

Ozark Hellbender In-stream Habitat and Stream Bank Remediation in the Eleven Point River

Summary: The Eleven Point River in Randolph County harbors the last viable population of the declining Ozark Hellbender in Arkansas. The river has been impacted by point-source sediment and cattle waste contaminants due to clearing of forest cover for cattle and hay operations resulting in stream bank erosion and surface run off at cattle access points. Stream bank restoration and cattle access exclusion, with alternative watering systems, would be implemented at one site near core hellbender habitat. Remediation of these contaminant sources would improve habitat for the Ozark Hellbender and 10 other aquatic SGCN and native sport fisheries species.

Project Co-Leaders:

Stephen O'Neal, Stream Team Biologist
Arkansas Game & Fish Commission
391 Bloodworth Rd.
Searcy, AR 72143
501.351.6208
sroneal@agfc.state.ar.us

Kelly Irwin, Herpetologist
Arkansas Game & Fish Commission
915 E. Sevier St.
Benton, AR 72015
877.847.2690
kirwin@agfc.state.ar.us

Partners:

Brian Wagner, Nongame Aquatics Biologist, Arkansas Game & Fish Commission, 877.847.2690,
bkwagner@agfc.state.ar.us

Bill Posey, Malacologist, Arkansas Game & Fish Commission, 877.777.5580, brposey@agfc.state.ar.us

Mickey Mathews, Aquatic Ecologist, Ecological Conservation Organization, 501.372.7895,
mickey@ecoconservation.org

Benjamin A. Wheeler, Biology Instructor, University of Arkansas Community College-Batesville,
870.612.2105, bwheeler@uaccb.edu

Daniel Devun, VP, Ecological Conservation Organization, 501.372.7895

Sam Barkley, District Fisheries Biologist, Arkansas Game & Fish Commission 877.972.5438

Sam Henry, Assistant District Fisheries Biologist, Arkansas Game & Fish Commission 877.972.5438

Total Estimated Project Cost: \$159,200

SWG Funds Requested: \$79,100

50% In-kind Match: \$80,100. In-kind match would be met in the form of personnel time, labor, equipment operation costs, and materials costs (AGFC, UACCB, ECO, and landowner).

Funding Priority Addressed: This project will specifically address the funding priority action “Conduct instream and stream bank stabilization and restoration to protect *Cryptobranchius alleganiensis bishopi*, Ozark hellbender” as listed in the RFP. This project will address those criteria listed in a similar RFP funding priorities calling for watershed management to address physical/chemical/biological and land use components to sustain aquatic life and riparian buffer restoration and improvements. The Eleven Point River is in the White River ecobasin of the Ozark Highlands ecoregion and contains the last remaining viable population of Ozark Hellbenders in Arkansas.

Location of Work: This project will be conducted on property with a 700 foot length of actively eroding stream bank on the Eleven Point River, approximately 3 miles NNW of Dalton, AR (see attached map). The property is a privately owned active cattle operation and the landowner has agreed to allow access to his property and actively participate with in-kind contributions on this proposed project.

Methods: The primary method used to remediate active stream bank erosion is the installation of instream “rock vane” structures. Rock vanes are dikes, constructed of boulders, which project from the stream bank pointing upstream at a 30° angle. Rock vanes decrease water velocities at the near stream bank by shifting the thalweg away from the stream bank, thereby ameliorating bank erosion. The repositioned thalweg creates optimal current velocities favorable to hellbenders and other SGCN aquatic taxa (e.g., crayfish, mussels, darters). Additionally, placement of native stone rubble and slab rock at the distal ends of the rock vanes will create new microhabitat cover for use by hellbenders and other SGCN aquatic species. Once rock vanes are in place the following actions would be implemented: (1) riparian zone re-establishment, using appropriate riverine plant species; (2) cattle exclusion via solar powered electric fencing; and (3) installation of an alternative watering source (such as ram-pump technology). All rock and earth work will be performed using a contracted heavy equipment operator and AGFC in-kind match use of a front end loader, dump truck and labor. Pre- and post-work surveys for Ozark Hellbenders and other SGCN species will be conducted by AGFC Nongame Aquatics Program personnel. The landowner will contribute 25% of the cost of an electric fence system and fence installation labor.

Products/ Outcomes: Upon completion of this project we propose to use this site as a demonstration project to encourage other riverfront property owners on the Eleven Point River to participate in riparian and riverine habitat improvement programs sponsored by NRCS, USFWS, AGFC, etc., using riverine cattle access exclusion, viability of alternative watering systems, instream thalweg management systems (rock vanes), aquatic microhabitat enhancement (i.e., artificially placed cover rock) and riparian buffer reestablishment. If successful, use of this site as a demonstration project will be enhanced by the landowner’s promotion of similar projects to other riverfront landowners.

Furthermore, it is our goal to create hydraulic conditions and suitable microhabitat for use and occupation by Ozark Hellbenders (and other aquatic SGCN’s), at a location where it was formerly absent; and eliminate point-source cattle waste and sediment (estimated 1.25 million pounds annually) contaminant inputs. Another added benefit would be a measureable increase in species diversity and abundance of sport and non-game fish species at the site.

Public education and awareness to promote the specific programs that implement this type of aquatic habitat remediation and improvement projects would be achieved through popular articles in local and state newspapers (e.g., Pocahontas Star Herald, Arkansas Democrat Gazette) and magazines (Arkansas Wildlife), and television stations in Jonesboro and Little Rock. Data collected on pre- and post- project survey work would enhance our understanding of the aquatic biodiversity of the Eleven Point River and will be incorporated into databases maintained by the Arkansas Game and Fish Commission and the Arkansas Natural Heritage Commission.

Monitoring Methodology: The project site will be surveyed by AGFC personnel to determine if Ozark Hellbenders and other SGCN species are present, prior to initiation of work. Hookah and/or snorkel skin diving equipment, electro-fishing gear, and seine will be used to survey the site for mussels, crayfish, fish,

and aquatic salamanders. Turning of streambed cover rocks by hand will be accomplished using the hookah and/or snorkel skin diving equipment to search for hellbenders. Multiple 1000 second electro-fishing runs will be conducted using the depletion method to remove all fish from the area and relocate them downstream between each run. These same techniques will be employed in the post-implementation phase to monitor for the presence of Ozark Hellbenders and other SGCN aquatic species. All aquatic species will be recorded and, where needed, preserved for identification by appropriate aquatics program personnel.

A handheld GPS will be used to record the latitude and longitude coordinates at the midpoint of the project area. The following measurements and/or data will also be recorded: pre- and post-profile analysis and measurements, water slope, valley slope, bank curvature radius, current velocity, bankfull depth, channel width, cross-sectional area, thalweg placement, substrate sizes, water temperature, and notes regarding aquatic vegetation, riparian vegetation, turbidity, and flow class. The project methodology will be entered into the Natural Resource Monitoring Partnership database (<http://nrmp.nbii.gov>) as required by the AGFC and any additional information needed to update the Comprehensive Wildlife Conservation Strategy database will be provided.

Teams: This project would partner personnel from AGFC, The Ecological Conservation Organization (ECO), and the University of Arkansas Community College – Batesville (UACCB) in both implementation and pre- and post- implementation monitoring phases. The Stream Team Biologist will coordinate the implementation phase and be responsible for budget management, contractor arrangements, and maintaining the grant requirements. The AGFC Nongame Aquatics Program Biologists (malacologist, herpetologist, nongame aquatics biologist) would lead the pre- and post-implementation aquatic taxa survey work, with assistance from AGFC District Fisheries, ECO, and UACCB personnel. The AGFC Herpetologist would work directly with UACCB and ECO personnel in post-implementation monitoring of artificially placed cover use by hellbenders. Further, the ECO staff will be responsible for researching, installing and maintaining the alternative watering system and solar powered electric fencing equipment. This work would be coordinated through the Stream Team Biologist to best suit the operating needs of the landowner.

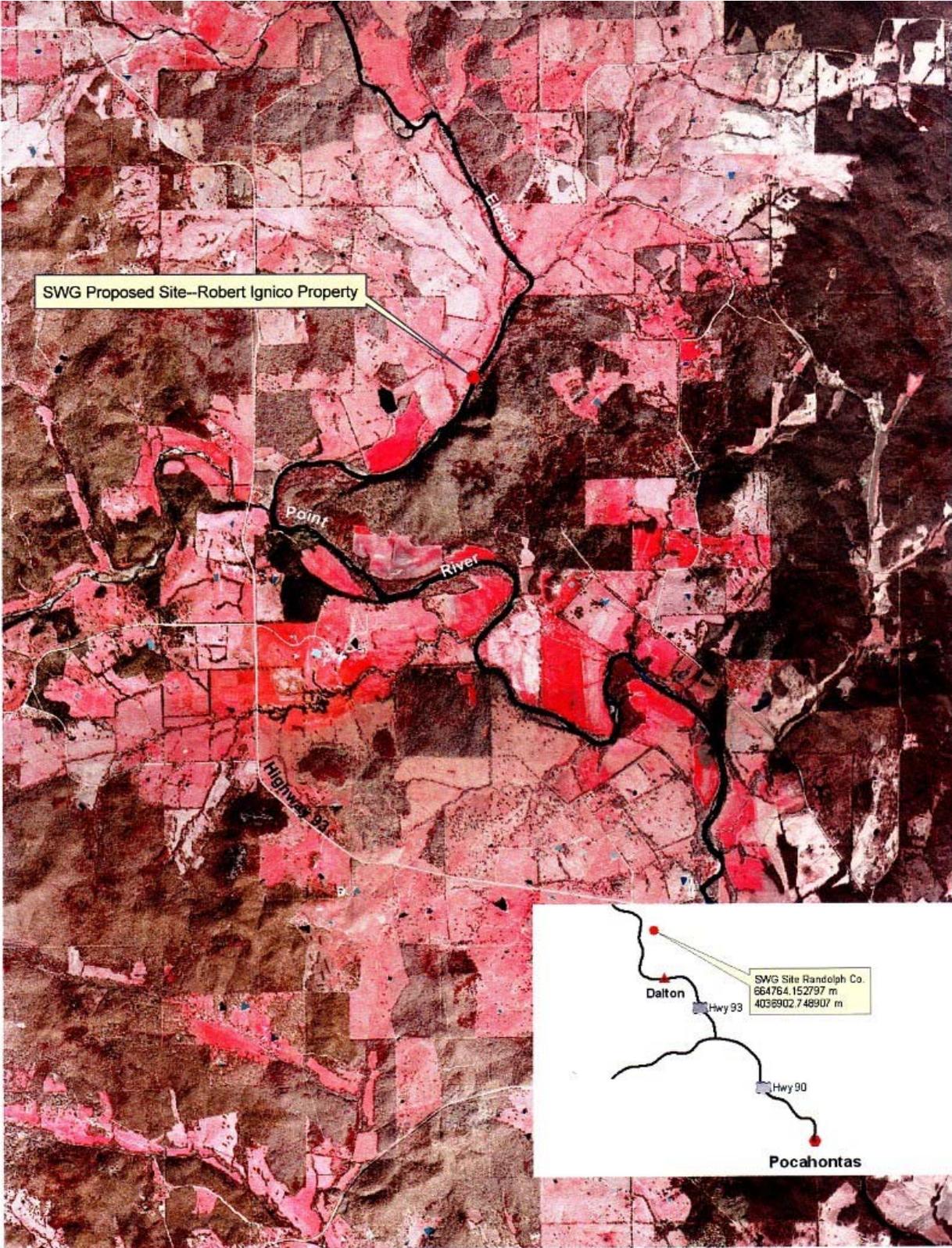
Duration: July 1, 2008 to June 30, 2010

Existing Resources Utilized: This project will take advantage of past cooperative work between personnel from UACCB, ECO, and the AGFC, and is focused on building increasing partnerships with private landowners. All cooperators contribute expertise in their respective fields, in research, promotion and implementation of this project. Utilization of existing equipment and personnel resources as in-kind match contributions by the cooperators directly enhances the project.

Long-term Maintenance: Long-term maintenance of this project would be limited to fence maintenance by the landowner, to exclude cattle from river access; and monitoring and/or adjustment of the alternative watering system by ECO, as needed to maintain effective operation. The landowner has agreed to accept the responsibility of day to day maintenance of these systems. The design used in rock vane construction to ameliorate stream bank erosion requires minimal to no maintenance once in place.

Proposed Budget:

SWG Funds:	ECO	UACCB	Landowner	AGFC
Salary/benefits	\$3000			
Travel	\$2600	\$1000		
Operating Expenses				
Equipment operator				\$12,000
Capital Expenses				
Quarry Stone				\$50,000
Alternative Water Source	\$7500			
Fencing	\$3000			
Subtotal	\$16,100	\$1000		\$62,000
SWG TOTAL			\$79,100	
In-kind Match:				
Salary/Benefits				
900 hrs @ \$60/hr	\$12,000	\$4000		\$38,000
Fence labor				
80 hrs @ \$20/hr			\$1600	
Travel	\$2000			\$6000
Operating Expenses				
Electrofishing				\$6000
Benthic fauna survey				\$3500
Post-project monitoring	\$2000			\$4000
Capital Expenses				
Fence			\$1000	
Subtotal	\$16,000	\$4000	\$2600	\$57,500
IN-KIND TOTAL			\$80,100	



SWG Proposed Site—Robert Ignico Property

Point River

Highway 93

Dalton

Hwy 93

SWG Site Randolph Co.
664764.152797 m
4036902.748907 m

Hwy 90

Pocahontas

Sam Barkley - District Fisheries Biologist, AGFC. B.S. 1969, Arkansas State University. 17 years in current position as District Fisheries Biologist, 14 years as AGFC Endangered, Nongame and Urban Wildlife Section and 6 years as fisheries biologist in south central Arkansas. Primary job duties include conducting fish population surveys using standardized AGFC Fisheries Division procedures, which provide data needed in determining management strategies. Recent work has involved extensive electro-fishing surveys on the Eleven Point and Spring rivers in northeast Arkansas.

Daniel Devun - Vice President of Ecological Conservation Organization (ECO). B.S. Environmental Science, University of Arkansas - Little Rock, emphasis in Environmental Planning and Biology. Co-founded ECO in 2004, previously worked for the Arkansas Soil & Water Conservation Commission and National Audubon Society restoring urban watersheds and wetlands.

Sam Henry - Assistant District Fisheries Biologist, AGFC. B.S. 1977, Fisheries and Wildlife Management, Arkansas Tech University. Fisheries biologist for over 30 years, with expertise in aquaculture and stream and reservoir management. Recent work on stream sportfish studies on the Spring and Eleven Point rivers and creation of a tilapia fishery in two public fishing reservoirs in northeast Arkansas.

Mickey Matthews - Aquatic Ecologist, ECO. M.S. Biology, Arkansas State University, emphasis in Aquatic Ecology. Worked for The Nature Conservancy for ~4yrs in Arkansas and Louisiana performing fire restoration activities, biological monitoring, preserve stewardship, and invasive species removal.

William R. Posey II - Malacologist and Commercial Fisheries Biologist, AGFC, B.S. Biology 1993 Henderson State University; M.S. Biology 1997 Arkansas State University. Coordinates the AGFC Mussel and Commercial Fisheries conservation programs. Authored or co-authored peer-reviewed publications on mussels, nongame fish and amphibians. Leads the State Wildlife Grants Mollusk Taxa Team, and sits on the Fish Taxa Team.

Stephen O'Neal - Stream Team Biologist, AGFC. B.S. Conservation Biology, University of Wisconsin; graduate work, Avian Ecology, University of Missouri. Implements riparian area remediation plans based on survey and analysis of hydrogeomorphological characteristics using solution-based methodologies. Incorporates the coordination of a volunteer work force to accomplish desired tasks, education of stakeholders and development of long-term monitoring strategies.

Kelly Irwin - Herpetologist, AGFC. M.S. Wildlife and Fisheries Sciences, 1997, Texas A&M University. Over 30 years experience in the field of herpetology. Duties include conducting, coordinating, and managing scientific research and management projects on reptile and amphibian species native to Arkansas. Recent major projects have focused on the conservation and management of Ozark Hellbenders, American Alligators, and aquatic freshwater turtles.

Brian Wagner - Nongame Aquatics Biologist, AGFC. M.S. Fisheries, Virginia Tech University. AGFC employee for 18 years in aquatic conservation and research, 9 years as Nongame Aquatics Biologist. Coordinates the Nongame Aquatics Program with specific oversight of nongame fish and crayfish research and conservation. A Certified Fisheries Scientist, has authored or co-authored peer-reviewed publications on sport fish, nongame fish, crayfish, reptiles, and amphibians. Leads the State Wildlife Grants Crayfish Taxa Team, and member of the Fish, Cave, and Invertebrate Taxa Teams.

The Ecological Conservation Organization (ECO) is an Arkansas based environmental non-profit organization whose mission is to "Restore natural ecosystems through research and restoration." ECO was established in 2004 by conservationists dedicated to improving the environmental quality of Arkansas. ECO's staff has produced numerous studies on water quality and conducted stream and terrestrial restoration projects.