

REPORT OF THE DEPARTMENT OF GAME AND INLAND FISHERIES

**A Report on the Progress by the Department
of Game and Inland Fisheries to Preserve the
Northern Bobwhite Quail (*Colinus virginianus*)**

**BUREAU OF WILDLIFE RESOURCES
VIRGINIA DEPARTMENT OF GAME AND INLAND FISHERIES**



COMMONWEALTH OF VIRGINIA

RICHMOND

JANUARY 7, 2015



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Department of Game and Inland Fisheries

Robert W. Duncan
Executive Director

TO: Division of Legislative Automated Systems

Senate Joint Resolution 63 as passed by the House and Senate in the 2014 General Assembly requested the Department to review ways to preserve the Virginia Bobwhite Quail population and that a report be submitted to the Division of Legislative Automated Systems. The Joint Resolution requested the Department of Game and Inland Fisheries to “review existing efforts to restore habitat and to preserve, protect, and reintroduce Bobwhite quail and include recommendations on strategies to achieve the goal of preserving the Virginia Bobwhite quail population and identify the resources and policies needed to implement those strategies”. This report addresses the Department’s progress toward meeting the requests found in Senate Joint Resolution 63.

We have the pleasure of submitting herewith the report on *The Progress of the Department of Game and Inland Fisheries to Preserve the Northern Bobwhite Quail (Colinus virginianus)*.

Respectfully Submitted,

A handwritten signature in blue ink that reads "Bob Duncan".

Robert W. Duncan
Executive Director
Virginia Department of Game and Inland Fisheries

cc: **The Honorable Emmett W. Hanger, Jr.**
 The Honorable R. Creigh Deeds
 The Honorable Terry L. Austin
 The Honorable Sam Rasoul

PREFACE

Virginia Department of Game and Inland Fisheries Report

As requested by Senate Joint Resolution No. 63.

“Requesting the Department of Game and Inland Fisheries to Review Ways to Preserve the Virginia Bobwhite Quail Population”

From the 2014 General Assembly Session.

Agreed to by the Senate on February 11, 2014 and by the House of Delegates, March 5, 2014.

The resolution: “Be it resolved by the Senate, The House of Delegates concurring, that the Department of Game and Inland Fisheries be requested to review ways to preserve the Virginia Bobwhite Quail Population. The Department of Game and Inland Fisheries shall review existing efforts to restore habitat, and to preserve, protect and reintroduce Bobwhite quail. Further, the review shall include recommendations on strategies to achieve the goal of preserving the Virginia bobwhite quail population and identify the resources and policies needed to implement those strategies.”

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EXECUTIVE SUMMARY

Populations of northern bobwhite quail and other bird species with related habitat requirements have experienced severe long-term declines in Virginia over the past 50 years. For perhaps 200 years or more, quail were one of the most common birds of rural Virginia. During the first half of the 20th century, as a shift from a rural-farm to urban-industrial economy began, idled and abandoned farms continued to support quail populations but a noticeable decline in quail populations from historical highs was observed by the mid-1920s.

For the past four decades, the Virginia Department of Game and Inland Fisheries (VDGIF) has strived to maintain a comprehensive bobwhite quail research and management program. These efforts were accelerated after the Virginia General Assembly requested the department to assess the bobwhite quail situation in 1988. This review led to the VDGIF creating what was the nation's first statewide quail recovery plan in 1996. The first quail plan specifically addressed eleven major factors identified in the review as contributing to quail decline and met with some success, but budgetary restrictions brought that effort to a close prematurely.

In 2007, the department began working on a second major quail effort, the Quail Recovery Initiative (QRI) which was adopted by the VDGIF Board of Director's in June, 2009. Recognizing the Virginia landscape has changed dramatically over the last 40 years and statewide quail recovery is not likely, current efforts are built around focal areas where quail conservation can be targeted in places where it has a chance to succeed. The goals of the Quail Recovery Initiative are to build on these existing focal areas where quail numbers and habitat remain favorable to long term population stability, establish source populations of bobwhites in areas where they have been largely extirpated, engage partners and other states, and educate Virginians about the value of early successional habitats and species.

In 2010, the National Bobwhite Conservation Initiative (NBCI) was started throughout the entire bobwhite's twenty-five state range. VDGIF staff has played an important leadership role in working with both the NBCI technical committee and management board.

While much has been accomplished in the 5 years of the Quail Recovery Initiative, over the past year the department has conducted an extensive review of the QRI which included internal agency input meetings, meetings with the Director's Quail Advisory Group (members listed on page 31), solicited input from the Virginia Quail Council (members listed on page 7), and web based surveys of quail partners and landowners. From this review, VDGIF staff has developed below a list of recommended strategies.

Recommended strategies to achieve the goal of preserving the Virginia bobwhite quail population

The following strategies will require commitments from multiple state agencies, partners, and legislators, but it is the department's belief that they will provide the greatest overall impacts for quail:

- **develop and implement a comprehensive strategy for appropriate state agencies to manage their lands for early succession wildlife habitat,**
- **a strategy to encourage counties to allow a wildlife conservation property tax valuation for lands converted to wildlife habitat,**
- **a cooperative strategy among affected parties to change the current policies relating to prescribed burning in the Commonwealth in order to allow for a safe increase in the use of prescribed fire as a land management tool,**
- **a comprehensive strategy among all appropriate state agencies to develop a marketing campaign that raises awareness of the plight of early successional habitat and the associated wildlife species.**

In addition, the department will take the lead in pursuing the following strategies as part of the ongoing Quail Recovery Initiative:

- **develop a comprehensive marketing plan to publicize the plight of early successional habitat and its own efforts on their behalf,**
- **continue employment of the private lands wildlife biologists with the possibility of expansion dependent on state budget,**
- **research into new quail reintroduction techniques,**
- **develop a prescribed fire awareness campaign potentially in conjunction with the Virginia Prescribed Fire Council, the VDOF, The U.S. Forest Service and other partners,**
- **redouble efforts to expand on existing habitat creation successes,**
- **develop a comprehensive strategy for working with the forest products industry,**
- **develop a quail and early-succession wildlife management academy, similar to the VDOF prescribed burners academy held annually,**
- **re-examine the hiring 1 or 2 staff on a part time basis to work under the supervision of the State Forest management supervisors with some guidance from VDGIF,**

- **work with military base personnel to help them better promote the enormous amount of early-succession habitat work they do,**
- **work with Non-Government Organizations (NGOs) to develop programs for early successional wildlife including “quail in the classroom”, a quail hunter mentor program, and a program that promotes hunter access.**

A more comprehensive review of these strategies can be found on pages 33-38 of this report.

VDGIF’s ongoing efforts demonstrate the department’s commitment to quail recovery in Virginia. Concerted, long-term efforts and partnerships among those who value the bobwhite quail will be the key to a successful recovery initiative.

Senate Joint Resolution Number 63 (SJR 63, Appendix C), requested the Virginia Department of Game and Inland Fisheries (VDGIF) to review existing efforts to restore habitat, and to preserve, protect and reintroduce Bobwhite quail. Further, the review shall include recommendations on strategies to achieve the goal of preserving the Virginia bobwhite quail population and identify the resources and policies needed to implement those strategies.

INTRODUCTION

Populations of northern bobwhite quail and other species with related habitat requirements have experienced severe long-term declines in Virginia over the past 50 years. In colonial times, as land was cleared and farmed, quail populations flourished. For perhaps 200 years or more, quail were one of the most common birds of rural Virginia. It is likely that quail populations in Virginia peaked in the 10 to 20 years following the Civil War when conditions on the landscape most favored them. Primitive farming, share cropping systems and other factors made the landscape quite by accident perfect for bobwhites. During the first half of the 20th century, as a shift from a rural-farm to urban-industrial economy began, idled and abandoned farms continued to support quail populations. It should be noted that the first studies done to examine the “bobwhite quail decline” were conducted in the mid-1920s. Even then, a noticeable decline in quail populations from historical highs was observed. Since then major land use changes have taken place. Virginia’s agricultural landscape became dominated by large, intensively managed crop fields, fescue pastures, hay fields and pine forests.

Total farmland acres declined. In 1900, approximately 80% of Virginia’s landscape was in open agricultural land. Today agricultural lands make up only 34% of our landscape. Many of the formerly open farm fields are now dominated by intensively managed pine forests. While cut-over timber lands still provide some of the only early-succession cover available, plant diversity is low and productivity for quail is poor. The value of these habitats is declining for quail and related species. Not only have the number of agricultural acres declined, the quality of the remaining acres for bobwhites has declined. Global food, fiber and wood products demand has necessitated more intense farming and forestry. The loss of early succession habitat, particularly nesting cover, brood rearing range, and shrubby “thicket” cover have been identified as the most significant factors limiting quail populations. Other factors such as increased predation and indirect effects of pesticides exacerbate the decline, but are not the primary causes.

Virginia is not alone. The bobwhite quail continues to decline in all 25 states that comprise the National Bobwhite Technical Committee (NBTC) and its product, the National Bobwhite Conservation Initiative (NBCI). These two entities are inextricably linked to form the consolidated national effort to unify and empower quail recovery efforts across the bobwhite's range. While bright spots exist in places such as portions of Texas, Kansas, Oklahoma, north Florida and South Georgia, declines continue in all states. At no time in history has there ever been as much effort placed into bobwhite recovery as is being seen today. Virginia continues to play key roles in this national effort as will be highlighted later in this document.

It should be noted that much of the nation's landscape, particularly that along the heavily populated eastern seaboard, has changed dramatically in the last 25 years. Reason must be applied to expectations for widespread bobwhite recovery in these areas. Time cannot be reversed. It is unlikely that bobwhite quail populations will ever again reach historic high levels in Virginia, or in much of the bobwhite's range. However, recovery in remaining rural areas conducive to habitat management can occur. In some portions of Virginia, long term viable bobwhite populations and the tradition of bobwhite quail hunting can continue to be supported. A frequent statement is heard by quail biologists across America, "We brought back deer, turkey, bear, and geese, why not quail?" It must be noted that much of the recovery for the above mentioned species did not occur over night. Contrary to popular belief, it took 50 to 75 years of dedicated work to bring these populations back to today's levels. Success can be attributed to many decades of hard work, but also to the fact that the landscape we live in now favors these species far more so than bobwhite quail. Bobwhite quail recovery is one of the biggest challenges faced by the wildlife conservation community in the last 100 years.

The goal of the department's current Quail Recovery Initiative (QRI) is to build on existing areas where quail numbers and habitat remain favorable to long term population stability and increase. For these reasons, the QRI identifies focal regions, focal landscapes and focal areas in accordance with the NBCI's Focal Tiers concepts. The NBCI Focal Tiers approach to bobwhite recovery has been adopted by all 25 states within the NBTC at some level. By targeting resources into viable areas, larger contiguous portions of Virginia's landscape can remain productive for quail. In addition to expanding existing areas of good bobwhite habitat, another goal of the current QRI is to establish source populations of bobwhites in areas where they have been largely extirpated, such as many areas west of the Blue Ridge Mountains. The natural process of quail movement during several periods of the year, most notably spring and fall, will provide quail to occupy newly created habitats in the areas surrounding the source populations. Simultaneously, as the department works to expand and create quail populations, efforts are targeted towards increasing public awareness of the plight of bobwhite quail and their many habitat associates. It is the hope that over time through continued, long-term,

determined efforts, Virginia's landscape in many areas will be changed to again favor bobwhites. This might occur primarily by changing landowner attitudes towards what many now see as "thickets, weeds and brush" in need of eradication or control, often in the form of unnecessary mowing. The modern tendency towards "cleaning up" the landscape is not conducive for bobwhite quail, field sparrows, eastern towhees, brown thrashers, prairie warblers or even for Virginia's state bird the northern cardinal. The public largely understands the value of mature forests and wetlands. What is needed is wide scale understanding that transitional habitats that ecologists term "early succession" such as weedy fields, shrub thickets, idle crop lands and overgrown fencerows are also a critical part of wildlife habitat in Virginia. The mission of spreading this message must be taken up by all partners involved in the Quail Recovery Initiative and not solely by VDGIF.

VIRGINIA'S FIRST QUAIL RECOVERY INITIATIVE

Beginning in the late 1970s, as sportsmen and biologists began to recognize the extent of the quail decline, which had been ongoing for many decades but had begun to accelerate, the Virginia Department of Game and Inland Fisheries began taking steps to understand and attempt to reverse the decline. Some of the first of these measures were surveys of avid quail hunters and quail call count surveys. In order to address a population decline, it is necessary to know its causes to the extent possible. In the early 1980s the private Non-Government Organization (NGO) Quail Unlimited (now defunct and replaced by several newer quail NGOs) was developed across the country. This NGO was modeled after others that came before it such as the National Wild Turkey Federation. Together, VDGIF, NGOs and private landowners began to work towards quail recovery. Early efforts were sporadic, miss-guided and ineffective. In early 1988, a legislative review was enacted requiring VDGIF to assess the bobwhite quail situation, identify specific causes of the decline and lay out measures to address all factors that could be addressed to help reverse the decline. The factors identified in that legislative review as contributing significantly to bobwhite decline were i) increased reliance on cool season grasses for livestock forage (primarily fescue), ii) decreased use of prescribed burning, iii) increased acreages in dense pine plantations, iv) trends towards "cleaner" farms, v) lack of consideration for wildlife in U.S. Department of Agriculture (USDA) farm programs, vi) unrealized opportunities to improve rights-of-ways for bobwhites, vii) lack of areas which demonstrate good habitat for quail, viii) lack of knowledge on the availability of quail habitat and landscape changes, ix) lack of understanding of predation impacts on quail in fragmented

landscapes, xi) impacts of changing pine forestry practices, xii) impacts of pesticides on quail, and xiii) impacts of releasing pen-raised quail on wild populations.

This review led to the hiring of several VDGIF staff to address the problem, the development of an agency “quail team” and ultimately to the development of Virginia’s first Quail Management Plan, enacted in 1996. Virginia’s plan was considered by many to be the first comprehensive quail recovery plan in the nation and many states followed suit developing their own plans in subsequent years. Simultaneously, the directors of the southeastern fish and wildlife agencies saw the need for a regional recovery effort. At their request, quail biologists, NGO partners and other entities formed the Southeast Quail Study Group in 1995.

Under VDGIF’s first quail plan, strategies were developed to address all the identified factors of decline and a 5-year budget of over \$4.1 million was developed. This included 6 new positions. Due to competing demands and lean state budgetary times, the quail plan only reached 35% of the proposed budget, only three of the five years were funded, and only 1 of 6 positions was filled.

Despite lowered funding, much was accomplished during the first quail plan. Most fescue stands were eliminated from piedmont and tidewater VDGIF Wildlife Management Areas, ten native grass workshops were held with an attendance of 445 and in-service training sessions were held for USDA field staff. Strategies to increase prescribed fire were enacted, including the development of a prescribed burn manager’s academy in conjunction with the Virginia Department of Forestry (still active today having graduated 1002 prescribed burn managers). Eleven prescribed burn workshops were held averaging 23 participants each. Six workshops were held to educate landowners about the benefits of pine thinning and understory burning.

A comprehensive booklet on wildlife friendly pine management was developed entitled “Managing Pines for Profit and Wildlife” and over 5,000 have been distributed. Twelve general quail management workshops averaging 53 attendees were held to increase overall landowner knowledge of bobwhite management techniques. An excellent full color, comprehensive quail management publication was developed entitled “Beyond the Food patch” and over 7,000 have been distributed. New wildlife friendly cost-share practices were developed in partnership with Department of Conservation and Recreation (DCR). As a result, 1,496 acres of idle crop land were enrolled, 552 acres of field borders were established, and 1,400 acres of tall fescue were converted to native grasses.

In addition, a rights-of-way (ROW) habitat incentive program was developed with Virginia’s two major power suppliers – Dominion Virginia Power and American Electric Power. A

ROW management workshop was also held which brought together all the major ROW managers in Virginia to discuss ways to better manage ROWs for wildlife. Significant efforts were made to increase liaison with agricultural related entities which included Soil and Water Conservation Districts (SWCD), Forage and Grasslands Councils, Natural Resources Conservation Service (NRCS) State Technical Committee, VDOF, and other entities deemed appropriate. This included regional and national input into USDA Farm Bill programs through the VDGIF's Farm Bill liaison position developed after the 1988 Legislative Review.

In conjunction with these habitat based efforts, several studies were completed including: "Bobwhite Nesting Ecology in Virginia", "Effects of Nest Predator Removal on Quail Recruitment and Populations", and "Survival of Wild Relocated, F1 and Pen-Raised Quail during Spring and Fall on Amelia WMA." In addition, a predation management workshop was held and VDGIF worked to provide extra predator control privileges to landowners having a track record of intensive bobwhite quail habitat management. The special predator control permit remains in effect today for landowners having a long term quail management plan and is available through VDGIF's permit section. A comprehensive report on the first Quail Plan is available.

VIRGINIA'S CURRENT QUAIL RECOVERY INITIATIVE

Shortly after the events of September 11th, 2001, the nation underwent a dramatic economic downturn. Accordingly, as the economy struggled to rebuild, the VDGIF was not immune. Funding for the Quail Plan was eliminated. The one quail private lands biologist hired under the Quail Plan in 1996, was reassigned as a district wildlife biologist in 2003 and for all practical purposes, the agency's "Quail Plan" ended. It should be noted that VDGIF's small game project leader and farm bill liaison biologist continued to work on quail recovery and remained active in the Southeast Quail Study Group. In addition, VDGIF's district wildlife biologists continued to provide quail management technical assistance to any landowner in Virginia requesting help. It is estimated that VDGIF biologists make approximately 750 landowner site visits annually to provide wildlife technical assistance.

In early 2007, VDGIF formed a Quail Focus Group and began working towards a second major quail effort. This led ultimately to the adoption of a resolution by the Quail Focus Group in December 2007. This resolution was officially adopted by the VDGIF Board of Directors in January of 2008. The resolution stated: "VDGIF should place the highest priority on the restoration of wild bobwhite quail populations and promote the sport of bobwhite quail hunting, both wild and preserve birds including the development of a Bobwhite Quail Action

Plan encompassing management, research, education, outreach, coordination (Utility and Power Companies, DOF, Timber, VDOT, etc.) and specifically addressing environmental and other factors limiting quail numbers; and establishing official habitats to demonstrate the effectiveness of habitat management.” Immediately upon adoption of this resolution the VDGIIF’s staff began development of the current Quail Recovery Initiative. As step one in this process, the agency conducted a comprehensive survey of 5,000 landowners owning at least 50 acres in 15 key focal counties. The goal was to determine the percentage of landowners involved in quail management, what percentage would become involved if incentives were offered, and what they were looking for in incentives. A total of 2,240 useable responses were received. Fifty-six percent of landowners indicated they were interested in providing cover for quail on their lands, but only 16% indicated they were willing to convert some of their land into quail habitat. Forty percent indicated they would not be willing to convert any of their land into quail habitat and only 16.2 % of landowners received any kind of financial assistance through government programs. This survey indicated the difficulty encountered in persuading landowners to convert their lands into quail friendly wildlife habitat, which is quite often viewed as “brush” in need of “bush-hogging.”

The QRI was officially adopted by VDGIIF’s Board of Directors in June 2009. The plan can be viewed in its entirety at: <http://www.dgif.virginia.gov/wildlife/quail/action-plan/quail-action-plan.pdf> . The QRI is based on the concept that current resources and landscape variables will not allow quail recovery statewide. For this reason, the QRI centers around 6 key focal regions comprised of 15 counties. VDGIIF biologists continue to assist any landowner in Virginia interested in quail management however funds and outreach have been directed towards the focal counties. Though the first goal of the plan was a request to seek new funding sources to support it and not take the funds from the existing budget, the Board adopted the plan with the understanding that it would be funded out of VDGIIF’s existing budget. Thus the QRI began in earnest in Fiscal year 2010 and just recently completed the 5th year of the initiative (FYs 2010, 2011, 2012, 2013 and 2014).

Building a Network of Partners

It is beyond the scope of a single agency to bring back a wildlife species. Partnerships have been and continue to be a critical part of wildlife conservation. One of the first tasks accomplished by the QRI team was to organize a meeting of the Virginia Quail Council (VQC). This first meeting took place in May 2009, and has since led to 5 more meetings of the VQC. The goal of the VQC was to involve and keep engaged all major entities with an interest in land management for bobwhite quail and early successional wildlife species (many identified in the VDGIIF Board’s Quail Resolution). All members of the VQC sign a memorandum of

understanding that they strongly support the QRI and pledge to work towards the department's goal of quail recovery. Signed partners and affiliate members include: The USDA Natural Resources Conservation Service, and Farm Services Agency, the Virginia Department of Conservation and Recreation (State Parks, Natural Heritage, and Soil and Water Conservation Districts), the Virginia Department of Forestry, the Virginia Department of Mines, Minerals and Energy, the Virginia Department of Transportation, Virginia Cooperative Extension Service, Virginia Tech College of Natural Resources (and the Conservation Management Institute at Virginia Tech), The U.S. Forest Service, the U.S. Army Corps of Engineers, Quail Forever (national and state), Quail and Upland Wildlife Federation (national and state), Ruffed Grouse Society, National Wild Turkey Federation, The Nature Conservancy, the National Audubon Society, American Electric Power, Dominion-Virginia Power, Central Virginia and Rappahannock Electric Cooperatives, American Woodcock Initiative, U.S. Army Ft. Pickett, U.S. Marine Corps Base Quantico, U.S. Radford Army Ammunition Plant, Long Wood University, Reese Farms, River Birch Farms and Falkland farms (Halifax County). The VQC remains an active and vital part of the quail team, most recently having convened for the purpose of providing input and revising the current QRI. Having an organization like the VQC was one of the key factors identified by the NBCI in their review of successful state quail efforts. The department's quail team was presented the 2013 Merit Award from the Virginia Society of Soil and Water Conservation for "team building." The Conservation Management Institute (CMI) at Virginia Tech maintains a list serve for the Virginia Quail Council which allows quick communication to all the key partners with one e-mail. The department continues to seek out new partners to engage and inform in the QRI.

Increasing Technical Assistance Delivery on the Ground

A key component of any quail recovery effort is getting habitat implemented on the ground. It takes dedicated employees who are allowed to focus on all aspects of high quality landowner technical assistance. There is no substitute for one-on-one contact between private landowners and highly skilled quail management staff. The backbone of the QRI is the 5 private lands wildlife biologists (PLWBs) hired in conjunction with two of VDGIF's key VQC partners, the Natural Resources Conservation Service (NRCS) and the Conservation Management Institute at Virginia Tech (See Figure 1 for coverage areas and focal counties).

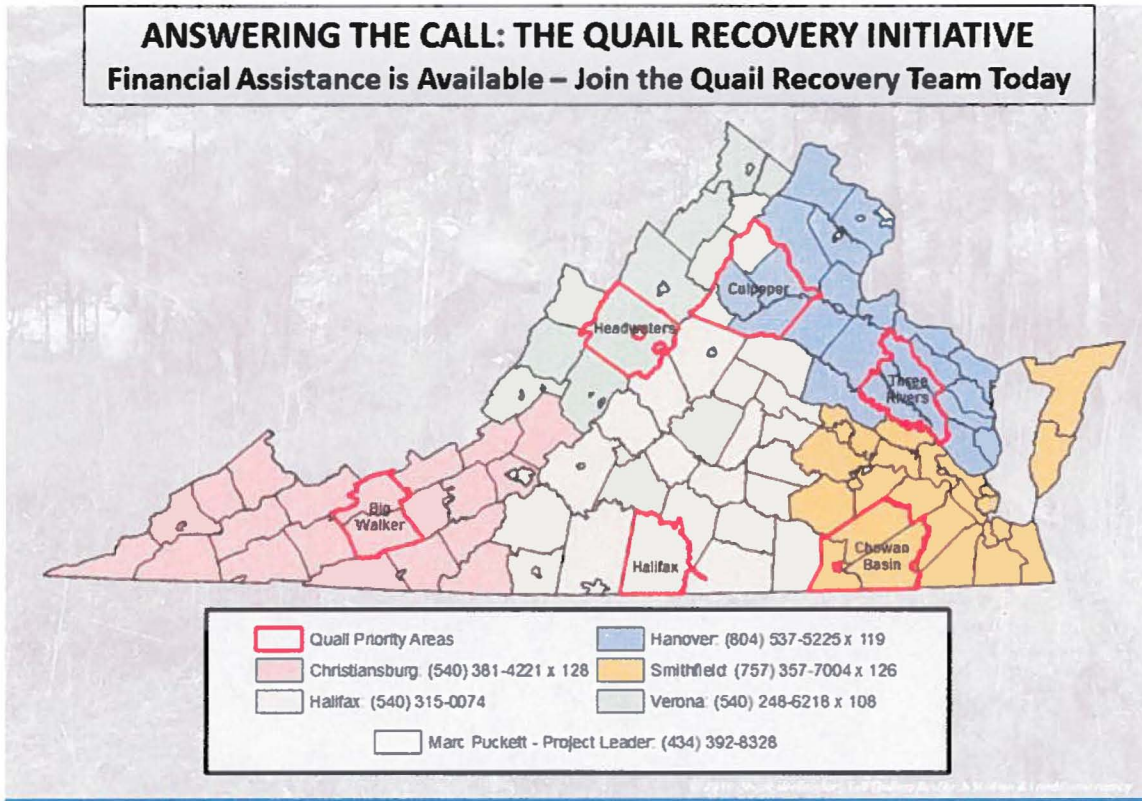


Figure 1. Private Land's Wildlife Biologists Coverage Areas

The VDGIF was not in a position to hire employees outright during 2009. Fortunately the agency's strong relationship with the NRCS and CMI allowed the department to jointly hire the five PLWBs. They are employees of CMI, housed and supported in NRCS offices within USDA Service Centers in key areas of Virginia, and jointly trained and funded by VDGIF and NRCS. This arrangement further strengthened the relationship between the agencies involved. The PLWBs will complete 5 years of service in December 2014. Their contracts have recently been renewed by MOU between NRCS, CMI, and VDGIF through December, 2017. Their accomplishments to date include:

- Made over 2,049 site visits (with 1,398 unique landowners).
- Landowners visited collectively own over 229,000 acres.
- Helped create or maintain 33,700 acres of habitat through a variety of state and federal programs (37% within the quail focal counties).
- Wrote over 1,200 quail habitat management plans.
- Conducted outreach at over 950 events.
- Helped distribute approximately, \$4.3 million in habitat incentive funds.



The core quail team: L-R, Andy Rosenberger – BS and MS Virginia Tech –, Bob Glennon – retired national NRCS program manager – BS Penn State, MS Rutgers, Lorien Huemoeller – BS and MS Virginia Tech , David Bryan – BS and MS – Virginia Commonwealth University , Marc Puckett –BS – Virginia Tech, MS North Carolina State University, Justin Folks – BS Virginia Tech – MS Texas A&M , Jeff Jones –NRCS State Biologist, and Jay Howell – BS University of Tennessee, MS University of Georgia. (Photo credit Lee Walker, VDGIF).

Breakdown of Habitat Funding by Program

Department field biologists have relied on a variety of wildlife habitat incentives programs to encourage landowners to conduct habitat management conducive to quail. The VDGIF funded 3 wildlife Best Management Practices (BMPs) in partnership with the Department of Conservation and Recreation’s Agricultural Cost-Share Program. This program relies on further partnership with six Soil and Water Conservation Districts that cover the 15 quail focal counties. These entities had the funding transfer mechanisms in place to allow distribution of the VDGIF funds to qualifying landowners. Through this program \$602,033 in habitat (2,460 acres – average \$245/acre) were created. This included: 355 acres of field borders, 936 acres of idle crop land, and 1,171 acres of fescue conversion to native warm season grasses.

A special NRCS program entitled the Cooperative Conservation Partnership Initiative (CCPI) provided an additional \$256,000 in non-VDGIF, federal funds for habitat implementation. These additional funds helped create 3,572 acres of habitat, much of it prescribed burning in thinned pine stands. The CCPI, unlike other federal programs, allowed the department to target

those funds into the focal counties. The CCPI funded 23 projects for an average cost of \$11,130 per project, but at a relatively low cost of \$72 per acre.

By far, the largest contributors of funds for quail and early successional species habitat establishment were the USDA NRCS Wildlife Habitat Incentives Program (WHIP) and the Environmental Quality Incentives Program (EQIP). Collectively these programs provided \$3.4 million in habitat funds. This amounted to 27,160 acres of early-succession habitat of various types including, field borders, hedgerows, understory burning, old field management, warm season grass and wildflower establishment, pollinator habitat (considered good for quail), fire break establishment, and more. Of this, 37% (10,108 acres) went into the quail focal counties. The WHIP program has now been rolled into the EQIP program and it is anticipated that Virginia will receive more funding than at any time in history, as much as \$1.3 million annually for wildlife habitat. This further illustrates the need for private lands wildlife biologists. They are the key to insuring these funds get allocated completely and appropriately.

An additional 680 acres of habitat was added through a trial program developed in conjunction with the Virginia Department of Forestry. During the last few years commodity crop prices (soybeans, corn, and wheat) have climbed to all-time highs (though the trend is slowing now). That was leading to slow sign-up for farmland related wildlife habitat practices as the value of the crops far exceeded incentive payments to take the land out of production. This led the department to form an ad hoc committee to develop forestry related BMPs that would benefit quail and be in keeping with good forest management. The department continues to believe forestry related wildlife practices will be more marketable than agricultural related wildlife practices in the future. As much as \$300,000 annually is available for the special forestry / wildlife BMPs which include understory prescribed burning, reduced impact forestry herbicides applications, short and long-leaf pine planting incentives, pre-commercial thinning in overstocked pine stands and encouragement for commercial thinning of small pine stands.

Outreach Efforts

The critical key to the future of the bobwhite quail and many other early successional wildlife species in Virginia and nationally is more effective assertive outreach and marketing. Money for buying habitat over the long term is likely unsustainable, those funds could be spent on an effective communications strategy aimed at changing landowner attitudes about early successional habitats. Until large numbers of Virginia's landowners come to value these often negatively viewed habitats, quail populations will continue to decline.

One of the first steps the department took to raise awareness of the quail program was to conduct mass mailings to all landowners in each of the 15 focal counties. Addresses of all

landowners owning over 50-acres in each of the focal counties were obtained from county Commissioners of Revenue. A total of four mass mailings were conducted. Each consisted of approximately 4,500 – 5,000 individual informational packets or fliers being mailed by contract through Virginia Industry for the Blind. Approximately 20,000 total notices were mailed over a 3 year period. After each mailing, numbers of phone calls to the private lands wildlife biologists increased markedly. Calls were not tracked from beginning to end, but there is a law of diminishing returns with this technique. Every 20 calls may lead to 5 site visits, which may ultimately lead to 1 or 2 habitat projects on the ground. The department considers these mailings useful and plans to continue to use them in the future because costs are low relative to the benefits, with printings and mailings together costing under \$3,500 per mailing.

Another major component of VDGIF's outreach efforts was the creation of the promotional DVD titled "Answering the Call: Virginia's Quail Recovery Initiative." This professionally produced in-house 12-minute DVD tells the story of the bobwhites plight, provides a basic outline of the department's recovery efforts, uses landowner testimonial for added effect, gives a plea to landowners to become something "larger than themselves" and tells them how to contact the department . It was designed to encourage landowners who were "on the fence" with regards to whether quail management was worthwhile. To date over 2,500 have been distributed. In addition, on at least 3 occasions, the DVD has been highlighted and shown in its entirety on the PBS TV special Virginia Farming. Additionally, VDGIF and partner staff have been interviewed and appeared on Virginia Farming two times to promote early-succession habitat. The show aired nationally on Rural Free Delivery Television (RFD-TV) at least two times.

The Quail Recovery Team has written, or been featured in, numerous articles about the department's quail program. At least 40 articles relating to the QRI have appeared in various newspapers and magazines including: Virginia Wildlife (featured piece on the program and landowner successes), Richmond Times Dispatch, Roanoke Times, South Boston News and Record, Lynchburg News and Advance, Tidewater Review, House and Home Magazine, Shooting Sportsmen, Virginia Society of Ornithology Newsletter, NWTF's National Magazine (success story of landowner in Nottoway County), Nashville Quail Forever Newsletter, Ferrum Nature Society Bulletin, Fredericksburg Freelance Star, National Public Radio (private lands biologist in southwest Virginia interviewed for NPR nationwide broadcast), The Daily Progress, Gloucester-Mathews Gazette, USA Today, The Carroll News, and others. A special issue of Virginia Wildlife is also being discussed which would focus on bobwhite quail and many other declining early-succession species.

Other outreach efforts included creating a comprehensive quail oriented section of VDGIF's webpage (<http://www.dgif.virginia.gov/quail/>). Landowners can find extensive information on the webpage to help guide them through quail management. The quail page on the website is being reviewed and improvements made to make it even easier to use. In addition, to stay current, a quail oriented Facebook page was created (<https://www.facebook.com/VirginiaBobwhiteBulletin>) that has been very well received. As mentioned earlier, over 950 outreach type activities have been conducted or participated in by the PLWBs. These activities range from speaking to field tour groups, farmer's breakfasts, Ruritan Club meetings, school groups, bee keepers clubs, youth camps, and many others. The department's team never misses an opportunity to carry the message about quail to Virginia's citizens. Additionally, the Quail Recovery Initiative has been advertised on numerous occasions in VDGIF's Outdoor Report, and also in VDGIF's annual Hunting Digest, which goes to over 300,000 hunters every year. A comprehensive annual report on PLWB activity is also provided to all interested stakeholders in the form of the Bobwhite Bulletin (<http://www.dgif.virginia.gov/quail/pdf/bobwhite-bulletin-fall-2014.pdf>).

Landowner and Partner Education and Recognition

Under the new QRI, the approach was taken to conduct workshops that would maximize use of department's staff time by going where demand was and focusing on quality rather than quantity. Going where demand was high insured that time spent would not be on trying to "drum up" business in an area, but instead would be working where it was most wanted. Nine workshops with over 525 total participants were held around the state. These included 2 in Halifax County (120), 1 for professionals entitled "Train the Trainers" in Charlotte County (50), 1 in King and Queen County (30), 1 in Sussex County (90 – collectively owned over 55,000 acres of land), 1 on the Eastern Shore (65), 1 in Mathews County (95 – featured in several local newspaper articles), 1 in Botetourt County (50 – sponsored by the Longbeards Chapter of the National Wild Turkey Federation – and their Botetourt Quail Quilt project), and 1 in Pittsylvania County (25 - large landowners by invite only).

One aspect of being a partner in the NBTC is that states help states and there is no need for each state to have to develop each and every quail educational tool. To reinforce advice given to landowners by the PLWBs, permission was received from the Missouri Department of Natural Resources to reproduce and distribute their very well done DVD "Private Land Care" which covers disking, herbiciding, important quail food plants, quail habitat components, seeder and sprayer calibration, covey headquarters thicket planting and renovation, eradicating fescue and sericea lespedeza, edge feathering, prescribed burning, and more. The Missouri DVD covers the department's needs very well and it would have cost the department a great deal of

time and money to develop its own video. The VDGIF logo appears on the face of all DVDs, but full credit is given to Missouri DNR for development. Over 2,000 have been given to landowners.

A limited landowner seed program was begun in 2010. Free seed is always in demand and some landowners do not wish to enroll in government habitat cost-share programs which can be paper work intensive. Therefore, the department began purchasing approximately \$5,000 of quail friendly seed mixtures annually. In the past 5 years, approximately two hundred 50 lb. bags of a mixture of Korean and Kobe lespedeza and partridge pea have been distributed. It is estimated that approximately 1000 acres have been planted with this mixture over the 5 years. This part of the program is more of a “feel good” component than anything else. Fifty pounds of free seed buys a lot of good will down the road.

Landowner recognition is important to long-term program success. Over the years, staff has worked with local Soil and Water Conservation Districts encouraging them to give annual wildlife conservation awards similar to Clean Water Farm and Forestry Awards that have been given for years. Some success has been seen along these lines, with awards being given in numerous SWCDs. One of the more notable successes has been the Halifax SWCD. Their district has given an annual wildlife conservationist award since 1997. However, statewide recognition of wildlife conservation by the farming community is still lacking with fewer than 10 SWCDs giving out wildlife oriented awards statewide (of the 47 current SWCDs). The Virginia Chapter of The Wildlife Society presents an award when merited to citizen wildlife conservationists. In 2013, one of the key landowners and long-term quail program supporters, Mr. Hudson Reese of Halifax County was presented the A. Willis Robertson Award – the highest honor given by the Virginia Chapter of the Wildlife Society to a non-professional annually. In 2011, the Central Virginia Chapter of Quail Unlimited was given this prestigious award. This not only helped recognize deserving people and entities, it allowed the profile of quail management to be raised in the eyes of state’s wildlife professionals.

New ways to recognize key landowners and partners are continually being developed. One of these methods is landowner recognition signs. Early in the recent efforts, the department developed metal “Quail Recovery Team Member” signs that landowners could post at key areas on their properties to let neighbors know what they are doing. These signs also note key partners and provide contact information for passers-by that may be interested in helping the department. Over 500 have been given out.

Furthering the recognition efforts, the NBCI in 2014 for the first time allowed states to offer an NBCI sanctioned “Firebird Award.” Named for the bobwhite’s penchant for fire created habitats, these awards allow the department to bring national attention to key partners and

individuals in Virginia. In 2014 at the National Bobwhite Technical Committee meeting in Des Moines, Iowa, the department recognized the Virginia Natural Resources Conservation Service and the Conservation Management Institute at Virginia Tech – without whom the department would not have the team of Private Lands Wildlife Biologists.

The Quail Management Assistance Program (QMAP)

While the QRI is built around focal areas, constituents are served statewide. The department developed the Quail Management Assistance Program (QMAP) to insure all Virginians interested in quail would be equally served. It is not mandatory that landowners participate in QMAP to receive assistance, but it is offered as an option to those landowners who are avid quail supporters regardless of where they reside in Virginia. As they do for the Virginia Quail Council, the Conservation Management Institute at Virginia Tech also maintains a QMAP list serve which allows staff to keep in contact with the most avid quail supporters using one e-mail.

To date, 358 tracts of land have been enrolled in QMAP totaling 82,554 acres with 12,540 (15%) under some form of quail management (Figure 2). Average tract size is 244 acres, and ranges as high as over 4,000. Landowners must complete a very simple two-page application and provide a tract map of some type to enroll. The application provides basic information about the parcel. The application is forwarded to the appropriate PLWB and they quickly arrange a site visit and begin the process of helping the landowners achieve their goals. Each applicant receives a mailed packet of comprehensive quail management information, including 2 DVDs, and several quail extension publications. In addition, each QMAP enrollee gets a “frame worthy” certificate of appreciation for their role in quail recovery.

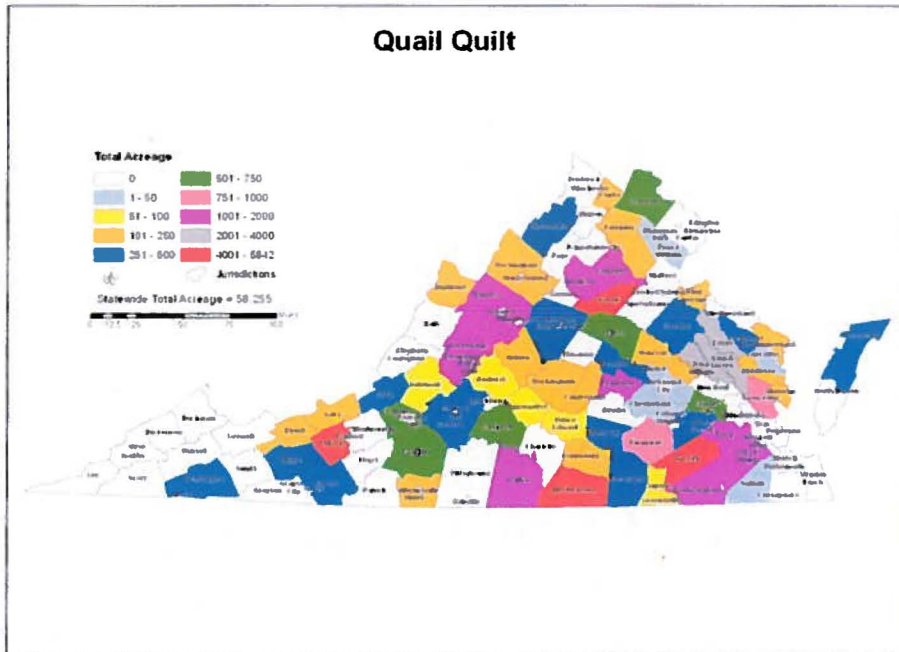


Figure 2. QMAP Participation by Acreage Enrolled (2014)

Early Succession Habitat Demonstration Areas

Examples of good quail and early succession habitat are important to educating landowners about what quail need to survive. While the department has a long track record of creating good habitat on department-owned Wildlife Management Areas (WMAs), conditions on some of them are not conducive to quail management, particularly west of the Blue Ridge. Virginia’s WMAs tend to be small in relation to what would be considered a “deep south quail plantation.” Most of the WMAs east of the Blue Ridge are between 2,000 and 4,000 acres, the exception is Big Woods WMA in Sussex County which when combined with The Nature Conservancy (TNC) and VDOF adjoining properties is over 7,000 acres. The piedmont WMAs are still largely dominated by hardwood stands, though pine is also abundant.

Three areas were designated as quail habitat demonstration areas at the beginning of the QRI. Powhatan WMA in Powhatan County, Amelia WMA in Amelia County and New Kent Forestry Center in New Kent County (in cooperation with VDOF). It should be noted that VDGIF has many constituent groups that utilize these WMA’s. This makes it difficult to manage a WMA entirely for quail. Though quail management techniques tend to also benefit deer, turkey and other game and non-game animals, wholesale management of a WMA strictly for quail has to be weighed against the needs of other constituent groups. Regardless, much work has been accomplished on the 3 designated quail demonstration areas.

Since 2009, over 2,300 acres have been managed for early succession species. The management includes: clear-cutting, timber thinning, understory prescribed burning, rotational disking in fields, fescue eradication, food plot planting, planting of extensive legumes (great for quail), selective herbicide applications, field border and native grass / wildflower establishment and more. These areas can now serve as places to take groups of landowners on educational tours. The plan is also to develop some self-guided tours perhaps using smart phone technology. In addition to these three quail demonstration areas, many of the department's WMAs have extensive early succession habitat and can also serve as educational backdrops when needed. These include: Big Woods-Piney Grove, Feather Fin, Mattaponi, Chickahominy, and White Oak Mountain. Big Woods-Piney Grove is being managed primarily for the endangered Red-Cockaded Woodpecker, but it also serves as Virginia's official NBCI Quail Model Focal Area (explained in more detail under National Efforts). The use of heavy timber thinning and prescribed fire to manage for red-cockaded woodpeckers is highly compatible with quail management.

Additional educational opportunities are found on large tracts of private lands accessible to department staff that are being solely managed for quail similar to the deep south quail plantations. Biologists have no trouble finding other private lands for workshop field tours through the department's long-term networking with dozens of landowners throughout the state.

National Level Involvement and Leadership

The National Bobwhite Technical Committee began as the Southeast Quail Study Group (SEQSG) in 1995 at the request of the Directors of the 13 Southeastern Association of Fish and Wildlife Agency States. The SEQSG became the 25 member state NBTC in August, 2010. The NBTC is a professional entity primarily composed of state agency wildlife biologists, non-governmental organization staff (Quail Forever, Quail and Upland Wildlife Federation, Quail Coalition, etc.), along with federal biologists and lands manager and other partners. The by-laws of the NBTC state that a majority of the NBTC Steering Committee must be biologists with state wildlife agencies to insure state control is retained over bobwhite quail management. Since bobwhites are non-migratory species, they do not fall under the purview of the U.S. Fish and Wildlife Service. Thus unlike waterfowl recovery efforts, which had the full support and weight of the U.S. Fish and Wildlife Service behind them, the bobwhite quail has not had the same level of support. The NBTC is a voluntary effort by states, for states, to help manage a non-migratory species with a unified national effort. Several VDGIF staff played key roles over the last 4 years in seeing that this organization survives and prospers for the good of all 25 NBTC

states. Since 2010, the VDGIF small game project leader has served in a leadership role on the NBTC steering committee.

The NBCI is a model plan for national quail recovery with 5 staff members to help insure it is implemented. The NBCI staff consists of a Director, an Assistant Director and Science Coordinator, A Forest and Prescribed Fire liaison, an Outreach and Communications Coordinator, and a National Agricultural Policy liaison. All the staff members work on behalf of the states at the discretion of the NBCI Management Board, which consists of high level state agency officials. Stable funding to support the positions has been problematic. Until recently, the NBCI staff positions were funded by grants from the National Fish and Wildlife Foundation (NFWF). The NFWF never funded the positions to the full level proposed then in March of 2014 pulled their funding completely. VDGIF's efforts, with help from many states, led to a 3-year NBCI staff funding effort. Fourteen states increased their support of NBCI staff significantly, and the remainder agreed to continue to fund NBCI staff at their existing level. This enormous team effort insures that NBCI staff will be solidly funded through July, 2017.

Virginia continues to provide key leadership in the NBTC. The VDGIF small game project co-leader now serves as the chair of the research subcommittee of NBTC. A major product of this committee has been the Coordinated Implementation Plan (CIP). This is a coordinated effort among states to unify methods for designing and documenting focal recovery areas. The goal is to show in a scientific manner that managing quail habitat works. Rigorous science based management is a key concept for both VDGIF and the NBTC. Several Virginia Quail Team staff participated in workshops to develop the protocol for the CIP. Virginia is also one of the first 7 states to implement the CIP on the ground.

Additionally, all members of the Virginia Quail Team actively participate in subcommittees of the NBTC. The NBTC subcommittees are the arm of the group that insures cooperative work continues throughout the year on bobwhite recovery. Virginia continues to provide key leadership in national quail conservation. Strong national efforts lead to strong state efforts and both are needed for widespread bobwhite recovery.

In July 2013 Virginia, under the department's quail team's leadership, hosted the 19th annual meeting of the National Bobwhite Technical Committee. Over 125 quail professionals attended from 23 of the 25 NBTC states. The meeting's theme was "Appalachian Overlap: Where the Ranges of Quail, Grouse, Woodcock and Golden-winged Warblers Occur Together." It focused on early succession habitat with the realization that these habitats are important to a variety of species and working together collectively species recovery goals can be achieved. The meeting was sponsored by a variety of companies and organizations including: Angler Environmental, American Electric Power, Dominion Virginia Power, Orvis, Alpha Natural

Resources, National Wild Turkey Federation, Quail Forever, Quail and Upland Wildlife Federation, Texas Quail Coalition, Ruffed Grouse Society, Timmons Group, U.S. Forest Service, USDA NRCS, the Wildlife Foundation of Virginia, Ernst Conservation Seed, Roundstone Seed, King Communications, Bass Pro Shops, the Virginia Department of Forestry and the National Shooting Sports Foundation. This highlights Virginia's leadership role in quail recovery.

Promotion of Quail Hunting

Promoting quail hunting has been one of VDGIF's biggest challenges. Hunting trends have progressed more and more towards big game animals like deer, bear and turkey as their populations have climbed. Even abundant small game species are no longer hunted to the extent that they were when big game animals were less abundant. Declines in small game hunter numbers have been seen across the board. For example, in 1973 there were over 250,000 squirrel hunters. Today there are around 50,000, even though there are probably more squirrels now than there were then. The situation is bleak for bobwhite quail hunters. There were 143,000 estimated quail hunters in 1973 and today there are fewer than 9,000. This represents a decline of nearly 94%. Quail hunters have declined more than quail populations. The struggle lies in how to promote hunting a species that is difficult to find in many parts of Virginia. Though there are still areas of Virginia in which huntable quail populations can be found, and where some avid quail hunters continue to be successful, land ownership patterns have shifted. Additionally, large tracts of corporate timber lands once open to the public with the purchase of an annual permit have been sold and are now generally under hunting leases. Access to land to hunt has declined and is something the department struggles with for many species. Complicating this for quail hunters is the need for larger tracts of land due to the nature of quail hunting. A quail hunter with bird dogs needs access to tracts hundreds of acres in size. VDGIF staff will continue to look for ways to best promote quail hunting in today's landscape.

One of the first steps staff undertook to promote quail hunting was to emphasize the availability of "hunting preserves." Also commonly called shooting preserves, most of the quail hunting that occurs in Virginia today is on commercial hunting preserves. With an extended season running from September 1st through April 30th and an unlimited supply of pen-raised quail, hunting preserves play a key role in keeping the tradition of quail hunting alive throughout the southeast. Working closely with the Virginia Hunting Preserve Association, VDGIF staff developed the Virginia Upland Game bird Trail (<http://www.dgif.virginia.gov/quail/upland-game-bird-trail.pdf>). The Upland Game Bird Trail was featured in an article written by outdoor writer Clarke Jones in Virginia Wildlife in 2010. It featured an introduction story about the hunting preserve experience. Hunting preserves were

also advertised in a special section on the small game page of every VDGIF annual Hunting and Trapping in Virginia digest. Locating, contacting and enjoying Virginia's hunting preserves has been made easier for hunters. Hunting preserves have been encouraged to take it upon themselves to offer special incentives to recruit new hunters. It is in their best interest to market and develop their own future hunters.

Virginia Wildlife magazine has been a critical source of outreach to Virginia's sportsmen. An article was written for Virginia Wildlife entitled "The 21st Century Bird Hunter" (September/October 2013). The basic premise is that as lands become more and more fragmented, game bird populations will become more and more scattered and upland bird hunters will have to become more innovative in how they approach the sport. The article encouraged "bird hunters" to branch out and think "outside the box." By combining woodcock, ruffed grouse, quail, dove and even turkey hunting, there is still a place in Virginia for upland game bird hunters. Whether we like it or not, whether some want to hear it or not, the classic days of the gentlemen quail hunter in Virginia are not coming back. But if one compares that to deer hunting, with all the new technology and equipment, the classic deer hunter is just as rare. The world continues to change and part of the "quail problem" is one of failing to adapt.

Staff also wrote a piece in Virginia Wildlife entitled "Listening Closely to an Old Bird Dog" which appealed to what the true meaning of being a bird hunter is (December 2010). It focused on looking at life through the eyes of a bird dog and how that relationship was the core of what mattered. Other Virginia Wildlife articles include: "Bring Back Bob" by Tee Clarkson in 2008, "Monitoring for Bobwhite" by Jay Howell in September/October 2013, "Creating a Quail Quilt" by Sally Mills in January / February 2013, and a special report on the QRI in September / October 2014. Numerous editions have run advertisements for the quail program.

The Department has administered some very limited lottery quail hunts. On the quail demonstration area at the New Kent Forestry Center two regular hunts and one apprentice hunt per year are offered by lottery application and drawing. Selected hunters can bring two guests and use bird dogs to hunt one day. In addition the department has reached out to some non-traditional partners that have not had a history of hunting such as The Nature Conservancy to explore possibilities of limited, lottery type quail hunts on their lands where applicable. While many of their lands are open to some form of deer hunting, their membership does not agree with continuing to hunt a species in decline like the bobwhite quail. The department has reached out to some state parks as well, but they currently only allow hunting for species that are over abundant like deer. The department will continue to look for methods to increase interest and participation in quail hunting.

Promotion of quail hunting in Virginia should present an opportunity for the NGOs like Quail Forever and the Quail and Upland Wildlife Federation, but these groups have not invested heavily in the state. Quail Forever, which is a subsidiary of Pheasants Forever, does best in the “pheasant states” and they rely on support from the pheasant hunters in the mid-west. It is difficult to establish quail oriented NGO chapters in a state like Virginia with only 9,000 quail hunters of which most are only occasional quail hunters. Virginia, due to its continued suburbanization and population growth is a less and less attractive choice for investment by quail oriented NGOs.

Research Activities

The bobwhite quail is one of the most studied organisms in the entire field of wildlife management. Beginning with some of the first studies on bobwhites conducted during the 1920s, bobwhites continue to be the focus of much research. The current QRI is more focused on habitat recovery than on research as the department continues to believe habitat loss, for a variety of reasons, is the primary cause for the quail decline. This doesn't mean that the department isn't involved in ongoing quail research. Due to budgetary and staff time constraints, the agency's role has evolved into primarily an advisory one except in the cases of a few key projects. The department also has ongoing population monitoring efforts that supplement these research projects that will be explained in more detail in a later section.

The department completed two pilot research projects through contracts with partners. In 2010, Dr. Dean Stauffer at Virginia Tech examined the utility of reclaimed surface mined lands in southwest Virginia for bobwhites (<http://www.dgif.virginia.gov/quail/quail-habitat-final-report.pdf>). The report on “Potential of Reclaimed Mine-land to Support Northern Bobwhite – A Pilot Study” was completed in October, 2011. The study used field habitat sampling and comparison to bobwhite habitat suitability indexes to examine whether reclaimed surface mined sites in Lee, Wise and Dickenson Counties, southwest, Virginia, were suitable for quail reintroduction. The study concluded that the ability of reclaimed mined land in southwest Virginia to support quail populations was poor to moderate. However, it was also suggested that with some improvement in how these sites were re-vegetated, that potential for quail existed. In western Kentucky, where quail have thrived on reclaimed surface mined tracts, the terrain is much less mountainous than in Virginia's surface mined areas. Additionally, the reclaimed mined sites there tend to be much larger and more contiguous than in Virginia. The tracts examined in Virginia tended to be less than 75 acres in size and widely scattered across a series of ridges. In Kentucky their most notable reclaimed surface mined area, known now as the Peabody Wildlife Management Area, is comprised of nearly 20,000 contiguous acres of rolling, piedmont terrain, much of it mined and reclaimed. The Virginia Tech study indicated

Virginia's reclaimed surface mined areas were more suitable for ruffed grouse, than bobwhite quail.

A second pilot study was completed through contract with the Conservation Management Institute at Virginia Tech. This study was designed to examine whether aerial photos from different time periods could be used to numerically differentiate quail habitat quantity through time, and further, could modern aerial photos be used to evaluate a landscape for its potential for quail recovery. Through this pilot study, the staff at CMI developed a new technique for assessing habitats using linear transects rather than the traditional polygons used in photo interpretation. The preliminary conclusions were that habitat quantity has declined through time, in some cases markedly, but that not all of the decline could be captured via aerial photo interpretation. There were some habitats where quality of habitat declined, as well, and those changes were not obvious through aerial photos. The method shows promise for interpreting and evaluating modern landscapes to help identify places where quail could most likely be restored. A proposal is in development to expand the study.

In addition to these two pilot research projects, at the urging of former House of Delegates member William T. Wilson (key proponent of the 1988 Joint Legislative review bill) VDGIF staff provided 60 quail wings for analysis for mercury contamination. The wings were randomly selected from hunter harvested wild quail wings submitted by VDGIF annual quail hunter cooperators (2009-2010 and 2010-2011). The majority of the wings were obtained in the southern piedmont and coastal plain which is where most of Virginia's quail hunters find success. Thirty juvenile and thirty adult quail wings were tested by the Biodiversity Research Institute in Gorham, Maine. Whole feathers were analyzed using a Direct Mercury Analyzer. Mercury is a known contaminant ubiquitous in our environment and has been shown to be problematic in songbirds, particularly those that feed in riparian zones or over water. Mercury bio-accumulates via dispersion in rainfall, through water, into aquatic organisms, then further into animals that feed on those organisms. Theorized exposure to quail could occur if they drink water from dew. Wing feathers have long been an accepted method of testing for mercury contamination in birds. Results of this study stated, "From the wings sampled, mercury does not appear to pose a significant threat to bobwhite quail. The mercury levels were 0.049 and 0.054 ppm from the 2009-2010 and 2010-2011 samples, respectively. These mercury levels are an order of magnitude lower than what has been found to be problematic in songbirds." A copy of the full report is available.

In 2013, staff proposed a major research project that would examine the possibility of using new techniques pioneered by Tall Timbers Research Station (based in Tallahassee, Florida

- <http://www.talltimbers.org/>) to reintroduce quail in areas where they are largely extirpated; and to bolster existing populations in areas where they occur, but are at low to moderate densities. This project would be a partner effort between Tall Timbers, Virginia Tech, VDGIF, Virginia Department of Conservation and Recreation State Parks, and Plum Creek Timber Corporation. The project would be ongoing for three years and involve several Master's degree students. VDGIF staff and members of the quail team would play key roles in the project. It is believed that these pioneering quail reintroduction methods, which rely on new hatching and rearing techniques for wild strain quail in captivity, could prove highly useful in not only restoring quail, but in encouraging landowners to implement habitat. Due to VDGIF's budget cuts the project was not approved for funding in fiscal year 2015. The project will be resubmitted for FY16.

CURRENT STATUS

The following section on population and monitoring will explain in more detail the overall status of quail in Virginia. VDGIF's efforts have had more success in some areas than in others but overall successes are limited. The most notable area would be portions of Sussex County where many years of conservation efforts, targeted outreach, a concentration of conservation minded landowners and entities and favorable timber management practices have all come together to create a fairly large section of high bobwhite densities compared to other portions of the state. Avid quail hunters in this area report substantial success, one group reported over 100 unique quail covey finds in the 2013 season. Several large landowners (one property over 10,000 acres) are doing considerable prescribed burning each year. The re-establishment of Long-leaf pine, a species much reduced in Virginia and dependent on fire to prosper, has taken hold in the area. All these factors, some a result of conservation effort, and some quite by accident, prove quail can still do well in Virginia.

Another similar pocket of high interest and effort developed in the northern portions of the King and Queen County focal area. Perhaps not as notable as the Sussex area, portions of King and Queen again showing high landowner interest in a concentrated area is producing more quail than in other areas of the region. Over 20 quail conservation projects have occurred in this area and landowners report seeing and hearing more quail than they have in many years.

The same is true in parts of the Halifax County focal area. Long term interest from key local landowners has spurred renewed interest in bobwhites from large and small landowners alike. Several large property owners have played key roles in keeping the quail tradition alive in the county. Many smaller landowners have also reported an increase in their quail coveys. The effort is more scattered in Halifax than in the other focal areas and quail can be found throughout the county in fair numbers.

To a lesser extent, there is a pocket of landowner interest in Rappahannock County that shows promise. Several key landowners, along with the Smithsonian Conservation Biology and Management Institute have led local efforts. Bobwhites have responded, having shown up on several properties where they had not been seen in years. No stocking of quail has occurred. These are wild quail that found the newly created habitats in a portion of the state where quail are quite rare. This gives hope that when good habitat is created, in most parts east of the Blue Ridge, quail can respond.

West of the Blue Ridge Mountains the situation is less optimistic. Wild quail are heard in some counties, but overall quail are not recovering west of the Blue Ridge Mountains. The department's goal west of the Blue Ridge Mountains is to look at new ways of reintroducing quail to pockets where substantial management is occurring in order to establish source populations of quail. One bright spot exists in that the U.S. Forest Service is conducting an increased amount of prescribed burning annually. They have been a good partner in the latest quail recovery efforts. The USFS is burning in large, contiguous blocks of several thousand acres, and they have plans to burn as much as 100,000 acres in rotation with 20,000 to 30,000 acres being prescribe-burned each year. This is conducive to grouse and could be conducive to quail. These large burn units could support bobwhites through time. The department's goal is to include several of these burn units in the study to determine if the Tall Timbers Research Station's new methods of rearing wild strain quail in captivity could effectively contribute to repopulation of quail west of the Blue Ridge Mountains.

Quail Population Status, Trends and Monitoring Efforts

The Department has several major programs that monitor quail populations in Virginia. Each of these programs provides a different snapshot of quail populations through their breeding cycle. In June, the peak calling time for quail in Virginia, the department attempts to assess the breeding population through a statewide network of survey routes. In August, with the aid of mail carriers for the US postal service that deliver mail along rural routes, a survey is conducted to gauge the population going into the hunting season. Hunter harvest and success is then measured using the Avid Quail Hunter Survey and the biennial Hunter Harvest and Effort Survey.

Beginning in 1980, the department began conducting surveys of singing males along secondary roads for the VDGIF June Quail Call and Rabbit Survey. Through time this survey has consisted of 214 routes distributed statewide (Figure 3). As part of this survey, staff biologists and volunteers estimate the number of bobwhites singing during a two minute window at ten stops distributed along the survey route. The primary strengths of this survey are that observers are highly skilled and routes are evenly distributed throughout the state. The

weaknesses are that the amount of area actively surveyed is low relative to the total area sampled. The result provides the department with population trends and relative abundance statewide and for the major climate regions of Virginia (Figure 4).

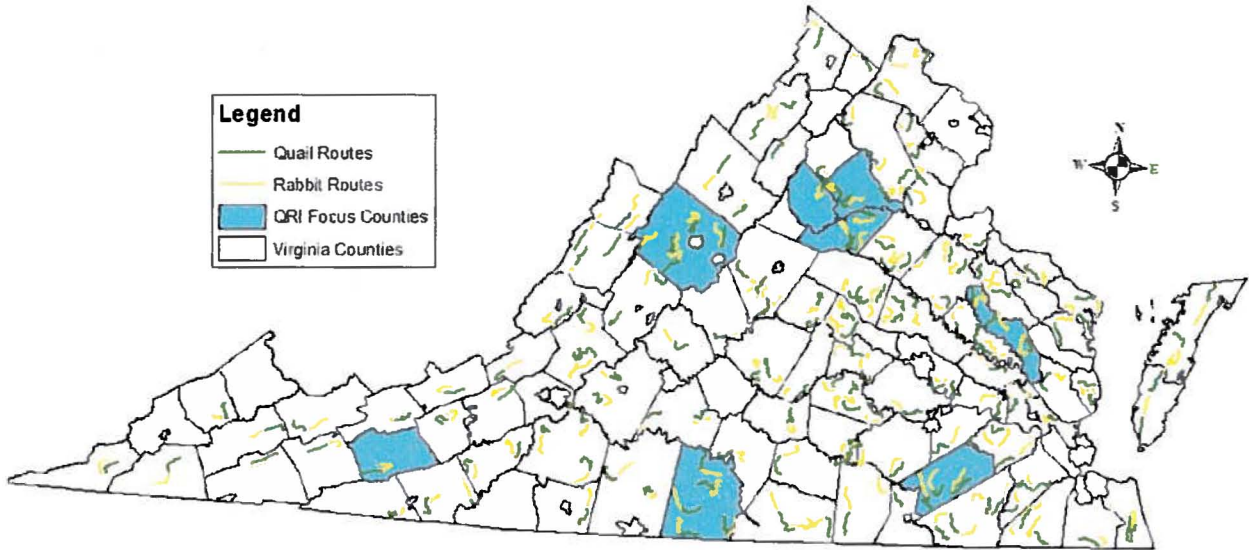


Figure 3. VDGIF June Quail Call and Rabbit Routes 1980-2014

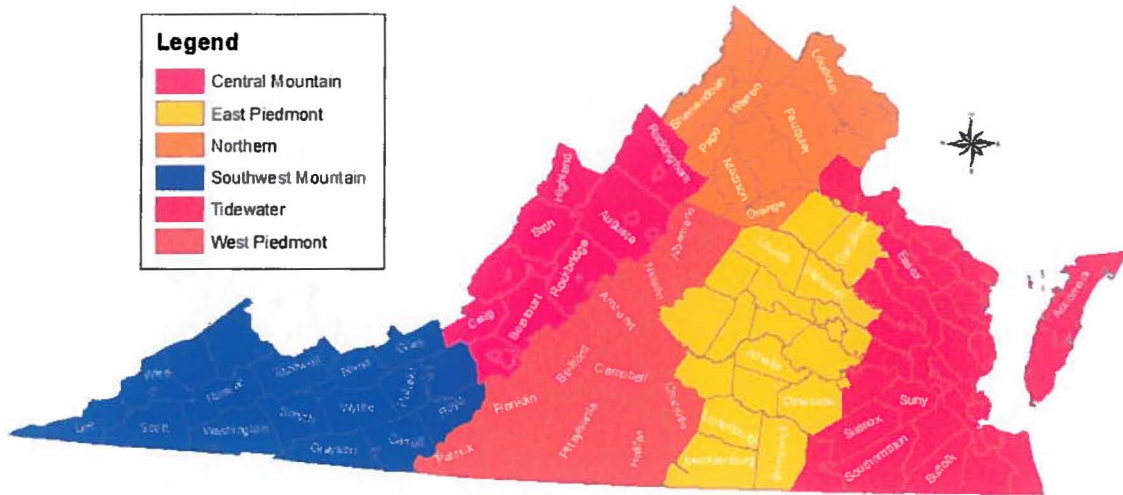


Figure 4. Climate Divisions of Virginia

The results of the survey clearly show the population decline throughout the state (Figure 5). Since 1989 (the first year the number of individuals at each point was estimated), the number of males observed singing has declined at an average rate of 5% per year statewide.

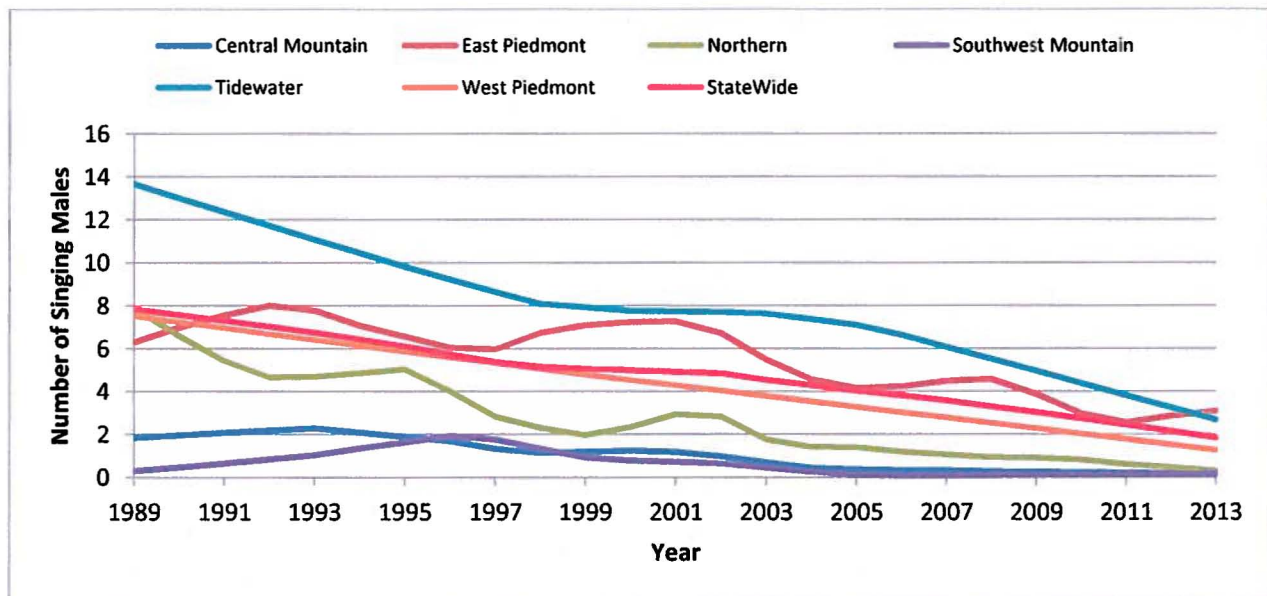


Figure 5. LOESS Smooth of Average Number of Quail Heard during the VDGIF June Quail Call and Rabbit Survey (1989 - 2013).

Regional trends are mostly negative (Figures 6). The exception is the Southwest Mountain region which has shown an increasing trend over the survey and in the last five years. It is important to note however that all three zones comprising the Blue Ridge and western parts of the state have declined to near zero. Populations in these areas are sparse and likely very unevenly distributed. This means that trend estimates for these areas are volatile to individual observations and annually inconsistent. The survey can no longer measure them effectively. In the piedmont and the tidewater, there remain good huntable populations of quail, but declines continue in these areas.

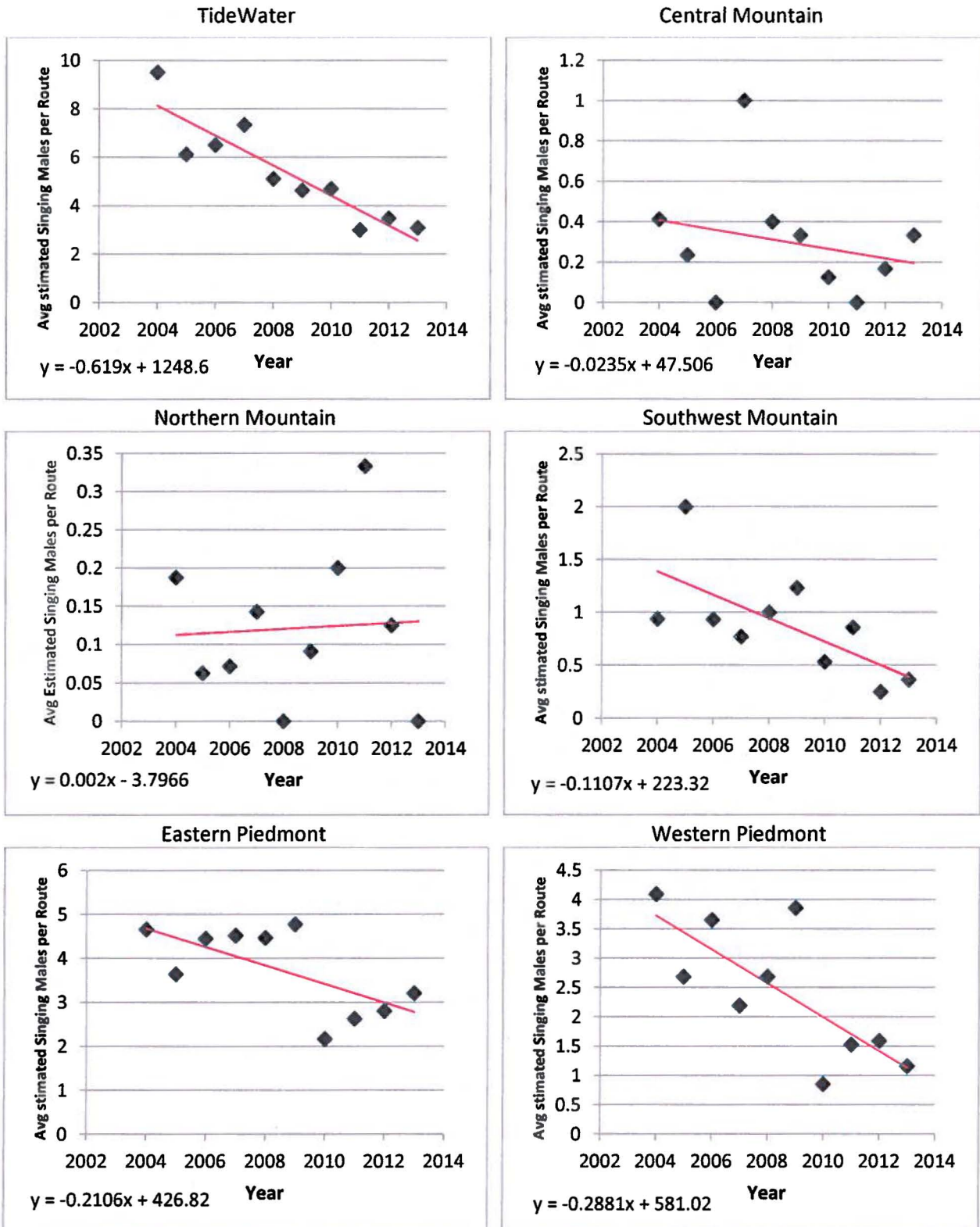


Figure 6. Ten Year Regional Quail Population Trends Based on the VDGF Quail Call and Rabbit Survey (2003-2013)

In 1988 VDGIF entered into cooperation with the United States Postal Service to survey for quail, rabbits, squirrels, and raccoons along rural mail delivery routes. Carriers are asked to write down the number of each species they encounter while delivering mail along their routes over a five day period in August and September. The strengths of this survey are that there are a large number of mail carriers distributed widely across the state. The weakness of this survey is that effort and ability of individual carriers varies widely. The resulting data provides estimates of the population going into the hunting season (Figure 7) and regional and statewide trends (Table 1).

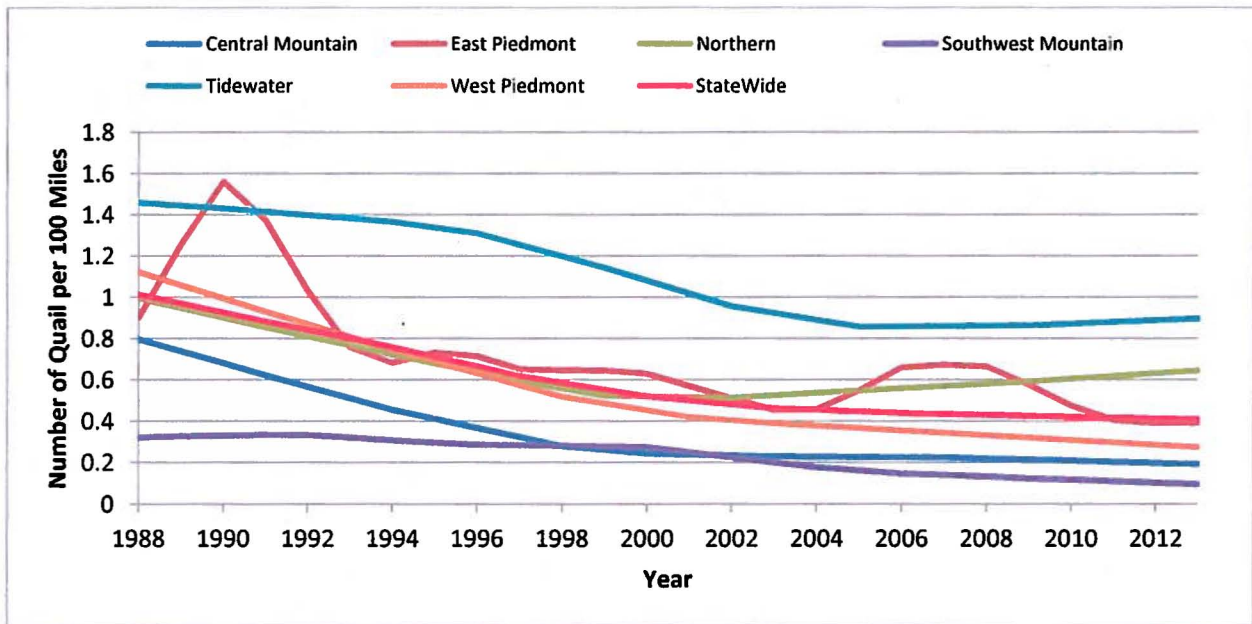


Figure 7. LOESS Smooth of Average Number of Quail Observed per 100 miles during the VDGIF Rural Mail Carrier Survey (2003-2013)

Survey	Trends	Central Mtn	East Piedmont	Northern	Southwest Mountain	Tidewater	West Piedmont	Statewide
Quail Call	Overall	-9.10%	-2.40%	-11.59%	0.74%	-6.46%	-7.11%	-5.83%
Quail Call	5 year	-11.13%	-6.56%	-20.02%	6.09%	-13.45%	-12.95%	-11.12%
Quail Call	10 year	-10.92%	-3.55%	-15.29%	-3.02%	-10.56%	-10.77%	-8.99%
Rural Mail	Overall	-5.45%	-2.22%	-1.65%	-4.67%	-1.91%	-5.48%	-3.54%
Rural Mail	5 year	-2.76%	-8.93%	2.17%	-6.23%	0.90%	-3.87%	-0.96%
Rural Mail	10 year	-1.90%	-0.91%	2.06%	-6.65%	0.08%	-3.55%	-1.18%

Table 1. Average Percent Change in Singing Males per Route for the VDGIF Quail Call Survey (1989-2013) or Quail Observed per 100 Miles in the Rural Mail Carrier Survey (1988-2013).

Since the survey began the number of quail observed per 100 miles traveled by the carriers has declined by almost 50%. In this survey, the rates of population decline regionally and statewide over the last 10 years have been much lower than the rates observed in the Quail Call Count Survey (Figure 8). While staff cannot be completely sure about the reasons for the differences in trends between the two surveys, staff does believe that as populations have declined throughout the state, distributions of bobwhites have become more clustered into smaller areas of suitable habitat. The rural mail carrier survey with its far greater potential survey area may be less sensitive to this issue by being better able to sample these clusters. In terms of relative abundance, both surveys agree that populations in western parts of the state have declined to very low numbers, with larger populations residing in the Piedmont and Tidewater. The exception is that the Northern Mountain region has always had a larger reported population than we would expect based on observations from other sources. This may be an artifact of uneven effort or ability among carriers.

As these results have shown, quail populations (particularly in western parts of the state) have declined to where VDGIF's current survey methodologies may no longer be adequate to produce a clear picture of what is occurring on the landscape. With this in mind staff has begun the process of developing new methodologies which will hopefully sample the population in a more effective manner. Staff is also hoping to leverage new technology to streamline the surveys and make them less staff time intensive and more cost effective.

Finally, it is important to note that both of these surveys sample the population at landscape scales. The habitat creation projects that VDGIF and other partner agencies have developed are by their nature affecting bobwhites at finer scales. This means that until the cumulative effect of these finer scale projects reaches landscape levels, these surveys are unlikely to detect their positive local effects. Staff hopes that given time and focus, these cumulative effects will be seen. In the interim, however it is important to be able to show that the department's habitat creation projects are showing local positive effects. In response to this problem, the National Bobwhite Technical Committee (NBTC) and VDGIF have developed the Coordinated Implementation Plan (CIP).

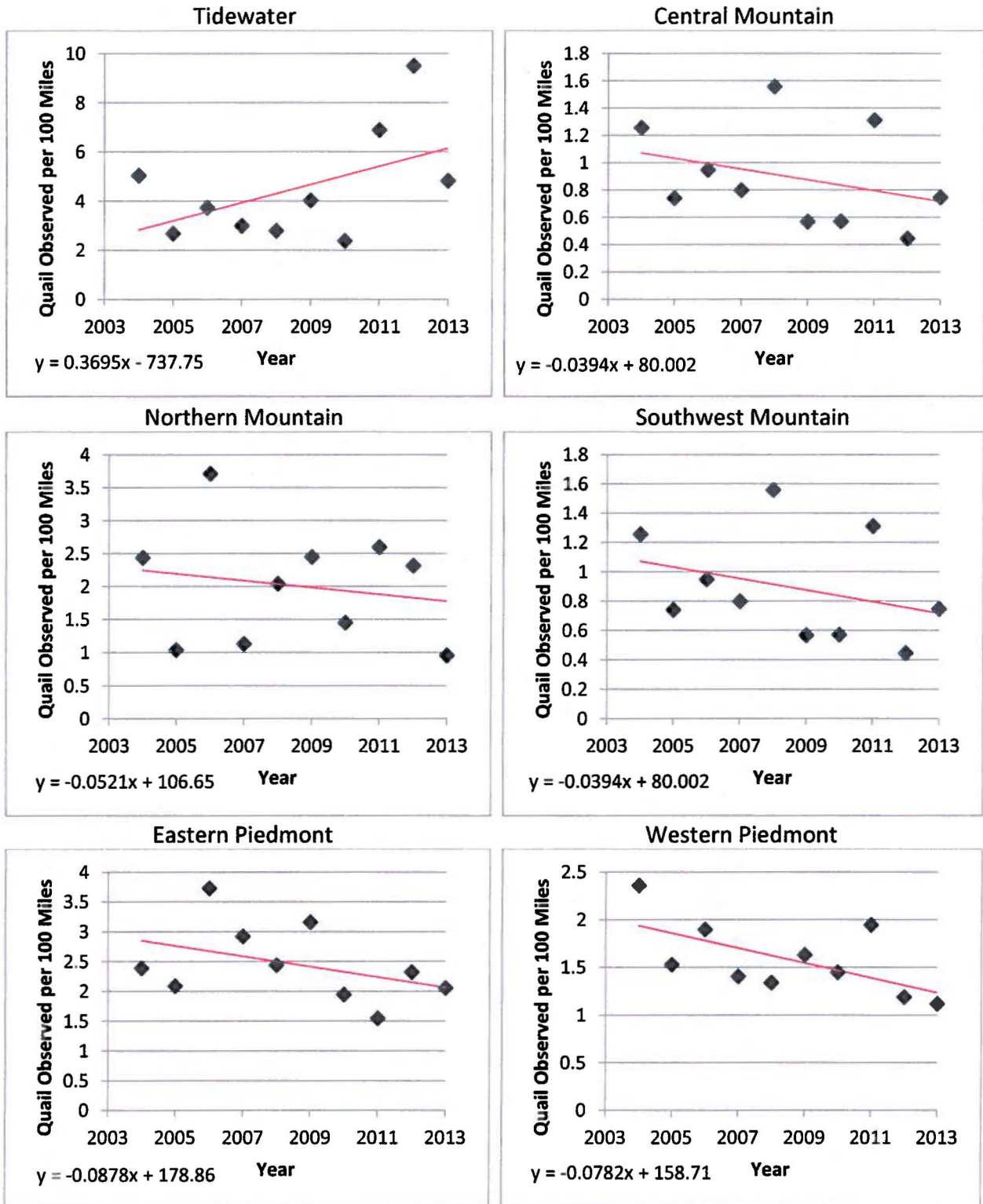


Figure 8. Ten Year Regional trends for Quail observed in the Virginia Rural Mail Carrier Survey (2003-2013).

The CIP is an effort by the partner states in the NBTC to develop a joint approach to focal area creation and monitoring. It employs a tiered approach where smaller scale focal areas are integrated into progressively larger areas in order to eventually effect landscape change through focused local efforts. The plan also includes a monitoring protocol for these focus areas that propose to track population density over a ten year period. These observed densities are then compared to goals set by coordinators to determine success or failure. A full description of the CIP can be found at:

http://bringbackbobwhites.org/component/docman/doc_details/194-nbci-coordinated-implementation-program-2014?Itemid=128 .

Virginia is acting as one of a few pilot states for this effort. Staff selected the Big Woods WMA and State Forest combined with The Nature Conservancy’s Piney Grove in Sussex County as the pilot study area (Figure 9). This area has been principally managed for red cockaded woodpeckers, but staff believes that the habitat practices already in use can be tweaked to be very positive for quail. Preliminary results from the monitoring have shown that spring quail populations are higher than in the surrounding landscape. With further refinements, it is believed that the quail population can increase substantially and make this area a model for throughout the state.

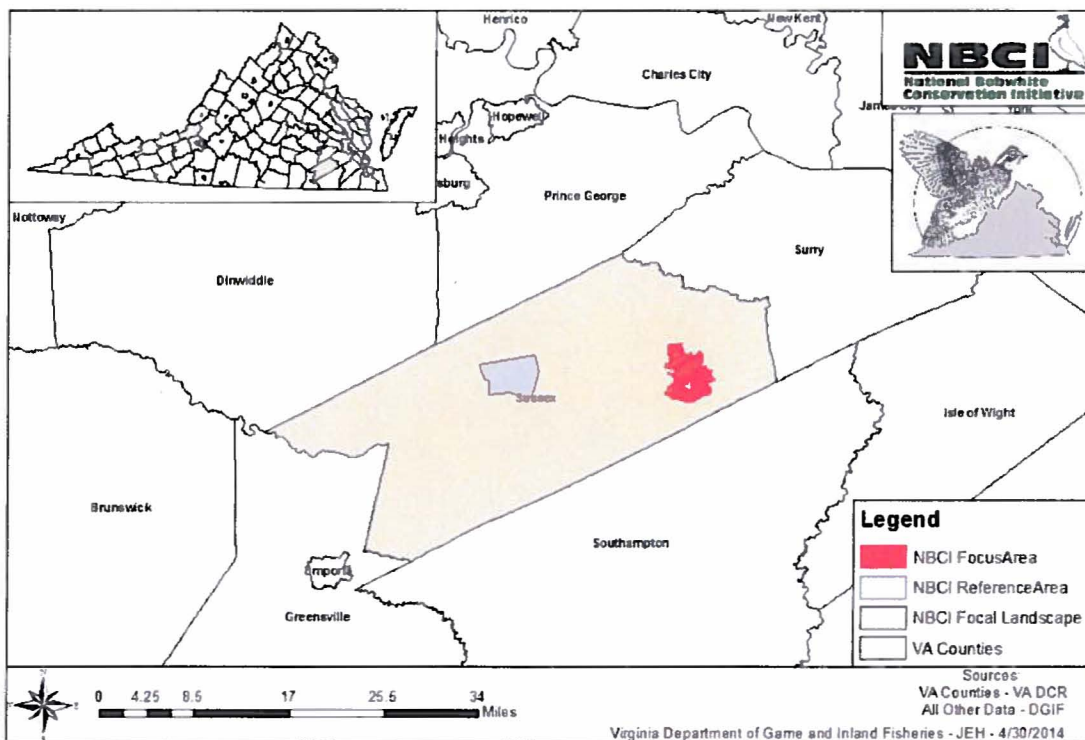


Figure 9. NBCI Focal Tiers in Virginia, the Big Woods WMA and State Forest/Piney Grove Focus Area (2014).

QUAIL RECOVERY INITIATIVE COMPREHENSIVE REVIEW PROCESS

As part of the 5-year QRI review, staff began a comprehensive input and evaluation process. In October, 2013, department staff met to discuss in detail the QRI, what was working, what was not working and how to improve it. The proposed "Quail Study Bill" moved forward in the 2014 General Assembly and also requested the department to review existing efforts and to look for new methods to restore the bobwhite quail. This was then wrapped in to our QRI comprehensive review process. In February, 2014, the Steering Committee of NBTC met in Knoxville, Tennessee where many topics were discussed including the Virginia General Assembly "Quail Study Bill."

On June 30th, 2014 a review session was convened with the Director's Quail Advisory Group (DQAG). Staff gave comprehensive reports on accomplishments to date. This was followed by a brain storming session with members. Those members include: Charles McDaniel, Chairman, Hildrup Companies, Inc., Scott Reed, formerly of Dominion Virginia Power, Ben Davenport, Chairman, First Piedmont Corporation, James Hazel, President, Angler Environmental, Curtis Colgate, Managing Partner, Peaceful Valley Limited Partnership, Briscoe White, President, The Growers Exchange, Ward Burton, NASCAR Driver and conservationist, Matt Thompson, Investment firm owner, John Mullin, Ridgeway Plantation, Jimmy Wheat, Wheat First Securities, Peter Easter, Easter Associates Inc., Hudson Reese, Reese farms, Halifax, Va., former Virginia Governor the Honorable A. Linwood Holton, William T. Wilson, Wilson, Updike and Shaw, former state delegate, Terry Austin, current state delegate (19th District), Our reports were well received and the group was impressed with what had been done, but concerns were expressed. One common theme was the difficulty encountered by landowners trying to conduct prescribed burning.

On July 10th, 2014, staff conducted a review and input session with the department's Virginia Quail Council. A comprehensive report was given the 40 participants to begin the meeting. This was followed by a question and answer session. The group was then divided into 4 sub-groups, each led by a facilitator to gather specific input. Several common themes arose from the breakout groups. An overarching component that each group deemed to be missing from our efforts was effective, wide-scale, professional marketing and communications. Notes of the meeting are contained in Appendix A. In addition to the meeting, staff conducted an electronic survey of the VQC membership to allow those not able to attend the meeting to comment. Staff also conducted an electronic survey of our QMAP list serve members and solicited input from the quail oriented non-governmental organizations in Virginia.

On September 16th, 2014, staff conducted a second meeting of the DQAG at VDGIF Richmond headquarters. This meeting led to a series of general recommendations from the group (Appendix B). This meeting was highlighted by two special events. The first was an MOU signing between the Virginia NRCS and the VDGIF extending the funding for the 5 private lands wildlife biologists through December, 2017. The second was a presentation from NBCI Director Don McKenzie. Mr. McKenzie updated the group on the plight of the bobwhite nationally. He also commended the Virginia Quail Team as a long term leader in quail conservation efforts. He mentioned that Virginia had in place many of the ingredients necessary to lead to quail recovery, but that quail would not come back overnight and the effort needed long term support.

Other recommendations of note from the DQAG was the mention of trapping and transferring wild quail to help with population recovery similar to what was done for wild turkey and more involvement of the rural electric cooperatives. The absence of the quail NGOs like Quail Forever and the Quail and Upland Wildlife Federation was noted and it was requested by the group that the department make efforts to involve them in the future. It was pointed out that chapters of these groups have waned in Virginia and there are only two active chapters in the state at this time. Staff has reached out to Quail Forever nationally with little success. Staff has had success locally working with the upland habitat branch of the National Wild Turkey Federation and they are interested in helping with quail recovery. Some attendees felt the department needed to work with large landowners, while others said not to forget most of Virginia was made up of smaller landowners. One attendee wanted more done to alleviate complications to conducting predator control and prescribed burning. Another member requested more work to be done with regards to the role of environmental contaminants in species decline. It was suggested a meeting be convened between VDGIF biologists and members of some of the larger timber management corporations in Virginia to discuss potential areas for cooperation. Another suggested that Virginia should make it easier to conduct supplemental feeding for quail, as is done on large areas of the "deep-South." Mention was made that much of what staff write about quail is too much "feel good" and more frank articles are needed, truly highlighting the plight of the bobwhite.

On October, 23rd, 2014, VDGIF staff met with professionals from Plum Creek and John Hancock Timber Management Corporations on Plum Creek and John Hancock lands in Buckingham County, Virginia. Staff was joined by a private consulting forester from Nottoway County, who also manages timber and wildlife on Ft. Pickett, Virginia. The discussion centered on concerns over intensity with which forestry herbicides are applied to prepare for pine planting. Productive discussions ensued, but the timber corporations are not prepared to change herbicide prescriptions on a wide scale. They are willing to work with the department

on research and habitat projects through time and indicated willingness to modify some post-harvest practices to benefit quail.

This input process and review has led the department to develop many more suggestions for strategies to improve efforts towards the restoration of the bobwhite quail in Virginia.

Potential Strategies for Enhancing the QRI

In this section recommended strategies are listed that suggest ways of improving on the department's current Quail Recovery Initiative. The first group of strategies is of a broader and larger scope that will require outside collaboration not necessarily led by the department. The second group of strategies is led by the department or in collaboration with partners.

Strategies of a broad scope:

- 1) Develop and implement a comprehensive strategy for appropriate state agencies to manage their lands for early succession wildlife habitat. To implement this strategy, a review of all state owned lands is needed to assess acreage of open lands and the current management policies of these lands. Further assessment to determine whether such practices as mowing, planting non-native species etc. are done on these lands and what alternative practices could be supplemented to benefit quail and other early succession wildlife species. As an example, one of the most common management strategies on open state lands is year round mowing. In addition, much of the open lands owned by many state agencies are planted to non-native invasive grass species like fescue. The state could save money in the long run and have positive impacts for wildlife if a high percentage of these lands were converted to native plant species and mowed, disked or prescribed burned on a rotation – meaning half to one third annually rather than being mowed in their entirety each year. In addition, simply changing the timing of mowing, shifting from fall mowing, to late winter mowing would positively impact wildlife species including bobwhite quail.
- 2) A strategy to encourage counties to allow a wildlife conservation valuation for lands converted to wildlife habitat. This would require a joint legislative review of county land use tax policies. The department suggests that thousands of acres of Virginia could be effectively managed for bobwhite quail and other wildlife species, but many landowners are hesitant to take those lands out of some form of agricultural production because to do so causes their county taxes to increase markedly, even when the land is being converted to wildlife habitat. Staff believes that wildlife conservation deserves the same tax incentive as agriculture and forestry in many counties. For example, a landowner has

a 50-acre hayfield in non-native fescue grass. They continue to hay it two times annually because it is required by the county to maintain agricultural land use tax assessment. If that landowner wishes to convert the field to native warm season grasses and wildflowers and manage them by rotational mowing or prescribed fire, in many counties they will lose their lower tax rate. It would seem that the county should not be opposed to this conversion. It does not cost the county anything. It does not change the major land form. The landowner is not making large sums of money from it.

- 3) A cooperative strategy among affected parties to change the current policies relating to prescribed burning in the Commonwealth in order to allow for a safe increase in the use of prescribed fire as a land management tool. A culture of prescribed burning awareness and use exists in states like Georgia and Florida where they burn over 1 million acres annually. Even in a smaller state like South Carolina, over 400,000 acres are prescribed burned annually. Prescribed fire is a critical component for bobwhite quail habitat management. In Virginia, difficulty in getting land burned leads to less than 100,000 acres being burned here each year. Properly conducted prescribed fire can reduce the danger of wildfire while simultaneously improving wildlife habitat. The Secretaries of Natural Resources and Agriculture and Forestry should coordinate with the Virginia Prescribed Fire Council and appropriate parties to examine ways to safely increase the use of prescribed fire in Virginia.
- 4) A comprehensive strategy among all appropriate state agencies to develop a marketing campaign that raises awareness of the plight of early succession habitat and the associated wildlife species. In order to affect a full quail recovery, it will take a cultural shift among the general public that embraces the importance of early succession habitat. These habitats must be seen to be as important as forests and wetlands to a healthy landscape. A comprehensive marketing campaign is necessary to develop this awareness. This campaign would involve a commitment by multiple agencies to promote early succession habitat and the engagement of a professional marketing firm to help spread the message.

Strategies specific to VDGIF and partners

- 1) The department will develop a comprehensive marketing campaign that will use all available social media (Facebook, Twitter, web sites, You Tube clips, TV advertising, etc.) to better publicize the plight of early-succession habitats across the board and the department's efforts on their behalf. Not limited to bobwhite quail, but as it applies to quail, grouse, woodcock, Golden-winged warblers, numerous pollinating insects, etc. (estimated budget approximately, \$100,000, including purchase of marketing items and promotional materials).

- a. This would include short clips on changing mowing habits, herbicide use reduction and change, etc.
 - b. Work with VDGIF and NRCS outreach staff to develop strategy.
 - c. Should be focused on the plight of the species and their importance, plus highlight some management steps.
 - d. Would require hiring a professional marketing firm and could include rental for bill boards, purchase of promotional items, etc.
- 2) Examine the possibility of first making the 5 private lands wildlife biologist positions permanent with either VDGIF or NRCS, and also expanding the program to include 5 non-permanent positions funded through time as budgets allowed. This method would insure keeping the very best staff and would also provide an opportunity to continue to educate new biologists (Budget if 5 positions were made permanent via VDGIF at entry level salary and 37% benefits package = \$ 52,771 per biologist per year = \$263,588 per year and then with 5 year-to-year positions funded by VDGIF and NRCS jointly – approximately \$175,000 annually per agency. VDGIF’s annual share total = \$438,588).
- a. Convene a meeting of NRCS, CMI and VDGIF senior staff to discuss this model more thoroughly.
 - b. Would need to develop a long-term, binding contract between the entities involved without a 60 days escape clause as currently exists.
 - c. The positions would be developed as career track positions through one of the partnering entities.
- 3) Develop a prescribed fire awareness campaign potentially in conjunction with the Virginia Prescribed Fire Council, the Virginia Department of Forestry, The U.S. Forest Service and other partners. The private lands component could be modeled after Mississippi’s “Fire on the Forty” outreach campaign. This was a grassroots effort that included partnerships with NGOs, Federal, and state agencies to encourage landowners to begin implementing prescribed fire that recreates the fire culture that is needed to sustain early succession habitat.
- a. Development of additional prescribed fire workshops.
 - b. Development of a curriculum similar to that provided for Wild Land Firefighters but tailored to prescribed fire managers.
 - c. Mass marketing campaign to educate the public about the benefits of fire to in part offset the negative impressions given by “Smokey the Bear” and anti-wild fire campaigns, which are necessary and effective but often misinterpreted by the general public.
- 4) Develop protocols, criteria and research related to trapping and transferring wild bobwhites, and / or using new techniques pioneered by Tall Timbers Research Station in raising wild strain captive quail chicks for restocking purposes. These techniques could speed up the process of quail recovery in areas east of the Blue Ridge where ample wild quail exist, and it could be used to potentially establish some source populations of wild quail in areas west of the Blue Ridge where quail have been extirpated in places, and where they exist at such low densities in other areas to make population recovery based on habitat alone unlikely (Initial proposed research in cooperation with partners,

\$470,000 over 3 years - \$157,000 annually. Potential to spend \$50,000 to \$75,000 annually to contract trapping and transfer of wild bobwhites to approved properties in Virginia, for as many as 5 to 10 years, and further study of survival and efficacy of wild relocated quail and Tall Timbers wild-strain quail – an additional \$300,000).

- a. Develop a set of standards of habitat – situation descriptions that would be amenable to wild quail or wild strain quail chick introduction – similar to, but not limited to the standards developed by Georgia DNR.
 - b. Organize an ad hoc committee within the department to develop these protocols.
 - c. Develop a contract and permitting process.
 - d. All release sites would be required to have a written, 5 year minimum quail management plan in place and pass a thorough site evaluation by a quail biologist.
 - e. All donor sites would be required to have enough quail and quail habitat – also determined by a quail biologist – to support removal of a modest number of wild quail.
- 5) Redouble efforts to expand existing successes, particularly, King and Queen – Newtown area, Southern Sussex private lands areas, Big Woods-Piney Grove focal area, Southern Halifax, Rappahannock, Orange, Madison, and Botetourt-Craig County (would involve some form of the targeted mass mailings, 4,000 to 5,000 recipients at an approximate cost of \$3,500 per mailing, times 10 to 15 mailings - \$52,500, development of professional success portfolio – approximately \$5,000).
- a. All these areas have shown varying degrees of higher interest than other parts of the state.
 - b. Determine best ways to focus outreach in and around these areas to build on successes, help NGOs and partners and nurture these areas.
 - c. More project recognition and promotion.
 - d. Develop a comprehensive portfolio of successful projects, to include all articles already written on them in one publication / accessible place.
- 6) Develop a comprehensive strategy for working with the forest products industry, particularly with regards to the intensification with which sites are prepared for replanting, and with regards to competition release methods throughout the life of the stand, to increase their understanding of the effects of their actions on long-term wildlife species conservation, and to highlight alternatives, including economic costs of using reduced impact herbicide regimes (Budget for invited workshop – approximately \$2,000, seek encouragement and assistance from VDOF – would invite major timber company representatives and consulting foresters association).
- a. Develop workshops for invited timber industry and consulting foresters to highlight the plight of ES species and educate about lower intensity herbicide regimes.
 - b. Conduct research long term into effects of various types of site prep and mid-rotation release regimes (much of this has been done, but would need a full time

- staff person to investigate findings and do a comprehensive research review, could be contracted through CMI or another entity possibly - \$20,000).
- c. Document effects on plant diversity, recovery times, insect diversity, etc.
 - d. Develop a set of BMPs for wildlife in terms of pine reforestation (update current booklet, or re-do?)(re-doing booklet - \$15,000).
 - e. Develop a landowner awareness campaign to help more landowners be aware they have choices and it is ultimately up to them (could be part of the overall marketing campaign).
- 7) Develop a quail and early-succession wildlife management academy, similar to the VDOF prescribed burners academy held annually. Limit participation to 50 students per academy, focus on intense habitat management learning for serious minded professionals and landowners including some of our own VDGIF, NRCS and other partner staffs. Would depend on partners being willing to absorb some of the cost and provide staff to assist. Could use encouragement from the Secretaries of Natural Resources and Forestry and Agriculture.
- a. Form a multi-partner (VDGIF, DOF, DCR Natural Heritage, etc.) ad hoc committee to develop timeframes, learning objectives, testing methods, field tour sites, etc. – basically to develop a curriculum for the course.
 - b. Determine the best location with proximity to good outdoor learning environments, good (and free) facilities, etc.
 - c. Determine best time of year for course, or consider two pronged course, winter and summer – split course.
 - d. Determine potential for costs as well as, food, logistics, etc.
 - e. Develop an official certification and diploma – attempt to get it sanctioned by TWS.
- 8) Re-examine the hiring 1 or 2 staff on a part-time (1500 hours) basis to work under the supervision of the State Forest management supervisors with some guidance from the department staff. These forests are some of the largest publicly accessible tracts of land east of the Blue Ridge and once harbored good quail populations. Also examine the possibility of providing additional equipment for them to be owned by VDGIF, or an NGO, but housed and used on the State Forests. Approximately \$30,000 annually per position times 2 = \$60,000 annually times 5 years = \$300,000. Purchase of complete set of management equipment (tractor, disc, spray rig, bush-hog, trailer, ¾ ton vehicle) for each position approximately \$250,000) for each position.
- a. Revisit with VDOF staff their thoughts on this concept.
 - b. If acceptable, budget for this in the next budget cycle, or also look at potential for an NGO to fund these positions (Halifax Quail Forever, for example).
- 9) Work with military base personnel to help them better promote the enormous amount of early-succession habitat work they do. Low cost – should budget for some extra outreach work, but could also be a part of the overall marketing campaign (add \$10,000 in budget for additional promotion).
- a. Basic promotion in conjunction with their staff, perhaps allowing their staff to write about their own work, and then help them publicize it.

- b. Also work with their personnel to develop a more thorough ES species monitoring protocol for them.
 - c. Develop and highlight an official NBCI Focal Military Base (this would be difficult given the NBCI standards and high number of staff days and time needed, perhaps an NBCI “light” approach could be used).
- 10) Work with quail NGOs to develop a “quail in the classroom” program, a quail hunter mentor program and help them develop more hunter access, particularly on state lands not currently open to hunting.
- a. Similar to Trout Unlimited’s Trout in the Classroom program, work with national Quail Forever, and local chapters to develop an in school awareness and interest program in Bobwhite Quail. This is also similar to the NSSF “Archery in the Schools” program. This is clearly a role for NGOs – both funding and conducting.
 - b. Solicit avid quail hunters to take on youngsters interested in learning the sport. Develop a way to match kids with interest with hunters interested in helping them.
 - c. Continue to look for opportunities for providing more public access to quail hunting, even on a limited, lottery based method. Seek out private landowners that might entertain allowing limited quail hunting coordinated through the VDGIF lottery system. Develop a list of potential landowners that may want to participate in such a program.

SUMMARY

Throughout the implementation of the Quail Recovery Initiative the department has been open to suggestions and actively solicited input from all interested parties. The department welcomed the opportunity to further this process through this report on the progress made to preserve the Northern Bobwhite Quail in Virginia. The Quail Recovery Initiative revision and review is not a static process. The department and its many partners involved in the initiative have strived to improve management opportunities and will continue to do so but also note that realism needs to be applied to expectations for quail recovery. It is unlikely that bobwhite quail populations will ever again reach historic high levels in Virginia, or in much of the bobwhite’s range. However, recovery in remaining rural areas conducive to habitat management can occur. This report on our ongoing efforts demonstrates the department’s commitment to quail recovery.

APPENDIX A. VIRGINIA QUAIL COUNCIL INPUT NOTES

Raw notes 7-18-2014

These are the verbatim notes from all four break-out groups taken from the flip charts.

Group 1- (Jeff Jones)

- Do more and better work on public lands – public lands should be a showcase
- Highlight habitat is for the birds and the bees
- Need meeting with state parks director
- Continue engaging private landowners
- More prescribed burning
- Highlight Halifax Grave's Brothers story
- Develop a prescribed burn mentor program
- Change food plot mentality to prescribed burning for food mentality
- Reach out to deer hunt clubs on benefits of burning
- Make the connection quail habitat=deer habitat=turkey habitat
- Virginia based research
- Tweak tree planting densities
- New publication needed on the benefits of fire
- Promote the quail hunting experience
- Involve sport dog associations more in habitat restoration
- Keep the course, but continue marching
- New system for estimating work done

Things to potentially question or dis-continue:

- Are the current quail route data and other surveys useful?
- Stop focusing on smaller tracts and home in on larger tracts

Group 2- (Jay Jeffreys)

- Do we continue – Yes!!!
- A lot accomplished in the last 5 years
- Program has done great work, agree we need to continue moving ahead
- Some in this group could help with policy above staff level
- *Need to get right group together to influence major landowners
- Evaluate weaknesses, go in new directions
- Marketing – very tough to quantify response to private lands habitat efforts, quail plan versus early-succession habitat
- *Rethink marketing approach and speak plainly
- What are we selling and who is the customer base?

- Don't want to make false promises – build up related benefits
- Quail needs to continue being part of the plan name –i.e. “quail and grasslands birds”
- *but need to broaden base, create political will to save wildlife
- Raise conservation status – how do we do this without listing or T&E?
- Need cooperation of forest industry, major landowners like VDOT, ROWs, etc.
- *Focus on mega-landowners, rejuvenate relationships and implement efforts to maintain them
- Improve communications
- Understand that hunting impacts are much less significant than threats like pesticides, feral cats, weather, etc.
- Inn house information – distribute to all staff and expand pool of people who can talk about quail, Outdoor Ed, etc.
- *Conduct more briefings with senior staff
- Expand Facebook and Twitter
- *Expand efforts in other social media outlets and talk realistically about the issue – not “feel good”
- What is working well:
 - o Private lands wildlife biologists
 - o VDGIF participation in NBCI / NBTC
- Missed/needs to do:
 - o Improve information sharing about what we are doing operationally
 - o Share our accomplishments more broadly and more often
 - o Need communications plan
 - o Refocus efforts on public lands, mega lands and industrial lands
 - o Change message
 - o New marketing tools
 - o We understand the problem, we have solutions, we need everyone's help to address
 - o What is the issue?
 - o How did we get here?
 - o Who is the full suite of stakeholders?
 - o What are the customized messages to these groups?
- *Additional research needed
 - o Why quail are not where habitat is good?
 - o Pesticides, contaminants
 - o Needs for research should be IDed and prioritized
 - o Need funding for research
 - o Collaborative studies
- Focus where we are having success (Coastal Plain – Piedmont) scale back elsewhere?

Group 3 – (Andy Rosenberger)

- Very simple – we need more quail☺

- More demonstration areas – WMAs, Private, USFS / VDOF, etc.
- Show what forestry BMPs look like
- Government effort to buy more conservation land – valley – show and tell active farm and quail management
- Better outreach with EDU initiatives
- With agencies e.g. – US Army Corps has approximately 50,000 acres and 26 WMAs, need outreach with staff
- Need more public support towards advertising, we only talk to ourselves, not general public and draw support when times are tough (?)
- Try to be in more cross agency meetings
- Better grasp of where quail hot spots are
- Advertise known release locations to public to get more habitat
- Need to form habitat strike teams for public lands and maybe private lands
- Land is available, but no one has time to manage it
- Radio ads seem to be working
- May need to hire a marketing company – and tie into national campaign via NBCI
- Need to develop a shared message between all natural resource agencies
- Better forestry education – lots of timber in Virginia and agricultural outreach is not working very well (at least BMPs)
- Turn work being done in favor of quail
- Large percentage of effort on 20% - 30% of lands
- National Short-leaf pine initiative – need to tie in better to that and ride coat-tails

Group 4 – (Bob Glennon)

- Target lands that are not income producing – lawns, etc. Highway ROWS, field borders, industrial lands
- Include explanation of fossil fuel reduction – money saved by mowing less, etc.
- Include signage for recognition
- Approach VDOT about some changes to mowing practices
- Need a comprehensive herbicide publication
- Combine efforts with other types of wildlife: Pollinators, turkey, etc.
- Explore opportunities with Cooperative Extension
- Contact the Vegetation Management Association
- Need to promote / publicize the Dominion Power cost-share program
- Contact realtors association
- Work with Jennifer Gagnon on a packet for forest landowners
- Contact managers of TIMOs and REILs
- Contact forest certification program, SFC, SFI, TREE FARM, etc.

APPENDIX B. THE DIRECTOR'S QUAIL ADVISORY GROUP

Recommendations from facilitated discussion by the Director's Quail Advisory Group

- 1) Tall Timbers Research Proposal: Proposal needs to be approved if not already and VDGIF needs to seek funding within our operating budget.
- 2) Make sure we identify the appropriate areas/land parcels that are truly suitable for quail habitat and area owned by a cooperative landowner. Need to develop a system for evaluating land/partnership if one doesn't already exist. Once these areas are identified, pursue access.
- 3) Outreach to Virginia's military bases.
- 4) Conduct/expand landowner specific research and partnerships, such as with Ft Pickett
- 5) VDGIF to facilitate more partnerships and communications among major landowners and quail partners.
- 6) Expand our efforts in and around focus areas; identify areas in close proximity to other success stories.
- 7) Work with Department of Forestry to encourage the sharing of information about particular landowners and their management practices; pursue research and cost share opportunities with these landowners; also invite DOF to meeting like this and to other workgroups/committees.
- 8) Increase support to private landowner (don't forget about the small landowner), to include making it easier to prescribe burn, expand trapping season, allow for supplemental feeding, and quail translocation.
- 9) Public awareness program (Communication plan).
- 10) Outreach to power companies, landowner associations, Cooperative Extension Offices, and Farm Bureau to promote coordination of message, on the ground efforts, resources, etc.
- 11) Research potential (sustainable) funding sources for quail habitat/population management, to possibly include a "quail stamp".
- 12) Focus on establishing more Quail Unlimited or Quail Forever Chapters; work from the grass roots level but also invite leaders from both organizations to speak to this advisory group.
- 13) Increase youth hunting initiatives and recruitment efforts (with obvious focus on appreciation for quail).
- 14) Write a profile piece in Virginia Wildlife Magazine, and be honest with people about the quail restoration/management efforts and what is still needed.
- 15) Expand staff/biologists to focus on quail initiative full time.
- 16) Partner with TNC, NWTf, and other NGO's that also have similar habitat and outreach efforts to support the quail initiative.
- 17) Research Local land use tax to determine if changes could be made to encourage more habitat management so as not to negatively impact property values.

APPENDIX C. SENATE JOINT RESOLUTION NUMBER 63

SENATE JOINT RESOLUTION NO. 63

Requesting the Department of Game and Inland Fisheries to review ways to preserve the Virginia Bobwhite quail population. Report.

Agreed to by the Senate, February 11, 2014

Agreed to by the House of Delegates, March 5, 2014

WHEREAS, in 1988, the General Assembly recognized that the Bobwhite quail was in drastic decline and created a joint subcommittee pursuant to House Joint Resolution 114 to study the problem and recommend ways to preserve the quail population; and

WHEREAS, in 1989, the joint subcommittee reported its findings (House Document 44), including recommendations that:

1. The Department of Game and Inland Fisheries, in cooperation with all interested parties, increase its efforts to protect, preserve, and create Bobwhite quail habitat;
2. The Department of Game and Inland Fisheries increase its education and technical efforts to better inform the public regarding the history, habitat requirements, and management of the Bobwhite quail;
3. The Department of Game and Inland Fisheries be encouraged to develop close working relationships with those state and federal agencies that administer agricultural and conservation programs so as to ensure the coordination of habitat management with other conservation and economic objectives;
4. Landowner liability statutes be modified to give landowners more of an incentive to allow the public to hunt on their lands; and
5. The Department of Game and Inland Fisheries conduct a comprehensive study to assess the diverse factors affecting quail population dynamics, including the effects of chemicals and agricultural land on the Bobwhite quail; and

WHEREAS, the report warned that to achieve a significant increase in the Bobwhite quail population over time, quail hunting had to be managed as intelligently as habitat; and

WHEREAS, the joint subcommittee recognized that it was recommending an "ambitious program" to preserve the Bobwhite quail and that, in doing so, personnel and funds would be needed in addition to the two small-game biologists approved by the 1988 General Assembly Session; and

WHEREAS, since the 1989 report, much has been done by the Department of Game and Inland Fisheries to preserve and protect Bobwhite quail, but unfortunately the population continues to decline in spite of a few success stories in various areas of the Commonwealth; and

WHEREAS, a number of states currently participate in a joint effort to save the quail known as the National Bobwhite Conservation Initiative; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, that the Department of Game and Inland Fisheries be requested to review ways to preserve the Virginia Bobwhite quail population. The Department of Game and Inland Fisheries shall review existing efforts to restore habitat and to preserve, protect, and reintroduce Bobwhite quail. Further, the review shall include recommendations on strategies to achieve the goal of preserving the Virginia Bobwhite quail population and identify the resources and policies needed to implement those strategies. Technical assistance shall be provided by the Department of Conservation and Recreation.

The Department of Game and Inland Fisheries shall submit to the Division of Legislative Automated Systems an executive summary and report of its progress in meeting the requests of this resolution no later than the first day of the 2015 Regular Session of the General Assembly. The executive summary and report shall be submitted for publication as a report document as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents and reports and shall be posted on the General Assembly's website.

APPENDIX D. GLOSSARY OF ACRONYMS USED IN THE REPORT

BMP – Best Management Practices

CCPI – Cooperative Conservation Partnership Initiative

CIP – Coordinated Implementation Plan

CMI – Conservation Management Institute

DCR – Department of Conservation and Recreation

DQAG – Director’s Quail Advisory Group

EQIP – Environmental Quality Incentives Program

NBCI – National Bobwhite Conservation Initiative

NBTC – National Bobwhite Technical Committee

NFWF – National Fish and Wildlife Foundation

NGO – Non-governmental organization

NRCS – Natural Resources Conservation Service

NWTF – National Wild Turkey Federation

PLWB – Private Lands Wildlife Biologist

QRI – Quail Recovery Initiative

ROW – Right-of-way

SWCD – Soil and Water Conservation District

TNC – The Nature Conservancy

USDA – United States Department of Agriculture

USFS – United States Forest Service

VDGIF – Virginia Department of Game and Inland Fisheries

VDOF – Virginia Department of Forestry

VQC – Virginia Quail Council

WHIP – Wildlife Habitat Incentives Program