for a return to a more focused approach to quail habitat restoration.

In addition to private lands, the Georgia Department of Natural Resources, Wildlife Resources Division (GA DNR WRD) is entrusted to manage northern bobwhites (*Colinus virginianus*) on behalf of the Georgia public. Several WRD Wildlife Management Areas (WMA) have increased efforts at bobwhite habitat management. Di-Lane WMA (Burke County) and Silver Lake WMA (Decatur County) were the first designated quail focal areas. River Creek WMA (Grady County), Chickasawhatchee WMA (Dougherty, Calhoun, and Baker Counties) and Elmodel WMA (Calhoun County) were all added shortly after. Each area had timber harvest

plans established to lower the basal areas to an average of 50 square feet/acre over a 3-5-year period. About 2 years into this effort, Hurricane Michael accelerated the process on both Silver Lake and Chickasawhatchee WMAs. Hunting opportunities have increased on most areas with a combination of quota and open days. Overall, bobwhite populations on Wildlife Management Areas (WMA) that are managed specifically for bobwhites have been stable or increasing in the past decade or so, however, populations can fluctuate dramatically and some remain below target densities suggesting additional actions are needed on WMAs.

Progress continues to be made and opportunities still exist to “gain more ground”, but we are still far short of the mark. Additional financial and technical resources for bobwhite-friendly programs, practices and outreach targeted into priority areas will be necessary to achieve BQI goals. This plan outlines the recommended strategies for WRD’s future bobwhite restoration through BQI.

Georgia Bobwhite Technical Team

Ultimately, successful bobwhite restoration will be achieved only through a committed conservation partnership and landowner participation. In 2022, BQI re-established the Georgia Bobwhite Technical Team (GBTT) to allow input from partners on the revision of the BQI plan.

In 2023, Georgia WRD signed a new NBCI Memorandum of Agreement (MOA) with 11 other state, federal and non-governmental organizations (NGOs). Through this MOA, GBTT partners pledged to assist as feasible with bobwhite promotion, delivery and monitoring to continue to provide momentum for bobwhite restoration. These partners include:

- Natural Resources Conservation Service
- Georgia Soil and Water Conservation Commission
- Tall Timbers Research Station and Land Conservancy - Albany Quail Project
- Georgia Association of Conservation District Supervisors
- Georgia Forestry Commission
- University of Georgia Warnell School of Forestry and Natural Resources (UGA)
- Quail Forever
- Longleaf Alliance
- The Nature Conservancy
- Georgia Wildlife Federation
- GA DNR Wildlife Conservation Section

Plan Development

Biologist Ranking Information

In September of 2008, the GBTT met to conduct a multi-organizational landscape analysis facilitated through a Biologist Ranking Information (BRI) process designed by TTRS to identify and prioritize (i.e., high, medium, low) spatially explicit landscapes relative to their potential for bobwhite restoration (Terhune and Palmer 2011). These landscape rankings were based on current habitat conditions as derived from various land cover/land use databases and inventory information; and refined with input from wildlife biologists, land managers and foresters with empirical knowledge of Georgia's current and long-term land use trends. Once habitat rankings were assigned, participants identified major land use opportunities and barriers for bobwhite habitat restoration and management within the county(s) ranked as high or medium and assigned corresponding confidence levels (Figure 4). The primary barriers to bobwhite restoration and management were identified as economics (18%), low bobwhite populations (18%), intensive farming (16%), introduced, invasive grasses (12%), and difficulty of using prescribed fire (8%).

Following the meeting, WRD staff further refined areas ranked as medium and high priority for bobwhite habitat restoration. Further details on the ranking can be found in the 2013-2023 BQI plan.

Population Density Estimation

Once the BRI ranking was completed, the second component entailed estimating current bobwhite densities by cover type (e.g., cropland, pine forest, mixed forest, pasture) in each county containing high or medium priority ranking. To calculate density estimates, WRD biologists relied on the best available monitoring data, harvest records, and empirical evidence from public and private lands across Georgia. Subsequently, biologists estimated the managed bobwhite density (MD) by cover type if habitat restoration objectives were realized in those counties to provide a good starting point for developing and evaluating density-based hypotheses (Terhune and Palmer 2011), which is essential in adaptive resource management. This density estimation tool estimated an addition of roughly 171,000 coveys (assuming 12 birds/covey) if habitat restoration objectives were fully achieved on all medium and high-priority acres across Georgia (Terhune and Palmer 2011). Achieving habitat restoration objectives on all medium and high-priority cropland and pine acres within the 22 Focal Landscapes would result in the addition of approximately 24,000 coveys. Based on the NBCI Focus Area monitoring program protocol, the 2013-2023 goal for BQI Focal Areas was to increase bobwhite populations by 50% of the MD target in 5 years and 100% of the MD within 10 years.

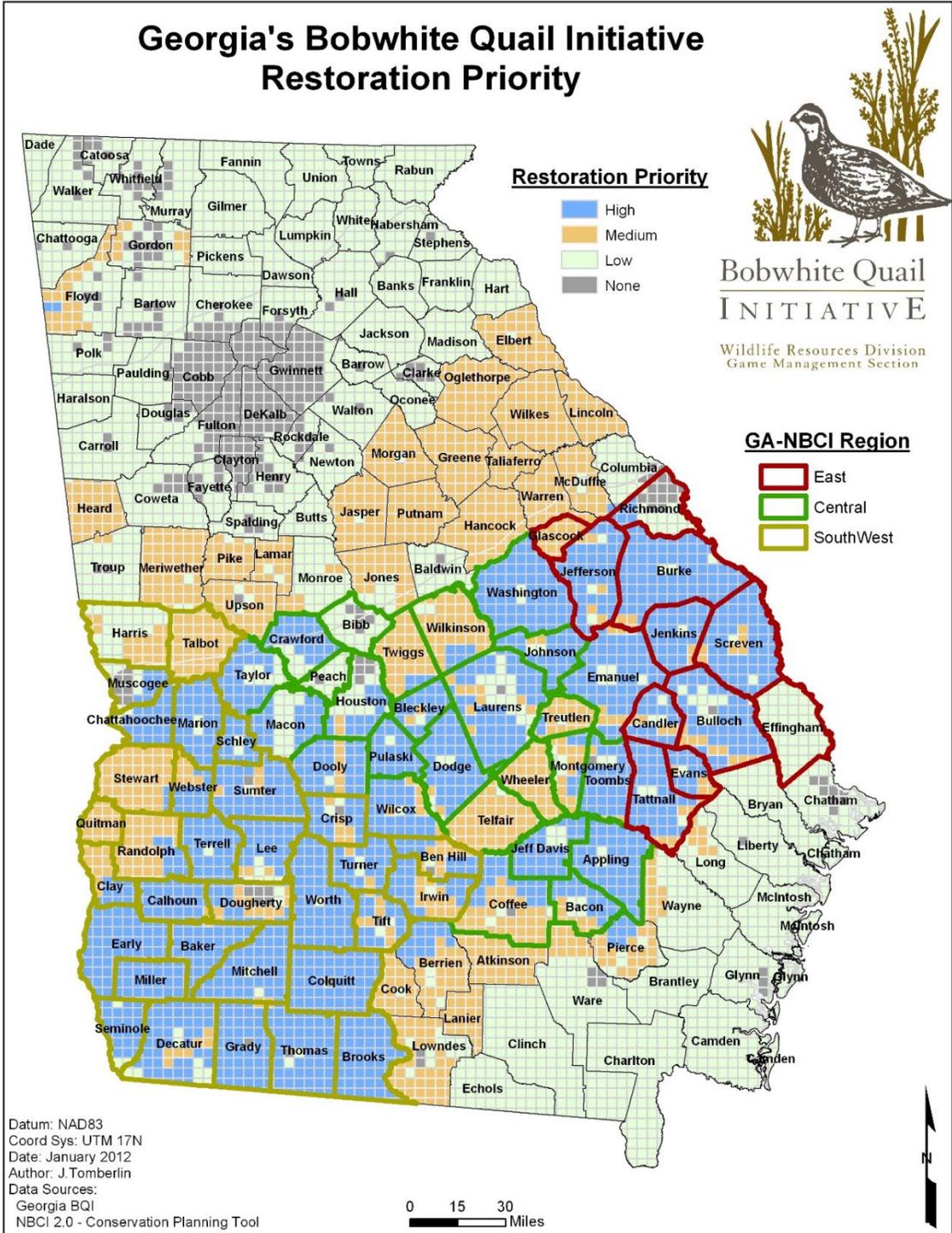


Figure 4. Bobwhite quail priority restoration delineated by BQI biologists and Georgia's Bobwhite Technical Team (GBTT) as part of the National Bobwhite Conservation Initiative (NBCI) biologist ranking information workshop (2008).

Focal Structure

The first BQI plan noted that factors attributed to the decline of bobwhites must be addressed from a landscape perspective to achieve bobwhite restoration goals (Fies et al. 2002). An important aspect of the BRI process was the identification of landscapes where restoration potential was low to avoid the expenditure of finite resources on sites with a low return on investment (Williams et al. 2004, Twedt et al. 2007). Over 18 million acres (roughly 50% of Georgia's landscape) were ranked as either medium or high priority through the BRI process. Therefore, a tiered structure was developed to provide a focused framework for plan implementation that best coincided with available state, federal and NGO personnel, and funding mechanisms (e.g., Farm Bill, BQI and PFW):

- BQI Focal Region: Two or more SWCDs comprised of predominantly high and medium-priority counties.
- BQI Focal Landscape: Sub-county landscapes ($\geq 6,400$ acres) primarily designated as high priority through the BRI process and delineated by BQI biologists.
- BQI Focal Area: Property(s) that meet strict criteria (e.g., $>1,500$ acres in size, landscape context, land cover, management intensity, habitat restored or potential, and NBCI Focal Area monitoring program protocols) and approved by BQI biologists.

Georgia SWCDs were chosen as the foundation for Focal Regions because they link into the primary infrastructure through which USDA delivers Farm Bill conservation programs to private landowners. Within each region, BQI biologists further refined and identified sub-county Focal Landscapes that held the greatest potential for restoration success (Figure 5). These areas were identified based on the presence of private and/or public conservation lands and bobwhite core areas (e.g., Albany/Red Hills quail plantations, Di-Lane WMA, etc.), landscape context and potential for habitat restoration. These core areas are critical to restoration success because they support source populations from which bobwhites can quickly pioneer into restored, adjacent habitats. Administrative boundaries (i.e., county boundaries, roadways, and watersheds) were used to delineate Focal Landscapes because they are recognizable and straightforward, which would assist with plan promotion and implementation.

Landowner participation ultimately determines the level of success with this Focal Landscape approach. Consequently, Focal Landscapes will be subject to change where new opportunities materialize or lack of participation and unsuccessful restoration efforts warrant modification. A goal of the new BQI plan is to re-examine the BRI and focal landscapes. Land use has changed drastically in some areas since the BRI was developed in 2011 and with over 20 years of habitat improvement efforts, priority areas have likely shifted.

Expectations were that enough farms would be enrolled to positively impact habitat conditions at the landscape scale and form habitat units of sufficient size. These habitat units

would support bobwhite metapopulations that would then be enlarged through increasing landowner participation. This appears to have occurred in some areas where multiple crop fields and/or forestlands enrolled in BQI or EQIP were in proximity (i.e., < 1 mile). However, numerous sites were isolated in landscapes of poor habitat quality where little or no bobwhite population response occurred. Hamrick (2002) and Cook (2004) speculated the magnitude of the bobwhite population response to BQI treatments was influenced largely by adjacent habitats. The goals of 2013-2023 BQI were to prioritize and target available FA and TA within these identified priority areas and landscapes. When funding and resources were able to be focused on targeted areas, habitat responses were positive. When funding shifted back to a state-wide focus, responses on a site level were mostly positive but not significant at a landscape level. This reinforced the idea that most resources need to be targeted in Focal Landscapes.

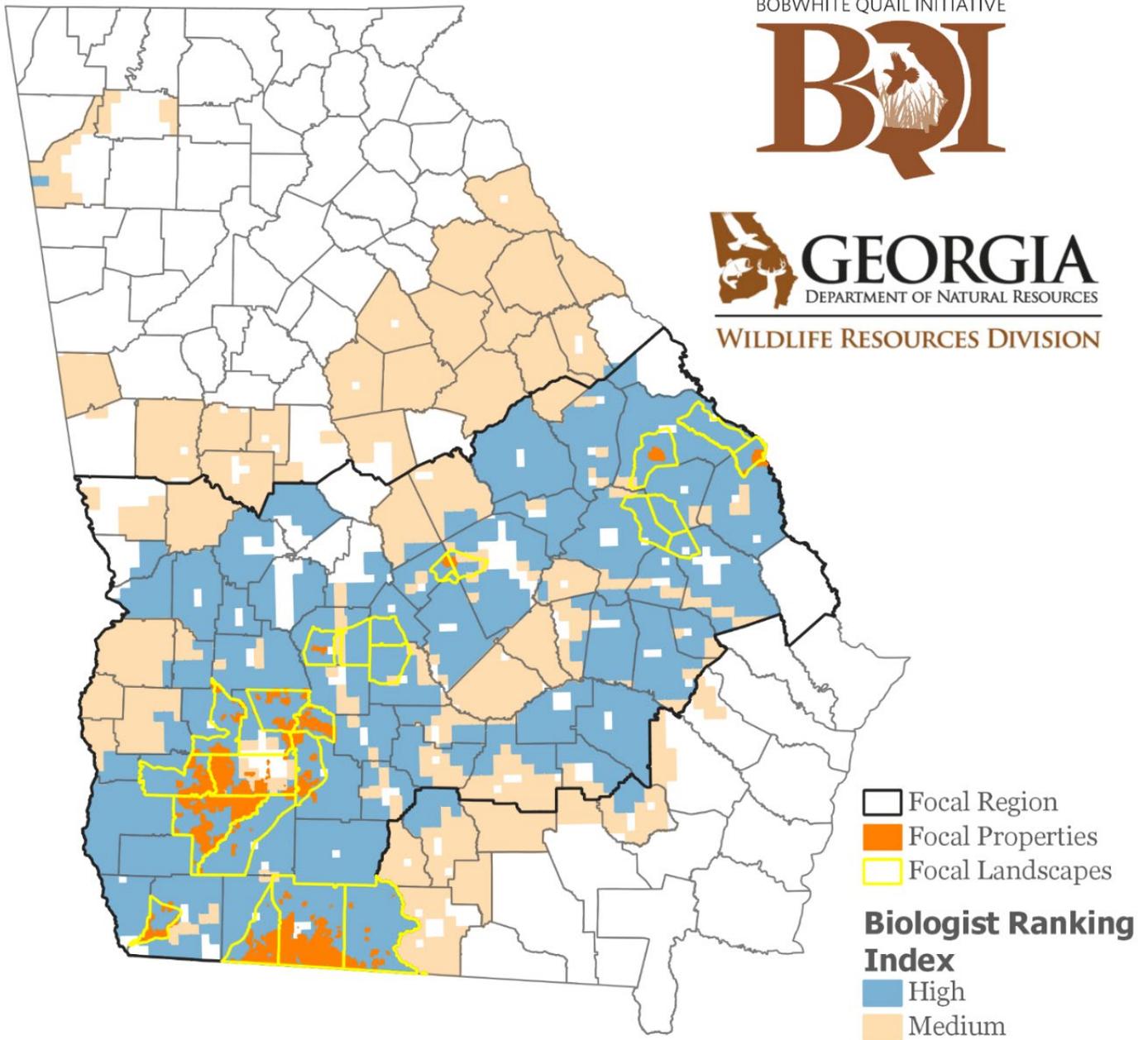


Figure 5. Georgia’s Bobwhite Quail Initiative's current focal structure as defined through a landscape analysis that identified areas with the highest potential and fewest barriers for bobwhite restoration and management (2012).

Fundamental Goals

After reviewing the 2013-2023 plan it was decided that the next BQI plan needed to include a comprehensive strategy that addresses bobwhite conservation at three spatial scales: state-wide, physiographic, and focal geographic (private and public). A state-wide scale strategy likely includes actions that maximize the efficacy of the Farm Bill, state-level initiatives for prescribed fire and forest stand improvement, and any other state-wide programs that increase bobwhite habitat. Certain physiographic regions are less feasible for bobwhite management; thus, region-specific actions and goals are appropriate. For example, bobwhites at the scale of the coastal plain need to persist in perpetuity and be connected such that when bobwhite habitat is created it is colonized. The long-term persistence at smaller scales is affected by populations at this scale.

The plan should also outline a strategy for private lands at focal geographic scales that increases bobwhite populations to a level that reflects stakeholder values. These potential actions include but are not limited to, providing BQI funds for bobwhite conservation in specific areas, working with federal agencies to increase funding in specific areas, demonstrating the ecosystem services and production benefits of bobwhite management, and facilitating bobwhite translocation for properties meeting rigorous criteria.

Lastly, the plan should include an adaptive strategy to increase the consistency of bobwhite-appropriate habitat management to meet the values and demands of bobwhite hunters on Wildlife Management Areas. Currently, 6 WMAs are managed with bobwhites as their top resource concern. These areas offer 63 total days of bobwhite hunting opportunities (28 of those are quota only and some overlap). Current users are generally satisfied with their hunting experiences, but the availability of hunting is limited, and more wild quail hunters are using public lands each year. The specific goals for quail-focused WMAs are determined as part of the individual WMA management plans which outline the desired quail population densities, maximizing hunting opportunities and increasing quality within the constraints of other management priorities.

The five fundamental goals established, and their performance measures are:

Fundamental Goal 1. Stabilize the bobwhite populations in the Piedmont and mountain regions and increase populations in the coastal plain.

Performance measures: northern bobwhite occupancy and relative abundance using USGS Breeding Bird Survey (BBS) data.

Fundamental Goal 2: Increase bobwhite populations on private lands within focal geographies.

Performance measures: northern bobwhite density and occupancy using USGS BBS data, GA DNR monitoring, and community science.

Fundamental Goal 3: Increase density and reduce the variability of bobwhite populations on public lands identified as bobwhite priority areas.

Performance measures: northern bobwhite density using GA DNR monitoring and annual reviews and planning of implementation of management activities on quail-focused WMA.

Fundamental Goal 4: Increase recreational opportunities related to bobwhites.

Performance measures: total number of quail hunting days allowed per unit area and number of years where fall population exceeds density target

Fundamental Goal 5: Evaluate the efficacy of programs and practices, identify gaps and prioritize data collection and potential research used to manage northern bobwhite.

Performance measure: number of research projects conducted in Georgia

Implementation Objectives

The Georgia Bobwhite Technical Team met to discuss the goal and propose various objectives (Table 2) and strategies for achieving the desired goals.

Table 2. List of possible objectives organized by goal.

1. Stabilize the bobwhite populations in the piedmont and mountain regions and increase populations in the coastal plain
 - a. Engage national forest service lands, national wildlife refuge and military installations and other public lands. (Work with partners to create at least one federal quail focal area.)
 - b. Educate the public through workshops, field days, articles, and newsletters. (Conduct at least 1 field day each year).
 - c. Work with NGOs, civic organizations, and schools to educate students on the importance of upland habitat, quail and pollinators (Create quail and pine savanna-focused educational materials.)
 - d. Engage legislature and provide notes to partners on needed policy changes. (Provide a report to partners quarterly.)
2. Increase bobwhite populations on private lands within focal geographies. Establish private land focal area(s) (Establish 2 private focal areas in 2 years)

- a. Create plans for cooperators. (50 landowner contacts per year and 10 new or updated plans per biologist)
 - b. Promote quail-friendly practices on agricultural lands. (Work with FSA, NRCS and NGOs to provide field days and promote cost-share programs.)
 - c. Establish quail-friendly management practices and programs through the Farm Bill. (Work with landowners to complete EQIP applications focused on quail-friendly practices)
 - d. Promote native forages and conversion of improved pasture. (Hold a native forages workshop/field day.)
 - e. Hire more private lands staff through NGO partnerships to meet the demand. (Add one additional habitat team.)
 - f. Improve communication between NRCS, FSA, extension, RC&Ds, SWCDs, GFC and private lands biologists. (Hold an annual private lands network meeting.)
 - g. Engage with farm and commodity groups such as cotton, peanut, and cattlemen. (Support Precision Ag Specialist through QF)
 - h. Work with partners to increase acres burned annually. (Increase acreage burned by 5% each year.)
 - i. Create more habitat teams to assist with burning and other management. (Add at least one more habitat team.)
 - j. Support prescribed fire training. (Provide funding to GFC or partners to increase training.)
 - k. Evaluate ways to increase the thinning of smaller timber tracts. (Create a pilot project to incentivize loggers to cut small tracts or creating landowner cooperatives for brokered timber sales.)
 - l. Educate landowners through workshops, field days, articles, and newsletters. (Assist/host 5+ field days or workshops per year.)
 - m. Create a video series on management practices. (Have at least 1 video in the first year, and 4 by year 5.)
 - n. Provide additional habitat and management training for staff. (host conservation herbicide training.)
3. Increase density and reduce the variability of bobwhite populations on WMAs identified as bobwhite priority areas.
 - a. Write or update management plans/maps for quail focal areas. (Complete plans for 5 management areas in 5 years.)
 - b. Explore options for increasing capacity for WMAs or pulling in habitat teams for quail focal areas. (Fund a focal area technician through QF)
 - c. Enhance habitat on private lands surrounding quail focal areas within a 2-mile radius. (Create focal areas for each biologist.)
 - d. Explore the development of a voluntary quail habitat stamp. (Generate revenue for public land habitat projects.)

4. Increase recreational opportunities related to bobwhites.
 - a. Improve habitat in marginal areas to increase populations. Maintain focal areas at 1 bird per 2 acres or better.
 - b. Host youth hunts. (Host at least 4 hunts per year)
 - c. Create VPA for quail hunting.
 - d. Evaluate current hunting opportunities and hunter satisfaction. (Increase opportunity days on public lands.)

5. Evaluate the efficacy and cost-effectiveness of programs and practices, identify gaps and prioritize data collection and potential research used to manage northern bobwhite.
 - a. Increase monitoring on other public lands. (Add 4 public areas to spring monitoring in 5 years.)
 - b. Support quail research centered on public land harvest and management and effective land management/incentives for private landowners.
 - c. Increase monitoring on private land. (Monitor at least 2 private properties in 1 year and 4 in 5 years.)
 - d. Evaluate hunting pressure on management areas. (Have harvest data collected on all WMAs with huntable quail populations in 5 years.)

The objectives were grouped into themes that met the plan goals and several strategies were then developed from these objectives. Strategies were created considering the real constraints that exist for GA DNR.

The Private Lands Program (PLP) currently has 9 GADNR private lands biologists, 7 cooperative Farm Bill biologists and a 4-person habitat team with Quail Forever, and approximately \$690,000 per annum to use for bobwhite management on private lands. Other resources are available on a competitive basis such as grants from the United States Department of Agriculture (USDA), United States Fish and Wildlife Service (USFWS), and other short-term funding sources. The WMAs generally have 1-2 technicians and a regional biologist per site and have a budget that acts as a real constraint. Most WMAs have multiple-use goals that take time and funding.

Selected Strategy

Estimated changes to the performance measures for each fundamental goal, the estimated percent increases in relative bobwhite abundance statewide, increased bobwhite density on public and private lands and the increase in recreational opportunities were

calculated for each strategy. These estimates were based on biologist and partner knowledge and opinions of how much each strategy would increase the current measures of the status quo. The selected strategy had the largest increases in abundance and opportunity while still being achievable under current constraints.

Under the selected strategy, there is increased partner involvement and outreach, the addition of private land focal areas, a new public focal area, increased monitoring on public and private land and the addition of a habitat team, focal area technician and additional precision agriculture. This strategy could result in a 3% increase in the relative abundance of bobwhites statewide and increase the density of bobwhites on private focal areas by 12%. The addition of another quail focal area on public land and opening additional dates for hunting on existing areas could result in 34+ more days of opportunity for hunters, including youth. The added habitat team and focal area technician would help stabilize the populations on public focal areas and increase the number of years that each area's population stays above its target density. The increased monitoring will help demonstrate these changes statewide and maintaining research will assist in identifying ways to address any issues and keep management practices up to date. Under this strategy, there would also be an increased focus on providing educational resources to schools.

The selected strategy will provide a framework for the next 10 years but because of the uncertainty around habitat management and population responses, we are also adopting an adaptive management approach. Adaptive management will allow the program to consider outcomes observed under the selected strategy and then adjust actions for the following years. Under Fundamental Objective 5: Reduce uncertainty about the efficacy of programs and practices used to manage for northern bobwhite, BQI will be supporting research that will help inform these decisions. To assist in evaluating the effectiveness of the adopted actions, BQI will provide opportunities for internal and external stakeholders to provide input. Also, there will be a 5-year review of this plan by the technical committee and any needed adjustments will be made.

Below is a schedule for the expected implementation of the selected strategies and performance measures that will be used to track success.

Schedule

Provide semi-annual briefing notes to partners on needed policy changes	Beginning January 2024
Review BRI mapping and focal landscapes	October 2024
Provide educational resources for schools	June 2025
Increase monitoring on private lands by 10%	Spring 2025
Increase monitoring on public lands by 10%	Spring 2026
Evaluate hunting pressure on public lands	2024-25 season
Estimate crippling loss on public lands	Fund research 2025
Establish a private land focal area	June 2024
Establish 1 additional focal area on WMA	2026
Assign each BQI biologist a private land focal landscape	2025
Develop incentive program built around focal landscapes	2026
Create an additional habitat team	2025
Add a focal area technician	2025
Add an additional precision ag specialist or new grazing specialist	2026
Increase quail hunting opportunity days on WMAs	2024
Develop private partnerships for public hunting access/specialty hunts	2025

Appendix A – Acronym List

BQI – Bobwhite Quail Initiative

BRI – Biologist Ranking Information

DNR – Department of Natural Resources

EQIP – Environmental Quality Incentives Program

ESH – Early Successional Habitat

GBTT – Georgia Bobwhite Technical Team

NBCI – National Bobwhite Conservation Initiative, now National Bobwhite Grasslands Initiative (NBGI)

NGO – non-governmental organization

NRCS – Natural Resources Conservation Service

SWAP - State Wildlife Action Plan

WRD – Wildlife Resources Division

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