

2007 University of Arkansas at Pine Bluff Combined Research and Extension Plan of Work

Improving Largemouth Bass Fishing in the Arkansas River

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

- 134 100% Outdoor Recreation

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

In recent years, the Arkansas Game and Fish Commission (AGFC) has been fielding concerns that the quality of the largemouth bass fishery has declined significantly in the lower Arkansas River over the last decade. AGFC has little fisheries data collected from the river, especially outside of Lake Dardanelle. AGFC desired a comprehensive stock assessment of largemouth bass in the different pools of the lower Arkansas River. The Arkansas Game and Fish Commission would like to assess and improve the largemouth bass populations in the Arkansas River. The status of the largemouth bass population in the river was brought to the attention of the AGFC by recreational and tournament bass anglers. We have the expertise and resources to help the AGFC with assessment, to suggest methods for improvement of the largemouth bass population, and to monitor the effects of management decisions. Priorities - The Arkansas Game and Fish Commission would like to determine whether hatchery-reared fingerlings stocked into pools of the Arkansas River replace or supplement wild produced largemouth bass fingerlings. We have assessed contribution of stocked largemouth bass fingerlings to year classes in the Arkansas River in previous research. We can design and execute research that would indicate the possible effects of stocked fingerlings on the wild population. Arkansas Game and Fish Commission (AGFC) has been collecting fish samples from rotenone samplings across the pools of Arkansas rivers and lakes since 1971. The long term data sets can provide quantitative measures on fish abundance in the habitats. However, the data has not been closely examined or analyzed for scientific research and fisheries management. It's partly due to a negative perception about the reliability of rotenone data. The proposed study will be the first attempt to make careful examinations of the Arkansas rotenone data set for checking the variability of data as well as the comparison with electrofishing data for black bass species in some matched areas. Owing to longterm collection of data, it would be possible to assess the temporal pattern of fish populations in Arkansas. • Assessment of the variability of rotenone data for major sport fish species in selected Arkansas water bodies to examine the reliability of data for scientific researches. • Comparison between rotenone data and electrofishing data for black bass species for the effectiveness of different sampling methods. • Assess the long-term pattern of fish populations and its relationship with external environmental factors.

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- It is not a foregone conclusion that the Arkansas River largemouth bass population needs management as the "decline" is not universally accepted by all AGFC scientists • But in the absence of any supporting data, a comprehensive baseline stock assessment is warranted • Any management recommendations from this research are subject to intra-agency approval and adoption by AGFC A research project will be able to determine whether stocked fish supplement the wild population. The Arkansas Game and Fish Commission will stock fish if it can be demonstrated that stocked fish supplement wild largemouth bass. Stocking largemouth bass will enhance recreational fishing in the Delta. It is assumed that rotenone samples are consistent and unbiased representations of fish populations in the region.

2. Ultimate goal(s) of this Program

- To provide a quantitative stock assessment of largemouth bass fisheries throughout the lower Arkansas River (eleven different pools, 300 river miles). •To provide baseline research to support future management of largemouth bass in the lower Arkansas River should it be warranted. •As a supplement, we also included spotted bass in assessments. •Enhance the angling experience of recreational anglers in the Delta. •Fisheries scientists would be aware of the potential use of rotenone data to answer the fisheries management issues. •The study results provide guidelines for fisheries management decision makers in the region.

V(F). Planned Program (Activity)

1. Activity for the Program

- Field collections of Arkansas River black basses from eleven pools during spring and fall seasons in 2004 and 2005 • Laboratory fish processing from 2004 through 2006 • Laboratory fish aging from 2004 through 2006 • Data analysis from 2005 through 2006 that include calculations of bass abundance, mortality, age structure, growth, and reproductive success. Conduct research to determine abundance of wild largemouth bass fingerlings in coves prior to stocking. We will randomly stock half of 10 coves. We will assess abundance of wild largemouth bass post stocking and compare mortality rates of largemouth bass fingerlings in stocked and unstocked coves. Conduct research to address the question of largemouth bass production in the

Arkansas River and whether production has changed over time. We are also developing an approach to be able to compare production of bass among large USACE reservoirs, natural lakes, and pools of the Arkansas River. • Data examination and screening • Conduct statistical analyses for the study objectives.