

PPR

Final Report

Project: Fish Habitat Enhancement Project on Beaver Lake and Tributary Clifty Creek, Arkansas

CFDA No: 15.608 - Fish and Wildlife Management Assistance

Grant No: F22AP00201-00

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Project Period: October 1, 2021 – September 30, 2023

Reporting Period: October 01, 2022 - September 30, 2023

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Project Information:

Title: Fish Habitat Enhancement Project on Beaver Lake and Tributary Clifty Creek, Arkansas

Location: Beaver Reservoir and Clifty Creek (upstream tributary)

GPS Coordinates: 36.250288; -93.920134

U.S. Congressional District: AR-3

Progress Report Narrative:

Beaver Watershed Alliance and Arkansas Game and Fish Commission successfully completed deliverables, met target outcomes on time and documented results for the Fish Habitat Enhancement Project on Beaver Lake and Tributary Clifty Creek, Arkansas project.

Performance Measures – Results

1. 300 linear feet of streambank and stream channel restored along Big Clifty Creek.

Report: Arkansas Game and Fish Stream Team assisted in design and permitting, Natural State Streams was selected and contracted to develop designs and install the project. The stream stabilization project was completed in March 2022. Approximately 300 linear feet of eroding cut bank Clifty Creek has been restored utilizing Natural Channel Design techniques. A stacked limestone boulder wall was constructed at the

toe of the bank and keyed into the bank in the proximity of existing stable channel features at the upstream and downstream tie-in locations. The boulder wall structure was constructed directly on top of existing bedrock to minimize the possibility of rocks being undercut by scour. A soil lift and bank-full bench was established atop the boulder wall which will extend along the length of the project. Above the bench the bank was graded back to a 3H:1V slope. Native seed and mulch was utilized to stabilize the soil and biodegradable coconut fiber matting was staked in atop the freshly-graded bank. Spoil generated from construction was utilized elsewhere onsite to create microtopography on the floodplain terrace/stockpiled onsite away from the stream for the landowner. In addition, a privately owned bridge located downstream of the cut bank was removed.

2. Six acres of riparian buffer enhanced with Ozark native plants.

Report: The Alliance worked with landowners, Mike and Sue Phillips, to develop a wildlife management plan, including the areas of riparian buffer along Clifty Creek. Upon completion of the stream restoration, the Alliance, AGFC Stream Team, and volunteers planted Ozark native plants including plants grown locally through the Alliance High Tunnels for Native Plants program. Over 300 native trees, shrubs, forbes and grasses were planted. Following the initial planting in March 2022, a subsequent planting of large trees and shrubs was conducted by AGFC Stream Team, the Alliance, and volunteers in December 2022. Approximately 200 trees and shrubs were planted by Alliance and AGFC staff and 14 volunteers. The six acres of riparian were planted with 500 native plants total.

As of October 1, 2022 – September 30, 2023:

An additional streambank restoration project will be constructed in September 2023, with the landowners financing an additional 500' of streambank restoration and 1 acre of riparian establishment. The additional restoration project will be keyed directly into the existing project and will utilize the same natural channel design techniques.

Downstream, the Alliance and partners were also able to achieve an additional 800' of riparian planting, or about 1 acre, at the Valentine property along Clifty Creek. 13 volunteers assisted with this planting. This planting was a direct result of the upstream activities at the Phillips property and helped to further increase landowner engagement, riparian establishment and water quality improvements.

These projects have led to landowner actions to further improve water quality and fish habitat, with the outcome of 800 linear feet of streambank restoration and eight acres of riparian establishment, in total.



Photo: Beaver Watershed Alliance, AGFC Stream Team and Volunteers help plant large trees along Clifty Creek riparian, March 2022.

3. Local demonstration site for landowners to visit to learn more on stream restoration.

Report: Two educational signs were installed near the project site, featuring riparian education and logos of program partners for visitors to view. Two workshops were held, including a field day on March 19, 2022 with a riparian workshop and volunteer planting day, and a second event held December 3, 2022 with additional volunteer plantings and an educational talk on streambank erosion and riparian management. The project site itself is part of the Hiding Place Hollow, a nonprofit group for furloughed workers, with many local and traveling residents visiting the site. During the workshops, several local landowners came to view and learn about the project and led to additional site visits to work with adjacent landowners. Downstream, the Alliance and partners were also able to achieve an additional 800' of riparian planting, or about 1 acre, at the Valentine property along Clifty Creek. This planting was a direct result of the upstream activities at the Phillips property and helped to further increase landowner engagement, riparian establishment and water quality improvements.



Photo: April 14, 2023, Ryan Roberts - NFHP, AGFC Staff and Beaver Watershed Alliance tour demonstration sites.

On April 14, 2023, Ryan Roberts- National Fish Habitat Partnership, Jason Olive – AGFC (now RFHP), Jon Stein - AGFC, Sean Saunders – AGFC Stream Team, and Becky Roark – Beaver Watershed Alliance toured both the Beaver Lake habitat project sites and the Clifty Creek stream restoration project. These sites will further serve as demonstration on how partners can work together to achieve lake habitat and stream habitat conservation success.

4. Improved water quality in Beaver Lake (that is used for drinking water for over 500,000 people).

Report: The streambank restoration treatment was keyed into the bank a minimum of 20 feet at the upstream and downstream extents, minimizing the risk of the creek flanking and eroding behind the restored bank. This has helped to hold the bank in place and reduce sediments from traveling downstream. Data analyzed from 2017 through pre-project completion of the streambank restoration site on Clifty Creek shows that approximately 200 tons of gravel and sediment eroded into Clifty Creek. The restoration will reduce this gravel and sediment from future loadings to the stream, and ultimately Beaver Lake, the region’s drinking water source for now 1 in 5 Arkansans.

5. Improved fish habitat in Beaver Lake with added 130 habitat sites.

Report: The Arkansas Game and Fish Commission worked with volunteers from several outdoor groups to sink fish habitat in Beaver Lake. Over 600 hours of volunteer time was garnered to add fish habitat to Beaver Lake from the following organizations: Back Country Hunters and Anglers, Hook, Line and Sinker Outdoors, Arkansas Master Naturalists, and Eclessia College. AGFC worked with the U.S. Army Corps of Engineers, Hobbs State Park and the volunteers to place 220 fish habitat sites in Beaver Lake, exceeding the goal of 130 habitat sites. Each habitat site has up to 6 cedar trees and GPS coordinates have been placed on our AGFC website for anglers to upload to their sonar units.

The AGFC conducted a large-scale fish habitat project on Beaver Lake in fall of 2021 and utilized \$75,796 in wages from employees during the project. The agency spent an additional \$10,000 on habitat supplies for the Beaver Lake Project.

As of October 1, 2022 – September 30, 2023:

The AGFC worked with Hobbs State Park and volunteers from several organizations from October 2022-December 2022 to add fish habitat to Beaver Lake. The Hobbs State Park Glade Restoration Project and volunteer projects added 30 additional habitat sites to bring the total for the project to 220. Each habitat site can be found and uploaded to sonar units from www.agfc.ar.gov.



Photo: Before picture of Hobbs State Park Glade infested with Eastern Red Cedar Trees.



Photo: After picture with Eastern Red Cedar trees removed from Hobbs State Park Glade.



Photo: Volunteers from Eclessia College assisting with Beaver Lake Fish Habitat.



Photo: Volunteers from Backcountry Hunters and Anglers Assisting with Beaver Lake Habitat



Photo: Volunteers from Backcountry Hunters tying blocks to sink cedar trees in Beaver Lake.

6. Improved shoreline and weekend angler success by placement of 30 fish habitat structures close to public access areas and shoreline fishing locations and improved angler catch rates and satisfaction rates.

Report: AGFC placed 31 new fish habitat sites close to bank fishing areas to allow bank anglers access to improved fishing. The habitat sites have at least 6 cedar trees per site and bank anglers can find a map of the sites on the AGFC website. These habitat sites should improve fishing success for bank anglers.

As of October 1, 2022 – September 30, 2023:

Five new habitat sites were created from October to December 20, 2022 that are located close to bank fishing areas on Beaver Lake. A total of 31 bank fishing habitat sites were created in the Beaver Lake Fish Habitat Project. These fish habitat sites will allow anglers that do not have a boat to experience higher angling catch rates due to the improved fish habitat.



Photo: Sonar image of fish habitat close to bank fishing area

7. Evaluation and survey data on fish habitat improvements, including comparisons on fish use of new habitat structures vs. areas with no habitat, use of habitat structures by anglers, angler information on fishing the structures with a creel survey.

Report: The AGFC has purchased forward facing sonar and plans to evaluate fish usage of these new habitat sites by the end of 2024. We also completed an angler survey in 2021 on Beaver Lake and asked questions on habitat use by anglers. Approximately, 58% percent of anglers were aware of fish habitat structures and fished around the structures. A follow up creel survey will occur in 2026 to evaluate the use of these new fish habitat sites.

8. Increased education and awareness to over 20,000 stakeholders in the Beaver Lake watershed.

Report: The Alliance distributed physical mailers and digital E-newsletters to watershed stakeholders. In addition, press releases, purchased advertisements, digital and printed mailers were distributed. In addition, several news articles covered project details in Northwest Arkansas.

Alliance Outreach:

November 2021 Enews 4,000+ subscribers
Winter 2022 Landowner Mailout 21,297 landowners
Spring 2022 Landowner Mailout 8,770 landowners
January 2022 Enews 4,000+ subscribers
March 2022 Enews 4,000+ subscribers
April 2022 Enews 4,000+ subscribers
Spring 2022 Newsletter 525 landowners
Summer 2022 Landowner Mailout 8,764 landowners

As of October 1, 2022 – September 30, 2023:

November 2022 ENews: 4,000+ subscribers
December 2022 ENews: 4,000+ subscribers
January 2023 ENews: 4,000+ subscribers
May 2023 ENews: 4,000+ subscribers
Winter 2023 Landowner Mailout: 8,762 landowners
June 2023 ENews: 4,000+ subscribers

3/7/22 Special Mailer - Postcard for Riparian Workshop and Planting Day at Clifty Creek

3/11/22 Ad in Madison County Record for Riparian Workshop and Planting Day at Clifty Creek

In The News:

1/13/23 – Beaver Lake and Clifty Creek Project Nears Completion -
https://www.friendsofreservoirs.com/project-update/beaver-lake-and-clifty-creek-project-nears-completion/?utm_source=mailpoet&utm_medium=email&utm_campaign=friends-of-reservoirs-news-newsletterposttitle-62

4/10/2023- New Habitat Barge and Skid Loader Get a Workout in Van Hollow on Beaver Lake – <https://www.friendsofreservoirs.com/project-update/new-habitat-barge-and-skid-loader-get-a-workout-in-van-hollow-on-beaver-lake/>

AGFC Outreach:

6/27/22 Video with AGFC for shoreline habitat work:
<https://www.facebook.com/watch/?v=3421509694754758>

7/15/22 Video produced and released by AGFC on project
<https://www.youtube.com/watch?v=8LDsClGn14o>

As of October 1, 2022 – September 30, 2023:

Mike and Sue Phillips were awarded the 2023 Natural State Award. A banquet was held July 2023 to honor them and other landowners in Arkansas. A video was produced by the AGFC:

<https://vimeo.com/showcase/10548986>

- 9. Improved wildlife habitat on Beaver Lake WMA by removing invasive cedar trees and incorporating a burn schedule in cooperation with the U.S. Army Corps of Engineers, Hobbs State Park, the Natural Heritage Commission and Beaver Watershed Alliance. The cedar removal and prescribed burns will greatly improve native plant species and enhance wildlife populations, which will include white-tailed deer, quail, songbirds, and other native species.**

Report: The AGFC worked with the U.S. Army Corps of Engineers, Hobbs State Park and Beaver Watershed Alliance to open up at least 5 acres of forest in Beaver Lake Wildlife Management Area by removing cedar trees. These wildlife openings have had a great response and many native plants are now growing in the open areas. The Corps of Engineers and AGFC will be conducting prescribed fire to keep these areas open in the next several years.

The AGFC will be working with the U.S. Army Corps of Engineers and Hobbs State Park on burning areas that have been opened up by cedar thinning on Beaver Lake WMA to improve wildlife habitat on the WMA. A total of 5 acres of wildlife habitat has been improved during the project.



Photo: Before picture of infestation of Eastern Red Cedar Trees on Beaver Lake WMA



Photo: After picture of removed Eastern Red Cedar trees and improved wildlife habitat

10. Restored natural glades through invasive cedar tree removal, which will benefit native plant species.

Report: AGFC worked with the U.S. Army Corps of Engineers to open up a field that was historically a native prairie by removing over 200 cedar trees. The field was planted with a native plant mix and has responded very well. AGFC also worked with Hobbs State Park to open up at least 1 acre of glade habitat by removing cedar trees.

As of October 1, 2022 – September 30, 2023:

AGFC worked with Hobbs State Park in May 2022 to open additional wildlife habitat on a glade in Van Hollow of Beaver Lake. A total of 10 habitat sites were added to the lake to bring the total to 220 fish habitat sites for the entire project.

11. Improved hunter success by clearing cedar trees and providing more suitable wildlife habitat.

Report: The removal of cedar trees and response to native plants has benefited wildlife habitat on Beaver Lake WMA. The improved wildlife habitat and these wildlife openings should improve deer hunting success rates.

12. Improved hunter, angler, and general public opinions of agencies and sponsors.

Report: The AGFC has completed at least 10 Facebook posts that have reached up to 20,000 users and this improved opinions of AGFC, Hobbs State Park, Corps of Engineers and Beaver Watershed Alliance. AGFC completed 2 video productions of the whole fish habitat project and have shared with the public. This has reached several thousand people to improve public opinions of the agencies and the fish habitat project.

As of October 1, 2022 – September 30, 2023:

AGFC completed 4 Facebook and Constant Contact posts to advertise the volunteer fish habitat days that reached over 10,000 people. The project has been very popular with anglers and the general public.

Additional comments:

This project initially began with \$40,000 from the Reservoir Fisheries Habitat Partnership. Funds were leveraged for the Clifty Creek project through additional grants and sponsorships, including \$35,000 from Bass Pro Outdoor Fund, \$25,000 from landowners Mike and Sue Phillips, \$1,500 from Rufus Fund for the War Eagle, and \$2,000 from the University of AR Extension Service. In addition, AGFC leveraged funding to bring an additional \$80,000 from

the Fish America Foundation. Including matching funds and cash contributions, the projects leveraged the \$40,000 to over \$330,000+.

The AGFC and BWA expanded on this project to obtain funding from the National Fish Habitat Partnership and Bass Pro Shops to add additional fish habitat to Beaver, Norfolk and Bull Shoals Lakes. The BWA and AGFC received a grant for \$275,000 to purchase a habitat barge, outboard motors, trailer, skid loader and trailer that will be utilized in statewide fish habitat projects in Arkansas. The AGFC conducted a large-scale habitat project on Bull Shoals Lake and replenished 128 fish habitat sites on the lake. Plans are to host a large-scale habitat project on Beaver Lake and small-scale project on Norfolk Lake in 2023. The addition of fish habitat in these lakes will be a great benefit to anglers and the general public.



Photo: New habitat barge for statewide habitat projects in Arkansas



Photo: Skid Loader used for fish habitat work in Arkansas

BWA and AGFC have expanded on the RFHP grant beyond the Bass Pro grant and have initiated the Northwest Arkansas Fish Habitat Alliance to build on the fish habitat improvements in Beaver Lake to include at least 10 waterbodies in 2024.

Northwest Arkansas Fish Habitat Alliance

Local Schools, Local Businesses, Improving Local Lakes

The Alliance is linked to the Arkansas Game and Fish Foundation, which is a 501 c3 non-profit organization to support the Arkansas Game and Fish and is focused on introducing new people to the outdoors. The Alliance will focus on improving fish habitat with the help of local high schools, local businesses (funding partners and fish habitat business-Mossback Fish Habitat) and education will be a main component.

Listed below are some educational opportunities for high schools.

1. Students assist with physical habitat builds and help sink habitat in lakes
 - High school teachers work with AGFC to determine how many fish habitat structures can be constructed by students.
 - Alliance applies for grants to pay for habitat structures, bus drivers and fuel for placing fish habitat.
 - After funding is received, students will construct habitat structures at school or local lake and place them in the lake with assistance of AGFC.
 - Beaver Lake structures will need to be from natural materials (pictures 1-2).

--All other lakes can be artificial structures from Mossback Fish Habitat (attached video and pictures).

2. Students assist with native aquatic vegetation plantings in local lakes and possibly design an Aquatic Plant Nursery at school.
 - Teachers work with AGFC to determine the lake to work on (more than likely Beaver Lake) and AGFC staff can help design a plant nursery at the school.
 - Alliance would apply for grant to fund the aquatic plant nursery, bus drivers and fuel for planting native vegetation in Beaver Lake.

3. Students assist with riparian area improvements in tributaries of waterways (planting trees or shrubs)
 - Teachers work with AGFC to determine waterbody to improve riparian areas by planting trees and shrubs.
 - Alliance would apply for grant to fund trees or shrubs to be planted, bus driver and fuel for planting day.

Staff from AGFC will provide educational workshops to the schools on importance of fish habitat and fish management in local lakes. This will be linked to state education standards. A professional fisherman or other staff will provide a fishing 101 course to students involved in the habitat projects

Table 1. Potential lakes and fish habitat enhancement for each lake.

Beaver Lake	Aquatic vegetation establishment, natural habitat structures and cut trees from shoreline
Crystal Lake	Artificial habitat structures
Lake Elmdale	Artificial habitat structures
Bob Kidd Lake	Vegetation establishment, artificial structures
Lake Fayetteville	Artificial or natural structures
Lake Sequoyah	Artificial or natural structures
Lincoln Lake	Artificial habitat structures
Lake Wedington	Artificial habitat structures
Lake Atalanta	Artificial habitat structures
Lake Leatherwood	Artificial habitat structures
Siloam Springs City Lake	Artificial habitat structures
Swepco Lake	Artificial habitat structures

The Beaver Watershed Alliance and Arkansas Game and Fish Commission deeply express their gratitude for this opportunity. The outcomes have been much more than just habitat improvement, such as new partnerships formed, new initiatives and new ways to engage more youth and adults in outdoor recreation and conservation efforts. Thank you to the Reservoir Fish Habitat Partnership for this opportunity.



Photo Library

Reservoir Fisheries Habitat Partnership Project

October 2021 – September 2023



The project site at Clifty Creek, located in Rogers, AR. A workshop, coordinated by Beaver Watershed Alliance and Arkansas Game and Fish Stream Team, was held March 2022 at a nearby location, with landowners attending who were interested in correcting streambank erosion and establishing a riparian buffer. A hands-on training and volunteer stewardship planting followed the workshop. Six acres of riparian were established with Ozark native plants and 300' of streambank was restored.



3-6 months after the volunteer riparian planting and streambank restoration, the native vegetation was coming in and the streambank restoration withstood several flood events.



The AGFC worked with Hobbs State Park and volunteers from several organizations from October 2022 - December 2022 to add fish habitat to Beaver Lake. The Hobbs State Park Glade Restoration Project and volunteer projects added 30 additional habitat sites to bring the total for the project to 220. Each habitat site can be found and uploaded to sonar units from www.agfc.ar.gov.



Before



After



Before



After

Before and after photos of the cedar clearing at Beaver Lake – Hobbs State Park Wildlife Management Area (WMA). Cedars were removed and placed as fish habitat in Beaver Lake. With an open forest floor, native grasses and other species have been able to thrive, restoring the glade habitat and generating a healthier habitat for wildlife.

Thank you to the following supporting partners and volunteer groups for making this project possible:

Arkansas Master Naturalists

Back Country Hunters and Anglers

Bass Pro and Cabela's Outdoor Fund

Beaver Water District

Cargill Cares

Clifty Fire Department

Eclessia College

Hook, Line and Sinker Outdoors

Landowners Mike and Sue Phillips

Landowners Renee and Gary Valentine

PackRat Outdoor Center

Rufus Fund for the War Eagle

University of Arkansas Agricultural Extension Services

