Lake Kyle Management Plan
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Small Impoundments in Texas

In Texas, public water bodies range from a fraction of an acre to over 100,000 acres in size; however, Texas Parks and Wildlife Department (TPWD) considers bodies of water under 500 acres as small impoundments. These smaller impoundments are typically managed by local governments (cities, townships and counties) and serve the purpose of flood control, water supply and recreation. Some reside within state parks and are great venues for those looking for an all-around outdoor package. Most of these waters are managed with regular fish stockings to sustain fishing activity. With fluctuating water levels, due to drought and consumption, affecting access at many major Texas reservoirs, these small lakes at times become the most reliable fishing holes for Texas anglers. In the future, these small impoundments may become invaluable fishing resources as water issues become more chronic. TPWD, in conjunction with these local authorities manage these impoundments to provide fishing opportunities for everyone.

Many of these small impoundments are focal points in small communities and serve as a great attraction for local residents. Others are spread throughout major metropolitan areas and serve as close-to-home opportunities for fishing and outdoor recreation. This fits perfectly with TPWD's urban fishing initiative, sprouting from the observed demographic shift in Texas. Texas' population is growing quickly. By 2050, it is expected that the Texas population will exceed 50 million residents (Figure 1), mostly concentrated around the four major metropolitan areas (Houston, Dallas, San Antonio and Austin). To keep the sport of fishing relevant to future urban generations (led by minority groups), we must bring fishing close to home (cities). Understanding this need; TPWD has developed programs such as the 9-inch Channel Catfish program, which supplies hatchery-raised Channel Catfish to community fishing lakes around the state; and Neighborhood Fishin', which presents a more intensive stocking regime to provide a year-round put-and-take fishery in selected waters in major metropolitan areas around the state. These programs provide a resource for those who wish to introduce themselves to fishing and to attract lapsed anglers.

With the success of the urban programs, TPWD realized there is a need to provide fishing opportunities for more advanced anglers. The thought of utilizing some of these larger impoundments, prone to sustaining fish populations without stocking, in urban areas was adopted. This led to the development of a committee for a new category of urban waters labeled "Diversified Community Angling" (DCA). The pilot phase of this work will primarily take place in major metropolitan areas of the state. These impoundments will be more intensively managed utilizing management practices such as restrictive harvest regulations, fertilization, aeration, forage stockings and habitat and access enhancement. The goal is to develop and manage community fisheries that offer diversified angling opportunities to existing and potential anglers in Texas. This will create quality urban fishery options not directed towards harvest, per say, but more towards recreation and enhancing sport fishing skills. The committee sees DCA impoundments to have the following characters:

A. More self-sustaining/productive lakes (size, habitat)
B. High-quality, non-harvest oriented fishery; focus on recreational opportunity
C. Manage access to protect sustainability
D. Establish effective partnerships to achieve projects
E. Should be marketable to more experienced anglers

The committee is in charge of developing a blueprint for managers to develop DCA waters in the future. This process has been determined through a set of objectives:

1. Within one year, identify existing or potential fisheries in major metropolitan areas of the State that can diversify angling opportunities.
2. Within two years, establish partnerships to develop and facilitate adaptive and objective-based management strategies for identified sites that create self-sustaining fisheries for enhanced angling opportunities.
3. Within three years, begin implementation and monitoring of the management plan.
4. Within five years, evaluate and re-assess management strategies.

Focusing in the Austin metropolitan area, five small lakes were selected to serve as pilots under the new DCA category. These lakes are Meadow Lake, Bright Lake, Lake Pflugerville, Brushy Creek Reservoir, and Lake Kyle. All of these lakes have a history of some type of intensive fisheries management protocols in place; however Lake Kyle is the newest addition to the Austin suite of public waters, and has been selected to serve as the "poster child" for the newly-implemented DCA objectives. This document will focus on the management plans for Lake Kyle.

Lake Kyle History and Current Status

Lake Kyle is a 12-acre impoundment of the Plum Creek watershed located in Hays County in the City of Kyle, TX. The lake was built as a soil conservation impoundment for flood control purposes. Lake Kyle Park serves as the City of Kyle Parks and Recreation Department (KPRD) headquarters site, and is part of the Plum Creek Preserve and Nature Trail Park System. The reservoir is mostly shallow; with a maximum depth of 9 feet (Figure 2). Before the City of Kyle purchased the park land, the lake was privately managed for bass and sunfish. The park has been open to the public since spring 2012 under the management of KPRD. Public access is limited to park hours, six days a week. All park users access the park through one entrance at the main office. The lake has 100% shoreline access and a new ADA-compliant fishing pier is available for anglers.

Since the park opened to the public, the fishery has been managed under the TPWD Community Fishing Lakes (CFL) designation. There is no minimum length limit for Channel Catfish, and a bag limit of 5 fish. Statewide bag and length limit harvest regulations apply for other species. The lake was stocked by TPWD in 2012 and 2013 with advanced fingerling Channel Catfish, totaling 1,731 fish.

The fish population was surveyed by boat electrofisher in spring 2010 and 2013, confirming the main species present were Largemouth Bass, Bluegill and Redear Sunfish. The 2010 survey was conducted before the park opened to the public and revealed a healthy bass and sunfish population, with quality-size individuals present for all species. In anticipation of high harvest rates, normally seen in small urban impoundments, a restrictive slot length limit was proposed and enacted in 2011 to protect the largemouth bass from harvest once the park opened to fishing. No regulations were proposed to protect the quality sunfish population present. The electrofishing survey in 2013 revealed that the regulation helped protect the bass, and a jump in catch rates suggested an increase in abundance (Figure 3). Unfortunately, the opposite was observed for the Bluegill and Redear Sunfish population structure. Lower catch rates were recorded for these sunfish species, with the large (≥8 inches) individuals missing in the distribution (Figures 4 and 5). Reports of heavy harvest of sunfish by the park manager suggest that anglers might have impacted the sunfish population in this small reservoir in a short time span following the park's opening. Based on these findings and the emerging DCA objectives, a new management plan has been devised for Lake Kyle.

Lake Kyle Management Plan

The goal is to manage Lake Kyle as a catch-and-release angling destination for urban anglers in the Austin metropolitan area. Catch-and-release regulations are a rarity in Texas public waters; however under the initiative to manage for self-sustaining small impoundments, this approach will be considered a pilot for this type of management. Any success of this management scheme at Lake Kyle may lead to similar schemes at DCA sites around the state of Texas.

Objectives:

1. Develop a partnership with the City of Kyle to agree on Lake Kyle's management approach (spring 2010).
2. Survey fish population on Lake Kyle before and after opening to the public to assess angler impact (spring 2013).
3. Revise management approach for Lake Kyle based on survey results (spring 2013).
4. Propose a regulation change for Lake Kyle to catch-and-release for Largemouth Bass, Channel Catfish and all sunfish species to the TPWD Commission (fall 2013).
5. Wait for TPWD Commission vote on proposed regulation (March 2014). Upon Commission approval, regulation will fall into effect September 1, 2014.
6. Develop partnerships with local stakeholders and private groups to help develop and fund the infrastructure used to improve the habitat on Lake Kyle, which will supplement the new regulation in creating a sustainable catch-and-release fishery (Fall 2014).
7. Install an aeration system into this shallow lake to improve habitat and water quality, and increase carrying capacity for a heavy stock of fish (December 2014).
8. Install a network of fish feeders to supplement feed for heavy stock of fish and serve as fish attractors around the perimeter of the lake (spring 2015).
9. Conduct management stockings of adult-sized sunfish to boost quality and genetic stock (spring 2015).
10. Install aquatic vegetation and gravel habitat features around the lake shoreline to serve as spawning nurseries and target areas for anglers (summer 2015).
11. Conduct a year-long angler creel survey to evaluate angler success, attitudes and opinions (Fall 2015).
12. Monitor the fish population in Lake Kyle after all improvements are completed (spring 2016)
13. Complete a project evaluation report for the DCA committee (summer 2016)

Upon completion of this management plan we expect Lake Kyle to become a popular fishing destination among Austin area anglers, catering to all types of fishing groups. Fly anglers, a growing segment in Central Texas, will especially benefit from shoreline catch-and-release opportunities like this one. Traditional anglers seeking a unique fishing experience will have one close to home; and anglers will have a special opportunity to target quality, and potentially trophy-size, sunfish and catfish.

<u>Estimated costs for infrastructure (approximate)</u>

- Aeration system (rated for this size impoundment)……..$7,500 - $9,000
- Automatic fish feeders (3)…….$3,000
- Swinging davit feeder mounts (3)……TBD
- Informational/promotional signage…….....$1,500 - $2,000
- Limestone gravel beds……$1,000 - $2,500

Figures and Tables

Figure 1. Predicted human population growth in Texas (Source: Office of the State Demographer)

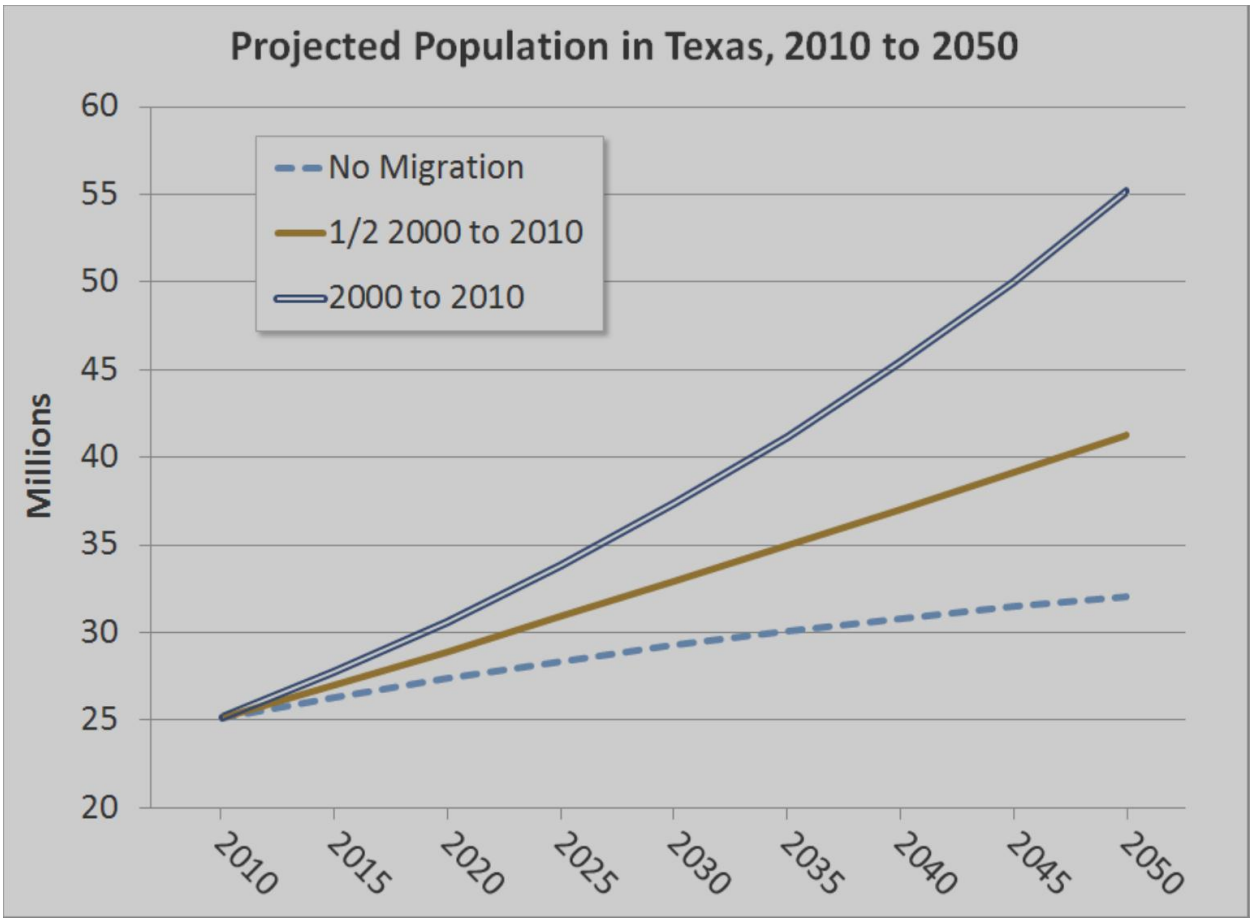


Figure 2. Bathymetric map of Lake Kyle, Kyle, Texas.

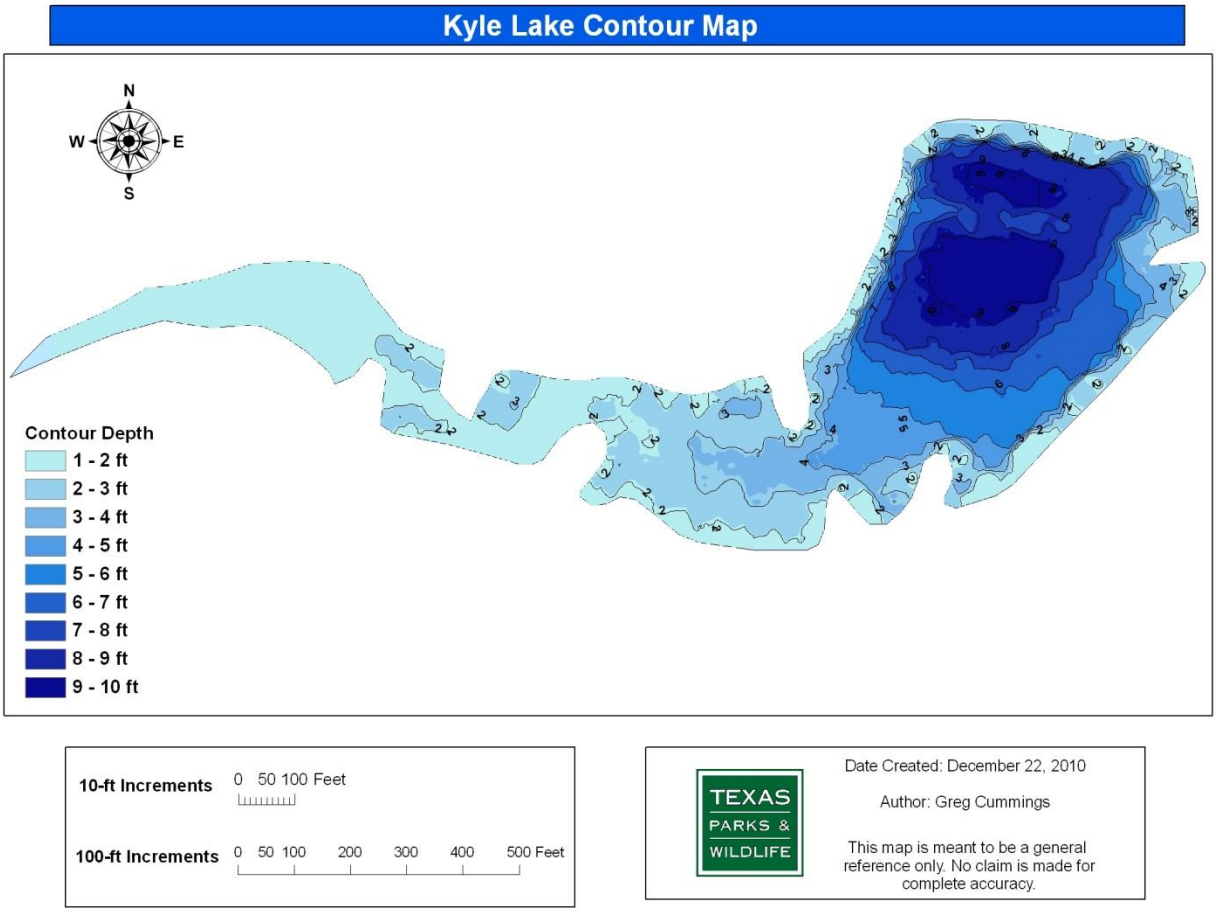


Figure 3. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring electrofishing surveys, Lake Kyle, Kyle, Texas, 2010 and 2013. Vertical lines represent minimum length limit at the time of sampling.

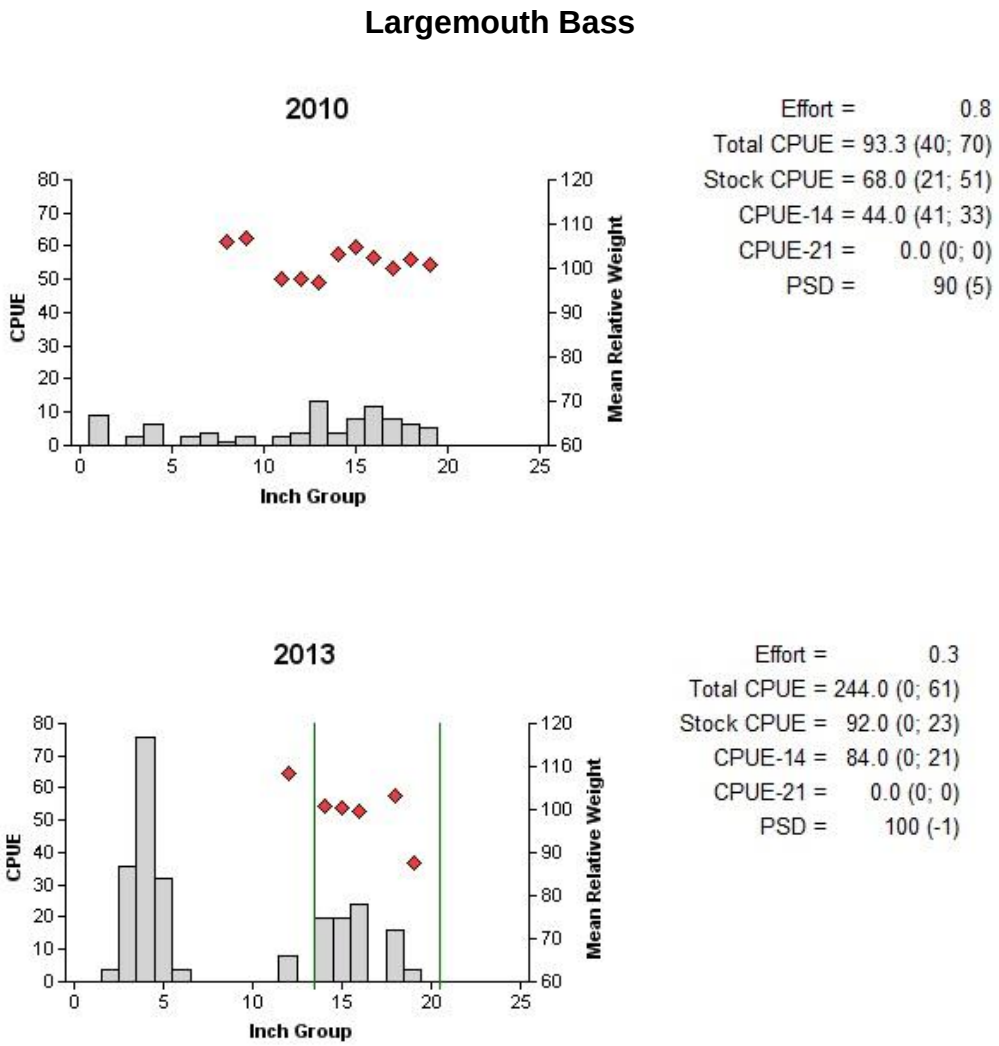
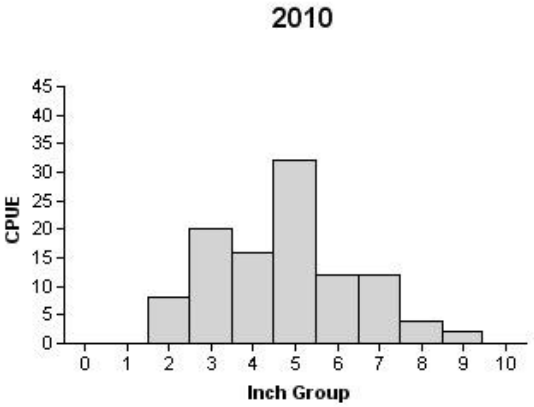
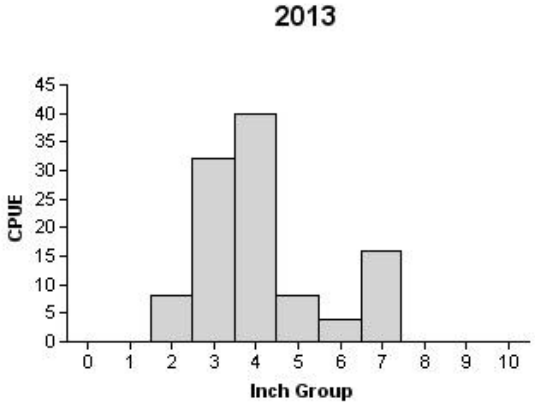


Figure 4. Number of Bluegill caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring electrofishing surveys, Lake Kyle, Kyle, Texas, 2010 and 2013.

Bluegill



Effort = 0.5
Total CPUE = 106.0 (58; 53)
CPUE-7 = 18.0 (78; 9)
CPUE-9 = 2.0 (100; 1)
PSD = 31 (4.1)



Effort = 0.3
Total CPUE = 108.0 (0; 27)
CPUE-7 = 16.0 (0; 4)
CPUE-9 = 0.0 (0; 0)
PSD = 20 (-1)

Figure 5. Number of Redear Sunfish caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring electrofishing surveys, Lake Kyle, Kyle, Texas, 2010 and 2013.