



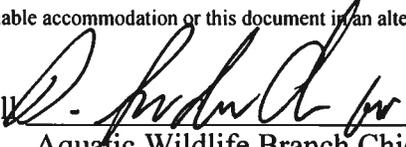
## Colorado River-Parker Strip Fisheries Management Plan 2019-2029

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Approved  by Chris Cantrell

  
Aquatic Wildlife Branch Chief

Date

10/1/19

## Location

The Colorado River - Parker Strip consists of 23.3 km (14.5 mi) portion of the Colorado River between Parker Dam and Headgate Rock Dam (Figure 1). The Colorado River in this section forms the boundary between Arizona (La Paz County) and California (San Bernardino County).

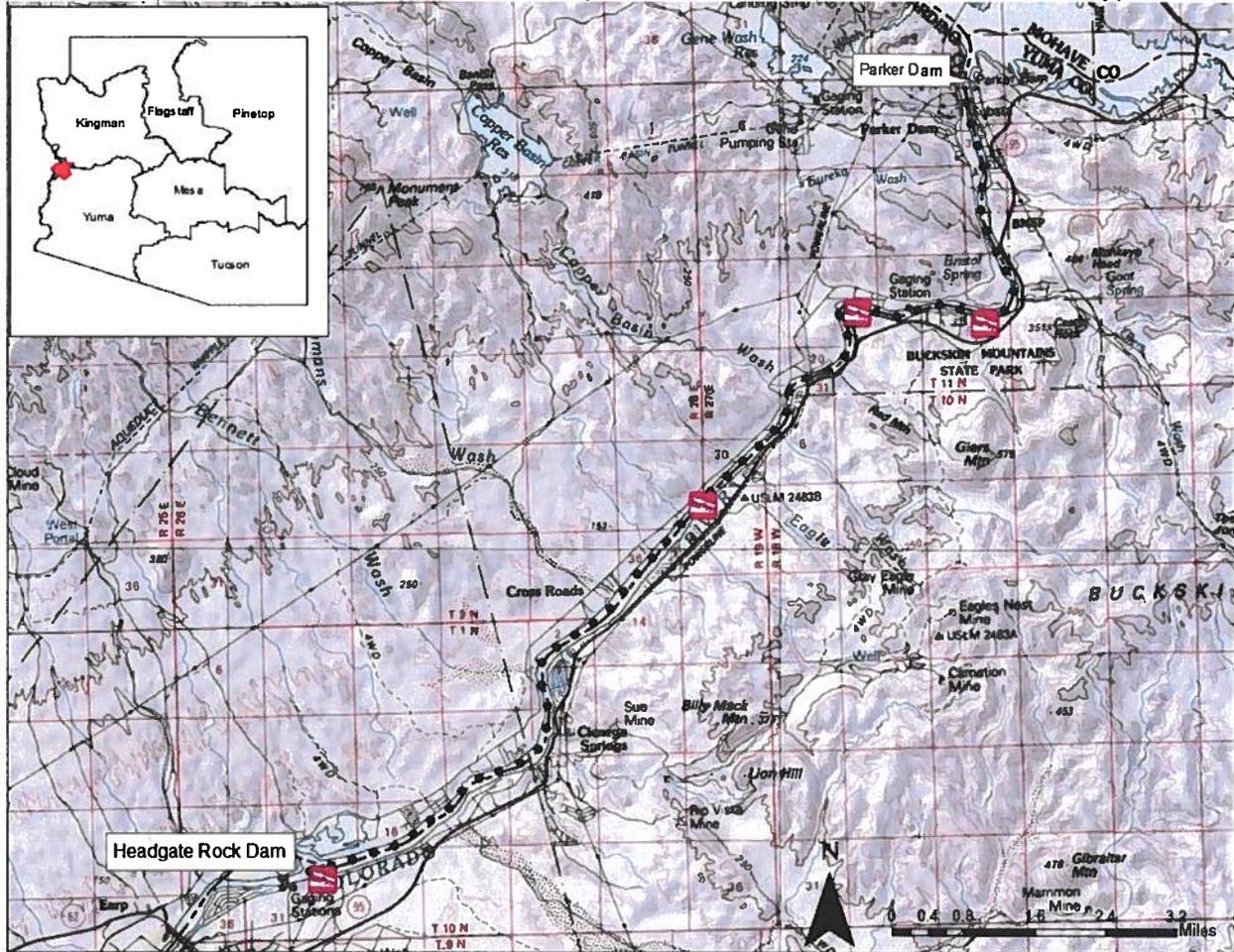


Figure 1. Location of Colorado River - Parker Strip.

## Management Prescription

The Arizona Game and Fish Department has developed concepts under a Strategic Vision Document (AGFD 2019) to help guide warmwater fisheries management in Arizona. Using these concepts, fisheries management on the Colorado River - Parker Strip will focus on General Opportunity Largemouth *Micropterus salmoides* and Smallmouth Bass *Micropterus dolomieu* fisheries.

Native fish species management, conservation, and recovery will be in partnership with the U. S. Fish and Wildlife Service (USFWS), Lower Colorado River Multi-species Conservation Program (LCRMSCP) and other partners. Actions related to the management, conservation, and recovery of native fish species in the Parker Strip of the Colorado River will be mostly driven by existing conservation and recovery plans and will not be addressed in this plan.

Monitoring activities to determine if management objectives are being met should include electrofishing surveys and creel surveys every five years. Management strategies to meet objectives are identified in Table 1.

Objective 1: Maintain the Largemouth and Smallmouth Bass populations to meet or exceed General Opportunity standards as listed in the Warmwater Sportfisheries Strategic Vision Document.

Objective 2: Maintain angler satisfaction at 80%.

**Table 1.** Colorado River - Parker Strip Objectives and Adaptive Management Strategies.

<b><i>Objective 1: Maintain the Largemouth and Smallmouth Bass populations to meet or exceed General Opportunity standards as listed in the Warmwater Sportfisheries Strategic Vision Document.</i></b>			
<b>Parameters</b>	<b>Objective Guideline</b>	<b>Trigger point to address unmet Objectives</b>	<b>Strategies if Objectives are not met</b>
Electrofishing Catch Rates	Total Fall Electrofishing Catch per Unit Effort: $\geq$ 50 fish/hour of electrofishing.	Total Fall Electrofishing drops below 50 fish per hour for three consecutive samples.	<ul style="list-style-type: none"> <li>• Stocking</li> <li>• Regulation Change</li> <li>• Outreach/Education</li> </ul>
Size Structure	Size Structure: multiple age classes	Three consecutive sampling events showing population below management guideline.	<ul style="list-style-type: none"> <li>• Stocking</li> <li>• Regulation Changes</li> <li>• Outreach/Education</li> </ul>
Angler Catch Rates	Angler catch rates $\geq$ 1 fish per hour	Angler catch rates drop below 1 fish per hour for two consecutive creel surveys.	<ul style="list-style-type: none"> <li>• Stocking</li> <li>• Regulation Changes</li> <li>• Outreach/Education</li> </ul>
<b><i>Objective 2: Maintain an overall angler satisfaction at 80%.</i></b>			
Angler Satisfaction	Angler Satisfaction $>$ 80%	Angler satisfaction drops below 80% for two consecutive creel surveys.	<ul style="list-style-type: none"> <li>• Stocking</li> <li>• Regulation Changes</li> <li>• Outreach/Education</li> </ul>

1 CPUE = Catch Per Unit Effort (fish per hour) 2 PSD = Proportional Size Distribution

## **Background**

Parker Dam was constructed in 1938 and Headgate Rock Dam was constructed in 1942. The primary purpose of Parker Dam was to divert water to more than 125 municipalities along the southern California coast. Headgate Rock Dam was constructed to divert water for irrigation for the Colorado River Indian Tribes (CRIT). The dam also has two low-head power-generating turbines for use by the CRIT. The Colorado River discharges from Parker Dam vary inter-annually, with high discharges in late spring and summer months (Figure 2).

The entire length of the Colorado River - Parker Strip has been highly developed with RV parks, county parks, state parks, bars, restaurants, river resorts, condominiums and private houses. Primary recreation on the Colorado River - Parker Strip focuses on high speed boating, water skiing and swimming, with fishing being of secondary importance.

## **Productivity/Water Quality**

The Department does not take regular water quality measurements in the Colorado River - Parker Strip. There has been no indication of severe or chronic water quality issues in this stretch of the river to date. There have been no large-scale fish die-offs due to water quality issues over the last several years. The Department takes some basic water quality measurement prior to surveys typically in November. Water temperature in the Colorado River - Parker Strip in November is approximately 60 degrees. Dissolved oxygen varies between 6 and 10 parts per million, pH varies between 7.5 and 8.5, and conductivity varies between 1,000 and 1,300 microsiemens per centimeter. There is no indication of severe or chronic water quality issues in this stretch of the river at this time.

Very little is known about nutrient levels in the Colorado River - Parker Strip. A better understanding of nutrient inputs, specifically phosphorus and nitrogen, into the river under different conditions and the corresponding changes in primary productivity of this division could help managers understand trophic connections and the associated effect on sportfish populations. It is possible the other partner agencies already take these measurements. If they do not take these measurements in their water quality surveys, the Department will attempt to begin this sampling in house as personnel time allows or contract out the sampling to an outside vendor.

## **Forage/Prey**

Management of forage fishes in Colorado River - Parker Strip should focus on maintaining a diverse forage base to support healthy predatory fish populations. Black Crappie, tilapia, Bluegill, Green Sunfish, and Redear Sunfish contribute the most to the forage base in the Colorado River - Parker Strip. Surveys conducted prior to 2014 were species-specific surveys, primarily targeting Largemouth and Smallmouth Bass. Community-wide surveys have been conducted since 2014 to collect data on species-specific abundance and relative species composition in the river, which will help to better quantify forage fish abundance. Based on these community-wide surveys, forage fish have comprised less than 50% of the total catch during fall electrofishing since complete surveys of the fish community began (Figure 3). In 2018, the Region 4 Aquatic Wildlife Program began to measure total length (mm) and wet weight (g) of Threadfin and Gizzard Shad sampled to

gain a better understanding of the population. With additional data and community-wide surveys, managers hope to better understand the connection between the abundance of forage fishes, as well as river conditions, both biotic and abiotic. If after several years of community-wide surveys, biologists are still unable to understand the connections between river conditions and forage abundance, alternative survey methods may be required.

The Department is unaware of any data collected on non-fish forage sources (i.e. plankton, macrophytes, crayfish, invertebrates, etc.) in Colorado River - Parker Strip. An increased understanding of the links between aforementioned forage sources could help better inform fisheries management in Colorado River - Parker Strip.

## **Habitat**

Fish habitat is moderate and seasonal in quantity and quality on the Parker Strip. A lot of the shoreline has been developed with docks, beaches, and retaining walls which do not provide good fish habitat. The upper end of the reach has rock lined embankments which provide habitat for Smallmouth Bass and other small fish. There are some areas with vegetation-lined banks and emergent vegetation which provides good fish habitat. Submerged vegetation growth is variable but can provide good seasonal habitat. Underwater structure appears to be limited in this section of the river

The Department has been working with the Parker Bass Club and the Bureau of Land Management (BLM - Lake Havasu City, AZ Office) to evaluate the need and feasibility of installing fish habitat in the Parker Strip. Potential sites for installing habitat have been identified and a bathymetric survey was conducted in the fall of 2015. Using the results of the bathymetric survey, Department staff has chosen no less than 12 coves where the fish population could benefit from the addition of artificial fish habitat. The Department plans to improve at least some of these coves over the life of this plan as resources become available.

## **Species**

Fish species known to occur in Colorado River - Parker Strip include Black Crappie *Pomoxis nigromaculatus*, tilapia *Oreochromis spp.*, Bluegill *Lepomis macrochirus*, Channel Catfish *Ictalurus punctatus*, Common Carp *Cyprinus carpio*, Flathead Catfish *Pylodictis olivaris*, Goldfish *Carassius auratus*, Green Sunfish *Lepomis cyanellus*, Largemouth Bass, Razorback Sucker *Xyrauchen texanus*, Red Shiner *Cyprinella lutrensis*, Redear Sunfish *Lepomis microlophus*, Smallmouth Bass, Striped Bass *Morone saxatilis*, and Yellow Bullhead *Ameiurus natalis*.

Smallmouth Bass started showing up on the Parker Strip in the mid 1990's. It is not clear how or where they came from other than it is likely they came downstream from Lake Havasu. However, Smallmouth Bass have not been common in Lake Havasu for very long either. Regardless, smallmouth have grown in numbers and sizes over the past 20 years in this area. Fall electrofishing surveys are conducted every other year. Prior to 2014, these surveys have primarily targeted Largemouth and Smallmouth Bass. The national standard for assessing bass populations calls for spring nighttime electrofishing, so future population sampling will switch over to the spring months. Fall sampling is still valuable and spot check type surveys to assess relative reproductive success of centrarchids may still be done in the fall.

### *Largemouth Bass:*

Largemouth Bass in 2017 met electrofishing CPUE management objectives, but missed management objectives in 2011, 2014 and 2015 (Figure 4). Average Largemouth Bass relative weight ( $W_r$ ) has stayed relatively constant over the last 4 surveys (Figure 5). The Largemouth Bass population has met management objectives for multiple size/age classes for all years during fall electrofishing surveys have met management objectives for multiple size/age classes for all years (Figure 6).

### *Smallmouth Bass:*

Smallmouth Bass met electrofishing CPUE management objectives in 2015 and 2017, but missed management objectives in 2011 and 2014 (Figure 9). Smallmouth Bass body condition indices have been relatively consistent, but have been lower than ideal at from 86 to 90 in the past 4 surveys (Figure 7). The Smallmouth Bass population has met management objectives for multiple size/age classes for all years during fall electrofishing surveys (Figure 9).

To increase relative weights of both species, the Department may need to consider alternatives, including additional management of populations of forage fishes. As mentioned above, forage fishes constitute less than 0.5 of the proportional species composition during annual surveys. In order to minimize unintended ecological consequences, augmenting populations of fishes currently occurring in Parker Strip of the Colorado River is favored over stocking additional species. As such, it is recommended that the Department consider stocking Threadfin Shad into the Parker Strip to attempt to raise the Largemouth and Smallmouth Bass body condition indices. Additional fish species may be considered depending on changes in river condition or availability of species. As the Department is not currently able to stock the Parker Strip of the Colorado River with any fish currently, the Department would either need to add the Parker Strip to stocked waters in the next consultation on the Department's stocking program or would need to write an EAC to cover this activity. For the life of this plan or until the next consultation is complete, the Parker Strip will be managed as a General Opportunity Largemouth and Smallmouth Bass fishery, and metrics for angler CPUE, size/age structure, and electrofishing CPUE will be monitored.

### *Invasive/undesirable species*

Quagga Mussels *Dreissena bugensis*, Asian Clams *Corbicula fluminea*, American Bullfrog *Lithobates catesbeiana*, Northern Crayfish *Orconectes virilis*, and Gizzard Shad *Dorosoma cepedianum* have all been documented in Parker Strip. Of these, Quagga Mussel is the only one that is currently listed on the state Aquatic Invasive Species (AIS) list. The Department has an active AIS program associated with Quagga Mussels. The Department provides education, outreach, and decontamination services for Quagga Mussels.

### **Access**

The Colorado River - Parker Strip is located in La Paz County, about 140 miles northeast of Yuma, Arizona, on the Colorado River between Parker and Headgate Rock Dams (Figure 3). There are multiple boat launch ramps for motorized boating on the Colorado River - Parker Strip. Vehicular

access to Parker Strip is abundant. Arizona Highway 95 parallels the river between Parker and Parker Dam and main frontage roads are found on both sides of the river. Boating and shoreline access is also available through the many campgrounds, resorts, state parks, county parks, and free day use areas.

### **Catch and Satisfaction**

The Department has not conducted a creel survey on the Colorado River - Parker Strip since 1985. As such, the following data is outdated and a recent creel survey is needed. During that time, a total of 285 anglers spent 608.75 hours fishing to catch 55 fish, resulting in a mean angler CPUE of 0.09 fish per hour. The lowest monthly catch rate was during February (0.03 fish/hour) and the highest was September (0.33 fish/hour). Angler success averaged 14% but varied monthly, with the highest angler success rate in August (47.6%) and the lowest in February (4.1%). Anglers kept 81.8% of fish caught. Species preference was primarily Channel Catfish (59.5%) followed by no preference (19.5%) and Striped Bass (11.8%). Only 6.1% of angler surveyed preferred Largemouth Bass. Smallmouth Bass were not present at the time. The creel survey was not conducted in July.

Due to the age of the previous study, the Department should attempt to undertake a creel survey of the Parker Strip of the Colorado River in the near future. Creel surveys should then be undertaken on a 5 year basis.

### **Literature Cited**

- Anderson, R. O. and R. M. Neumann. 1996. Length, weight, and associated structural indices. In: *Fisheries Techniques, 2nd ed.* (Murphy, B. R. and D. W. Willis, Eds.). pp. 447-482. Bethesda, MD: American Fisheries Society.
- Arizona Game and Fish Department (AGFD). 2019. Warmwater Sportfisheries Strategic Vision Document, 2019-2029. Arizona Game and Fish Department, Statewide Fisheries Program.
- Gablehouse, D. W., Jr. 1984. A length-categorization system to assess fish stocks. *North American Journal of Fisheries Management* 4(3):273-285.

## Tables and Figures

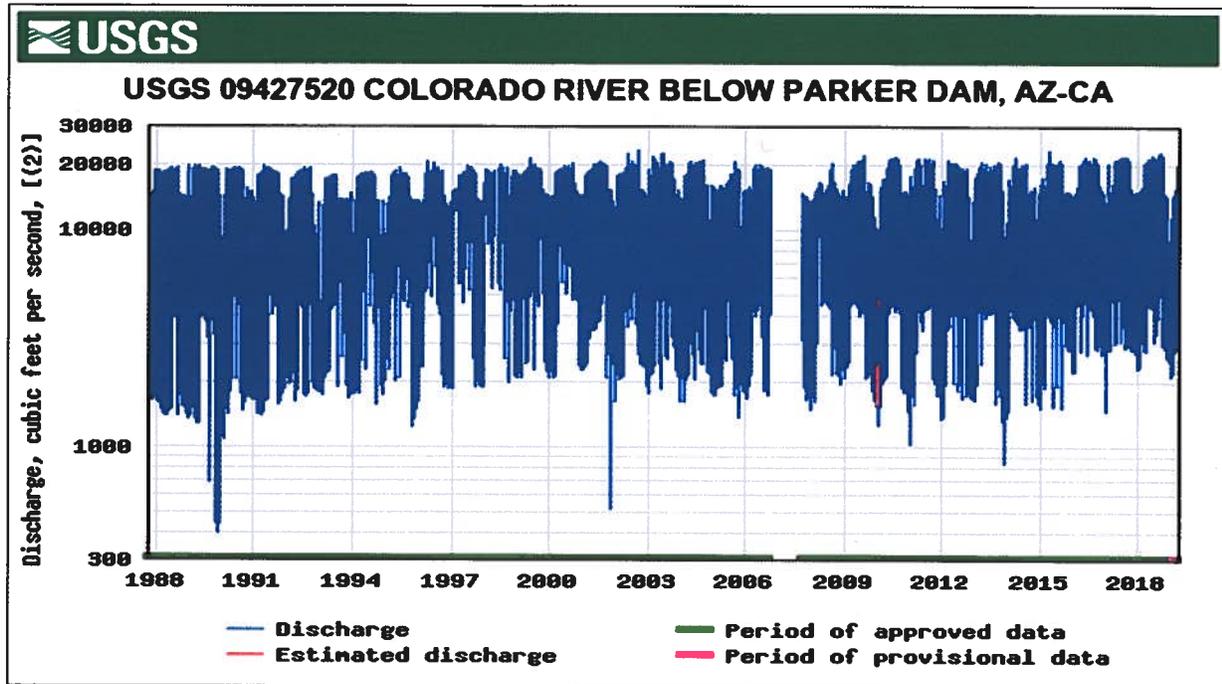


Figure 2. Annual hydrograph of Colorado River - Parker Strip.

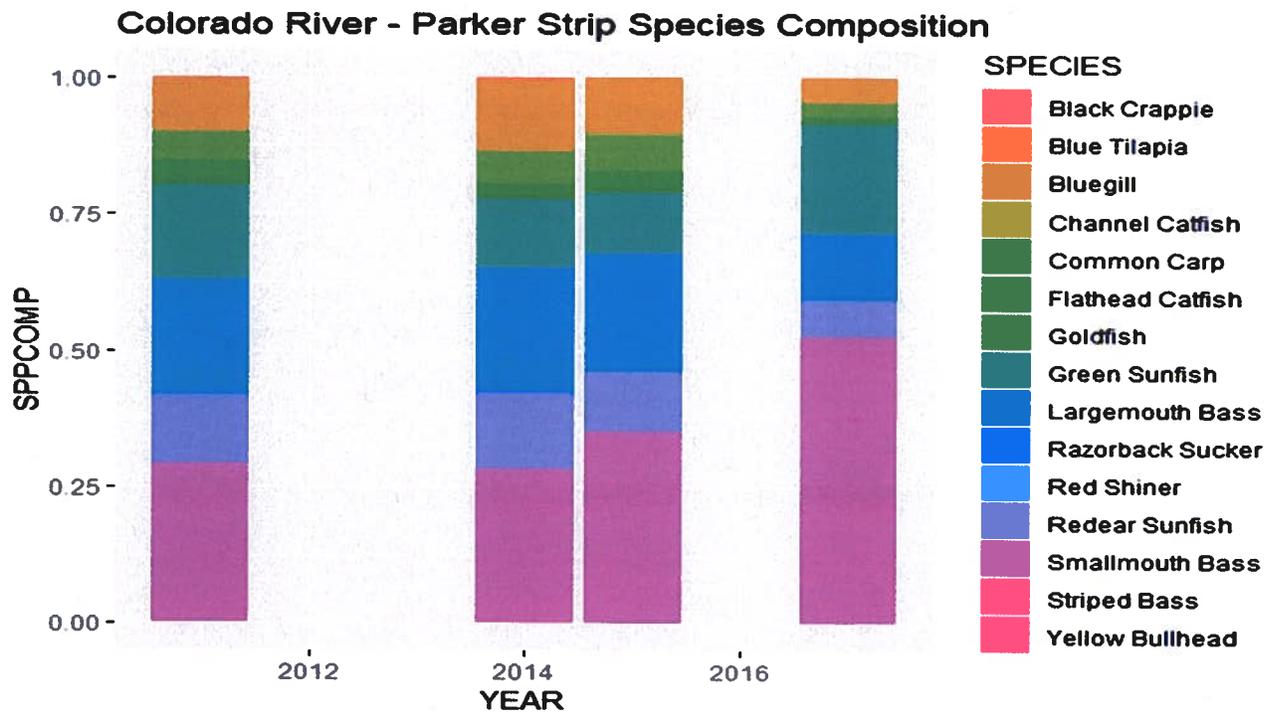
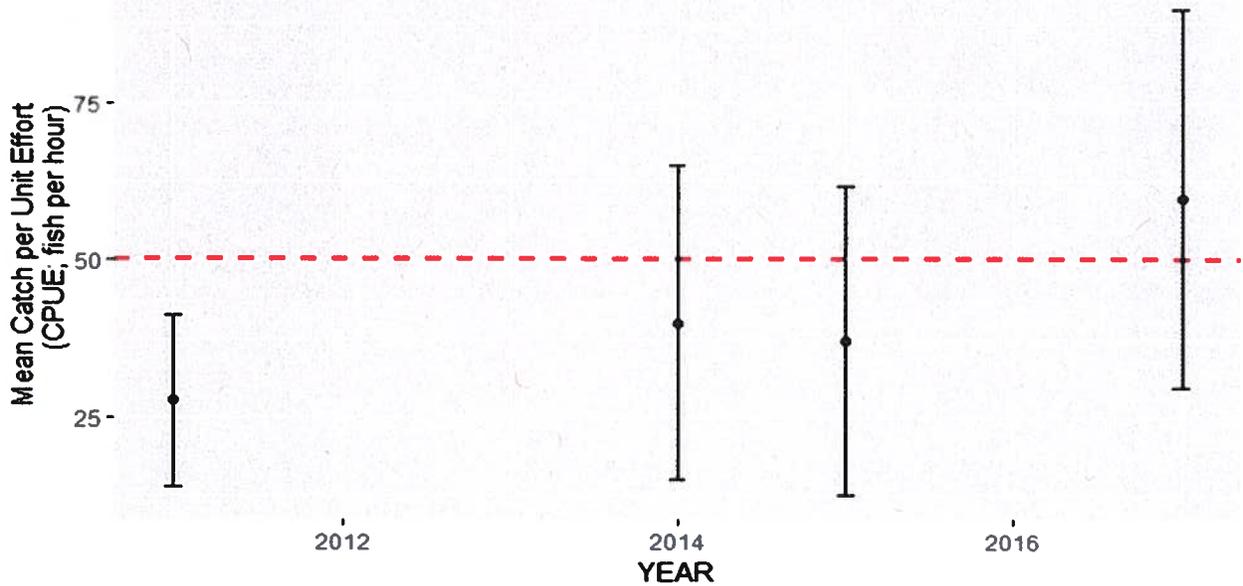


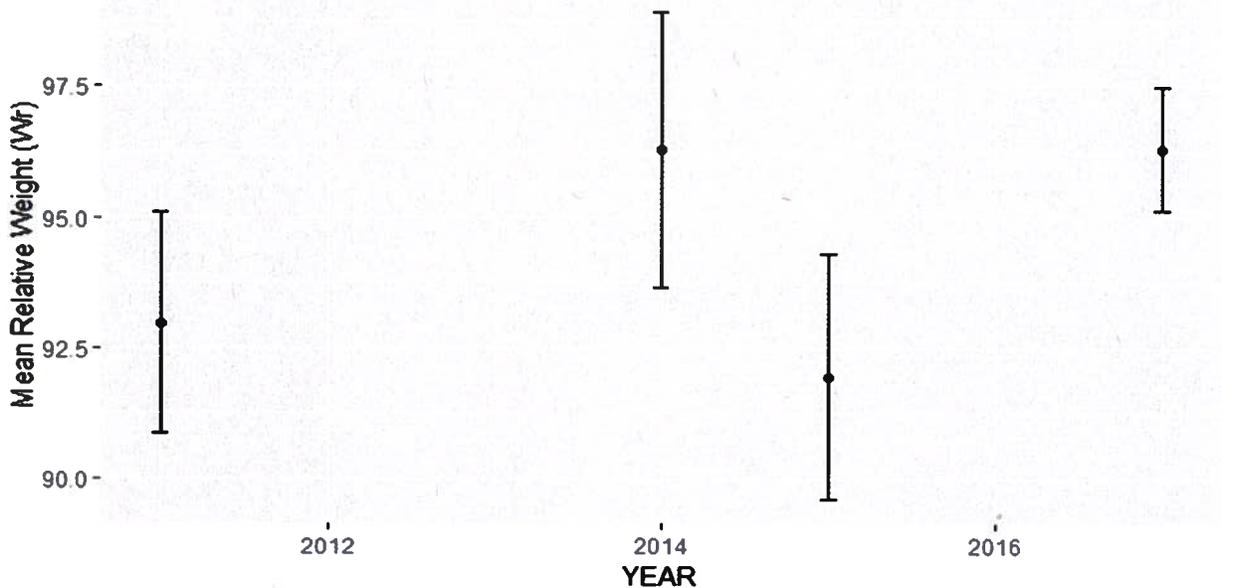
Figure 3. Relative species composition of fish captured during fall electrofishing surveys at Colorado River - Parker Strip (2011-2018).

### Colorado River - Parker Strip Largemouth Bass (2011-2018)

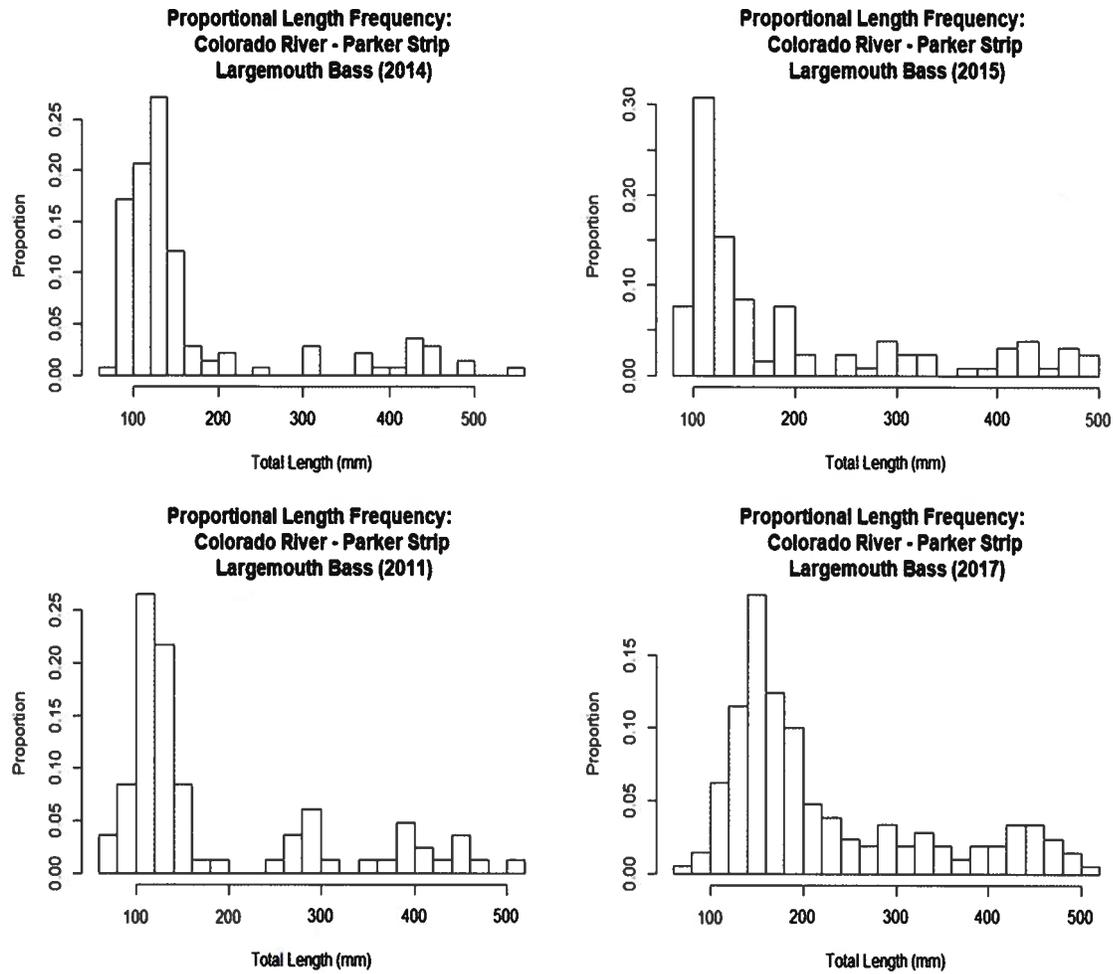


**Figure 4.** Annual mean catch per unit effort (CPUE) and associated 95% confidence intervals for Largemouth Bass captured during fall electrofishing surveys at Colorado River - Parker Strip (2011-2018). AGFD Warmwater Vision objectives are shown with dashed red line.

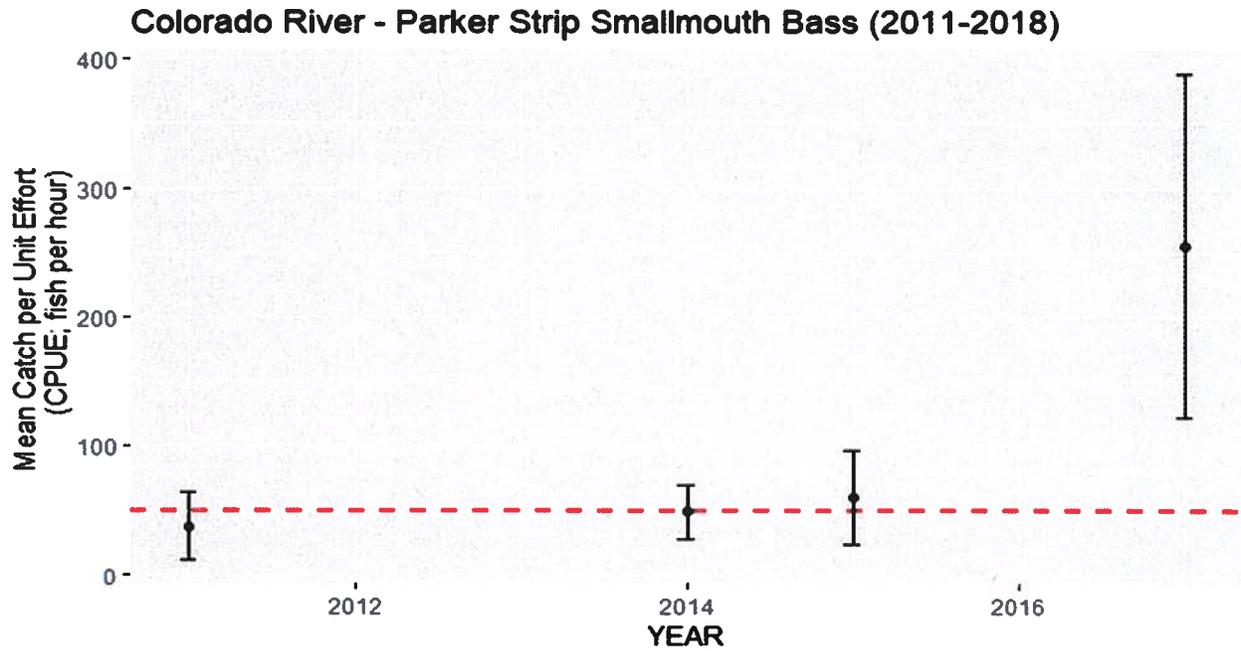
### Colorado River - Parker Strip Largemouth Bass (2011-2018)



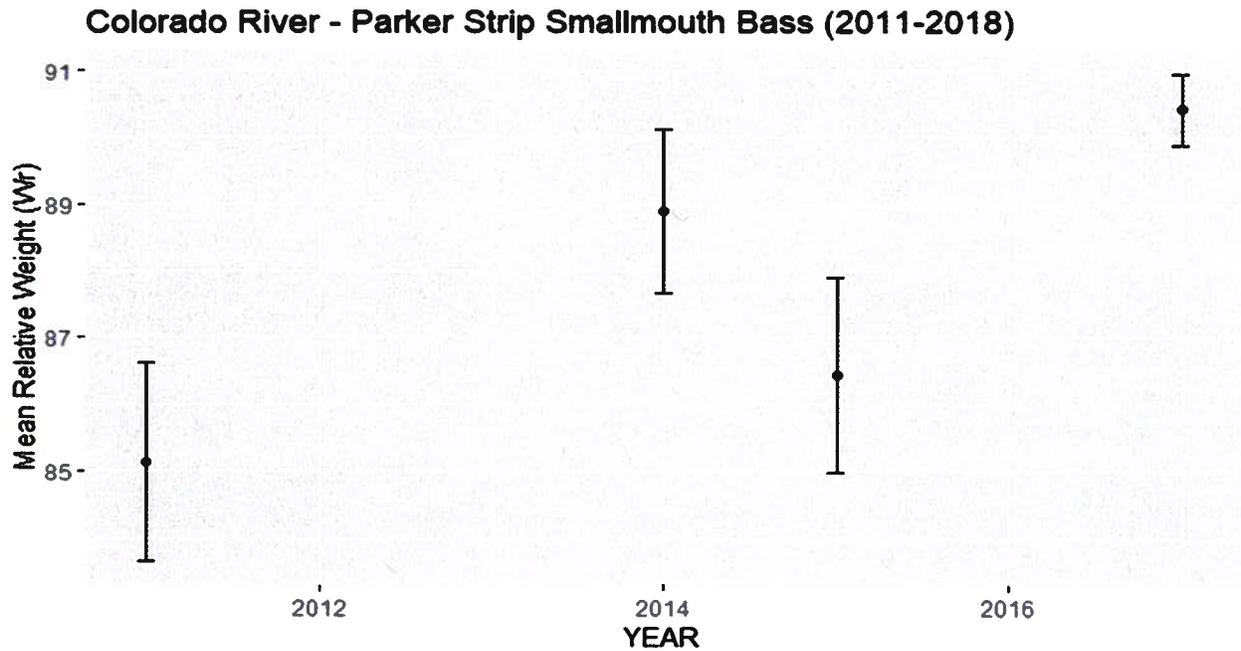
**Figure 5.** Annual mean relative weight (Wr) and associated 95% confidence intervals for Largemouth Bass captured during fall electrofishing surveys at Colorado River - Parker Strip (2011-2018). AGFD Warmwater Vision objectives are shown with dashed red line.



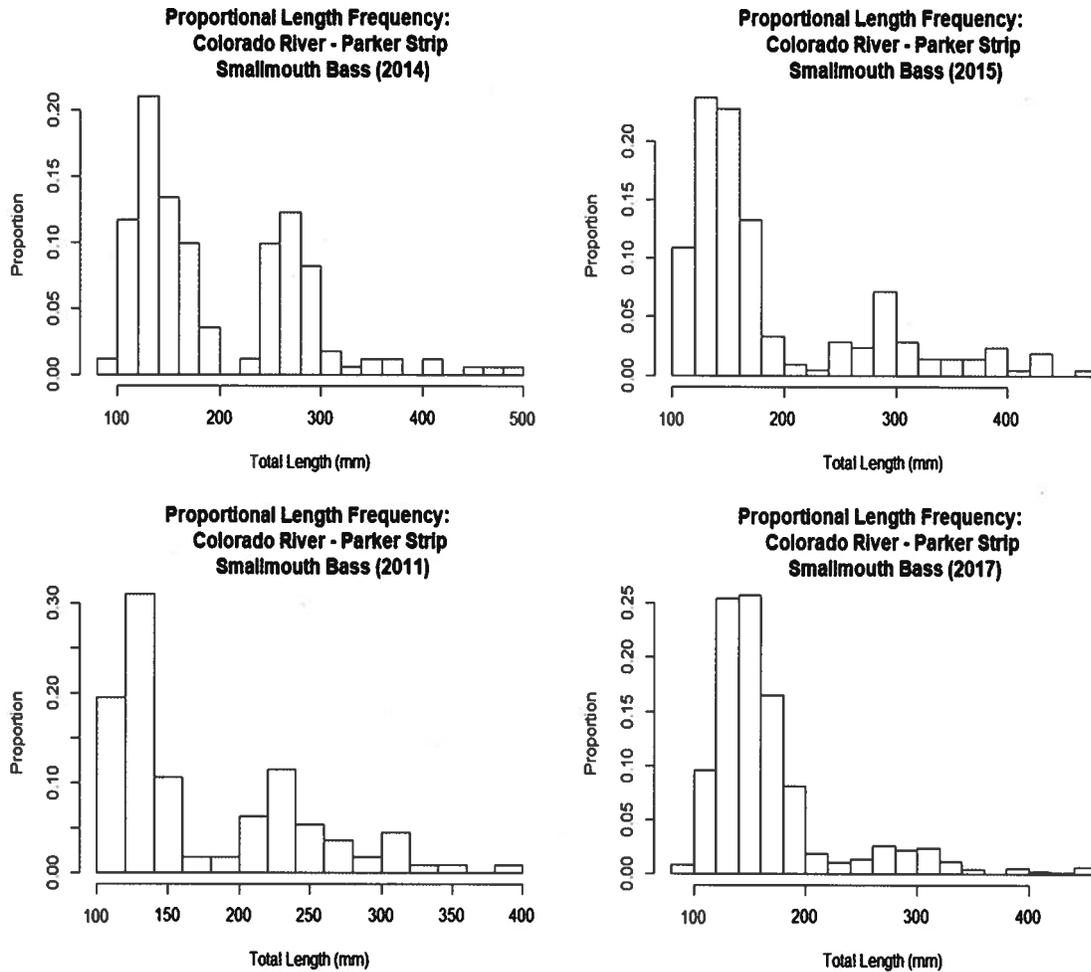
**Figure 6.** Proportional length-frequency distribution for Largemouth Bass captured during fall electrofishing surveys at Colorado River - Parker Strip (2011-2018).



**Figure 7.** Annual mean catch per unit effort (CPUE) and associated 95% confidence intervals for Smallmouth Bass captured during fall electrofishing surveys at Colorado River - Parker Strip (2011-2018). AGFD Warmwater Vision objectives are shown with dashed red line.



**Figure 8.** Annual mean relative weight (Wr) and associated 95% confidence intervals for Smallmouth Bass captured during fall electrofishing surveys at Colorado River - Parker Strip (2011-2018). AGFD Warmwater Vision objectives are shown with dashed red line.



**Figure 9.** Proportional length-frequency distribution for Smallmouth Bass captured during fall electrofishing surveys at Colorado River - Parker Strip (2011-2018).