Survey of Fish and Lampsilis species-A and Marshbird Habitat Improvement in Fourche Creek Watershed

Audubon Arkansas will conduct fish and mussel surveying throughout the Fourche Creek Watershed. This project will provide valuable information on large-river fish distribution in the Fourche Creek Watershed and the impact various human activities have on fish diversity. With assistance from John Harris of the Arkansas State Highways and Transportation Department, we will conduct mussel sampling to determine the range of the newly discovered mussel, '*Lampsilis* species-A', that has so far been found exclusively on Fourche Creek. Audubon employees will also begin a 60-acre marshbird habitat improvement project in Fourche Bottoms consisting of invasive species removal and planting of native marsh vegetation.

Project Leader & Critical Staff

Daniel Scheiman, PhD, Director of Bird Conservation, Audubon Arkansas
dscheiman@audubon.org
1423 B South Main Street
Little Rock, AR 72202
501-244-2229 p
501-244-2231 f

Brent Kelley, Field Programs Coordinator
Audubon Arkansas
mkelley@audubon.org
501-244-2229

Project Partners

Clifton Jackson
Urban Fisheries Specialist
Arkansas Game and Fish Commission
cjackson@agfc.state.ar.us
501-978-7322

John Harris
Biologist
Arkansas State Highway and
Transportation Department
John.Harris@arkansashighways.com
501-569-2000

Total Project Cost: $100,000
Total SWG Money Requested: $50,000

Sources and Amounts of Matching Funds/In-kind Services

Audubon Arkansas (in-kind services)	$21,000
Arkansas Game and Fish Commission (in-kind services)	$19,000
Arkansas State Highway and Transportation Department (in-kind services)	$10,000
Total	$50,000

A. Conservation Priorities

Often overlooked are conservation opportunities for Species of Greatest Conservation Need (SGCN) in the interface between urban and wilderness areas. As human populations take over more and more of the natural landscape of Arkansas, how to protect species at the urban/wilderness interface becomes critically important.

The Fourche Creek Watershed is one of the most important urban watersheds in Arkansas. Before entering the Arkansas River, Fourche Creek drains and filters runoff from most of Little Rock. Decades of abuse have damaged wildlife habitat along Fourche Creek, though Fourche Bottoms, an 1,800-acre core wetland, maintains some natural functions and character.

Within this watershed, Audubon and its partners will assess the status of fish and mussel SGCN and improve marshbird SGCN habitat. Our project will:

1. Improve understanding of the distribution and abundance of 24 large-river oriented fish SGCN.
2. Improve understanding of the distribution and abundance of '*Lampsilis* species-A', a newly described mussel SGCN.
3. Improve marshbird SGCN habitat in Fourche Bottoms through the removal of invasive alligatorweed and planting of native marsh vegetation.

B. Ecoregions and Habitats

Fourche Creek and its tributaries flow through three of Arkansas' major ecoregions: the Ouachita Mountains, the West Gulf Coastal Plain, and the Mississippi River Alluvial Plain.

Our work will occur primarily in the following habitats: Ouachita Riparian, West Gulf Coastal Plain Small Stream Forest, West Gulf Coastal Plain Wet Hardwood Flatwoods, Urban/Suburban, and Pastureland.

C. Project Methods

Stream Assessment and Aquatic Species Sampling:

1. We will conduct extensive fish sampling at points along Fourche Creek and its tributaries from its mouth at the Arkansas River to the small headwater streams in eastern Saline and western Pulaski counties. Sampling methods will include:
    a. Backpack shocking with Arkansas Game and Fish Commission (AGFC).
    b. Seining and Fyke netting.
    c. When possible, fish will be identified and released to limit mortality.
    d. Habitat assessment to qualify the degree of impacts from weirs, roads, and unnatural sediment loads on species diversity.
2. We will collect mussel shells. John Harris, Arkansas State Highway and Transportation Department (AHTD), will identify which shells are those of '*Lampsilis* species-A'.

Marshbird Habitat Improvements:

1. Eradicate alligatorweed (*Alternanthera philoxeroides*) using an effective, carefully tested, host-specific biological control agent, the alligatorweed flea beetle (*Agasicles hygrophila*), from a 60-acre emergent marsh in Fourche Bottoms. Dr. Robert Wiedenmann, Professor of Biological Control, University of Arkansas at Fayetteville; and Allan Beuerman, County Extension Agent, Pulaski County Extension Office, will provide guidance on release and monitoring. We will also experiment with other methods of weed control such as dragging it out of the water, and smothering with a black tarp.
2. Hand plant and seed the area with select native emergent marsh species to ensure native plant establishment. Native plants should prevent alligatorweed from repossessing cleared areas.

3. Monitor eradication effectiveness, marsh vegetation response, and marshbirds using standard protocol.

D. Measurable Products and Outcomes

By July 2011 we will have:

1. A map detailing the distribution of '*Lampsilis* species-A', in Fourche Creek Watershed and a report detailing habitats where it was found.
2. A list of fish species found in Fourche Creek Watershed organized by habitat type, stream-order, and degree of local human impacts.
3. A report detailing the success of marsh habitat improvement efforts including information on alligatorweed removal, and success of native marsh species plantings.
4. Updated the Wildlife Action Plan with our findings.
5. Placed all data and reports on our fourchecreek.org website.
6. Given a talk or poster presentation of our findings.
7. Article in Arkansas Wild or similar publication covering our work and results.

Deliverables and Work Calendar

Quarter 1 Aug. 2009 – Oct. 2009
Begin invasive species removal in marsh habitat improvement area.
Survey 10 miles of Fourche Creek and tributaries for '*Lampsilis* species-A'
Conduct fish sampling at 5 sites in watershed
Initial planting of native marsh plants in habitat improvement area

Quarter 2 Nov. 2009 - Jan. 2010
Survey 10 additional miles of Fourche Creek and tributaries for '*Lampsilis* species-A'
Conduct fish sampling at 5 sites in the watershed

Quarter 3 Feb. 2010 – Apr. 2010
Survey 10 additional miles of Fourche Creek and tributaries for '*Lampsilis* species-A'
Conduct fish sampling at 5 sites in the watershed
Continue invasive species removal in habitat improvement area
Second planting of native marsh plants

Quarter 4 May 2010 - Jul. 2010
Continue invasive species removal in habitat improvement area
Continue planting of native marsh plants.
Survey 10 additional miles of Fourche Creek and tributaries for '*Lampsilis* species-A'if results to date warrant this
Conduct fish sampling at 5 sites in the watershed

Quarter 5 Aug. 2010 – Oct. 2010
Monitor success of invasive species removal and planting efforts
Complete report on invasive removal and planting results to date
Survey 10 additional miles of Fourche Creek and tributaries for '*Lampsilis* species-A' if results to date warrant this
Conduct fish sampling at 5 sites in the watershed

Quarter 6 Nov. 2010 – Jan. 2011
Survey 10 additional miles of Fourche Creek and tributaries for '*Lampsilis* species-A' if results to date warrant this

Quarter 7 Feb. 2011 – Apr. 2011
Continue invasive species removal in habitat improvement area
Continue planting of native marsh plants
Conduct fish sampling at 5 sites in the watershed

Quarter 8 May 2011 – July 2011
Report on Lampsilis species-A range
Summary of fish sampling data organized by habitat type, stream-order, and degree of local human impacts
Report on marsh habitat improvement efforts
All reports made available on our website fourchecreek.org
Data added to the Wildlife Action Plan database
Talk or poster presentation on results, prossibly for Arkansas Academy of Science
Article in Arkansas Wild or similar publication on our work

E. Use of Existing Resources

Audubon Arkansas will make use of many of existing partnerships. We have a strong working relationship with AGFC that includes programs such as Watchable Wildlife, Urban Fisheries, and Stream Team. Clifton Jackson, with the Urban Fisheries program, will provide fish identification expertise and sampling equipment. We have worked with the Highway Department on finding and mapping rare plants in Fourche Creek Watershed and will continue this partnership by sending mussel shells to John Harris for identification. We have worked with both AGFC and AHTD to improve access to, and wildlife habitat in, a borrow pond in Little Rock. We have long standing partnerships with University of Arkansas at Little Rock (UALR) and Arkansas Department of Environmental Quality. UALR student interns may assist with fish sampling.

As a result of years of extensive work in the Fourche Creek Watershed, Audubon Arkansas already has products that will enhance our proposed work:

1. Completed stream assessments of Fourche Creek and many of its larger tributaries.
2. Extensive water quality data collected over a five-year period.
3. Results from preliminary fish sampling at four sites in the watershed.

Staff Qualifications

Daniel Scheiman, Ph.D., Director of Bird Conservation, is the lead manager responsible for this project's success. He will supervise any college interns who will help with this project. Dr. Scheiman manages Arkansas' Important Bird Areas program and Waterbirds on Working Lands Initiative. He received his B.S. from Cornell University, M.S. from Eastern Illinois University, and Ph.D. from Purdue University, all in wildlife ecology. He has over ten years of bird research experience on topics such as bird-habitat relationships and population dynamics, resulting in several peer-reviewed publications.

Brent Kelley, Field Programs Coordinator, will perform much of the fish and mussel sampling. Since 2006, Mr. Kelley has coordinated and managed all field projects within the Fourche Creek Watershed Initiative, including stream-bank stabilization projects, reforestation efforts, water quality sampling and analysis, and storm water control projects. In addition, Mr. Kelley manages the field portion of the Wetland Reserve Program (WRP) in which Audubon partners with the Natural Resources Conservation Service (NRCS) to put non-productive farmland back into its natural forested state. Mr. Kelley received his undergraduate degree in Botany from the University of Arkansas in 2001 and his Master's degree in Forest Entomology in 2006.

Audubon Arkansas' staff has extensive experience in wetlands reconstruction, reforestation, grasslands restoration, managing contracts, working with landowners, monitoring, and public outreach. We have technical training and certification in prescribed burning, wildland fire chainsaws, watershed planning, stream morphology, water quality monitoring, GIS, and vertebrate and invertebrate surveys. Audubon has successfully managed Wetland Reserve Program projects on 4,600 acres in the state. Audubon partnered with Ducks Unlimited at the Woodson Joint Venture, the single largest Wetland Reserve Program site conducted by NRCS to date. During implementation of that project, Audubon contracted with professional foresters, surveyor/engineers, dirt movers, and tree planting crews who performed the work. Audubon personnel were on site each day of the tree planting. Over 700,000 hardwoods were planted; about 150 acres of grasslands were created. Audubon continues to monitor these tracts.