Conservation Actions to Implement the Candidate Conservation Agreement with Assurances for Yellowcheek Darter (Etheostoma moorei) and other Species of Greatest Conservation Need in the Upper Little Red River Watershed, Arkansas

Project Summary

The proposed project will directly address the 2007 implementation priority for Arkansas Rivers and Streams by working with private land owners to restrict cattle access to streams through fence construction along stream riparian areas and by providing alternative water sources for cattle via reservoir construction or other water delivery systems. The yellowcheek darter has the highest priority ranking of all aquatic species of greatest conservation need in the Boston Mountains ecoregion.

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The total cost of this project will be $60,000.

The Nature Conservancy respectfully requests $30,000 to complete this project and will provide the remaining $30,000 as match (50%).

Project Description

Background

The yellowcheek darter is an endemic species found only in the four-headwater streams of the Little Red River (Middle Fork, South Fork, Archey Fork, and Turkey/Beech/Devils Fork complex) above Greer's Ferry Lake (Ecobasin: Boston Mountains – White River). The upper Little Red River watershed consists of 558,615 acres in the Arkansas counties of Cleburne, Pope, Searcy, Stone and Van Buren. There are approximately 331 individuals, corporations, or entities that collectively own approximately 87,000 acres directly adjacent to the streams.

Due to recent population declines, isolation, and fragmentation, the US Fish and Wildlife Service (USFWS) designated the yellowcheek darter (*Etheostoma moorei*) as a candidate species for addition to the Federal List of Endangered and Threatened Wildlife in 2001. The yellowcheek darter was also ranked as the number one species of greatest conservation need in the Arkansas State Wildlife Action Plan for the Boston Mountains ecoregion. The historic range included the main stem Little Red River and the four forks. The historic range has been impacted by the construction of Greer's Ferry Reservoir and channel alterations in the Archey and South Forks. Historic population sizes were estimated at 36,000 for Middle Fork, 14,000 for South Fork, 5,000 for Archey Fork, and 5,000 for the Turkey Fork, with all four drainages collectively supporting a population of about 60,000 individuals. More recent population estimates (2001) totaled approximately 10,000 individuals remaining in three streams: Middle, South, and Archey forks with no individuals collected from the Turkey Fork.

Based on a 2004/2005 threats assessment conducted by the USFWS and several recent studies, gravel mining, unrestricted cattle access into streams, water withdrawal for agricultural and recreational purposes such as golf courses, lack of adequate riparian buffers, construction and maintenance of county roads, and non-point source pollution arising from a broad array of activities appear to be degrading suitable habitat for the species. Channelization of the lower Archey and South Forks has degraded habitat downstream and upstream of the project area. Further, the construction of Greer's Ferry Reservoir has resulted in the permanent loss of habitat due to inundation and cold-water releases from the dam.

Eroding stream banks are depositing sediment in downstream reaches resulting in a reduction of habitat quantity and quality. Thirty-five eroding stream banks have been identified in the Middle Fork, 14 along the South Fork, six along Archey Fork, and one along the Beech Fork. Unrestricted cattle access in the Middle and South Forks also threatens to degrade water quality and habitat.

Current Conservation Efforts

In early 2005, a multi-agency team developed the *Conservation Strategy for the Speckled Pocketbook and Yellowcheek Darter* to aid in the implementation of proactive land conservation measures, standards, and guidelines that will help to ensure that viable populations of yellowcheek darter are maintained. This was the first step in a watershed level approach to restore stream habitat in the entire upper Little Red River watershed for yellowcheek darter. The strategy identifies eight major conservation actions, time frames, and responsible partners to undertake the actions for conservation of the yellowcheek darter. In addition to protection of the yellowcheek darter, the strategy also identified conservation measures to protect the federally endangered speckled pocketbook mussel (*Lampsilis streckeri*).

In order to implement the conservation strategy, the USFWS, Arkansas Game and Fish Commission (AGFC), The Nature Conservancy (TNC), and The Natural Resources Conservation Service (NRCS) created a joint programmatic Safe Harbor and Candidate Conservation Agreement with Assurances (CCAA) for the Upper Little Red River Watershed. This is the first such aquatic agreement of its kind to be used by the USFWS and will serve as a national template. The purpose of the CCAA portion of this

agreement is to provide a mechanism for implementing the conservation strategy through some level of monitoring and management for yellowcheek darter and to encourage voluntary yellowcheek darter habitat maintenance by landowners who enroll under this CCAA. Under the CCAA, landowners will voluntarily implement conservation measures to biologically benefit the yellowcheek darter over a 30-year period. The landowner will agree to restore, enhance, and increase habitat in a suitable condition for this species. This CCAA will increase the amount of habitat available and improve water quality for yellowcheek darter and the ability of the USFWS, AGFC, TNC, and NRCS to monitor yellowcheek darter populations while giving assurances to landowners that future uses of their property will not be restricted by the presence of the species.

Some components of the conservation strategy have been or are currently being implemented by the signatories of the agreement or partners. For instance, the Arkansas Department of Environmental Quality has established 11 water quality-monitoring stations in the watershed. These data are crucial for biological monitoring and determining water quality trends prior to and post implementation of conservation actions. Public outreach already has begun with assistance from the Upper Little Red River Watershed Alliance, a non-profit local group. There are landowners currently enrolled in programs such as Wildlife Habitat Incentive Program and Partners for Fish and Wildlife that have expressed interest in continuing their conservation efforts under the CCAA. One landowner in the South Fork watershed has received approximately $50,000 through state and federal funds to implement conservation measures consistent with the CCAA. TNC has received a USFWS grant for $30,000 to be used for GIS database development, habitat mapping, development of fish survey and collection protocols, development of a landowner outreach video, and other conservation actions that benefit the yellowcheek darter. The Nature Conservancy has applied for a grant to inventory and model all unpaved roads in the upper Little Red River to identify significant sediment sources into the streams. Additionally, the USFWS already has a verbal commitment from landowners to enroll approximately 45,000 acres of land in the CCAA upon final release of the agreement, which has undergone public comment in the federal register and is awaiting signatures at the regional level in a high profile event to be held in early 2007.

Proposed Request for Funding

The conservation goal of the CCAA is to preclude the need to list the yellowcheek darter as threatened or endangered by protecting, enhancing, and expanding habitat availability; reducing sediment and pollutant runoff thereby enhancing water quality and instream habitat and allowing for subsequent natural population expansion; or, if necessary, reintroduction of the yellowcheek darter in the upper Little Red River watershed. This goal will be addressed through the following objectives: (1) control of livestock access, (2) protection, restoration, or enhancement of terrestrial and aquatic habitats, (3) species reintroduction, and (4) biological monitoring.

Specifically, this proposal is a request for funding to help implement the CCAA by restricting cattle access to streams through fence construction along stream riparian areas and/or providing alternative water sources for cattle via reservoir construction or other water delivery systems on lands that are enrolled in the CCAA. The identification process of specific properties where fencing is needed will be enhanced by current work that TNC and USFWS are completing in the watershed. The GIS database, which will include land ownership, streams, soils and landuse will be used to identify properties. Additionally, TNC is mapping and modeling specific reaches of stream that provide habitat for the yellowcheek darter. By combining these datasets, a list of possible land owners to work with will be generated. Specific landowners, especially ones already enrolled in the CCAA or other federal programs will be approached for possible partnership. Funds would be made available to qualifying participating landowners for the proposed activities during the project period. Such funding would reduce the need for future stream restoration projects, which are much more costly than fencing and watering projects.

Funding priorities addressed by this proposal include integration of the Arkansas Wildlife Action Plan priorities with other land-use or natural resource planning efforts and application of funding from various state or federal incentive programs toward wildlife action plan priorities. This effort will provide a high profile, on-the-ground stewardship and restoration project that implements the priorities of the Arkansas Wildlife Action Plan and will serve as demonstration or model that may be replicated in other places. It will also publicize and raise the profile of the Arkansas Wildlife Action Plan with elected officials, decision and policy makers, interested parties, and the general public.

According to the Arkansas Wildlife Action Plan, the yellowcheek darter ranks first in aquatic species of greatest conservation need in the Boston Mountains ecoregion. The action plan identifies several conservation action categories to address threats in the defined area with three of the top four being habitat protection, habitat restoration/improvement, and threat abatement. All of these conservation actions would be addressed by the proposed activities for funding. The proposed project is will occur over a two-year period from July 2007 to June 2009.

Supplemental Information

Monitoring Methodology

Because conservation actions related to the CCAA are just beginning and will occur over at least a 30-year period, measurable improvements in water quality and species populations may also take many years to be detected. However, a diligent attempt will be made to document improvements related to conservation and restoration actions funded by this grant.

As described above, several efforts to monitor the effects of conservation actions are being established. First, data from the ADEQ water quality-monitoring stations will be used to identify baseline values before conservation actions are applied. After implementation of cattle fencing and alternative watering activities funded through this grant, trends in water quality will also be examined.

TNC is currently developing a protocol for surveying yellowcheek darter populations. Once the protocol is in place, TNC, USFWS, and AGFC personnel will use the protocol when conducting yearly yellowcheek darter surveys. Fish populations will be monitored along streams where restoration actions occur to identify population trends in relation to restoration actions. The species survey protocol will be entered into the National Resources Monitoring Partnership's protocols database.

Species of Greatest Concern

Species of greatest concern that will directly benefit from this project include the yellowcheek darter (*Etheostoma moorei*, CWCS Priority Score of 100) and the speckled pocketbook (*Lampsilis streckeri*, CWCS Priority Score of 80). Other species of greatest conservation need are likely to benefit from this project.

Updating the Arkansas CWCS

TNC staff are committed to working with AGFC and other partners to update the CWCS so that it reflects new information and knowledge gained by implementing this project.

Updating the Scientific Community

TNC staff are committed to presenting this project and its results to the scientific community through an AGFC-organized symposium and at other regional or national scientific meetings. Our staff generally attend at least 10 conferences per year, and present talks and posters at most meetings we attend. This project will be an important part of the work we share with others in the years to come.

Making a Public Connection

Because the Upper Little Red River CCAA is an innovative program, it will receive a fair level of national media coverage when the project is announced in spring of 2007. Related projects, such as this proposed grant, will likely receive significant coverage. TNC Ozark Highlands Office and our media relations personnel in Little Rock have worked closely with reporters and writers with several Arkansas newspapers to generate positive and informative stories regarding our conservation work. TNC will insure that the project will be covered in Little Rock and Northwest Arkansas newspapers. We will also pursue an article in the Van Buren County Democrat, a local newspaper in Clinton, Arkansas. As part of our previous grant with USFWS, we will be producing a landowner outreach video. This video will provide landowners with information about the benefits of enrolling their land into CCAA. It will also describe funding opportunities for landowners to implement conservation tools on their land.

Proposed Deliverables, Budget, and Timeline

Description of Deliverables

1) Identify priority land owners based on GIS database analysis, historic and current yellowcheek darter and speckled pocketbook habitat, and enrollment in CCAA or other programs. Contact land owners to identify interested parties for restoration projects.
2) Work with land owners and agency personnel to develop a restoration plan for each site property.
3) Collect and analyze baseline biological and water quality information at site locations and downstream of sites.
4) Purchase equipment and materials for restoration activities.
5) Implement restoration actions on sites.
6) Collect and analyze post-treatment biological water quality information at site locations and downstream of sites.
7) Write final report summarizing methodologies and results for the project.
8) Work with AGFC and other agency staff to update the CWCS database with new information gained from the project.
9) Work with the media to present the goals and process of the project at the beginning and end of the project. Present the project to the scientific community (Fall,2009).

Deliverables Timeline and Budget

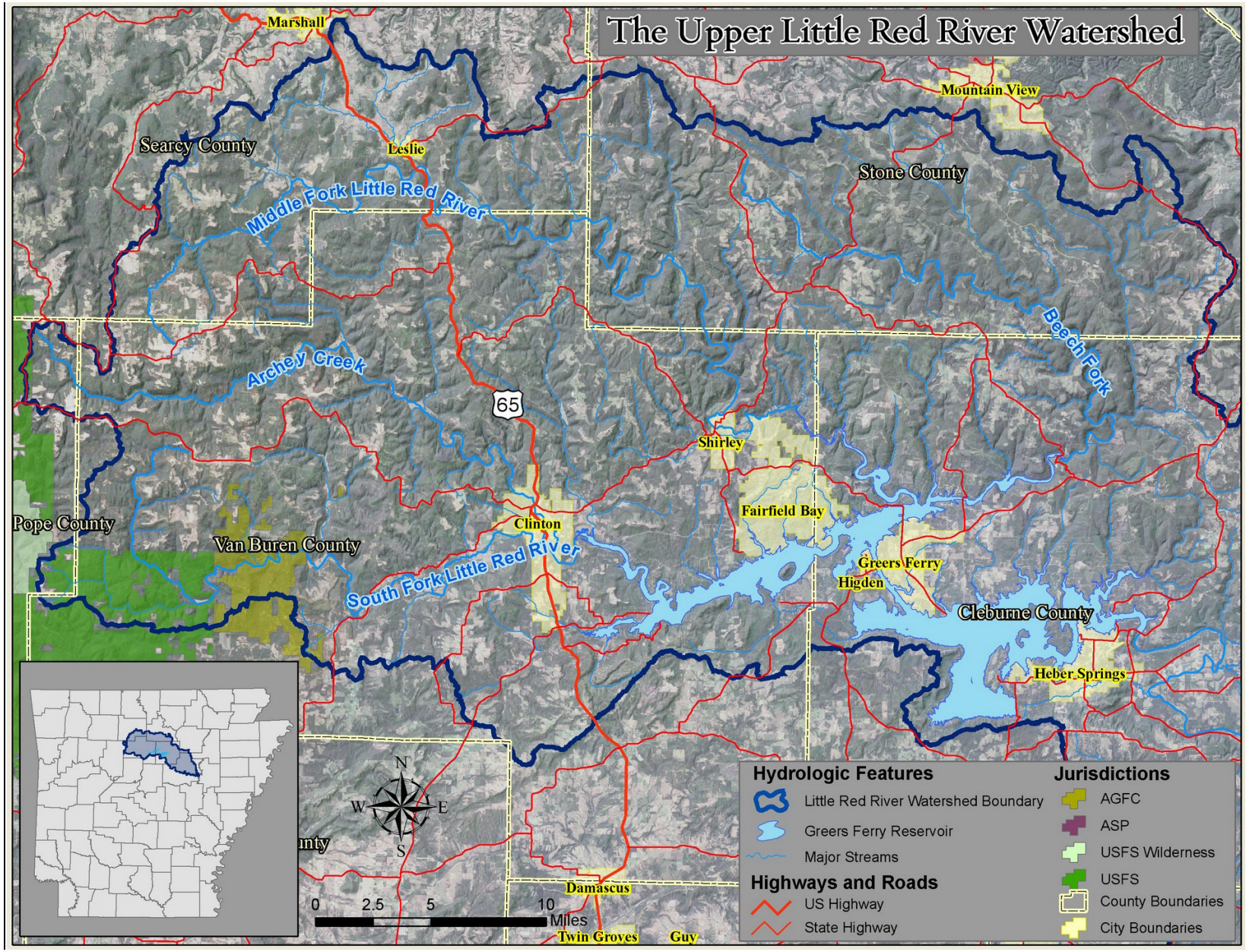
Deliverable	***Start Month**	***End Month**	**AGFC Cost**	**TNC Match**	**Total Cost**
1) Landowner ID and Contact	Month 1	Month 6	$1,500	$1,500	$3,000
2) Site Restoration Planning	Month 4	Month 10	$2,000	$2,000	$4,000
3) Collect Baseline Data	Month 3	Month 10	$2,000	$2,000	$4,000
4) Purchase Equipment, Materials	Month 11	Month 13	$10,000	$10,000	$20,000
5) Implement Restoration Actions	Month 13	Month 16	$3,500	$3,500	$7,000
6) Collect Post-Treatment Data	Month 16	Month 22	$2,000	$2,000	$4,000
7) Write Final Report	Month 18	Month 24	$2,000	$2,000	$4,000
8) Update CWCS Database	Month 23	Month 24	$500	$500	$1,000
9) Inform the Public & Scientific Community	Month 1	Month 24	$500	$500	$1,000
Direct Costs			**$24,000**	**$24,000**	**$48,000**
Indirect Costs** (25%)			**$6,000**	**$6,000**	**$12,000**
Total Project Costs			**$30,000**	**$30,000**	**$60,000**

*Estimated, subject to change based on unforeseen or variable circumstances

Budget expenses supporting these deliverables include personnel salaries/benefits, travel, supplies (including fencing materials, off stream watering systems, gravel, rock, and materials for restoration activities such as trees, grass seed, mulch, erosion control fabrics, etc.), contracts, equipment rental, and other project related expenses.

****Indirect Costs**: The Nature Conservancy has a federal negotiated indirect cost rate (NICRA) of 25%, which is accepted by USFWS.

Total project value: $ 60,000. To complete the conservation efforts for the speckled pocketbook and yellowcheek darter on the upper Little Red River will cost millions. The activities funded by this project will provide the model to motivate additional landowners to perform priority conservation actions on their lands.


The Upper Little Red River Watershed
Marshall
Searcy County
Leslie
Middle Fork Little Red River
Mountain View
Stone County
Beech Fork
Archey Creek
65
Shirley
Fairfield Bay
Pope County
Van Buren County
Clinton
South Fork Little Red River
Greers Ferry
Higden
Cleburne County
Heber Springs
Damascus
Twin Groves
Guy
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S
0
2.5
5
10
Miles
Hydrologic Features
Little Red River Watershed Boundary
Greers Ferry Reservoir
Major Streams
Highways and Roads
US Highway
State Highway
Jurisdictions
AGFC
ASP
USFS Wilderness
USFS
County Boundaries
City Boundaries

Qualifications

Ethan Inlander has been applying geospatial technologies and physical sciences to conservation issues for over 12 years. He received his undergraduate and master's degrees from the Department of Geography at University of California Santa Barbara, the #1 geography program in the US (NRC, phds.org). His thesis topic was "An Integrated Methodology for the Mapping and Inventory of Riparian Areas in the Upper Santa Ynez Watershed, California ". Before joining The Nature Conservancy, Ethan applied geographical information systems technology to address multiple scale conservation problems in riparian and costal habitats of California. Since joining The Nature Conservancy, Ethan has applied these same techniques to identify and reduce impacts and habitat degradation to freshwater stream ecosystems, conduct local, watershed, and regional threat assessments of subterranean environments, and prioritize and implement karst and riverine conservation actions at multiple scales.

Mitch Wine has been employed by the USFWS for over three years and co-wrote the joint programmatic Safe Harbor and Candidate Conservation Agreement with Assurances for the Speckled Pocketbook and Yellowcheek Darter in the Upper Little Red River Watershed, AR. Mitch began his professional career as a fishery biologist at the Greer's Ferry National Fish Hatchery in Heber Springs, Arkansas and now works as a fish and wildlife biologist in the USFWS Arkansas Field Office. He holds an undergraduate and master's degree from Arkansas State University, and has worked extensively on conservation efforts in the upper Little Red River watershed during his tenure with the USFWS. In addition to work performed with the USFWS, Mitch also conducted his masters thesis work on the yellowcheek darter from 1999-2002.

Chris Davidson received his B.S. in Fisheries and Wildlife Biology from Arkansas Tech University in 1995 and his M. S. in Aquatic Biology from Arkansas State University in 1997. His graduate research dealt with analyzing population/community structure, habitat preferences and age-growth of freshwater mussels in the Little Missouri and Saline Rivers and Blue Mountain, Ozark, and Dardanelle Reservoirs, Arkansas. Chris began his professional career with the University of Arkansas Cooperative Extension Service working with commercial catfish farms where on-farm trials were ongoing to verify the utility of research-based extension recommendations. Following a one year tenure with the U of A CES, he went to work for five years with the Arkansas Department of Environmental Quality as a stream ecologist focused primarily on aquatic macro-invertebrate and fish community assessments to assess water quality and habitat conditions, including development of the first ecoregion based aquatic macro-invertebrate indices of biological integrity for small and medium watersheds. He began his tenure with the U. S. Fish and Wildlife Service's Arkansas Ecological Services Field Office in 2003 as endangered species coordinator for the state. In this role, he is responsible for coordinating all ESA activities including listing actions, recovery planning and implementation, and section 7 and 10 activities in the state. He recently developed the first programmatic joint Safe Harbor/Candidate Conservation Agreement with Assurances in the nation for two aquatic species.