

Conserving Brook Trout in Southern Appalachia:
A Case Study in Building Public-Private Partnerships

by

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Abstract

As with many of our natural resources, Brook Trout, *Salvelinus fontinalis*, are in need of protection on private lands. Increasing development and poor agricultural practices have removed or degraded much of this species' habitat in western North Carolina. In order to protect remaining Brook Trout habitat in this region, the Southern Appalachian Biodiversity Project held the Brook Trout Summit with the purpose of promoting public-private partnerships between private landowners and government conservation agencies. Specifically, this summit introduced farmers and developers to conservation easements and the conservation incentive programs that would allow them to preserve and restore riparian habitat. This research used a survey to assess the Summit's effectiveness in 1. attracting private landowners, 2. increasing participants' knowledge of the conservation programs and partners that they can become involved with to conserve Brook Trout habitat, and 3. encouraging the formation of public-private partnerships. Analysis of survey results showed that the Summit was effective in increasing participants' knowledge and encouraging the formation of partnerships, but was unable to attract sufficient numbers of private landowners. Suggestions for improvement of the summit format are explored and recommendations for future endeavors, including a second Brook Trout Summit, are discussed.

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Introduction

Public-private partnerships have been used in a variety of disciplines to bring disparate parties together in the pursuit of a common goal. In the realm of species conservation, these partnerships are an effective means of protecting threatened species and, more specifically, their habitat. Unlike the typical top-down management approach of protected areas, public-private partnerships involve a variety of stakeholders in the management process (Stoll-Kleemann and O’Riordan 2002). Federal and state agencies, conservation organizations, and private landowners come together and combine their resources in order to protect a public good. In many cases, conservation partnerships are formed with the purpose of protecting a species by conserving a particular aspect of the landscape through land conservation. In western North Carolina, conserving riparian habitat through the formation of public-private partnerships may provide a way to increase the highly reduced populations of the region’s only native trout species, the Southern Appalachian Brook Trout (*Salvelinus fontinalis*). Specifically, my research focused on improving the Brook Trout’s habitat on private lands.

Other land conservation efforts, like the one to preserve Brook Trout habitat, have also depended upon the involvement of private landowners. For example, in Hartford, Connecticut, very little open space is available to the public for recreational access and the majority of open spaces that do remain are privately owned. Ryan and Walker (2004) surveyed local farmers and private landowners in an area known as the Great Meadows, to determine the extent to which landowners would be willing to allow public recreational use of their land. Their results showed that the majority of landowners were hesitant to allow complete public access on their property, even though they were already allowing local sporting clubs and organizations to recreate on their land. As a strategy towards increasing the number of landowners opening their property to

public access, the authors proposed providing financial incentives. This case study showcases the relevancy of public-private partnerships in conserving privately owned natural areas. As noted by the authors, purchasing property as a solution to natural resources protection is no longer an affordable option in many areas and regulatory methods remain highly controversial (Ryan and Walker 2004).

The work performed by Ryan and Walker (2004) demonstrates the difficulty of enlisting the participation of private landowners in conservation efforts. In their study of partnerships in Australia, Thackway and Olsson (1999) attempted to discover the reasons that landowners hesitate to engage in such agreements. One reason, which appears to be universal when considering partnerships that deal with land conservation, is a fear that the government will take over their (the private landowners') property. Another reason that is common to property owners, who depend on their land for income, is that they cannot afford to dedicate portions of their land to conservation (Thackway and Olsson 1999). As suggested in Ryan and Walker (2004), incentives in the form of financial support can act to counterbalance these fears and secure private landowner participation. In Australia, the Department of Environment created financial incentives to encourage the creation of protected areas on leasehold lands. Although no landowners had officially accepted the incentives offered by the completion of the Thackway and Olsson (1999) study, many landowners had indicated their intent of adhering to conservation principles on their land (Thackway and Olsson 1999).

A more successful example of land conservation through public-private partnerships occurred in Valle Crucis, North Carolina. Here, financial incentives and a concern for the environment led developer Jeff Walker to halt construction of seven luxury homes on a scenic ridge overlooking the valley. Walker was approached by a local land trust and convinced to

enter into a \$1.1 million agreement with the High Country Conservancy and the state of North Carolina to preserve 32 acres of land. The property, now owned by the state, has connected other prominent protected areas in the regions. Although Walker lost money on the deal, he was pleased with the outcome: “I just viewed it as a win/win” (Mitchell 2007).

In my work, I used similar techniques to those exhibited by the High Country Conservancy to engage landowners in public-private partnerships that would protect Brook Trout habitat. Specifically, I worked with the Southern Appalachian Biodiversity Project (SABP) to engage private landowners, within western North Carolina, in conservation incentive programs run by the Natural Resources Conservation Service and in creating conservation easements to restore and preserve riparian habitat, the vegetated areas running alongside bodies of freshwater, such as streams. In the fall of 2007, SABP hosted a summit, which I organized, to bring together private landowners, local land trusts, and state conservation agencies in the hope of building public-private partnerships for the Brook Trout. During this event, the Brook Trout Summit, I distributed a survey to all attendees, which was later used to determine if the Summit was successful in engaging participants in Brook Trout conservation efforts. Specifically, this research will focus on whether the Summit was able to achieve the following objectives:

- (1) To attract private landowners,
- (2) To increase participants’ knowledge of the programs and partners that they can become involved with to conserve Brook Trout habitat, and
- (3) To encourage the formation of public-private partnerships.

Background

Brook Trout in North Carolina

The initial motive behind the Brook Trout Summit was to conserve Brook Trout within North Carolina, of which there exist three separate strains. These include the northern stock of Brook Trout, the Southern Appalachian Brook Trout, and a mixture of the two (Hayes et al. 1996). The Southern Appalachian Brook Trout, the only strain considered to be native to this area, contributes to 39% of North Carolina's Brook Trout populations (Conservation Strategy 2007). This work, however, does not distinguish among the different strains of Brook Trout and therefore all three will be encompassed in the term "Brook Trout" and all three will be affected by the Summit. It is important to note, however, that Brook Trout restoration efforts in North Carolina will focus on repopulating the Southern Appalachian Brook Trout strain.

The importance of the Brook Trout to the Southern Appalachian region has resulted in the recent conservation efforts on its behalf. In addition to its status as the only native trout in the eastern United States, the Brook Trout is also considered an "indicator species." This term refers to the Brook Trout's ability to signify the health of the ecosystem in which it lives. Since this species survives in only the cleanest and coldest waters of the Southern Appalachians, populations of Brook Trout will decrease as the condition of the streams declines. Therefore, unhealthy Brook Trout populations are indicators of unhealthy streams (Trout Unlimited 2006).

Unfortunately for the fish and for the streams of the Southern Appalachians, Brook Trout no longer exist in 36% of the subwatersheds historically occupied by this species (Trout Unlimited 2006). Only one of the subwatersheds between North Carolina and Tennessee hosts an intact Brook Trout population, while over 47% of the subwatersheds contain greatly reduced populations, meaning that less than 50% of the habitat is occupied (Figure 1). The reason for

this extensive decline is a combination of urbanization, agriculture, the acidification of streams, and competition from non-native trout species. The introduction of the non-native Rainbow Trout (*Oncorhynchus mykiss*) and the Brown Trout (*Salmo trutta*) has been a major threat affecting 69% of the subwatersheds within Tennessee and North Carolina. Originally introduced to re-stock fish populations for anglers, the Rainbow and Brown Trout compete with the Brook Trout for space and food (Trout Unlimited 2006). According to Marschall and Crowder (1996) the non-native fish out-compete the Brook Trout for food during their early stages of development, which results in a reduced growth rate for the native trout. Consequently, the larger Brown and Rainbow Trout are able to out-compete adult Brook Trout for both food and space (Marschall and Crowder 1996).

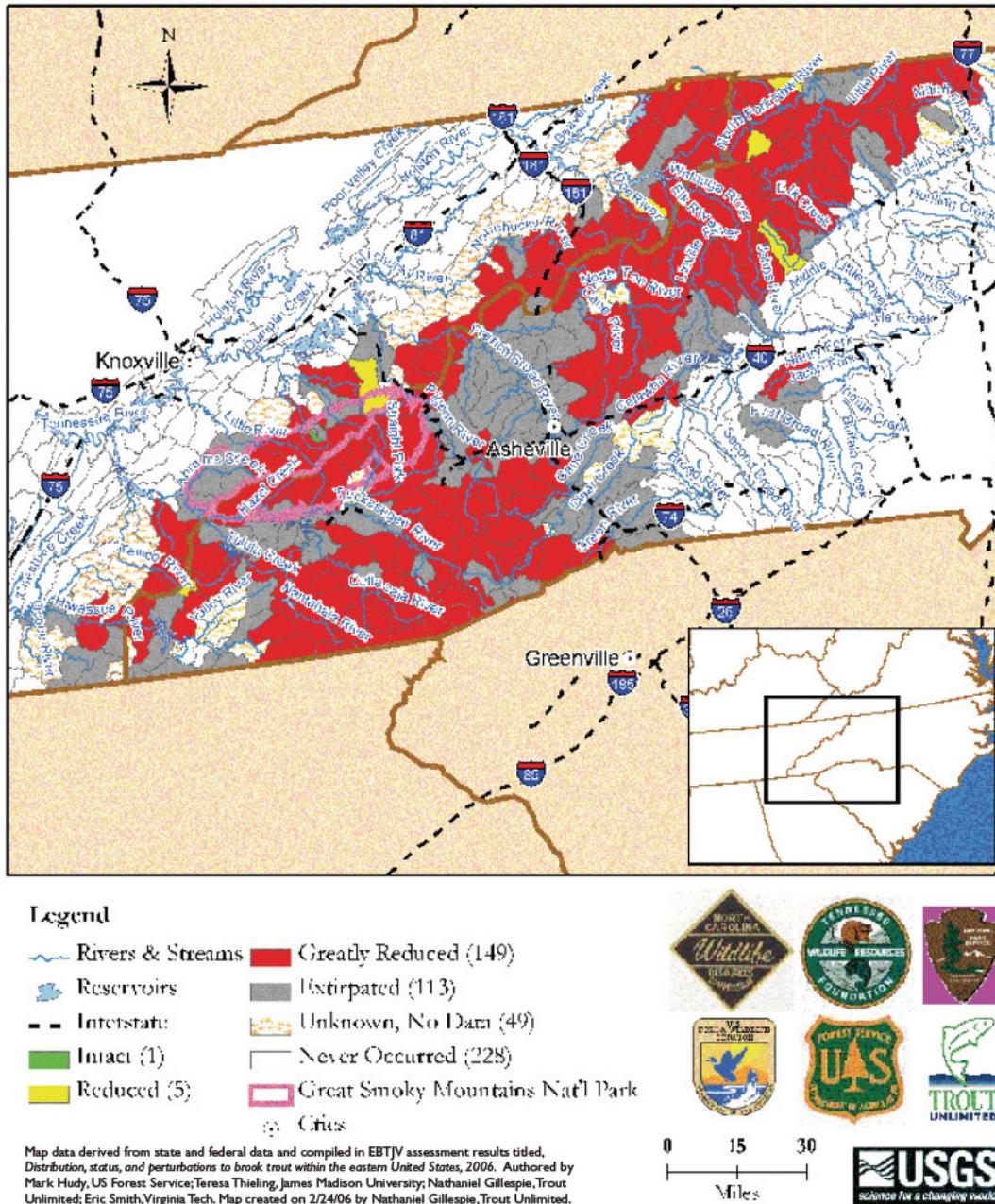


Figure 1. Population status map of Brook Trout in the Southern Appalachian region of Tennessee and North Carolina (Trout Unlimited 2006).

In addition to competition from non-native trout, urbanization and agriculture are major threats to the Brook Trout of Southern Appalachia. Urbanization is considered a disturbance in 41% of subwatersheds, whereas the poor land management practices of agriculture affect 37%

(Trout Unlimited 2006). Potential landowners are drawn to this area of North Carolina by the spectacular views and recreational opportunities, a fact which has led to increased development pressures and conflicts with wildlife. In spite of the population growth in this area of western North Carolina, agriculture still accounts for a major use of land, a use which also compromises wildlife. This area is home to beef and dairy cattle ranching (particularly harmful to riparian habitat), grain farming, tree farming, sheep and goat farming, and several other types of farming (National Agricultural 2002). Combined, agriculture and urbanization are responsible for the loss of much of the Brook Trout's suitable habitat.

Specifically, development and poor farming practices remove or destroy the vegetation alongside streambanks, which decreases the quality of the habitat for Brook Trout. The loss of vegetation allows more sunlight to reach the water, increasing the water's temperature. As explained by Corbett et al. (1978), the Brook Trout are very sensitive to changes in their environment. Higher temperatures lower the amount of oxygen available in the water, leading to reduced vigor, growth, and resistance to disease (Corbett et al. 1978). By varying the level of forest cutting, Swift and Messer (1971) found that the removal of vegetation can increase stream temperatures in the Appalachians to 73 degrees or higher. Because Brook Trout function best at a temperature of 68 degrees, the removal of trees and understory vegetation can lead to severe changes in individuals. For example, temperatures above 70 degrees have been known to affect Brook Trout's migration patterns, hatching, development, and metabolic rates (Corbett et al. 1978).

The removal of streamside vegetation also causes the sedimentation within the streams to increase. The removal of trees and understory growth destabilizes banks and increases rates of erosion (Poole and Berman 2001). The excess sediment caused by this process affects all stages

of Brook Trout life. The sediment fills in the spaces found between gravel (interstices), decreasing the flow of oxygen reaching fish embryos in the stream beds. In addition, excess sediment in the water column causes death in juvenile fish through the inflammation of their membranes and gills and affects adult fish by blocking light transmission necessary for primary productivity, which the Brook Trout's food sources depend on (Corbett et al. 1978).

To address the effects of urbanization and agriculture, the Southern Appalachian Biodiversity Project decided to focus their conservation efforts on preventing the degradation of riparian habitat on private lands. As expressed by Doug Besler, Coldwater Research Coordinator for the N.C. Wildlife Resources Commission's Division of Inland Fisheries, "vegetated stream buffers are the most effective way to protect stream habitat and water quality" (Besler 2007). Providing such buffers should in turn lead to increases in Brook Trout populations.

Public-private partnerships for Brook Trout

In order to encourage the protection of riparian habitat on private property, I researched federal and state programs that would remunerate landowners for preserving or improving streamside habitat. Two types of programs emerged that would meet these qualifications: conservation incentive programs and conservation easements. For our purposes, conservation incentive programs include cost-share programs offered or administered by the federal or state government, such as the Conservation Reserve Program (CRP), Environmental Quality Incentives Program (EQIP), Wildlife Habitat Incentive Program (WHIP), and the North Carolina Agriculture Cost Share Program (ACSP). Each of these programs offers to pay landowners a percentage of the costs incurred for preserving or restoring riparian habitat on their property. For example, the ACSP remunerates farmers up to 75% of the costs for creating a Best Management

Practice (BMP) on their property. Best Management Practices include structural or vegetative formations that prevent groundwater pollution and erosion, while also improving farm efficiency (North Carolina 1999). Examples include creating riparian forest buffers and filter strips, or installing stream bank protection and fences (used to keep livestock out of streams). Local Soil and Water Conservation Districts work with the landowner in designing the BMP and in developing a long-term conservation plan.

In addition to conservation incentive programs, landowners can preserve riparian habitat, in the interest of conserving Brook Trout, through conservation easements. Landowners can either sell or donate their property (or a portion of their property) to government agencies or local land trusts. The landowner still retains ownership of the property, but loses the right to develop the land. If ownership of the land changes, the new owners take on the responsibility for meeting the terms of the easement. One advantage of creating these easements is that the process lowers the overall value of the property, which in many cases provides at least some tax relief for the property owner (Poole 1993). In addition, if the land is donated with the purpose of creating an easement and the land donated provides some form of public benefit (protecting conservation resources), it may be considered a tax-deductible charitable donation (Conservation options 2006).

The Ecosystem Enhancement Program (EEP) and the Wetlands Reserve Program are both government administered programs that can be used to preserve riparian habitat through the use of conservation easements. EEP's official mission is to "restore and protect streams, wetlands, and riparian areas, including but not limited to those necessary for the restoration, maintenance and protection of water quality and riparian habitats throughout North Carolina" (North Carolina EEP 2007). With this program, landowners have the option of selling or

donating their property to be held by the State of North Carolina in a permanent conservation easement. If the property is sold, the landowner receives a fair market price for the conservation easement and if it is donated, the landowner receives tax benefits. These benefits can include federal estate tax deductions, federal income tax deductions, North Carolina income tax credits, and county tax reductions. As part of the Ecosystem Enhancement Program, the North Carolina Department of Environment, Health, and Natural Resources also implements stream, wetland, and riparian buffer restoration projects through voluntary agreements with private landowners (North Carolina EEP 2007).

The Wetlands Reserve Program is similar to the EEP in that it incorporates the use of conservation easements and restoration projects to protect and restore wetland habitat. Administered by the USDA Natural Resources Conservation Service, WRP allows landowners to create permanent or 30-year conservation easements, or enter into a restoration cost share agreement. Landowners receive a payment equal to an established payment cap, an amount offered, or the agricultural value of the land in response to creating a permanent conservation easement. The program will provide landowners with 75% of the chosen price if only a thirty-year easement is chosen (North Carolina DENR 1999).

Depending on the organization, land trusts can play two different roles in the creation of conservation easements. A land trust can hold land that has been donated by or bought from a private landowner. In most cases, the organization will then monitor the property to ensure that it is meeting the terms set in the agreement. A land trust can also act as a negotiator between private landowners and government agencies. Landowners can receive technical assistance from the organization as well as rely on the land trust to find a suitable land holder for their property (Endicott 1993). Within western North Carolina, there are many land trusts working with private

landowners to preserve land. Examples include the Southern Appalachian Highlands Conservancy, the Conservation Trust for North Carolina, and the Blue Ridge Rural Land Trust. Between these organizations, government programs such as EEP and WRP, and government conservation incentive programs, private landowners are provided with multiple opportunities to protect riparian habitat and conserve Brook Trout populations. Anytime a landowner becomes involved in either a conservation incentive program or a conservation easement, it is considered a public-private partnership.

Methods

Subject Selection

In order to build public-private partnerships that would benefit the Brook Trout, advertising efforts for the Brook Trout Summit were focused within the counties containing historic Brook Trout populations. These counties were identified by overlaying Brook Trout stream data from Southern Appalachia (courtesy of the North Carolina Wildlife Resources Commission) on to a map of North Carolina using ArcGIS (version 9.2, ESRI, Redlands, CA). Counties found to have historic Brook Trout populations include Alleghany, Ashe, Avery, Buncombe, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, McDowell, Mitchel, Polk, Swain, Transylvania, Watauga, and Yancey. Within each of these counties we hoped to attract private landowners and the conservation organizations they might partner with, including the Natural Resources Conservation Service (NRCS) and land trusts. In particular, we targeted farmers and developers owning land on or near Brook Trout streams in order to address the threats of agriculture and urbanization.

To advertise the Summit and personally invite NRCS agency staff and land trust employees, I made phone calls to each county NRCS office and to multiple land trusts working in our study area. Follow-up emails were then sent that included a newsletter article and flyer produced for the Summit, as well as a tentative agenda.

To notify private landowners of the event, all NRCS offices, multiple County Cooperative Extension offices, and several land trusts within our study area were asked to post our Brook Trout Summit flyer and to include our newsletter article in their own newsletters. SABP also ran a copy of this article in their publication, *Wild Mountain Times*, and ran an advertisement in the local paper prior to the Summit. In addition, approximately 200 invitations were mailed out to landowners who owned land on or near Brook Trout streams within our study area. Addresses were obtained through a variety of sources. NRCS offices, County Cooperative Extension offices, Farm Service Agencies, and land trusts were called and asked for lists of addresses of farmers, developers, and all private landowners living in areas near known Brook Trout streams. I was able to provide these organizations with stream names and therefore with locations of known Brook Trout areas in their counties. I also made several phone calls to development agencies in our study area to obtain their addresses.

In addition, personal contacts, including previous and current board members and members of SABP, provided me with addresses of farmers and developers in the area. Other addresses were derived from matching my GIS map of Brook Trout streams to county GIS tax maps, which embedded the mailing addresses of those owning parcels of land. Also, a large database of private landowners living near Brook Trout streams within Haywood County was produced through the gracious efforts of Eric Romaniszyn at the Haywood Waterways Association.

Summit Design

The main purpose of the Brook Trout Summit was to bring together all of the relevant stakeholders associated with the conservation of this species. As mentioned previously, the specific objectives of the Summit were to (1) attract private landowners, (2) increase participants' knowledge of conservation programs and partners and (3) encourage the formation of public-private partnerships. Our advertising campaign was designed to meet the first of these objectives, while the Summit's schedule of events was designed to satisfy the remaining objectives.

To increase participants' knowledge, the morning of the Summit was dedicated to presentations given by each of our co-sponsors: the North Carolina Wildlife Resources Commission, the Natural Resources Conservation Service, Trout Unlimited, the US Forest Service, the North Carolina Wildlife Federation, the North Carolina Teaming with Wildlife Coalition, and Equinox Environmental (an environmental consulting and design firm). For example, the Wildlife Resources Commission presented on the range, status, and ecology of the Brook Trout, while the Natural Resources Conservation Service spoke about the conservation incentive programs that private landowners could become involved in and how landowners could create conservation easements (see Appendix A for more details).

The afternoon of the event was dedicated to panel discussions, which were designed to encourage the formation of partnerships by allowing private landowners the opportunity to speak openly with organizations that they could partner with to conserve Brook Trout habitat. Specifically, one panel focused on conservation incentive programs, while a second panel discussed conservation easements (Appendix A). Members of appropriate organizations for each panel were present to answer questions. Following these discussions, the Summit concluded

with SABP presenting the idea of a certification program that would publicly recognize private landowners for participating in conservation incentive programs or creating conservation easements. SABP was particularly interested in learning whether participants felt a certification program would encourage participation in incentive programs or in creating easements.

In addition, each participant of the Brook Trout Summit received a folder of information upon registering for the event that contained pamphlets and information sheets on conservation incentive programs and easements. A packet of introductory information on each co-sponsor organization, a SABP newsletter, the Summit agenda, and the Summit survey were also included. Along with the presentations and panel discussions, this folder may have helped to increase participants' knowledge of conservation programs and partners and to encourage the formation of partnerships.

Survey Design

To discover if the Summit was successful in meeting its objectives, I developed a 19-question survey that was given to all Summit participants, in their informational folders, upon registering for the event. During the opening remarks of the Summit, participants were asked to leave their survey in the folder until the end of the day, when an announcement would be made to fill out the surveys. Then, as participants exited the Summit, I and other SABP staff members collected the surveys. In addition to the nineteen questions, each survey also contained consent and background information about the document and my project in accordance with Duke University's Institutional Review Board's criteria for research on human subjects. This information was added to the survey as a cover page (Appendix B).

To determine if the Summit had met its first objective, attracting private landowners, I designed the following question, which asks participants to characterize themselves. Responses to this question reveal the audience profile and specifically how many private landowners attended the event. This question was also designed to allow me to stratify the results from all other questions. For example, I would be able to see how farmers responded to each question versus how conservation agency employees answered the same questions.

- (1.) Which of the following describes you? (Please check all that apply.)
- private landowner
 - farmer
 - developer
 - business-owner
 - land trust employee
 - state conservation agency employee
 - non-profit conservation organization employee
 - private conservation organization employee
 - other, please list _____

In order to assess the Summit's ability to increase participants' knowledge of conservation partners and programs, Objective Two, I developed two questions based on a Likert-scale design. Both asked participants to rank their knowledge of each partner and program on a scale of one to five, one representing no knowledge and five representing a great deal of knowledge. The first asked survey respondents to rank their knowledge of each topic prior to the Summit (see below) and the second to rank their knowledge after attending the event (Appendix C, Question 6). By comparing before and after ratings of survey respondents' knowledge, I could determine whether Summit participants had gained knowledge by attending the event. Questions were also developed to see if the Summit had increased participants'

general knowledge of Brook Trout and more specifically what topics concerning this species they had learned more about (Appendix C, Questions 2-4).

(5.) Prior to attending this summit, how much did you know about the following? (Please circle the most appropriate number)					
	Not at All	A Little	Some- what	Much	A Great Deal
<u>Conservation Partners</u>					
Natural Resources Conservation Service	1	2	3	4	5
Land trusts	1	2	3	4	5
<u>Conservation Tools</u>					
Conservation Easements	1	2	3	4	5
Conservation incentive programs (in general)	1	2	3	4	5
Ecosystem Enhancement Program	1	2	3	4	5
Conservation Reserve Program	1	2	3	4	5
Environmental Quality Incentive Program	1	2	3	4	5
Wildlife Habitat Incentive Program	1	2	3	4	5
Agriculture Cost Share Program	1	2	3	4	5

Likert-scale questions were also used to determine if the Summit had met its third objective, encouraging the formation of public-private partnerships. Survey respondents were asked to rank how likely they were to participate in a conservation incentive program (see below) and how likely they were to create a conservation easement, after attending the Summit (Appendix C, Question 12). Participants were also asked if they had previously participated in conservation incentive programs or created conservation easements (Appendix C, Questions 7 and 11). In addition, any participant who indicated that he/she was not at all likely to participate in a conservation incentive program or create an easement was asked to state the reason for not doing so (Appendix C, Questions 10 and 13).

(8.) How much more likely are you to participate in a conservation incentive program since attending the summit?

Not at all Not very likely Somewhat Likely Very Likely I definitely will

Along with designing questions to assess the Summit's ability to meet its objectives, I also developed questions concerning the Brook Trout Certification Program and participants' general feelings about the Summit. Two questions were dedicated to determining if public recognition, from a certification program, would function as an incentive, encouraging Summit participants to create conservation easements or become involved with conservation incentive programs (Appendix C, Questions 14 and 15). Both of these were designed using the same Likert scale as can be seen above.

Questions asking for survey respondents' general feelings were open-ended. Participants were asked what parts of the Summit were the least and most useful to them as well as what changes they would make if there were to be a second Brook Trout Summit (Appendix C, Questions 16, 17, and 19). Responses to these questions were used to determine what the participants felt was missing from the Summit and what was important to keep if there were to be a second summit. In addition, participants were asked how they found out about the event in order to inform SABP of which advertising techniques worked best (Appendix C, Question 18).

Survey Analysis

Responses to all survey questions were tallied and percentages for each response were calculated based on the total number of people answering each question. Open ended questions were treated in the same manner, but individual responses were first grouped into categories. For example, the majority of comments received from Question 16 (*What part of the summit was most useful to you?*) could easily be grouped into nine separate categories (Appendix D, Question 16). The percentage of comments that fell into each category was then calculated based on the number of people answering the question. In addition, those responses not easily fitting into any category were grouped as *Other* and a percentage for this category was also calculated.

Questions 5 and 6 received further analysis. These two questions were used to assess how successful the Summit was in increasing participants' knowledge of conservation partners and tools. Question 5 asked survey respondents to rate their baseline knowledge of these partners and tools prior to attending the Summit, while Question 6 asked respondents to rate their knowledge after attending the event. In addition to calculating the above mentioned percentages for each question, I also calculated the difference between each participant's response to Question 6 and Question 5. I then considered each particular conservation partner and tool and tallied the number of participants who did not increase their knowledge of each at all, or who increased their knowledge by one, two, three, or four levels. The percentage of respondents that had increased their knowledge by at least one level was then calculated for each conservation partner and tool. Any participants that had rated their knowledge of a topic, prior to attending the Summit, as a five (*A great deal*) were removed from the population before calculating these

percentages, since it would not be possible for them to indicate an increase in knowledge on the survey.

The next step in the analysis of Questions 5 and 6 was to calculate the average score for each conservation partner and each conservation tool. These calculations show how much the survey respondents, as a group, increased their knowledge of conservation partners and tools due to their participation in the Summit. Averages were considered a valid representation of the population since no bimodal distributions were found for any conservation partners or tools (Appendix D, Questions 5 and 6). In addition, I performed a Chi-square test for variance using the responses from Questions 5 and 6 in order to determine if the change in knowledge from before the Summit to after the event was statistically significant for each topic. These results, in combination with the mean score and percentages calculated for each topic, would provide me with a more conclusive answer of whether the Summit increased participants' knowledge, than any of these calculations would alone.

Results

Attracting Private Landowners

On the day of the Brook Trout Summit, 56 people registered as participants, while an estimated 10 more people attended without registering. Of those in attendance, 47 participants completed the Brook Trout Summit Survey, which is approximately a 78% response rate. Sixteen different professions were represented by the 45 people answering the first (self-identification) question, indicating a fairly diverse audience (Figure 2). Out of these 45, 13 people recorded themselves as private landowners, while three participants characterized themselves as farmers and two as developers. The category *Other* received the most marks with

17 participants, some of whom described themselves as consultant, federal conservation agency employee, private mitigation banking firm employee, US Army Corp of Engineers employee, and university employee (remaining descriptions can be found in Appendix D, Question 1). In addition to determining if the Summit met its first objective, attracting private landowners, results from Question 1 were also to be used to stratify the results for each remaining question. However, the majority of participants marked more than one category, which prevented this additional analysis from being completed. One participant, for example, indicated that he was both a private landowner and a state conservation agency employee.

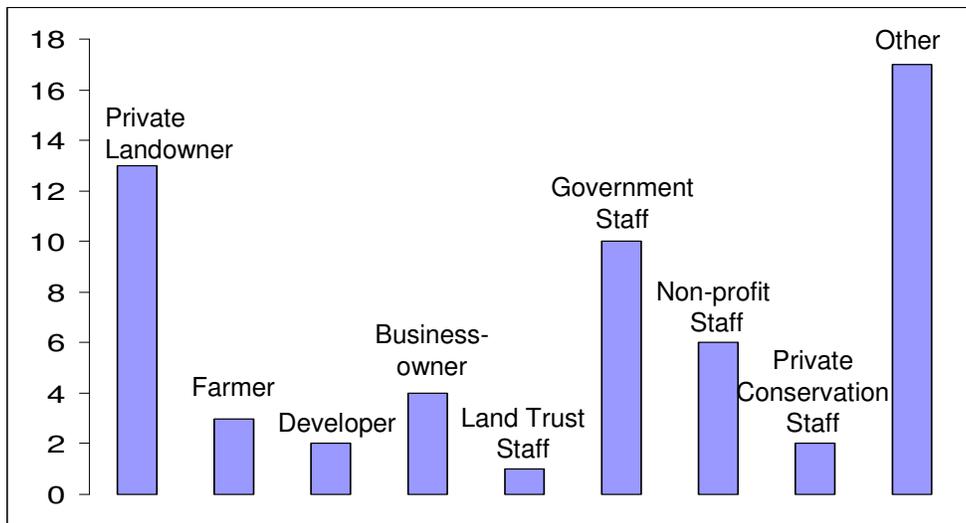


Figure 2. Audience profile of the Brook Trout Summit.

Increasing Participants' Knowledge

Results from Questions 2 through 6 were used to determine if participants' knowledge had increased due to their attendance of the Summit. Specifically, the results from Questions 2 through 4 related to survey respondents' knowledge of Brook Trout, while the results from Questions 5 and 6 expressed participants' knowledge of conservation tools, such as conservation

easements, and conservation partners. For reference, the five-step Likert scale used in the majority of these questions worked as follows: one represented *Not at All*, two represented *A little*, three represented *Somewhat*, four represented *Much*, and five represented *A great deal*.

In response to Question 2, *How much did you know about Brook Trout prior to the summit*, 76% of the participants indicated that they knew at least *Somewhat* about Brook Trout prior to the event, meaning that they had marked a three or above on the five-step Likert scale (Appendix D). When asked how much the Summit had increased their knowledge of Brook Trout, Question 3, 81% of the respondents indicated that the Summit had increased their knowledge by at least *Somewhat*, with 37% stating that it had increased their knowledge by *Much* (Appendix D, Question 3). Participants indicating that the Summit had increased their knowledge of Brook Trout were then asked in Question 4 what specifically they had learned more about. Over 50% of the respondents had learned more about the status of, threats to, and habitat requirements of Brook Trout (Appendix D, Question 4).

Results from Questions 5 and 6 were analyzed to see if the Summit had met Objective Two, increasing participants' knowledge of conservation partners and tools. The average score, representing participants' average knowledge level for every partner and tool, increased after participants had attended the Summit (Table 1). Further analysis of Questions 5 and 6 showed that the majority of participants, due to their attendance of the event, had increased their knowledge of six out of the nine partners and tools listed (Table 1). The lower percentages for Land Trusts, Conservation Easements, and the Ecosystem Enhancement Program can be attributed to participants' knowing more about these topics, prior to the Summit, than the others listed. As denoted in Table 1, the average knowledge scores for Land Trust, Conservation Easements, and the EEP were higher than for any other topic, excepting the Natural Resources

Conservation Service. In addition, according to a Chi-square test for variance, scores from before the Summit for six out of the seven conservation tools proved to be statistically significantly different from scores after the Summit (Table 1).

Table 1. Results from analysis of survey Questions 5 and 6.

Knowledge Categories	Average Knowledge Prior to Summit (Survey Question 5)	Average Knowledge Post Summit (Survey Question 6)	Percentage of People Gaining Knowledge from Summit
<i>Conservation Partners</i>			
Natural Resources Conservation Service	3.3	3.9	56
Land Trusts	3.2	3.6	37
<i>Conservation Tools</i>			
Conservation Easements	3.5	3.9	46
Conservation incentive programs (in general)*	3.0	3.7	67
Ecosystem Enhancement Program *	3.2	3.8	46
Conservation Reserve Program*	2.7	3.5	68
Environmental Quality Incentive Program*	2.8	3.5	64
Wildlife Habitat Incentive Program*	2.8	3.5	64
Agriculture Cost Share Program*	2.7	3.4	59

*Topics that proved to have statistically significant differences between before and after scores ($p \leq 0.05$).

Encouraging the Formation of Partnerships

Prior to the Summit, only eight out of the 47 respondents had participated in conservation incentive programs. Of these eight, five mentioned having participated in a professional capacity (Appendix D, Question 7). The remaining three people that had participated in conservation incentive programs did not mention working with these programs on a professional level and

were therefore assumed to have personal experience with the programs as private landowners. One person had worked with farm water systems and riparian protections, another with the EEP and the WHIP, and a third with the EEP, the Clean Water Management Trust Fund, and conservation easements.

Results from Question 8 were then used to determine if by attending the Summit, participants were now more likely to engage in conservation incentive programs and therefore if the Summit had met its third objective of encouraging the formation of partnerships. Approximately 43% of the respondents indicated that they would be *Somewhat likely* to participate in a conservation incentive program since attending the Summit and 23% stated that they would be *Very likely* to participate. In addition, 9%, or four people, said they would definitely participate in these programs (see Appendix D, Question 8 for complete results). However, of these four, one commented that he would participate “as a partner” and another commented that his interest in participating was “no more than prior to the summit.”

For those that stated that they were *Not very likely*, *Somewhat Likely*, *Very Likely*, or that said *I definitely will* in response to Question 8, the survey then asked which programs in particular they would be most likely to participate in. The Conservation Reserve Program, the Ecosystem Enhancement Program, and the Environmental Quality Incentive Program were the most popular programs, receiving 18 (45%), 23 (58%), and 25 (63%) of the responses respectively (see Appendix D, Question 9, for complete results). For those that said they were *Not at all* likely to participate in conservation incentive programs after attending the Summit, the survey then asked their reason for not participating. Only 12 people responded to this question and ten of these gave “I do not own land that would qualify for these programs” as their reason. The remaining two people stated “referral capacity for clients” and “ability to control

management within the conservation area” as their reasons for not participating (Appendix D, 10).

The results from Question 12, which also addressed the Summit’s third objective, showed how much more likely participants were to create conservation easements after attending the Summit. Prior to the event only three people had created easements on their property and one of these commented that he/she had participated in an advisory capacity (Appendix D, Question 11). After attending the event, the majority of survey respondents’ indicated that they were at least *Somewhat likely* to create a conservation easement. Approximately 24% said they were *Very likely* and 7% (corresponding to three participants) stated that they definitely would create a conservation easement (Appendix D, Question 12). For those responding that they were *Not at all* likely to create a conservation easement on their property after attending the Summit, the survey then asked their reason. Of the 17 people responding to this question, 14 gave “don’t own enough land” as the reason and the remaining three wrote “n/a” (Appendix D, Question 13).

Public Recognition as an Incentive

In addition to assessing the Summit’s ability to meet its objectives, the survey was also used to determine if a certification program based on public recognition would encourage the formation of partnerships. Participants were asked how much more likely they would be to get involved with conservation incentive programs if they were publicly recognized for doing so (Appendix C, Question 14). Using the same five-step Likert scale as in previous questions, approximately 63% of the survey respondents said they were at least *Somewhat likely* to participate in a conservation incentive program if publicly recognized. Approximately 24% stated that they were *Very likely* to participate if recognized and 10% said they definitely would

participate if recognized, which corresponds to four people (Appendix D, Question 14). Survey respondents were also asked how much more likely they would be to create conservation easements on their property if they were publicly recognized. In response, four people stated that they definitely would create easements if recognized, while 20% said they would be *Very likely* to and 27% said they would be *Somewhat likely* to do so.

Open-ended Questions

To get an overall idea of participants' general feelings about the Summit, the survey included questions such as *Which parts of the Summit were the most and least useful to you?* and *What changes would you suggest if we were to have a second Brook Trout Summit?* Of all the responses, the two parts of the event that were mentioned the most often as being the most useful were networking and the presentation on Brook Trout (Appendix D, Question 16). The responses for which part of the Summit was least useful were spread fairly evenly across 11 categories, except for one category earning nine responses (all comments noted in Appendix D, Question 17). This category was *All was useful*, suggesting that these nine participants did not find any part of the Summit to be least useful.

For the question, *What changes would you make to this event?*, participants' responses fell into six different categories, including *No changes needed*, *Need more time*, *Need more people*, *More trout info*, *Changes to breakout sessions*, and *Other* (all comments can be found in Appendix D, Question 19). The category *More trout info* received the most responses, while the category *Need more people* included responses that were pertinent to the Summit objectives. Responses indicated that we needed to have more landowners, developers, and "interested parties" in attendance. In addition, the responses in the category *Changes to breakout sessions*

informed us that if there is to be a second Brook Trout Summit, participants should be able to attend both breakout sessions, which was not possible at this event since both occurred at the same time.

Additionally, the Southern Appalachian Biodiversity Project was interested in how participants had found out about the Summit, so a question to this effect was added to the survey. The results revealed that almost half of those responding found out about the Summit from a colleague. Other popular methods included emails and personal invitations from SABP (Appendix D, Question 18).

At the end of the survey, participants were provided with a space for noting any additional comments. Seventy-seven percent of the comments written were thank-yous and compliments. Other pertinent comments included the following:

“I had to leave early, so this may be covered: but I would encourage follow-up so all these great thoughts/ideas are not lost, keep the momentum going.”

“would have liked to see more landowners---I know there was an ad in the Asheville paper, but maybe a more aggressive pre-summit outreach method would result in a better cross-sectional audience... :)”

“While I understand using BKT is the key species for the meeting, one needs to realize that coldwater habitat is what needs to be addressed.”

Discussion

The purpose of this research was to determine if the Brook Trout Summit had met its three objectives: (1) to attract private landowners, (2) to increase participants’ knowledge of the programs and partners that they can become involved with to conserve Brook Trout habitat, and (3) to encourage the formation of public-private partnerships. Results suggest that the Summit

was successful in meeting Objectives Two and Three. In addition, several beneficial outcomes emerged that were not explicitly planned for this event.

In order for private landowners to join in public-private partnerships, they must first be aware that these opportunities exist and understand the benefits of getting involved. As evidenced by participants' mean knowledge scores, which increased for all conservation partners and tools after survey respondents had attended the Summit, participants did learn about the conservation programs and partners that they could join to protect Brook Trout habitat. This conclusion is further supported by the survey results showing that the majority of participants increased their knowledge of most of the conservation partners and tools presented throughout the event. These results suggest that informational presentations followed by panel discussions, which allowed participants to ask questions, were an effective means of increasing participants' knowledge of the conservation programs and partners available to them.

Along with increasing participant knowledge, the Summit was also designed to encourage private landowners to engage in public-private partnerships, by providing them with the opportunity to speak with the agencies that they would partner with to protect riparian habitat. According to the survey results, three participants stated that they would definitely participate in conservation incentive programs, while three survey respondents said that they would definitely create conservation easements on their property. Therefore, six participants, including developers, conservation non-profit staff, and state conservation agency employees, indicated that they would join in public-private partnerships as a result of attending the Summit. Although six is not a particularly large number, the formation of any partnerships was a very exciting result for this size of event and for an organization such as the Southern Appalachian Biodiversity Project, which previously had no experience with conservation on private lands.

In contrast to increasing participants' knowledge and encouraging the formation of partnerships, the Brook Trout Summit was not very effective at attracting private landowners. Only 29% of the survey respondents indicated that they were private landowners. Of the 13 participants included in this group, only three characterized themselves as farmers and two as developers; there simply were not enough landowners present to have a significant effect on Brook Trout populations. This deficiency of landowners was noted by several participants in their survey responses. One person stated that we “[m]ust find a way to attract more landowners,” while another participant mentioned that we should “try to get a few more developers.” In order to protect enough riparian habitat to improve Brook Trout populations, we need to encourage more landowners to participate in conservation incentive programs and to create conservation easements.

In addition to the results the Summit was designed to produce, the event also provided opportunities for networking and initiated an on-going discussion group dedicated to developing a Brook Trout certification program. Networking was listed, by survey respondents, as the second most useful part of the Summit. It affords different organizations the opportunity to share information and to find solutions to common problems. For example, during the event, an employee of a national non-profit organization informed me that the Summit was the first time that he had spoken with several of his regional offices. In doing so, they had found ways to collaborate on conservation efforts for the Brook Trout.

As a conclusion to the Summit, SABP introduced the idea of a certification program that would publicly recognize any landowner who improved or protected riparian habitat by engaging in conservation incentive programs or creating conservation easements. Participants expressed great interest in the program and nine people in particular championed the idea by creating a

working group to develop the certification program. At the time of this project's completion, the working group had held one meeting via conference call and had begun working out the details of an accreditation process for certifying landowners as "Brook Trout friendly." More than half of the survey respondents indicated that they would be at least somewhat more likely to participate in conservation incentive programs or create conservation easements if publicly recognized for doing so. Therefore, a Brook Trout certification program would likely prove an effective means of engaging private landowners in public-private partnerships.

In summary, the Brook Trout Summit increased participants' knowledge of conservation programs and partners and it encouraged the formation of public-private partnerships. It also initiated the Brook Trout Certification Program working group and provided a venue for networking, which may lead to future Brook Trout conservation endeavors. However, the impact of the Summit's success will be limited by the low number of private landowners attending the event. The improvement of Brook Trout populations in Southern Appalachia will depend upon the cooperation and involvement of private landowners. Regardless, the Brook Trout Summit was an important first step in building public-private partnerships to conserve Brook Trout habitat. Its efforts will not only affect Brook Trout populations, but also the health of the stream ecosystem in which they live. By improving and preserving riparian habitat, these partnerships have the ability to enhance water quality and provide suitable habitat for a diversity of organisms.

Conclusions

In order to continue the progress of the first Brook Trout Summit, a second summit of similar design should be held. As evidenced by this study, the Brook Trout Summit was able to increase participants' knowledge and build public-private partnerships that should result in the improvement and protection of Brook Trout habitat. Therefore, if more people, and in particular more private landowners, were to attend a second Brook Trout Summit, we would expect to see an increase in the number of public-private partnerships formed. For this second summit to be effective, it would be essential to adopt a more aggressive advertising strategy aimed at private landowners. Specifically, placing advertisements in local newspapers within each county bounded by our study area and running a spot on local public radio and television would help to reach a larger audience. The completion of a Brook Trout certification program would also aid in attracting landowners. As previously stated, participants of the first Brook Trout Summit expressed great interest in the program and many indicated a willingness to use the program if it became available. In addition, the networking that occurred during the first Summit between SABP and conservation organizations and between SABP and private landowners could prove beneficial to advertising the summit via word of mouth.

In addition to altering their advertising strategy, SABP could also improve the design of the Summit by incorporating comments from the survey. Several responses indicated that participants would have liked to receive more information concerning the Brook Trout. Specifically, these participants wanted to know about the habitat needs of the fish and the riparian community as a whole, and were interested in hearing case studies of Brook Trout conservation and restoration. These responses demonstrate the need for a future summit to provide the necessary background to explain both the need for the desired partnerships and how

participants' efforts would coincide with current projects in the field. It is important for participants to understand how their involvement would contribute to the conservation of a species.

In addition, survey respondents indicated that breakout sessions needed more focus and more structure. Our sessions were designed to provide participants with the opportunity to ask questions and interact with agency staff. However, discussion occasionally strayed from its originally intended purpose. While it is important to provide time for discussion between possible partners, summit planners must also be sure to keep the dialogue centered on the event's purpose. Other design concerns brought to our attention included time restraints on presentations and limits on the number of sessions each participant could attend. Several survey responses indicated that participants would have liked to attend both breakout sessions.

By incorporating these design changes and improving the advertising strategy, the Summit format could be an effective model for involving private landowners in Brook Trout conservation throughout its range along the eastern seaboard. In particular, this model could be incorporated into the Eastern Brook Trout Joint Venture's current conservation strategy. This group consists of conservation organizations, academia, businesses, private citizens, and government agencies all dedicated to enhancing aquatic habitat for the Brook Trout. One of their principal goals is to "[e]ncourage partnerships among management agencies and stakeholders to seek solutions to regional environmental ... threats," which the Brook Trout Summit has proven successful at doing (Conservation Strategy 2007). On a broader scale, this research suggests that a summit, as designed here, that incorporates an aggressive advertising strategy, could be a useful tool to engage private citizens in any conservation effort. By bringing a diversity of stakeholders together, providing adequate information, and allowing participants the opportunity

to discuss solutions, a summit is an effective means of building public-private partnerships in any arena.

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Appendix A: Summit Agenda

Brook Trout Summit October 23, 2007

8:45 Check-in

9:15 Welcome

9:20 Presentation on Brook Trout

by the North Carolina Wildlife Resources Commission

Population status, threats, and how the private sector can help

9:50 Co-Sponsor Presentations

Natural Resources Conservation Service

Conservation Incentive Programs and Conservation Easements

North Carolina Wildlife Federation and Teaming with Wildlife Coalition

Wildlife Action Plans and how private landowners can get involved

US Forest Service

Restoration of Brook Trout populations on public lands and the importance of private land protection

Trout Unlimited

Habitat restoration and how private landowners can contribute

10:55 Break

11:15 Equinox Environmental Presentation

Designing developments to conserve natural resources

11:45 Lunch (complimentary)

1:00-2:00 Panel A – Incentive Programs

(for farmers and small landowners)

Will include explanations of landowner incentive programs/options available for protecting trout habitat, a brief account of one farmer's experiences with the conservation reserve program, and ample time for discussion

1:00-2:00 Panel B – Conservation Easements

(for developers and businesses)

Will include a presentation on conservation easements by local land trust/options available for trout habitat protection, a brief account of one developer's experiences with easements, and ample time for discussion

2:10-2:30 Recounts of Break-Out Sessions

2:30-2:45 Presentation and discussion on Brook Trout Certification Program

Appendix B: Survey Consent Form and Cover Page

Brook Trout Summit Survey

Please do not fill out until the end of the day when an announcement has been made.

The following survey contains several questions asking you about your knowledge of conservation incentive programs, conservation easements, and the agencies that supervise these programs, as well as your feelings towards participating in these programs. Participation in this survey is completely voluntary and will take approximately 5 minutes to complete.

The survey does not ask for your name. Your answers to this survey cannot and will not in any way be used to identify you. If you choose to participate, you can skip questions or stop at any time.

The surveys will be used to determine if the Brook Trout Summit was successful in increasing your knowledge of the incentive programs, easements, and agencies and if it was able to encourage landowner participation in these programs. As a graduate student in the Nicholas School of the Environment at Duke University, I will analyze the results of this study to inform my Master's Project, "Conserving brook trout in Southern Appalachia: A case study in building public-private partnerships." Survey results will be included in my final report, which will be delivered to the Southern Appalachian Biodiversity Project to inform their work, presented to the general public and Nicholas school faculty and students, and kept on file at the Nicholas School. If you have any questions regarding this survey or my research, please feel free to contact me at joanna.bounds@duke.edu.

Appendix C: Brook Trout Summit Survey

1.) Which of the following describes you? (Please check all that apply.)

- private landowner
- farmer
- developer
- business-owner
- land trust employee
- state conservation agency employee
- non-profit conservation organization employee
- private conservation organization employee
- other, please list _____

2.) How much did you know about Brook Trout prior to the Summit?
(Please check under the most appropriate number)

- | Not at all | A little | Somewhat | Much | A great deal |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 | 4 | 5 |
| <input type="checkbox"/> |

3.) How much has this summit increased your knowledge of Brook Trout?
(Please check under the most appropriate number)

- | Not at all | A little | Somewhat | Much | A great deal |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 | 4 | 5 |
| <input type="checkbox"/> |

4.) If you checked number 2, 3, 4, or 5 for question 3, what specifically have you learned more about? (Please check all that apply)

- status of North Carolina Brook Trout populations
- threats facing the Brook Trout
- habitat requirements of the Brook Trout
- other, please specify _____

5.) **Prior to attending** this summit, how much did you know about the following?
(Please circle the most appropriate number)

	Not at All	A Little	Some-what	Much	A Great Deal
<u>Conservation Partners</u>					
Natural Resources Conservation Service	1	2	3	4	5
Land trusts	1	2	3	4	5
<u>Conservation Tools</u>					
Conservation Easements	1	2	3	4	5
Conservation incentive programs (in general)	1	2	3	4	5

Ecosystem Enhancement Program	1	2	3	4	5
Conservation Reserve Program	1	2	3	4	5
Environmental Quality Incentive Program	1	2	3	4	5
Wildlife Habitat Incentive Program	1	2	3	4	5
Agriculture Cost Share Program	1	2	3	4	5

6.) **After attending** this summit, how much do you now know about the following?
(Please circle the most appropriate number)

	Not at All	A Little	Some-what	Much	A Great Deal
<u>Conservation Partners</u>					
Natural Resources Conservation Service	1	2	3	4	5
Land trusts	1	2	3	4	5
<u>Conservation Tools</u>					
Conservation Easements	1	2	3	4	5
Conservation incentive programs (in general)	1	2	3	4	5
Ecosystem Enhancement Program	1	2	3	4	5
Conservation Reserve Program	1	2	3	4	5
Environmental Quality Incentive Program	1	2	3	4	5
Wildlife Habitat Incentive Program	1	2	3	4	5
Agriculture Cost Share Program	1	2	3	4	5

7.) Have you previously participated in any conservation incentive programs, such as the Conservation Reserve Program? If yes, please list which program(s).

____ Yes _____

____ No

8.) How much more likely are you to participate in a conservation incentive program since attending the summit? (Please check under the most appropriate number)

Not at all	Not very likely	Somewhat Likely	Very Likely	I definitely will
1	2	3	4	5
_____	_____	_____	_____	_____

9.) If you checked 2, 3, 4, or 5 for question 8, which programs would you be most likely to participate in?

- conservation reserve program
- ecosystem enhancement program
- environmental quality incentive program
- wildlife habitat incentive program
- agriculture cost share program
- other, please list _____
- not sure

10.) If you checked 1 for number 8, what would be your reason for not participating in a conservation incentive program?

11.) Have you previously created a conservation easement on your property?

Yes No

12.) How much more likely are you to create a conservation easement on your property, now that you have attended this summit? (Please check under the most appropriate number)

Not at all	Not very likely	Somewhat Likely	Very Likely	I definitely will
1	2	3	4	5
_____	_____	_____	_____	_____

13.) If you checked 1 for number 12, what would be your reason for not creating a conservation easement on your property?

14.) How much more likely would you be to participate in a **conservation incentive program** if you were publicly recognized for doing so?

Not at all	Not very likely	Somewhat Likely	Very Likely	I definitely will
1	2	3	4	5
_____	_____	_____	_____	_____

15.) How much more likely would you be to create a **conservation easement** on your property if you were publicly recognized for doing so?

Not at all	Not very likely	Somewhat Likely	Very Likely	I definitely will
1	2	3	4	5
_____	_____	_____	_____	_____

16.) What part of the summit was most useful to you?

17.) What part of the summit was the least useful to you?

18.) How did you find out about the summit?

19.) If we were to have another similar summit, what changes would you suggest?

Additional comments:

Appendix D: Survey Results

Question One

Which of the following describes you?

Total number answering question: 45		
Choice	Number of responses	Percentage of responses
private landowner	13	29
farmer	3	7
developer	2	4
business-owner	4	9
land trust employee	1	2
state conservation agency employee	10	22
non-profit conservation organization employee	6	13
private conservation organization employee	2	4
other*	17	38

* Responses include: consultant, Engineering Consultant, Engineering Firm that conducts stream restoration and est. easements, environmental consultant, Federal Conservation Agency, interested citizen, Land of Sky Regional Council of Governments, member of non profit conservation organization, non-profit conservation volunteer, non-profit conservation volunteer LOS-TU, private mitigation banking firm, regulatory agency-US Army Corps of Engineers, State Regulatory Agency, University, Federal, Federal regulatory employee, county conservation agency employee

Question Two

How much did you know about Brook Trout prior to the Summit?

1=Not at all 2 = A little 3=Somewhat 4=Much 5=A great deal

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	1	2
2	10	22
3	14	30
4	9	20
5	12	26

Question Three

How much has this summit increased your knowledge of Brook Trout?

1=Not at all 2 = A little 3=Somewhat 4=Much 5=A great deal

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	3	7
2	6	13
3	15	33
4	17	37
5	5	11

Question Four

If you checked number 2, 3, 4, or 5 for question 3, what specifically have you learned more about?

Total number answering: 43		
Choice	Number of responses	Percentage of responses
Status	34	79
Threats	21	49
Habitat requirements	19	44
Other*	13	30

*Responses include: % ages of remaining Brook Trout populations in WNC, Easement Issues, How Brook Trout are viewed by developers, ideas pertaining to brook trout accreditation program, recent research efforts by the state WRC, some things about CRP & easements, life cycle, strains, etc., brook trout pops. In relation to other trout populations, management strategies, concepts i.e. future action plans, increasing habitat, Link between hemlock woody adelgid & brook trout populations

Question Five

Prior to attending this summit, how much did you know about the following?
1=Not at all 2 = A little 3=Somewhat 4=Much 5=A great deal

Natural Resources Conservation Service

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	6	13
2	8	17
3	9	20
4	11	24
5	12	26

Land Trusts

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	5	11
2	6	13
3	14	30
4	16	35
5	5	11

Conservation Easements

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	3	7
2	5	11
3	15	33
4	13	28
5	10	22

Conservation incentive programs (in general)

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	6	13
2	10	22
3	15	33
4	9	20
5	6	13

Ecosystem Enhancement Program

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	7	15
2	9	20
3	10	22
4	7	15
5	13	28

Conservation Reserve Program

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	10	22
2	13	28
3	9	20
4	7	15
5	7	15

Environmental Quality Incentive Program

Total number answering question: 45		
Choice	Number of responses	Percentage of responses
1	11	24
2	8	18
3	11	24
4	9	20
5	6	13

Wildlife Habitat Incentive Program

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	8	17
2	14	30
3	11	24
4	6	13
5	7	15

Agriculture Cost Share Program

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	10	22
2	12	26
3	10	22
4	9	20
5	5	11

Question Six

After attending this summit, how much do you now know about the following?
1=Not at all 2 = A little 3=Somewhat 4=Much 5=A great deal

Natural Resources Conservation Service

Total number answering question: 47		
Choice	Number of responses	Percentage of responses
1	1	2
2	3	6
3	11	23
4	19	40
5	13	28

Land trusts

Total number answering question: 47		
Choice	Number of responses	Percentage of responses
1	1	2
2	2	4
3	19	40
4	18	38
5	7	15

Conservation Easements

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	0	0
2	0	0
3	15	33
4	19	41
5	12	26

Conservation incentive programs (in general)

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	0	0
2	5	11
3	14	30
4	17	37
5	10	22

Ecosystem Enhancement Program

Total number answering question: 47		
Choice	Number of responses	Percentage of responses
1	1	2
2	3	6
3	13	28
4	17	36
5	13	28

Conservation Reserve Program

Total number answering question: 45		
Choice	Number of responses	Percentage of responses
1	1	2
2	7	16
3	12	27
4	17	38
5	8	18

Environmental Quality Incentive Program

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	0	0
2	9	20
3	12	26
4	17	37
5	8	17

Wildlife Habitat Incentive Program

Total number answering question: 47		
Choice	Number of responses	Percentage of responses
1	0	0
2	9	19
3	14	30
4	15	32
5	9	19

Agriculture Cost Share Program

Total number answering question: 47		
Choice	Number of responses	Percentage of responses
1	2	4
2	7	15
3	17	36
4	13	28
5	8	17

Question Seven

Have you previously participated in any conservation incentive programs, such as the Conservation Reserve Program? If yes, please list which program(s).

Total number answering question: 47		
Choice	Number of responses	Percentage of responses
Yes*	8	17
No	39	83

*Programs participated in include: WHIP/EQIP (not as a land owner, but as NGO staff), EEP/CWMTF/Conservation Easements, EEP/WHIP, EQIP/WHIP/CREP/CRP/FRP (as a partner to landowner), Farm Water Systems/Riparian protections, 3rd party to CRP, Management, I am a former employee of the NCWRC and have worked with the NRCS and landowners to incorporate WHIP moneys into a stream restoration project. I presently do work for EEP as a client

Question Eight

How much more likely are you to participate in a conservation incentive program since attending the summit?

1=Not at all 2=Not very likely 3=Somewhat Likely 4=Very Likely 5=Definitely will

Total number answering question: 47		
Choice	Number of responses	Percentage of responses
1	3	6
2	3	6
3	20	43
4	11	23
5*	4	9
n/a	6	13

*comments included: *as partner and but no more than prior to the summit*

Question Nine

If you checked 2, 3, 4, or 5 for question 8, which programs would you be most likely to participate in?

Total number answering question: 40		
Choice	Number of responses	Percentage of responses
CRP	18	45
EEP	23	58
EQIP	8	20
WHIP	25	63
ACSP	8	20
not sure	5	13
n/a	3	8
Other*	4	10

*Responses include: local land trusts/conservation easements, conservation easements, any that can benefit landowners we work with, any that our organizations local members become interested in

Question Ten

If you checked 1 for number 8, what would be your reason for not participating in a conservation incentive program?

Total number answering question: 12		
Category	Number of responses	Percentage of responses
Do not own eligible land	10	83
Other*	2	15

*Responses include: *referral capacity for clients and ability to control management within the conservation area*

Question Eleven

Have you previously created a conservation easement on your property?

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
Yes	3	7
No	40	87
n/a	3	7

Question Twelve

How much more likely are you to create a conservation easement on your property, now that you have attended this summit?

1=Not at all 2=Not very likely 3=Somewhat Likely 4=Very Likely 5=Definitely will

Total number answering question: 46		
Choice	Number of responses	Percentage of responses
1	8	17
2	9	20
3	11	24
4	11	24
5	3	7
n/a	4	9

Question Thirteen

If you checked 1 for number 12, what would be your reason for not creating a conservation easement on your property?

Total number answering question: 17		
Category	Number of responses	Percentage of responses
Don't own land	5	29
Don't own enough land	9	53
n/a	3	18

Question Fourteen

How much more likely would you be to participate in a **conservation incentive program** if you were publicly recognized for doing so?

1=Not at all 2=Not very likely 3=Somewhat Likely 4=Very Likely 5=Definitely will

Total number answering question: 42		
Choice	Number of responses	Percentage of responses
1	9	21
2	4	10
3	12	29
4	10	24
5	4	10
n/a	3	7

Question Fifteen

How much more likely would you be to create a **conservation easement** on your property if you were publicly recognized for doing so?

1=Not at all 2=Not very likely 3=Somewhat Likely 4=Very Likely 5=Definitely will

Total number answering question: 44		
Choice	Number of responses	Percentage of responses
1	10	23
2	5	11
3	12	27
4	9	20
5	4	9
n/a	3	7
Other*	1	2

*Comment: not likely - cluster development with land in primary ownership

Question Sixteen

What part of the summit was most useful to you?

Total number answering question: 43		
Category	Number of responses	Percentage of responses
Accreditation Program	5	12
Everything	1	2
Brook Trout Presentation	11	26
Equinox presentation	5	12
Networking	10	23
Agency Presentations	5	12
Learning about conservation incentive programs	5	12
Morning presentations (in general)	4	9
Panel discussions (in general)	3	7
Other*	4	9

*Responses include: variety of stakeholder perspectives, advancement of easements, info on plants and access to water for animals, programs available to enhance populations of BT

Question Seventeen

What part of the summit was the least useful to you?

Total number answering question: 31		
Category	Number of responses	Percentage of responses
All was useful	9	29
Afternoon Breakouts	2	6
Ag Incentive Programs and NRCS	3	10
Brook Trout Biology Presentation	2	6
Portions I was already familiar with	2	6
n/a	2	6
Panel A (Incentive Programs)	1	3
Panel B (easements)	2	6
Co-sponsor/Agency presentations	2	6
Too Short	1	3
Other*	5	16

*Responses included: discussion-not sure what the objective/product of session will be, general conservation w/in developments, info on CES, Land Trusts, LID presentation (part of my job)

Question Eighteen

How did you find out about the summit?

Total number answering question: 44		
Category	Number of responses	Percentage of responses
Advertisement/Newspaper	3	7
Colleague	20	45
Email	17	39
Invitation from SABP	5	11
Through co-sponsorship	2	5
Other*	3	7

*Responses included: word of mouth, phone call, word of mouth

Question Nineteen

If we were to have another similar summit, what changes would you suggest?

Total number answering question: 36		
Category	#	%
<i>Need more people</i>	5	14
invite a more wide range of Interested parties.		
Must find a way to attract more landowners-Do on a Saturday or both Sat. & weekday		
real effort to include other groups such as real estate agents, developers, etc		
Try to get a few more developers		
try to get more developers to the meeting		
<i>Need more time</i>	4	11
Allow more time for speakers. Most speakers seemed rushed to finish.		
More time for the conservation partner presentations since they were so informative		
More time, most folks seemed a little rushed.		
More Time-Bring worked out ideas to table to work out details		
<i>No changes needed</i>	6	17
I am not sure changes are needed.		
I can't think of any additional changes that would improve the summit.		
None		
none		
none		

None-well organized		
<i>More Trout info</i>	9	25
Add <u>one</u> scientific presentation on trout.		
case studies of brook trout conservation		
include more discussions about habitat requirements for brook trout specifically. More Biology.		
May be helpful to provide info on actual habitat needs of aquatic/riparian species or species community.		
more case studies of trout restoration		
more on trout-specific info		
more re: Brook trout or species specific info		
provide more information on why it is better to have brook trout than other types of trout		
talking more about what you do hands on to improve habitat		
<i>Changes to Breakout sessions</i>	6	17
ability to attend both available break out groups		
being able to attend both breakout sessions=both would have been v. useful		
Focus on the specifics of an accreditation program.		
focused breakout sessions		
maybe have better plan for breakout session-it was worthwhile but free form format got off track a little		
more breakout areas		
<i>Other responses</i>	6	17
Chocolate Chip Cookies!! - Just kidding		
clarify some terminology/agency language/tech. terms		
Have a presentation or some sort of list of all available preservation/conservation resources available to property owner/developers, -list of land trusts in area, - list of resource agencies & their programs -list of other initiatives		
Info or strategies for better public education.		
More cases and issues related to implementing Brook Trout Management on private land, implementing easements on green development.		
schedule later in the day		

Additional Comments

Total number answering question: 13		
Category	#	%
<i>Thank yous, etc.</i>	10	77
Great concept (?)		
Great Job!		
Great work to put this together !		
Lunch was good & well organized as was entire event		
please put me on your e-mail list		
Thank you.		
Thanks!		
Thanks, glad to see so many people interested.		
very informative		
Very well organized, nice job!		
<i>Other Comments</i>	3	23
I had to leave early, so this may be covered: but I would encourage follow-up so all these great thoughts/ideas are not lost, keep the momentum going.		
would have liked to see more landowners-I know there was an ad in the Asheville paper, but maybe a more aggressive pre-summit outreach method would result in a better cross-sectional audience... :)		
While I understand using BKT is the key species for the meeting, one needs to realize that coldwater habitat is what needs to be addressed.		