



## Red Mountain Lake, Mesa Fisheries Management Plan 2019-2029

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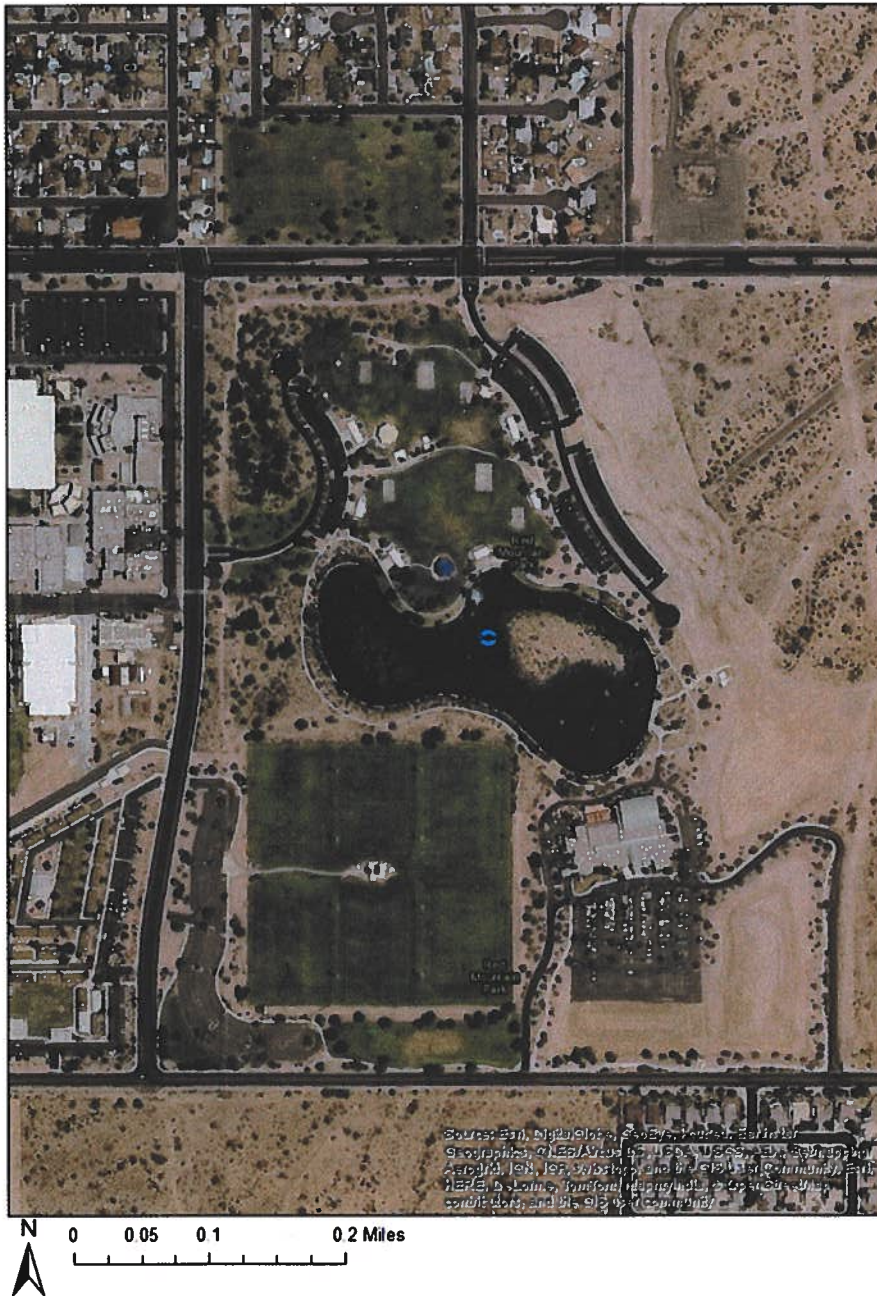
Approved [  ] by Chris Cantrell

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Aquatic Wildlife Branch Chief

Date: *6/25/19*

## Location

Red Mountain Lake is located at Latitude 33.43263 Longitude -111.669167 near E. Brown Road and N Sunvalley Blvd, Mesa (Figure 1).



**Figure 1.** Red Mountain Lake Mesa.

## Management Prescription

The Arizona Game and Fish Department (Department) has developed concepts under Strategic Vision Documents (AGFD 2019a-b) to help guide fisheries management in Arizona. The Department also developed a Community Fishing Program (CFP) Vision in 2015 to further guide management objectives in CFP waters, for angler catch per unit effort (CPUE; fish caught per hour) and angler satisfaction (AGFD 2015). Target catch rates and angler satisfaction is the same for all CFP waters: Achieve an angler satisfaction rate of at least 85% for each individual water, and overall catch-rates greater than 0.50 fish/hr. Red Mountain has employed an Intensive Use management concept since the lake was added to the program. Because angler use is very high in most CFP waters, frequent stocking is necessary to reach the goals of an Intensive Use, CFP water. Therefore, the management prescription for Red Mountain will be closely tied to stocking rates and seasons.

**Rainbow Trout *Oncorhynchus mykiss*:** Catchable Rainbow Trout will continue to be stocked bi-weekly from mid-November to mid-March. No stocking shall take place outside of this time period due to high water temperatures that would cause mortality to Rainbow Trout. Rainbow Trout from commercial vendors are stocked at a rate of 30-40 pounds per acre and average 0.75 pounds and have an average length of 10"-13". A daily bag limit of 4 trout per day has been established and will remain unless objectives are not being met for catch rates and satisfaction.

**Channel Catfish *Ictalurus punctatus*:** Catchable Channel Catfish will continue to be stocked bi-weekly mid-September to mid-November and mid-March to June. No stocking shall take place in July or August due to high water temperatures. Channel Catfish are stocked at a rate of approximately 100 pounds per acre. Stocked individuals average 1.5-2.0 pounds and have an average length of 14"-18". A daily bag limit of 4 Channel Catfish per day has been established and will remain unless objectives are not being met for catch rates and satisfaction.

**Bluegill *Lepomis macrochirus* and/or Redear Sunfish *Lepomis microlophus*:** Catchable sunfish are stocked once per year, usually in April. Sunfish are stocked at a rate of approximately 30 pounds per acre and have an average length of 5"-8". A daily bag limit of 10 sunfish per day has been established and will remain unless objectives are not being met for catch rates and satisfaction.

**Largemouth Bass *Micropterus salmoides*:** Catchable (13 inches or greater) or sub-catchable (less than 13 inches) Largemouth bass are stocked periodically depending upon available funds, but no more than once per year and usually in March or April. Bass are stocked at a rate of approximately 20-30 pounds per acre. An established bag limit of 2 Largemouth Bass per day (Minimum length of 13 inches) shall remain until further notice.



**Table 1. Red Mountain Lake Stocking Management Strategies:**

Species	Management Strategy	Regulations	Stocking
Focal Species <sup>1</sup>			
Rainbow Trout	Intensive Use – Winter Months	Limit 4 per day	Frequent; November to March
Channel Catfish	Intensive Use – Summer Months	Limit 4 per day	Frequent; March to November
Sunfish (Bluegill, Redear)	Basic Yield – Year Round	Limit 10 per day	Once per year
Largemouth Bass	Low Yield – Year Round	Limit 2 per day, 13in minimum	Maintenance as needed
Other sport species <sup>2</sup>			
Black Crappie	Low Yield – Year Round	Statewide limits	Maintenance as needed

**Table 2. Red Mountain Lake Objectives and Adaptive Management Strategies:**

<b>Objective 1: Maintain an Intensive Use Rainbow Trout fishery.</b>			
Parameters	Objective Guideline	Trigger point to address unmet Objectives	Strategies if Objectives are Unmet
Angler Catch Rates	Maintain an angler catch rate of 0.5 fish/hour during stocking season.	Catch rates drop below 0.5 fish/hour during assessment of catch rates on a 5 year rotational basis through creel surveys.	<ul style="list-style-type: none"> <li>• Implement changes in daily bag limit.</li> <li>• Increase number of trout stocked to meet target catch rate.</li> <li>• Increase frequency of stocking.</li> <li>• Increase law enforcement patrols to reduce poaching.</li> </ul>
<b>Objective 2: Maintain an Intensive Use Channel Catfish fishery.</b>			
Angler Catch Rates	Maintain an angler catch rate of 0.5 fish/hour during stocking season.	Catch rates drop below 0.5 fish/hour during assessment of catch rates on a 5 year rotational basis through creel surveys.	<ul style="list-style-type: none"> <li>• Implement changes in daily bag limit.</li> <li>• Increase number of catfish stocked to meet target catch rate.</li> <li>• Increase frequency of stocking.</li> <li>• Increase the amount of artificial habitat.</li> <li>• Increase law enforcement patrols.</li> </ul>
<b>Objective 3: Maintain an Intensive Use Bluegill and/or Redear Sunfish fishery.</b>			

<sup>1</sup> Species approved for stocking by U. S. Fish and Wildlife Service.

<sup>2</sup> Species is present, but future stocking would require a new environmental analysis (EAC) and consultation.

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Angler Catch Rates	Maintain an angler catch rate of 0.5 fish/hour.	Catch rates drop below 0.5 fish/hour during assessment of catch rates on a 5 year rotational basis through creel surveys.	<ul style="list-style-type: none"> <li>• Implement changes in daily bag limit.</li> <li>• Increase number of Bluegill stocked to meet target catch rate.</li> <li>• Increase frequency of stocking.</li> <li>• Increase the amount of artificial habitat.</li> <li>• Increase law enforcement patrols.</li> <li>• Suppress predators.</li> </ul>
<b>Objective 4: Maintain satisfaction rate of at least 85%.</b>			
Angler Satisfaction	A minimum of 85% of anglers rate fishing as fair, good or excellent.	Creel census shows less than 85% of anglers rate fishing as fair, good or excellent.	<ul style="list-style-type: none"> <li>• Increase stocking rates.</li> <li>• Increase size of fish stocked.</li> <li>• Increase or modify efforts for angler education, preferably at the lake.</li> <li>• Increase law enforcement efforts.</li> </ul>

## **Background**

Red Mountain is an artificially constructed lake located in Mesa Arizona at the intersection of East Brown Road and N Sterling Road. The lake is 8 acres in surface area and is part of a 1,146 acre city park that includes playgrounds, basketball courts, soccer and baseball fields, and several other amenities. Constructed by the City of Mesa in the 1995, the lake was built for park aesthetics, recreational fishing, groundwater recharge, and for use in watering park landscape.

This artificial lake has an unsealed bottom and a concrete perimeter edge. At the time of construction, lake depths averaged 12 feet, with a maximum of 17 feet. Presently the lake has an average depth of 8 feet and an estimated maximum of 9 feet deep due to siltation. Red Mountain Lake is considered a closed system water body because it has no drainage inflow and no outflow or spillway. The lake is supplied with Central Arizona Project (CAP) water, gravity fed through a 0.7 mile buried pipeline that originates at the Mesa Water Treatment facility. CAP water from the facility passes through a grinder box device that allows for no movement of live fish into Red Mountain. Likewise, there is no opportunity for fish to leave this lake because movement up through the irrigation head gates is impossible. There is no lake outflow, and water pumped from the lake has screened intakes and feeds the turf sprinkler systems. Pumps pull water from the lake

to irrigate surrounding park turf grass and soccer fields, and a significant amount of water percolates into the aquifer.

Red Mountain Lake is extremely popular with urban anglers in the east valley. The water is persistently clear, the park has ample shade trees and green grass, and the lake has two islands which create a naturalistic look. The lake was added to the program during the year it was constructed (1995) as a “core” stocking water with routine intensive stocking of catchable catfish during the summer months (March-November) and Rainbow Trout during the winter months (November-March). Sunfish were often stocked twice per year around March and October, but has since been reduced to once per year. Red Mountain has a “lake” regulation strategy which includes daily bag limits of four catfish, four trout, 2 bass (13 inches or more in length), 10 sunfish, and one White Amur (at least 30 inches minimum length).

Creel survey results from 2005 found 40,600 angler use days per year, an angler satisfaction rate of 77%, and a 31% youth participation rate. Put-and-take stockings occur from September through early July each year, with trout stocked in November through March and catfish stocked in the fall and spring. Sunfish and Largemouth Bass are stocked in the fall and/or spring. Due to high temperatures, Rainbow Trout do not persist through the summer. Besides providing put-and-take fishing, some of the stocked warm water species remain to spawn and augment the modest sport fish populations of the lake.

### **Productivity/Water Quality**

The City Parks and Recreation Department has a contractor (Aquatic Consulting and Testing Inc.) that manages the algae and aquatic macrophytes via periodic application of herbicides/algaecides. The City has another consulting company that manages the aeration system. The lake has very good water quality on a consistent basis.

### **Forage/Prey**

Very little data has been collected by the Department on forage or prey species assemblage from Red Mountain Lake since construction in 1995. Based on stocking records as well as observations, the lake is known to harbor Fathead Minnow *Pimephales promelas* as well as Bluegill and Redear Sunfish.

### **Habitat**

The lake was designed (see Figure 3) with a few piles of large and mid-size cobble and an aeration system. Emergent and submerged aquatic vegetation has grown in significantly around the lake since construction. As mentioned above, the City has a lake management consultant to monitor and control aquatic plants and algae, which are rarely problematic. Water quality and clarity is usually good or excellent at the lake. Since construction, fish habitat in the form of trash cans has been added at various locations in the lake. The lake has two separate islands which are covered in vegetation.

### **Access**

Access to Red Mountain is via three separate parking lots; from the north on Brown Road; from the West on N Sunvalley Blvd., and from the South on E Adobe Road. Access to fishing along the shoreline is generally good and unrestricted. There are no boat ramps on the lake and the park posts open times from sunrise to 10:00pm. There are numerous walking trails all the way around the lake. There is a stocking platform and angler fishing area on the southeast corner of the lake, and another fishing platform on the north end of the lake.

## **Species**

Very little data has been collected on fish species assemblage from Red Mountain since it was constructed. Department records from 2006 report seasonal Rainbow Trout, Channel Catfish, Bluegill, Redear Sunfish, hybrid sunfish, tilapia, White Amur, and Largemouth Bass are present. Data from the 2015 angler creel survey indicate that anglers are targeting any fish most frequently, followed by the focal species being stocked at the time. During November to March, that primary target species was trout, and from March to November the primary target species was catfish.

The CFP has conducted extensive angler creel surveys every 5 years to monitor target species, catch rates, angler satisfaction, harvest rates, and expenditures that can be used to evaluate the economic importance of the lake.

### *Invasive Species*

Red Mountain was found to have Apple snails in approximately March 2014. It is believed that the snails were illegally dumped from a home aquarium. In addition, quagga mussels were first documented in November 2011, and most likely came from the CAP canal which is known to harbor the mussels. Annual surveys in Red Mountain Lake are conducted by volunteer divers to monitor both quagga mussels as well as apple snails within the lake. In addition, adult apple snails and egg masses are removed if found. Crayfish are also known to be present in the lake, but it is unknown when or where they came from. A Black Carp *Mylopharyngodon piceus* was caught by an angler in April 2019. Although the fish was formally identified by Region 6 staff as a Grass Carp, several carp anglers with some expertise identified the fish as Black Carp. The fish was eligible for a state record as either grass carp or black carp because it weighed 61 pounds and was 60 inches in length.

## **Catch**

Red Mountain had an overall CPUE of 0.28 in 2010, and AUD of 40,200 (Table 3). In 2013 a Department survey estimated AUD's at Red Mountain to be at 147,279 based on license sales, which is likely grossly overestimated. Target species are usually the species being stocked, depending upon the time of year. Angler catch rate declined in 2015 to 0.15 fish/hr as did AUD which declined to 27,900 (Arizona Game and Fish Department 2017).

## Satisfaction

Angler satisfaction is of paramount importance to the Department. We measure angler satisfaction via two different methods. The first is by the median score on a 10-point scale; and the second is by the percentage of anglers giving a satisfactory score (6-10) on the same scale. In 2010 median angler satisfaction was 8 out of 10, with 82% of anglers giving a satisfactory score. Despite reduced catch rates in 2015, angler satisfaction remained strong at 87% (Table 3).

During Creel surveys and interactions with anglers, Department staff will ask a standardized question regarding an angler's satisfaction with the fishery. Angler satisfaction of 85% is the goal of the fishery and for the program as a whole.

## Literature Cited

Arizona Game and Fish Department. 2015. Community Fishing Program Vision for 2015-2025. Arizona Game and Fish Department, Community Fish Program, Phoenix, Arizona.

Arizona Game and Fish Department. 2017. Community Fishing Program 2015 Creel Survey Report. Arizona Game and Fish Department, Community Fishing Program, Phoenix, Arizona.

Arizona Game and Fish Department. 2019a. Warmwater Sportfisheries Strategic Vision Document. Arizona Game and Fish Department, Statewide Sportfish Program, Phoenix, Arizona.

Arizona Game and Fish Department. 2019b. Coldwater Sportfisheries Strategic Vision Document. Arizona Game and Fish Department, Statewide Sportfish Program, Phoenix, Arizona.

## Tables and Figures

**Table 3.** Catch rates of anglers at Red Mountain Lake as measured by creel surveys. AUD = Angler user day.

	Catch Rate Overall	Catch Rate RBT	Catch Rate CCF	Angler Satisfaction Median Score	Angler Satisfaction % Giving 6-10	AUD's
RM 2000	0.44	0.50	0.44	8	78	32,300
RM 2005	0.32	0.32	0.49	8	77	40,600
RM 2010	0.28	0.56	0.34	8	82	40,200
RM 2015	0.15	NA	NA	8	87	27,900





**Figure 2.** Community Fishing signs at Red Mountain Lake, Mesa.

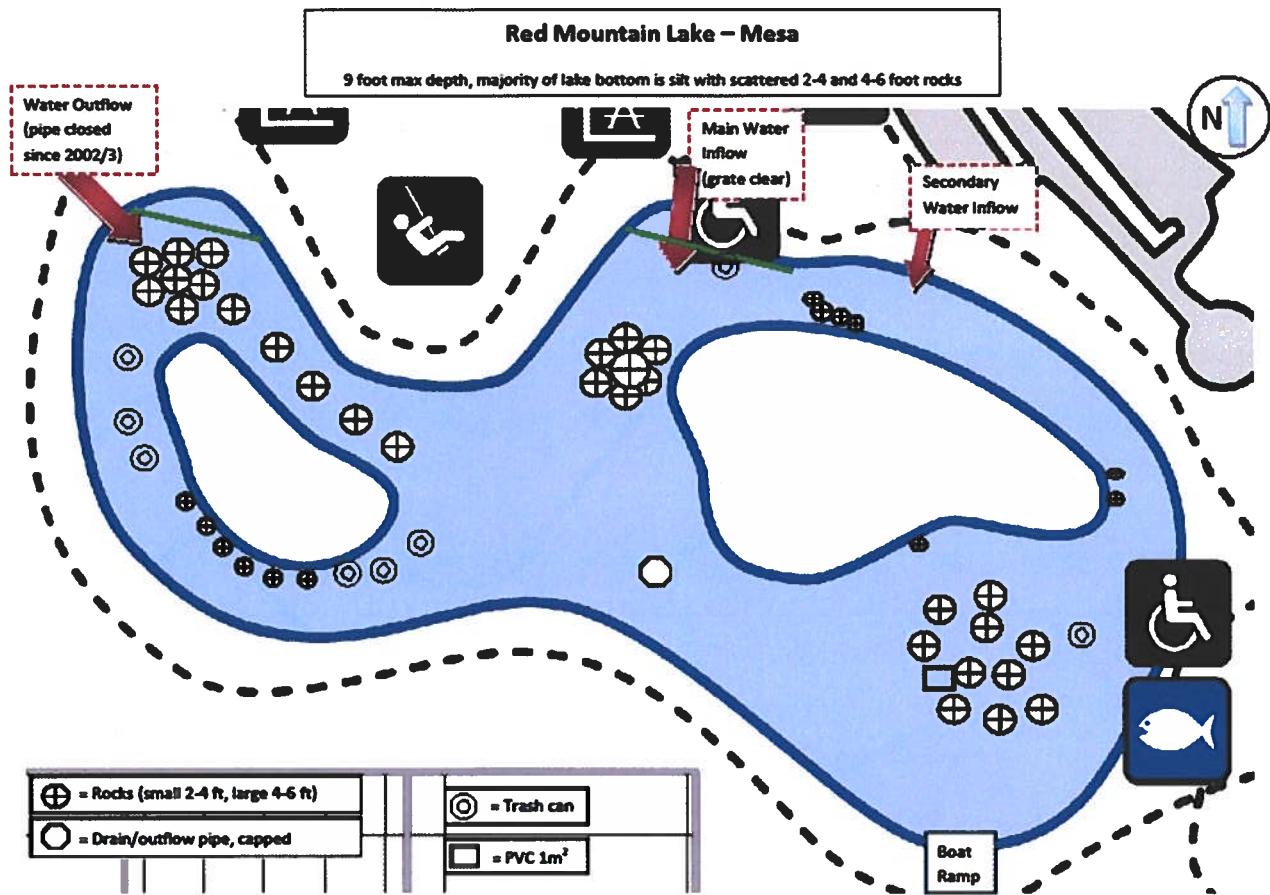


Figure 3. Known fish habitats and locations within Red Mountain Lake.