

# EUFAULA LAKE, OKLAHOMA HABITAT RESTORATION PROJECT

## BACKGROUND

Eufaula Lake is located on the Canadian river, 27 miles upstream from its confluence with the Arkansas River. The dam is 12 miles east of the city of Eufaula. Major tributaries include the North and South Canadian Rivers, the Deep Fork River, Duchess, Longtown and Gaines Creeks. It has over 600 miles of shoreline ranging from large areas of sandy beach to rocky bluffs. Construction began in December of 1956 and was completed in February of 1964. It is operated by the United States Army Corps of Engineers (USACE) for the purposes of flood control, water supply, hydroelectric power and navigation.



The contributing drainage area is 5,379,200 acres. At impoundment, the reservoir covered 105,500 acres at normal pool with a storage capacity of 2,314,600 acre feet. However, the reservoir's storage capacity has been reduced by 12% in the last 40 years from siltation.

## THE PROBLEM



As might be expected of a reservoir with such a large watershed, Eufaula lake levels fluctuate an average of almost 10 feet per calendar year (with levels typically above Conservation pool each spring, dropping several feet below pool in the summer). This fluctuation has limited the establishment of aquatic vegetation and produced scoured, bare shorelines in many areas of the lake. Soils have been transported downslope leaving underlying rock and gravel exposed. Fish species dependent on shoreline vegetation for nursery areas such as largemouth bass and sunfish have been limited in those areas.

Water willow (*Justicia* spp.) is established in some areas of the lake but only grows to depths of one foot and upslope one or two feet above Conservation Pool elevation. Denser stands are found in Longtown and Duchess Creeks and Brooken Cove and electrofishing surveys in these areas indicate a higher density of largemouth bass.

But extended periods of high water during the past 20 years have hindered establishment in other areas. Some areas that once had large plant beds are now bare.

Eufaula Lake's proximity to both the Oklahoma City and Tulsa metropolitan areas, and its sheer size and diversity of habitats make it one of the most popular fishing destinations in Oklahoma. Numbers of bass tournament permits issued are exceeded only by Grand Lake and Lake Tenkiller. However, 15-year trends in Oklahoma bass tournament statistics rank Eufaula only 12th in overall bass fishing quality. As the reservoir has aged, fish habitat has declined in both quantity and quality, and is reflected in the declining catches of many of the major sport fish species.

Habitat work to date has consisted of placing cedar tree brush piles and polyethylene pipe "spider blocks" in many portions of the lakes as fish attractors. These structures concentrate fish for anglers but do not improve recruitment. Experimental plantings of water willow in Gaines Creek showed initial promise but the plants were not well established when a record-setting drought set in and reduced survival to near zero. Additional attempts to re-establish the plants were not attempted due to personnel and funding limitations.





It is believed that a larger-scale effort to introduce aquatic vegetation such as water willow and American pondweed could be successful in improving recruitment of fish including bass, crappie, sunfish and forage species. Shoreline plantings should help reduce erosion and turbidity.



Intensive efforts of saturate selected coves or embayments with cedar trees and spider blocks could also prove beneficial in providing additional fish-attracting cover that would improve angler catch of sport fish.

Placement of large quantities of stone and rock rip-rap could serve to reduce erosion on shorelines and serve as wave breaks, creating quiet areas where aquatic plants could become established more readily. Rock piles and breakwaters would also provide additional fish habitat for many fish species.

**EXPECTED BENEFITS**

Bass, crappie, sunfish and forage fish population should increase significantly as nursery habitat is established and cover for adults is introduced into the lake. Monitoring changes in the fish populations will be done using protocol outlined in ODWC’s Standardized Sampling Procedures manual.

Water quality benefits from established aquatic plant communities include uptake of excessive nutrients, reduction in turbidity and stabilization of shoreline soils. In addition to benefiting anglers, habitat restoration that improves water quality should lead to increased recreational visitation which will provide an economic stimulus to local communities.

**ESTIMATED COSTS**

<b>Personnel</b> - shoreline vegetation planting crew, brush pile crew, three years each.	\$3,000,000
<b>Equipment</b> - ATVs, fabricated planters, rock hauling barge, habitat barges, tow vehicles	\$1,000,000
<b>Materials &amp; Supplies</b> - Plants and fencing, riprap, miscellaneous expenses	\$1,000,000
<b>Contractual Services</b> - Rip rap hauling & placement, backhoe and track hoe rental	<u>\$1,500,000</u>
	<b>\$6,500,000</b>