

PROCEEDINGS OF THE 9th ANNUAL SOUTHEAST QUAIL STUDY GROUP MEETING

August 25 - 28, 2003
Potosi, MO



Hosted By:

**MISSOURI DEPARTMENT OF
CONSERVATION**



**Sponsored in part by Quail Unlimited
And the Missouri Chapter of The Wildlife Society**



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Program and Agenda

MONDAY, 25 AUGUST

- | | |
|--------------------|---|
| 10:30 am – 5:00 pm | Field Trip – White River Trace CA
Depart from the main entrance of Trout Lodge |
| 4:00 pm – 8:00 pm | Registration / Meeting Headquarters – Mallard 4
Poster Set-up – Mallard 1 |
| 6:00 pm – 7:30 pm | Dinner – Dining Room |
| 7:00 pm – 10:00 pm | Reception with light snacks – Meeting Room 5 / Deck |

TUESDAY, 26 AUGUST

- | | |
|------------------------|--|
| 7:15 am – 8:00 am | Breakfast – Dining Room |
| 7:30 am | Registration / Meeting Headquarters – Mallard 4 |
| WELCOME SESSION | Mallard 2 and 3 |
| 8:00 am – 8:10 am | Welcome and Housekeeping – Dr. Tom Dailey, Resource
Scientist, Missouri Department of Conservation |
| 8:10 am – 8:20 am | Welcome and Comments – Dave Erickson, Wildlife Division
Administrator, Missouri Department of Conservation |
| 8:20 am – 8:30 am | Welcome and Charge to SEQSG Committees – Reggie
Thackston, Chairman, SEQSG Steering Committee |
| 8:30 am – 8:45 am | Quail Unlimited NBCI Fund – Roger Wells, National Habitat
Coordinator, Quail Unlimited |
| PLENARY SESSION | NBCI AND THE CENTRAL HARDWOODS BIRD CONSERVATION
REGION
Moderator – Rob Chapman |
| 8:45 am – 9:05 am | Integrated Bird Conservation and NBCI – Dr. Jane Fitzgerald,
Coordinator of the Central Hardwoods Bird Conservation
Region, American Bird Conservancy |
| 9:05 am – 9:45 am | Model-Based Selection of Focal Areas for NBCI
Implementation: Central Hardwoods BCR Pilot – Dr.
Wes Burger, Professor, Department of Wildlife & Fisheries,
Mississippi State University |
| 9:45 am – 10:00 am | Break |

10:00 am – 10:30 am	Area Requirements of Viable Bobwhite Populations: How Much Space Do We Need? – Dr. Fred Guthery, Professor and Bollenbach Chair in Wildlife Ecology, Department of Forestry, Oklahoma State University
10:30 am – 11:00 am	NRCS Programs – Dave Gagner, Special Assistant to NRCS Chief and Wildlife Group Liaison, Natural Resources Conservation Service
11:00 am – 11:30 am	NBCI Coordinator Introduction and Update – Breck Carmichael, Program Coordinator, Northern Bobwhite Conservation Initiative
11:30 am – 12:00 am	Panel Q & A
12:00 pm – 12:45 pm	Lunch – Dining Room

COMMITTEE MEETINGS

1:00 pm – 5:00 pm	Committee Meetings Agricultural Policy – Meeting Room 5 Research – Meeting Room 6 Habitat Implementation – Meeting Room 7 Forestry – Mallard 3 Public Relations, Information & Education – Mallard 2
6:00 pm – 6:45 pm	Dinner – Dining Room
6:45 pm – 7:15 pm	Walk to Campfire
7:30 pm – 10:00 pm	Campfire: SEQSG Awards Program and Entertainment. “The Lewis and Clark Journey Through Missouri”

WEDNESDAY, 27 AUGUST

7:15 am – 8:00 am	Breakfast – Dining Room
8:00 am – 9:30 am	Committee Meetings (same locations as Tuesday)
9:30 am – 10:00 am	Break
10:00 am – 12:00 pm	TECHNICAL SESSION I – RESTORATION INITIATIVES: STATUS, LESSONS LEARNED & THE FUTURE – Mallard 2 and 3 Moderator – Elsa Gallagher
10:05 am – 10:15 am	Update on NCCURE – Terry Sharpe, Agriculture Liaison Biologist, North Carolina Wildlife Resources Commission

10:15 am – 10:30 am	Update on Georgia Bobwhite Quail Initiative – Reggie Thackston, Coordinator, Georgia Bobwhite Quail Initiative, Georgia Department of Natural Resources
10:30 am – 10:45 am	Update on Northeast Missouri Open Lands Initiative – Bill Bergh, Private Lands Regional Supervisor, Missouri Department of Conservation
10:45 am – 11:00 am	Update on Southeast Kansas Quail Initiative – Lance Hedges, District Biologist, Kansas Department of Wildlife and Parks
11:00 am – 11:30 am	CRP Filter Strips in Western Tennessee – Mike Hansbrough, Biologist, Natural Resources Conservation Service
11:30 am – 12:00 am	State-Scale Patterns in Quail Harvest Management – Dr. Fred Guthery, Professor and Bollenbach Chair in Wildlife Ecology, Department of Forestry, Oklahoma State University
12:00 pm – 12:45 pm	Lunch – Dining Room
1:00 pm – 5:00 pm	TECHNICAL SESSION II – NBCI IMPLEMENTATION: GETTING CITIZENS TO CARRY OUT RESOURCE OBJECTIVES Moderator – Dr. Robert Pierce
1:00 pm – 1:45 pm	Impact of Recent Changes in Patterns of Land Use On Quail and Other Wildlife Populations in Southeastern U.S. – Dr. Daryl Hobbs, Director, University of Missouri Office of Social and Economic Data Analysis
1:45 pm -- 2:30 pm	The Missouri Watershed Initiative – An Objective Approach to Watershed Planning – Dr. Bill Kurtz, Professor, TSNR, University of Missouri
2:30 pm -- 3:10 pm	Why Cattlemen Want Native Grasses, But Plant Tall Fescue – Sid Brantly, Southeast Regional Grazing Specialist, Natural Resources Conservation Service
3:10 pm -- 3:30 pm	Break
3:30 pm -- 3:50 pm	Marketing Intangible Products: <i>Water Works Wonders</i> – Ron Dent, Resource Science Field Chief, Missouri Department of Conservation
3:50 pm -- 4:35 pm	Teaching Kids Equals More Quail – Dr. Jim Byford, Dean, College of Agriculture and Applied Sciences, University of Tennessee, Martin:
4:35 pm -- 5:00 pm	Panel Q & A

6:00 pm – 6:45 pm	Dinner – Dining Room
8:00 pm -- 9:00 pm	Poster session (poster presenters) (beverages available in poster room) – Mallard 1 and 2
7:00 pm -- 10:00 pm	Recreation: clay target shooting, fishing, boating, hiking, biking, etc.

THURSDAY, 28 AUGUST

7:15 am – 8:00 am	Breakfast – Dining Room
8:00 am – 10:00 am	Committee reports – Mallard 2 and 3
10:00 am – 10:20 am	Break
10:20 am – 11:50 pm	SEQSG Business Meeting – Meeting Rooms 2 and 3
11:50 pm – 11:55 pm	Concluding Remarks / Adjourn
12:00 pm – 12:45 pm	Lunch – Dining Room

Field Trip: White River Trace Conservation Area, Dent County, Missouri
Date: Monday 25 August

The 2,044 acre White River Trace Conservation Area (WRTCA) is a northern bobwhite focus area of the Missouri Department of Conservation. Primary management involves natural community restoration and incorporates all-bird conservation. The area is dominated by an extensive grassland-savanna-woodland complex with an abundant population of northern bobwhites. There are also at least 30 other species of songbirds that are priority species in the Central Hardwoods Bird Conservation Region on the area. Population surveys and the incorporation of special hunting regulations allow us to monitor the quail population and our management efforts.



9TH ANNUAL SEQSG MEETING PLANNING TEAM

Tom Dailey – Chair
Resource Scientist
Missouri Department of Conservation

Rob Chapman – Program & Field Trip
Wildlife Management Biologist
Missouri Department of Conservation

Elsa Gallagher – Video Program
Wildlife Ecologist / Upland Wildlife Coordinator
Missouri Department of Conservation

Jef Hodges – Fund Raising
Great Plains Regional Director
Quail Unlimited

Dave Hoover – Poster Session
Private Land Conservationist
Missouri Department of Conservation

Brad McCord - Registration
Private Land Programs Coordinator
Missouri Department of Conservation

Bob Pierce – Proceedings
Extension Assistant Professor in Fisheries and Wildlife
University of Missouri – Columbia

Barb Ross – Registration / Secretary / Treasurer
Administrative Staff Assistant
Missouri Department of Conservation

John Vogel – Equipment & Transportation
Wildlife Management Biologist
Missouri Department of Conservation

Bill White – Social
Wildlife Services Biologist
Missouri Department of Conservation

Executive Summary

The 9th Annual Meeting of the Southeast Quail Study Group (SEQSG) was held at the YMCA of the Ozarks in Potosi, Missouri, during August 25-28, 2003. The meeting was hosted by the Missouri Department of Conservation (MDC), with major support from several Quail Unlimited state councils and chapters. As the host state we were pleased to have 90 out-of-state biologists join over 60 Missourians.

We focused on implementation of the Northern Bobwhite Conservation Initiative (NBCI). Highlights included NBCI efforts in the Central Hardwoods Bird Conservation Region, updates of state quail initiatives, SEQSG committee work, the latest research findings, and an entire session devoted to the challenge of getting landowners to carry out habitat restoration. The optional field trip to MDC's White River Trace Conservation Area provided insight into management of natural plant communities for bobwhite and grassland song birds. The program's diversity provided ample opportunity for us to contemplate how we can create new approaches to habitat restoration on private land.

The success of the meeting was due to hard work by many individuals—speakers, moderators, poster presenters, SEQSG committee chairs, YMCA staff, and steering committee members and their recruits—thank you! A special thanks to Jef Hodges and Quail Unlimited for generous financial support.

I started the meeting comparing NBCI to a jigsaw puzzle. Every person at the meeting is a piece of the puzzle, and the products from the meeting in Missouri will fill in a chunk of the NBCI puzzle. Missouri's quail restoration effort took a big step forward with the interest shown by Conservation Department Director John Hoskins, and the participation of many MDC biologists and administrators. Although the meeting required much work, there was a tremendous net gain for Missouri's quail conservation. Thank you for the great opportunity!

Tom Dailey, Chairman
9th Annual Southeast Quail Study Group Meeting

SEQSG Chairman's Address And Charge To Committees

Submitted By:
Reggie Thackston, Chair SEQSG Steering Committee

Good morning and on behalf of the Southeast Quail Study Group (SEQSG) Steering Committee welcome to this our 9th Annual Meeting. I also extend the Group's thanks and sincere appreciation to the Missouri Department of Wildlife Conservation Director Hoskins and associates for your commitment and effort in hosting this meeting. Georgia DNR hosted the meeting last year and therefore I can fully appreciate the amount of time and effort that goes into making this meeting a success; and as everyone who has hosted meetings knows "the devil is in the details". Based on the meeting location, outstanding agenda, accommodations and nominal costs it appears that all the details have been well covered.

I've had the pleasure and good fortune to attend all of the SEQSG annual meetings and it has been rewarding to see the attendance steadily increase in number and diversity. As I look at the crowd this morning I see a strong core of original members and I want to thank you all for what you have done, are doing and I am confident will continue to do for the betterment of quail populations and the SEQSG.

Likewise, I am pleased to see a number of folks who are not the traditional "quail or game biologist type". We must continue to build on the common ground that we share with professionals in the songbird, cropland, grazing-land and forestry communities. Based on the agenda topics and the professionals here today it appears that this meeting sets the stage for maintaining our ongoing efforts and strengthening new alliances.

In this day and time, particularly in light of the current budget woes, it is easy to become pessimistic about the future of bobwhites and other grassland-forb species. However, I would argue that we currently have more reasons for optimism than at anytime in the past. In fact, many positive actions have occurred during the past year and I would like to briefly elaborate on just a few of these:

- 1) We took a big step forward with the hiring of a national coordinator for the Northern Bobwhite Conservation Initiative (NBCI). The SEQSG Steering Committee faced a difficult task in selecting a candidate as a number of excellent and seasoned wildlife professionals applied. The mere fact that these folks believed in NBCI to the point they were willing to apply for the job provides encouragement to me for the future of bobwhites. As most of you know, Breck Carmichael was chosen for the NBCI Coordinator position. Of course, Breck is no stranger to this group as he was the primary catalyst in starting the SEQSG in 1995, served as the Group's first Chairman, and has served as Agricultural Policy Committee Chairman. It seems only appropriate that Breck should serve as the first ever NBCI Coordinator and we are fortunate to have him. Additionally, the fact that the Southeastern Association of Fish and Wildlife Agencies (SEAFWA) Directors and the Natural Resources Conservation Service Wildlife Habitat Management Institute were willing to

contribute the match funding for the position speaks volumes about their support for the recovery of the bobwhite.

- 2) Another accomplishment during the past year was the development of an NBCI Marketing Strategy by the SEQSG Public Relations Information and Education Committee. This all encompassing marketing plan should play an important role for promoting NBCI at all levels. The plan was presented to the SEAFWA Directors at their annual conference in Baltimore Maryland, and was well received. It now awaits our implementation.
- 3) Also encouraging, are the results of a survey by Mark Gudlin of 26 state wildlife agencies in the South and Mid-west, which reveals a strong and growing commitment to quail management and restoration. A few of the highlights of this survey include 21 states having at least 1 quail biologist/NBCI coordinator, 10 states having a full time agricultural liaison, 14 states having state-funded habitat cost share programs and 13 states currently have, or are in the process of having, step down plans for NBCI.
- 4) Another important accomplishment during the past year occurred with the joint statement of the congressional conference committee encouraging the Secretary of Agriculture to use the conservation programs of the 2002 Farm Bill to support the goal of restoring habitat for quail. This is certainly uplifting in that it elevates the status of concern about the bobwhite decline to an unprecedented level within USDA.
- 5) Yet another important event was the recent signing of Memorandums of Understanding between USDA Natural Resources Conservation Service and Mississippi State University, Quail Unlimited and SEAFWA for the purpose of establishing collaborative efforts in monitoring the effectiveness of conservation programs and practices in meeting NBCI population goals and habitat objectives.
- 6) Quail Unlimited has answered the call for NBCI as their Board of Trustees has approved a proposal that includes establishing an NBCI habitat fund, educational projects and general NBCI advocacy.
- 7) Finally the above are just a few of the "big picture" actions that have occurred to provide optimism for moving forward with NBCI. Of equal, or perhaps even greater importance, are the day-to-day accomplishments and success stories by untold numbers of wildlife biologists and technicians, private landowners, land managers and others with a commitment to habitat management for quail, songbirds and other wildlife. These are the folks in the infantry, who are on the front lines, turning the dirt and making things happen, and who will ultimately win the war for quail restoration. We all know of individual properties or even regions where quail populations have been restored and/or are being maintained through sound management. When we suffer setbacks or become frustrated with our efforts we should think about these places and re-assure ourselves that it can be done and that as the saying goes "the elephant is most effectively eaten one bite at the time".

As we embark on the implementation of NBCI I do think it is critical for us to realize that quail populations can't be practically restored and/or maintained across all landscapes. In Civil War vernacular it is vital that we "choose our ground" to maximize our potential for success. As we form grassland habitat or quail teams in each of the states we need to carefully choose focus areas that have realistic biological potential and landowner demographics suitable for successful quail management. I look forward to hearing what our speakers today have to say about landscape context and habitat patch relative to maintaining viable quail and songbird populations.

With these thoughts as a backdrop I now want to deliver the charge to the committees. I begin by re-iterating that the SEQSG is truly about working committees. This is what separates us from being just another technical meeting. Sure we come to hear the latest information from ongoing research projects,

receive status reports and exchange management information. But primarily we are about working committees that have the primary function of developing strategies and implementing plans of action to facilitate the restoration of grassland-forb habitat across the entire bobwhite range, and now more specifically move toward the fulfillment of NBCI goals and objectives. In this regard I charge the committees as follows:

The Agricultural Policy Committee must continue to focus working with USDA conservation programs and practices to make sure that wherever possible quail friendly practices are applied to solve soil erosion, water quality and other resource concerns. We have seen great improvements with many of the Farm Bill Conservation Programs but we have also suffered some setbacks and we currently face challenges with newly created programs. Dan Figert is the Ag Policy Chair, having recently been elected to this position when Breck Carmichael vacated it. Thanks to Breck for your excellent work as past chair and congratulations to Dan.

The Habitat Implementation Committee must work to develop strategies for integrating native warm season grasses into rotational grazing systems and gain acceptance for these practices by forage specialists and agronomists within the university systems. David Hoover currently chairs HIC, but as you know the Steering Committee is recommending that HIC be split into the Croplands Management Committee, with David as Chair, and the Grasslands/Grazinglands Committee, with a new chair to be elected. This will make our committees consistent with the structure of NBCI. If you haven't voted please do so.

The Forestry Committee, chaired by Mark Whitney, needs to focus on working with the US Forest Service and forest industry to promote practices for the establishment of quality grassland-forb habitat and elicit their support for NBCI.

The Research Committee, chaired by Tom Dailey, must focus on developing strategies and priorities for monitoring the progress of conservation programs and practices toward achieving NBCI population goals and habitat objectives. With the MOUs in place that I previously mentioned and multi-organizational quail or grassland habitat teams being formed in many states, the stage is set for development and implementation of monitoring programs.

The Public Relations Information and Education Committee has in place an excellent Marketing Strategy for NBCI and now must focus on its implementation. Marc Puckett has served as chair and has done an excellent job. However, due to budget reductions and re-organization within

Virginia Game and Fish, Marc has stepped down, and Robert Perez is the new chairman. I know Robert will be a strong leader and will continue to build on the strong foundation laid by Marc and the other members.

Dave Howell chairs the Funding Committee and has done an excellent job in meeting our needs. This Committee has played an important role in generating funding for the SEQSG. This has become even more critical as budget cuts have occurred in our own organizations. Dave asked me to share with the Group that he is open to receive requests for additional funding needs.

I also want to encourage the committee chairs to get together and compare notes on agenda topics. There often is overlap with certain topics or issues and this can provide an opportunity for committees to work concomitantly and synergistically.

Finally, we have the Steering Committee. As current chairman I can't say enough about the quality and dedication of the folks on this committee. We had two positions vacated this year as their terms expired.

Dr. Pete Bromley rotated out of the Academia position and Don McKenzie rotated from the Non-profit NGO or Federal Agency position. Both Pete and Don were excellent committee members and made

strong contributions and I thank them for their efforts. Fortunately, we have a strong slate of candidates who have agreed to run for these positions.

I close by saying it is my privilege to have served as Chairman during the past year for this dedicated group of professionals and I look forward to another productive year. Keep up the good work!

Southeast Quail Study Group Committee Reports Steering Committee

**Submitted By:
Steve DeMaso, Chairman-Elect**

The Steering Committee met on the evening of Wednesday, 27 August 2003 at the YMCA of the Ozarks in Potosi, Missouri. Highlights of the meeting included:

- Minutes from the Steering Committee in Blacksburg, VA were distributed and approved
- The Treasurers report was distributed and approved, current balance is \$5,857.35
- Currently, there are 112 paid members in the Southeast Quail Study Group (SEQSG)
- The Audit report was given by Don Mckenzie and approved
- Dave Howell reported that Quail Unlimited had a new Web Site Coordinator
- It was decided by the Committee to hold off on incorporating the "Fringe Quail States" into the National Bobwhite Conservation Initiative (NBCI) until it is revised in 2006
- Breck Carmichael said that he was working with the Public Relations, Information, and Education Committee (PRIIE) to develop a tri-fold handout and a popularized version of the NBCI
- Breck Carmichael handed out a draft monitoring data sheet and said that each state would be sent a copy and asked to comment.
- Roger Wells gave an update on the formation of a governing board for the "Quail Unlimited Habitat Fund" to assist with the implementation of the NBCI
- Dave Howell gave an update on the formation of a "National NBCI Award" to be awarded annually by Quail Unlimited
- It was decided by the Committee that the Committee Chairs need to correspond prior to the annual meeting to discuss items that Committees had a joint interest and could work cooperatively on those items
- The 2004 annual meeting will be held in Arkansas and the 2005 meeting in Kentucky

Habitat Implementation Committee

Submitted By:
David Hoover, Chairman

The Habitat Implementation Committee members included: Judy Barnes (SC), Dave Howell (IN), Fred Kimmel (LA), Eddie Linebarger (AR), Mike Sams (OK), Tommy Hines (FL), Robert Chapman (MO), Chris Garland (KY), Ted Zawislek (AR), Roger Wells (KS-QU), Jef Hodges (MO-QU), Jeff Powelson (MO), Nick Prough (MO), Kevin Hedgpeth (MO), Tom Glick (KS), Jeremy Iirak (KS) and myself.

Reggie Thackston, Chairman SEQSG Steering Committee, gave the Habitat Implementation Committee a charge to: **Develop an "Action Plan" to incorporate nwsg into rotational grazing and haying operations on private lands and gain acceptance for nwsg among Ag. Extension.** This was the focus of committee discussions.

The items below were discussed at the 9th annual meeting of the Southeast Quail Study Group.

Agenda Items:

- 1) Reviewed accomplishments since August 2002 Georgia meeting.
- 2) Dave Howell discussed changes with the 2nd printing of the "Bobwhite Basics" pamphlet.
 - 70,000 – 80,000 copies printed in 2002
 - Second printing includes 45 – 50 changes, most changes were to web sites, Farm Bill information, design, and layout.
 - Current cost is \$85/1000.
 - 500 copies distributed to Breck Carmichael and another 500 to Marc Puckett for promotional activities.
 - 32 entities ordered copies during the first run.
 - Additional proceeds after expenses forwarded on to SEQSG Steering Committee to be used at their discretion.
 - This is the third in a series of HIC publications, following "Handling the Fescue Problems" and "Managing Pine Plantations for Timber and Wildlife".
- 3) Reviewed proposed Bylaw change that will dissolve the Habitat Implementation Committee and create the Cropland Management and Grasslands/Grazing Lands committees. This change is proposed to align the SEQSG committee structure with the habitat types outlined in the NBCI plan.
 - A. Bylaw change was approved and Robert Chapman was elected Chair of the new Grasslands/Grazing Lands Committee.

4) Each state present gave a brief overview of NBCI related events occurring within the last year. State updates are as follows:

Missouri – hired Upland Wildlife Coordinator; stepping down NBCI to state level; identifying potential Northern Bobwhite focus areas; integrating all bird conservation areas on public and private lands.

Kentucky – significant increase in funding for early-successional habitat on private lands through partnerships between KDFW and TNC; hired 2 full-time and 12 seasonal employees through TNC to assist habitat implementation in current focus areas; continue to identify and develop additional focus areas.

Oklahoma – hired 4 technicians under and MOU with NRCS; grant in place in NW Oklahoma on Lesser Prairie Chickens will have side benefits for Northern Bobwhites; stepping down NBCI to state level.

Florida – working on statewide quail recovery plan; partnership developed between Florida Wildlife Commission and Tall Timbers Research Station to evaluate economic impacts of quail management on agricultural landscapes; coming closer to movements to an emphasis on private lands.

Maryland – renewed quail emphasis in the state through the hiring of a quail biologist; 65,000 acres in CREP buffers.

Kansas – Developing WHIP plans for NRCS offices; Southeast Kansas Quail Initiative up and running.

Louisiana – Developing step down implementation of NBCI at the state level; organizing quail committee and partnerships with Louisiana State University; developing NWSG demonstration areas with LSU.

North Carolina – update on NC CURE; 3 landowner cooperatives established totaling 16,000 acres on private lands; 18,000 acres in focus areas on public lands; NCWRC working with corporate farms to develop demonstrations.

South Carolina – Judy Barnes accepting additional responsibilities since Carmichael change; considering hiring a full-time Ag Liaison; SC DNR has a pending TSP contributory agreement with NRCS.

Arkansas – many agencies developing a partnership to organize a quail committee, including USFWS, Arkansas Game and Fish Commission; Arkansas Department of Forestry, QU, and USFS; 2 focus areas identified to direct WHIP dollars; expressed a need for increased monitoring.

Iowa – nothing to report.

Colorado – disappointed that they were left out of NBCI; Roger Wells is modifying BCR18 to include CO; quail focus areas being established for both scaled quail and northern bobwhites.

Tennessee – TWRA and NRCS partnered to hire 2 additional private lands staff; TWRA added additional cost share to continue Farm Wildlife Program on farms that failed to get enrolled into WHIP; TWRA to provide drills to landowners who to establish NWSG; UT Extension and TWRA working on a publication on NWSG establishment and management.

Quail Unlimited Habitat Update – Roger Wells Grants awarded to NC and GA to support those states quail initiatives. Further grants have been submitted to support TN efforts. Developing a partnership with Southern Utility Company in several states for increased habitat management under utility rights-of-ways.

5) Initiated development of “Action Plan” to increase acceptance of nwsgr among landowners and state agency personnel, particularly Ag. Extension professionals. A facilitated discussion among committee members was held to identify obstacles surrounding this issue. These obstacles were paired down and grouped into 4 primary target issues. They are as follows:

A. Research

- a. Cost/Benefit Analysis – look at net return/acre and inputs vs. yield comparisons between straight csg grazing operations and csg/nwsgr systems. Variables to consider include, forage quality, average daily gain, conception/calving rates. Although data is currently available in portions of the country, it is important that information be derived and/or replicated locally or regionally before general acceptance can be gained.

B. Education/Outreach: Must create demand for natives.

- a. Develop marketing strategy – PRIE COMMITTEE assistance
 - i. identify audiences
 - ii. identify niche markets
 1. hay production
 2. seed production
- b. Develop partnerships with Ag. Extension, NRCS, forage and grassland councils, etc. to find and discuss common ground for both wildlife and production.
 - i. Must provide benefit to landowners first priority – animal husbandry
- c. Get involved at local level through:
 - i. demonstration farms
 - ii. field days
 - iii. informational material
 - iv. attend meetings of Ag. Constituency groups

C. Economics

- a. Evaluate feasibility of incorporating nwsg forages into csg grazing/hay operations
- b. Determine economic threshold for conversion – At what point (if any) is a landowner willing to accept the “risk” involved with changing?
 - i. May consider options such as cost-share with deferment payments
- c. Identify/seek funding mechanisms via:
 - i. Agency/NGO MOUs
 - ii. NBCI Habitat Management Fund
 - iii. Ag. Industry
 - iv. Others??

D. Management

- a. Seed availability
 - i. Work with Plant Material Centers, Ag. Research, etc. to develop/provide locally adapted seed sources
- b. Equipment/Manpower

6) Cropland Management and Grassland/Grazing Lands Committee Structure.

A. It was discussed and agreed upon that the two committees will work closely together on many issues, but it was left undecided as to exactly how future meetings will evolve.

7) CRP.

A. The committee discussed, briefly, the importance of CRP management in reaching the goals set forth in the NBCI. This will be a priority issue for the new Cropland Management Committee to address.

Agricultural Policy Committee for the period August 29, 2002 – August 24, 2003

**Submitted By:
D. Breck Carmichael, Jr., Chairman**

Current Committee Members

Breck Carmichael, Chair – NBCI Program Coordinator & South Carolina DNR; Dan Figert, Chair-Elect – Kentucky Dept. of Fish and Wildlife Resources; Steve Capel – Virginia Dept. of Game and Inland Fisheries; Glynda Clardy – NRCS, Mississippi; Steve DeMaso – Texas Parks & Wildlife Dept.; Elsa Gallagher – Missouri Dept. of Conservation; Dave Godwin – Mississippi Dept. of Wildlife, Fisheries and Parks; Mark Gudlin – Tennessee Wildlife Resources Agency; Ed Hackett – NRCS-Wildlife Habitat Management Institute, Mississippi; John Hendrix - Oklahoma Dept. of Wildlife Conservation; Dave Howell – Quail Unlimited, Indiana; Chuck Kowaleski – Texas Parks and Wildlife Dept.; Brad McCord – Missouri Dept. of Conservation; Don McKenzie – Wildlife Management Institute, Arkansas; Terry Sharpe – North Carolina Wildlife Resources Commission; Brian Smith – Kentucky Dept. of Fish and Wildlife Resources; Jeffery Sole – The Nature Conservancy, Kentucky; Reggie Thackston – Georgia DNR; Jeff Thurmond – NRCS, Mississippi; Mark Whitney – Georgia DNR

Committee Purpose

The Southeast Quail Study Group Agricultural Policy Committee charge is to monitor agriculture policy with respect to its potential impact on the habitat of northern bobwhite quail. In coordination with the SEQSG Steering Committee, the Agricultural Policy Committee will draft position statements and provide recommendations relative to the formulation and implementation of agriculture programs and provisions. Additionally, the committee will work with appropriate state and federal agencies and private conservation organizations to facilitate information transfer regarding the impacts of agriculture policy on northern bobwhite habitat.

Committee Activities

The Agricultural Policy Committee undertook the following actions since the August 2002 meeting in Waynesboro, GA.

- The Forest Management Committee was assisted with drafting of comments to USDA concerning the Draft Forest Land Enhancement Program Interim Rule.
- A letter was prepared for signature by the President of the Southeastern Association of Fish and Wildlife Agencies concerning state fish and wildlife agencies role in the delivery of technical assistance for implementation of Farm Bill conservation programs.
- Comments concerning the Draft Programmatic Environmental Impact Statement for the Conservation Reserve Program (CRP) were submitted to the USDA Farm Service Agency (FSA).

- Comments concerning the proposed rule for the Environmental Quality Incentives Program (EQIP) were submitted to the USDA Natural Resources Conservation Service (NRCS).
- Committee members Carmichael and McKenzie accompanied Texas Quail Council representatives in a meeting with NRCS Chief Bruce Knight in Washington, DC to discuss NRCS' role in implementation of the Northern Bobwhite Conservation Initiative generally, and EQIP specifically.
- A set of "Bobwhite BMP's", based on NRCS Field Office Technical Guide Practice Standards was developed and submitted to Chief Knight in the aforementioned meeting.
- The NRCS National Handbook of Conservation Practice Standards was reviewed and suggestions for modifications to numerous practices were submitted. Most suggestions were oriented towards improving habitat conditions for northern bobwhites and other early successional wildlife species.
- Comments were submitted to FSA concerning the CRP Long Term Policy Interim Rule.
- The Committee, on behalf of the SEQSG, signed onto a letter to the Secretary of Agriculture (along with 9 other conservation groups) concerning clarifying the definition of "conserving use" in the CRP rule.
- Committee member McKenzie, and others, drafted a proposal to the FSA for the inclusion of "Bobwhite Buffers" (i.e. field borders) in the Continuous CRP.
- Input was provided to the International Association of Fish and Wildlife Agencies (IAFWA) on agriculture policy issues through service on the IAFWA Agriculture Conservation Task Force.
- The Committee Chair coordinated election of a new Chair for the Ag Policy Committee.

Research Committee

Submitted By:
Thomas V. Dailey, Chairman

The research committee had a productive meeting with 24 in attendance. We focused on monitoring and evaluation for the Northern Bobwhite Conservation Initiative (NBCI), and shared research updates. Regarding the later, special presentations were given by Fred Guthery (hyperthermia in quail), Chong He (Bayesian estimation of nest survival) and Bill Palmer (quail DNA research opportunities).

We updated work being done on the NBCI research priorities identified at last year's meeting: (1) human dimensions information needs, (2) land inventory (GIS) information needs, (3) quail abundance indices as a measurement of the degree of success of NBCI, and (4) hunter activity indices as a measurement of the degree of success of NBCI. Most work focusing on these priorities involves GIS information with several states reporting limited action. Regarding the top priority, human dimensions research, in 2004 Missouri will be conducting a landowner attitude survey in association with a quail habitat restoration initiative. Overall there has been little specific work done to prepare for evaluation of NBCI; however, that is about to change as NRCS announced a special funding program for NBCI evaluation.

Wes Burger (Mississippi State University) and Pete Heard (NRCS) provided leadership on this issue. As of late September there are Memorandums of Understanding between USDA Natural Resources Conservation Service and Mississippi State University, Quail Unlimited and SEAFWA for the purpose of establishing collaborative efforts in monitoring the effectiveness of conservation programs and practices in meeting NBCI population goals and habitat objectives. Funding includes \$500,000 of appropriated monies per year for 3 consecutive years. Funding will be guided by a steering committee and a technical committee. SEQSG researchers and outside scientists will be invited to serve on the technical committee. The time line for the technical committee includes a meeting this fall to develop a request for proposals (RFP) and release of the RFP in early 2004.

Public Relations, Information and Education (PRIE) Committee

Committee members: Robert Perez (Chair), Rick Chastain, Jerry W. Davis, Lance Hedges, Bill Whitman, Kate Pipkin, George Shurvington, Bill White, Tim Hiller, Russ Walsh, Helga McDaniel, Frank Barick and Mark Gudlin

The PRIE committee received its charge from Chairman Thackston, to implement the completed NBCI marketing strategy. The majority of the PRIE committee meeting time was devoted to formulating methods to get the NBCI marketing strategy into a form that can easily be copied in a "cookie cutter" process by the affected state agencies. Additionally, the groundwork was laid to develop a tri-fold and a popular version of the NBCI. Suggested strategies and action items are outlined as follows:

Implementation of the Marketing Strategy

Develop informational packets for distribution to each state's NBCI representative and Information and Education dept. [cc Agency Director/Division Director (Chief)] which will include:

1. Electronic copy of the NBCI logo
2. CD containing a power point presentation of the What, Why, and How of the marketing strategy including video clips of Breck Carmichael, Mark Gudlin, Reggie Thackston, Academia representative, Steve DeMaso, etc. (Perez/Chastain)
3. Hard and electronic copies of the strategy
4. CD containing the NBCI, NBCI poster, NBCI fact sheet, Bobwhite Basics, State and Federal Incentives presentation, and NBCI presentation
5. List of states with quail initiatives, and/or state councils, and state council flowchart example with suggestions.
6. In-house workshop/partnering model

Popular Version of the NBCI in Tri-Fold Form

Develop a summary of the NBCI in an easily digestible form for all audiences which would include the following sections:

1. What is the current situation/status of grassland and grassland savannah ecosystems and of bobwhite quail in particular (Chastain)
2. Why are these systems important to all of us? (Chastain/Perez)
3. What is the NBCI? (Chastain)
 - a. Overall objectives and goals
 - b. Map of BCRs included in the plan
4. Recovery through the partnerships (Perez)
5. What can you do to help? (Gudlin)
6. General contact info (Gudlin)

Popular Version of The NBCI (8-10 pages)

Develop a summary of the NBCI in an attractive format for distribution to administrators, foundations, legislators, etc. Use same design/style as tri-fold and use a professional editor.

1. What is the current situation/status of grassland and grassland savannah ecosystems and of bobwhite quail in particular
 2. Why are these systems important to all of us?
 3. What is the NBCI?
 - a. Overall objectives and goals
 - b. Map of BCRs included in the plan
 - c. Description by BCR and species that benefit
 7. Habitat Management
 - a. Pine/Hardwood woodlands mgmt.
 - b. Grassland/Pastureland (Perez)
 - c. Cropland (Perez/Kate)
 3. Recovery through the partnerships (Perez)
 4. What can you do to help? (Gudlin)
 5. General contact info (Gudlin)
- **VIDEO-** discussed but consensus was that a video may be better suited for habitat management activities
 - **TRACKING METHODS-** ways to report committee annual activities were discussed. The group agreed to attempt to do this via e-mail.
 - **LIST SERVE-** discussed but consensus was that the direction and size could not easily be controlled.
 - **SLOGANS-**
 - Quail Count
 - Northern Bobwhite: National Treasure , National Priority
 - Bringing Back Bob
 - Flushes for the Future
 - NBCI: Its for the Birds

Action Items

1. Request non-NBCI state coordinator SEQSG Body to sign-up (volunteer) to receive info packet when distributed, to take to Agency/Division heads.
2. Find out how many states are linked to SEQSG website.
3. Catalog images of quail habitat practices and songbird images. Upload some of these images to the SEQSG website.
4. Seek out BCR article for QU Magazine: Success Stories
5. Continue SEQSG newsletter in QU Magazine

6. Address the SEQSG body/steering committee in regard to hiring a marketing firm to promote the NBCI. Which states currently employ marketing experts?
7. Encourage states with their own public television shows to run NBCI stories
8. Encourage PSA's and Radio plugs



State Reports

2003 Southeast Quail Study Group Alabama

Submitted By:

**Stan Stewart, Wildlife Biologist, Alabama Wildlife & Freshwater Fisheries Division
Management Initiatives/Private Lands Outreach**

Various efforts are currently underway to address bobwhite restoration within the state. As an outgrowth of a collaborative attempt to create a Bobwhite Initiative, the Alabama Wildlife Federation along with conservation partners including Quail Unlimited, Alabama Quail Hunters, Alabama Department of Conservation and Natural Resources, USDA Forest Service and Natural Resources Conservation Service launched the Alabama Quail Trail to promote and further the goals of quail hunting, quail conservation and quail research in the state. One of the objectives is to highlight an increase of bobwhite numbers and associated quail hunting as an opportunity for rural economic development. It is estimated that the current loss of quail hunting opportunity and quail hunters compared to 1970 translates to an annual revenue loss of \$135 million.

The Choccolocco Upland Initiative is a cooperative project of USDA Forest Service, Quail Unlimited and Alabama Department of Conservation and Natural Resources to restore and manage montane longleaf pine forests, the red-cockaded woodpecker, northern bobwhites and other associated wildlife on the Shoal Creek District of Talladega National Forest and Choccolocco Wildlife Management Area. The initiative tailors prescribed fire regimes and other management practices to favor bobwhite productivity within the context of longleaf pine and red-cockaded woodpecker management.

USDA Natural Resources Conservation Service and Alabama Department of Conservation and Natural Resources are cooperating on the delivery of farm conservation programs through financial and technical assistance with a directed emphasis on bobwhite habitat development and restoration. Wildlife Habitat Incentive Program funds and Environmental Quality Incentive Program funds are available to cost-share with private landowners to install and manage bobwhite habitat developments, and landowner response has been enthusiastic. A Bobwhite Conservation Priority Area was designated by the USDA Farm Service Agency within one county for the Conservation Reserve Program, although no enrollments occurred during the sign-up period.

Research Activities

ECOLOGY OF NORTHERN BOBWHITES IN THE LONGLEAF PINE ECOSYSTEM MANAGED WITH GROWING SEASON BURNS

Southern pinelands have traditionally been managed with prescribed fire in late winter (i.e. February or March). Burning at this time has received favor due to consistent burn conditions, little effect on nesting birds, and minimal time of reduced cover for wildlife. Recent research suggests that fires during spring and summer months (i.e. growing season burns) may also provide positive effects on native flora and fauna of the longleaf pine (*Pinus palustris*) ecosystem, especially endangered species. Little research has addressed the potential

ramifications of growing season burns on other game and nongame wildlife species. Considering the economic importance of northern bobwhites (*Colinus virginianus*) in the southeast, research should address whether sustainable populations can be maintained in landscapes managed with growing season burns.

Conecuh National Forest (CNF; 31° 7' latitude, 86° 37' longitude) is located in the southeastern Coastal Plain of Alabama and consists of approximately 42,000 acres of native longleaf pine. The U. S. Forest Service manages a majority of these lands for the endangered Red-cockaded Woodpecker, gopher tortoise, and to maintain healthy longleaf pine communities. Stands typically are burned triennially, and growing season burns occur between April and June. Little is known of the fire mediated habitat characteristics that influence northern bobwhite vital rates (mortality, fecundity, immigration, emigration) in longleaf pine ecosystem. Researchers from the Alabama Cooperative Fish and Wildlife Research Unit at Auburn University (T. H. Folk and J. B. Grand) have initiated a 3-year radio telemetry study to investigate bobwhite population dynamics in longleaf communities managed with growing season fires. Approximately 100 birds will be radio marked annually and vital rates will be estimated among and within stands of differing burn history (i.e. stands burned last year, 2 years prior, and 3 years prior). Research will also evaluate differences in structure and composition of understory vegetation in longleaf pine stands. Information gained will determine if stable northern bobwhite populations can be maintained in longleaf pine stands managed with growing season burns. Knowledge will also be gained relating to landscape level management for northern bobwhites. This research will better help public land managers in the southeast meet competing management objectives. This project is currently in its second year.

The Alabama Quail Management Project

A new quail management project, located in east-central Alabama, modeled after and in association with the Albany Quail Management Project (Auburn University School of Forestry and Wildlife Sciences, H. L. Stribling and D. C. Sisson) will investigate the application of current bobwhite management techniques to Alabama habitats.

An initial 3-year radio telemetry investigation of the ecology and management of wild bobwhites will be conducted on quail plantations located in Macon and Bullock Counties, Alabama. On all study sites 50 birds will be radio-tagged each spring and fall, and monitored year-round for the duration of the study. Differential habitat use, home range size, survival, and reproductive effort will be determined. Fall covey counts and hunting records will be used to track population levels and compare them to habitat conditions.

The research information acquired will be used to guide management practices that will increase bobwhite populations in Alabama landscapes, and stimulate renewed optimism for wild quail management in the state. This project is currently entering its second year.

2003 Southeast Quail Study Group State Report - Arkansas

Submitted By:
Bradley J. Carner, Arkansas Game and Fish Commission

Bobwhite Population Status

According to Breeding Bird Survey data, northern bobwhite numbers in Arkansas declined by 42 percent during the period of 1966-1980. This rate of decline accelerated to 5 percent annually during the period of 1980-1998.

Currently, the Arkansas Game & Fish Commission continues to monitor population trends annually through quail call counts conducted during late May and quail brood surveys conducted from June 15-August 31. Since the inception of these survey methods in the early 1980's, data from both of these surveys also indicate a precipitous decline in quail numbers in Arkansas (Figure 1 & 2).

Figure 1. Quail Call Count Trend 1982-1992, 1998-2002

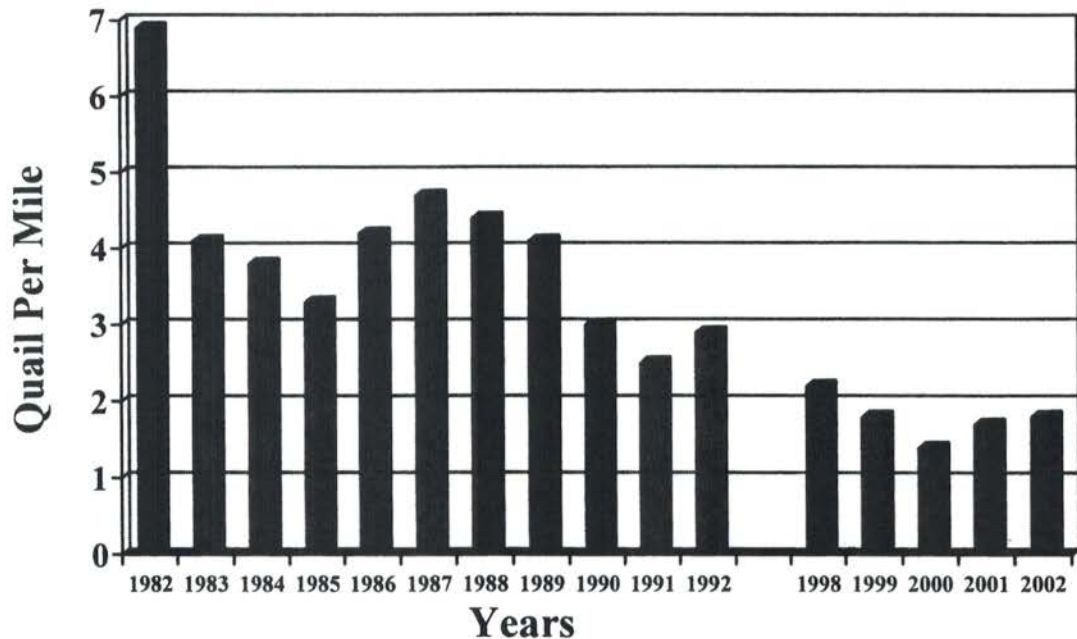
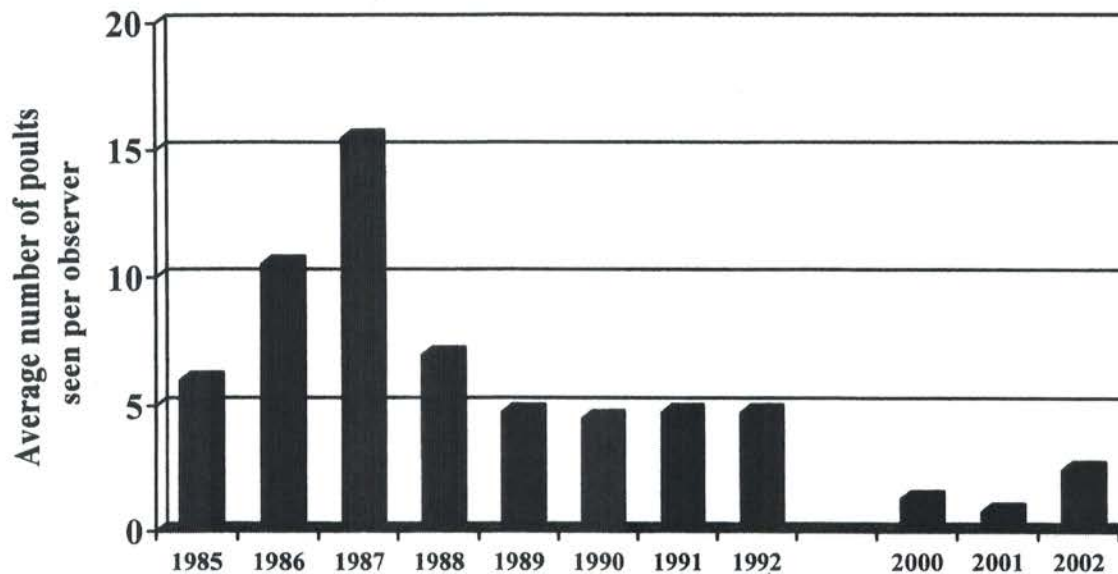


Figure 2. Quail Brood Survey Trend 1985-1992, 2000-2002



Quail Management Initiatives

As a result of the approval of the Arkansas Game & Fish Commission's Strategic Quail Management Plan in May 2001 and the subsequent release of the Northern Bobwhite Conservation Initiative (NBCI) in March 2002, the Arkansas Quail Committee has been formed in an attempt to achieve the goals outlined in the two plans. The Arkansas Quail Committee is a conglomeration of representatives from several organizations including the Arkansas Game & Fish Commission, NRCS, U.S. Forest Service, U.S. Fish & Wildlife Service, Cooperative Extension Service, FSA, Arkansas Forestry Commission, Arkansas Natural Heritage Commission, Quail Unlimited, industrial timber companies, private consultants and academia.

The first action item of the Arkansas Quail Committee has been to initiate the development of 1-2 quail "focal areas" within each of the three Bird Conservation Regions (BCRs) within the state as outlined in the NBCI. At this time, two focal areas have been identified (one in Searcy Co. and one in Fulton Co.), both of which lie within the Central Hardwoods BCR of northern Arkansas. Each of these focal areas are comprised of numerous landowners that are willing to manage for quail on their respective properties and collectively represent relatively contiguous tracts of property each in excess of 8,000 acres.

The two quail focal areas were declared as "Special Project Areas" for the 2003 WHIP sign-up. Along with the status of "Special Project Area", each focal area received an allocation of \$100,000 in WHIP funding to provide 75% cost-share on select practices to landowners within

the focal areas. In addition, the Arkansas Game & Fish Commission provided the remaining 25% cost-share on those same practices to insure that the landowners did not incur any out-of-pocket expenses. The WHIP plans for these properties have been developed and management practices will begin as early as October 1, 2003. Meanwhile, members of the Arkansas Quail Committee have been working to gather baseline data on these two areas pertaining to quail numbers, resident songbird numbers as well as vegetative data in order to document responses to future habitat manipulations.

Research

A four-year study within the Ouachita National Forest on "The Effects of Pine-Grassland Restoration on Bobwhite Quail" is nearing completion with a final report expected in the near future. Initial findings from radio-telemetry indicate that quail tend to use pine-bluestem restoration areas within the study site almost exclusively indicating that this habitat type provides all of the annual requirements for the species.

Data collection for a second study, "Survival and Habitat Use of Pen-Reared and Wild Northern Bobwhite (*Colinus virginianus*) at the Camp Robinson Wildlife Demonstration Area", has been completed with the final report to be submitted in the very near future.

2003 Southeast Quail Study Group State Report - Delaware

**Submitted By:
Bill Whitman, Delaware NBCI/Quail Coordinator**

The Northern Bobwhite Quail is Delaware's only resident game bird and is a species of special concern in the State. Together with the eastern shores of Maryland and Virginia, Delaware covers a significant part of the Delmarva Peninsular and was historically an important area for bobwhite quail. We are a "fringe" state and not currently part of NBCI; however, that species is continues to be a high priority in DE and the Division of Fish and Wildlife continues to target habitat restoration and management as an issue in the recovery of the species.

During the 1970's and early 1980's, quail populations in this state rivaled any in the southeast. In the late 1980's and throughout the 1990's, populations declined sharply and dramatically. By the mid-1990's, public concern was high and the Division responded by reducing seasons and bag limits. In 1995 the Division assigned a biologist to survey populations and assess habitat as the potential cause for decline. Random call count routes were selected, wings were collected from hunters, mail carrier routes were run, and telemetry/trapping investigations were undertaken. Quail populations continued to decline but some good information was gathered about numbers, distribution, mortality and habitat use. By 1999 all research and most call count surveys were discontinued due to lack of funding and a decline in hunter numbers and support. Only a few random routes and some state wildlife management areas continue to be surveyed. These limited long term surveys suggest that quail numbers have reached an all time low, perhaps reaching a level where isolated coveys will continue to exist but below a point where they can recover to a viable and harvestable population.

Throughout the decline, speculation about the cause ranged from predation, over hunting, and weather extremes to habitat loss. Clearly, the latter is the determining variable in Delaware and throughout the southeast. While the amount of habitat in this state is declining, substantial high quality cover remains over most of southern Delaware and the Delmarva Peninsular. In addition to quantity, biologists suspect that distribution (fragmentation) is an equally if not more important consideration. Commercial and residential development is rapidly consuming farmland, former quail habitat, in an opportunistic and poorly planned pattern. The result is fragmentation of large habitats into many small sections. While each smaller parcel may provide high quality habitat and be adequate to support a single covey, the long-term survival of that covey is tenuous at best and production of a second and third covey is impossible. Genetic variability and, thus, reproductive potential is limited and the potential for population recovery is eliminated. The NBCI has ambitious habitat goals but may not be devoting enough attention to patterns of distribution which limit covey interaction?

The Division of Fish and Wildlife does not have an official bobwhite quail recovery or research program; however, it is a target species for all of our upland habitat restoration projects. The Division has recently restructured staff to create a private lands habitat restoration program using state funds, USFWS grants, and farm bill programs. Two full time biologists are currently working in this program and another begins on September 1, 2003 funded by a LIP grant and a

contribution agreement with NRCS. Because the federal funding sources that support our program require emphasis on rare and endangered species or species of special concern, we cannot designate a species specific program even though the restoration that we promote is textbook management for bobwhite quail. We are responding to opportunities on both public and private land and are placing special emphasis on sites that expand existing habitat and/or connect adjacent areas to reduce fragmentation. An ultimate goal is to connect grassland and secondary successional habitats across the state to provide contiguous habitat sufficient to sustain harvestable populations of bobwhites.

Delaware does not have a recovery plan within the NBCI; however, to include Delaware may offer benefits to both NBCI and state habitat goals. Delaware is an important part of the Delmarva Conservation Corridor recognized under the 2002 Farm Bill. This special recognition supports the concept of habitat continuity and its development could be further enhanced and supported by including this state in the NBCI, which is also given special recognition under the Farm Bill. For NBCI, the Conservation Corridor concept in Delaware may boost opportunities to leverage money and focus actions on habitat recovery on Delmarva. Delaware has participated in the SEQSG since its inception primarily to stay abreast of regional research and management activities. We would like to continue to attend annual meetings and pending comment and approval by the group, we will offer recovery objectives and action plans for inclusion in the NBCI.

2003 Southeast Quail Study Group State Report – Florida

**Submitted By:
Tommy Hines, Florida Fish and Wildlife Conservation Commission**

Florida Fish and Wildlife Conservation Commission (FWCC) quail harvest data continue to indicate low populations. The 2001-2002 data reported 182,000 birds harvested which is within the range of the last 12 years. However, it is dramatically lower than the 1000,000 to 3000,000 birds harvested annually in the 1960's thru the late 1970's. With the exception of plantations and other lands specifically managed for quail, populations are low and quail hunting opportunity is very limited in Florida.

Private Lands

Until recently, programs within the FWCC aimed at quail restoration and management, on private lands, have not been a top priority. The one program, since 1990, which probably has had some impact is the Forest Stewardship Program. There have been wildlife management prescriptions written on over 530, 000 acres. These plans are comprehensive in nature, but recommendations routinely include practices, which enhance quail habitat.

A reevaluation of priorities within the FFWC has placed new emphasis on private lands. As a result, the staff is beginning to pursue various options to engage private landowners more effectively. One of the early objectives is to secure funding through grants, memorandums of understandings (MOU's), contribution agreements, and the farm bill to lay the foundation for a comprehensive private lands program.

To date, the FFWC has successfully obtained a Landowners Incentives Program (LIP) grant from the US Fish and Wildlife Service. The grant will provide \$840,000 for the next three years for cost-share funding to participating landowners plus \$180,000 for Program overhead. Although the emphasis of this program is imperiled species, there are provisions for practices, which enhance or maintain early successional habitat. The FFWC has recently signed a MOU to make \$60,000 available from the Natural Resources Conservation Service (NRCS) to provide technical assistance associated with the delivery of Florida's Wildlife Incentive Program (WHIP). Florida's Partner for Fish and Wildlife Program (Partners) currently has \$300,000 available for cost shares to private landowners. Not all of these monies will be directed to quail habitat. However, approximately \$100,000 has been directed toward Water Management District projects that emphasize longleaf pine reforestation/afforestation and prescribed burning. In addition, the Fish and Wildlife Service has recently obligated \$25,000 per year to FFWC for the next five years to initiate a cost share program that could be used for various habitat related practices such as prescribed fire.

Public Lands

Quail management has not been a priority on most of the public land managed by the FWCC. The only public lands hunting area where quail management is the primary objective is the

Babcock Webb Wildlife Management Area (WMA) in South Florida. The Webb WMA is a 63,000 acre area and has been, since its inception in the 1940's, dedicated to quail management. There are also some quail management efforts in the Panhandle on the Blackwater Forest which is a 200,000 acre area, that is predominantly longleaf. Also, some management is being implemented on the smaller Aplachee area in the Panhandle.

State Management Plan

A petition was presented to the Florida Fish and Wildlife Conservation Commission (FWCC) in August of 2002 to list the bobwhite on the state list as a Species of Special Concern. After some debate, it became apparent to all parties that even though quail had suffered serious declines in Florida, there was no justification for a special listing. However, because the issue had been brought to the forefront by the petition, the time was appropriate to form an agency working group to begin writing a state quail plan addressing the issue of bobwhite restoration in Florida. In February of 2003, an agency-working group was convened and work was begun on developing a state bobwhite restoration and management plan. A draft plan has been developed and a completed plan should be ready by the end of the year. It is envisioned that when the plan has been completed that it will provide direction for all quail management and research activities carried out by the FFWC.

Research

There are several research needs identified in the draft plan. At least two of those research projects are already being implemented prior to the completion of the plan. One involves the important Babcock -Webb WMA, and the other is directed at the issue of quail management on private lands.

The Webb WMA represents a unique South Florida habitat classified as South Florida wet pine flatwoods. Slash pine, intermittent wet prairies, dry prairies, and freshwater marshes characterize the property. It is extremely wet during the rainy season and can experience dramatic differences in the nature of the habitat between years and within years. Quail populations have historically fluctuated dramatically. However, recent declines in harvest have been more severe than in the past, and demand for hunting opportunity has continued to increase. In order to provide a sound database upon which to manage the property, a research project was implemented on the area during the late summer of 2002. The FWCC has contracted, via the UF Cooperative Unit, the services of Dr. Ralph Dimmick to conduct a study to address the question of the effect of the perceived excessive hunting pressure and to document the factors affecting bobwhite population dynamics on the Webb WMA.

Quail management on private lands is largely influenced by economic considerations. But information, on the economics of restoration of bobwhite habitats, is lacking for agricultural landscapes. Also, demonstration of management that achieves a balance between quail management objectives and timber and agricultural objectives is almost entirely lacking. In order to address these questions, we have secured a grant from the Florida Wildlife Foundation and are entering into a cooperative agreement with Tall Timbers Research Station and the

University of Georgia. Additional money will come from the University of Georgia and Tall Timbers. Initial objectives developed include the following:

1. Determine the long term cost for implementation of a habitat management plan on a typical rural landscape that is suitable for recovery of northern bobwhite.
2. Determine the level to which northern bobwhite and songbird populations respond to early-successional habitat restoration.
3. Based on objectives 1 and 2, determine the need for and estimate the size of cost share programs for enticing landowners to invest in habitat restoration on their farms
4. Develop a model-working farm that can serve as a demonstration area for other landowners interested in habitat restoration.

Conclusion

The FWCC is in the process of going through the most extensive reorganization in its history, including the reordering of priorities. Consequently, this is an extremely opportune time to be lobbying for an expanded bobwhite management program. The extent of the problem regarding low quail populations is well known. Now it is time to begin the process of addressing the problem from a statewide/landscape perspective.

2003 Southeast Quail Study Group State Report - Georgia

Submitted By: Clay Sisson

Management Initiatives

The most recent USGS Breeding Bird Survey Data show bobwhite populations in Georgia declining at the rate of - 4.17 percent per year from 1966 – 2002. Likewise, Georgia Department of Natural Resources, Wildlife Resources Division (WRD) surveys show both quail hunter numbers and estimated harvest have declined dramatically during this time. In 1966 an estimated 135,000 harvested about 3.3 million quail while in the 2002 – 2003 season an estimated 29,858 hunters harvested 541,922 quail, of which 371,217 (68.5%) were pen reared and 170,705 (31.5%) were wild (1966 and 2002 – 2003 estimates derived by different survey techniques). In general, quail populations are very low across the Ridge and Valley, Blue Ridge Mountains, Piedmont and Lower Coastal Plain physiographic provinces with populations in the Upper Coastal Plain varying from moderate to low with localized abundance on properties being managed for quail, particularly in Southwest Georgia.

Bobwhite Quail Initiative Update (BQI)

The primary goal of Georgia's Bobwhite Quail Initiative (BQI) is to restore grassland – forb habitat and enhance or maintain quail populations on private lands across 17 counties in Georgia's Upper Coastal Plain. Secondary objectives include improving habitat for early successional songbirds, reducing soil erosion, improving water quality and increasing the opportunity for wildlife associated recreation, particularly quail hunting. Since the programs inception in 1999, BQI personnel have provided technical assistance for >365,000 acres of private lands and have disbursed \$159,478 to BQI Cooperators (landowners or managers enrolled in BQI) who successfully implemented habitat practices for economic incentives. An additional \$685,128 has been obligated with BQI cooperator contracts for habitat practices to be implemented through 2005. A stepwise increase in program practice options and incentive payment rates increased landowner participation remarkably for years 2001 and 2003. By the end of 2002 there were 93 Cooperators enrolled who had established 344 miles of field borders, hedgerows and filterstrips. Currently, there are 142 Cooperators enrolled with the potential to have established over 400 miles of linear habitats and along with other practices may positively impact over 20,000 acres by 2004.

Fall quail covey counts were conducted by the University of Georgia and are discussed in the following section. BQI biologists in the Central Focus Area recorded incidental sightings and whistle counts while conducting annual habitat compliance checks and estimated quail occupancy rates of BQI fields during the summer. Results during 2000 – 2002 across 84 BQI fields showed quail occupancy rates as follows: 14% for fields < 15 ha and \geq 700 m apart; 37% for fields < 15 ha and < 700 m apart; 63% for fields \geq 15 ha and \geq 700 m apart; and 64% for fields \geq 15 ha and < 700 m apart. Results seem to indicate increased success across landscapes where BQI fields are large and close together versus landscapes where fields are small and/or far apart.

During 2000 – 2002 the efficacy of 3 grass selective translocated herbicides (Quizalofop = Assure II, Clethodim = Select, Fulazifop and Fenoxaprop = Fusion) and 1 broad spectrum translocated herbicide (Imazapyr = Chopper) was tested for bermudagrass control on burned and unburned sites. The most effective bermudagrass control was obtained from prescribe burning in the spring and applying Imazapyr in the summer. (Submitted by Reggie Thackston)

Private Lands Program (PLP)

The PLP, operated by WRD, continues to work with private landowners across the state by focusing on Farm Bill programs including WHIP, CRP, EQIP, FLEP and WRP. In addition, the PLP is active with the Georgia Forestry Commission in implementing the Forest Stewardship Program (FSP) and delivering management plans to individual private landowners. And finally, PLP works with corporate forest landowners throughout Georgia utilizing the Forestry for Wildlife Partnership Program (FWP) to improve wildlife habitats on industry lands.

Activities concerning Farm Bill programs centered on rule making and implementation of 2002 Farm Bill programs. The PLP helped develop mid-contract management practices for CRP, the ranking formulas for EQIP and WRP, ranked WHIP proposals and assisted in the development of the FLEP State Priority Plan. In addition, PLP set the new primary nesting seasons in CRP and GRP from April 1 – August 31 and worked with NRCS to secure a Cooperative Agreement for funding a wildlife biologist position for riparian buffer work. The PLP participated in a Legislative Conservation Tour where WRD personnel demonstrated and discussed the benefits of Conservation programs, technical assistance funds and collaborative working arrangements provided for in the 2002 Farm Bill.

The Forest Stewardship Program biologists, in the PLP, reviewed and/or wrote 289 Stewardship Management Plans covering approximately 68,500 acres. All PLP biologists also provided management plans to 14 other private landowners addressing habitat needs on 4085 acres.

The FWP recognized 5 forest industry companies as partners for this past year. Those companies represent an ownership of approximately 2.6 million acres in Georgia. Each of these companies was commended for numerous wildlife management practices including thinning, leaving shrub borders around pine plantations, and using herbicide applications and methods that promote adequate early succession habitats in newly regenerated pine stands. (Submitted by Mark Whitney)

Regulatory Changes

Regulatory changes were made during the past year to create a statewide quail season that opens on the first Saturday after November 13 and closes on the last day of February.

Research Update

University of Georgia – D.B. Warnell School of Forest Resources (UGA)

Over the last 3 years we have worked in conjunction with the Georgia DNR on monitoring and research of the BQI program. Fall and winter bobwhite population monitoring was hampered by inclement weather in 2002, but results indicated a continued positive response of bobwhites to BQI habitats.

A manuscript is in preparation on vegetative response in BQI managed field margins, extent of Bermuda grass invasion and management, and potential effects of Bermuda grass as a heat sink and on bobwhite quail chick mobility. We are in the second year of radio-telemetry work on BQI managed and control farms looking at quail ecology relative to management.

We are collaborating with USDA-Wildlife Services, Tall Timbers Research Station, and Auburn University on a predation management project. We are in our third field season where we are looking at the effects of meso-mammalian predator removal on quail recruitment and populations. We are also in the first year of fieldwork on a collaborative project with Auburn and Tall Timbers to examine the genetic impacts of translocated wild bobwhites into an existing fragmented population. (Information submitted by Dr. John Carroll and Rick Hamrick)

Auburn University - Albany Quail Project (AQP)

This summer marks the twelfth year of work by the Auburn University's School of Forestry and Wildlife on Quail Plantations in southwest Georgia. The previous year was one of continued intensive study of factors affecting quail populations in the area as well as expansion into new areas. Our research in Albany has focused on ways to improve over winter survival of quail as well as participating in a large scale predator removal experiment in conjunction with the University of Georgia, Tall Timbers, and USDA-Wildlife Services. Graduate student Theron Terhune is completing his Masters work on the ecology of whistling males as well as analyzing long-term data sets on habitat parameters associated with successful nests and evaluation of effects of radio-collars on survival.

We have also expanded over the last year to begin a project on plantation land in east central Alabama, which is modeled after, and in association with the Albany project. Another new project is on Wade Plantation in east central Georgia, which is looking at the effects of irrigation on quail populations and hunting success. Our other new project is in conjunction with UGA and TTRS and is evaluating genetic and demographic effects of relocating wild quail into an isolated quail population in middle Georgia.

We have also been very active over the last year on several large management projects on both existing and new quail properties and are excited about the enthusiasm and intensity level of quail management in southwest Georgia currently.

2003 Southeast Quail Study Group State Report - Illinois

Submitted By:

**John Cole, Upland Wildlife Program Manager, Division of Wildlife Resources, Illinois
Department of Natural Resources**

Population Status

Bobwhite numbers in Illinois have declined sharply in the last three decades. Prior to World War II, bobwhite flourished on the landscape created by small, general farms with wood lots, wooded fence rows, crop rotations of corn, wheat, oats, clover, and permanent pasture of bluegrass and shrubs. After the War, farms in south-central and west-central Illinois became larger and less diversified shifting to continuous corn and soybeans. However, the transition was mitigated by large scale programs to reduce production of feed grains (set asides and soil bank) that returned many acres to grass/legume mixtures or fallow fields providing nest cover and brood habitat. In far southern Illinois, many farms were converted to fescue grazing land or reverted to forest. Below is a chronological review of bobwhite status in Illinois.

- **1960 to 1975** Estimated annual harvests ranged between 1.5 and 2.6 million birds. During the same period, an average of 152,000 hunters spent about 840,000 days hunting quail each year.
- **1976 to 1980** Large scale reductions in short term set aside programs and two consecutive severe winters reduced estimated harvest by 50 to 60 percent. Hunter numbers declined proportionately.
- **1981 to 1994** Milder weather and low grain prices resulted in a modest recovery. During this period, short term set asides returned and the Conservation Reserve Program began. The ACR (annual set aside) program annually idled between 500,000 and 3,000,000 acres in Illinois as other land was enrolled in the Conservation Reserve Program. Between 1985 and 1995, CRP enrollment reached 822,000 acres in Illinois. These programs dramatically increased available nest cover and brood habitat for quail. Estimated quail harvest reached 900,000 to 1,000,000 birds in four of ten years.
- **1995 to 1999** The population decline worsened. Weather and agricultural policy were again responsible. Between 1995 and 1996, quail harvest fell from 706,000 to 426,000 birds. Spring 1996 was cold and wet and annual set aside had been eliminated. In addition, over 200,000 acres of CRP grasslands returned to production while remaining acres had succeeded to poor quality grass monocultures including considerable tall fescue. Weather moderated in 1997 and 1998 and harvests increased to 468,000 and 520,000 respectively. Winter of 1998-99 negatively impacted quail in south-central and west-central Illinois. Call counts in June 1999 were down 30 percent statewide. Summer 1999 was hot and dry probably causing an early termination of nesting. A quail wing survey conducted by Southern Illinois University indicated a

juvenile to adult ratio of 2.87, the lowest recorded since the study began in the 1950's. The long term average is 5.

- **2000 to 2002** An annual average of 40,000 hunters harvested 265,000 quail in 240,000 days afield, historic lows in all categories.

Bobwhite Management Efforts

Conservation of wild bobwhites is an objective of IDNR. Population trends and hunter effort and harvest are monitored annually. Hunting seasons and bag limits are reviewed annually but have not yet been adjusted in response to recent sharp declines in abundance. Habitat restoration on public and private land is a primary responsibility of 35 district wildlife biologists in districts ranging in size from two to four counties. Illinois has very little public land and only six sites emphasize management of habitat and hunting pressure for bobwhite. At most sites, limited staffing, equipment and funding and conflicting multiple use objectives prevent intensive management for early succession habitats. On private land, planning assistance for restoration of bobwhite habitat is provided to about 5,000 landowners annually. Through the program, approximately 15,000 acres of grassland, 2,500 acres of shrubs and 1,500 acres of food plots are established each year. In addition, Illinois operates a quail habitat restoration cost sharing program with funds from the Habitat Stamp Fund. The Wildlife Habitat Enhancement Bonus Program cost shares: native grass/forb planting on CRP, strip disking on CRP, and fescue conversion on idle lands.

A new initiative will focus on restoration of early succession habitat on CRP grasslands through mowing, disking and herbicide application or combinations. Efforts will be concentrated in a block of five counties in south-central Illinois that contain a total of 170,000 acres of CRP grasslands. A block of four counties in west-central Illinois also has potential for this program

Recent Research

Two projects beginning at Southern Illinois University, Carbondale will aid substantially in implementing NBCI in Illinois. First a statewide landowner survey will examine attitudes and efforts to manage bobwhite on their holdings. The second project will build on Roseberry's GIS analyses of bobwhite distribution/abundance and habitat. Key habitat elements (%grassland,% cropland, amount of woody edge and contagion) on a study area containing both high quail densities and low quail densities will be analyzed. Then estimates of the types and quantity of habitat needed to raise the "low density area" to the "high density area" level will be made. Finally, the economic consequences of adding habitat to landowners, natural resource agencies and ngo's will be estimated.

The Illinois Natural History Survey is continuing a study of bobwhite ecology at the 15,000 acre Jim Edgar State Fish and Wildlife Area in central Illinois. This recently purchased area is undergoing habitat development for quail. Studies will include development of density estimates, year round monitoring of habitat utilization, nesting ecology (focusing on habitat structure and incidence of predation) and brood movements.

2003 Southeast Quail Study Group State Report – Indiana

Submitted By:

James C. Pitman, Wildlife Research Biologist

Breeding Population Index of Northern Bobwhite
1 July 2002 to 30 June 2003

Abstract

Spring whistle counts have been conducted annually throughout Indiana since 1947 (except 1958-1976) to assess changes in bobwhite population abundance. The number of whistling bobwhites were counted along 47 routes in 2003. Data were only considered for analysis if routes were surveyed in 2002 and 2003 and if at least 1 bird was counted on the route during the previous 2 survey years. Considering only these routes ($n = 36$), the mean number of bobwhites heard per survey stop in 2003 (0.82 ± 0.12) was significantly less ($t = 2.52$, $df = 35$, $P = 0.017$) than the number heard in 2002 (1.05 ± 0.14). However, the number of bobwhites heard per stop did not differ significantly ($P > 0.05$) from the previous year within any of the 4 physiographic regions. The number of bobwhite quail heard per survey stop was greatest in the southeast and – west physiographic region of the state (1.01 ± 0.19 , $n = 11$ routes), and the fewest bobwhites heard per stop was recorded in the central region of the state (0.24 ± 0.08 , $n = 18$ routes).

Objective

To monitor annual changes in the breeding population on northern bobwhites in Indiana.

Procedures

The Indiana Division of Fish and Wildlife has conducted roadside counts of whistling bobwhites each spring since 1947 (except 1958-1976) to monitor changes in population abundance. Results from these surveys are used to formulate management priorities, set harvest regulations, and evaluate habitat improvement programs. In 2003, whistle count surveys were completed from late-June through mid-July. Observers recorded the number of different quail heard while at 15 three-minute stops on 47 statewide routes. Counts started at sunrise and were not conducted during precipitation events or when winds exceeded 18 mph. A paired t-test (Ott 1993) was used to compare indices of abundance between 2002 and 2003. Routes on which quail were not heard during either year were eliminated from analyses. Consequently, the number of routes analyzed is less than the actual number of routes surveyed. Population indices were standardized to the number of quail heard per survey stop.

Results

Due to logistical constraints, only 47 of 72 routes were surveyed in 2003. During 2002 and 2003, bobwhites were heard on 36 of these routes and data from only these routes were used to

draw statistical comparisons between indices of bobwhite abundance. Considering only these paired routes, the statewide number of bobwhites heard per stop in 2003 ($\bar{x} = 0.82 \pm 0.11$) was significantly less ($t = 2.52$, $df = 35$, $P = 0.053$) than the number heard per stop in 2002 ($\bar{x} = 1.05 \pm 0.13$) (Table 1). This difference represented a statewide decrease of 22% from the previous year. However, the number of bobwhites heard per stop in 2003 did not differ significantly ($P > 0.05$) from the number heard in 2002 within any of the 4 physiographic regions of the state (Table 1).

Indices derived from all survey routes in 2003 were also used to make non-statistical comparisons with the previous year. The mean number of bobwhites heard at each survey stop in 2003 ($\bar{x} = 0.63 \pm 0.09$, $n = 47$) was similar to the 2002 mean ($\bar{x} = 0.70 \pm 0.09$, $n = 72$) (Table 2). However, apparent declines in regional abundance were observed in 3 of 4 physiographic regions. An apparent increase was observed only in northern Indiana (Table 1). Despite the apparent declines, the indices to bobwhite abundance were still greater in the southcentral and southeast & -west regions of the state when compared to the central and northern regions (Table 2). Indices to bobwhite abundance continue to remain well below the observed levels in the mid 1970's (Fig. 1).

Discussion

The index to Indiana bobwhite abundance appeared to be lower in 2003 than in the previous year. However, it is difficult to assess the validity of this difference due to a couple of lurking factors. Due to logistic constraints, the mean survey date in 2003 was 5 July compared to a mean survey date of 22 June in 2002. The same constraints that delayed the annual bobwhite whistle survey were also responsible for 25 routes not being surveyed in 2003. In future years, a greater number of routes will be surveyed during the peak calling period (Hansen and Guthery 2001, Robel et al. 1969) providing better indices to regional and statewide bobwhite abundance.

Because several routes were surveyed more than 2 weeks after the peak period of bobwhite calling, the differences between the 2002 and 2003 indices of abundance are probably not substantial. However, it is still quite apparent that indices to bobwhite abundance remain near historic lows in each of the 4 physiographic regions of the state (Fig. 1). In Indiana, indices to bobwhite abundance have not rebounded following the severe winter weather of the late 1970's primarily due to loss of habitat associated with the ongoing conversion of small-scale pastoral agriculture to large row-crop operations.

Recommendation

Whistle counts provide the most cost-effective method to monitor regional and statewide bobwhite abundance in Indiana. However, annual trends in bobwhite abundance based on whistle counts should be interpreted cautiously due to daily and seasonal changes in peak-calling period between years (Hansen and Guthery 2001). Despite their limitations, data from the annual bobwhite whistle count aids biologists in setting harvest regulations and detecting large-scale changes in bobwhite abundance following severe weather events, ongoing habitat destruction, or changes in harvest regulations. Therefore, the bobwhite whistle counts should be continued as a method of monitoring large-scale changes in bobwhite abundance throughout Indiana.

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Table 1. Number of northern bobwhites heard per stop ($\bar{x} \pm \text{SE}$) along 36 paired survey routes in 2002 and 2003 in the 4 physiographic regions of Indiana.

Region	Mean Bobwhites Heard Per Stop			<i>t</i>	<i>P</i>
	<i>n</i> ^a	2002	2003		
Statewide	36	1.05 \pm 14	0.82 \pm 0.12	2.52	0.017
North	5	0.85 \pm 0.33	1.03 \pm 0.34	-1.04	0.356
Central	11	0.64 \pm 0.14	0.39 \pm 0.10	1.66	0.129
Southcentral	9	1.41 \pm 0.32	0.99 \pm 0.22	1.73	0.121
Southeast & -west	11	1.24 \pm 0.21	1.01 \pm 0.19	1.74	0.113

^a Includes only routes surveyed in 2002 and 2003 in which at least 1 bird was heard (paired non-zero routes).

Table 2. Number of northern bobwhites heard per stop ($\bar{x} \pm \text{SE}$) along Indiana's annual survey routes. Index values were derived for all 4 physiographic regions within the state using data from all routes surveyed in 2002 and 2003.

Region	Mean Bobwhites Heard Per Stop		Apparent Change (%)
	2002	2003	
Statewide	0.70 \pm 0.09 (72) ^a	0.63 \pm 0.09 (47)	- 10.0%
North	0.40 \pm 0.15 (15)	0.57 \pm 0.25 (9)	+ 42.5%
Central	0.44 \pm 0.10 (32)	0.24 \pm 0.08 (18)	- 45.5%
Southcentral	1.30 \pm 0.27 (11)	0.99 \pm 0.22 (9)	- 23.5%
Southeast & -west	1.16 \pm 0.17 (14)	1.01 \pm 0.19 (11)	-3.9%

^a Number of routes used to derive the index to bobwhite abundance.

2003 Southeast Quail Study Group Population and Status Report – Iowa

Submitted By:
Todd R. Bogenschutz, Upland Wildlife Biologist

Hunting Regulations

Small game hunters are required to have a valid small game hunting license, habitat stamp and hunter safety certificate if born after January 1, 1967 to hunt small game in Iowa. Resident hunting license cost \$17.50 and habitat stamp \$8.50. Non-resident (+18) small game hunting license are \$80.50 plus \$8.50 habitat stamp. Non-resident small game licenses (under 18) are \$30.50. Hunting licenses are valid until January 10th of each year. No limited season licenses are available. Hunter orange is not required of small game hunters.

Species	Season dates	Limits	
		Bag/Poss.	Shooting hours
Pheasant	Last Saturday in October - January 10th	3/12	8:00-4:30
Quail	Last Saturday in October - January 31st	8/16	8:00-4:30
Gray	2nd Saturday in October – January 31st	8/16	8:00-4:30
Partridge			
Cottontail	September 1st - February 28 th	10/20	Sunrise-sunset

Hunters and Harvest

The Iowa DNR uses a random mail questionnaire to assess small game harvest and distribution. Survey questionnaires were mailed to 8,200 license holders. Survey participants were asked where they hunted, which species they hunted, how many days they hunted, and how many of each species they harvested. Survey participants returned 3,584 usable questionnaires for a response rate of 44%. Based on these returns 136,615 small game hunters took to Iowa's fields during the 2002-03 hunting season, 1% fewer hunters than the year before. Approximately 20,887 quail hunters (9% of licensed hunters) harvested 63,872 quail during the 2002-03 quail season (Figure 1). This is a 98% increase from the 2001 harvest estimate of 32,226. Resident hunter numbers declined 21%, while nonresident hunter numbers increased 14% compared to 2001. Quail hunters averaged 7 days afield and harvested 3 birds for the season. Sixty-five percent of the quail harvest occurred in the first 31 days of the 2002 season. Over 90% percent of quail hunters hunted 15 days or less and over 50% hunted 5 days or less. Most of the quail harvest (45%) came from the southwest and south central regions of the state. The DNR does not have a hunter access program.

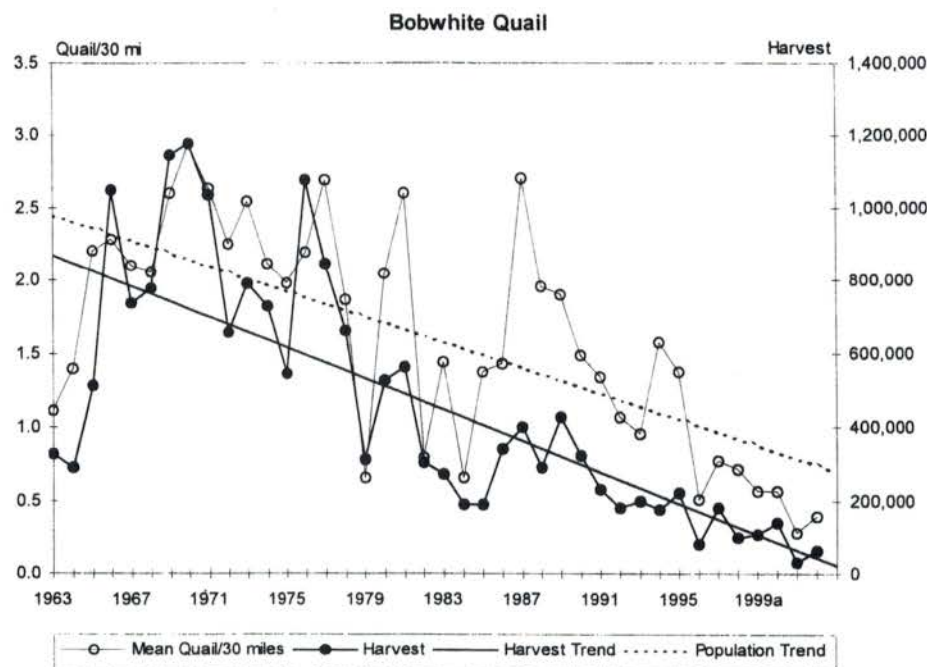


Figure 1 Iowa bobwhite population and harvest trends.

Populations and Survey Methodology

The Iowa DNR uses an August roadside survey (ARS) to assess its upland game populations. The August roadside survey generates data from 210 30-mile routes on ring-necked pheasants, bobwhite quail, gray partridge, cottontail rabbits, and white-tailed jackrabbits. Counts conducted on cool mornings when the sun is shining, with heavy dew, and no wind yield the most consistent results. All routes are conducted on gravel roads to minimize vehicle traffic. Annual changes are based on routes that are directly comparable between years. Long-term trends are based on the total number of routes completed.

Bobwhite quail numbers increased 28% statewide in 2002, but the increase was not statistically significant (Figure 1). This year's statewide index of 0.41 birds/route is 47% and 74% below the 10-year and long-term means respectively. In Iowa's primary quail range, SW, SC, and SE regions, populations increased in both the SC and SE regions (> 80%) and declined (-25%) in the SW region. With the mild winter the decline in the SW seems somewhat suspect and the low quail numbers might be the result of poor survey conditions (lack of dew) rather than an actual decline in the population. The 2002 August Roadside Survey results are available on the DNR's website at WWW.STATE.IA.US/WILDLIFE.

Habitat Trends

Long-term habitat trends in Iowa have been related to conversion of grasslands and wetlands to row crops. Percent row crops by county range from 40% to >90%. Intensification of agricultural practices since the 1960's has led to a general decline in upland game populations across Iowa. Cropping practices have changed, with less emphasis on hay and small grains and

more corn and soybeans (Figure 2). Bigger and better machinery has lead to fewer and larger farms resulting in the loss of brushy fencelines and hedgerows. Following World War II chemical use also increased and today with Roundup-Ready crops, crop fields are virtually weed free and quail free as a result. The Conservation Reserve Program (CRP) has provided much needed pheasant/quail habitat, in Iowa with over 2.2 million acres enrolled through 1995. Unfortunately with the changes in the 1996 Farmbill Iowa's CRP acreage fell to 1.4 million acres. Through a joint effort the DNR, Pheasants Forever, NRCS, and Iowa's SWCD's have actively promoted the continuous CRP (300,000+ acres) to boost Iowa's CRP acreage to 1.8 million acres. However, much of this acreage is in poor covers or desperate need of disturbance to benefit quail.

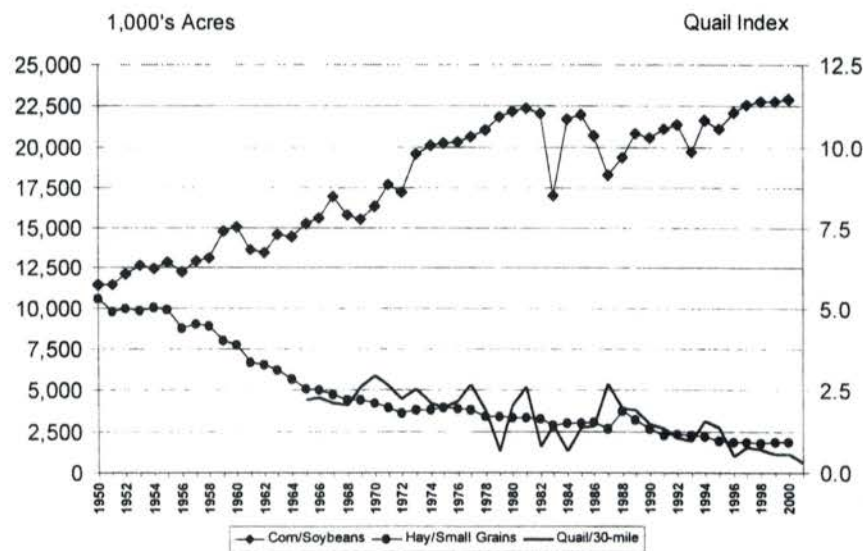


Figure 2 Iowa quail population, cereal and row crop trends.

Current Research

Iowa has 2 ongoing quail research projects. The first is a study of the landscape features influencing the decline of bobwhite quail in Iowa. Historical aerial photos (1940's, 1960's, and 1980's) from 45 counties in Iowa's primary quail range have been classified and digitized. Sam Pociask a student at St Mary's University, Winona MN, is in the process of summarizing changes in macro landscape variables using ArcInfo and Fragstats software. In addition to identifying changes in the landscape through time, Sam will also apply Wes Burger's quail model to our digitized landscapes. The second project is a new study with ISU (Dr. Dave Otis), bobwhite quail habitat relationships in Southern Iowa. The goal of this project is to develop a habitat model for use on public and private land.

Special Projects

Native Seed Harvest Program - The goal of this project is to provide local ecotype grass and forb seed to increase grassland plant diversity on public wildlife management areas. In the fall of 1996 the Iowa DNR entered into a cooperative agreement with Iowa Parks and Preserves board to harvest local ecotype seed from native prairie remnants on state preserves as well as DNR wildlife management areas. The more common native grasses and forb seed is provided to local wildlife biologists for use on their areas. Local inmates from area prisons are used to hand collect less common native species. This seed is grown in production plots by contracting with private growers, local prisons, or on DNR production plots.

DNR/Pheasants Forever/SWCD Buffers Program - The purpose of this cooperative agreement is to facilitate the promotion and establishment of filterstrips, farmable wetlands, and other conservation practices on private lands through the continuous CRP. The Iowa DNR provides \$100,000 as a challenge grant to Iowa Pheasants Forever. Funds are used to hire temporary technicians through SWCD offices to promote and work individually with private landowners in establishing CCRP practices. The challenge program works as follows: DNR \$1,000 challenge to county PF chapter, PF chapter matches with \$1,000, Iowa PF matches chapter money with \$1,000 National Fish and Wildlife Foundation (NFWF), and SWCD must match DNR/PF/NFWF monies with \$2,000. The minimum amount of partnership funds available on the local level to promote CCRP practices will be \$5,000 per SWCD.

Pheasant/Quail Restoration Program - The 2002 Iowa legislature passed HF2591 which raised resident hunting license fees \$4.50 beginning July 1, 2002. Over the next 5 years, HF2591 directs the DNR to spend 60% (~\$500,000/yr) of the funds per year from this license increase to restore declining pheasant and quail populations, particularly populations in southern Iowa. Of the \$500,000 available per year the DNR will give \$100,000 to Pheasants Forever to leverage its county chapters to promote CCRP and FWP programs statewide. Another \$100,000 will be used to establish shelterbelts statewide. The remaining \$300,000 will be spent in the southern third of Iowa to pay private landowners to develop pheasant/quail habitat on their property. Practices the DNR will pay for on private land include: foodplots on CRP, strip-disking and/or spraying on CRP, establishment of warm season grasses on CRP, interseeding on CRP, edge feathering, and burning. The DNR will pay the full cost of establishing habitats on private CRP lands and require a 5-year habitat agreement from participating landowners.

2003 Southeast Quail Study Group State Report - Kansas

Submitted By:

**Roger D. Applegate, Small Game Research and Survey Coordinator, Kansas
Department of Wildlife and Parks**

Population and Harvest Trends

Since this is the first time there has been a formal Kansas report provided to SEQSG, I will provide a broader view of population and harvest trends. Kansas has 4 surveys that provide data on populations and harvest of northern bobwhite (*Colinus virginianus*). The Rural Mail Carrier Survey (RMCS) is conducted annually in January, April, July, and October. A small game hunter questionnaire is administered annually to provide an estimate of hunter activity and harvest, and the annual brood survey is conducted in July and August. In addition, spring whistle counts were reinitiated in 1996.

The primary data source for population trends is provided by the RMCS. Wells and Sexson (1982) found that the October RMCS was most strongly correlated with harvest. Recent analyses with 20+ additional years of these data confirm this relationship (Figure 1; $Y=585594+901301x-129256x^2+9514x^3$, $R^2=0.77$, $F_{1,32}=36.24$, $P\leq 0.10$) although with the additional data the relationship is cubic rather than linear. October RMCS indices (quail/100 miles; Figure 2) are declining ($Y=215.298-0.1073x$, $R^2=0.63$, $F_{1,35}=59.61$, $P\leq 0.10$) in parallel with resident hunter harvests ($Y=790000000-38615x$, $R^2=0.38$, $F_{1,37}=22.87$, $P\leq 0.10$, Figure 3). However, nonresident harvest has increased ($Y=0.0000007+5414.96x$, $R^2=0.173$, $F_{1,15}=3.14$, $P\leq 0.10$; Figure 4). Since whistle counts are relatively new, sample size is insufficient to provide trends. There is no trend evidence in the widely fluctuating brood counts (Figure 5).

We are collaborating with Dr. A. R. Ives at the University of Wisconsin, and Dr. Fred Guthery at Oklahoma State University, on studies of RMCS and harvest data. Manuscripts on these studies will be forthcoming. Two publications have been prepared from analyses of RMCS data (Applegate and Williams 1998, Robinson et al. 2000).

Research

A research program for quail management is ongoing. We now have 10 years of data from 1 research project and several smaller studies. Key findings from this research have shown the importance of woody cover to quail in winter, and the dynamics of quail covey size regulation. Other aspects of quail ecology have been covered in our research program. To date, 8 peer-reviewed, 1 technical, and 2 popular papers have been published from our work. These are all listed in the literature cited. In addition, there are several papers in press or review at this time.

Outreach

Three documents have been put together to provide information for wildlife managers, NRCS personnel, and the general public. These publications are a bibliography of quail habitat literature (Applegate 2002), a technical note on bobwhite habitat conservation practices (Applegate et al. 2002), and a fact sheet on the relationship between wild turkey (*Meleagris gallopavo*) and bobwhite (Applegate and Wells 2003).

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Figure 1. Relationship between October Rural Mail Carrier Survey index and annual estimated bobwhite harvest.

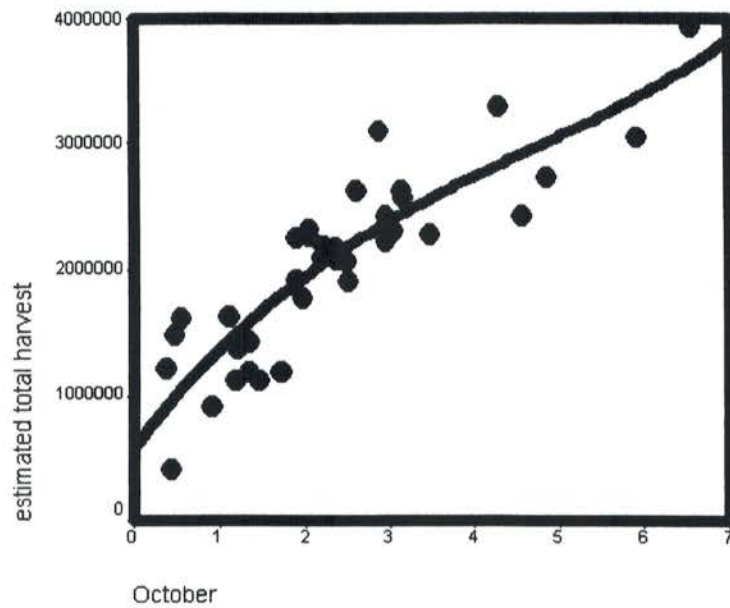


Figure 2. Bobwhite population trend from October Rural Mail Carrier Survey.

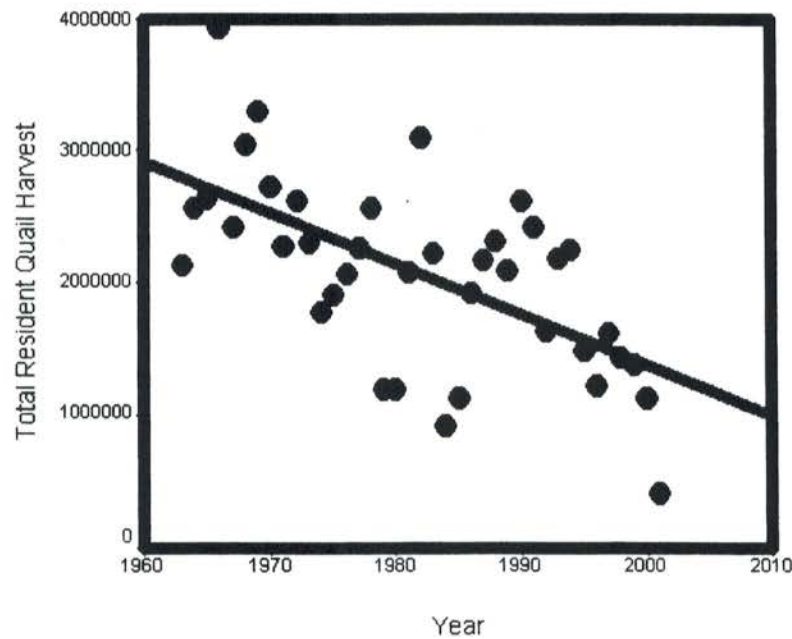


Figure 3. Trend in resident estimated bobwhite harvest.

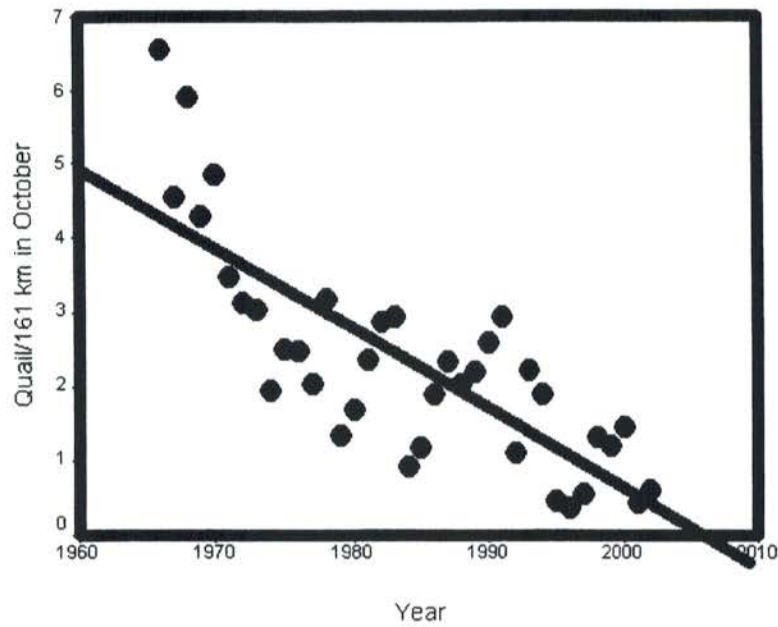


Figure 4. Trend in nonresident bobwhite harvest.

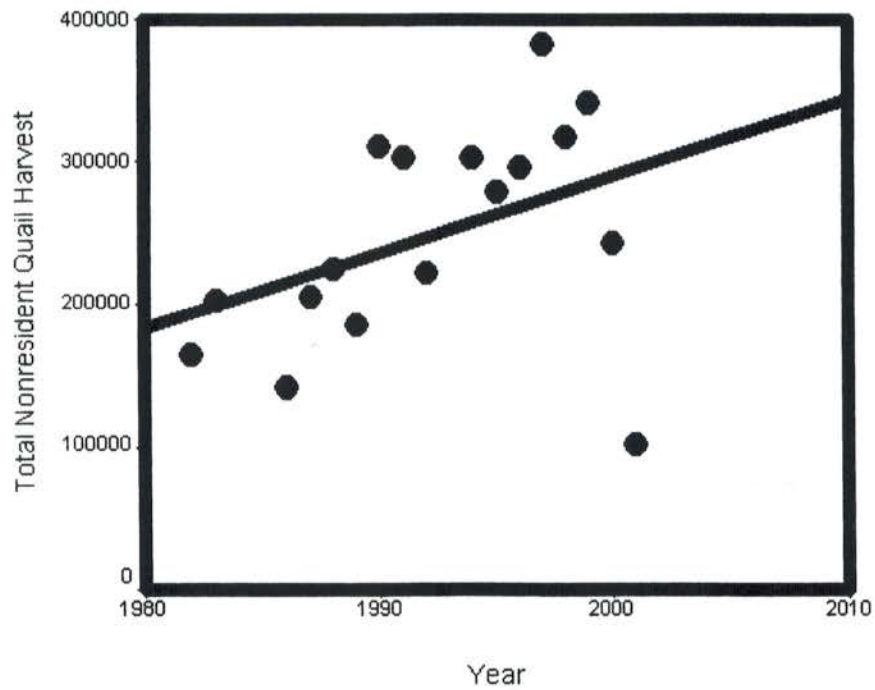
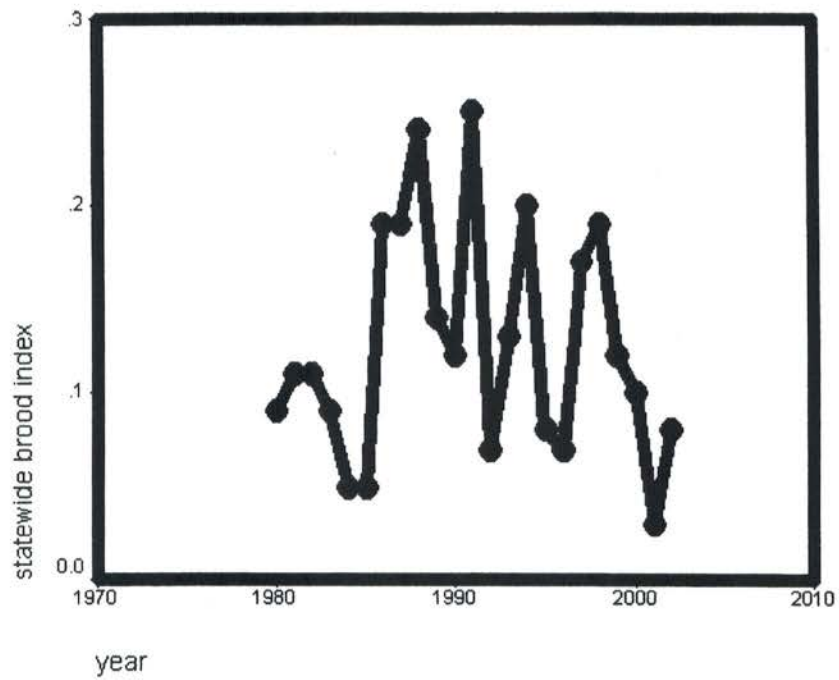


Figure 5. Annual brood index, broods/observer/day.



2003 Southeast Quail Study Group State Report - Kentucky

Submitted By:

Brian Smith, Kentucky Department of Fish and Wildlife Resources

Native warm season grass drills

We planted approximately 3,500 acres of NWSG with department drills this past year and another 4,500 acres of warm and cool season grasses with the District of Conservation drills. The landowners of Kentucky now have over 58 native warm season grass drills available to them across the state to get habitat on the ground. This past year we added 2 drills in our CREP area through a partnership with USFWS.

Kentucky's Buffers for Bobwhites Bonus Programs

The "Buffers for Bobwhites" program continues in the Green River and Jackson Purchase regions where it is starting its 5th year, and is also entering its 3rd year in 7 counties in the Bluegrass region. These programs are sponsored by the Kentucky Department of Fish and Wildlife Resources and Kentucky Quail Unlimited in cooperation with USDA Farm Service Agency and Natural Resources Conservation Service. The program allows landowners participating in USDA's Continuous Conservation Reserve Program to take advantage of bonus payments for completing cool season and/or native warm season grass and legume plantings in filter strips, grassed waterways, or riparian buffers on CCRP acreage. The Bluegrass region's program recently revised its guidelines to also include certain management practices (fescue conversion and strip disking) on non-USDA program acreages.

Conservation Reserve Enhancement Project (CREP)

The Kentucky CREP project is underway along a 100 mile stretch of the Green River which flows through 8 counties and Mammoth Cave National Park in the South central part of the state. The incentive-based program will compensate landowners for restoring and protecting nearly 100,000 acres of hardwood forests, native grasses, wetlands, sinkholes, and caves. The area has enrolled approximately 5,000 acres into the program with >90% of the acres being signed up for the Riparian Buffer and Native Warm Season Grass conservation practices. We also dedicated funds for 3 seasonal employees this past planting season, and are in the process of placing 2-3 full-time biologists in the CREP area to assist with program delivery.

United States Fish and Wildlife Service Partners Program Agreement

The KDFWR and USFWS have signed an agreement to provide federal funds for use in habitat improvement projects. The agreement would facilitate the protection and recovery of riparian corridors and the reduction of non-point source pollution. Subsequently, federally-listed species and their habitats would be protected. This past year, we funded a large project in the Muddy Creek watershed to enhance and protect running buffalo clover habitat. Nearly 3 miles of riparian corridor were fenced, planted to trees and warm season grasses (where appropriate),

provided with alternative water sources, and grazed on a light rotational system (to promote the clover).

Peabody Wildlife Management Area (PWMA) Grassland Ecosystem Project

KDFWR initiated the restoration of 1,255 acres of mined lands to a continuous grassland area. KDFWR received a NFWF grant for nearly \$700,000.00 for grassland development on the area. Although the site preparation and planting seasons were very wet this spring, PWMA staff and local contractors were able to meet their planting goals for this spring. Special thanks must be extended to Kentucky QU chapters for their equipment donations to PWMA; they have been extremely supportive of KDFWR and PWMA over the years.

Small Game Initiative

Our small game initiative has mostly centered around Farm Bill activity over the last year. KDFWR took the initiative to develop Wildlife and Water Quality Conservation Priority Areas (CPAs) prior to the general CRP signup in 2003. The CPA practices selected were those that were beneficial to small game. In addition, we worked closely with NRCS and FSA when developing CRP specifications for KY, which paid huge dividends. They decided that no general CRP practices would plant fescue (which we already had) and re-enrollments planted primarily in fescue were NOT eligible under CP10. If someone wanted to reenroll a fescue field, they had to select another cover to establish. We (along with Dave Howell) were also essentially charged with developing the mid-contract management practices available for CRP participants. We made a couple of minor compromises, but we came out with an extremely wildlife-friendly set of options (see Appendix A). Other major small game investments: CREP area—dedicating more staff and purchasing more equipment with partners to assist in program delivery; GRP—intricately involved in ranking criteria development, which helped steer program towards original intent; TSP—in process of signing MOA with NRCS to fund up to 12 positions (50:50 contribution agreement) to assist with program delivery; FLEP—worked closely with state forestry to develop a small-game friendly FLEP 6 practice.

KDFWR Habitat Improvement Programs

Habitat Improvement Program (HIP)

This is the 15th year for the HIP in Kentucky. To date the program has provided technical guidance to >7500 landowners, writing management plans for >1,550,000 acres across the state. The 2003 fiscal year we had 614 visits on farms totaling 95,506 acres. This year's HIP budget has been reduced to accommodate the potential NRCS positions, but additional programs (i.e., FLEP and LIP) are coming on-line soon and should complement HIP nicely.

Forest Stewardship Program (FSP)

The Forest Stewardship Program (along with the Stewardship Incentive Program [SIP]) was the cornerstone of our private lands efforts for years. We began our private lands program with 3 forest stewardship biologists working with KDF to help get wildlife recommendations (for both

forest and openlands) worked into the forest management plans. Forest stewardship activity has slowed in Kentucky, mostly due to a lack of SIP funds over the last few years. FLEP, once funded, should renew interest in the forestry program and should increase the level of cooperation between the KY Division of Forestry and KDFWR. In the past year, 86 landowners with 13,501 acres were contacted, bringing this program's totals to 3,214 landowners with 593,227 acres.

Quail and Rabbit Roadside Survey

The 2003 Quail and Rabbit Roadside Survey data has not been completed. The survey was conducted the last week of July and the data has not been analyzed. We will be glad to send the information to SEQSG members when it is available.

Quail Hunter Cooperator Hunting Log Survey – Abstract

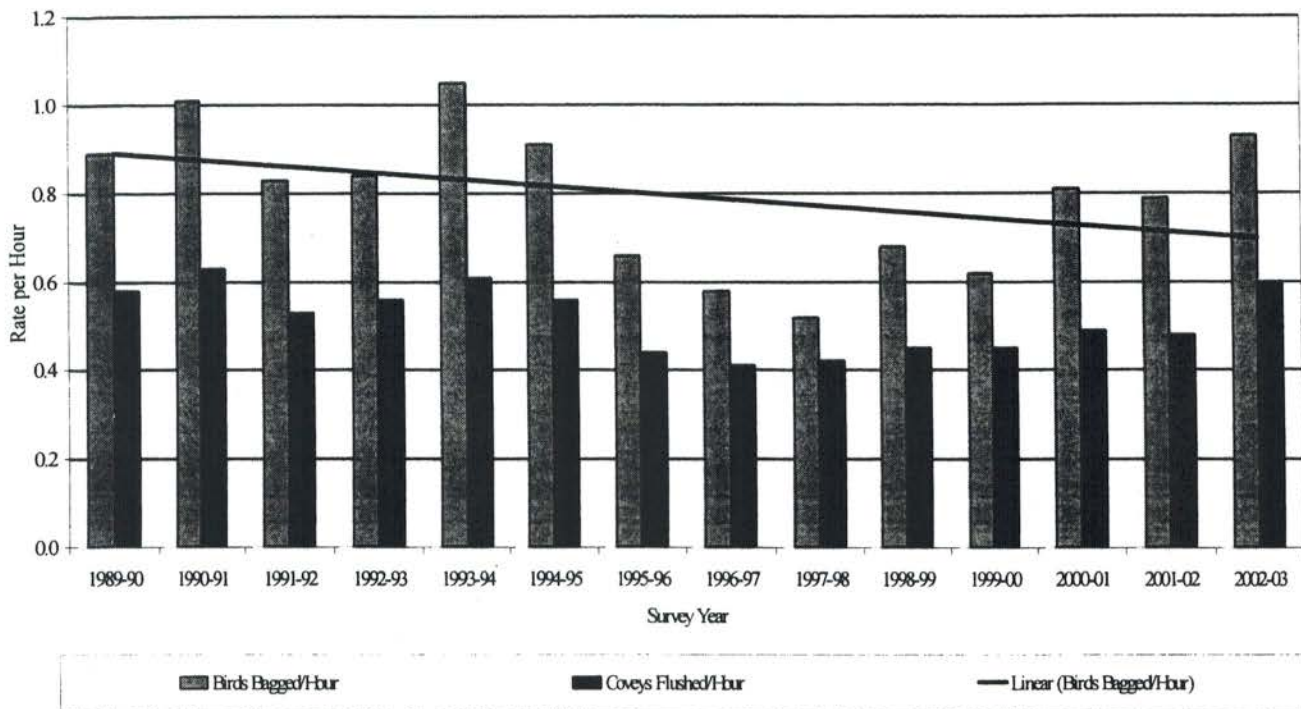
Volunteer Kentucky hunters recorded data on quail harvest and hunter effort by maintaining a diary-type hunting log. Forty (40) hunters participated in the survey and averaged 13.7 hunting trips, each being 3.3 hours in length. Data were collected for 548 hunts in 48 counties. Flush rates averaged 0.60 coveys/hr of hunting (1.67 hr/covey) for the season. The average hunter bagged 3.1 birds/trip (0.93 birds/hr). Flush rates increased by 17.7% compared to 2001-02. Hunters reported harvesting 62.4% of the shot at birds, whereas crippling rates averaged 7.0%. Therefore, hunter related mortality was 69.4% of the shot at birds assuming crippled birds did not survive. Hunting effort was dynamic throughout the season, however a slightly negative trend was characteristic of effort as the season progressed. Week 5 was the peak of hunting as expected, because it immediately followed the close of modern gun deer season.

Comparisons of current, all time high, all time low and long-term average quail and rabbit population indices. (# Observed/100 miles 2001 quail and rabbit roadside survey.)

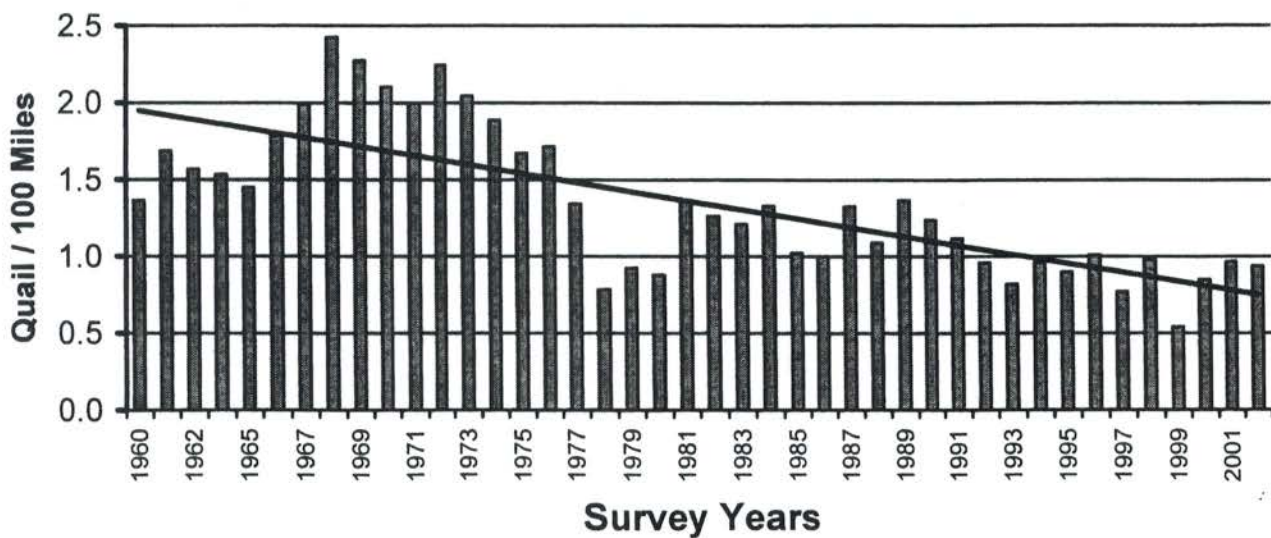
	Current	All Time Low	All Time High	%Below All Time High	Long Term Average
I	0.94	0.54 (1999)	2.43 (1968)	-60.3 %	1.35

Comparison of total quail/100 miles observed by rural mail carriers.(2002 Quail and Rabbit Roadside Survey).

Total Quail/100 Miles				Percent Change	
Weather	Mean			Mean	
Division	1960-2002*	2001	2002	2002/1960-2002	2001/2002
Western	2.5	1.61	1.62	-35.2	+0.6
Central	1.35	0.97	1.00	-25.9	+3.0
Bluegrass	0.87	0.85	0.70	-19.5	-17.6
Eastern	0.63	0.36	0.33	-47.6	-8.3
Statewide	1.35	0.97	0.94	-30.4	-3.1
*No data available for 1964.					



Bobwhite Quail Trends In KY 1960 -2002



Appendix A. Required or Voluntary CRP Mid-Contract Management Activity in KY.

Required CRP Mid-Contract Management Activity	CRP Practices
<p>Strip Disking:</p> <ul style="list-style-type: none"> • Strip disking is used to manage and/or alter plant density and/or diversity, reduce plant residues, and improve wildlife habitat. No more than ½ of the field should be disked in any one year. • Strip disking will start during the 5th -6th -7th years after the cover is established on the contract. Participant may choose to disk 1/3 of the field for three years, or ½ of the field for 2 years. For CP10 practice, disking will begin the first year of the contract and will be conducted again during years 5, 6, and/or 7. • Strip disking should be 2-4 inches deep, reducing residue to between 30-50%. Recommended method is to rotate disked strips, with undisked strips across the field, with the contour. • Strip disking should occur between September 1 and April 1. For optimum quail benefits, disk between October 1 and December 31. • The same acreage within the field will not be strip disked more often than every 3rd year when disking in thirds, or every 2nd year when disking ½ the field. • Strip disk no closer than 5 feet next to trees or shrubs on CP4B and CP4D practices. • Strip disking is allowed on CP21 only when filter strip equals or exceeds 30 ft. 	<p>CP1, CP2, CP4B, CP4D, CP10, CP21, CP25</p>
<p>Controlled Burnings:</p> <ul style="list-style-type: none"> • Prescribed burning reduces litter buildup, improves wildlife cover and enhances the stand for future forage or seed production after the contract expires. • All burning must be done under an approved burn plan developed by KDFWR or TSP. • Burning should be performed no more than every third year. Burning for native warm season grasses should take place between November 1 and April 1. • Early winter (November 1- January 1) or early spring burns will promote increased forb production. Late spring burns will promote native warm season grass production. • Development of firebreaks around the exterior of fields according to the burn plan to protect plantings from wildfires and to assist in conducting the controlled burn will be included with the controlled burn cost-share rate. 	<p>CP2, and when native grass is predominant on CP4B, CP4D, CP10 and CP25. Burning shall not be used on acres where trees and/or shrub are established.</p>

Required CRP Mid-Contract Management Activity	CRP Practices
<p>Chemical Application (After establishment):</p> <ul style="list-style-type: none"> • Apply chemical application if needed during the 5th or 6th year of the contract if needed to maintain desired cover. Application should be applied to CP10 practice during 1st year of contract if strip disking option is not selected. • Use labeled rates. • Apply chemicals in all tree plantings according to recommendations by KDF Forester or TSP. <p>Forest Stand Improvement:</p> <ul style="list-style-type: none"> • Forest Stewardship Plans should be developed by KDF Forester with input from a KDFWL wildlife biologist, and attached to the Conservation Plan. • Apply chemical application, if needed. • Standards and specifications shall be according to the FOTG-666. <p>Interseeding Forbs, Following Strip Disking or Burning:</p> <ul style="list-style-type: none"> • Interseeding forbs after establishment shall be performed only once during life of practice. • Interseeding shall be performed if needed, during the 5th, 6th or 7th years of the contract. • Interseed the same acres that were strip disked or burned. • Interseed forbs using the same rate as the original seeding. 	<p>CP3, CP3A, CP10, CP15A, CP15B, CP 22, CP23</p> <p>CP3A, CP11, CP22, CP23</p> <p>CP1, CP2, CP4B, CP4D, CP25</p>

Note: The appropriate mid-contract management activities shall be included on the CPO. The CPO may be modified during the contract period if determined necessary by the TSP or NRCS. For example, if there is a drought, or if the participant exercised the managed haying/grazing option.

2003 Southeast Quail Study Group State Report – Louisiana

Submitted by:
Fred Kimmel, Louisiana Department of Wildlife and Fisheries

Status

Long term bobwhite abundance trends are monitored by a statewide call count survey. The survey is conducted during a 3-week period in October-November. The state is divided into 5 habitat types encompassing the historic bobwhite range.

Fall whistling surveys were conducted along 41 routes in 5 habitat types. There were 7 assumed zero routes. The Southeast Loblolly Region had the highest call per stop value, followed by the Northwest Loblolly-Shortleaf-Hardwood Region, Longleaf Region, the Acadiana Rice Belt, and the Mississippi/Atchafalaya River Agricultural Belt. Changes from 2001 were not significant ($P \geq 0.10$). Data are summarized in Table 1.

Table 1. Statewide fall bobwhite whistling survey results, 2002.

Habitat Type	Calls Per Stop 2002	Calls Per Stop 2001	Change From 2001	Long-Term Mean Calls per Stop 1983-2001
SE Loblolly	0.09	0.09	0	0.24
NW Loblolly- Shortleaf- Hardwood	0.07	0.09	0	0.13
Longleaf	0.06	0.05	+20.0% (NS)	0.16
Acadiana Rice Belt	0.05	0.04	+25.0% (NS)	0.11
Miss./Atchaf. R. Agricultural Belt	0	0.03	-	0.05

S = Significant ($P \leq 0.10$)

NS = Not Significant ($P \geq 0.10$)

The 2002 regional indices (calls per stop) remain below the long-term averages. Although the index for the SE Loblolly Region is the highest of the 5 habitat types, the value this year is unchanged from 2001 and is the lowest recorded for this region since the inception of the survey. The 2002 index for the Longleaf Region ties the 2000 index for the second lowest recorded for this region.

The longleaf region of western and central Louisiana was historically one of the best areas of bobwhite habitat. However, in recent years the index from that region has declined considerably. Late summer drought during 1999 and 2000 may have played a role in the low index during those years. During the same time, habitat quality has deteriorated as more land is subject to intensive pine management practices. The decreased use of prescribed burning as a forest

management tool is probably the most important change in this area in the past several years. As a result, even when weather is favorable for bobwhite production, negative habitat influences may keep production (and resulting populations) at a low level.

The number of routes in which no quail were heard was the highest recorded. This year no quail were heard on 24 routes, including those assumed to be zero. The previous high number of routes on which no quail were heard was 20 routes in 2000. During 1983-92, the number of routes on which no quail were heard ranged from 4 – 14 per year, and averaged 8.0 routes per year. Since 1993, the number of routes on which quail were not heard ranged from 8-24 per year, and averaged 13.6 routes per year.

Conditions for quail production during the summer of 2002 were generally good across the state. Although rainfall in most regions was slightly below normal during May and June, normal to above normal rainfall was recorded in July and August. Despite improved weather conditions, the survey did not detect significant increases in the number of coveys located. However, the survey cannot detect changes in covey size, so improved production may have occurred and resulted in larger coveys, if not more coveys. It is important to note that this survey is designed to track long-term changes in abundance, and its ability to detect making year to year differences is very limited.

There has been concern that the fall survey methodology provides a biased picture of bobwhite population trends. It has been theorized that development along the routes since 1983 has negatively influenced survey results. In order to address this question, each participant in the survey completed a questionnaire regarding their opinion of development along the route, and the degree to which the habitat along the road is representative of the habitat beyond the road. The results of the survey indicate that development along the route has increased, but perhaps not as much as expected. Six percent of the respondents said there was significantly more development along the route in 2002 than in 1983. However, the majority (73%) thought there was only slightly more development, and 11% thought there was no change. In response to a question regarding whether the habitat immediately along the route was representative of the surrounding habitat, 64% thought there was no difference in habitat quality, 28% thought it was slightly different, and 8% thought it was much different. On those routes where habitat was different, about 50% were judged to have higher quality habitat beyond the road. On the remaining routes, the habitat quality beyond the road was thought to be of lower quality.

Quail Management Initiatives

The Louisiana Department of Wildlife and Fisheries (LDWF) and the Louisiana Army National Guard are cooperating to improve bobwhite habitat on Camp Beauregard, a 13,000-acre base and Wildlife Management Area in central Louisiana. In addition a bobwhite management plan has been written and the initial habitat development phases have begun on Camp Minden, a 13,600-acre base in northwest Louisiana.

Private Lands Program

Louisiana's private land program is directed at providing technical assistance to landowners and working through the state technical committee to affect delivery of federal farm programs. LDWF has been pursuing a MOU with NRCS to serve as a technical assistance provider, but have thus far been unsuccessful due to the 50% state match requirement and lack of available state funding.

Several changes were recommended for the CRP program that would improve conditions for wildlife. The state CRP working group recommended non-disturbance dates of 1 May - 31 July (currently 15 April - 15 July). However, the state FSA director balked at this, and as of this writing these new dates have not been accepted. Efforts are being made to revisit this issue and extend the non-disturbance period. LDWF has presented data indicating that most bobwhites in Louisiana hatch after mid July (see below). The CRP working group also recommended an incentive payment (\$1.00 per ac. payable every 5th year) for landowners who wish to extend the non-disturbance period by an additional 90 days. Approval for this new incentive from the FSA Washington, D.C. office is pending.

Research

LDWF has collected wings from hunter bagged bobwhites since 1989. An analysis of immature wings taken throughout the hunting season, and subadult wings taken during November, revealed that 81.5% of these bobwhites hatched after 3 July (N=1,858). Birds hatched after 18 July constituted 75.2% of the sample.

LDWF has contracted with Dr. Michael Chamberlain of the LSU School of Renewable Natural Resources to examine bobwhite responses to use of selective herbicides for habitat enhancement. Fieldwork continued through 2002-03 with the monitoring of instrumented bobwhites. Chick foraging experiments have been conducted to determine foraging efficiency in stands with various treatment regimes.

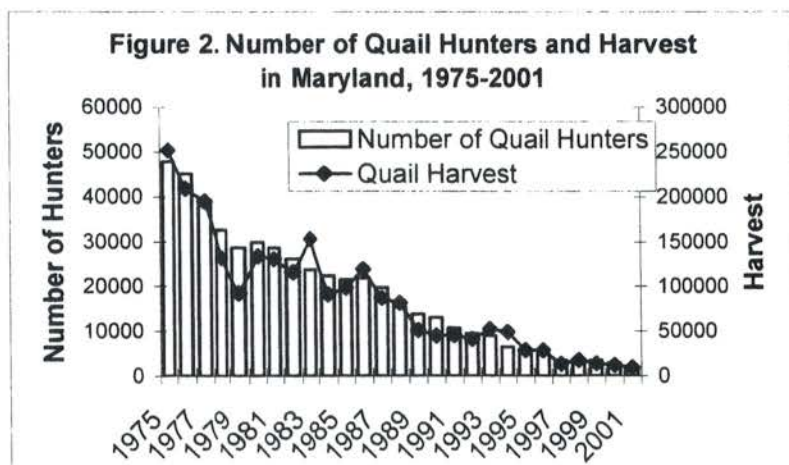
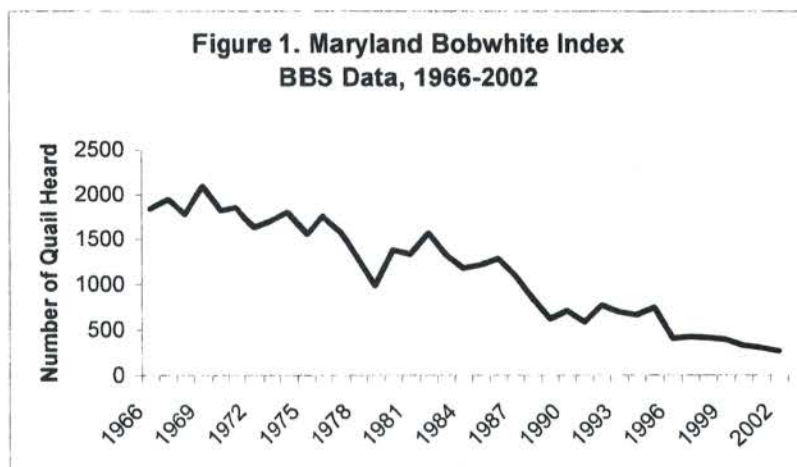
2003 Southeast Quail Study Group State Report – Maryland

Submitted by:
Bob Long, Maryland Department of Natural Resources

Population Status

The most reliable bobwhite population data for Maryland is obtained through the Breeding Bird Survey (BBS). The high density of routes (66 total) throughout the state has provided consistent sampling of the entire state since 1966. Based on the most recent BBS data, statewide bobwhite populations have declined 4.6% annually since 1966 and almost 7% per year since 1980 (Figure 1). Decreases have not been uniform across the state. The Eastern region is still holding huntable quail numbers while they have virtually disappeared from the central and western portions of the state.

Paralleling the quail population decrease has been a 96% decline in both quail hunting participation and harvest since 1975. The most recent hunter mail survey estimates there are about 2000 quail hunters in the state that harvest less than 10,000 birds annually (Figure 2).



Management and Research Activities

The Maryland Department of Natural Resources has lacked a dedicated quail biologist for over 5 years, but in summer 2002, a wild turkey and upland game bird biologist was hired who has been devoting about 50% of his time to quail management activities. Several quail-specific projects were undertaken in the past year including the initiation of fall and spring bobwhite surveys, the development of a quail demonstration area, preparation for a CREP buffer research study, and various private lands technical assistance projects.

The Conservation Reserve Enhancement Program (CREP) has considerable potential to make landscape-level changes in quail habitat abundance in Maryland. As of June 2003, nearly 65,000 acres have been enrolled, with about 34,000 acres of grass buffers (CP-21) established. The amount of land enrolled in CREP in the eastern region, where quail are still present, has been significant, converting about 5.5% (43,000 acres) of cropland into more wildlife-friendly cover. BBS data suggest population stabilization or increases along many of the routes that intersect a significant amount of CREP lands. New maintenance practices have recently been approved, and participants will now receive cost-share payments for prescribed burning and light-disking of warm-season grass buffers.

Fall covey call surveys were initiated on various private lands and Wildlife Management Areas in the eastern region of the state. This was the 1st year for the surveys, but the technique appeared well-suited to accurately census small tracts (<300 acres) with a limited number of observers. Spring call counts were conducted for the 1st time on many of the same lands and should provide valuable baseline data for the years ahead.

A proposal for an early-successional habitat demonstration area in Caroline County was approved and habitat work will begin in fall 2003. A variety of bobwhite habitat creation and enhancement practices will be employed over the next 4 years in an effort to increase quail abundance and provide a site to host periodic workshops.

This winter, a statewide research effort will begin to examine the use of CREP buffers by bobwhite quail and early-successional songbirds. Bobwhite surveys will be conducted in both the spring and the fall in an effort to document the effectiveness of buffer establishment for increasing quail populations. Comparisons will include buffer sites vs. control sites, and grass vs. forest buffers. Bird abundance will also be related to vegetative characteristics of the buffers.

2003 Southeast Quail Study Group State Report - Mississippi

Submitted By:

**David Godwin, Mississippi Department Of Wildlife, Fisheries & Parks
Bobwhite Quail Program**

Primary Program Accomplishments:

Technical assistance on quail management was provided to private landowners in each region of the State.

Technical assistance on quail management was provided to public land managers (e.g., U.S. Forest Service, Corps of Engineers, and MDWFP Wildlife Management Area personnel) within the state.

Statewide program provided funds and technical support to conduct quail habitat management on numerous agency Wildlife Management Areas , including Marion County WMA, Black Prairie WMA, Leaf River WMA, Hell Creek WMA, and Red Creek WMA.

Initiated Mississippi Bobwhite Quail Initiative Technical Group, a cooperative venture between State, Federal and private conservation interests within Mississippi. This group will work to advance bobwhite conservation within the state, and to guide state level step-down planning efforts relative to NBCI.

Cooperated with Quail Unlimited and NRCS to continue the "Mississippi Bobwhite Bonus Program". The program is available in 2 North Mississippi Counties (Marshall and DeSoto), and provides cost-share payments to private landowners implementing quail habitat management practices.

Cooperated with Mississippi State University to fund and implement the following wildlife research projects:

- A. Evaluate bobwhite quail management on Black Prairie WMA.
- B. Response of cottontail rabbits to bobwhite quail habitat management.
- C. Effects of field border practices on bobwhite populations.

Also cooperated with MSU to begin a new project that will provide a spatial analysis of bobwhite habitat and an assessment of habitat restoration potential for use in NBCI-related restoration efforts.

Conducted 21 public presentations (e.g., Quail Unlimited Chapter meetings, local and statewide television shows, county wildlife dinners) on quail management.

Cooperated with Extension Service to maintain the mobile classroom "The Life and Times of Bobwhite Quail in Mississippi", which is used in 3rd and 4th grade classrooms across the State.

Cooperated with Extension Service to administer Mississippi 4-H Quail and Small Game Youth Project Grant Program. Youth develop quail and small game management plans for their private land, and are given funds and guidance to implement the plan. Projects are evaluated and ranked, with finalists giving oral presentations on their projects at a statewide contest. Top ranking finalists are awarded scholarship prizes.

Provided technical assistance to federal agencies (e.g, NRCS, FSA, etc.) in the implementation of federal Farm Bill Programs (e.g., WHIP, CRP, EQIP, WRP, etc.) at the local, county and state levels, including serving on NRCS State Technical Committee.

Implemented quail monitoring programs: in addition to data from the mail hunter survey, quail populations are monitored in Mississippi using 2 means: a volunteer quail hunter survey, and summer and fall call counts conducted on managed tracts across the state.

Cooperated with Mississippi State University, Quail Unlimited and Extension Service to hold a regional Quail Management Shortcourse at the Noxubee National Wildlife Refuge, Winston County, MS.

Cooperated with Extension Service to write, publish and distribute quail management information in booklets and video.

Wrote and published 14 quail-related popular articles.

2003 Southeast Quail Study Group Meeting State Report - Missouri

Submitted By:

Thomas V. Dailey, Ph.D., Resource Scientist, Missouri Department of Conservation

Quail Population & Hunting Status

- ◆ Missouri's 2002 statewide quail roadside index (conducted 1983 to present) remained near the record low set in 2001 with 3.5 quail per 30-mile route. For more information see <http://www.conservation.state.mo.us/hunt/>.
- ◆ The estimated statewide quail harvest during the 2001-2002 season was the lowest since 1967, the year the survey began. The harvest of 333,612 is 82% below the long-term average (1967-2000; 1,861,548). Similarly, the estimated number of licensed hunters that hunt quail was 41,464 in the 2001-2002 season, 64% below the long-term average of 114,793 (1967-2000).

Quail Restoration

- ◆ As a member of The Southeastern Association of Fish and Wildlife Agencies, MDC is a partner, and is providing financial support for the Northern Bobwhite Conservation Initiative (NBCI). MDC is actively involved with the NBCI, and is tailoring restoration efforts to link with this national initiative.
- ◆ MDC's plan for restoring quail (*Strategic Guidance for Northern Bobwhite Recovery*) was unveiled by Director John Hoskins on February 1st, 2003, at a statewide Quail Unlimited meeting in Kansas City. Main elements of the guidance include outreach, private and public lands, and research. Each MDC regional unit is developing an action plan to work toward the quail population goals outlined in the guidance. Elsa Gallagher (formerly of Private Land Services Division) was chosen to coordinate implementation of this effort and to serve as the MDC liaison to NBCI. Quail restoration is occurring under the auspices of the Missouri Bird Conservation Initiative.
- ◆ The *Conservation Federation of Missouri*, in recognition of language in the 2002 Farm Bill that supports quail management, passed a resolution at their 2003 meeting calling for USDA support of quail-friendly Farm Bill practices in Missouri.
- ◆ Missouri's version of the CRP in the 2002 Farm Bill has quail-friendly practices including mid-contract management and extra points for quail priority areas. Original plans by the FSA for annual management of CP 10 contracts, and 2 iterations of management for new plantings, were changed to less frequent management. About 190,000 acres were offered for enrollment.
- ◆ MDC is in the 6th year of the Northeast Missouri Open Lands Initiative (NEMO OLI), a 10-year small game and songbird habitat restoration effort in Knox, Macon, Ralls and

Monroe Counties. Review of first 5 years revealed significant administrative problems that need to be corrected in order for NEMO OLI to have a chance of being successful.

- ◆ MDC and QU are in the 2nd year of quail habitat restoration in Northwest Missouri. Check out www.coveyheadquarters.com for more information. This website contains articles from past issues of The Covey Headquarters (an MDC Northwest Region publication) and some Conservation Department publications.
- ◆ The Missouri Quail Habitat Initiative, a program created and funded by QU Regional Director Jef Hodges and Missouri QU chapters continues. MDC matches QU expenditures on a 1:1 basis; total expenditures/commitments are >\$350,000.
- ◆ Educational programs targeting youth and adults continue. MDC and QU partner on the MO Quail Academy, which has grown to annually serve >50 students/teachers at two locations. Also, there are several guided training hunts around the state for youth and adults.
- ◆ MDC published a new comprehensive guide to quail ecology and management, *On the Edge: A Guide to Managing Land for Bobwhite Quail*.
- ◆ MDC created a new web site to guide quail restoration (www.conservation.state.mo.us/landown/wild/quail/)
- ◆ Missouri is hosting the 9th Annual Meeting of the Southeast Quail Study Group during 25-28 August 2003.
- ◆ Research continues on evaluation of the suitability for quail of vegetation in Conservation Reserve Program fields and evaluation of population trends in Open Lands Initiative areas in northeast Missouri. Two years of CRP data from 8 northeast counties reveal that fields are dominated by grass, particularly tall fescue, and that bare ground is <11%. Based on previous research it is strongly recommended that management (disking, burning and/or herbicide) occur annually in order to benefit quail.
- ◆ Research continues on the accuracy of fall covey whistle count technique. Ted Seiler's Master's degree research revealed that the 60-acre cell size produces considerable counting error. A test of accuracy of listeners in 60-, 45- and 30-acre cells revealed little improvement as cells got smaller. MDC is planning intensive training of observers to reduce measurement error.
- ◆ We collaborated with Dr. Fred Guthery and other states to assess statewide quail hunting regulations and relationships to hunting pressure, hunter skill and quail abundance. Major conclusion was that current "liberal" daily bag limits could be increased further without affecting statewide rate of harvest. This is because quail abundance per se has the greatest affect on hunting pressure.

2003 Southeast Quail Study Group State Report - North Carolina

**Submitted by Terry Sharpe
North Carolina Wildlife Resources Commission**

Status

Northern bobwhite quail (*Colinus virginianus*) populations have declined drastically throughout the southeastern United States during the last several decades. North Carolina's quail population has followed this same downward trend. Quail were once an abundant byproduct of rural landscapes and a mainstay for North Carolina's small game hunters. Large-scale changes in both land use and farming practices, with the resultant loss and/or degradation of habitat, have been major contributing factors. Urban sprawl and fragmentation of remaining habitats have further exacerbated an already dire situation for quail by increasing their susceptibility to predation and other limiting factors. While there have been minor annual fluctuations in trend indicators in North Carolina, the overall trend in quail abundance indicators continues downward.

Quail Management Initiatives

Cooperative Upland habitat Restoration and Enhancement (CURE) Program 2002-2003 Progress Report

The Cooperative Upland habitat Restoration and Enhancement (CURE) Program was established as a result of Commission approval and funding of "small game implementation strategies" on August 30, 2000. During Phase I, focal areas were selected based on habitat criteria that provided the greatest potential for impacting small game, songbird and numerous other wildlife populations through habitat restoration and enhancement projects. Within these focal areas, three Cooperatives, or groups of private landowners, have been selected to enroll in the CURE program. Forty-two landowners with 16,801 acres of land are currently participating in the program. Each participant initially agreed to participate for a five-year period. As part of an agreement with the Natural Resources Conservation Service and the Wildlife Resources Commission (WRC), the WRC agreed to extend the project an additional year to end in December of 2006. With only one exception, the current participants have signed extensions to meet this goal. Biologists are currently investigating opportunities for expansion of the program to other sites within the established focal areas.

The portion of the program known as Phase II provided for establishment of Game Land CURE areas on portions of four state-owned Game Lands. A total of 21,266 acres will be managed as part of this early succession habitat initiative. Habitat projects are now well underway on these areas. Monitoring is also a part of the Game Land project.

Phase III of the program involves efforts to expand CURE to the Corporate level. Division of Wildlife Management staff continues to work with representatives of International Paper

Company (IP) in an effort to develop and implement a project on the IP lands within the Coastal Plain. More recently, negotiations have begun with Murphy-Brown Company, LLC, concerning land management programs on their properties in eastern North Carolina. Initial efforts will be directed toward developing early succession habitat on approximately 6,000 acres of farm and forest land located near Suggs Mill Pond Game Land, which is one of the CURE Game Land areas. Dr. Pete Bromley has been contracted by Murphy-Brown Company to facilitate the project and seek grants to fund the practices. The first grant proposal submitted to the North Carolina Department of Justice Environmental Enhancement Grant Program was unsuccessful but plans are to resubmit during the next grant cycle.

Monitoring remains an extremely high priority on all CURE areas. Winter and breeding songbird surveys, summer and fall quail surveys, summer and winter vegetation surveys, a spring grouse survey on South Mountains, photoplots, and a fall evaluation of habitat were conducted to evaluate the impacts of CURE on birds and habitat. The 2002/2003 season represented the first year after implementation of habitat improvements on the private cooperatives, and essentially baseline conditions on the Game Lands. It is too early to draw definitive conclusions about trends in bird populations, and conclusive results will likely not become evident for several years. The 2003 winter songbird surveys revealed an increase in densities of focal species on private cooperatives over 2002 levels, especially on Benthall Plantation. The spring songbird point counts revealed an increase in shrub nesting birds on Benthall Plantation and Rowland, and a decrease in grassland nesters and birds that forage in early succession habitats on Turnersburg. The summer of 2003 quail surveys revealed a slight decrease in quail numbers across most CURE areas over 2002 levels. Covey surveys in the fall of 2002 showed a slight increase at Rowland and slight decrease at Suggs over 2001 levels. Vegetation surveys revealed that fallow areas and young woodlands contained adequate cover for quail, but suitable habitat has not yet responded in mature woodlands. Fall habitat evaluations revealed that in their baseline condition, about 15% of each of the CURE Game Lands has habitat useable for quail during at least part of the year.

Outreach efforts were initiated at the regional, state, and local levels. Division personnel presented two peer-reviewed papers and one poster at the 2002 Annual Conference of the Southeastern Association of Fish and Wildlife Agencies. One paper provided an overview of the CURE Program and the other outlined the procedure used to identify focal areas. The poster described the CURE Program and used one management plan to illustrate its implementation.

Presentations on the CURE Program were given to various groups and organizations. CURE displays were manned during the Southern Farm Show in Raleigh and the One North Carolina Naturally conference in Raleigh. In addition, Division personnel presented two CURE posters at the 2002 Southeast Quail Study Group meeting and the Third Eastern Native Grass Symposium. Articles featuring the CURE program appeared in each issue of the **Upland Gazette**. The **Upland Gazette** is distributed to approximately 4,500 people twice a year.

Division personnel designed and printed an insert for the NRCS publication conservation Practices and Programs for Your Farm. The insert describes wildlife success stories in North Carolina. One press release on the CURE program was sent during the 2002-2003 year. Twenty-three newspaper articles informed readers of the CURE program.

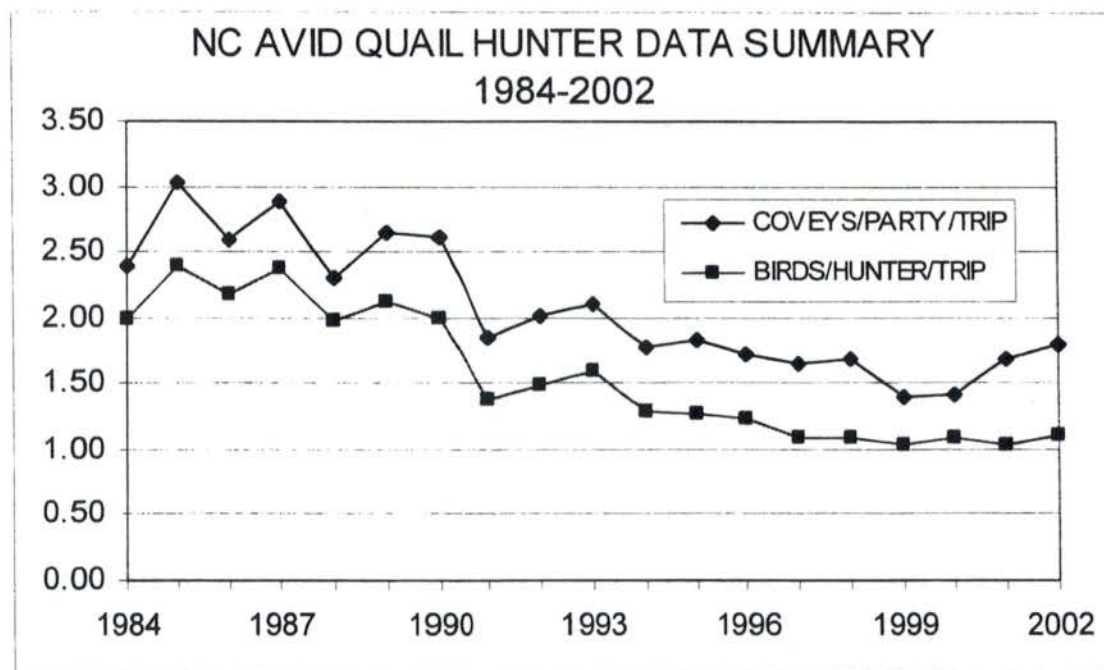
Overall, the CURE project is on track and moving forward according to plans. Expansion efforts will continue during the next year as funds and personnel become available. The project is in line with objectives established by the “**Northern Bobwhite Conservation Initiative**” which has been formally endorsed by the Southeastern Association of Fish and Wildlife Agencies.

Numerous private landowners, individuals, and organizations have contributed financial and/or logistical support to the CURE program.

Research and Surveys

Avid Quail Hunter Survey

A total of 99 avid quail hunters reported on 1,405 hunts during the season. Although the long-term trend has been significantly downward, during the 2002-2003 season the average flush rate statewide increased 6.5% to 1.80 coveys/party trip while the average harvest rate increased by 7.8% to 1.11 quail bagged/hunter trip. Regionally, the average flush rate in the Coastal Plain was 2.10 coveys/party trip (+10.5%), the average flush rate in the Piedmont was 1.35 coveys/party trip (-1.5%), and the average flush rate in the Mountains was 0.97 coveys/party trip (-17.1%).

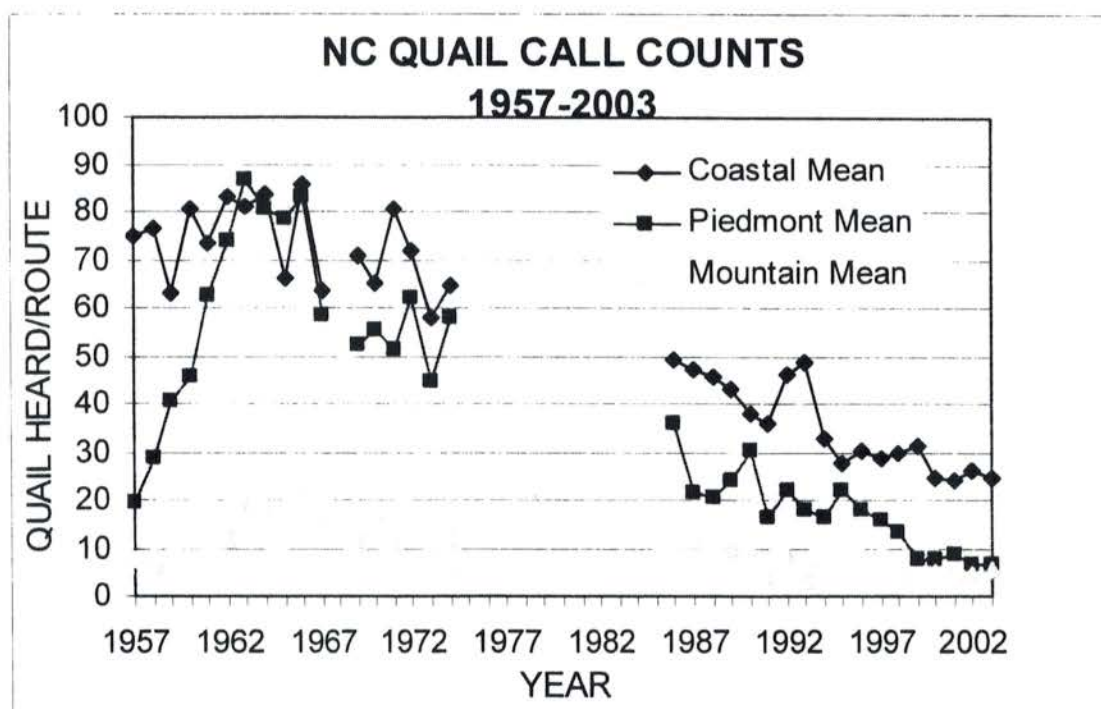


Bobwhite Quail Call Count Survey

Quail call count surveys have been used to monitor quail abundance and population trends in North Carolina since 1957. Originally, seventeen (17) routes were established; five (5) routes in the Coastal Region, eight (8) routes in the Piedmont Region, and four (4) routes in the Mountain Region. In 1986, one (1) additional route was established in the Coastal Region. In 1990, nine

(9) more routes were established; four (4) in the Coastal Region, two (2) in the Piedmont Region, and three (3) in the Mountain Region. In 1992, one (1) additional route was established in the Piedmont Region bringing the total routes being surveyed to twenty-eight (28). Survey protocol calls for routes to be dropped if no quail are heard for two (2) consecutive years. Between 1992 and 2002, three (3) routes were dropped; one each in 1992, 2001, and 2002 – all three in the Mountain Region. Routes were not surveyed in 1968 and from 1975 through 1985.

In 2003, twenty-five (25) routes were surveyed; ten (10) routes in the Coastal Region, eleven (11) routes in the Piedmont Region, and four (4) routes in the Mountain Region. In the Coastal Region, the average number of quail heard per route (24.5) was down 6.1% from the previous year. In the Piedmont Region, the average number of quail heard per route (6.82) was up 2.7% over the previous year. In the Mountain Region, the average number of quail heard per route (5.5) was up 22.2% over the previous year. The graph below shows the results of the quail call count surveys by geographical region from 1957 through 2003.



2003 Southeast Quail Study Group State Report - Oklahoma

Submitted By:

Mike Sams, Upland Game Biologist, Oklahoma Department of Wildlife Conservation

Status

The 2002-2003 hunting season was a welcome sight to many quail hunters that struggled through the 2001-2002 season. Fall quail population indices returned to normal following the lowest fall index ever documented in Oklahoma in 2001. Roadside surveys during the fall of 2002 were 427% higher than the previous year and 8% above the 13-year average. Undoubtedly, mild weather throughout the nesting season helped to facilitate the return.

Estimated quail harvest also rebounded from the lowest ever recorded in 2001 (354,452) to an estimated 771,218 quail during the 2002-2003 season. While hunter numbers continue to decline in Oklahoma participation during the 2002-2003 season did increase over the previous year primarily due to the increase in quail numbers.

Northern Bobwhite Conservation Initiative

Oklahoma Department of Wildlife Conservation (ODWC) employees continue to give presentation to the general public and professional audiences concerning NBCI. Personnel with the department are in the process of stepping down the NBCI to the state scale. To date no formalize committee or council has been developed to perpetuate the implementation of NBCI.

Farm Bill Activities

During the past year, ODWC biologists have worked with the Natural Resources Conservation Service (NRCS) on Farm Bill programs and served on the state technical committee. ODWC biologists logged 1,433 man hours working with NRCS personnel on Farm Bill programs. Oklahoma's appropriation for the 2003 Wildlife Habitat Incentive Program (WHIP) totaled \$400,000 and provided funding for 26 contracts on 7,878 acres. During the 2002 WHIP enrollment period Oklahoma landowners requested an excess of \$4.4 million.

ODWC recently entered into a Memorandum of Understanding with the NRCS to facilitate their WHIP. Serving as an out-source, the ODWC will make farm visits to landowners seeking application with the WHIP, rank applications and prepare management plans. Currently ODWC is seeking to fill 4 technician positions and a part-time secretarial position to help facilitate the NRCS WHIP.

Private Lands Program

During the 2002 fiscal year (fy) ODWC spent \$80,000 in private lands cost-share and has committed to spending \$175,000 during the 2003 fy. Funds administered by the ODWC's cost-share program are specific to quail, deer, turkey, prairie chickens, waterfowl and pheasant.

ODWC along with the U.S. Fish and Wildlife Service have developed a priority area for habitat restoration for lesser prairie chickens and northern bobwhite in western Oklahoma. Grants for

landowner initiatives now total \$230,000 for restoration activities. Sign-ups for the habitat restoration have just started.

ODWC continued production of a newsletter entitled "Your Side of the Fence" and a "Habitat Management Calendar" for private landowners/managers. During the 2002 fy ODWC biologists provided technical assistance visits to some 442 landowners on 345,875 acres.

Research

Data collection for the Packsaddle Quail research project was completed June 30, 2002. Data analysis is being conducted by Fred Guthery and Jeff Lusk of Oklahoma State University and is scheduled for completion in June of 2004. OSU researcher Sam Fuhlendorf is spearheading a GIS research project exploring quail population changes in relation to habitat change and fragmentation in eastern Oklahoma. The GIS project is schedule for completion in January of 2005.

2003 Southeast Quail Study Group State Report - South Carolina

Submitted by:
Billy Dukes, South Carolina Department of Natural Resources

Status

South Carolina's quail population has declined dramatically over the past 35 years as a result of large-scale changes in land use and the resultant habitat loss or degradation. Between 1952 and 1999, pine plantation acreage in South Carolina increased from approximately 200,000 acres to approximately 2,400,000 acres. Urban sprawl and changes in farming practices have also reduced habitat availability and suitability. USFWS Breeding Bird Survey results indicate an approximate decline of 4.5% annually in bobwhite quail abundance in South Carolina from 1966-1999. Improved weather conditions, including above-average rainfall, has resulted in excellent cover conditions on remaining habitat.

Efforts are underway to establish a Grassland Birds Initiative to achieve greater private land participation in the establishment, enhancement and maintenance of early succession habitat. Bobwhite quail habitat and population goals from the Northern Bobwhite Conservation Initiative are being incorporated into state planning efforts, as well as regional bird conservation efforts such as the South Atlantic Migratory Bird Initiative (SAMBI).

Habitat Improvement

SCDNR offers small game management technical assistance to private landowners through the Small Game Project. Twenty-five management plans were written by Project staff during the past year, covering over 21,000 acres. Select properties in the Wildlife Management Area (WMA) program are intensively managed for quail. Habitat enhancement for quail on WMA's consists of the standard practices of annual plantings, prescribed burning, strip disking, timber thinning, and creation of forest openings. Establishment of native grasses has been attempted on several areas with limited success. Herbicide application for the control of invasive sod-forming grasses and understory hardwoods is being implemented on several areas.

Seasons And Bag Limits

Quail season in South Carolina runs from Thanksgiving Day to March 1 in the majority of the state, with some game zones having slightly longer seasons. Bag limits range from 10 to 15 birds per day throughout the state.

SURVEYS

Bobwhite Quail Whistling Cock Survey

This survey has been conducted for the past 25 years, producing reliable trend data which parallels field observations and the USFWS Breeding Bird Survey. Sixty-nine permanent routes are established statewide, and survey routes (5.5 miles) are conducted on consecutive mornings or afternoons between June 15 and July 10. In 2001 and 2002, experimental whistling cock call

counts were conducted between May 17 and June 8 on selected routes to in an attempt to determine if the peak whistling period for male bobwhites in South Carolina is within the June 15-July 10 period as stated by Rosene. Comparison of results between routes conducted during the experimental period and the traditional period indicated no difference in average number of calling males between the two periods. As a result, the traditional survey period was retained in the 2003 survey.

Quail Brood Sighting Survey

A sighting survey for quail broods is conducted in conjunction with an annual Turkey Brood Sighting Survey. All quail observed by field personnel from July 01 to August 23 are recorded. From these sighting, an annual index of productivity (juveniles/adult) is calculated. The 2003 brood sighting survey is currently underway and results will be available to interested parties in the fall of 2003.

Quail Hunter Survey

Quail hunters are contacted prior to the season and provided with a hunting diary, data sheet, wing tags, and return envelopes. Hunters are asked to provide up to 10 wings for calculating a productivity index (juveniles/adult). Hunters are asked to provide information on hunt locations, hours hunted, flush rates and harvest rates. The coveys per hour index decreased from 0.62 coveys per hour in 2001-02 to 0.59 coveys per hour in 2002-03. Quail hunters participating in the survey bagged 0.56 birds/hour in 2002-03, identical to the previous year.

Fall Covey Counts

Fall covey counts were conducted on 6 WMA's during October and November, 2002. Quail densities were estimated at 1 covey/25-50 acres on three of the six areas. Preliminary fall covey counts in South Carolina indicated the following: (1) Inexperienced observers could be easily trained to utilize the technique; (2) Average time of first call was 35 minutes before official sunrise; (3) Active calling by coveys ceases after approximately 10 minutes; (4) Playback of recorded covey calls failed to elicit response outside of the peak calling period; and (5) Calling rates remain consistently high until at least the third week of November. Fall covey counts will again be conducted on select WMA's during 2003.

Agricultural Liaison Activities

Farm Bill coordination and implementation activities have been re-assigned to the DNR Small Game Project. Staff continue to work with NRCS and other USDA agencies to incorporate quail-friendly practices into farm conservation plans. Efforts are underway to finalize a Technical Service Provider contract between DNR and NRCS. Discussions have been held with NRCS regarding establishment of an initiative to integrate quail habitat enhancement into grazing and pasture systems, and an initial quail population assessment has taken place on the proposed habitat enhancement focus area.

2003 Southeast Quail Study Group State Report – Texas

**Submitted by:
Robert Perez, Texas Parks and Wildlife Department**

The Texas Quail Plan

The Texas Parks and Wildlife Department (TPWD) has taken the first step towards coordinated conservation action for bobwhite and scaled quail populations in Texas. TPWD's Gamebird Program staff has developed a step-down version of the NBCI entitled the Texas Quail Plan (TQP). The Texas plan is in its third revision and should be available to the public by Fall 2003. The Plan will serve as a roadmap to coordinate quail efforts in Texas, as well as foster partnerships among the many groups interested in Texas quail.

The Texas Plan is organized to delineate population and habitat objectives for bobwhite as well as scaled quail in the eight Bird Conservation Regions (BCRs) that comprise Texas. This approach was selected to facilitate coordination and cooperation with other bird management plans, such as Partners In Flight, the North American Waterfowl Management Plan, NGO's, other agencies, and landowners in Texas. The Plan also includes three chapters that detail specific quail habitat management practices to be used on agricultural land, grasslands, and forests, and one chapter outlining the approaches to be taken to implement the Plan.

The scope of Plan is such that it will require a steering committee (Texas Quail Council) and a technical support committee (Quail Technical Committee) to guide its implementation over time. The key to success will be the ability to stay focused on the major goals and objectives, and periodically review plan accomplishments and update as conditions and information change.

It is important that certain types of people and organizations be represented on both groups. For instance, the Texas Wildlife Association, Texas Farm Bureau, Texas Department of Agriculture, NRCS, the Texas Chapter of Quail Unlimited, Texas Audubon and a ranking member of TPWD currently serve on the Texas Quail Council (TQC), along with landowners and members from other conservation groups. The Quail Technical Committee (QTC) includes regional and program staff from TPWD along with members from several universities, Texas Cooperative Extension, private sector quail biologists, and others important to implementing the Plan.

The purpose of recommending this approach is simple; other approaches have been fragmented and unsuccessful. It is time for all interested parties to line up behind the range-wide approach the Plan was derived from and be willing to stay the long-haul to insure success. The TQC and QTC should function as the authorities when it comes to quail recovery and bring all the support their organizations can offer to the accomplishment of this Plan.

The TQC encourages cooperation with the several Bird Conservation Joint Ventures already operating in Texas to deliver landscape conservation planning and projects. These joint ventures offer exciting prospects for leveraging the needs of multi-species conservation, especially for grassland dependent species.

Implementation of the Plan will require the long-term cooperation among federal, state, and private wildlife organizations, as well as individual landowners and managers. Existing Joint Ventures provide a delivery system to develop partnerships, leverage funds, and conduct landscape scale, habitat-based projects that improve wildlife habitat. Much of the needed funding can be derived from existing federal and state programs, though increased appropriations will be required, and some new funding initiatives may be needed.

It is anticipated that if immediate action is taken the quail decline in Texas may be stabilized in 5-7 years, and if the Plan is followed to its conclusion, the restoration may be effected in 20-25 years. The Texas Plan aspires to stabilize quail populations, in part by utilizing existing and new joint venture frameworks to deliver habitat projects on the ground. Leveraging funds and programs is an integral part of this process (Figure 1).

Texas Audubon Society

A new conservation initiative is being spearheaded by Audubon Texas. The program, called the Audubon Texas Quail Initiative, will be launched statewide in Fall 2003 and will focus on restoring mixed grassland habitat essential to the survival of Northern Bobwhite and Scaled Quail. The program, funded through a generous grant from Houston Endowment, Inc., will be instrumental in implementing the strategies outlined in the Northern Bobwhite Conservation Initiative (NBCI) and the recently developed Texas Quail Plan.

The grassland ecosystems that quail rely on in Texas ideally consist of native bunch grasses with woody cover interspersed at varying heights and thickness. Land fragmentation and heavy agricultural and ranching uses of grassland ecosystems have resulted in loss of this native vegetation, and increased invasion by undesirable plant species. In order to carry out the necessary restoration work, Audubon has hired a full-time Quail Initiative Coordinator, and initially partnered with more than 20 private landowners, as well as organizations like Texas Parks and Wildlife, the Cesar Kleberg Wildlife Research Institute, and the Welder Wildlife Foundation.

Quail Season Forecast

Most of Texas including the Rolling Plains and South Texas ecological areas, have experienced a cool wet summer, the most ideal conditions for production. Many field reports indicate an above average year for production, noting that there was sufficient brood stock from last year.

The statewide season runs from October 25- February 29.

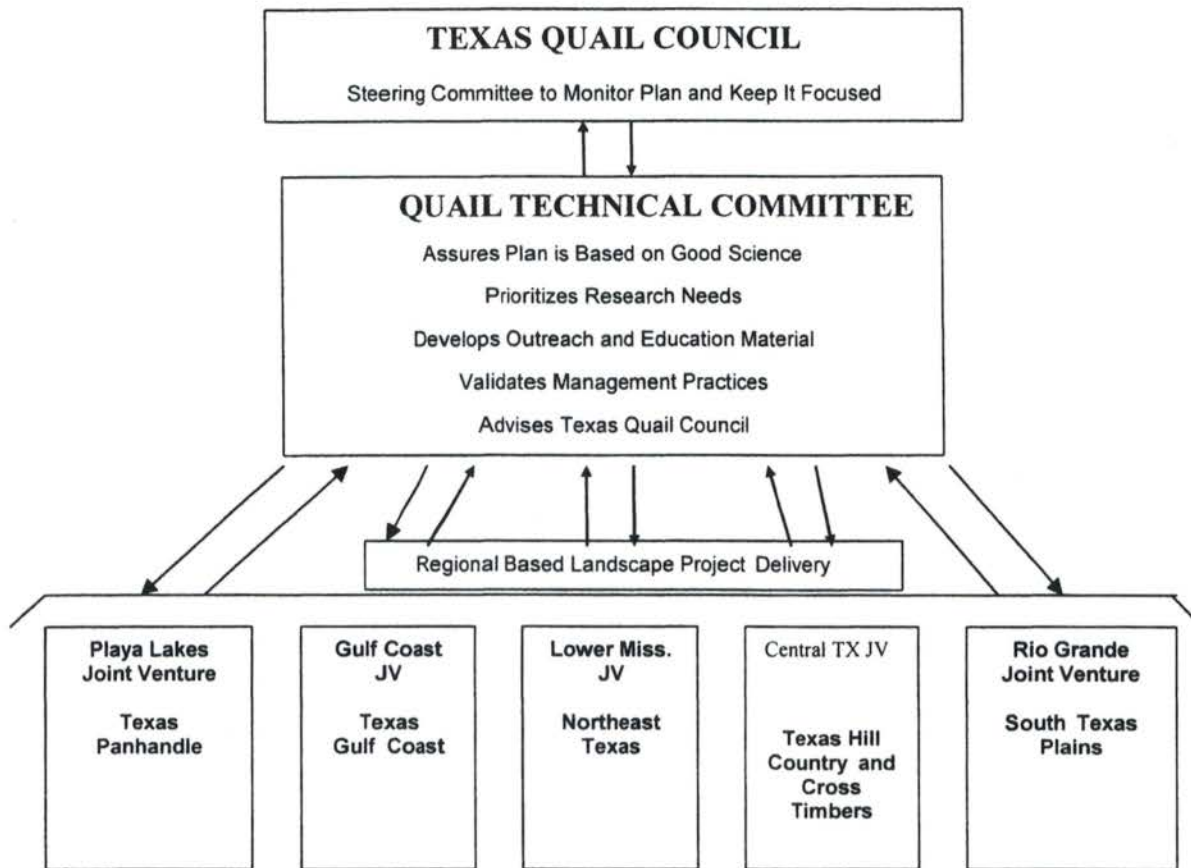


Figure 1. Organizational chart of the Texas Quail Council and Quail Technical Committee developed by the Texas Quail Plan.

2003 Southeast Quail Study Group Farm Wildlife Program Report – Virginia

**Submitted By:
Steve Capel, Virginia Department of Game and Inland Fisheries**

Quail Populations & Uniting Season

After a fairly continuous decline since the mid-1960, Virginia's bobwhite population has stabilized at least temporarily since 1998. USFWS Breeding Bird Survey, June Quail Call Count and Quail Hunter Cooperator Surveys all reflected roughly the same trend toward stabilization. The exception was the 2002 Whistle Count, which showed a decline of 21%. However droughty conditions during the survey period in 2002 apparently impacted this survey, as the 2002-3 Quail Hunter Survey reflected a 10.7% increase in hunting success (Quail bagged/hunter hour), with the number of coveys flushed per hunter hour down slightly from 2001 (-3.7%). The 2001-2 Quail Hunter Cooperator Survey had shown a 12% increase in hunter success, so the statewide trend has been for a slight increase the past few years.

Regionally, quail populations have varied quite dramatically from the state average which remained almost constant (Statewide: -3.7% coveys flushed/hunter hour and +10.7% quail bagged/hunter hour). The severe drought during the summer of 2002 and severe ice conditions during December 2002 and early January 2003 dramatically impacted production in the Piedmont (-41.9% & -23.8% quail bagged/hunter hour West and East Piedmont respectively), but these impacts were much less severe in Tidewater, as hunter success actually increased 35.3% (quail/hunter hour) in Tidewater during the 2002-3 season. Thus Virginia has experienced the most divergent populations between the Tidewater and Piedmont.

The 2003 Quail Call Counts are still being analyzed, but preliminary information indicates a roughly stable Tidewater population and Piedmont populations that are slightly decreased. There were some strange situations in the 2003 Call Count Survey that we have not yet explained. In several regions, there were strong increases in numbers of birds heard, but declines in total calls hear/route. The weather during the survey period in 2003 was quite wet, and may have produced some unusual calling patterns. We would caution that data are still coming in and have yet to be fully analyzed.

Quail Management Activities

Some excellent early succession wildlife features have been incorporated into the various Federal Farm Bill programs. Early Succession Wildlife practices in WHIP have averaged roughly 80% of the practices applied on the ground over the past 6 years. A compressed "WHIP Year," due to extremely late allocations to the states, has made 2003 WHIP activities more than a bit chaotic. Virginia may or may not get all of the funds committed this year due to time constraints.

EQIP did not authorize a percentage of funds for wildlife practices, but there were a series of early succession wildlife practice incentives including a 3-year land conservation cover (\$100/ac/yr), field border plantings (\$100/ac incentive for up to 3 years), conversion of cool

season pastures or haylands to native grasses (\$80/acre incentive), and prescribed burning (\$20/acre incentive).

The CRP General Sign-up included a Wildlife Zone that was designed to expand the relatively high quail density of south Tidewater to the west by adding extra points to the EBI if certain quail-friendly cover practices were agreed to. Results of the 2003 sign-up have not yet been received, so we have not been able to assess the impact of this effort.

The five years of the Virginia Quail Management Plan expired in June 2001. Habitat management efforts declined in Virginia during the two years since then. Budget allocations to the plan had declined toward the end of the 5-year plan, and funds for the cost share program, workshops, publications and similar activities dried up dramatically the next year. A combination of poor economic times, changing emphases within the department and a lack of dramatic change in quail numbers over the 5 years created the environment for this change. Then in early 2003 a reorganization of the Wildlife Division dropped the number of positions working on small game from 4 to 2 (Research & Monitoring; Ag Liaison and Management). Direct Technical Assistance kept up with demand for a while, but the intense demand of WHIP since June 1 has created a real backlog.

Quail Research

Data analyses of various aspects of the 3-year Quail Nesting Study are nearing completion. A presentation for the 10th Wildlife Society Annual Conference, Burlington, VT has been prepared on "Dispersing Northern Bobwhites: Successful Pioneers or Doomed Individuals." A paper on Breeding Season Movements and Dispersal of Northern Bobwhites in Fragmented Habitats of Virginia was published in Quail V.

"Survival of Game Farm, F1-Wild Progeny, and Wild-relocated Northern Bobwhites Using Two Release Methods" paper was published in the SEAFWA Proceedings, summarizing a study evaluating Anchor Covey Systems vs. soft release into quality habitats. This paper was actually presented a year earlier.

NBCI Goals for VA

Work is underway to pull Virginia's goals out of the NBCI, and allocate them to the various District Biologists' districts. This will give each field person a specific set of goals and objectives for their district.

2003 Southeast Quail Study Group State Report -West Virginia

Historical Review:

West Virginia, with its mountainous topography, lies within the Allegheny Mountain Region. The state is comprised of the following three physiographical regions: Ridge & Valley Section, Allegheny Mountains & Uplands, and the Western Hills Region. Seventy-nine percent of West Virginia's land base is covered by forests, with the majority dominated by oak-hickory forest cover types. Furthermore, the majority (76%) of the state's forests are in the saw-timber age class.

Land use trends in West Virginia during the past 65 years reflect a dramatic decline in active farms and a reversion of these small farms to forested habitat. From 1935 to the present, over 5.3 million acres (1/3 of the State's land area) have been taken out of agricultural production. Furthermore, West Virginia has experienced a 96% decline in grain production since 1910. These trends, along with other factors, have led to a significant decline in quail numbers over the past few decades.

The failure of quail populations to recover from severe winter conditions (1977-1979) and a review of the land use changes in the state indicate that significant quail habitat deterioration and fragmentation have occurred. Presently, habitat conditions have resulted in isolated populations of low quail densities in the eastern panhandle counties and along some of the major river valleys (i.e. Greenbrier, Ohio River) of West Virginia. Over the past 25 years, quail have been extirpated from many of the counties which supported quail during the mid-1900's. West Virginia Breeding Bird Survey results illustrate a 90% decline in quail numbers from 1966 through 1999, with the most significant decline occurring during the late 1970's.

Management Initiatives:

Technical assistance is provided upon request to landowners interested in managing their lands for farm game habitat and quail populations.

Since the inception of the Farm Bill's Wildlife Habitat Incentives Program (WHIP), state objectives have focused upon the development of grassland and early successional forested habitat, which benefit declining species such as quail and ruffed grouse. Currently, WHIP plans targeting quail can only be approved in all or portions of 17 counties which support natural populations of bobwhite quail.

Hunting Regulations:

The current hunting season for bobwhite quail (statewide) runs from November 1, 2003 to January 3, 2004. The daily bag limit is 3 with a possession limit of 9. There is no season limit on bobwhite quail.

Research Update:

There is no known research presently being conducted on bobwhite quail in West Virginia at the present time.

Program Abstracts

NBCI and the Central Hardwoods Conservation Region Integrated Bird Conservation and NBCI

**Dr. Jane Fitzgerald, Coordinator of the Central Hardwoods
Bird Conservation Region, American Bird Conservancy**

The Central Hardwoods BCR partnership embraces the goal of the North American Bird Conservation Initiative "to deliver the full spectrum of bird conservation through regionally based, biologically driven, landscape oriented partnerships." However, there are many different landscape types in the Central Hardwoods and it is important to focus conservation efforts for certain groups of birds within those landscapes with the greatest potential to support the habitat types that the target species require. Technical staff of the Central Hardwoods' partner agencies and organizations have delineated focus areas for wetland, grassland, grass-shrubland and grassland birds, and the rationale used to map those areas will be discussed. Habitat restoration projects within landscapes most conducive to the restoration of quail and other priority grassland bird populations will be highlighted to show examples of integrated bird conservation at work.

Area Requirements of Viable Bobwhite Populations: How Much Space Do We Need?

**Fred S. Guthery, Department of Forestry
Oklahoma State University, Stillwater, Oklahoma 74078, USA**

I review and expand upon findings presented by Guthery et al. (J. Wildl. Manage. 64:646-662, 2000) regarding number and area requirements for viable northern bobwhite (*Colinus virginianus*) populations. At a carrying capacity of 800 birds, bobwhite populations in all latitudes seem resilient to insults offered up by man and nature. Under assumed densities of 1-2 birds/ha, the associated area requirement is 800-1,600 ha. These areas must be composed of suitable permanent cover (fully usable space). By comparison, a lek population of lesser prairie-chickens (*Tympanuchus pallidicinctus*) in Texas is thought to require 4,800 ha; grassland sparrows in Florida may need >4,000 ha.

Northern Bobwhite Conservation Initiative Coordinator Introduction and Update

Breck Carmichael, NBCI Program Coordinator

The Southeastern Association of Fish and Wildlife Agencies (SEAFWA) Directors approved the establishment of a Program Coordinator position for the Northern Bobwhite Conservation Initiative (NBCI) in October 2002. The position was filled and work began in February 2003. Funding to support the position is provided through January 2006 from a Multi-State Conservation Grant, administered through the International Association of Fish and Wildlife Agencies and the U.S. Fish and Wildlife Service Sport Fish and Wildlife Restoration Program. These funds are supplemented by contributions from the SEAFWA member agencies and the Natural Resources Conservation Service (NRCS), Wildlife Habitat Management Institute. The major objectives to be advanced by the NBCI Program Coordinator are to: (1) Expand the NBCI habitat plan to cover portions of the Northern bobwhite range not covered under the existing plan; (2) Provide liaison among state wildlife agencies, joint ventures, Bird Conservation Regions, the NRCS and other organizations to facilitate the promotion and implementation of the NBCI; and (3) Work with state and federal organizations to develop and administer a database system for compiling and reporting habitat development and other accomplishments. Major activities in the first 6 months of NBCI program coordination have included attending various regional and national meetings to make presentations on the NBCI, working with states to develop quail task forces, councils or technical committees utilizing a multi-partnership approach, and developing MOU's with organizations and agencies for cooperation and partnerships towards achieving goals of the NBCI. Considerable time has also been devoted to tracking and commenting on rules and policies for Federal Farm Bill programs to ensure quail and grassland bird habitat restoration practices are facilitated. Tasks for the immediate future will include coordinating with 12 or more "fringe" states to prepare supplements to address omitted areas and elevate the NBCI to a national plan, implementing an aggressive marketing campaign to bring attention to the NBCI, especially within the agricultural community, and developing a data base template for states to utilize in monitoring habitat accomplishments towards goals of the NBCI.

Technical Session I

Restoration Initiatives: Status, Lessons Learned and the Future

North Carolina's Cooperative Upland habitat Restoration and Enhancement (CURE) Program

Terry Sharpe, Agriculture Liaison Biologist

The Cooperative Upland habitat Restoration and Enhancement (CURE) Program was established as a result of Commission approval and funding of "small game implementation strategies" on August 30, 2000. During Phase I, focal areas were selected based on habitat criteria that provided the greatest potential for impacting small game, songbird and numerous other wildlife populations through habitat restoration and enhancement projects. Within these focal areas, three Cooperatives, or groups of private landowners, have been selected to enroll in the CURE program. Forty-two landowners with 16,801 acres of land are currently participating in the program (Appendix B). The portion of the program known as Phase II provided for establishment of Game Land CURE areas on portions of four state-owned Game Lands. A total of 21,266 acres will be managed as part of this early succession habitat initiative. Habitat projects are now well underway on these areas. Winter and breeding songbird surveys, summer and fall quail surveys, summer and winter vegetation surveys, photoplots, and a fall evaluation of habitat were conducted on all areas to evaluate the impacts of CURE on birds and habitat.

Outreach efforts were initiated at the regional, state, and local levels. Overall, the CURE project is on track and moving forward according to plans. Expansion efforts will continue during the next year as funds and personnel become available. The project is in line with objectives established by the "**Northern Bobwhite Conservation Initiative**" which has been formally endorsed by the Southeastern Association of Fish and Wildlife Agencies.

Update on Georgia's Bobwhite Quail Initiative

Reggie Thackston, BQI Coordinator
Georgia Department of Natural Resources, Wildlife Division

The primary goal of Georgia's Bobwhite Quail Initiative (BQI) is to restore grassland – forb habitat and enhance or maintain quail populations on private lands across 17 counties in Georgia's Upper Coastal Plain. Secondary objectives include improving habitat for early successional songbirds, reducing soil erosion, improving water quality and increasing the opportunity for wildlife associated recreation, particularly quail hunting. Since the programs inception in 1999, BQI personnel have provided technical assistance for >365,000 acres of private lands and have disbursed \$159,478 to BQI Cooperators (landowners or managers enrolled in BQI) who successfully implemented habitat practices for economic incentives. An additional \$685,128 has been obligated with BQI cooperator contracts for habitat practices to be implemented through 2005. A stepwise increase in program practice options and incentive payment rates increased landowner participation remarkably for years 2001 and 2003. By the end of 2002 there were 93 Cooperators enrolled who had established 344 miles of field borders, hedgerows and filterstrips. Currently, there are 142 Cooperators enrolled with the potential to have established over 400 miles of linear habitats and along with other practices may positively impact over 20,000 acres by 2004. Fall and winter bobwhite population monitoring, conducted by the University of Georgia, was hampered by inclement weather in 2002, but results indicated a continued positive response of bobwhites to BQI habitats. Winter songbird use of fields containing BQI practices has continued to be much higher than use of control fields with 3 sparrow species (Le Conte's, Grasshopper, White-crowned Sparrow) only documented using fields following implementation of practices. Summer quail monitoring results during 2000 – 2002 across 84 BQI fields showed quail occupancy rates as follows: 14% for fields < 15 ha and \geq 700 m apart; 37% for fields < 15 ha and < 700 m apart; 63% for fields \geq 15 ha and \geq 700 m apart; and 64% for fields \geq 15 ha and < 700 m apart. During 2000 – 2002 the efficacy of 3 grass selective translocated herbicides (Quizalofop = Assure II, Clethodim = Select, Fulazifop and Fenoxaprop = Fusion) and 1 broad spectrum translocated herbicide (Imazapyr = Chopper) was tested for bermudagrass control on burned and unburned sites. The most effective bermudagrass control was obtained from prescribe burning in the spring and applying Imazapyr in the summer. Additional results will be presented and discussed.

Open Lands Initiative - Northeast Missouri Pilot Five-Year Evaluation Report: FY 1998-2002

Bill Bergh, Missouri Department of Conservation

Record low populations of northern bobwhite and other grassland songbirds have alarmed citizens, Missouri Department of Conservation (MDC) staff and the Missouri Conservation Commission. In response, MDC created a statewide Open Lands Initiative (OLI) which began with a pilot Northeast Missouri Open Lands Initiative (NEMO OLI) in FY1998. The initiative was based on six tenets: bite-sized geography, focus on habitat deficiencies, leverage MDC resources, department-wide effort, marketing/education, and landowner input/feedback. A statewide steering committee and a local implementation team provided administrative guidance and local planning/implementation, respectively. The NEMO OLI goal as stated in the operational plan (24 September 1999) was:

Improve upland habitat for quail, rabbits and grassland/shrubland songbirds.

The plan identified a focus area containing Knox, Macon, Monroe and Ralls counties for program application. Objectives addressed (1) developing optimum vegetation in Conservation Reserve Program (CRP) fields, (2) improving quality and amount of early successional habitat, (3) developing an aggressive marketing program, (4) improving wildlife habitat on public land, and (5) monitoring to determine landscape scale trends resulting from the initiative. The pilot was to be evaluated after 5 years. Estimated cost of the 5-year pilot was \$3.5 million; \$5.1 million if continued through FY2007.

Southeast Kansas Quail Initiative

Tom Glick and Lance Hedges, Kansas Department of Wildlife and Parks

The Southeast Kansas Quail Initiative (QI) began in the spring of 2001. The program budget consists of \$150,000 per year. This money is made available to landowners in the form of cost share or incentive payments for management practices beneficial to quail. The cost shares are limited to landowners in Allen, Bourbon, Crawford, and Neosho counties. Traditionally, these four counties had the highest quail harvest in Kansas, and during the past twenty years, these counties have seen the greatest decline. The program is administered by two District Wildlife Biologist's (DWB).

Quail harvest in Kansas has declined 69% since 1980. The basis for this downward trend is the change in habitat. Some of the habitat problems identified include: 1) increased field size, 2) lack of weedy habitat, 3) succession, 4) fescue, fragmentation. The QI is designed to address these habitat concerns on private land. Typically, a meeting is held between the DWB and the landowner, and a habitat plan is drawn up outlining everyone's responsibility. Projects available for cost share include: 1) Native Grass and Forb Planting, 2) Disturbance of stagnant vegetative stands {ex. strip disc/early burn CRP}, 3) Hedgerow Renovation, 4) Conservation Headlands, 5) Food Plots, 6) Shrub Planting, 7) Livestock Management, 8) Livestock Exclusion, and 9) Native Hay Meadow Management.

Response to the QI program has been tremendous. To date, 118 habitat plans have been written. Payments to individual cooperators have ranged from \$45 for a simple one-acre food plot, to nearly \$9,000 to create extensive bobwhite friendly habitat using multiple practices. The average payment has been \$1,722. The most common practice sought is the establishment of native grass – including replacing fescue and cropland retirement (45%); followed by food plots (18%); then shrub plantings (9.4%) and livestock management planning (8.9%).

One of the challenges faced by the DWB's has been recruitment. During the first year of the program, the budget was spent very quickly as the easy projects were completed, and the most interested landowners stepped forward. The simple projects were finished quickly, and efforts were made to sell quail management to those with less interest in the bobwhite's plight; and to target larger producers. The second year was slower, with roughly half of the budget being spent on habitat. After regrouping, the DWB's held numerous public meetings, a video was produced, and there were many news releases, and radio announcements distributed – all promoting the QI. The results of these efforts were realized in the third year with the entire \$150,000 being committed to quail habitat.

In addition to the four counties, the southwest portion of Bourbon County (119,000 acres) has been designated a Demonstration Area. Here larger landowners are targeted, and quail research is taking place. This research centers around the landscape changes that are taking place as part of the QI cost share. Whistle counts in the Demonstration Area were up 45% in 2003, versus the 31% increase seen in the Control Area.

Patterns in State-Scale Quail Harvest Management

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In collaboration with management biologists from Missouri, Kansas, Oklahoma, Texas, and Arizona, I analyzed historical records on quail harvest (questionnaire data) and populations trends (various indices) to determine the implications of fixed, liberal regulations (long seasons, high daily bag limits) in state-scale harvest management. The following results held in all states. Hunting pressure was expressible as a linear function of quail abundance and total harvest was expressible as a linear function of hunting pressure. These outcomes imply skill of the average hunter, harvest pressure, and harvest rate decline as quail abundance increases. These findings go contrary to the widely held belief that quail harvest is self-limiting. Given fixed, liberal regulations, quail populations per se govern harvest. Put differently, given fixed, liberal regulations, the nature of the quail harvest in a state would not change if regulations were removed altogether. Thus, state-scale regulations seem to have converged on irrelevance, which could be construed as state-of-the-art management.

Technical Session II

NBCI Implementation: Getting Citizens to Carry Out Resource Objectives

Impact of Recent Changes in Patterns of Land Use On Quail and Other Wildlife Populations in Southeastern U.S.

**Daryl Hobbs, Director of the Office of Social and Economic Data Analysis
University of Missouri, Columbia**

Throughout the Southeastern U.S. States there have been recent significant shifts in patterns of land use. Some of that change in land use has been commercial in the form of timber harvesting and/or large-scale agriculture. But much more extensive has been a growing pattern of population growth in the open country (outside the city limits of any town) of each of these states. Most attractive has been wooded, hilly land previously occupied by small-scale farmers. The presentation will include demographic and land use data from each of the southeastern states. The graphics used in the presentation will be in the form of a power point presentation. The power point presentation will be available to those attending the conference and other interested persons on the OSEDA Web Site at www.oseda.missouri.edu

The Missouri Watershed Initiative: An Objective Approach to Watershed Planning

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The Missouri Watershed Initiative has been designed to help local communities develop answers to their local water quality problems through watershed planning. It is a comprehensive process for formally integrating issue-directed interdisciplinary assessment, research and extension/outreach into local-level decision making regarding watershed land use and management. In effect, this process might be termed "resource-based community economic development" since most communities depend on water for their livelihood. Four identifiable groups – a state-level advisory council, university teams, local steering committee and local technical group - have key roles in directing and implementing the process to help create partnerships for local decision making regarding water quality that are consistent with the state's long-term agricultural, economic and environmental goals.

The process is comprised of two initial steps – an assessment and development of a steering committee and a technical group. The assessment is the more scientific of the two, relying on various scientific disciplines – water biology, entomology, hydrology, geology, microbiology, soils, economics, sociology - as well as records and published information, to characterize the watershed in terms of its resources as well as identify various kinds and amounts of pollutants.

The development of the steering committee (individuals representing local stakeholder groups) and technical group (government agency personnel stationed in the local community) assures that their input regarding water resource issues is heard and is factored into the assessment framework. Parallel to the period of time during which the respective assessment projects are being conducted, periodic (monthly or more frequently, as needed) meetings are held with the committees during which their respective water resource concerns are identified and recorded, and during which the individuals conducting the assessments provide updates regarding their processes and findings. This is a two-way educational process for all groups because of the amount of exchange that takes place. Further, it is an effective means of providing engagement and building trust among the groups.

The 70,000-acre Long Branch Watershed, in north central Missouri, was selected as a pilot project area in 1998 to test the process for community involvement in watershed management and restoration. A 15-member local steering committee comprised of representatives of different stakeholder groups was formed to identify water quality issues within the watershed boundaries and develop the strategy and action plan consistent with community and stakeholder expectations. A series of assessment projects were instituted to describe the biological, physical and social characteristics of the Long Branch Lake and Watershed. Additional assessment efforts – environmental and economic impact analyses for the watershed and using DNA to track the sources of *e. coli* contamination – have been continued to evaluate impacts.

Two demonstration projects have been initiated - one demonstrating the benefits of stiff-grass hedges for erosion control on no-till cropland and another demonstrating the value of off-site watering placement for livestock.

Using the Long Branch Watershed Management Plan and a guide, a Source Water Protection Plan (SWPP) was approved for the Long Branch Watershed. By having the SWPP approved, local agricultural producers have enrolled some 3,500 acres in the Missouri Conservation Reserve Enhanced Program (MoCREP). Both an environmental analysis and an economic analysis have been conducted to determine the impact of this acreage enrollment to provide additional information to the local steering committee as well as community decision-making. Further, the local Soil and Water Conservation Districts have been awarded a \$750,000 seven-year grant to hire a watershed coordinator and provide cost-share funding for conservation practices to be applied in the watershed.

Marketing Intangible Products: Water Works Wonders

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Marketing techniques as applied to fish and wildlife programs has not been previously supported or used to promote conservation programs. One major reason marketing has not been used is a negative connotation that agencies should not “sell” conservation as if it were a commercial commodity. However, the principals of marketing are a useful tool for resource managers and agencies in that marketing uses human dimensions information (including life style information) to develop outreach efforts for specifically targeting an audience. The Recreational Fishing and Boating Foundation (RBFF) developed a series of marketing techniques for promoting recreational fishing to anglers in a nationwide campaign. The marketing program was named Water Works Wonders. Marketing principles used in the Water Works Wonders campaign were provided in a series of workshops sponsored by RBFF this past year. In this presentation I will discuss common marketing principles and techniques used for recreational fishing which has broad scale applications in marketing intangible products such as fishing, boating and even quail management.

Teaching Kids Equals More Quail

**Dr. Jim Byford, Dean, College of Agriculture and Applied Sciences
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While there may be some exceptions, few people will argue with the premise that better habitat results in more quail. To get better habitat, we have to motivate people to manage for it. The best long term (and permanent) solution to motivating people is to reach them when they're kids.

To reach kids effectively, we have to understand them, so we can figure out which buttons to push. Once we do that, it's just a matter of planning a strategy, putting together the resources, finding the leaders to make it happen - - then getting to work.

Poster Abstracts

The Bobwhite Quail Initiative: Helping Georgia land managers restore bobwhite habitat while improving the environment

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ABSTRACT: Research indicates that the significant declines (>70% since 1966) in Northern bobwhite (*Colinus virginianus*) populations of Georgia can be attributed to reduction of habitat quality due primarily to intensification of agricultural and forestry practices. To address this problem, members of the Georgia Department of Natural Resources (DNR) Board of Natural Resources worked with the Georgia General Assembly, the DNR Wildlife Resources Division (WRD) and a number of conservation organizations to develop and fund the Bobwhite Quail Initiative (BQI) during the 1999 legislative session. The primary goal of BQI was to restore grassland – forb habitat and quail populations on private lands across 17 counties in Georgia's Upper Coastal Plain. Secondary objectives included improving habitat for early successional songbirds, reducing soil erosion, improving water quality and increasing the opportunity for wildlife associated recreation, particularly quail hunting. Since 1999, BQI personnel have provided technical assistance for >365,000 acres of private lands and disbursed > \$159,000 to landowners who successfully implemented habitat practices for economic incentives. A stepwise increase in program practice options and incentive payment rates increased landowner participation remarkably for years 2001 and 2003. Bobwhite population monitoring was hampered by inclement fall/winter weather in 2002, but the results indicated continued positive response of bobwhites to BQI habitats. Songbird use of fields containing BQI practices has continued to be much higher than use of control fields with 3 sparrow species (Le Conte's, Grasshopper, White-crowned Sparrow) only documented using fields following implementation of practices.

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Effects of microhabitat, macrohabitat, and predator space use on success of northern bobwhite nests.

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ABSTRACT: Northern bobwhite (*Colinus virginianus*) exhibit high reproductive potential, but low individual nest success, ranging from 16-50%. Habitat structure, landscape context, and predator context may interact in a complex manner to influence fate of individual nests. We use incubated nests (n = 104) of radio-marked bobwhite on a managed area in east-central Mississippi from 1996-2000 to examine simultaneous effects of micro-habitat, macro-habitat, and predator space-use on nest survival. At each nest we characterized vegetation structure. Within a 200m buffer around nests we characterized landscape structure and composition. We used year-specific harmonic mean utilization distributions of radio-marked raccoons to construct cumulative raccoon utilization distributions to measure intensity of space use by an important bobwhite nest predator. We used logistic regression on nest fate (hatched/failed) to develop predictive models of nest success as a function of micro-habitat, macro-habitat, and predator space-use. We developed 7 *a priori* candidate models that each represented a research hypothesis about how the system might operate. A model containing micro-habitat + raccoon space use was the best approximating model of those in the candidate set. This model had a 63.9% correct classification rate and included variables describing grass canopy cover, forb canopy cover, litter cover, VOR, and cumulative intensity of raccoon space use. Litter cover and raccoon space use most strongly influenced nest fate with probability of hatching increasing with increasing litter cover and declining raccoon use. On average, successful nests had 20% more litter (69.3% vs. 48.6%) and half the intensity of raccoon activity (806 vs. 1665) as unsuccessful nests. Probability of hatching increased with increasing grass canopy and declining forb canopy and VOR.

Assessment of conservational-tillage systems on soil insect ecology, habitat use, and reproductive success of bobwhite quail (*Colinus virginianus*).

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ABSTRACT: In the past decade, many farmers in South Carolina have adopted conservation tillage practices because of its numerous advantages over traditional tillage practices. Conservation tillage can provide farmers with greater crop profitability, less contaminant run-off, cheaper equipment cost, and less top-soil erosion, however, it does require the use of more herbicides and insecticides depending on the crop selection. From this information, we decided to study the affects of tillage treatment on the ecology and survival patterns of native northern bobwhite quail (*Colinus virginianus*). The study area consisted on five double cropped soybean fields at the Clemson University's Pee Dee Research and Education Center were spilt in half with a conservation tillage system aimed at maximizing weed control (no-till, 7.5 inch rows spacing, Roundup Ready variety) used on one side and compared to a traditional tillage system (burning of wheat residues, disking, cultivating, 30-inch row spacing, conventional variety, traditionally used herbicides). All experimental fields are adjacent to a 20 foot field border which develops into a mixed hardwood/pine forest and with one-quarter of the fields planted in corn using the same surface tillage practice as used to produce the wheat and soybeans. Insect measurements were taken randomly in each treatment plot using traditional pitfall methods to monitor insect species in relationship to viable quail food. Crop measurements including canopy coverage, residue amounts and yield records were gathered for comparison between quail habitat selection or avoidance. All quail were captured in late fall to early spring and fitted with a radio transmitter which was used to track and plot location (bivariate) data. This data was analyzed for information on home range size/structure, movement patterns, habitat selection (tillage and crop preference), foraging areas (with and without chicks), brood habitat selection/success, and mortality locations. All data was analyzed using ANOVA and Freidman's statistical test in SAS.

Variation of survival within and among northern bobwhite coveys.

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ABSTRACT: Winter survival rates of northern bobwhite (*Colinus virginianus*) are commonly determined by radio-tagging and monitoring fates of 2 to 3 birds/covey. Typically, data from coveys under study are pooled yielding sample sizes sufficient for Kaplan-Meier or other analyses. To achieve an unbiased survival estimate requires that (1) survival of individuals within coveys and among coveys is independent, and (2) coveys marked are representative of the population as a whole or a sufficient random sample of coveys on the study area. To assess the independence of survival within and among coveys, we monitored survival of bobwhites, January- April, 2001-2003, where > 70% of each covey on the 200 ha study area was marked (average radio-tags per covey was 10.6). We compared the distribution of observed covey survival to expected frequencies of covey survival derived from the binomial distribution. We determined that mortality was not distributed randomly among coveys, especially in years of lower survivorship ($P < 0.001$). Observed covey survival was skewed to the tails of the expected distribution. Preliminary semivariogram analysis revealed little spatial correlation among survival rate of coveys. Our results suggest that once a predator(s) identifies a covey they continue to prey on individuals within that covey until covey extinction occurs or the remaining birds join other coveys. These results underscore the importance of marking a random sample of birds in a large proportion of coveys on a study area to achieve an unbiased survival estimate.

Breeding season survival and cause-specific mortality of dispersing and non-dispersing northern bobwhites in Virginia.

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ABSTRACT: For many species, dispersal is a beneficial process for population regulation, inbreeding avoidance, and range extension. However, dispersal may also have negative consequences for emigrating individuals, such as higher mortality rates and reduced reproductive success. To better understand the role of dispersal in northern bobwhite (*Colinus virginianus*) populations, we measured breeding season movements of 198 radiomarked bobwhites and estimated survival, cause-specific mortality, and nest success of dispersing and non-dispersing individuals. Forty-nine of 198 (24.7%) bobwhites were classified as dispersers (maximum distance between winter and breeding season locations > 2 km). Survival during early (16 Apr-30 Jun), late (1 Jul-15 Sep), and combined breeding seasons (16 Apr-15 Sep) did not differ between dispersing and non-dispersing individuals ($P > 0.05$). Survival of dispersing male bobwhites during the early breeding season ($86.9 \pm 7.2\%$) appeared to be higher than non-dispersing males ($68.6 \pm 5.4\%$, $P = 0.078$) during the same period, but was similar during the late and combined breeding seasons. Dispersing juvenile bobwhites survived better than dispersing adults (juvenile = $83.0 \pm 6.5\%$ vs. adult = $33.3 \pm 27.2\%$; $P = 0.028$) and appeared to survive better than non-dispersing juveniles ($66.6 \pm 4.6\%$; $P = 0.059$) during the early breeding season. Cause-specific mortality from avian and mammalian predators was similar between dispersers and non-dispersers during all seasons. Nest success of 11 nests located > 2 km from winter locations (dispersed nests) was 27.3% and did not differ ($P = 0.497$) from 74 non-dispersed nests (37.8%). Our data do not support the hypothesis that dispersing individuals are more susceptible to predation or experience reduced reproductive success. We suggest that breeding season dispersal is an innate phenomenon that permits colonization of favorable habitats and is essential for ensuring the persistence of declining bobwhite populations.

The impact of cooperative agreements on selection of wildlife friendly cover types and response of northern bobwhites on land enrolled in the Conservation Reserve Program in western Tennessee.

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ABSTRACT: Significant declines of northern bobwhite (*Colinus virginianus*) across the Southeast are well documented as a result of myriad factors. While many agencies and groups view the federal Farm Bill as renewed hope for achieving landscape level habitat improvements for bobwhites, little information is available on specific cover type selection by landowners and the response of bobwhites in areas where native warm season grasses (NWSG) are utilized in USDA programs. Cooperative efforts between the state wildlife agency (Tennessee Wildlife Resources Agency, or TWRA) and USDA agencies were very effective in increasing acceptance of wildlife friendly cover types such as NWSG in USDA programs. We tracked selection of cover types in CRP over three years after the cooperative efforts of the TWRA funded a Natural Resources Conservation Service private lands biologist dedicated to increasing upland wildlife habitat on USDA program acres in 21 western Tennessee counties. Cover type selection in CRP was tracked by federal fiscal year (FY), October 1 – September 30. Fescue comprised >93% of all CRP filter strips in FY 1999 and <2% of filter strips in FY 2002 in western Tennessee. NWSG comprised zero CRP filter strip acres in FYs 1999 and 2000, and increased to 650 acres in FY 2001 and 2100 acres in FY 2002. During FY 2002 a one-time signing incentive payment of \$50 per acre was offered by TWRA to landowners who established NWSG in CRP filter strips. Assuming an average width of 75 feet commonly used for filter strips in western Tennessee, miles of NWSG filter strips increased from zero in FYs 1999 and 2000 to 71 miles in FY 2001 and 230 miles in FY 2002. NWSG were the most common (>90%) cover type selected followed by orchardgrass-legume mixtures (<5%) during FY 2002. We also monitored whistling bobwhite cock counts on newly enrolled Conservation Reserve Program (CRP) areas (both block and buffer strip practices) of NWSG ($n = 24$) and control areas ($n = 18$) in western Tennessee for three years. Control areas were reasonably similar agricultural areas that did not have any native warm season grasses. The average whistle count per minute for all CRP NWSG sites increased from summer 2000 to summer 2002 by 213%, while the average for all control areas during this same time frame decreased by 31%. Landowner selection of wildlife friendly cover types on land enrolled in USDA programs will be key to the restoration of local and regional bobwhite populations. Cooperative efforts between state wildlife agencies and USDA in educating agency personnel and landowners in establishment and maintenance of NWSG and identifying where additional financial incentives can be used to increase landowner selection of wildlife friendly cover types offer potential to hasten landowner acceptance of these practices and achieve habitat goals identified in the Northern Bobwhite Conservation Initiative.

Bayesian modeling of age-specific survival in bird nesting studies under irregular visits.

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ABSTRACT: In this paper, a Bayesian model for the age-specific nest survival rates is presented to handle the irregular visit case. The Bayesian method provides more accurate estimate of the total survival rate than the standard Mayfield method if the age-specific hazard rates are not constant. The Bayesian method also enables the biologist to look for high and low survival during the whole nesting period. In practice, it is common for data of several types to be collected in a single study.

That is, some nests may be aged, others are not. Some nests are visited regularly, others are visited irregularly. The Bayesian method accommodates any mix of these sampling assuming that the aging and visiting activities have no effect on the survival rate. The methods are illustrated through an analysis of the Missouri northern bobwhite data set.

Over winter survival of northern bobwhite in relation to landscape composition and structure.

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ABSTRACT: Despite numerous studies of bobwhite habitat use and survival, very few studies have related landscape composition and structure to fitness. We estimated over winter survival of radio-marked bobwhite from September 15-April 14, 2000-2002 and used Cox proportional hazard modeling to relate over winter survival to landscape composition and structure at the 2 spatial scales. We generated 95% kernel seasonal range estimates for 23 coveys containing 167 radio-marked bobwhite and used these ranges to generate landscape metrics for each individual's seasonal range. We then generated landscape metrics for 3419 daily ranges of 132 radio-marked bobwhite. None of the measured landscape metrics were strongly associated with over winter survival of radio-marked bobwhite at either the seasonal or daily range scale. However, at the spatial scale of daily locations, presumptive mortality sites differed from live radio-marked bobwhite locations. Mortality recovery locations included a higher percentage of agricultural fields and greater edge density of agricultural fields when compared to a randomly selected live location from the previous 14 days for the same radio-marked individual. Since bobwhite are adapted to a wide range and variety of landscapes, variation in the abundance, distribution, and space-use of the local predator community may influence bobwhite survival more than local landscape composition and structure. Alternatively, insofar as predators and bobwhite likely perceive landscapes at different spatial resolutions, landscape structure and composition at larger spatial scales than we examined might influence predation risk.

Effects of three sampling methods on growth and survival of neonatal northern bobwhite, and the utility of these methods for genetic analysis.

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ABSTRACT: Integrated studies of population ecology and population genetics require that tissue collection methods produce consistently amplifiable DNA and do not affect fitness of sampled individuals. Special consideration must be taken when dealing with neonates. To assess effects of sampling on neonatal northern bobwhite (*Colinus virginianus*) chicks, we randomly distributed 600 12-24 h old chicks among 10 temperature-controlled brooders (60/brooder). Within each brooder, 5 chicks were randomly assigned to one of 12 treatment combinations (n=50/treatment/day) of 3 sampling methods (control, down feather, patagial biopsy) taken at 4 ages (1, 3, 6, and 10 days). We measured weight (g), and length (mm) of tarsus, bill, and wing-chord at 3 day intervals, and survival to 21 days. We used a repeated measures ANOVA and a Cox proportional Hazard model to test for effects of sampling method and age at sampling on growth and survival, respectively. Sampling method and age did not influence growth or survival; however, weight at hatch had a strong influence on survival. Patagial microbiopsies consistently produced greater amounts of DNA than both down feathers and egg teeth. We suggest that patagial microbiopsy is the most reliable method of sampling neonatal bobwhite chicks for genetic analysis and has minimal effects of growth and survival.

Effects of supplemental feeding on northern bobwhite.

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ABSTRACT: Supplemental feeding of northern bobwhites (*Colinus virginianus*) is a common management practice on shooting plantations in the South. However, research on the demographic response of bobwhites to the presence of supplemental feed is unclear. We are investigating the long-term demographic effects of year-round supplemental feeding on bobwhite populations at 2 sites in the Red Hills of Florida and Georgia. At each site, blonde sorghum was spread on 50% of each area while the other half served as a reference, 2000-2003. Sorghum was spread every 2 weeks at a rate of 1.5 bushels/acre/year along dedicated feed trails. We monitored survival and reproductive parameters from a sample of radio-tagged bobwhite on each study area. We determined spring and fall population levels from band-recapture and fall covey counts, respectively. Variation in annual survival of bobwhites has been lower fed sites than on unfed sites. Preliminary analyses indicate that winter survival (Jan – Apr) averaged 28% higher on fed sites and was as much as 61% higher in some years. Incubation rate of hens was greater in most years of fed sites as a result of longer nesting season and increased reneating. In some years, per capita nest success was as much as 50% greater for hens on fed sites. After 3 years of supplemental feeding, differences in survival and reproductive parameters are resulting in higher bobwhite densities on fed sites in relation to unfed sites. These results indicate that supplemental feeding can reduce annual variation in demographic parameters of bobwhite. Increases in seasonal survival and/or reproduction of bobwhites on fed sites are large enough to have long-term implications for population growth.

Reproductive effort and survival of northern bobwhite in relation to density.

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ABSTRACT: Management strategies often depend on the degree to which the population regulation of a species is considered to be density dependent or density independent. How biologists view the role of density dependence in bobwhite can determine what management strategies are considered viable. Bobwhite reproduction is often considered to be density dependent. However, the sensitivity of bobwhite reproductive parameters to breeding density has not been quantified. In this study, we monitored survival and reproductive parameters of bobwhite at breeding densities ranging from 1 per 4 acres to 4 bobwhites per acre on 6 sites over 5 years. In addition, we monitored demographics and population changes on 2 sites. Preliminary analyses indicate that per capita reproductive success was insensitive to breeding density across and within sites. Only at extremely high densities did we observe a decline in some reproductive parameters. Seasonal survival also was not related to density. This study suggests that bobwhite demographics in the Red Hills are not strongly related to their density. Other factors, such as weather, habitat and predator context appear to be driving demographics.

Enhancing traditional quail habitat management to benefit songbirds.

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ABSTRACT: Several songbirds with declining populations have overlapping habitat needs with bobwhite quail. Traditional quail management can be modified to help meet the needs of several birds of conservation concern without sacrificing quail management goals. Eastern meadowlark and grasshopper sparrow will benefit from establishing larger (>20 acre) grassland habitat areas, favoring short bunch grasses, and management that creates heterogeneous vegetative structure. Yellow-breasted chat, prairie warbler, and field sparrow will benefit from establishing thickets of shrubs or blackberries. Loggerhead shrike will benefit from establishing isolated thorny shrubs or posts wrapped with barbed wire in short-grass areas. Pine savanna management through thinning and burning will benefit Bachman's sparrow and brown-headed nuthatch. Nuthatches can be further aided by creating small diameter (6-10") snags and Bachman's sparrows will benefit from the enhancement of panic grasses (genera *Panicum* and *Dichanthelium*) in or near pine savannas. The Northern Bobwhite Conservation Initiative can gain broader support from the public and conservation community by looking for opportunities to maximize benefits for key early succession birds.

Comparison of space-use and abundance-based approaches to habitat modeling using high resolution remotely sensed imagery.

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ABSTRACT: Wildlife habitat models, based on remotely sensed imagery, play an integral role in the assessment of potential habitat, allocation of conservation efforts, and monitoring of recovery plan goals. Most large-scale wildlife habitat models are constructed based on associations between measures of occurrence/relative abundance and surrounding land cover/vegetation characteristics. Abundance-based approaches implicitly assume that occupancy indicates usability and density is associated with quality in a continuous fashion. Furthermore, abundance-based models are frequently subjected to arbitrarily defined spatial extent and resolution of analysis, may not account for landscape context on suitability, and use abundance as a proxy measure of suitability. Accurate predictions of species distribution require that relationships be defined at appropriate spatial and temporal scales. Many patterns can be detected at a resolution far coarser than needed to understand the processes that produce the pattern. Alternately, habitat models based on the underlying process (space-use) that produced the observed distributional patterns of abundance may provide a more effective link between fine scale selection of habitat and suitability. We developed competing habitat suitability models for northern bobwhite in Mississippi based on simultaneous measures of relative abundance and space-use. We used land cover models based on classified, high resolution, multi-spectral imagery for both modeling approaches. Abundance-based models used mean number of calling male bobwhite detected during June counts as a response. Space-use models utilized habitat use patterns of radio-marked bobwhite. We interpreted posterior probabilities from logistic regression models of high and low-density points (abundance-based) and used and random ranges (space-use) as measures of probability of occupancy (habitat suitability). We report correct classification rates and compare predicted suitability between approaches.

Multi-scale approach to wildlife habitat modeling using remotely sensed imagery.

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ABSTRACT: Objective, empirically-based habitat suitability models are needed for defining spatially explicit allocation of effort and resources for wildlife conservation initiatives. Remote sensing imagery, coupled with wildlife habitat models, has historically served this role in the implementation, assessment, and monitoring of wildlife conservation/restoration programs. However, previously published habitat suitability models have typically been established for either large scale (state/region) or extremely fine scale (timber stand/field) management purposes. Few models have been developed to address habitat suitability concerns at intermediate spatial scales (farm). For example, LandSat has been the primary imagery source for model development and subsequent habitat suitability analyses at large spatial extents. Although appropriate for identification of extant habitat, estimating gross trends in habitat conditions, and modeling regional trends in population declines, LandSat imagery may not be suitable for assessing site-specific (farm scale) habitat suitability. Low spatial resolution (28.5 meters), relative to an animal's perception of its environment, may not be sufficient to detect structural and compositional attributes of habitat which may dictate animal habitat use patterns, thus influencing suitability. Whereas issues related to multi-scale analyses have been acknowledged with respect to wildlife habitat models, few sources of high resolution imagery have been readily available for site-specific analyses. We describe and demonstrate methods for using low resolution LandSat imagery in conjunction with high resolution IKONOS imagery in a hierarchical approach for assessing wildlife habitat suitability at multiple spatial scales. This multi-scale process objectively defines initial focal areas within a region and then specific habitat deficiencies within focal areas for the purpose of efficiently allocating habitat enhancement effort and resources.

Use of human imprinted northern bobwhite chicks to measure invertebrate availability.

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ABSTRACT: Arthropods are essential for the growth and survival of most gallinaceous neonates and availability may affect population trajectories in some landscapes. Consequently, much research has been conducted regarding the relative abundance of arthropods within brood rearing habitats. Conventional arthropod sampling techniques such as sweep-nets, vacuum devices, and pit fall traps may not adequately sample the suite of arthropods available to neonatal birds due to inherent proximal sampling biases. To overcome these sampling biases, human imprinted neonates have been used to obtain potentially less biased estimates of arthropod availability within habitats of interest. Because use of wild caught subjects for destructive sampling is impractical, commercially produced substitutes have been used. However, subtle differences may exist regarding growth rates and foraging efficiency of commercial strain and wild strain neonates. Furthermore, researchers have recently employed ligatures encircling the esophagus immediately posterior to the crop to prevent food items from entering the gizzard, thereby increasing the likelihood of arthropod identification and reducing time spent in postmortem crop analysis. The effects of commercial strain neonates and ligatures on foraging and growth rates have not been tested. The objectives of this study were to examine growth (g/neonate/day) and foraging (g/neonate/30 min) rates between commercial and wild strain northern bobwhite neonates. Furthermore, we examined difference in foraging rates between ligatured and non-ligatured neonates. Growth rates differed between commercial and wild strain neonates ($F_{1,38}=12.58$, $P=0.001$), but foraging rate did not ($\bar{x}_{\text{commercial}}=0.278$, $SE=0.043$; $\bar{x}_{\text{wild}}=0.241$, $SE=0.055$; $t_{54}=0.54$, $P=0.593$). Foraging rate did not differ between ligatured ($\bar{x}=0.041$, $SE=0.007$) and non-ligatured ($\bar{x}=0.028$, $SE=0.004$) neonates ($t_{54}=2.44$, $P=0.059$). However, in non-ligatured chicks, some food passed into the gizzard, thereby making identification more difficult and potentially biasing estimates of arthropod consumption. During 30 minute trials ligatured chicks did not completely fill crops leading to satiation and cessation of foraging activity. Ligatured, commercially produced neonates may offer an effective tool for determining relative arthropod availability within habitats of interest.

Nest site selection of northern bobwhites in Mississippi.

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ABSTRACT: Northern bobwhite (*Colinus virginianus*) is one of the most intensively studied gamebirds in North America. However, despite over 70 years of bobwhite-habitat investigations many questions regarding quail ecology and management remain unanswered. While numerous studies have documented nesting chronology, mating systems, nest predation, and nest site characteristics, few studies have considered nest site selection simultaneously at multiple spatial scales. Previous research emphasized the need to maintain some proportion of the managed land base in undisturbed idle grassy vegetation to serve as nesting habitat. Consequently, conventional bobwhite habitat management focused primarily at the patch and within-patch scales. However, the relative importance of patch versus within-patch management remains uncertain because the spatial scale at which nest site selection occurs is poorly understood. We examined northern bobwhite nest site selection at the within-patch, patch, and study area spatial scales using data collected from 125 nests of 97 nesting bobwhites on an intensively managed wildlife area in Mississippi from 1997-2002. We employed habitat selection procedures of Nue et al. (1974) embedded within Johnson's (1980) hierarchical framework of selection to determine scale of nest selection at the patch scale and logistic regression at the microhabitat scale. Pre-nesting home ranges of northern bobwhite were used to define proportional availability of patch types and the proportion of nests within each patch type was considered as use. Nest site selection occurred primarily at the patch scale. Once a patch was selected, micro-habitat variables did not differ between used and random within-patch sites.

A technique for capturing northern bobwhite chicks.

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ABSTRACT: Lack of a technique to capture northern bobwhite (*Colinus virginianus*) chicks has hindered research on this life stage. Therefore, we developed a technique for capturing northern bobwhite chicks < 14 days of age that were associated with a radio-tagged adult. We located a radio-tagged adult with a brood 1.5 hrs before sunrise by homing to within 5 – 10 m from 3 or more directions. After the brooding adult was located a corral, composed of screen covered panels, was erected around the brood. Soil was placed along the bottom of the corral to block potential escape routes. Near sunrise, vegetation and ground debris were removed until the adult flushed and all chicks within the corral were captured. Chicks were then patagially marked and released near the radio-tagged adult. Between 1997 and 2001 we captured 1325 chicks from 224 broods. Of these 224 capture attempts, 71% captured all chicks, 17% captured some but not all chicks, and 12% were complete failures. Capture success rate was independent of chick age, up to 12 days of age. An average of 7.3 (SE = 0.3) chicks were captured per attempt with fewer chicks captured in older broods than younger broods. This technique may have utility for researchers studying brood ecology of bobwhites or other precocial birds.

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Identifying predators at northern bobwhite nests and nest predation relative to predator abundance.

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ABSTRACT: We identified nest predators of northern bobwhites (*Colinus virginianus*) on private lands in northern Florida and southern Georgia using continuous infrared micro-video cameras, 1999 – 2001, and compared these results to predictions based on diagnostic sign at nests. We measured relative abundance of mesomammal predators using scent station surveys to determine if species-specific depredation rates were proportional to relative abundance indices of these nest predators. Mammals, snakes, and ants accounted for 60%, 29% and 11% of bobwhite nest depredations, respectively. Mammalian predators, in order of importance, were raccoons (*Procyon lotor*), nine-banded armadillo (*Dasypus novemcinctus*), Virginia opossum (*Didelphis virginiana*), bobcat (*Lynx rufus*), cotton rat (*Sigmodon hispidus*), and coyote (*Canis latrans*). Species-specific depredation rates by mesomammals were related to abundance indices ($r^2 = 0.81$, $P < 0.001$, $n = 14$). Because of intraspecific variation and interspecific overlap of depredation styles, technicians correctly classified only 30% of mammalian depredations to species, and overestimated nest depredations by snakes. A classification tree model to classify depredated nests into “mammal” or “snake” categories that included nest condition and presence of egg fragments correctly classified 75% of the test sample ($n = 33$), but still overestimated depredations by snakes. Therefore, we conclude that diagnostic sign at depredated nests is unreliable for identifying nest predators of northern bobwhites. We also documented a broader community of bobwhite nest predators than previously known for northern Florida and southern Georgia and we confirmed that some snake species were important nest predators of bobwhites. Our data indicate that the relative abundance of different mesomammal predator species largely explains their relative importance as predators of bobwhite nests. This result suggests bobwhite managers could use scent station indices to identify nest predators and subsequently develop management plans to improve bobwhite habitat while reducing habitat of those predator species most likely to be depredating bobwhite nests.

Comparison of two techniques to estimate northern bobwhite autumn density.

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ABSTRACT: Early morning call surveys have been conducted in autumn to estimate post-recruitment density of northern bobwhite (*Colinus virginianus*) coveys. One survey method estimates density on small 10–25 ha sample plots using 4 observers to produce accurate counts of coveys within the plot. While this method is effective, it is labor intensive and thus limited in the proportion of study area coverage. A single observer point count method has also been used as an index of quail abundance to minimize survey effort, but its value is limited due to an inability to meet assumptions and poor correlation to density. However, point count data can be adjusted to an unbiased density estimator using empirical models of detectability over distance. Therefore, we measured observer detection using multiple observers to develop a detection function and density estimate using the program Distance[®] for 2 study areas in north Florida, USA. The detection probability was 1.0 within 100 m of the observation point, which then decreased to 0.03 at 500 m. Detection variability was highest between 250–500 m. A hazard rate function model produced the best fit to the data ($P = 0.31$) and was used to generate density estimates. Density estimates generated from point count data were similar ($P > 0.15$) to density estimates from the intensive survey method on all study areas. We recommend point count surveys as a way to efficiently estimate density for northern bobwhite coveys, given the application of an appropriate detection function and adequate sample size.