

Executive Summary

I. Title of Project: The Eastern Brook Trout Joint Venture

II. Applicant Information:

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III. Project Objectives:

The objective of this project is to develop a range-wide management strategy for Eastern brook trout that demonstrates a geographic model for implementing the National Fish Habitat Initiative. Focus areas of this project include 1) collecting and integrating data on the status and trends of brook trout populations and identifying the primary threats to existing populations and restoring impaired populations; 2) using that data as the basis to develop a range-wide management strategy for Eastern brook trout; and 3) implementing management actions and educational efforts on the importance of Eastern brook trout and their habitats.

IV. Proposed Length of Project: 2 years

V. Amount of Grant Funding Requested: Year 1 \$250,781 and Year 2 \$180,810

VI. Primary NCN Addressed: *NCN 4. Actions in Support of a National Fish Habitat Initiative*

VII. Summary Statement:

In developing the strategy, available scientific information on brook trout populations will be collected from all identified sources and integrated into a unified network of range-wide GIS databases that display the status and location of all known brook trout populations by watershed. A report on the status of brook trout populations will be prepared, and additional data needs will be identified. The population data will be overlaid with information about threats to brook trout and their habitats to identify critical restoration and other management needs. Second, this information will be used to develop a range-wide conservation plan that can coordinate and set priorities for state and federal agencies, as well as other entities engaged in brook trout management and restoration. And third, the applicants will implement management and education programs aimed at informing the public about the importance of brook trout and brook trout habitat and initiating conservation efforts

This effort will develop a useful model for other regional initiatives that fit within the National Fish Habitat Initiative. We will focus on 1) science-based assessment and monitoring, 2) multi-agency coordination and conservation planning, and 3) management and outreach to the public. These three components will be essential to the success of the National Fish Habitat Initiative.

Title: The Eastern Brook Trout Joint Venture

Objective: The objective of this project is to demonstrate a possible model for the National Fish Habitat Initiative by developing an initiative to restore Eastern brook trout populations.

Problem Statement:

Native populations of the Eastern brook trout appear to be declining through much of its historic range from a variety of stressors including habitat loss, acid precipitation, competition with non-native fish, and a variety of other problems. While considerable effort is being expended to recover brook trout in the East, management agencies are hindered by a lack of an effective way to share information for assessment, a lack of a coordinated plan, and a lack of resources/public support for brook trout recovery. Range-wide monitoring of progress is impossible without common data sharing protocols. Without a range-wide view of the status and trends, preparing a recovery strategy is nearly impossible, and without a recovery strategy, communicating the need for action to the public and decision-makers is very difficult.

This project addresses NCN 4. *Actions in Support of a National Fish Habitat Initiative*. This project will affect the entire nation by demonstrating the components needed for the National Fish Habitat Initiative. By addressing these needs, the proposed project will directly affect a majority of states in one US Fish and Wildlife Service Region, the Northeast, and 5 states in the Southeast.

Experience:

A group of fisheries biologists, managers, nongovernmental organizations, and academics came together in 2003 to address the need for a coordinated approach to Eastern brook trout restoration. In June 2004, the group sponsored a workshop in Shepherdstown, WV where work groups were formed to address the various components of the initiative. The originating group became the steering committee. Two members of the steering committee, Fred Harris, NC Fish and Wildlife, and Steve Perry, NH Fish and Game, are co-investigators on this proposal. The steering committee will be the oversight entity for the project. The Conservation Management Institute agreed to coordinate and submit the proposal and serve as the prime contractor if the proposal is funded. The USGS National Biological Information Infrastructure (USGS) has agreed to provide matching funds and overall coordination of the information management and assessment activities. The Southern Appalachian Man and Biosphere Program (SAMAB) has agreed to assist with the GIS component of the project. Trout Unlimited is currently working on a project with funding from the National Fish and Wildlife Foundation and the Curtis and Edith Munson Foundation to prepare a preliminary database and assessment of brook trout in the East.

The Conservation Management Institute (CMI) has extensive experience both in managing large complex projects and developing information management programs for state and federal fish and wildlife agencies. We manage the Multi-State Aquatic Resource Information System, a consortium of six state fisheries agencies in the Midwest, to make fisheries information available over the world-wide-web and we have developed dozens of information management systems for state fish and wildlife agencies. We have several projects that have run for many years with total funding of several million dollars for each. We recently finished a similar project for the US Fish and Wildlife Service and the IAFWA to coordinate the development of a database protocol for Chronic Wasting Disease data among state fish and wildlife agencies. CMI employs biologists, programmers, GIS specialists, educators, and others (~ 85 positions) to address natural resource projects throughout North America. CMI will handle personnel, assist with database coordination, and support logistics of this project.

The NBII FAR <far.nbii.gov> Node is well suited to work on projects such as the Eastern Brook Trout Joint Venture. The FAR brings broad perspective and experience in working with fisheries managers and

expertise in creating federated fisheries data systems. Using experience gained through the creation of the Multi-State Aquatic Resources Information System (MARIS), the FAR node manager will provide leadership in discovery of brook trout data sets and creation of reporting standards for brook trout information. Once the data systems have been identified and the reporting standards are agreed upon, the FAR node will create the necessary data access system to pull information from independent datasets into one data reporting system. The FAR node has experience in doing these types of projects and currently has projects such as the National Fish Strain Registry, Pennsylvania Fisheries Explorer and Chesapeake Bay Information System that are utilized by a variety of fisheries managers.

Approach:

At the June 2004 Eastern Brook Trout Meeting of over 60 individuals from state and federal management agencies and nongovernmental agencies, the participants resolved to establish a three-part strategy for reversing declines in eastern brook trout (*Salvelinus fontinalis*) populations. First, the available scientific information and data on these populations will be collected from the various state agencies and integrated into a unified, geographic information system (GIS) database. As a result of this work, a report on the status of brook trout populations will be prepared, and additional data needs and monitoring protocols will be identified. The population data will be overlaid with information about threats to brook trout and their habitat. Second, this information will be used to develop a range-wide conservation assessment and plan that can be used to coordinate and set priorities for state and federal agencies, as well as other entities, engaged in brook trout management and restoration. And third, the applicants will implement an education program aimed at informing the public about the importance of brook trout and brook trout habitat.

This effort will develop a useful model for other regional initiatives that fit within the National Fish Habitat Initiative. We will focus on 1) science-based assessment and monitoring, 2) multi-agency coordination and conservation planning, and 3) outreach to the public. These three components will be essential to the success of the National Fish Habitat Initiative. We feel that the Eastern brook trout is a good choice for developing such a model because it has a wide geographic range, a combination of public and private lands support existing populations, it is declining but recoverable in most instances, it has both great recreational and ecological benefit to the public, and the agencies needed to accomplish significant gains on the ground have already gotten behind the idea of a range-wide assessment and recovery strategy.

Component 1: Information Compilation

The NBII FAR program manager will work with managers from the state and federal agencies responsible for brook trout management to assess the data needed to meet their management objectives. Fisheries managers will drive the process to develop the data management tools needed for the brook trout initiative. The process will likely include data discovery, data description, assessment of data gaps, development of data reporting standards, and development of analytical tools such as Internet map servers, and data query systems.

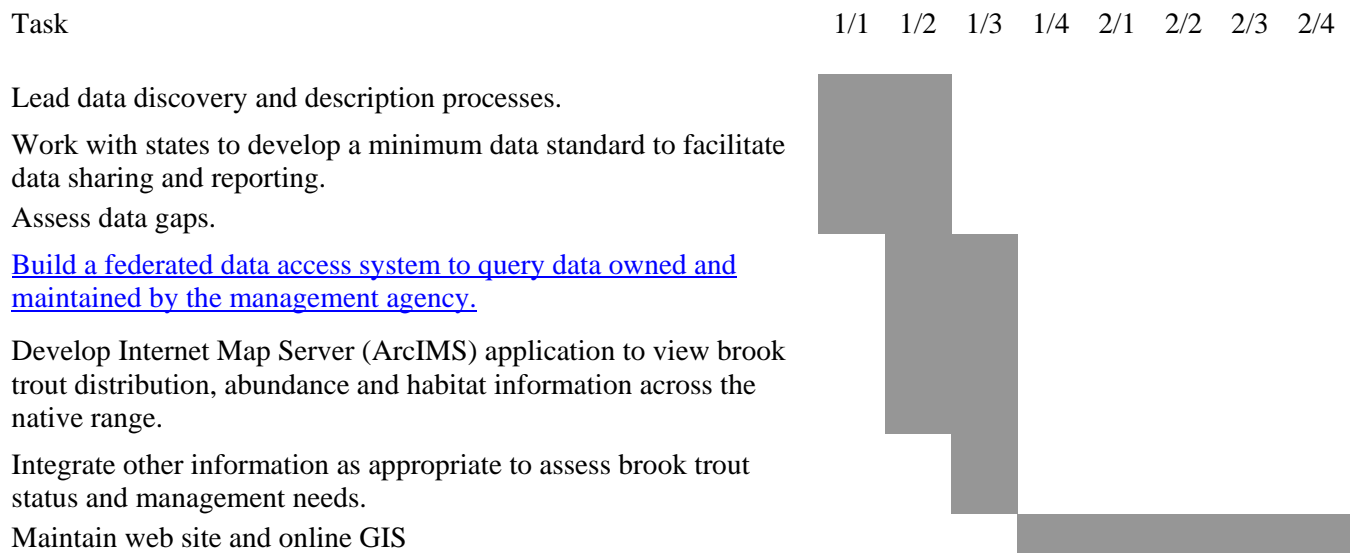
Component 1 Objective: Provide a comprehensive, federated data management system that permits all agencies with management responsibilities for native brook trout to contribute and access data supporting a range-wide native brook trout assessment.

Work Steps

- a. Lead data discovery and description processes.

- b. Work with states to develop a minimum data standard to facilitate data sharing and reporting. Run meetings with participating organizations to establish the standards, and provide technical support to implement the standard.
- c. Assess data gaps.
- d. Build a federated data access system to query data owned and maintained by the management agency. This would permit biologists to access other organizations' data from a central location while allowing the state and federal data owners to maintain full ownership and control of their data. (This employs the model created by the Multi-state Aquatic Resources Information System (MARIS) <www.gis.uiuc.edu/maris>).
- e. Develop Internet Map Server (ArcIMS) application to view brook trout distribution, abundance and habitat information across the native range.
- f. Integrate other information as appropriate to assess brook trout status and management needs.

Timeline



Evaluation

This component will be evaluated by it's usefulness in component two, and by the number of users and downloads we receive on the world-wide-web.

Component 2: Assessment and Planning

A key component of this project is to develop an assessment and strategic plan for the regional conservation of brook trout. This plan is absolutely necessary for coordinating multiple agencies and organizations, identifying the highest priority actions, and communicating the need for resources to Congress. After the data is pulled together and analyzed, we will gather together the steering committee for the Initiative in a workshop setting and use trained facilitators to develop a multi-agency strategy for brook trout conservation. Funding for travel will be provided to those participants that request travel grants. This assessment and strategy will be published on the world-wide-web and in hardcopy form for distribution to Congressional offices, management agencies, and other important decision-makers. A summary of the plan will be submitted to Fisheries magazine as an article.

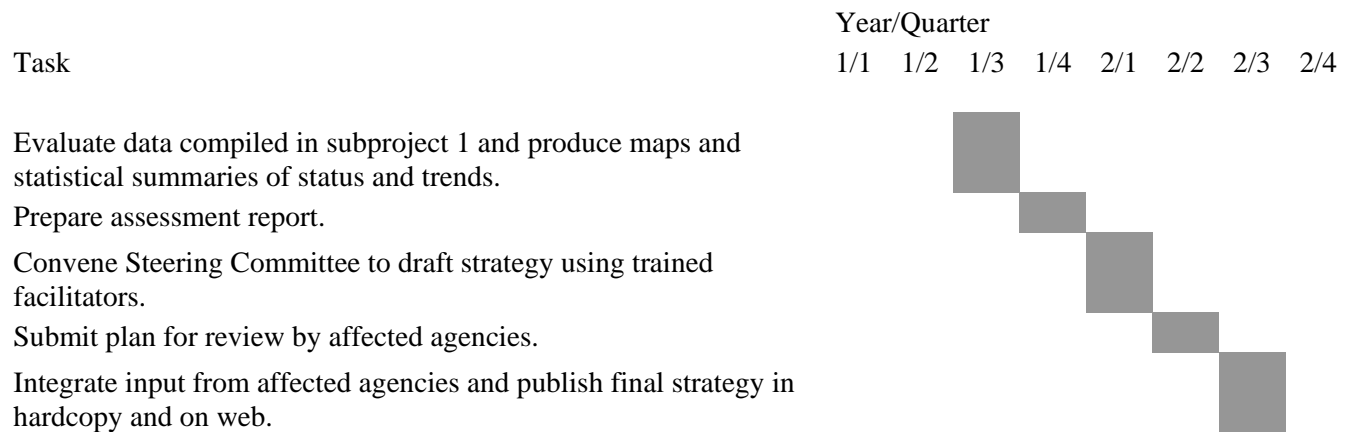
The strategy should address concrete population goals by state, suggest the means by which those goals will be attained, and include a timeframe for completion. A monitoring sub-plan will be included.

Component 2 Objective: Assess the Status and Trends of native Eastern brook trout populations and develop a multi-agency conservation management strategy.

Work Steps

- a. Evaluate data compiled in subproject 1 and produce maps and statistical summaries of status and trends.
- b. Prepare assessment report.
- c. Convene Steering Committee to draft strategy using trained facilitators.
- d. Submit plan for review by affected agencies.
- e. Integrate input from affected agencies and publish final strategy in hardcopy and on web.

Timeline



Evaluation

This component will be evaluated by the quality and depth of the assessment, and the degree of acceptance by the management agencies.

Component 3: Education and Management

At the Eastern Brook Trout Meeting, a “break out” session was held to identify and explore potential solutions and program concepts to address threats to brook trout. Much of the discussion centered on the human dimensions of natural resource impairment. It was recognized that identifying threats to brook trout was fairly straightforward; however, many solutions tended to be sociological in nature and as such were not as simple to address. A chasm is present between science held by fisheries professionals and awareness and knowledge held by the general public. In identifying mechanisms to protect brook trout, emphasis was placed on an informed and inspired public. A Promotion and Education (P & E) Committee was formed to design, implement, and manage the outreach component of the Eastern Brook Trout Conservation Initiative (EBTCI).

Component 3 Objective: Develop, implement, and manage a comprehensive outreach plan to engage, inform, and inspire the public and decision makers within Eastern brook trout range.

Work Steps

The P & E Committee submits the following activities and tools for organizing and funding in the initial development of an outreach strategy:

- 1) Logo – the beauty of a brook trout naturally lends itself to using the fish as a totem; a logo will be developed to be used by all partners in all EBTCI activities and materials. The object is to “brand” the concept of healthy brook trout territory, the fringe benefits people gain from these intact ecosystems, and the positive role of the EBTCI in managing and conserving these systems for the public. Branding will involve the use of a unique and identifiable symbol as both a physical and emotional trigger to create a relationship between the public and the fish. The brand will not just be the property of the EBTCI, but belong to the public as well; people today become so close to “their brands”, they start to form communities in which they help build the brand and increase its awareness, value, etc. A brand can also become the rationale for making some choices over others (i.e. it can encourage brook trout-friendly behavior).
- 2) Cultivate celebrity spokesperson – the P & E Committee will identify a set of criteria to use in the quest and selection of a nationally recognized individual to speak on behalf of the fish and the EBTCI.
- 3) Video – a 5-10 minute informative (yet entertaining) presentation on Eastern brook trout and its place as a natural resource jewel (history, folklore, ecology, recreational value... concluding with the take-home message of its status as an indicator species). Should feature celebrity spokesperson.
- 4) Pamphlet – basic tri-fold to complement and highlight salient points of video presentation.
- 5) Public Service Announcements (PSAs) – three versions (short, shorter and shortest) with basic conservation message, the EBTCI’s role in conserving “America’s Fish”, and a general “ask” for public support.
- 6) Portable Displays – exhibits to be used at EBTCI outreach events. Incorporating wrap-around flexible panels, these are relatively easy to set-up, tear-down and mail.
- 7) Children’s Book – geared to a primary school-age reader, a kid-friendly pamphlet similar to “Russell the Mussel”.
- 8) Road Signs – standard metal signs with the EBTCI logo prominently displayed as well as verbiage recognizing healthy brook trout territory from Georgia to Maine.

Materials developed to carry a campaign message are of questionable value without mechanisms to distribute them and shepherd their use (i.e. delivery to appropriate audiences, venues, timing, etc). The P & E Committee suggests partnering with Trout Unlimited to utilize *Back the Brookie*, a campaign emphasizing grassroots advocacy and education, to move the products and “push” the message into communities within brook trout range. Specifically, TU’s *Back the Brookie* Campaign can bring the following to the table:

- 1) A professionally designed and managed strategy to publicize the initiative using appropriate media outlets (newspapers, TV, radio stations, etc). This would include a “kick off” segment as well as communication and releases at regular intervals.
- 2) www.brookie.org – the *Back the Brookie* website (under construction; due 6/04) will feature information on the fish, the issues, and the campaign, as well as school curriculums and opportunities to support the campaign (volunteering, educating decision makers, donating, etc). Materials developed through the EBTCI (pamphlets, PSAs, children’s book, etc) will be featured on www.brookie.org as well, available for the public to view and download from the site. The world’s only Southern Appalachian brook trout display at the Tennessee Aquarium (which hosts 1 million visitors each year) will be featured on the website. A line of merchandise (apparel, caps, mugs, key chains, bumper stickers, etc) will be available from the website and will feature campaign artwork and the website’s address. The website will be a dynamic communication and

education tool, and could be set up to further integrate activities and direct traffic between all stakeholders.

- 3) Recruitment of TU's grassroots volunteers throughout brook trout range to coordinate delivery and use of outreach materials. Volunteer staffing of the *Back the Brookie* campaign includes an Educational Chair in each participating state. These Chairs will be developing statewide networks of other TU volunteers, who can deliver the EBTCI's message and materials in their own communities (and to decision makers) within brook trout range.

The P & E committee also suggests partnering with state fish and wildlife agencies. Specifically, state fish and wildlife agencies can bring the following to the table:

- 1) Advocacy for EBTCI projects within their agencies. This may result in cost-sharing in the arenas of research funding, materials production (pamphlets, displays, signage) and stream restoration work.
- 2) Ready-made distribution channels for EBTCI educational messages through state conservation education programs. (For instance, Kentucky's conservation education program reaches 85,000 4th-6th graders annually. Plus, 5,800 primary schoolers attend a week-long "conservation camp" in that state. These types of state fish & wildlife agency activities would be natural outlets for our message and materials.)
- 3) Access to state agency regulation booklets, conservation department TV shows, radio programs and brochures. By partnering with these agencies we can get free promotion thru these mechanisms.
- 4) State agencies that already have a large promotion and education component can easily work our message in with their own. In many cases, they need specific examples of "aquatic biodiversity" or "bio-indicators." Our campaign materials could fill gaps in their own materials.

The P & E Committee will be responsible for the management of the outreach campaign, as well as the development and implementation. However, input from, communication with, and oversight by the EBTCI's Steering Committee (as well as supporting committees) will be vital to a concerted, well thought-out and executed outreach campaign:

Message Development – will be the Steering Committee's responsibility, with input from all supporting committees

Materials Development – will be the P & E Committee's responsibility, with input from all committees and final approval of the Steering Committee

Campaign Implementation – will be the P & E Committee's responsibility, as will regular reports (detailing progress) to the Steering Committee

Campaign Management – overall management, including budgeting, timing, oversight of the TU grassroots educational network, partnering with state fish and wildlife agencies, and further organizational development and increased capacity building, will fall under the P & E Committee's charge

Timeline

Development of materials is a lengthy process; the P & E Committee suggests beginning this process soon as to allow the outreach campaign to be ready when the EBTCI has its plan in place, as well as a public message developed.

Task	Year/Quarter							
	1/1	1/2	1/3	1/4	2/1	2/2	2/3	2/4
Gather baseline data on current public knowledge of brook trout and coldwater issues in select sample regions of brook trout range (i.e. Southeast, Mid-Atlantic, and Northeast)	█	█	█					
Develop criteria for celebrity spokesperson and approach/cultivate candidates		█	█					
Design campaign logo	█							
Design media strategy		█						
Develop PSAs, video, tri-fold			█					
Recruit, organize and train TU volunteer network and state fish and wildlife agency partners to deliver campaign materials to communities.	█	█	█					
Integrate all materials and message into www.brookie.org			█					
Kick off campaign with media event and begin delivering message and materials to the public				█				
Develop and add to materials the children's book, portable exhibits, and road signs					█			
Continue media relations and TU volunteer recruitment and training						█	█	█
Continue to move materials and push message into communities within brook trout range							█	█

Evaluation

Execute follow up survey in the sample regions to measure changes in public knowledge and attitude towards brook trout and coldwater conservation

Project Leverage

Two other groups have pledged their support by leveraging existing projects. The first is a project underway by Trout Unlimited (TU) funded by the National Fish and Wildlife Foundation and the Curtis and Edith Munson Foundation (\$72,277) to do a preliminary compilation of data and a range-wide assessment of brook trout. This proposed project will dovetail with the TU project because the TU project will perform the initial data availability survey and a compilation of qualitative information about brook trout status. This proposed project will extend that work to actually establish a quantitative data network. The TU assessment will be coordinated with the proposed assessment to save money on travel and other expenses related to meetings, conference calls, etc.

The second leverage project is the Fisheries and Aquatic Resources Node of the National Biological Information Infrastructure (NBII). This group at USGS has pledged approximately \$75k to assist with establishing the data network, supporting meetings, and most importantly paying for GIS and programmer time to support the technical development of the proposed system.

Expected Results or Benefits:

We expect multiple benefits to accrue from this project.

1. Improved data sharing and coordination will give the management agencies a way to compare brook trout populations from watershed to watershed, and provide the first assessment of trends available for the East. A clear understanding of population status, trends, and threats should help the management agencies prioritize restoration efforts.
2. Coordination of restoration efforts and sharing of success stories should improve the ability of management agencies to recover populations by utilizing lessons learned in other places.
3. An assessment and management strategy should help gain attention for restoration needs for brook trout in the East from decision-makers raising the priority level of resource requests and policy decisions affecting brook trout.
4. A better informed public should ensue from the education component that will make political decisions regarding funding allocations and land management decisions that support brook trout restoration activities easier to acquire.

Project Costs:

Expenses	GRANT REQUEST			Total Cost
	2005	2006	Partnership Funds	
Objective 1: Information Management				
Salaries	14,344	15,277	50,000	79,621
Fringe Benefits	4,985	5,308	17,375	27,668
Materials & Supplies			200	200
Equipment			2,000	2,000
Travel (transportation, lodging, meals, etc.)			5,425	5,425
Contractual (describe)	25,000	25,000		50,000
Subtotal	44,329	45,585	75,000	164,914
Objective 2: Assessment and Planning				
Salaries	24,471	26,002		50,473
Fringe Benefits	8,541	9,074		17,615
Materials & Supplies	1,500	250		1,750
Postage & Printing	2,500			2,500
Travel (transportation, lodging, meals, etc.)	12,500	6,000		18,500
Contractual (describe)	7,500			7,500
Other (describe):	1,200	1,200		2,400
Subtotal	58,212	42,526	0	100,738
Objective 3: Management and Education				

Salaries	42,581	19,500	52,277	114,358
Materials & Supplies	31,304	5,500	13,000	49,804
Travel (transportation, lodging, meals, etc.)	5,670	2,580	5,000	13,250
Distribution costs	1,900	1,200	2,000	5,100
Contractual (describe)	25,000	25,000		50,000
Other (describe):	6,585	21,500		28,085
Subtotal	113,040	75,280	72,277	260,597
Total direct costs:	215,580	163,391	147,277	526,248
Indirect Costs (27.6%...first \$25k of subcontracts)	35,201	17,419	40,648	93,268
Total Expenses and Grant Request	250,781	180,810	187,925	619,517

- Note 1: Subcontract in Obj. 1 is to Southern Appalachian Man and Biosphere Foundation at Univ. of TN for GIS and web support \$50,000.
- Note 2: Subcontract in Obj. 2 will be bid to acquire services of trained planning facilitators.
- Note 3: Objective 3 will be entirely subcontracted to Trout Unlimited.
- Note 4: Other expenses in Obj. 3 are related to equipment purchases necessary to support outreach and education.

NBII will cost-share \$75k/year on the data sharing/web development component. A \$73k project funded by the National Fish and Wildlife Foundation through the Bring Back the Natives Program and the Curtis and Edith Munson Foundation will also be leveraged in collaboration with Trout Unlimited. Two subcontracts are proposed, one to the Southern Appalachian Man and Biosphere Program (an NBII contractor) for assistance with the GIS and web mapping component. The other is a subcontract to Trout Unlimited to handle component 3.

Resume: Jeff Waldon

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Work Experience:

1/00 to Present Assistant Director of the Conservation Management Institute, College of Natural Resources, Virginia Tech. The Conservation Management Institute is dedicated to addressing the needs of the conservation community for research into cutting edge technology and techniques for land management, species conservation, and planning. Duties included all aspects of program development and contract acquisition (approximately \$4 million/year), personnel management (85 positions), interaction with sponsors and cooperating agencies (several dozen), and planning. The CMI is generally involved in 40-50 major projects at any given moment requiring extensive leadership and

coordination. Projects include geographic information systems and remote sensing, information management planning, training, species information system development, national surveys, gap analysis, military base research support, field research project management, and international capacity building and development.

11/91 to 12/99 Project Leader, Fish and Wildlife Information Exchange (FWIE), Department of Fish and Wildlife Sciences, Virginia Polytechnic Institute and State University. The Fish and Wildlife Information Exchange was a clearinghouse and technical assistance center for state, federal, and nongovernmental agencies and organizations in information management and computerization. Duties included all aspects of program development and contract acquisition (approximately \$1.4 million/year), personnel management (50 positions), interaction with sponsors and cooperating agencies (several dozen), and planning.

Publications:

I have produced 47 publications and major professional presentations on a variety of topics related to fish and wildlife information management.

Relevant Professional Service and Awards:

Affiliate Member of the IAFWA Committee on Science and Research
Special Committee on Electronic Publishing, The Wildlife Society, 2000-2002
Organization of Fish and Wildlife Information Managers Member-At-Large 1994-1996.
American Fisheries Society Electronic Media Committee 1995-1999.

Awards and Certifications:

International Association of Fish and Wildlife Agencies Excellence Award for activities related to the Virginia Teaming with Wildlife Coalition, 1997.
Southeastern Section, The Wildlife Society For Outstanding Service as Newsletter Editor 1996-1998.
1999 Professional Award, Virginia Chapter of The Wildlife Society.
Certified Wildlife Biologist, The Wildlife Society.

Certification:

I certify that the Conservation Management Institute at Virginia Tech will not use the grant funds to fund, in whole or in part, any activity of the organization that promotes or encourages opposition to the regulated hunting or trapping of wildlife, or the regulated taking of fish and the grant funds will not be used in whole or in part, for any activity, project, or program that promotes or encourages opposition to the regulated hunting and trapping of wildlife or the regulated taking of fish.