7th Annual Meeting
Reservoir Fisheries Habitat Partnership
Big Cedar Lodge
Ridgedale, MO
8-9 November 2016

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Reservoir Fisheries Habitat Partnership/Friends of Reservoirs Annual Meeting Big Cedar Lodge 7-10 November 2016

Monday, November 7	
Travel Day	
Tuesday, November 8	**Lakeview Room A&B**
0730-0830	**Breakfast-Sponsored by United Phosphorous, Inc. (UPI)**
0830-0835	Introductory Remarks-Jeff Boxrucker
0835-0900	Welcome/Bass Pro Shops Conservation Programs-Bob Ziehmer/Martin MacDonald
0900-0920	National Fish Habitat Partnership updates-Tom Champeau, NFHP Board Chair
0920-0940	B.A.S.S. Conservation Programs-Gene Gilliland
0940-1000	Reservoir Fisheries Habitat Restoration is too Big a Job for Any one Agency to Tackle: Partnering and the Friends of Reservoirs Role in its Promotion-Jeff Boxrucker
1000-1020	The Challenge of Reservoir Fish Habitat Improvement in Texas: It's Going to Take a Village-Dave Terre
1020-1040	**Coffee Break (provided by FOR)**
1040-1110	Inspiring the Will to Revitalize a Reservoir-Tom Lang
1110-1130	Towards a Predictive Framework of Habitat Enhancement-Brian Graeb
1130-1200	Best Management Practices for Reservoir Fish Habitats-Steve Miranda
1200-1300	**Lunch (provided by FOR)**
1300-1330	How Missouri is Making a Difference through Fishers and Farmers -Chris Williamson, Rob Pulliam and Sherry Fischer
1330-1350	Largescale Habitat Improvement on Table Rock Lake-Mike Allen
1350-1410	Remediation of Failing Septic Systems in the Upper White River Watershed in Missouri -David Casaletto
1410-1430	Installation and Evaluation of Fish Habitat Structures in Bull Shoals-Dylan Bussell and Nate Rechtenwald
1430-1450	Sticks and Stones: A Cooperative Effort to Increase Fish Habitat in Smithville Lake-Eric Dennis
1450-1510	**Coffee Break-Sponsored by Midwest Lake Management**
1510-1530	Mozingo Lake Habitat Restoration Project-Tory Mason
1530-1600	Indiana's New Reservoir Enhancement Program -Sandra Clark-Kolaks
1600-1620	Mining Unexpected Results from Fisheries Projects -Earl Conway
1620-1640	Habitat Enhancement Options in Private Ponds and Lakes-Jeff Slipke
	Dinner on your own (Buzzard Bar)
Wednesday, November 9	**Lakeview Room A&B**
0730-0830	**Breakfast-Sponsored by B.A.S.S.**
0830-0855	Reestablishing Native Vegetation in Lake Livingston, TX through Partnerships -Tom McDonough and Ed Parten
0855-0915	Lakes Bloomington and Evergreen Habitat Restoration Projects-Mike Garthaus
0915-0945	New Website for Friends of Reservoirs-Rebecca Krogman and Amberle Jones
0945-1015	Other Communication Tools for Spreading our Message-Rebecca Krogman
1015-1045	Youth Ambassador Challenge-Jeff Boxrucker
1045-1115	Show Me the Money Too-Earl Conway
1115-1200	Discussion
1200-1300	**Lunch (provided by FOR)**
1300-1700	RFHP Business Meeting
1830-2100	**Banquet-Sponsored by Bass Pro Shops (Worman House)**

MEETING ABSTRACTS

B.A.S.S. Conservation Programs-***Gene Gilliland, B.A.S.S. Conservation Director***

Bass fishing organizations affiliated with B.A.S.S. in 47states and one Canadian province make up the B.A.S.S. Nation. Each state/province has a volunteer Conservation Director that works on local, state and regional conservation issues related to the B.A.S.S. Conservation Agenda which includes a component on protecting and enhancing fish habitat. These state affiliates and the local bass clubs that make up their organizations have access to several small (<$5,000) grant programs that provide funds for local habitat projects. These include grants from the Aquatic Ecosystem Restoration Foundation (aquatic plant projects), Mossback Fish Attractors (utilizing artificial habitat structures), FishAmerica Foundation (habitat protection and enhancement) and Shimano American Corporation (habitat enhancement requiring youth bass club participation). Clubs are required/encouraged to partner with other stakeholders to find additional sources of non-federal grant dollars that can serve as match for monies that state agencies have available through the Wildlife and Sportfish Restoration program and through entities such as Friends of Reservoirs who disburse funds from the National Fish Habitat Partnership. B.A.S.S. clubs have leveraged ~$75,000 in grants in the last three years and completed projects valued at over $137,000.

Reservoir Fisheries Habitat Restoration is too Big a Job for Any one Agency to Tackle: Partnering and the Friends of Reservoirs Role in its Promotion- ***Jeff Boxrucker, Coordinator, Reservoir Fisheries Habitat Partnership***

The task of restoring habitat in the nation's reservoirs is a multijurisdictional challenge and cost prohibitive for a federal and/or state agency to accomplish without partnering with other public and private organizations or individuals. The Reservoir Fisheries Habitat Partnership (RFHP) recognizes that reservoir fisheries habitat impairments are often extensions of poor land-use practices in the respective watersheds. RFHP works to bring agencies and local organizations and individuals together to address habitat impairments at the local scale. RFHP and the Friends of Reservoirs Foundation have a membership and grant program that encourages local groups to work with state fisheries biologists to ensure that projects enhance fisheries management plans. RFHP has conducted a habitat impairment assessment of reservoirs nationwide to help prioritize activities. Funded projects have focused on native vegetation restoration, structure addition and shoreline stabilization. Future projects look to partner with organizations to address watershed impairments to improve water quality and habitat in downstream impoundments.

The Challenge of Reservoir Fish Habitat Improvement in Texas: It's Going to Take a Village-*Dave Terre, Chief, Fisheries Management and Research, Texas Parks and Wildlife Department.*

Texas has over 1100 public reservoirs and degraded fish habitats are beginning to take their toll on recreational fishing opportunity and water quality. The Texas Parks and Wildlife Department (TPWD), like many other state fisheries agencies, does not have the financial or manpower resources to solve these problems by themselves. In Texas, local community and political support are required to solve these problems and initiating habitat projects supported by grass

roots partners, at a local level, is a good way to build this support. To accomplish this, the TPWD has chosen to engage the Reservoir Fisheries Habitat Partnership in the recruitment of local Friends of Reservoir (FOR) Chapters and Affiliate Organizations to support local fish habitat improvement projects across the state. These public FOR groups have provided volunteer labor, generated funding, created political support, and raised public awareness of the need for such projects within their communities. Productive relationships established on fish habitat improvement projects have also led to productive relationships in other areas of fisheries-related work. This presentation will explore how to get FOR groups established in your state and show the benefits that could result from having them as partners in your fish habitat improvement work.

Inspiring the Will to Revitalize a Reservoir-*Tom Lang, Texas Parks and Wildlife Department*

Built in 1901, Lake Wichita in Wichita Falls is the third oldest lake in Texas. Known as the "Gem of North Texas," it has served the region as a recreation destination, as a social mecca, as a driving economic force, as a home for the wise-use and conservation of fish and wildlife resources and as a foundation for community growth by serving as a drinking water source. At 115, Lake Wichita is beyond its expected 100-year life span. The natural reservoir aging-process (among other issues) has led to its present state where it is no longer able to provide significant social, economic, ecological, or recreational benefits to the community. Lake Wichita has been plagued by Golden Alga fish kills, a drought of record started in 2010 and nearly completely dried up the 1,200-acre reservoir until torrential rains in May of 2015 refilled the lake. With these issues and an average depth of 4.5 feet at conservation pool Lake Wichita was essentially dead. In May 2013, the City of Wichita Falls established a Lake Wichita Study Committee to make recommendations to the City Council. As a result, the Lake Wichita Revitalization Project has been established with several key project partners; City of Wichita Falls, City of Lakeside City, Texas Parks and Wildlife Department, Wichita Falls Area Community Foundation, and the Lake Wichita Chapter of Friends of Reservoirs. Together these organizations have led a grass roots effort that has been growing in political, financial, and public support for a holistic plan to revitalize the lake. Partners and the public have varied interests but all have agreed that without rebuilding the lake of sufficient quality to support a fisheries resource, no other desires for amenities at the lake matter. This project includes a dry excavation of 8-million cubic yards of sediment, bathymetric construction that minimizes evaporation during drought, watershed restoration, placement of a plethora of fish habitat, fish restocking, fishing access, commercial development, recreational amenities, and wildlife viewing. This presentation will focus on the grass roots process and efforts that is leading to the success of this holistic and integrated lake revitalization; including inspiring partners, politicians, civic organizations, philanthropists, and the general public to actively work for the successful revitalization of the lake.

Best Management Practices for Reservoir Fish Habitats-*L.E. Miranda, U.S. Geological Survey, Mississippi Cooperative Fish and Wildlife Research Unit, Mississippi State, MS*

Best management practices (BMPs) are conservation measures and social actions for environmental protection, restoration, and enhancement. The Reservoir Fisheries Habitat Partnership has developed a toolbox of BMPs to address reservoir habitat problems that originate

within the reservoir, and its tributaries, riparia, and watershed. The BMPs address habitat distress such as sedimentation, water quality, water clarity, eutrophication, water regime, connectivity, littoral plants, and structural habitat. The toolbox includes structural BMPs (e.g., those that are installed), non-structural BMPs (e.g., those that involve organizing or regulating), and procedural BMPs (e.g., those that involve following a process). A rating system that considers applicability, efficacy, reliability, feasibility, durability, affordability, and value added was developed to estimate the potential utility of BMPs at the local level. The BMPs are being made available online through the partnership's website and in print format starting in 2017.

How Missouri is Making a Difference Through Fishers and Farmers-*Sherry Fischer, Stream Services Program Supervisor, Chris Williamson, Fisheries Management Biologist, Rob Pulliam, Fisheries Management Biologist, Missouri Department of Conservation*

Fishers & Farmers Partnership For the Upper Mississippi River Basin is a self-directed group of non-government agricultural and conservation organizations, tribal organizations, and state and federal agencies united to add value to farms while protecting, restoring, and enhancing the 30,700 miles of streams and rivers of the Upper Mississippi River Basin. Throughout the Basin, the Partnership works to build flexible, collaborative relationships between landowners, agriculture, and conservation organizations to empower landowners to act for themselves and the greater good. The Missouri Department of Conservation participates in the five state partnership and provides representation on the Steering Committee. Local watershed efforts have been enhanced by receiving FFP funding for projects in the Meramec and Peno/Spring Creek priority watersheds. Our presentation will provide an overview of accomplishments, stakeholder engagement, and future plans.

Table Rock Lake National Fish Habitat Initiative-*Michael Allen, Resource Assistant and Shane Bush, Fisheries Management Biologist, Missouri Department of Conservation.*

The Missouri Department of Conservation (MDC), Bass Pro Shops, National Fish and Wildlife Foundation, and Arkansas Game and Fish Commission completed a five year project in 2013 to maintain and enhance the fish habitat in Table Rock Lake and serve as a pilot project in a broader national program focusing on habitat restoration within reservoirs. The primary project objectives were to improve fish habitat and water quality within Table Rock Lake and its tributaries, and improve habitat and water quality in Lake Taneycomo, the tail water of Table Rock Lake. Over 2,000 fish habitat structures comprised of stumps, rocks, pine, cedar, and hardwood trees were installed in Table Rock Lake between 2007 and 2013. MDC used electrofishing, SCUBA surveys, radio telemetry, and angler creel surveys to evaluate the effectiveness of these habitat structures. In Lake Taneycomo, 71 boulder clusters were installed to improve trout habitat. MDC has also worked to improve watershed health by providing cost-share benefits to landowners. Over 3,000 septic tanks have been pumped around the lake in an effort to reduce non-point sources of pollution into Table Rock Lake. Additionally, eight stream bank stabilization projects were completed in the watershed to stop soil erosion and reduce sediment input into the lake. This project has proven to be an excellent opportunity to proactively maintain and enhance fish habitat in and around two of the Midwest's most popular sport fisheries and is providing a national example for sustaining and improving reservoir

sportfish populations through large-scale habitat improvements.

Remediation of Failing Septic Systems in the Upper White River Watershed in Missouri- ***David Casaletto***

Failing septic systems have been proven to have a cumulative negative effect on water quality in our lakes, streams and rivers. In 2001, a study by Table Rock Lake Water Quality found laundry detergent brighteners in the near-shore areas of Table Rock Lake coming from lake front homes. Efforts started in 2002 around Table Rock Lake developed new advanced septic treatment systems that overcome our poor site conditions such as steep slopes, lack of soil, rock outcroppings and karst topography. These advanced systems use pressurized drip irrigation tubing to disperse treated effluent into imported soil lateral fields that polish the effluent before it enters our ground and surface waters. Currently, grants totaling $2 million in State Revolving Funds (SRF) from EPA and administered by the Missouri Department of Natural Resources, are cost sharing with property owners who are replacing failing septic systems in the Upper White River Basin. In addition, a grant from the Missouri Department of Conservation is allowing a $50 rebate to property owners who pumpout their septic tanks.

Installation and Evaluation of Fish Habitat Structures in Bull Shoals Lake, Missouri- ***Dylan Bussell, Fisheries Biologist and Nathan Recktenwald, Fisheries Management Biologist, Missouri Department of Conservation***

The Missouri Department of Conservation, Bass Pro Shops, and the National Fish and Wildlife Foundation are currently funding a project to increase fish habitat structures in the Missouri portions of Bull Shoals Lake and Norfork Lake. The US Army Corps of Engineers owns both lakes located in the southern part of the state. Existing fish habitat structures are deteriorated, and new habitat structures are being installed for the purpose of attracting sportfish for anglers. An abundance of Eastern Redcedar trees exist along the shoreline and are selected based on ease of access, size of trees, slope of the bank, land classification, and proximity to preferred habitat structure locations. Contracted labor is used to cut and anchor trees while biologists operate a habitat barge to drag trees from the shoreline and place structures within the lake. The project consists of approximately 115 structures grouped in four to eight trees combined. Structures extend perpendicular to the shoreline from water depths of 10 feet to 30 feet in coves and 20 feet to 40 feet in the main lake areas. The GPS coordinates of structure locations are made publically available through signage, the MO Fishing App, and the online MO Fishing Interactive Map.

Sticks and Stones: A Cooperative Effort to Increase Fish Habitat in Smithville Lake- ***Eric Dennis, Fisheries Management Biologist, Missouri Department of Conservation***

Smithville Lake is a 7,190-acre U.S. Army Corps of Engineer (USACE) reservoir located just north of Kansas City, Missouri. Construction of Smithville Lake was completed in 1982, and attracts thousands of water enthusiasts and anglers each year. Smithville supports a diverse and popular sport fishery including crappie, largemouth bass, white bass, channel catfish, and flathead catfish. Like many reservoirs across the country, large, woody, habitat has significantly degraded and currently provides limited habitat for fish. A cooperative effort between the Missouri Department of Conservation, USACE, Clay County Parks and Recreation, Reservoir

Fisheries Habitat Partnership, and local volunteers was established to enhance aquatic habitat in Smithville Lake. Project objectives include increasing angler-fish interactions and enhancing recruitment of multiple fish species by installing hard woody cover and utilizing large rock for aquatic habitat and erosion control. Since 2012, over 700 fish habitat structures have been installed, nearly 15 miles of shoreline have been hinge-cut, and 12 major lake points have been armored. This project has proven to be an excellent example of how cooperative efforts can be used to enhance aquatic habitat and improve reservoir sportfish populations.

Mozingo Lake Habitat Enhancement-*Tory Mason, Fisheries Management Biologist, Missouri Dept. of Conservation*

Mozingo Lake is a 1,010-acre water supply lake owned by the city of Maryville, MO. Construction of the lake began in 1991, and was completed in 1992. Managed by the Missouri Department of Conservation (MDC) through a conservation assistance program (CAP agreement), Mozingo Lake offers a diverse and popular public sport fishery that includes largemouth bass, crappie, bluegill, walleye, and channel catfish. Mozingo Lake attracts thousands of anglers and boaters each year. Like many reservoirs across the country, large, woody, habitat has significantly degraded and shorelines have eroded from wind and wave action. A cooperative effort between the Missouri Department of Conservation, City of Maryville, Reservoir Fisheries Habitat Partnership, and local volunteers was established to enhance aquatic habitat in Mozingo Lake. The goals of this project were to increase angler-fish interactions and enhance recruitment of multiple fish species by installing hard, woody cover and utilizing large rock for aquatic habitat and bank stabilization. Accomplishments include armoring 1,875 feet of eroded shoreline and installing 30 large hardwood brushpiles. Broader implications of the project include the city of Maryville budgeting for more bank stabilization in the future, resulting in the armoring of eroding shorelines. These actions should ensure improved water quality, reduced sediment input, protected infrastructure, improved fish habitat, and improved angler success in the future.

Indiana's New Reservoir Enhancement Program-Sandra Clark-Kolaks, *Indiana Department of Natural Resources*

In many Midwest states, including Indiana, large reservoirs are highly utilized by anglers. Also, similar to most reservoirs in the Midwest, reservoirs in Indiana are aging and aquatic habitat is deteriorating or nonexistent. Indiana Department of Natural Resources (DNR) is working to create a reservoir aquatic habitat enhancement program similar to other Midwest states using artificial structures: crib structures, rock piles, Georgia cubes, brush piles, and felled shoreline trees. General recommendations of the number of structures to place in a complex (i.e. 20 cribs per acre) are widely available but the question of how much aquatic habitat is needed is still unanswered. Indiana DNR is attempting to use a quantitative measure of habitat enhancement by calculating a Habitat Enhancement Zone (HEZ). The HEZ is the surface area for the portion of the lake with adequate oxygen levels for fish but deep enough not to obstruct boats. The HEZ is calculated using detailed bathometric maps which are created using Lowrance HDS depth finder and BioBase software. All artificial structures will be placed within this HEZ. We created an impact acreage for structure complexes (i.e. 20 cribs per acre) based on an area slightly greater than the complex surface area due to habitat created along the edges of the structures. Other structures, like brush piles and felled shoreline trees; where documentation of surface area

is not available, the best estimate of the area of habitat created was based on an area slightly larger than the structure (length of tree, etc.). Based on these individual structure impact acreages, Indiana DNR hopes to increase available habitat by 5% to 20% in the Habitat Enhancement Zone in project lakes.

Mining unexpected results from fisheries projects-*Earl Conway, New Mexico B.A.S.S.*

Twelve years of habitat improvement efforts and experiments in New Mexico's drought have yielded many unexpected results. New Mexico BASS Nation shares how they learned and adapted projects when things didn't work the way they thought they would. Examples range from native seed collection and plant selection to spawning behaviors and artificial and natural habitat material rating and prioritization.

Habitat Enhancement Options in Private Ponds and Lakes - *Jeff Slipke, Midwest Lake Management*

Fisheries managers working in the private sector have unique opportunities to design and implement a variety of habitat enhancement projects. One thing that makes our situation unique is that we are typically dealing with relatively small impoundments rather than large reservoirs. This difference allows us to design habitat projects that can influence a large percentage of the water body; the entire water body in fact. In particular, many of our habitat enhancement efforts are directed toward improving the water quality in an impoundment in addition to manipulating or enhancing the physical habitat. Such water quality enhancement include chemical amendments (alum, lime, fertilization, microbes, etc) as well as aeration and circulation. Up-scaling such enhancement projects to large reservoir systems would be cost prohibitive in most cases. The relatively small reservoirs we work with also affords us the opportunity to completely renovate severely degraded reservoirs, allowing us to reset the entire reservoir basin and even modify the watershed.

Reestablishing Native Vegetation in Lake Livingston, TX through Partnerships-*Tom McDonough and, Lake Livingston Friends of Reservoirs and Ed Parten Texas Black Bass Unlimited.*

Lake Livingston, an east Texas impoundment, like many reservoirs has experienced degraded littoral habitat due to reservoir aging processes. LLFoR was established in 2013 to create partnerships with the objective of restoring native aquatic plants (water willow) to provide nursery habitat and stabilize eroding shorelines. Partnerships were established with the appropriate management agencies TPWD and TRA, local governments, civic and conservation organizations and seven Independent School Districts and the prison system. Culture and planting of the founder colonies are being conducted per TPWD BMPs. Local school districts construct the nursery cells, culture the plants, and participate in the planting process. Student participation promotes an understanding of ecosystem processes and provides an "ownership" in the ecosystem health of their local reservoir. Currently, 22 growing cells have been constructed with plans for 25-30 cells to be operational in 2017. A grant from the Reservoir Fisheries Habitat Partnership provided initial funding for the project and local fundraising is expected to maintain and expand efforts over the next 10 years. This project was recognized as part of the National Fish Habitat Partnership's Ten Waters to Watch program in 2015. TBBU, in creating LLFoR, continues its long term goal of promoting water quality, aquatic vegetation, public access, inner-

city youth fishing programs and is working vigorously to promote legislation relating to our Texas streams, rivers, and lakes.

Show me the Money Too-*Earl Conway, New Mexico B.A.S.S.*

Volunteer organizations can be a source of matching funds as well as free labor. But poor coordination and timing of efforts can thwart efforts by both agencies and NGOs. The presentation provides an overview of NGO funding options and suggestions for planning and coordination to maximize the benefit of non-state/federal funding. The use of a "maturity model" for agency/NGO relationships is also provided for future reference.