RESERVOIR FISHERIES HABITAT PARTNERSHIP

Annual Meeting
30 Sept.-2 Oct 2022
USACE Project Office
Shelbyville, IL

Sponsored By:

U.S. ARMY CORPS OF ENGINEERS

Lake Shelbyville FISH HABITAT Alliance

Lake Shelbyville FISH HABITAT Alliance

THIRD ANNUAL BANQUET

OCTOBER 01, 2022

TIME

4:00PM
Doors Open

5:30PM
Dinner Served

6:30PM
Program Begins

LOCATION

SULLIVAN VFW
1132 IL-32, Sullivan, IL 61951

MENU
Steak or Chicken Dinners

COST
$40 Single
$60 Couple
$10 Minnow*
*16 & Under
$150 Sponsor
$170 Sponsor Couple
$1000 Table Sponsor
$10 price increase at the door

- Raffles
- Silent Auction
- Live Auction
- Limited to 250 seats!

Purchase tickets online at:
https://LSFHABanquet.eventbrite.com

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chipsmarine2@yahoo.com

Reservoir Fisheries Habitat Partnership/Friends of Reservoirs Annual Meeting
30 Sept 2022

0900-1130	Cube Build-USACE Maintenance Building, 1989 State Hwy 16 East, Shelbyville, IL
1130-1300	**Lunch**
1300-1700	Field Trips

1 October 2022

RFHP/FOR Business Meeting USACE Office, 1989 State Hwy 16 East, Shelbyville 0800-1200

LUNCH (Provided by Friends of Reservoirs) 1200-1300

TECHNICAL SESSIONS

1300-1320	Welcome-Jeff Boxrucker (RFHP/FOR)
1320-1340	Building a Successful Partnership: The Lake Shelbyville Fish Habitat Alliance-Lee Mitchell, USACE
1340-1410	Roles of Material Type and Location on the Ability of Artificial Habitat Structures to Concentrate Prey Resources and Fishes-Jeremy C. Facer, Illinois Natural History Survey
1410-1440	Fish Community Response to Reservoir Habitat Enhancement Across Multiple Spatiotemporal Scales-Carly C. Fenstermacher, , Illinois Natural History Survey
1440-1500	Carlyle Lake Fisheries Habitat Projects – Doug Wasmuth, USACE
1500-1520	Rend Lake Fisheries Habitat Projects – Brockton Letcher, USACE
1520-1540	Mark Twain Lake Fisheries Habitat Project–Allen Mehrer, USACE
1700-2100	**Banquet-VFW, 1132 IL-32, Sullivan, IL**
Sunday, October 2	
0830-0850	Utilizing Reef Innovations, Reef Ball concrete structures as fish habitat enhancements and erosion control in Pelican Lake, Utah.-Natalie Boren, Utah Division of Wildlife Resources
0850-0910	Year 8 for the *Friends of Lake Livingston* Project-Our Journey, Challenges, Success and Failures-Scott Ball & Scooter Langley
0910-0930	Habitat Projects at Patoka Lake, Indiana-Don Goldsberry
0930-0950	Reservoir Fisheries Habitat Partnership Habitat Improvement Project on Barkley Reservoir-Michael Clark, Tennessee Wildlife Resources Agency
0950-1010	Reef Ball Fish Habitat Program in East Tennessee with a note about Alabama Bass-John Hammonds, Tennessee Wildlife Resources Agency
1010-1030	Largemouth Bass CPUE in reservoir coves with and without offshore artificial habitat structures-Sandy Clark-Kolaks; Indiana Department of Natural Resources
1030-1050	Beginning and Evolution of Habitat Manipulation Projects in New Mexico Reservoirs-Jacob William Miller, New Mexico Department of Game and Fish
1050-1110	Raystown Lake Fish Habitat and Shoreline Stabilization Project-Ben Page, Pennsylvania Fish and Boat Commission
1110-1130	Enhancement of Beaver Lake Fish Habitat: It's all about the Partnerships-Jon Stein, Arkansas Game and Fish Commission
1130-1150	Paper, Rock, Scissors....Choosing habitat designs and materials for Carlsbad-Earl Conway, Sun Country Outdoors
	Lunch (Provided by Friends of Reservoirs)

ABSTRACTS

Building a Successful Partnership: The Lake Shelbyville Fish Habitat Alliance-Lee Mitchell, USACE

The Lake Shelbyville Fish Habitat Alliance has proven to be a very successful partnership between the US Army Corps of Engineers, Illinois Department of Natural Resources, Illinois Natural History Survey, and anglers at Lake Shelbyville. The presentation will outline why the partnership works and will do a deep dive into how you can build your own successful partnership.

Roles of Material Type and Location on the Ability of Artificial Habitat Structures to Concentrate Prey Resources and Fishes-Jeremy C. Facer, Anthony P. Porreca, Michael A. Nannini, Joseph J. Parkos III

Management agencies deploy a variety of artificial habitat structures to help compensate for the loss of naturally occurring habitat in aging reservoirs. Added structures are assumed to benefit reservoir fisheries by attracting sport fish and concentrating prey resources for multiple trophic levels by providing substrate for primary producers and aquatic macroinvertebrates. Artificial habitat structures composed of plastics are assumed to function similarly to natural wood or rock structures; however, differences between artificial and natural materials in chemical composition, surface characteristics, and longevity may influence the ability of added structure to concentrate fish and prey resources over time. Aside from material composition, deployment location within a reservoir may also influence a structure's ability to attract and concentrate different fish species. The placement of habitat relative to environmental conditions and features within a reservoir, such as depth, channel width, proximity to other structures, turbidity, temperature, and oxygen availability, may shape spatial and seasonal patterns of fish abundance and occupancy of added habitats. To test whether natural and plastic structures function similarly as substrates for fish prey resources, we are conducting a pond experiment to quantify differences in macroinvertebrate colonization and community composition over time between natural felled trees and synthetic Mossback trees. In August 2021, ten ponds each received three natural trees and three Mossback trees, with periphyton and macroinvertebrates sampled from the structures in each pond once per month for a projected two years. To examine how location within a reservoir's aquatic landscape may influence fish use of different added structures, we will compare abundance and assemblage structures of fish collected from rock reefs and plastic crib habitats distributed throughout the longitudinal, environmental gradient within Lake Shelbyville, a 4500-ha reservoir. Data on fish use of artificial habitats will be collected using a combination of electrofishing and sonar gears and will be related to local conditions and features at each structure location. These studies will explore the mechanisms underlying fish use of artificial habitat enhancements and provide guidance on how material composition and deployment location affect the efficacy of reservoir habitat additions.

Fish Community Response to Reservoir Habitat Enhancement Across Multiple Spatiotemporal Scales-Carly C. Fenstermacher, Anthony P. Porreca, Joseph J. Parkos III

Habitat enhancements (e.g., additions of natural and artificial fish habitats) are a common management tool used to mitigate the loss of natural physical structure in aging reservoirs. Habitat additions have typically been found to concentrate fish; however, how this concentration effect varies over the age and location of the structure and whether these additions increase prey and fish production are poorly understood. We designed two studies to assess the effects of reservoir habitat additions at different spatial and temporal scales. In the first study, we measured responses of fish populations and fish prey resources to a whole-reservoir habitat manipulation, where over 1500 trees were added to the shoreline of a small

(22 ha) reservoir, resulting in approximately 13 times more littoral coarse woody habitat (CWH) compared to pre-habitat enhancement conditions. The CWH addition increased Bluegill size structure and reproductive productivity and Largemouth Bass size structure during the four-year evaluation period, while the abundances of zooplankton, macroinvertebrates, Bluegill, and Largemouth Bass were unaffected. In the second study, we investigated whether fish relative abundance and assemblage composition at 50 synthetic habitat structures (PVC cubes) varied longitudinally within Lake Shelbyville, a 4500-ha reservoir, and with time since deployment, ranging in age from five months to five years. Structure location had a stronger effect on fish occupancy of PVC cubes than time since deployment. Fish relative abundance generally decreased from lower to upper reservoir cube locations, with fish present at cubes shifting from primarily crappie and sunfishes at lower reservoir sites to mainly freshwater drum at upper reservoir cubes. These studies indicated that understanding the effects of habitat additions at multiple scales is important for the guidance of habitat enhancement programs. For example, observed increases in size structure and reproduction indicate that reservoir habitat additions may enhance fish productivity, but the location of added habitats within a reservoir is likely an important driver of fish aggregation and the influence of individual habitat patches on fish populations.

Carlyle Lake Fisheries Habitat Projects – Doug Wasmuth, USACE

Carlyle Lake, the largest man-made lake in Illinois, is located in South Central Illinois, approximately 50 miles east of St. Louis, Missouri. Construction of the lake began in 1958 and was completed in 1967. The lake is 12 miles long and 1-3 miles wide with approximately 26,000 acres of surface water. Carlyle Lake is a multi-purpose lake, these purposes include downstream flood control, recreation, water supply, environmental stewardship, and downstream navigation. Over the past five years the Carlyle Lake Project has utilized grant funding through the Reservoir Fisheries Habitat Partnership and a successful network of partners to complete much needed aquatic habitat improvement projects. The projects include bank stabilization and fish structures at Point One in the Dam West Recreation Area and bank stabilization and shoreline revetment in the Coles Creek Recreation Area. Through grant funding, volunteer hours, and donated equipment materials, the project has totaled leverage funding over $150K.

Rend Lake Fisheries Habitat Projects – Brockton Letcher, USACE

- **Reservoir Fisheries Habitat Partnership Grant Proposal**
  1. Project Overview
  2. Monitoring plan overview
  3. Outreach plan overview
  4. Provision to protect the restoration project site.
  5. List of required permits
  6. Project timeline
  7. Budget
  8. Optional Supporting Material
- **Rend Lake Grant Statistics**
  1. Contributions
  2. Volunteers
  3. Leveraged Benefit
- **Future FOR applications**
- **Rend Lake's Fisheries Habitat Improvement Program**
  1. Christmas Trees
  2. Cubes / spider blocks
  3. Brood ponds
  4. Annual tournaments

5. Fisheries Fact Sheet - surveys

Mark Twain Lake Fish Habitat Project-Allen Mehrer, USACE

Clarence Cannon Dam and Mark Twain Lake has collaborated with the Mark Twain Lake Friends of Recreation and Environmental Stewardship (FOREST) Council, the Missouri Department of Conservation, and regional angling enthusiast to develop and a comprehensive five-year management plan to create durable fisheries habitat and shoreline fishing opportunities. The Mark Twain Lake Fisheries Habitat Plan the features the development of two types of artificial structures. The first is the MTL Crappie Condo structure constructed of PVC pipe and interlaced with a matrix of drain tile. These structures are placed in deeper depths of the reservoir. The second is the MTL Medusa Block, and concrete block structure embedded with ½" poly pipe. These structures are placed at shallower depths in the reservoir, and in proximity to shoreline access. Locations determined for management are based on collective experiences of resource professionals and angling enthusiasts. The plan is in its second year of implementation. Three projects have already been accomplished Mark Twain Lake at the following locations: Three Fingers Branch with 90 condos and 180 blocks being placed; Route N Silo Bay with 60 condos and 120 blocks being placed; and South Fork Bridge Site with 60 condos and 120 blocks being placed. The next project is scheduled for October 1, 2022 and will feature 60 MTL condos and 120 MTL Medusa Blocks being placed at key locations in the Spalding Bay. What started as a simple conversation among partners regarding the loss of natural habitat in the reservoir has evolved into a sustainable initiative supported by numerous community groups, cooperating agencies and volunteers.

Utilizing Reef Innovations, Reef Ball concrete structures as fish habitat enhancements and erosion control in Pelican Lake, Utah.-Natalie Boren, Regional Sportfish Biologist, Utah Division of Wildlife Resources, Vernal Utah.

In the fall of 2021, Utah Division of Wildlife Resources sportfish biologist and heavy equipment crew installed 250 concrete reef ball structures into Pelican Lake, Utah. Our objective was to reduce erosion on a southern shoreline with an exposed bank. Considerable wave action, caused by storm events has caused severe erosion and increased turbidity in the lake. These reef balls also serve as a unique fish habitat structures in the lake which are used by both largemouth bass and bluegill. This presentation is an update on the project and how it has held up against water level fluctuations, ice sheets and wave action.

Year 8 for the *Friends of Lake Livingston* Project-Our Journey, Challenges, Success and Failures- Scott Ball & Scooter Langley

Our project kicked off in 2013. It's been quite a journey so far. Like any such large conservation project, we encountered challenges starting up including building infrastructure and community support. At some point, we realized infrastructure and community support were not enough to make the project successful. Concurrent with a leadership team evolution, new science driven methods were investigated from a variety of sources. Key to modifying past project efforts was information received from the Reservoir Fisheries Habitat Partnership (Friends of Reservoir), Texas Parks & Wildlife, and the Lee College Horticulture program based in a prison unit in Huntsville, Tx. With adoption of an updated science-based approach, new community partnerships were formed and new methods implemented. Additions were made to the leadership team. We currently engage 5 high schools in the local community, a prison unit horticulture program, two Texas Master Naturalist chapters and numerous other community groups around Lake Livingston, Texas.

Reservoir Fisheries Habitat Partnership Habitat Improvement Project on Barkley Reservoir-

Justin Graben; Kentucky Department of Fish and Wildlife Resources, justin.graben@ky.gov; Adam Martin; Adam.martin@ky.gov; Nick Simpson; Nick.simpson@ky.gov; Michael Clark; Tennessee Wildlife Resources Agency, michael.a.clark@tn.gov; Tom Flanagan, tom.j.flanagan@tn.gov; Brandon French, brandon.french@tn.gov

A habitat improvement project was recently completed at Lake Barkley. Target species for habitat improvement were Largemouth Bass, Smallmouth Bass, Crappie spp., and Sunfish spp. The 57,000 acre mainstem impoundment is over 50 years old and has lost some natural habitat due to age, siltation, and water level fluctuations. Work was completed in the Kentucky and Tennessee portions of the reservoir and included multiple state, federal, and private partners. In the Kentucky portion, the Kentucky Department of Fish and Wildlife Resources initiated the project with fish attractors in the form of shallow water stake beds, and deepwater brushpiles. In addition to the fish attracting structures, the primary focus was improving the littoral zone habitat in ways specifically designed to increase the spawning success of the black bass, crappie, and sunfish in the reservoir. This work included adding shallow water hardwood laydowns, and concrete artificial spawning beds. The efficacy of these spawning structures was evaluated by conducting snorkel surveys, electrofishing, and hatch date analyses. Bald cypress trees were also planted to decrease erosion and provide spawning habitat in the future. The Tennessee Wildlife Resources Agency was offered and accepted a partnership with this grant that included installation of 8 deep water fish attractors, 320 artificial shallow water fish attractors, and 140 artificial spawning structures. The success of this project will be monitored by conducting electrofishing surveys annually in the spring and fall so that population characteristics may be compared to historic levels.

Reef Ball Fish Habitat Program in East Tennessee with a note about Alabama Bass-John Hammonds and Russell Young, Tennessee Wildlife Resources Agency

East Tennessee contains mostly headwater reservoirs of the upper Tennessee River system and these reservoirs are drawn down during the winter months in preparation for collecting spring rain runoff. Therefore, much of the natural fish habitat enhancement structures succumb to exposure and quicker decaying when compared to other reservoirs where the habitat remains inundated with water. About a decade ago, TWRA's region 4 reservoir fisheries personnel decided to pursue a more permanent type structure for providing fish habitat in their region and began constructing and deploying Reef Balls developed by Reef Innovations of Florida. During this time, a few hundred reef balls have been deployed and enhanced with brush to provide fish habitat and also areas for anglers to target their fishing efforts. A variety of grants and interest have been generated around this project, and some anecdotal data have been acquired to show fish usage, with and without being enhanced with brush.
Alabama Bass have caused total loss of species in some reservoirs across the southeast, and recently, their genes have been detected in several Tennessee Reservoirs. Fisheries managers are concerned and have been tasked with educating their colleagues, anglers, and interest groups in the dangers of moving Alabama Bass outside their native range.

Largemouth Bass CPUE in reservoir coves with and without offshore artificial habitat Structures-Sandy Clark-Kolaks; Indiana Department of Natural Resources

Artificial habitat structures are commonly used to supplement existing habitat or replace structured habitat that has been degraded or lost in aging reservoirs and are expected to concentrate fish and increase angler catch rates. In 2016, 135 artificial habitat structures were placed at 7 locations around Sullivan Lake, IN (451 acres). Artificial structures included Georgia cubes, Pennsylvania porcupine cribs and juniors, and black bass nesting platforms. Eight stations (4 artificial habitat and 4 non-habitat) were sampled for Largemouth Bass in May of 2017-2019 and 2021-2022. No sampling was conducted in 2020

due to COVID-19 restrictions. Sampling consisted of 15-minute night DC electrofishing stations with two dippers. The addition of artificial habitat did not increase Largemouth Bass catches over time and CPUE was greatest in 2018 and declined every year after that. Largemouth Bass CPUE was greater in habitat stations in every year of sampling however, the margin of difference was greatest in 2017 and declined over time.

Beginning and Evolution of Habitat Manipulation Projects in New Mexico Reservoirs-Jacob William Miller, New Mexico Department of Game and Fish

New Mexico has numerous small reservoirs (80-200 ha) that are over 50 years old and in need of habitat manipulations/installations, especially woody debris. Historically, when issues in sportfish populations pertaining to growth rates, relative abundances, and body conditions have been observed, the only management tool available has been the manipulation of stocking strategies, change in recreational harvest limits, or removal/relocation of stunted fish. The New Mexico Department of Game and Fish (NMDGF) decided to start exploring the possibility of lacustrine habitat manipulation projects to improve sportfish population dynamics in 2018 and implemented the first project in 2020. In this presentation I intend to share the background information that influenced the NMDGF to start implementing these projects, the prototype habitat structures being built and how they have been adapted/altered. I will also discuss methods used to plan and map sinking locations and how angler opinions guided the plans to reduce conflicts between angler groups (e.g. shore trout anglers and boat/shore bass anglers) and other recreational uses. Hopefully the sharing of this information will help the NMDGF and other groups/agencies learn how future habitat manipulation projects can be improved to benefit fish populations and anglers.

Raystown Lake Fish Habitat and Shoreline Stabilization Project-Ben Page, Pennsylvania Fish and Boat Commission, 595 East Rolling Ridge Drive, Bellefonte, Pennsylvania 16823, phone (814) 359-5162, fax (814) 359-5153, e-mail bepage@pa.gov

Raystown Lake has been a part of the PA Fish and Boat Commission's Cooperative Habitat Improvement Program for over 20 years. Through those 20 plus years the PFBC has contributed to an annual volunteer habitat project in partnership with the U.S. Army Corps of Engineers. A recent consent order between Sunoco and the PA Department of Environmental Protection has provided $1.15 million to complete a large-scale habitat project at Raystown Lake. The PFBC has partnered with the non-profit Friends of Reservoirs to administer the funding for this project. The Friends of Raystown Lake have utilized the consent order funding as match to leverage grant funds from PA Lake Management Society and Reservoir Fisheries Habitat Partnership. The project funding has enabled the PFBC to stabilize extensive lengths of shoreline at Raystown Lake which improves water quality, increases angler access and enhances fish habitat. The PFBC construction crew began the project in September of 2020 and is scheduled for completion in 2023.

Enhancement of Beaver Lake Fish Habitat: It's all about the Partnerships-Jon Stein, Eric Gates and Jordan Lindaman, Arkansas Game and Fish Commission Jonathan.Stein@agfc.ar.gov, Eric.Gates@agfc.ar.gov, Jordan.Lindaman@agfc.ar.gov

Beaver Lake is a large (11,500 ha.) flood control reservoir that is owned by the U.S. Army Corps of Engineers. Fish populations in Beaver Lake are managed by the Arkansas Game and Fish Commission and popular sportfish include Largemouth Bass, Spotted Bass, Smallmouth Bass, White Crappie, Black Crappie, Striped Bass, and Walleye. As with most large reservoirs in the southeast, Beaver Lake is aging (56 years old) and much of the original habitat has been lost. The AGFC worked with Beaver Watershed Alliance and at least ten different partners to obtain grants from the Reservoir Fish Habitat Partnership, Fish America Foundation and Bass Pro Shops to improve fish habitat in Beaver Lake and a tributary. A total of 189 fish habitat sites have been placed in the reservoir to date, with each site holding up to six large cedar trees. Several sites have been placed close to bank fishing areas to improve fishing access and success of an underserved angler group on Beaver Lake.

Paper, Rock, Scissors....Choosing habitat designs and materials for Carlsbad-Earl Conway, Sun Country Outdoors.

Lake Carlsbad presented a variety of challenges to design fish habitat that would be effective at mitigating the many impairments, increasing food web production, bait fish production, and grow bigger and more gamefish. But meeting the desires of residents, city officials, game biologists and their bosses has also been a challenge. Tradeoffs were made between long-lasting plastics, dense metal or concrete structures, and wooden structures to meet the specific needs of the location. Comments from TikTok social media also provides a perspective on how the public reacts to different designs. Decision criteria included depth, boat traffic, flood potential, fishing access and topography.