

# Arizona Game and Fish Department

## Region III Fisheries Program

### Verde River: Granite Creek- Verde Ranch Fish Survey Report June 2019

**Author:** Gregg Cummins

**Report Date:** June 18, 2019



The Arizona Game and Fish Department (AGFD) prohibits discrimination on the basis of race, color, sex, national origin, age, or disability in its programs and activities. If anyone believes that they have been discriminated against in any of the AGFD's programs or activities, including its employment practices, the individual may file a complaint alleging discrimination directly to the AGFD deputy director, 5000 W. Carefree Hwy, Phoenix, AZ 85086, (602) 942-3000 or U.S. Fish and Wildlife Service, 4040 N. Fairfax Dr., Suite. 130, Arlington, VA 22203.

Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, or this document in an alternative format, by contacting the AGFD Deputy Director, 5000 W. Carefree Hwy, Phoenix, AZ 85086, (602) 942-3000. Requests should be made as early as possible to allow sufficient time to arrange for accommodation.

## Executive Summary

On June 11-12, 2019, Region III Fisheries Program lead a survey of an 8.5-mile (13.7 Km) section of the upper Verde River. The section started at the confluence of Granite Creek and ended at Verde Ranch. A total of 446 fish were sampled including 3 native species. Redeye Bass *Micropterus coosae* (91%) dominated the percent of catch followed by Sonora Sucker *Catostomus insignis* (3%). Six Roundtail Chub *Gila robusta* and one Desert Sucker *Pantosteus clarkii* were the other native species sampled and combined for 2% of the total catch.

## Introduction

The Verde River begins below the Sullivan Lake Dam, near Paulden, and flows for 125 miles (201 Km) through private, state, tribal and United States Forrest Service lands before the dam at Horseshoe Lake. The Verde River meets the Salt River near the community of Fountain Hills which is east of Phoenix. The purpose of this survey was to continue monitoring species occurrence and relative abundance of the upper Verde River in compliance with statewide protocol standards. This survey will serve as a comparison to similar surveys done in August 2004, June 2005, August 2006, June 2007, June 2010, June 2013, and June 2016 on the same stretch of river.

## Methods

A Smith-Root canoe mounted electrofishing unit with a single sphere anode and four cathode tails were used throughout the entire survey. A deadman switch was operated by hand on top of the generator as the canoe was maneuvered in and around available habitats. One individual operated a deadman switch and canoe. Netters were primarily positioned downstream of the canoe, collecting all fish possible. In areas where this was not effective or safe, the electrofishing unit was operated from inside the canoes and followed or mirrored by the remaining support canoes. All sites were 200 meters (approximately 656 ft.) in length with the exception of site # 05 which was 150 meters due to cattail density. Approximately 390 meters were sampled from inside the canoes and 1,160 meters was taken wading from outside the canoes. While sampling from inside of the canoe a control switch was operated by foot and remaining support canoes followed the electrofishing-canoe collecting all fish exhibiting signs of tetany with dip nets. While sampling from outside the canoe a dead-man switch was operated by hand on top of the generator as the canoe was maneuvered in and around available habitats. Netters were primarily positioned downstream of the canoe collecting all fish possible. All personnel in the water while electrofishing wore PVC coated waders and gloves. Settings used on the electrofisher were 125 volts pushing 2-4 amps at 50 pulses per second. A total of 8 sites, 5 random and 3 fixed, were surveyed within this section of river. Random sites were generated using Expert GPS program in order to minimize sampling bias. The 3 fixed sites were sites that have been sampled during each of the surveys in this reach since 2006. Table 1 gives a general summary of trip hours, distance traveled and number of sites. Table 2 represents the site number and associated river mile.

## Results

A total of 446 fish comprised of seven species were sampled; which included three native fish species. Native species comprised 5% of the total fish caught. Redeye Bass represented 91% of the overall sample with a Catch Per Unit Effort (per/15 minutes) of 63.3 (Table 3). Table 4 represents each sample site fish composition. Thirteen Sonora Suckers and six Roundtail Chub were sampled. Roundtail Chub length ranged from 141mm to 220 mm and the average length was 180 mm (Table 5). Nine Yellow Bullhead *Ameiurus natalis* and seven Red Shiners *Cyprinella lutrensis* were sampled and combined for 4% of the sample. Five Fathead Minnows *Pimephales promelas* were sampled and made up 1% of the total catch.

## Discussion

The upper Verde River fish community is comprised of both native and sportfish species. This section of the river has the lowest usage by fishermen (16,786 AUD annually), rafters/tubers and swimmers of any other section upstream from Horseshoe Lake, primarily because of access to the river and the number of people that live in the area. The abundance of Redeye Bass in this section of the Verde River is likely due to the lack of high flow events after the 9,000 cfs flow in 2010.. The abundance and density of cattails (*Typha* genus) hinders movement downstream in many areas. In one sample site only 150 meters was sampled because the density of the cattails made electrofishing impossible. Previous surveys have Smallmouth Bass as the most abundant species in the upper Verde River. Environmental DNA work done by Dr. Catherine E. Benson, Assistant Professor of Biology, at Embry-Riddle Aeronautical University has found that the Smallmouth Bass identified during previous surveys were Redeye Bass (forthcoming). This has been confirmed by meristics. Redeye Bass are not a large species of black bass, which may be a reason that the largest Redeye Bass sampled out of 405 fish was 263mm (~10.4 inches). Whether this is a stunting phenomenon due to the high density or that they are simply a smaller bass species, these fish aren't targeted as much because of the small size.

## Literature cited

Bryan, S., K. Young, M. Lopez, C. Benedict, A. Clark, B. Jacobson, D. Mitchell, D. Weedman, C. Hiser, T. Robinson, S. Gurtin, and T. Pringle. 2004. Standard fish sampling protocol for state of Arizona waters. Statewide Fisheries Investigations, Federal Aid. Arizona Game and Fish Department, Phoenix, Arizona.

## Acknowledgements

Thanks to the USFS for providing a crew member on this survey and to AZGFD personnel that are not Region III Fisheries. Funding for this survey was provided through fishing license revenues and the Federal Aid in Sport Fish Restoration Act, a program administered by the U.S. Fish and Wildlife Service, Division of Federal Aid.

## Figures

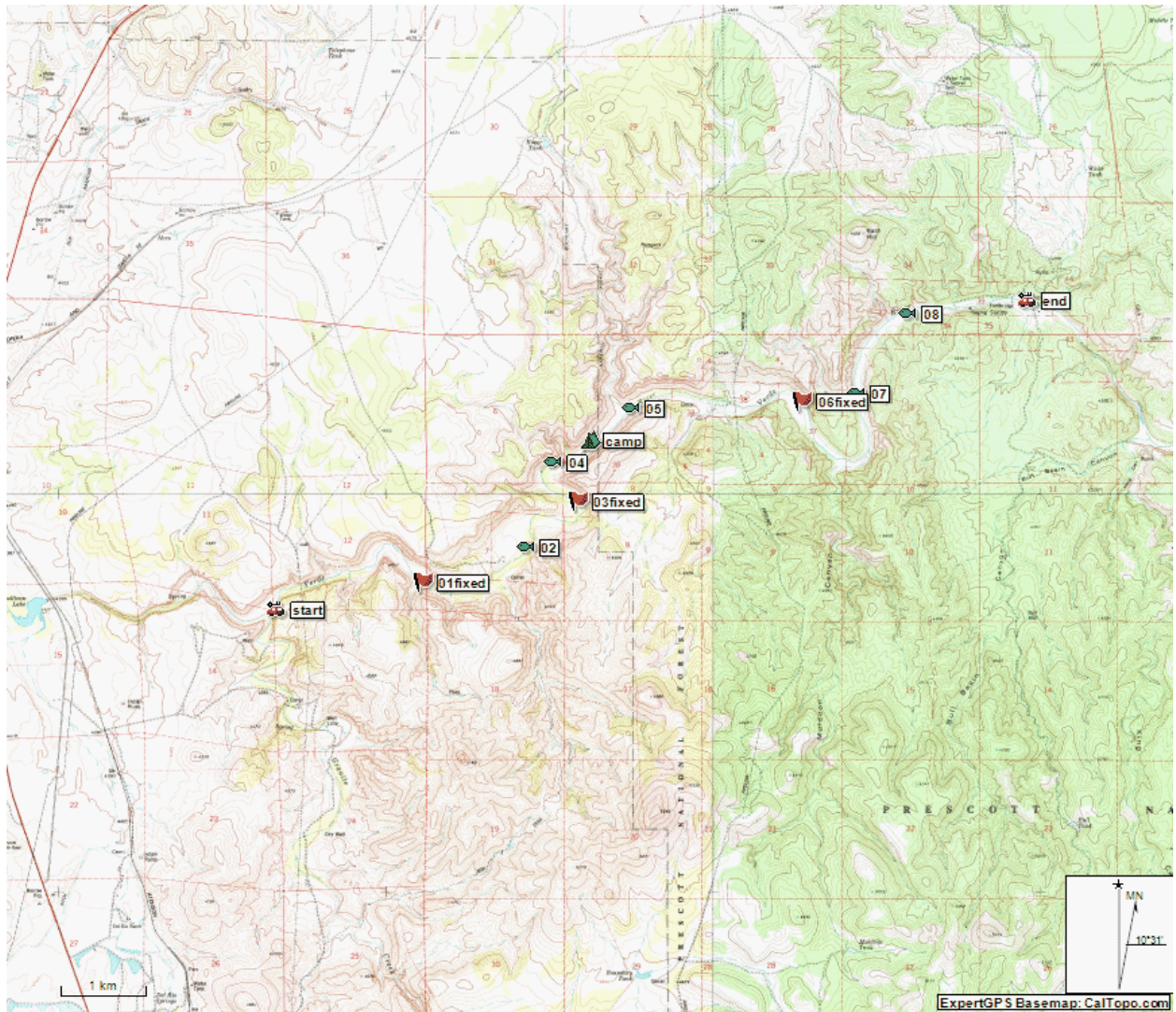


Figure 1. Map of electrofishing sample sites of the upper Verde River (Granite Creek-Verde Ranch) June, 2019.

## Tables

Table 1. Summary of survey hours, distance traveled, sample sites per day, and total effort in minutes using canoe electrofishing unite with a ball mounted cathode on the Verde River (Granite Creek- Verde Ranch), June, 2019.

Date	Trip Hours	Distance traveled (approx. miles)	Number of Sample Sites	Total Fish	Total Sampling Effort (minutes)
6/11/2019	8	4	4	328	53
6/12/2019	9	4.5	4	118	43
<b>Total</b>	<b>17</b>	<b>8.5</b>	<b>8</b>	<b>446</b>	<b>96</b>

Table 2. Site number and approximate river mile of each sample location using canoe electrofishing unite with a ball mounted cathode on the Verde River (Granite Creek-Verde Ranch), June, 2019.

Site Number	Approximate River Mile	Date
1 Fixed	3.4	6/11/2019
2	4	6/11/2019
3 Fixed	5.2	6/11/2019
4	5.7	6/11/2019
5	6.5	6/12/2019
6 Fixed	7.7	6/12/2019
7	8.6	6/12/2019
8	9.6	6/12/2019

Table 3. Overall number of fish, percent of total catch, CPUE (fish/15 minutes) and standard error by species of fish sampled canoe electrofishing unite with a ball mounted cathode on the Verde River (Granite Creek- Verde Ranch), June, 2019.

Species	Number Sampled	Percent of Total	CPUE	Standard Error
Yellow Bullhead	9	2	1.35	0.45
Sonora Sucker	13	3	2.10	1.04
Red Shiner	7	2	1.05	0.69
Roundtail Chub	6	1	0.90	0.58
Redeye Bass	405	91	63.30	14.39
Desert Sucker	1	0	0.15	0.12
Fathead Minnow	5	1	0.75	0.58





Table 4. Species composition, total minutes per site, and catch per unite effort (fish/15 minutes) of each site of fish sampled canoe electrofishing with a ball mounted cathode during the summer fish survey on the Verde River, (Granite Creek- Verde Ranch), June, 2019.

Site	Minutes	Yellow Bullhead	%	Sonora Sucker	%	Red Shiner	%	Roundtail Chub	%	Redeye Bass	%	Desert Sucker	%	Fathead Minnow	%	Site Total	Relative Abundance (CPUE)
1F	14	2	1	0	0	0	0	1	0	136	98	0	0	0	0	139	148.9
2	17	4	4	0	0	0	0	5	4	97	92	0	0	0	0	106	93.5
3F	9	0	0	1	3	0	0	0	0	32	97	0	0	0	0	33	54.9
4	13	0	0	0	0	0	0	0	0	50	100	0	0	0	0	50	57.7
5	9	1	4	0	0	0	0	0	0	22	96	0	0	0	0	23	38.3
6F	11	1	10	0	0	0	0	0	0	9	90	0	0	0	0	10	13.6
7	11	0	0	3	8	1	3	0	0	32	89	0	0	0	0	36	49.1
8	12	1	2	9	18	6	12	0	0	27	56	1	2	5	10	49	61.2
Total=	96	9		13		7		6		405		1		5		446	69.7

Table 5. Length frequency distribution of fish sampled with a canoe mounted electrofishing unit with a ball mounted cathode during summer Verde River survey, (Granite Creek-Verde Ranch), in June, 2019.

Size Range (mm)	Yellow Bullhead	Sonora Sucker	Red Shiner	Roundtail Chub	Redeye Bass	Desert Sucker	Fathead Minnow
<100	0	4	7	0	58	0	5
100-149	0	0	0	1	93	0	0
150-199	8	0	0	4	193	0	0
200-249	1	7	0	1	56	1	0
250-299	0	1	0	0	6	0	0
300-349	0	1	0	0	0	0	0