

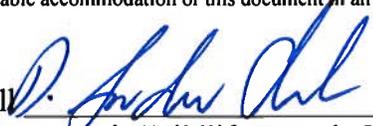


**Show Low Lake
Fisheries Management Plan
2020-2030**

**Mike Lopez, Aquatics Program Manager, Region I
Veronica Corbett, Aquatic Wildlife Specialist, Region I**

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 with the Directors Office, 5000 W. Carefree Hwy, Phoenix, AZ 85086-5000, (602) 942-3000 or U.S. Fish and Wildlife Service, Attn: Civil Rights Coordinator for Public Access, 5275 Leesburg Pike, MS:WSFR, Falls Church, VA 22041-3803.

Persons with a disability may request a reasonable accommodation or this document in an alternative format by contacting the Director's Office as listed above.

Approved by Chris Cantrell  Date 3/3/2020
Aquatic Wildlife Branch Chief

Management Prescription

The Arizona Game and Fish Department (Department) has developed approaches for coldwater and warmwater species management in Arizona under a Coldwater Strategic Vision Document (AGFD 2019a) and Warmwater Strategic Vision Document (AGFD 2019b). The primary management emphasis for Show Low Lake is for a coldwater sport fishery, and the secondary management emphasis is for a warmwater sport fishery. The primary management approach is an Intensive Use Coldwater fishery (Young et al 2001) to be supported by frequent stocking of Rainbow Trout *Oncorhynchus mykiss*, based on the continued demand for coldwater angling at this lake and general area. The secondary management approach is multiple warmwater sport fisheries, including a High Quality Channel Catfish *Ictalurus punctatus* fishery, Featured Species Walleye *Sander vitreus* fishery, General Opportunity Largemouth Bass *Micropterus salmoides* fishery, General Opportunity Smallmouth Bass *Micropterus dolomieu* fishery, and General Opportunity Bluegill *Lepomis macrochirus* fishery (Young et al 2001). This is based on the growing demand for warmwater angling at this lake and general area, and the lack of conflict with managing highly predaceous fish species in this drainage. There are few to no native fish, or other sensitive aquatic wildlife that would be impacted by this management approach at Show Low Lake.

Fisheries monitoring activities, including gillnetting surveys and/or electrofishing surveys, and angler creel surveys will be used to determine if management objectives are being met. Objective guidelines to meet management objectives are listed in Table 1.

Objective 1: Maintain the Rainbow Trout population to meet or exceed the Intensive Use standards.

Objective 2: Maintain the Channel Catfish population to meet or exceed High Quality standards.

Objective 3: Maintain the Walleye population to meet or exceed Featured Species standards.

Objective 4: Maintain the Black Bass (Largemouth and Smallmouth) populations to meet or exceed General Opportunity standards.

Objective 5: Maintain the Bluegill population to meet or exceed General Opportunity standards.

Objective 6: Maintain angler satisfaction at 80%.

Table 1. Show Low Lake Objectives and Adaptive Management Strategies

Parameters	Objective Guideline	Trigger point to address unmet Objectives	Strategies if Objectives are not met
<i>Objective 1: Maintain the Rainbow Trout population to meet or exceed Intensive Use standards as listed in the Coldwater Sportfisheries Strategic Vision Document.</i>			
Angler Catch Rates	No less than 0.5 fish per hour.	Angler catch rates drop below 0.5 fish per hour for two consecutive creel surveys.	<ul style="list-style-type: none"> • Stocking • Regulation changes • Outreach/education
<i>Objective 2: Maintain the Channel Catfish population to meet or exceed High Quality standards as listed in the Warmwater Sportfisheries Strategic Vision Document.</i>			
Size Distribution	PSD ¹ between 40-70, PSD-P ² between 10-40.	Three consecutive sampling events where size distribution guidelines are not met.	<ul style="list-style-type: none"> • Habitat improvement • Stocking • Regulation changes
Mean Relative Weight	Mean relative weight between 90-105.	Mean relative weight is not between 90-105 for three consecutive sampling events.	<ul style="list-style-type: none"> • Prey stocking • Regulation changes • Habitat improvement
Angler Catch Rates	No less than 0.5 fish per hour.	Angler catch rates drop below 0.5 fish per hour for two consecutive creel surveys.	<ul style="list-style-type: none"> • Stocking • Regulation changes • Outreach/education
<i>Objective 3: Maintain the Walleye population to meet Featured Species standards as listed in the Warmwater Sportfisheries Strategic Vision Document.</i>			
Size Structure	Multiple age classes.	Missing age classes, especially young fish, for three consecutive sampling events.	<ul style="list-style-type: none"> • Habitat improvement • Regulation changes • Prey stocking
Mean Relative Weight	Mean relative weight between 90-105.	Mean relative weight is not between 90-105 for three consecutive sampling events.	<ul style="list-style-type: none"> • Prey stocking • Regulation changes • Habitat improvement
Size Distribution	PSD ¹ between 30-60.	Three consecutive sampling events where size distribution guidelines are not met.	<ul style="list-style-type: none"> • Habitat improvement • Stocking • Regulation changes

Parameters	Objective Guideline	Trigger point to address unmet Objectives	Strategies if Objectives are not met
Objective 4: Maintain Black Bass populations to meet or exceed General Opportunity standards as listed in the Warmwater Sportfisheries Strategic Vision Document.			
Size Structure	Multiple age classes.	Missing age classes, especially young fish, for three consecutive sampling events.	<ul style="list-style-type: none"> • Habitat improvement • Regulation changes • Prey stocking
Angler Catch Rates	No less than 1.0 fish per hour.	Angler catch rates drop below 1.0 fish per hour for two consecutive creel surveys.	<ul style="list-style-type: none"> • Supplemental stocking • Habitat improvement
Objective 5: Maintain the Bluegill population to meet or exceed General Opportunity standards as listed in the Warmwater Sportfisheries Strategic Vision Document.			
Size Structure	Multiple age classes.	Missing age classes, especially young fish, for three consecutive sampling events.	<ul style="list-style-type: none"> • Habitat improvement • Regulation changes • Prey stocking
Angler Catch Rates	No less than 1.0 fish per hour.	Angler catch rates drop below 1.0 fish per hour for two consecutive creel surveys.	<ul style="list-style-type: none"> • Supplemental stocking • Habitat improvement
Objective 6: Maintain angler satisfaction at 80%.			
Angler Satisfaction	Angler satisfaction in creel surveys >80%.	Angler satisfaction drops below 80% for two consecutive creel surveys.	<ul style="list-style-type: none"> • Stock 12" minimum Rainbow Trout • Stock warmwater species • Outreach/education

¹ PSD=Proportional Size Distribution ² PSD-P = Proportional Size Distribution – Preferred

Background

Show Low Lake is a man-made reservoir built by the Phelps Dodge Corporation in 1951 for inter-basin transfers of water to benefit mining operations in other areas of the state. Show Low Lake was constructed by damming Show Low Creek in the Silver Creek drainage, within the Little Colorado River watershed.

The lake is 100 surface acres in size, with an average depth of 33 feet and a maximum depth of 50 feet. Land ownership includes the Apache-Sitgreaves National Forests (Forest) at the inlet of the lake, 4.43 acres of Arizona Game and Fish Commission property at the boat ramp on the west side

(Figure 2), and the remainder of the shoreline is Phelps Dodge Corporation and City of Show Low (City). The lake bed is owned by the Phelps Dodge Corporation.

The Department property currently contains paved parking, restrooms, a boat ramp, a fishing pier (owned by City of Show Low), a boat concession dock (owned and operated by Recreation Resource Management), and camping spots on the east side of Show Low Lake Road. Under an agreement the Department has with the City of Show Low, the City will manage the property for water-related outdoor recreation in conjunction with their other properties adjacent to the lake. In turn, the City has contracted Recreation Resource Management as a concessionaire to manage the City and Department property together.

Show Low Lake has a watershed of approximately 59.1 square miles of juniper and Ponderosa Pine forest. Show Low Creek is perennial where it enters the lake, and the lake level is maintained mostly through these flows and winter snowmelt, and has little influence from summer monsoon rains. Irrigation releases from upstream reservoirs are also captured in Show Low Lake for irrigation use downstream of the reservoir. Phelps Dodge Corporation no longer makes inter-basin transfers of water and sold the water rights to the City of Show Low. The City currently manages the water rights cooperatively with the Show Low-Pinetop-Woodland Irrigation Company for agricultural irrigation uses, but has future plans to use some water for domestic purposes.

Show Low Lake is downstream of three reservoirs located in Pinetop-Lakeside: Scott Reservoir on Porter Creek, Rainbow Lake on Walnut Creek, and Woodland Lake on Walnut Creek. Porter Creek and Walnut Creek join to form Show Low Creek upstream of Show Low Lake. Downstream of Show Low Lake, Show Low Creek flows into Fool Hollow Lake in Show Low.

Current angling regulations at Show Low Lake fall under the statewide regulations for gear and bag limits, which allow bait, lures and flies, including treble hooks. Daily bag limits include 6 trout, 6 bass, 6 walleye, 10 catfish, and unlimited sunfish. The use of live baitfish is not permitted at Show Low Lake, nor in all of Coconino, Navajo, Apache, Pima, and Cochise counties.

Productivity/Water Quality

Water quality is suitable for trout and other species at Show Low Lake. Water temperatures, pH levels, and dissolved oxygen (DO) meet trout stocking standards year-round, allowing trout stocking from spring (early-April) through Labor Day weekend. Water quality is also suitable outside of these stocking dates, but few anglers are on the water at that time. Approval to stock in March is recommended because of the frequent occurrence of short/poor winters, resulting in fishable conditions earlier than in the past.

Unsafe ice may develop on Show Low Lake from December through February. It is never thick enough to allow for winter ice fishing. A thermocline develops in the summer as surface water temperatures increase, developing at about 13 meters below the surface in May, at 8 meters in June, at 6 meters in July, at 7 meters in August, at 10 meters in September, at 12 meters in October, then breaks up by November, when measured during an intensive limnological survey by Department Regional biologists in 1993-1994 (Table 2). Colder water temperatures exist below the thermocline in the summer, but the water is anoxic due to a lack of mixing below the thermocline and lack of oxygen production at those depths. Thus, trout are only able to go as deep

as the thermocline level when seeking colder water during the summer months and congregate in a narrow layer on top of the thermocline. Warmwater species with lower oxygen demands may utilize more area below the thermocline, however DO levels are low enough that even more tolerant fish species such as bass and catfish would become stressed.

pH levels are typically within the good range at Show Low Lake, rarely exceeding 8.6 during the summer months. Conductivity is moderate, ranging from about 50-130 umhos through most of the water column throughout the year. The only water quality concern was moderately low DO (5.78-5.9 mg/l) throughout the water column in October in 1993 following the fall turnover. These levels were near marginal, but still suitable for trout since they did not drop below 5 mg/l. Show Low Lake does not experience fish kills due to water quality, although, a fish kill was documented in September 1969 when pH and water temperatures were “high”.

Show Low Lake can be classified as a slightly-hard water eutrophic lake (Bright et al. 1994). Total average epilimnetic (above thermocline) phosphorus and hardness values were 0.05 mg/l and 58.4 mg/l as equivalent CaCO₃, respectively, when measured in 1993-1994 by Department biologists. The total nitrogen epilimnetic average concentration was 0.65 mg/l, and the N:P ratio is 13:1. Phosphorus concentration in the hypolimnetic water (below thermocline) was 0.12 mg/l, while epilimnetic phosphorus on the same day was 0.02 mg/l. This demonstrates a concentration gradient which is due to the utilization by the algal population in the epilimnion.

Replication of 1993-1994 water sampling data is recommended to update water quality knowledge and improve stocking recommendations and fishing information.

Forage/Prey

Forage in Show Low Lake consists of zooplankton, benthic invertebrates (including crayfish), aquatic and terrestrial insects, and small fish species.

Zooplankton were surveyed in Show Low Lake by Department Regional biologists in 1993. This survey found relatively moderate densities of zooplankton available to trout. Zooplankton counts ranged from a low of 20.7 organisms per vertical net haul in December to a high of 783 organisms per haul in August (Figure 3). Copepod densities remained relatively stable all year, averaging 40.5 per haul. *Daphnia* (order Cladocera), which is normally the most important zooplankton for adult trout, had two spikes in densities, one in the spring and a slightly smaller spike in the fall. The low in mid-summer may be due to heavy utilization by high numbers of stocked trout at that time. Total number of organisms rose dramatically in June through September, due to a large increase in rotifers at that time.

Benthos invertebrates in Show Low Lake were also surveyed by Department Regional biologists in 1993. Chironomid midge larvae and Oligochaetes (a group of segmented worms) were the most abundant benthos invertebrates, averaging 36.5 and 33.9 per dredge sample, respectively (Figure 4). Scuds (*Hyalella azteca*), a valuable forage organism, was moderately abundant in the shallow water sample sites, but absent from the deeper sites and averaged only 13.3 per dredge sample overall.

Show Low Lake has a moderate abundance of forage fishes, including Green Sunfish *Lepomis cyanellus*, Bluegill, Black Crappie *Pomoxis nigromaculatus*, Fathead Minnow *Pimephales promelas*, and even trout when stocked in smaller sizes. Bluegill are found in higher densities than the other sunfishes in Show Low Lake. Trout were a main food item for Walleye over 550 mm total length (TL) when stocked at smaller sizes in the past. A food habits study on Walleye in Show Low Lake was conducted in 2012 by Department biologists, finding mostly midges in the stomachs of smaller Walleye (<550 mm) and stocked trout in the stomachs of larger Walleye (>550 mm). Of 16 Walleye examined under 550 mm TL, 56% had midge larvae in their stomachs, while 44% had empty stomachs. Of 19 Walleye examined over 550 mm TL, 47% had stocked Rainbow Trout in their stomachs, 5% had midge larvae, 11% had unidentified digested fish, and 37% had empty stomachs. The stocking regime in the last several years has moved away from smaller trout to a “super-catchable” size trout with a minimum length of 12 inches to reduce predation on stocked trout and allow greater return to creel for the angler.

The addition of new forage fishes into Show Low Lake is not recommended since Rainbow Trout would likely not utilize them and several forage fishes already exist. Improving habitat (artificial structures) in the lake is recommended to boost sunfish populations, which would benefit bass, Walleye, and likely catfish. Multiple types of habitat structures may be necessary to benefit a variety of species.

Habitat

There is little structure in Show Low Lake except for rocky structure along some stretches of shoreline. There are few to no aquatic plants growing in the lake.

Trout are not known to require structural habitat to do well, therefore, habitat is not considered to be a limiting factor for trout in Show Low Lake. However, other species, including sunfish, bass, crappie, and even Walleye, often benefit from structure or features in a lake. The addition of artificial or natural habitat would most likely improve populations of these species. Bathymetric and habitat surveys have been completed by Department Aquatic Habitat Program, however only bathymetry has been analyzed (Figure 5). Once aquatic habitat has been assessed, lake needs should be determined and projects developed to improve available habitat and structure. Boosting populations of forage species like Bluegill and crappie should benefit and improve bass and Walleye populations. Channel Catfish recruitment is inadequate to support angler harvest, and populations may benefit from the addition of spawning and juvenile rearing structures.

Species

Species present in Show Low Lake include stocked Rainbow Trout, Largemouth Bass, Smallmouth Bass, Green Sunfish, Bluegill, Walleye, Channel Catfish, Black Crappie, Black Bullhead *Ameiurus melas*, and Fathead Minnow. The Department may stock Rainbow Trout, Cutthroat Trout *Oncorhynchus clarkii*, Brook Trout *Salvelinus fontinalis*, Apache Trout *Oncorhynchus apache*, Channel Catfish, and Bluegill into Show Low Lake. Cutthroat Trout, Brook Trout, and Apache Trout have been occasionally stocked when surpluses of these species exists. Kokanee *Oncorhynchus nerka*, Northern Pike *Esox lucius*, Arctic Grayling *Thymallus arcticus*, and Brown Trout *Salmo trutta* were historically stocked into Show Low Lake, but no longer persist. Show Low Lake is prioritized as a Tier II fishery, requiring a minimum of one

paired survey every 5 years (AGFD 2004). Fish population surveys are conducted with gill nets for trout, Walleye, and catfish and with a boat electrofisher for bass and sunfish, in accordance with standard survey protocols.

Rainbow Trout:

Rainbow Trout are stocked every 2-3 weeks from early-April through September (usually Labor Day weekend) during the highest angler use time. Trout do not reproduce in the lake, which is consistent with other trout lakes in Arizona, requiring regular stockings to maintain the Intensive Use coldwater sport fishery. Rainbow Trout are stocked at super-catchable size, averaging 1.0 fish per pound or no less than 12 inches in length, at a rate of approximately 5-10 pounds per acre per stocking.

Trout are generally not sampled in high numbers in spring gillnetting as the surveys are conducted before seasonal stocking begins. Under the Intensive Use coldwater approach, trout are stocked to be caught by anglers and are not expected to grow and persist in the lake from year to year. Some trout do hold over through the winter however. Show Low Lake was most recently surveyed by overnight gillnet March 20-21, 2017. Of 249 fish surveyed, 144 were Rainbow Trout or Cutthroat Trout (Figure 6). In this case, over 75,000 surplus subcatchable sized Cutthroat Trout were stocked in September 2016. These fish were likely poorly utilized by anglers given that the highest use months had passed, and the fish were below catchable size when stocked. Excluding Cutthroat Trout, only 8 Rainbow Trout were sampled, which is more consistent with past surveys and expected holdover rates (Figure 7). Gillnetting surveys were also conducted on March 30-31, 2015. A higher diversity of species was sampled, however proportions of key species like Walleye, Smallmouth Bass and Channel Catfish were relatively similar to 2017; Walleye were 48% in 2017, 53% in 2015; Smallmouth Bass were 10% in 2017, 15% in 2015; Channel Catfish were 14% in 2017, 15% in 2015 (Figure 8). Again, few Rainbow Trout were found to hold over from the previous year's stocking; only two Rainbow Trout were sampled in 2015.

While too few Rainbow Trout were sampled to make a confident assessment of overwintering growth and forage availability, average body condition, or relative weight, from 2015 gillnet survey was 94.3. Relative weight (W_r) values around 100 represent an average, healthy fish, with values below 100 indicating poor body condition and values above indicating excellent, overweight fish (Anderson and Neumann 1996). Body condition decline is expected over winter when prey is less available and fish may seldom feed in cold water conditions. W_r of Rainbow Trout found in 2017 gillnetting surveys was 76.6, suggesting that stocking that many surplus trout led to high competition and a lack of adequate available prey for trout to maintain or grow throughout the winter. Average W_r of Cutthroat Trout in 2017 survey was 88.9, likely because the Cutthroat Trout had recently come from a hatchery setting and had been in the lake for a short amount of time, thus allowing for less weight loss. Condition of Cutthroat Trout may also have been better than Rainbow Trout due to them utilizing different prey sources and Cutthroat Trout generally adapting to larger prey sources at a smaller size than Rainbow Trout. Stocking large numbers of surplus trout in Show Low Lake should be monitored carefully so as not to over utilize available prey bases.

Some fish species have been known to overpopulate in Show Low Lake and compete directly with stocked trout. The Department has taken actions in the past to eliminate them. The lake was chemically treated with rotenone in 1953 to eradicate Common Carp *Cyprinus carpio* and Yellow Perch *Perca flavescens*. The lake was chemically treated with rotenone in 1958 to control sunfish and bullheads, again in 1959 to eradicate sunfish, bullheads, and carp, and again in 1960 to control bullheads.

Channel Catfish:

Like other lakes in the Show Low area, the desire for a High Quality Channel Catfish fishery has increased significantly in recent years. Recruitment at Show Low Lake is adequate to support the desired harvest rates of anglers. Thus, the Department has begun stocking juvenile (fingerling or subcatchable) Channel Catfish in the spring to keep up with demand. Channel Catfish will be stocked once per year at a fingerling or subcatchable size at a rate of 100 per acre. The lake grows catfish to large sizes well, thus stocking smaller sizes will maximize the numbers we are able to stock. Fingerling catfish were stocked in 2018 and 2019, at 14,000 and 15,000 respectively. Continuation of this annual stocking is recommended to maintain High Quality fishing opportunities.

Gillnetting is the standard sampling method for Channel Catfish and overnight surveys were conducted on March 18-19, 2014, and in 2015 and 2017. Catfish were also found during May 9, 2018 boat electrofishing, though some individuals were those recently stocked fingerlings, thus the small size classes (Figure 9). A balanced population of fish is one in which the relationship between small size class fish and large size class fish falls within an established range of values; these values indicate rates of recruitment, growth and mortality are satisfactory for recreational angling (Anderson and Neumann 1996). For Channel Catfish, a balanced population has a Proportional Size Distribution (PSD) between 40-70, a Proportional Size Distribution-Preferred (PSD-P) between 10-40 and a PSD-Memorable (PSD-M) between 0-10 (Gablehouse 1984) (Guy et al. 2007). Management goals for a High Quality fishery reflect these size distribution goals. In all three recent gillnetting surveys, Channel Catfish populations fell well outside this ideal size distribution and management goals, with no fish surveyed in the Memorable or Trophy size categories and poor distribution of fish in the small size categories (Figure 10). Poor recruitment and low adult survivorship, likely due to high angler harvest, are the most likely causes of this poor size distribution and can be improved by continuing the current supplemental stocking regime, improving habitat to increase natural recruitment, and possibly lowering harvest limits.

High Quality fishery management goals additionally include keeping average W_r values within the 95-105 range. In all four recent surveys (including incidental catch in 2018 boat electrofishing), catfish were well above recommended weights, averaging 114 in 2014, 117 in 2015, 125 in 2017 and 124 in 2018, and were in much better condition than all other warmwater species in Show Low Lake (Figure 11). However, without smaller size class fish (those between Stock and Quality size distributions), this figure for 2018 shows that Channel Catfish populations are not balanced and require steps to address recruitment. PSD and PSD-P of 2018 electrofishing surveyed Channel Catfish were also outside ideal management ranges. Recent creel survey data does not show angler catch rates meeting the High Quality management goals. Stocking more frequently and more numbers of catfish may be required in order for anglers to reach target catch rates. Warmwater species are overall underutilized and catch rates may improve with increased outreach and signage.

Walleye:

A very robust population of Walleye is present in Show Low Lake. Walleye were stocked once in the lake (750K sac fry in 1975) and have established well since then. The last 3 State Record Walleye have been caught in Show Low Lake, a 12 lb. 12 oz. fish in 1989, a 12 lb. 14.4 oz. fish in 2000, and the current record of 16 lb. 1.76 oz., caught in 2002. As one of a small number of lakes where the opportunity for Walleye angling exists and in an even smaller group where the water quality and mercury levels allow for the safe consumption of Walleye, Show Low Lake is often sought as a fishing destination for this uncommon species. Management goals for Walleye under a Featured Species approach include sampling multiple age classes of fish, healthy Wr (90-105 on average), and PSD 30-60.

Walleye were sampled during all four recent Show Low Lake surveys: 2018 boat electrofishing, 2017 gillnetting, 2015 gillnetting and 2014 gillnetting. Multiple size classes were found during all four surveys, which indicates successful recruitment and growth, and meets management goals (Figure 12). The most recent gillnetting survey in 2017 found Walleye as the largest single species caught when excluding recently stocked Cutthroat Trout (48.3% of modified catch) (Figure 7). Similarly, Walleye dominated the overnight gillnet survey in 2015, at 52.6% of the total catch (Figure 8). In fact, one fish fell within national Trophy size for Walleye at 760 mm or 29.9 inches. The current state record Walleye measured 31 inches.

Sampling data shows Wr has improved over the last several years, finally meeting management goals in 2018 (Figure 13). However, size distribution of Walleye tended toward smaller fish in 2018 when compared to 2014, 2015 and 2017 netting data. Boat electrofishing is not the standard survey method for Walleye poorly sampling larger fish in deeper water. Capture data tends to be skewed toward smaller fish which often have better relative weight than larger fish (Figure 11). Surveys in 2014, 2015 and 2017 found a wider size range of Walleye and 2015 surveyed significantly more Walleye than any other year (Figure 12). Average Wr from those surveys are likely the most accurate representation of Walleye condition and do not meet management goals (Figure 13). Diet studies may be used to determine Walleye ideal prey and/or acceptable secondary prey sources for Walleye since the stocking change to super-catchable trout and to help address low Wr.

For all three gillnetting surveys, Walleye fell generally within the ideal size distribution ranges for a balanced population (Figure 14). 2018 electrofishing data was not included in this graph because an inadequate number of minimum Stock length Walleye (fish greater than 250mm in length) were surveyed and population size structure could not be assessed. No one survey had ideal proportions of fish in each size range, suggesting that Walleye populations are shifting significantly from year to year. The 2015 survey which sampled the highest number of fish, found low numbers of fish in the Preferred range (510mm or 20 inches) and larger. Again, this poor ratio of large fish could be due to high angler harvest of large fish, inadequate prey to grow large fish, or likely a combination of both factors.

Largemouth Bass:

Likely due to the lack of aquatic vegetation, lack of aquatic structure and simple bathymetry of Show Low Lake, Largemouth Bass populations are naturally reproducing and self-sustaining, but do not meet High Quality growth and population size standards. Though it is similar to Fool Hollow Lake, artificial aquatic habitat is needed to provide rearing habitat for juveniles and boost sunfish populations as adult forage. Until beneficial habitat improvements can be made, Largemouth Bass are managed under a General Opportunity approach. Bass populations were most recently sampled during the 2018 boat electrofishing survey. Few individuals were sampled, only four total, which represented only 1.5% of the total catch (Figure 15). Similarly, a boat electrofishing survey was conducted on June 14, 2012 and Largemouth Bass only represented 2.1% of the catch with six individuals. Overnight gillnetting is generally an ineffective method of capturing bass in higher elevation reservoirs. The 2014 survey captured one Largemouth Bass while 2015 and 2017 surveys caught none.

Consistent low numbers of Largemouth Bass found in surveys indicate an overall poor population in Show Low Lake. Management goals were generally met by the 2018 survey due to the varied size classes surveyed (Figure 16). Size distributions were also fairly similar from 2012 data to 2018 data. Recent creel survey data does not show angler catch rates meeting the General Opportunity management goals. To reach target catch rates, Show Low Lake likely will require supplemental stockings. Warmwater species are overall underutilized and catch rates may improve with increased outreach and signage. Supplemental stocking and habitat improvement are both recommended, dependent on creel results. Largemouth Bass populations may be small due to the lack of habitat available for spawning and rearing juveniles, or due to Largemouth Bass being outcompeted by Smallmouth Bass.

Smallmouth Bass:

In contrast to Largemouth Bass populations, Smallmouth Bass in Show Low Lake appear to be consistently healthy. Smallmouth are also naturally reproducing and self-sustaining, but are likely more tolerant of the rocky substrate and lack of vegetation. Smallmouth Bass in Show Low Lake are the result of an illegal fish introduction, first documented in a survey in 2003. Smallmouth Bass have been determined not to pose an immediate risk to native species management goals or sportfish management in the Show Low area, therefore have been tolerated. Current management goals for a General Opportunity warmwater fishery are for surveys to find multiple age classes and for satisfactory angler catch rates. More juvenile-sized Smallmouth Bass have been surveyed than Largemouth Bass in 2012 and 2018 electrofishing surveys, suggesting better recruitment and growth of Smallmouth compared to Largemouth (Figure 16; Figure 17). Reasons for similar species such as Largemouth and Smallmouth Bass populations being markedly different in the same water are numerous and generally speculative.

Recent creel survey data does not show angler catch rates meeting the General Opportunity management goals. Supplemental stocking likely will be required for anglers to reach target catch rates for Smallmouth Bass. Warmwater species are overall underutilized and catch rates may improve with increased outreach and signage. However, 2012 and 2018 boat electrofishing data confidently supports the presence of multiple age classes (Figure 17). In fact, when evaluating Smallmouth Bass in Show Low Lake under the High Quality management goals, Smallmouth meet and exceed size distribution and relative weight metrics.

High Quality size distribution goals were met in both 2012 and 2018 boat electrofishing surveys, with fish sampled falling well within the ideal ranges (Figure 18). Even Channel Catfish did not fall into these ideal population distribution ranges at the PSD-Memorable (710 mm or 28 inches) or larger classes, due to no fish in these large size classes found in surveys. Smallmouth Bass were the most numerous species surveyed in 2012 and 2018 boat electrofishing surveys, with the largest individuals from those surveys weighing 4.1 pounds and 3.6 pounds, respectively (Figure 15). Even 2014 netting, 2015 netting and 2017 netting surveyed three, fifteen and three Smallmouth Bass, respectively, despite overnight gillnetting not being the most effective method, suggesting populations are likely quite robust (Figure 7; Figure 8).

Relative weight for Smallmouth Bass also met or exceeded High Quality goals in 2012 and 2018 electrofishing surveys, and incidental 2015 gillnetting survey captures (Figure 19). High average Wr of all Smallmouth surveyed indicates plentiful and/or varied prey sources available to fish of all size classes. Relatively lower Wr of Stock to Preferred (180mm to 610mm or 7 inches to 24-inches) sizes could be analyzed and potentially addressed by completing diet studies targeting fish of those lengths (Figure 11). Given the robust population of Smallmouth Bass in Show Low Lake, if angler catch rates are not meeting management goals, educational outreach may help improve angler knowledge of the species and provide fishing tactics to better target warmwater species.

Bluegill (and other sunfish):

Bluegill are the desired species of forage fish and general angling opportunity in Show Low Lake. Though other sunfish species are present, including Black Crappie, Green Sunfish and Green Sunfish x Bluegill hybrids, Green Sunfish and hybrids are considered undesirable due to their propensity for establishing in streams and outcompeting sensitive native species.

All sunfish species comprised 44.6% of the total catch of the 2018 boat electrofishing survey. Bluegill were the largest proportion of the sunfish sample at 27.3% showing an improvement from 2012 electrofishing data which found only 8.2% of the catch as Bluegill (Figure 15). Bluegill sampled had more size variation than Green Sunfish sampled, though a higher number of young of the year Green Sunfish were sampled than Bluegill, indicating at least initially higher recruitment that may not result in long term population increases (Figure 20). The largest sized sunfish sampled in 2018 were Green Sunfish x Bluegill hybrids and Black Crappie, though both were relatively uncommon suggesting one or two successful spawning years and not overall healthy populations. Bluegill had the most consistent average Wr of all warmwater species surveyed in 2018, indicating adequate prey base to support existing populations and to allow for population enhancement (Figure 11).

Black Crappie are the result of an illegal fish introduction, first documented in a survey in 2001. Since then, Black Crappie have been determined not to pose an immediate risk to native species management goals or sportfish management in the Show Low area, however populations have not improved significantly, nor have anglers begun to utilize this fishery. Black Crappie populations would, like all sunfish, benefit from the addition of aquatic habitat. At current levels, Black Crappie likely provide important forage resources to larger, piscivorous fish species like bass and Walleye.

Undesirable or Invasive Species

There are no records of aquatic invasive species at Show Low Lake.

The lake contains Northern Crayfish *Orconectes virilis*, which are not native to Arizona, and have not been surveyed formally, and Bullfrogs *Lithobates catesbeianus*. A number of illegally introduced fish species have been documented, including Golden Shiner *Notemigonus crysoleucas*, Koi *Cyprinus rubrofuscus*, Common Carp, Black Bullhead, Yellow Perch, Smallmouth Bass, and Black Crappie. Smallmouth Bass and Black Crappie have been tolerated, but the other species are not. Golden Shiner, Koi, Common Carp, and Yellow Perch are no longer found in the lake.

Access

The lake is located approximately 1 mile off Highway 260 in Show Low, via the paved Show Low Lake Road. There is one boat ramp and associated boat dock located on the west shore on Department property (Figure 2). The Show Low Lake store and concession, along with campgrounds and boat rentals, are operated by Recreation Resource Management by contract with the City of Show Low and are located in close proximity to the boat ramp. Boats are restricted to 10 horsepower gas motors or less.

Access to fishing along the shoreline is good on the west, north, and south shorelines where there is close vehicle access. There are also 2 fishing piers, one located on Department property near the boat ramp, and one located on the north shoreline, accessed by a dirt road over the spillway and dam. These fishing piers are owned by the City of Show Low.

The lake is accessible year-round, but may develop unsafe ice occasionally in December through February.

Current regulatory and informational signs at the lake are few and far between. Signs at the boat dock describe boating regulations and basic fishing regulations, but no signs exist describing live baitfish restrictions or highlighting species presence. Increased signage, including fishing techniques to target the various, underutilized warmwater species in the lake are highly recommended. Two fishing piers exist and the boat dock area have the most focused angler use and would be the best locations for such signage.

Challenges in access include swimmers occupying the boat ramp during summer months; increasing use of non-motorized kayaks, paddleboards, and canoes, many who aren't fishing and often occupy the single boat ramp; currently no ADA shoreline access, not even on the fishing piers; annual seasonal closure of a section of shoreline for nesting Bald Eagles; restrooms often closed due to filling during heavy precipitation; no easy access from top parking lot to the lake; and not enough ADA parking down by boat ramp.

Strategies to address these issues may include post no swimming signs in boat launch area and enforcement with Department and City officers; install a ramp or beach for launching non-motorized craft that is separate, but possibly adjacent to the boat ramp; install ADA access to one

or both fishing pier(s); work with the Forest and Bald Eagle program on closure strategies that minimize impacts on anglers while protecting the needs of nesting Bald Eagles; and support Department plans to make facility improvements on Department property. Beneficial improvements to Department facilities may include new restrooms with running water and electricity (connect to City water and power lines), a new fish cleaning station adjacent to new restroom, ADA compliance access down to boat ramp area from top parking area, and the construction of additional ADA compliant parking in boat ramp area.

Construction work on improving ADA compliant parking near the boat ramp and access from upper parking area began in 2018, but halted due to insufficient funding. Completion of these projects is expected to conclude in 2020.

Catch

Target angler catch rates at Show Low Lake differ per species, based on the differing management strategies (Table 1). Target catch rates when targeting Rainbow Trout and Channel Catfish are 0.5 fish/hour or greater. Catch rates for trout are during stocking season only. Target catch rates when targeting Largemouth Bass, Smallmouth Bass or Bluegill are 1.0 fish/hour or greater. The overall goal for angler satisfaction is at least 80% for fair, good or excellent ratings.

During a 2007 creel survey, anglers at Show Low Lake were asked if they would prefer to catch more small trout or fewer larger trout. 53% responded that they preferred to catch one 18-inch trout, followed by two 12-inch trout (30%), and lastly four 9-inch trout (17%), all being equivalent total weight of fish. This data motivated investigation of trout stocking regime changes.

The summer months of June, July, May, and August are the highest angler use months, in that order, as seen in results from angler creel surveys conducted from April through November in 2012 (Table 21). The best fishing also occurs generally during that timeframe as well, with the highest catch rates in May (0.41 fish/hour), June (0.32 fish/ hour), August (0.25 fish/ hour), and July (0.19 fish/ hour) (Table 22). Catch rates also come back up somewhat in October (0.18 fish/ hour), but are still below the target catch rate. Target catch rates were not met in any month in 2012.

The majority of trout harvested from Show Low Lake in 2012 were in May and June (Table 23), with another 25% harvested in July and August cumulatively. Catch rates by species show that Walleye, bass, and catfish are relatively underutilized (Table 24). Creel conducted in 2014 found the same pattern of low angler use of warmwater species. With better outreach about these species in the lake, as well as improving warmwater populations, catch rates of individual warmwater species as well as overall catch rates should increase. Management goals to improve warmwater fishing opportunities reflect growing angler interest in non-trout angling opportunities. Future creel surveys should specify species of bass caught to support the possibility for highlighting Smallmouth Bass as a High Quality fishery.

A variety of sizes of Rainbow Trout were stocked in 2012 to track return rates to anglers by the size of trout stocked in lakes with predatory fish species. A diet study the same year showed that Walleye were feeding heavily on 8-10" stocked trout, and surveys show the Walleye population is robust and well established. Stocking larger trout was theorized to reduce the predation by Walleye

(and bass), and allow more trout to be caught by anglers. Nearly 80% of the trout stocked, about 21,500 trout, were 8-12" in size, yet only 8% of trout harvested by anglers were of that size, and most of those were in the 11-12" size range. Nearly all trout stocked over 12" in length into Show Low Lake in 2012 were harvested by anglers (Figure 25). For this reason, a change to stocking primarily super-catchable size trout, at least 12 inches in length, was made in 2014. However, in making this size change, fewer fish are able to be stocked. Trout are raised in hatcheries by weight, and every hatchery is raising fish at capacity. Each trout stocked into Show Low Lake, starting in 2014, is heavier (average 1 pound each) than regular catchable size. Our hatcheries are able to raise fewer of these super-catchable trout to keep the same overall weight of fish grown.

A follow up creel survey was conducted in 2014 to assess the success of switching to stocking super-catchable Rainbow Trout. This creel data suggests the switch to super-catchable trout has distinct benefits. Catch per unit of effort of anglers decreased; anglers caught fewer fish because the overall number of trout stocked into Show Low Lake decreased. Overall CPUE in 2012 was 0.24 fish per hour, while it dropped to 0.11 fish per hour in 2014 when averaging boat and shore anglers (Figure 26). With fewer trout being stocked in the lake to catch, CPUE was expected to decline. However, given the quality of fish has increased and the number of fish available to catch will increase, catch rates are expected to improve overall, as is angler satisfaction. When stocking super-catchable fish, more will be available to catch when compared with catchable trout because more will survive without being eaten by other predatory fish. While larger trout are still not expected to persist in the lake through the winter, they are expected to survive through the stocking season better and increase the chance for angler harvest.

Angler use at Show Low Lake supported approximately 44,714 angler days in 2001, with approximately 60% targeting trout and others targeting warmwater fish, according to a statewide angler use survey (Pringle 2004). In 2013, another statewide angler use survey found that use had increased to approximately 71,704 angler use days, though the proportion of anglers targeting trout vs other species had not changed. This increase in use represents the 5th highest lake in the Region with regard to use (behind only Big Lake, Woods Canyon Lake, Willow Springs Lake, and Fool Hollow Lake) (AGFD 2015).

Satisfaction

Angler satisfaction was most recently surveyed using creel or angler interview surveys in 2012 and 2014. Satisfaction rates at Show Low Lake did not meet the target rate of 80% of fair/good/excellent ratings overall or in any single month in 2012, rating 30% fair/good/excellent overall (Figure 27). The lowest satisfaction rates occurred in April (12%), July (22%), and August (25%). This is attributed mostly to lower catch rates in those months. Trout stocking begins in April, depending on the weather and fish growth at the hatcheries, so catch rates can be lower during the time period where no trout have been stocked, thus leading to low satisfaction. Low satisfaction in July and August is attributed to lower catch rates when water temperatures are highest and the thermocline is closest to the surface, thus decreasing available fishing area and often making targeting fish difficult for anglers.

The change to stocking only super-catchable size (>12") trout in 2014 did improve satisfaction rates, though levels still did not meet the desired 80% (Figure 28). Higher satisfaction suggests anglers like catching larger fish, as long as they catch them often enough to keep them satisfied.

Improved information and outreach about warmwater species available, especially highlighting fishing techniques to help target those species, is expected to improve satisfaction.

Catch rates of warmwater species could be increased by better outreach about the underutilized species (Walleye, Smallmouth Bass, and Channel Catfish), as well as boosting sunfish populations by installing artificial fish habitat/structure, which will in turn benefit the same underutilized sportfish and increase forage species populations.

Literature Cited

- Anderson R. O. and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 463-475 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- Arizona Game and Fish Department (AGFD). 2004. Standard fish sampling protocol for State of Arizona waters. Arizona Game and Fish Department, Phoenix, AZ.
- Arizona Game and Fish Department (AGFD). 2015. 2013 Arizona Angler User Days, Fishing Economics and Angler Demographics. Fisheries Technical Report, Federal Aid Project FW-100-P-23. Arizona Game and Fish Department, Phoenix, Arizona.
- Arizona Game and Fish Department (AGFD). 2019a. Coldwater Sportfisheries Strategic Vision Document, 2015-2025. Arizona Game and Fish Department, Statewide Fisheries Program.
- Arizona Game and Fish Department (AGFD). 2019b. Warmwater Sportfisheries Strategic Vision Document. 2015-2025. Arizona Game and Fish Department, Statewide Fisheries Program.
- Bright, K., M. Underwood, and R. Dreyer. 1994. White Mountain "In Town Lakes" Water Quality Survey. Arizona Game and Fish Department, Fisheries Branch, Phoenix, AZ. 15 pp.
- Gablehouse, Jr., D. 1984. A Length-Categorization Systems to Asses Fish Stocks. North American Journal of Fisheries Management 4:273-285.
- Guy, C. S., R. M. Neumann, D. W. Willis, R. O. Anderson. 2007. Proportional Size Distribution (PSD): A Further Refinement of Population Size Structure Index Terminology. Fisheries 32(7):348.
- Pringle, T. 2004. Statewide survey of 2001 Arizona anglers. Fisheries Technical Report 03-01. Statewide Fisheries Investigations, Federal Aid Project F-7-M-46. Arizona Game and Fish Department, Phoenix, Arizona.
- Young, K. L., E. P. Lopez, and D. B. Dorum. 2001. Integrated Fisheries Management Plan for the Little Colorado River Watershed. Technical Report 146. Nongame and Endangered Wildlife Program, Arizona Game and Fish Department.

Tables and Figures

Table 2. Water quality profiles for temperature (°C), pH, and dissolved oxygen (DO in mg/l) by month in Show Low Lake, Arizona, when measured in a limnological survey in 1993-1994. The red shaded areas highlights very low DO levels in the bottom layers in the summer that are lethal, or near lethal, to trout.

Depth Meters	January			February			March			April			May			June		
	Temp	pH	DO	Temp	pH	DO	Temp	pH	DO	Temp	pH	DO	Temp	pH	DO	Temp	pH	DO
S	2.9	7.6	10.9	3.6	7.5	10.3	8.4	7.8	10.3	14.2	8.0	8.7	20.5	8.2	8.1	20.2	8.2	7.1
1	3.1	7.7	10.8	3.6	7.5	10.1	8.4	7.8	9.6	14.2	8.0	8.7	20.4	8.2	8.1	20.2	8.2	7.1
2	3.3	7.7	10.8	3.6	7.5	10.1	8.3	7.8	9.5	14.1	8.0	8.6	20.2	8.2	8.1	20.2	8.2	7.1
3	3.3	7.7	10.8	3.6	7.5	10.1	8.3	7.8	9.5	13.2	7.9	8.5	18.8	8.2	8.1	20.2	8.2	7.1
4	3.4	7.7	10.7	3.6	7.5	9.9	8.2	7.7	9.5	11.9	7.8	8.3	17.8	8.0	7.6	20.1	8.2	7.0
5	3.4	7.7	10.6	3.6	7.5	9.8	8.1	7.7	9.4	11.7	7.8	8.2	13.9	7.7	6.9	19.5	8.1	6.7
6	3.4	7.7	10.6	3.6	7.6	9.8	8.0	7.7	9.4	11.5	7.7	8.2	12.6	7.7	7.3	17.2	8.0	6.0
7	3.4	7.7	10.5	3.6	7.6	9.8	7.8	7.7	9.4	11.0	7.7	8.2	12.2	7.6	6.9	15.4	7.8	5.0
8	3.4	7.7	10.5	3.6	7.6	9.7	7.8	7.7	9.4	10.9	7.7	8.1	12.0	7.6	6.7	13.7	7.7	3.9
9	3.4	7.7	10.5	3.6	7.6	9.7	7.3	7.7	9.3	10.7	7.7	8.0	11.6	7.5	6.2	12.5	7.6	3.7
10	3.4	7.7	10.5	3.6	7.6	9.6	7.0	7.7	9.0	10.6	7.7	8.0	11.2	7.5	5.9	11.5	7.5	2.9
11	3.4	7.7	10.5	3.6	7.6	9.6	6.9	7.7	9.0	10.3	7.6	7.8	11.0	7.4	5.4	11.1	7.4	2.7
12	3.4	7.7	10.4	3.6	7.6	9.6	6.8	7.7	8.8	9.7	7.6	7.5	10.6	7.4	4.9	10.8	7.4	1.6
13							6.7	7.7	8.8	9.4	7.5	7.1	10.3	7.4	3.7			
14							6.7	7.7	8.7	9.2	7.5	7.0	10.0	7.3	2.9			
14.5							6.5	7.7	8.6	9.2	7.5	6.5	10.0	7.3	2.5			
Depth Meters	July			August			September			October			November			December		
	Temp	pH	DO	Temp	pH	DO	Temp	pH	DO	Temp	pH	DO	Temp	pH	DO	Temp	pH	DO
S	22.8	8.1	6.7	21.7	8.0	7.2	19.3	7.9	7.3	14.3	7.6	5.9	8.3	7.9	9.5	6.7	8.0	9.5
1	22.8	8.1	6.7	20.6	8.0	7.4	17.7	7.8	7.3	14.3	7.6	5.9	8.3	7.9	9.4	6.7	8.0	9.1
2	22.8	8.1	6.7	20.4	8.0	7.3	17.5	7.8	7.2	14.3	7.6	5.9	8.3	7.9	9.4	6.7	8.1	8.2
3	21.6	8.1	6.5	20.2	7.9	7.1	17.4	7.8	7.1	14.3	7.6	5.8	8.3	8.0	9.4	6.7	8.1	9.8
4	21.5	8.1	6.3	20.1	7.9	7.0	17.3	7.8	7.1	14.3	7.6	5.8	8.3	8.0	9.4	6.7	8.1	9.5
5	20.9	7.9	5.1	20.1	7.9	6.9	17.2	7.8	7.1	14.3	7.6	5.8	8.3	8.0	9.3	6.7	8.1	8.5
6	18.4	7.9	2.0	20.0	7.9	6.6	17.2	7.8	7.0	14.3	7.6	5.8	8.3	8.0	9.3	6.7	8.1	8.5
7	16.0	7.7	2.2	19.3	7.7	3.3	17.2	7.8	7.0	14.2	7.6	5.8	8.3	8.0	9.3	6.7	8.1	8.6
8	14.2	7.6	1.7	17.9	7.5	0.6	17.1	7.8	5.7	14.2	7.6	5.8	8.3	8.0	9.3	6.7	8.1	9.7
9	12.9	7.5	1.5	15.4	7.4	0.6	16.5	7.6	4.4	14.2	7.6	5.7	8.3	8.0	9.3	6.7	8.1	9.5
10	12.1	7.5	0.8	13.4	7.4	0.6	15.6	7.6	1.2	14.1	7.6	5.7	8.3	8.0	9.3	6.7	8.1	9.1
11	11.4	7.4	0.4	12.3	7.4	0.6	13.4	7.4	0.2	13.9	7.6	5.2	8.3	8.0	9.3	6.7	8.1	9.1
12	10.8	7.4	0.1	11.6	7.3	0.6	11.7	7.3	0.2	12.9	7.5	1.3	8.3	8.0	9.3	6.7	8.1	9.1
13	10.4	7.4	0.1	10.9	7.3	0.6				12.8	7.4	0.3	8.3	8.0	9.2	6.7	8.0	9.1
14	10.3	7.3	0.1	10.6	7.3	0.6							8.3	8.0	9.1	6.7	8.0	9.1
14.5	10.1	7.3	0.1										8.3	8.0	9.0	6.7	8.0	9.0

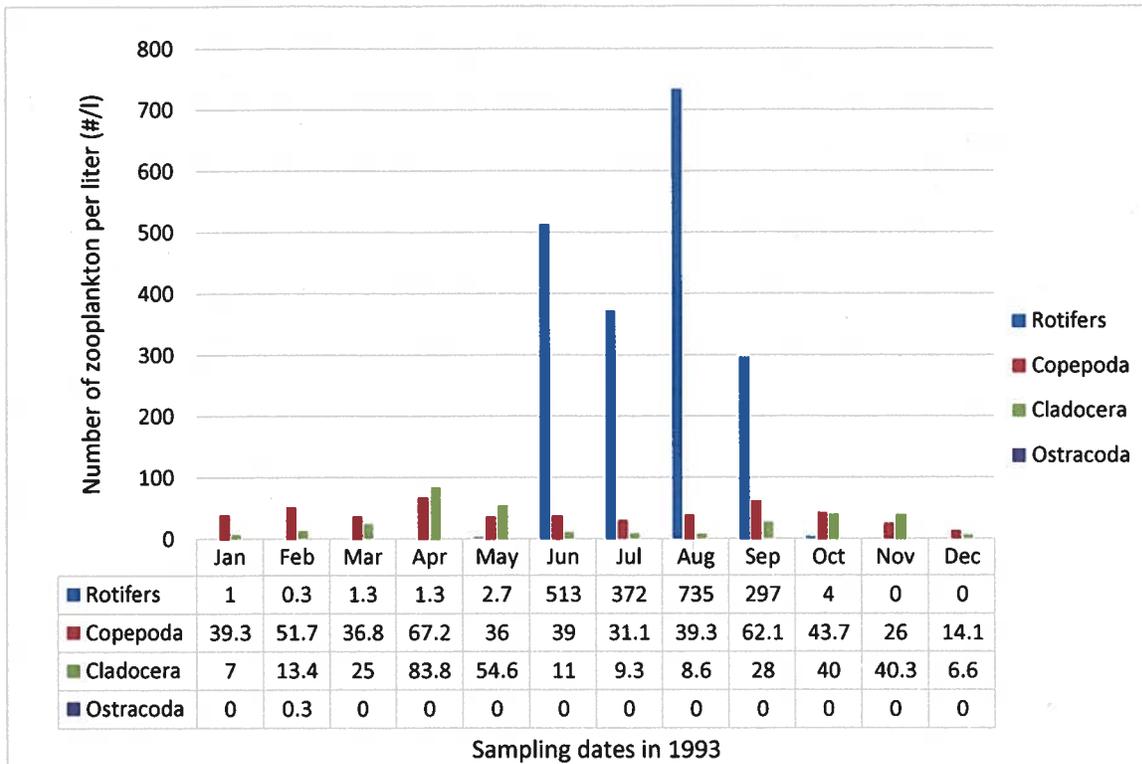


Figure 3. Number of zooplankton per vertical haul in Show Low Lake, Arizona in 1993.

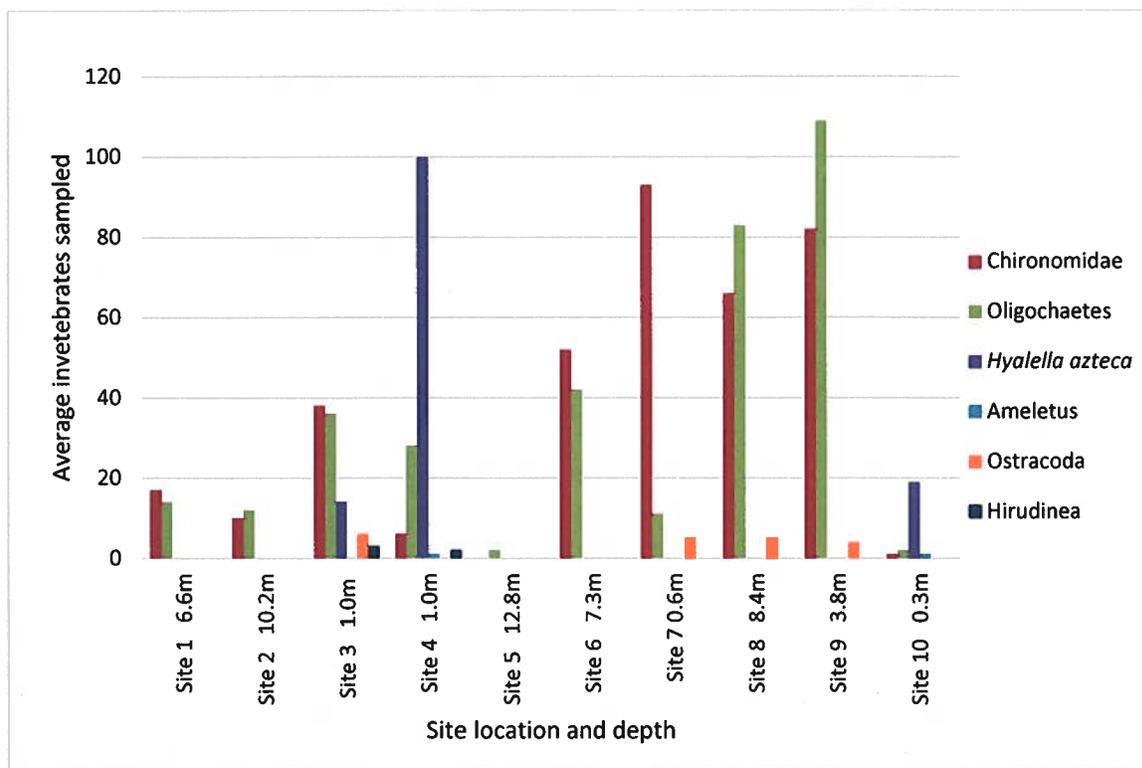


Figure 4. Number of benthos invertebrates in Show Low Lake, Arizona in 1993. Number is given as the mean number of invertebrates in three samples collected by ponar dredge at each of 10 sites in the lake.

Show Low Lake

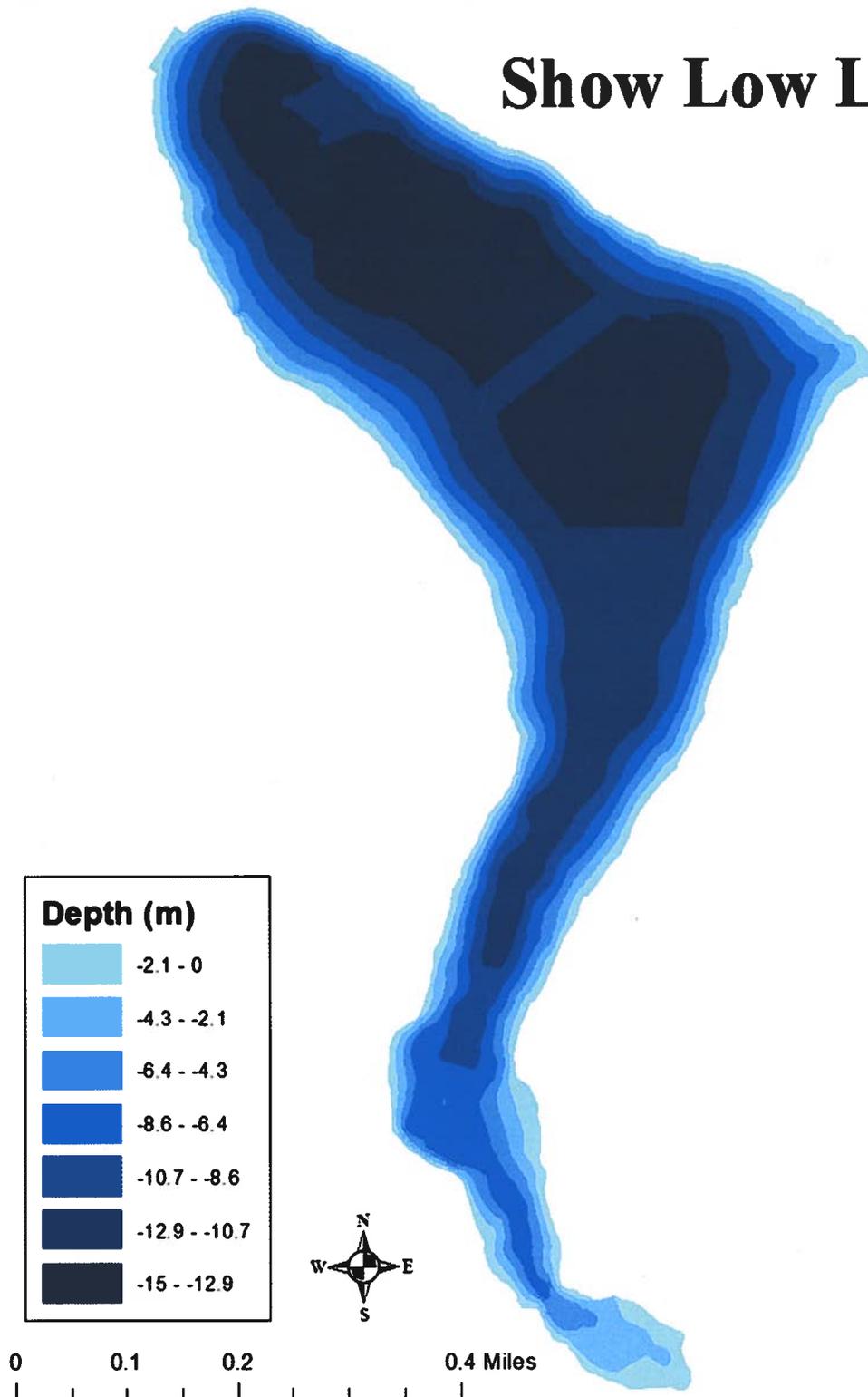


Figure 5. Bathymetric map of Show Low Lake, Arizona from 2017 survey.

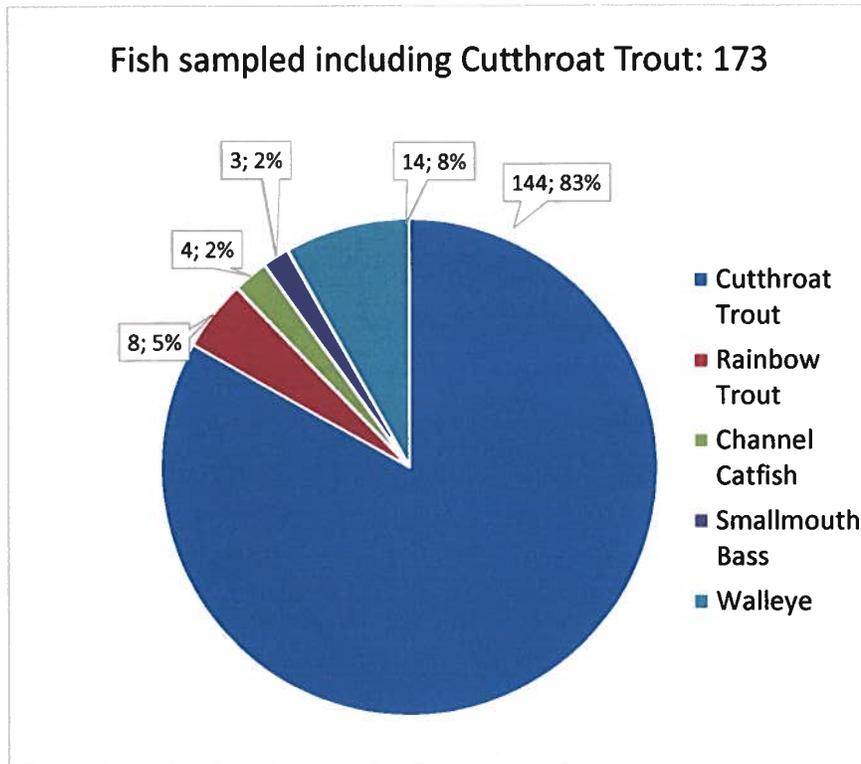


Figure 6. Species composition from gillnetting survey conducted in March 2017 including Cutthroat Trout on Show Low Lake, Arizona.

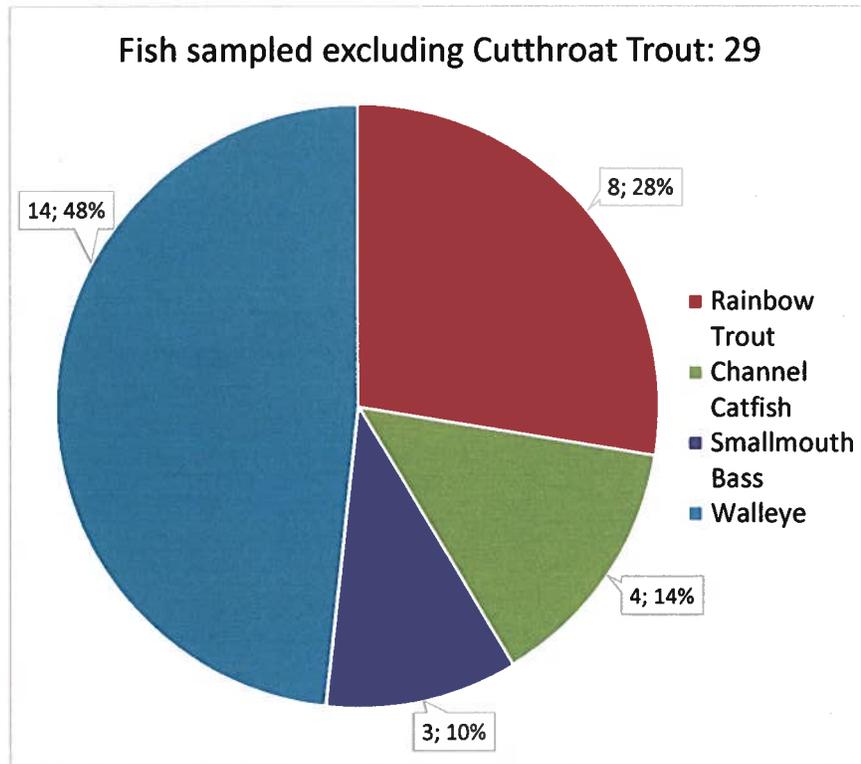


Figure 7. Species composition from gillnetting survey conducted in March 2017 excluding Cutthroat Trout on Show Low Lake, Arizona.

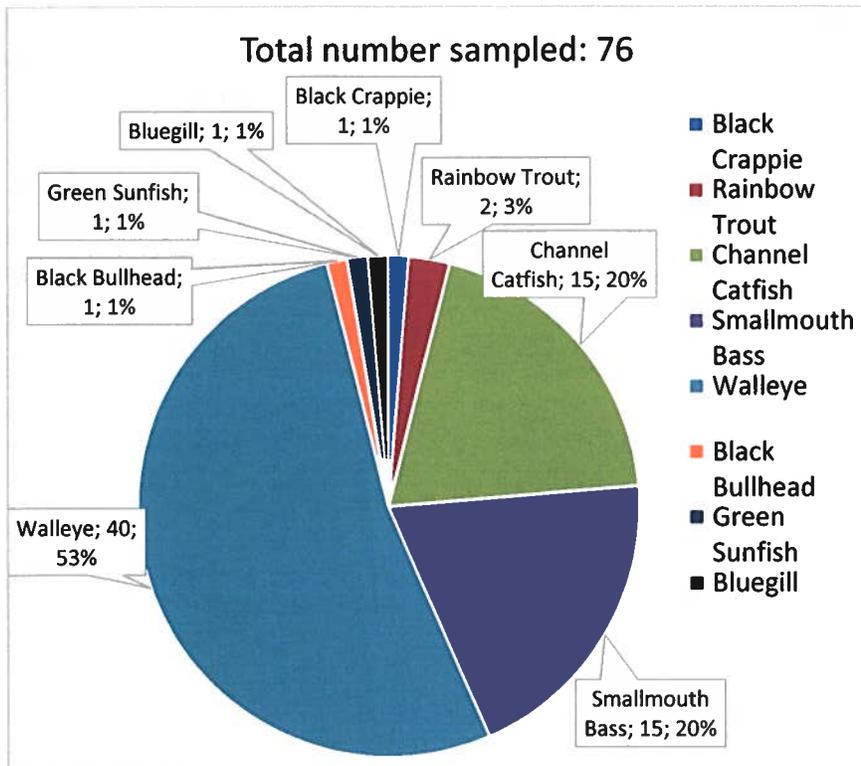


Figure 8. Species composition from gillnetting survey conducted in March 2015 on Show Low Lake, Arizona.

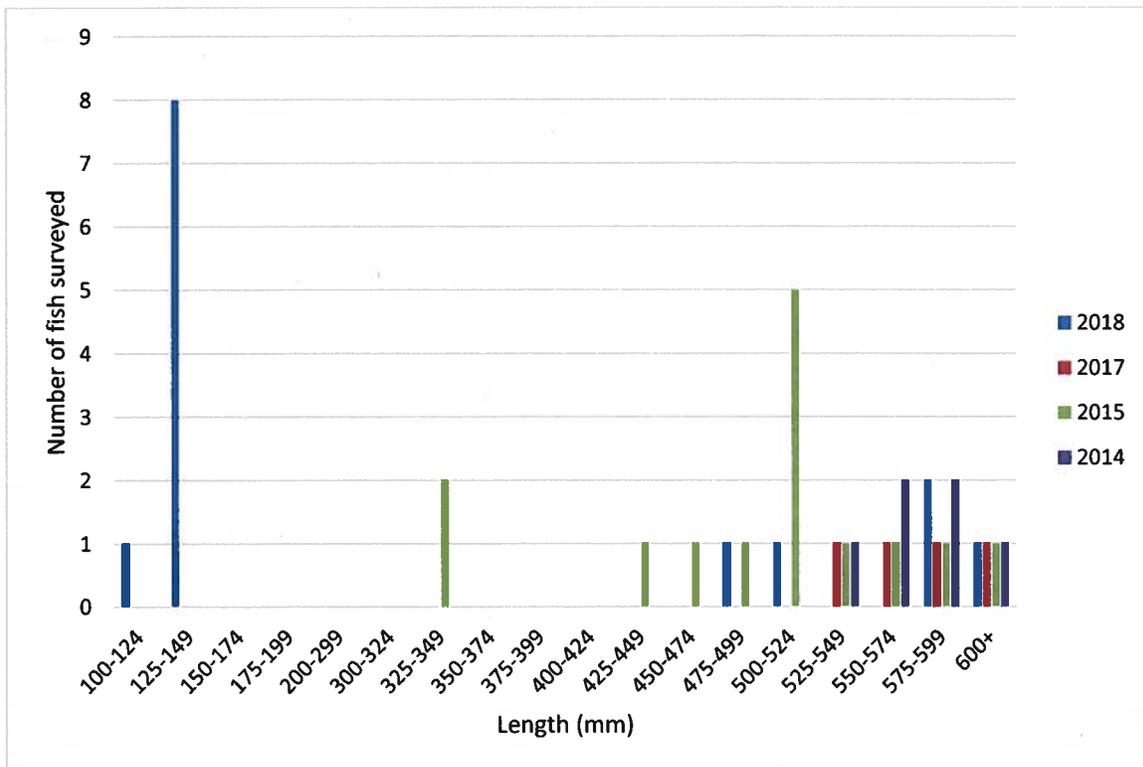


Figure 9. Length frequencies of Channel Catfish from 2014, 2015, 2017 and 2018 surveys on Show Low Lake, Arizona.

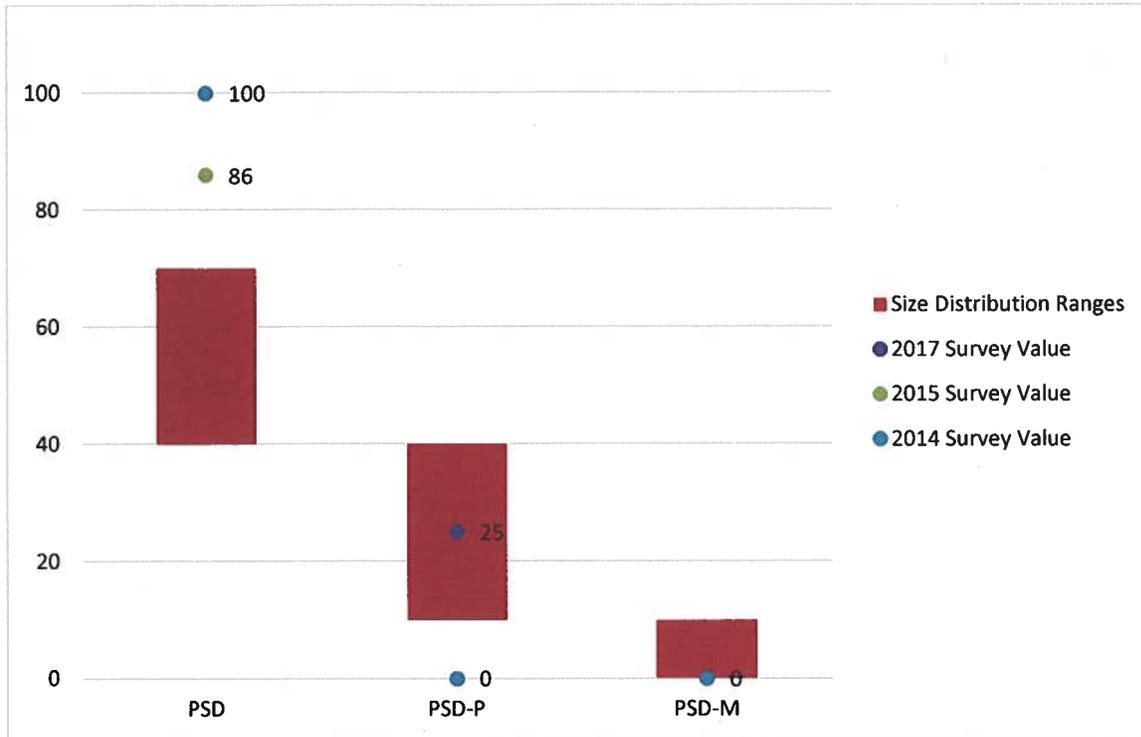


Figure 10. Range of ideal size distributions for Channel Catfish and computed size distribution values from 2018 boat electrofishing, 2017 gillnetting and 2015 gillnetting surveys at Show Low Lake, Arizona.

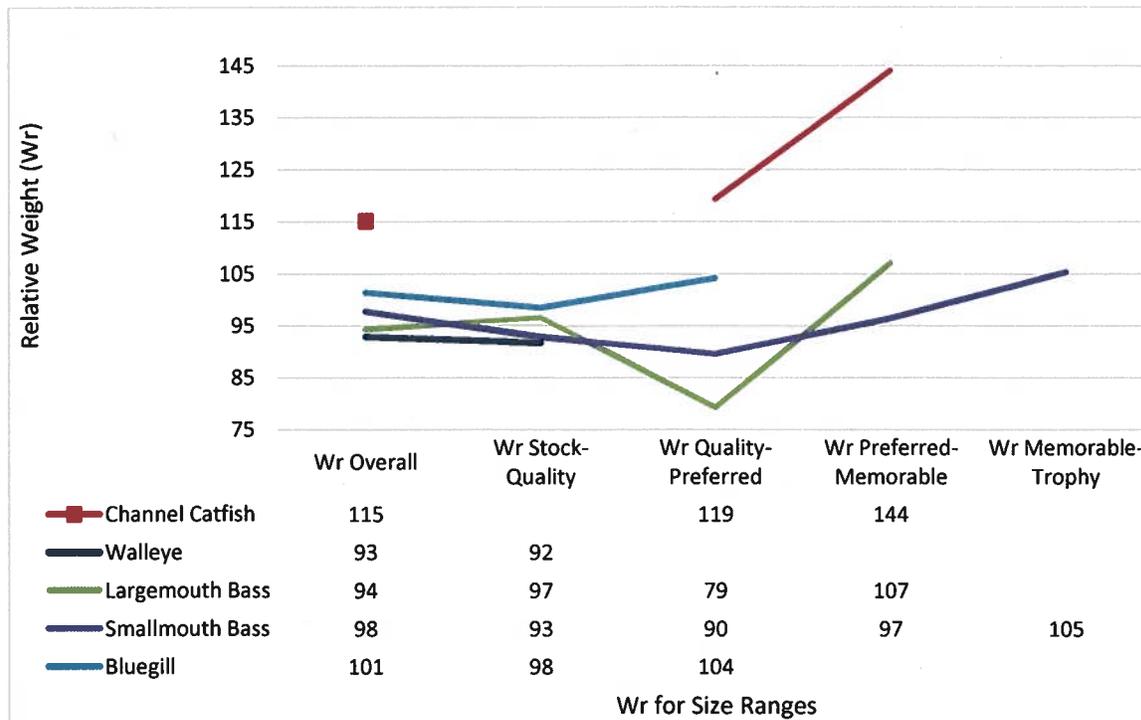


Figure 11. Relative weights of fish sampled during boat electrofishing survey at Show Low Lake, Arizona on May 9-10, 2018.

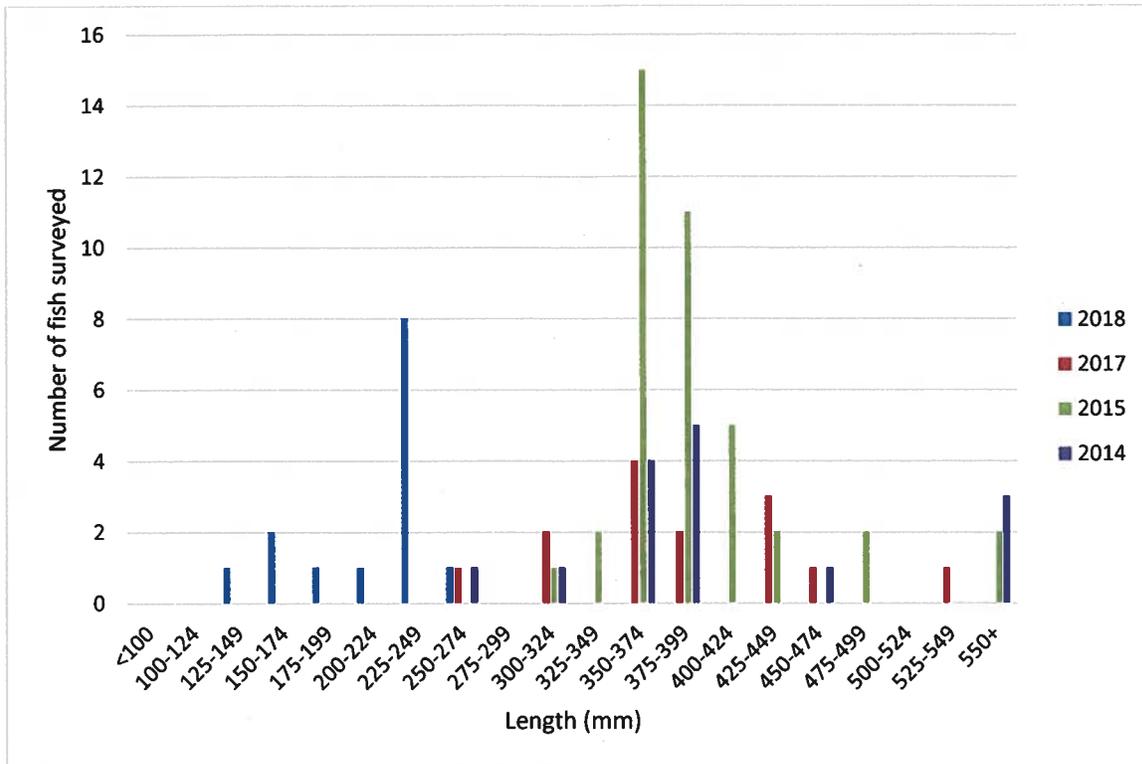


Figure 12. Length frequencies of Walleye from 2014, 2015, 2017 and 2018 surveys on Show Low Lake, Arizona.

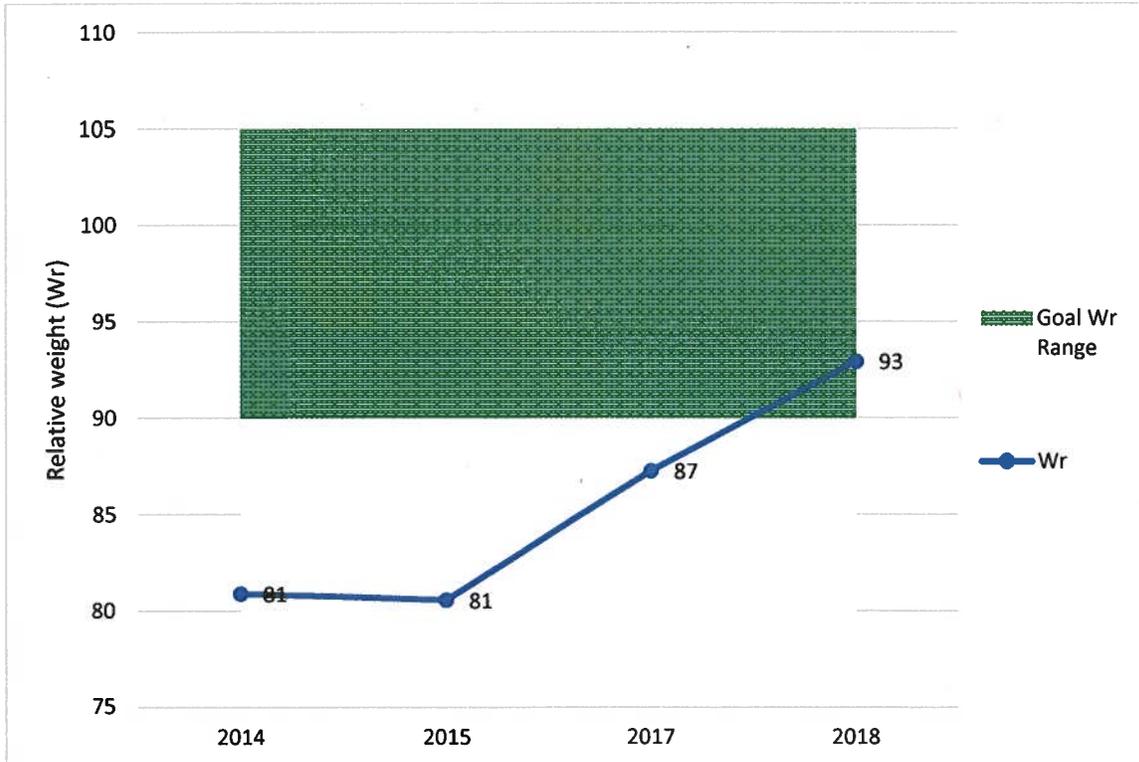


Figure 13. Range of ideal relative weight (Wr) for Walleye and computed values from 2018 boat electrofishing, 2017 gillnetting, 2015 gillnetting and 2014 gillnetting surveys at Show Low Lake.



Figure 14. Range of ideal size distributions for Walleye and computed size distribution values from 2017 gillnetting, 2015 gillnetting and 2014 gillnetting surveys at Show Low Lake, Arizona.

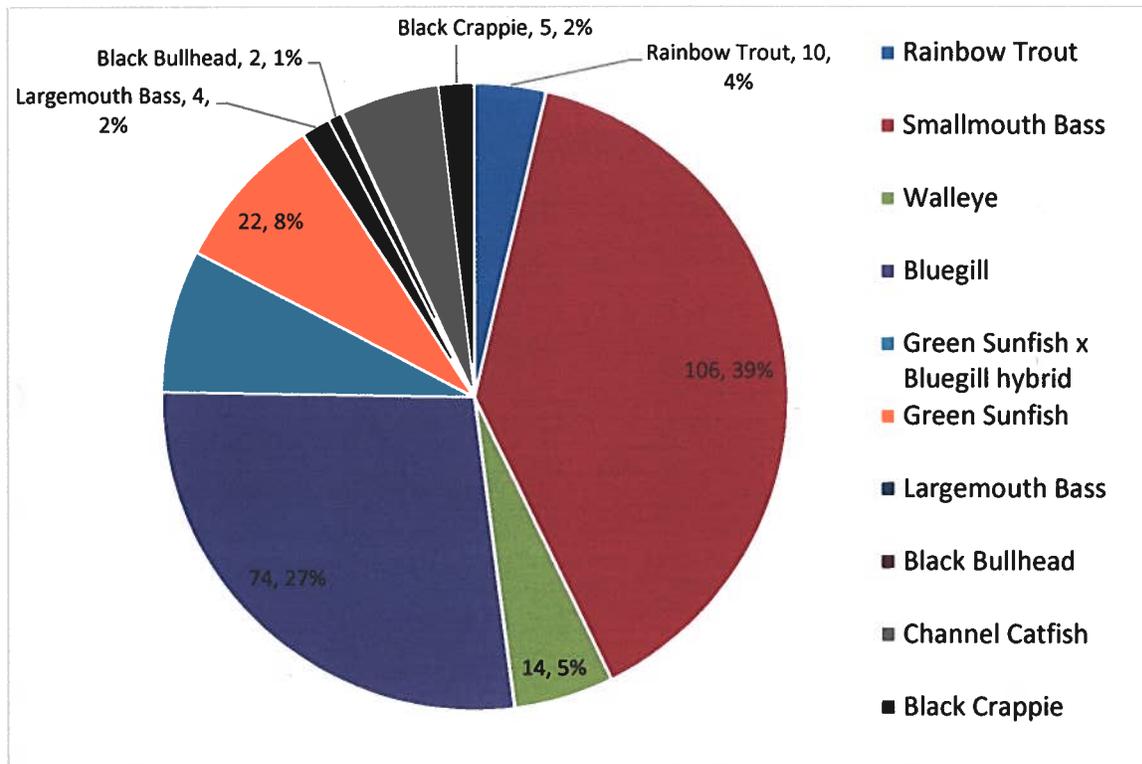


Figure 15. Species composition from boat electrofishing survey conducted in May 2018 on Show Low Lake, Arizona.

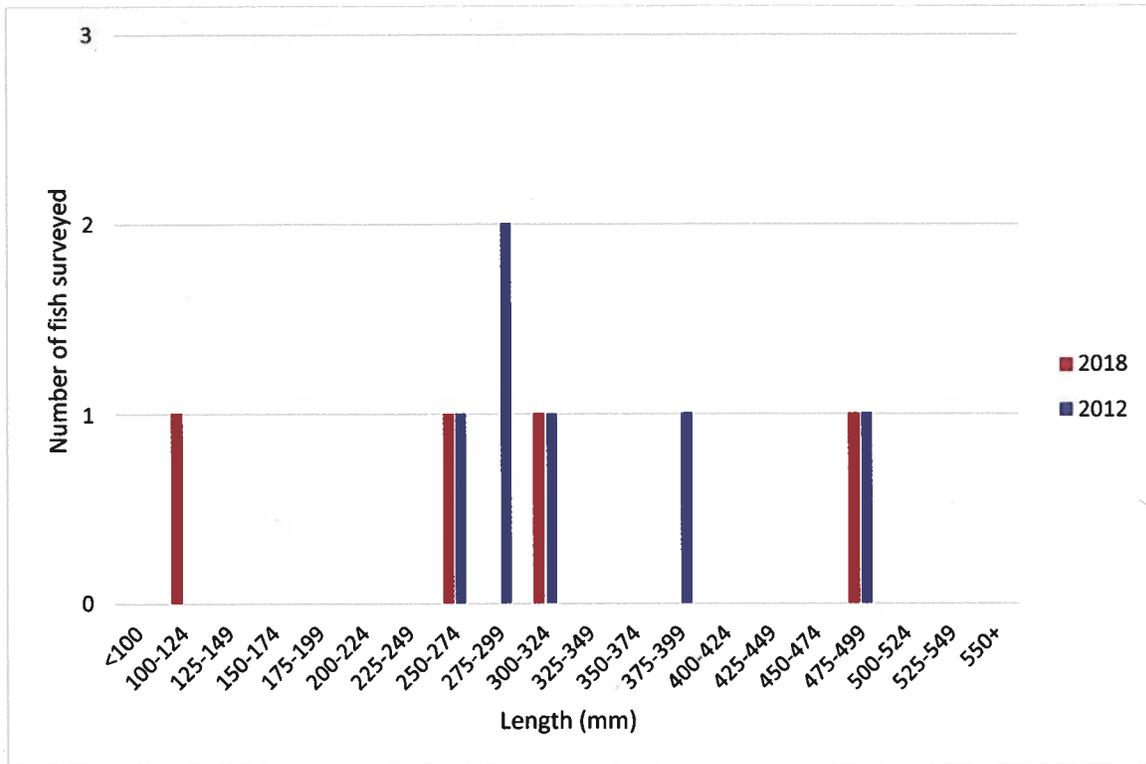


Figure 16. Length frequencies of Largemouth Bass from 2012 and 2018 boat electrofishing surveys on Show Low Lake, Arizona.

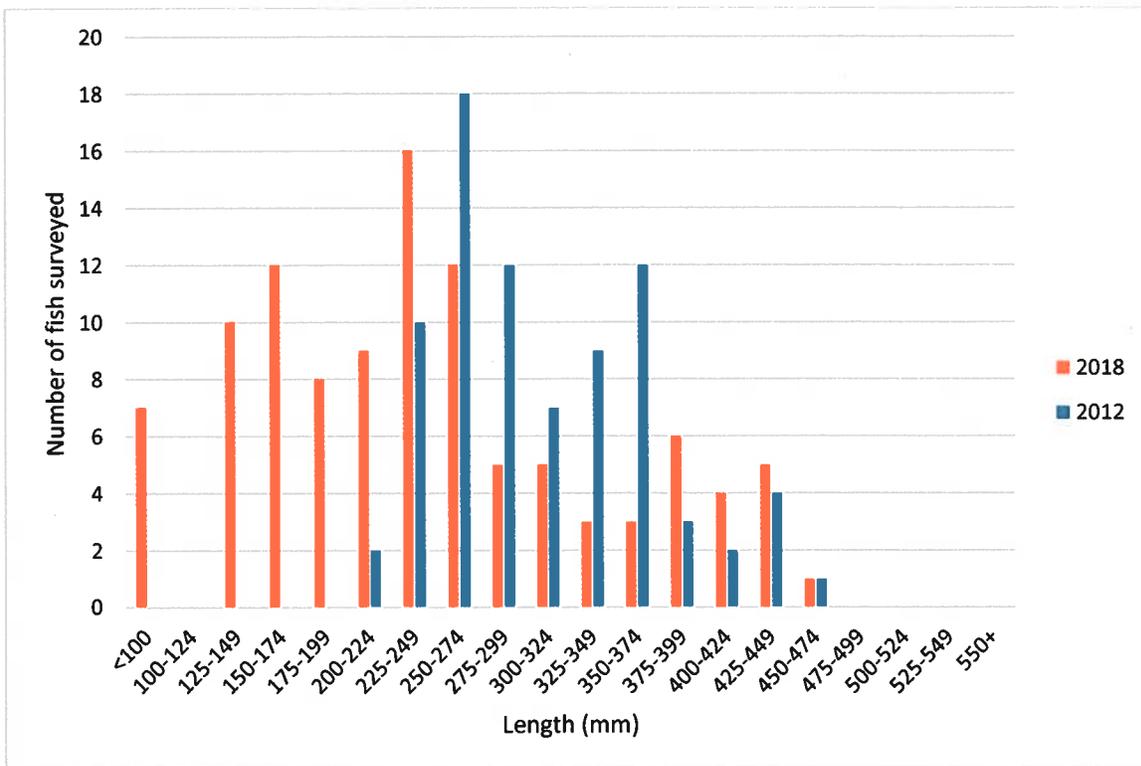


Figure 17. Length frequencies of Smallmouth Bass from 2012 and 2018 boat electrofishing surveys on Show Low Lake, Arizona.

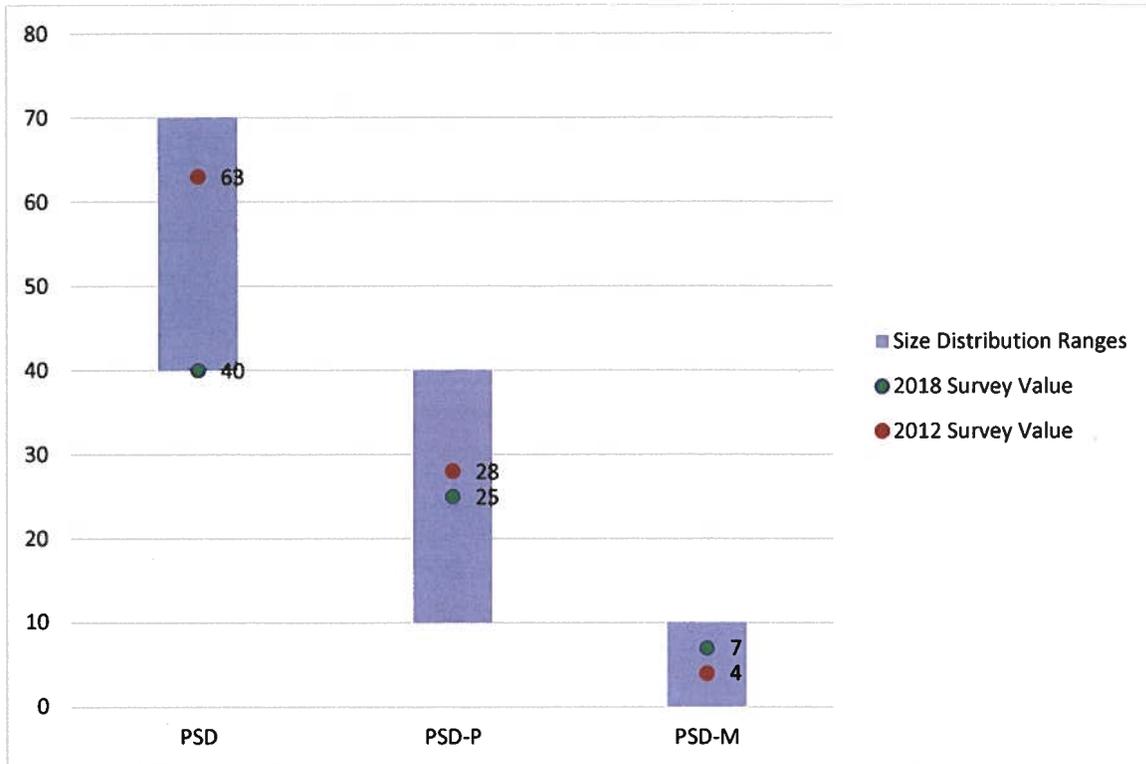


Figure 18. Range of ideal size distributions for Smallmouth Bass and computed size distribution values from 2012 and 2018 electrofishing surveys at Show Low Lake, Arizona.

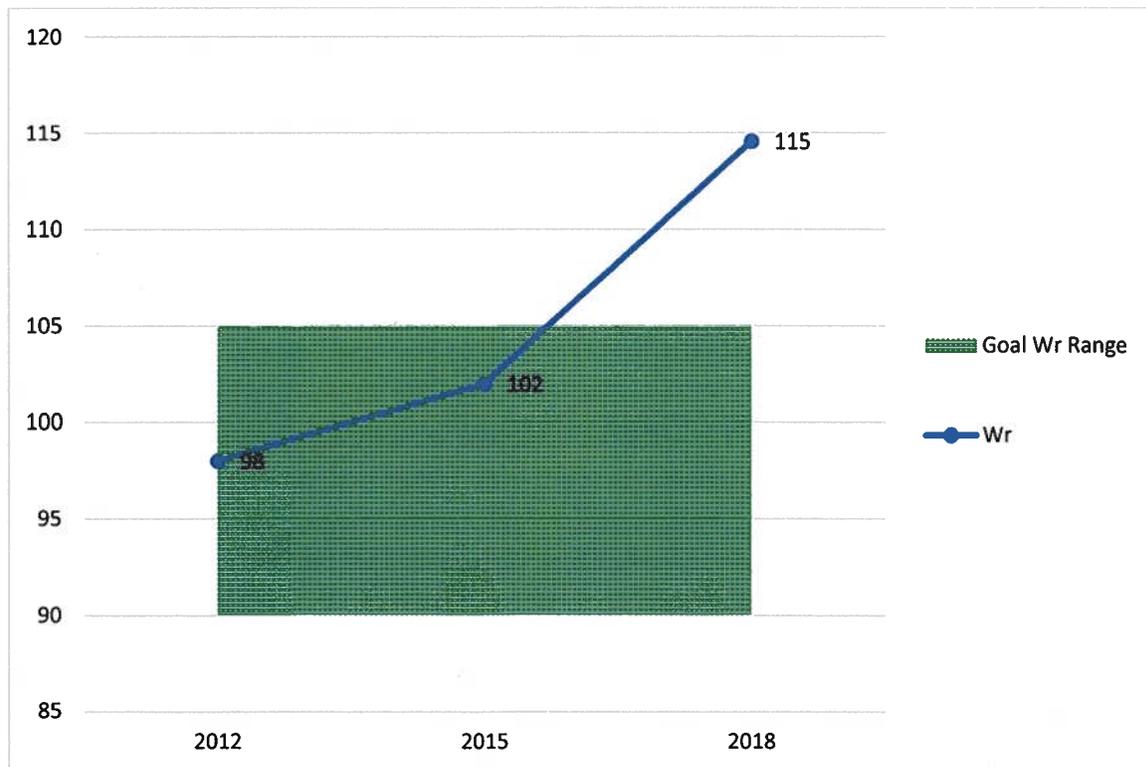


Figure 19. Range of ideal relative weight (Wr) for Smallmouth Bass and computed values from 2018 boat electrofishing, 2015 gillnetting and 2012 electrofishing surveys at Show Low Lake.

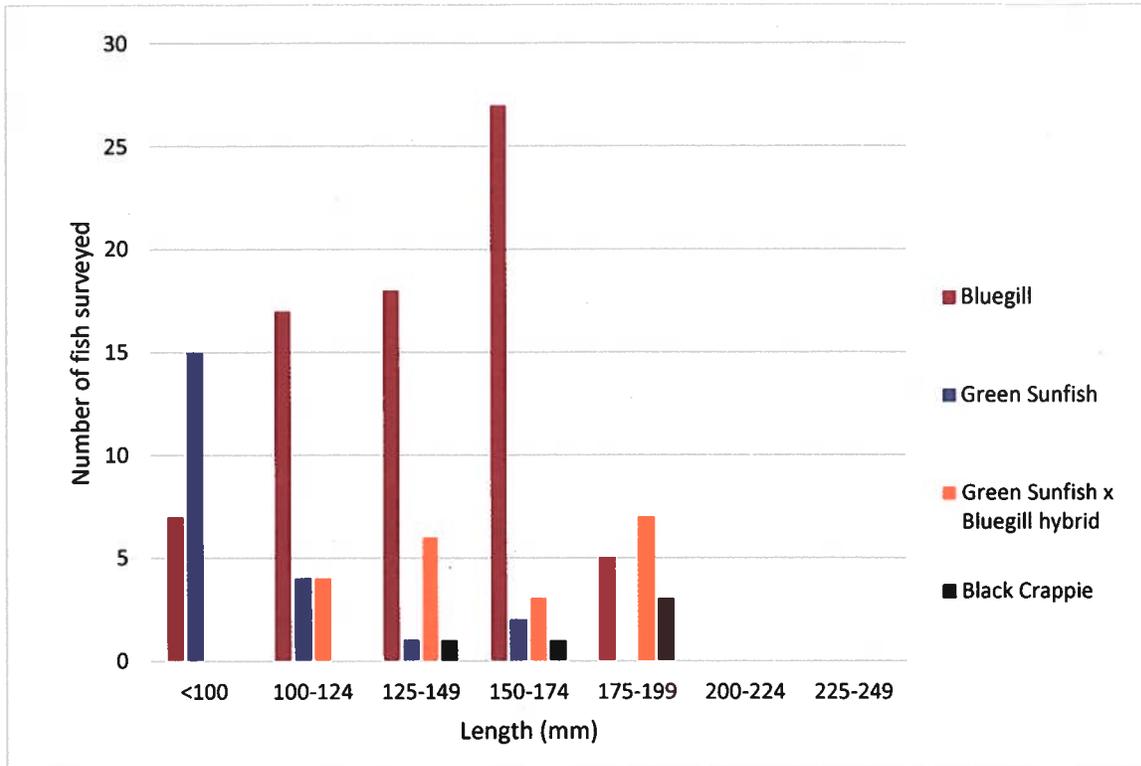


Figure 20. Length frequencies of Bluegill, Green Sunfish, Green Sunfish, Bluegill hybrids and Black Crappie from 2018 surveys on Show Low Lake, Arizona.

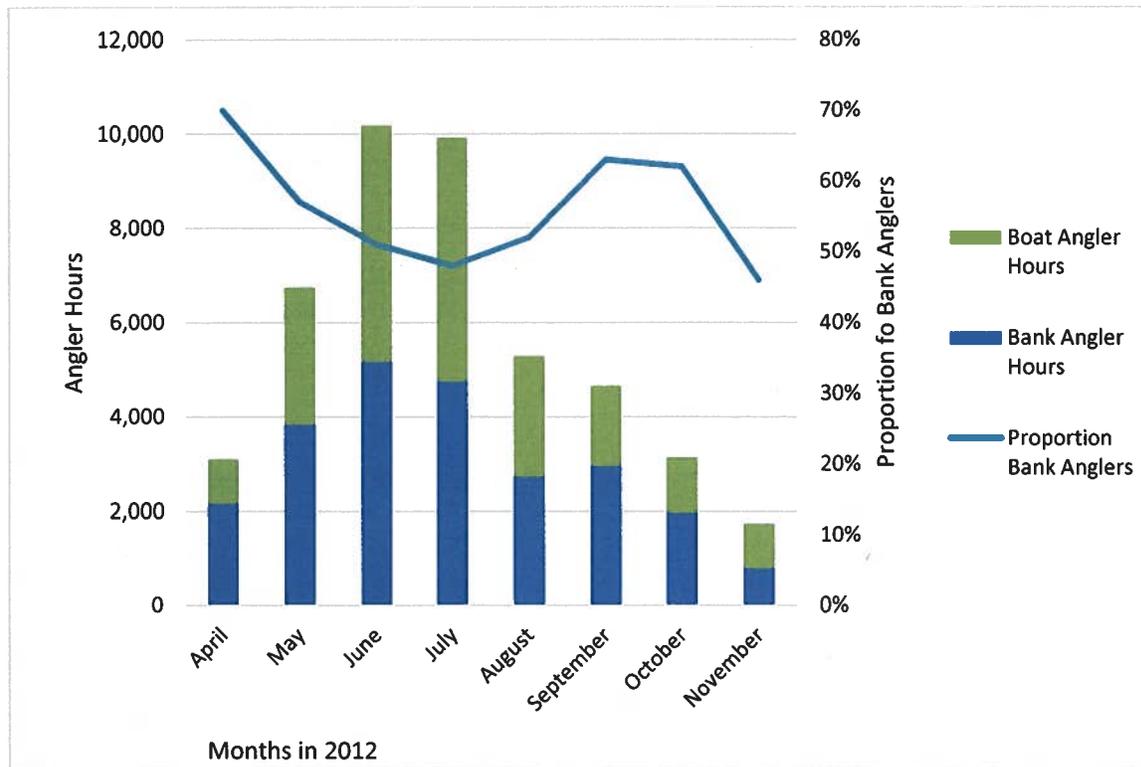


Figure 21. Angler use and proportion of bank anglers by month at Show Low Lake in 2012.

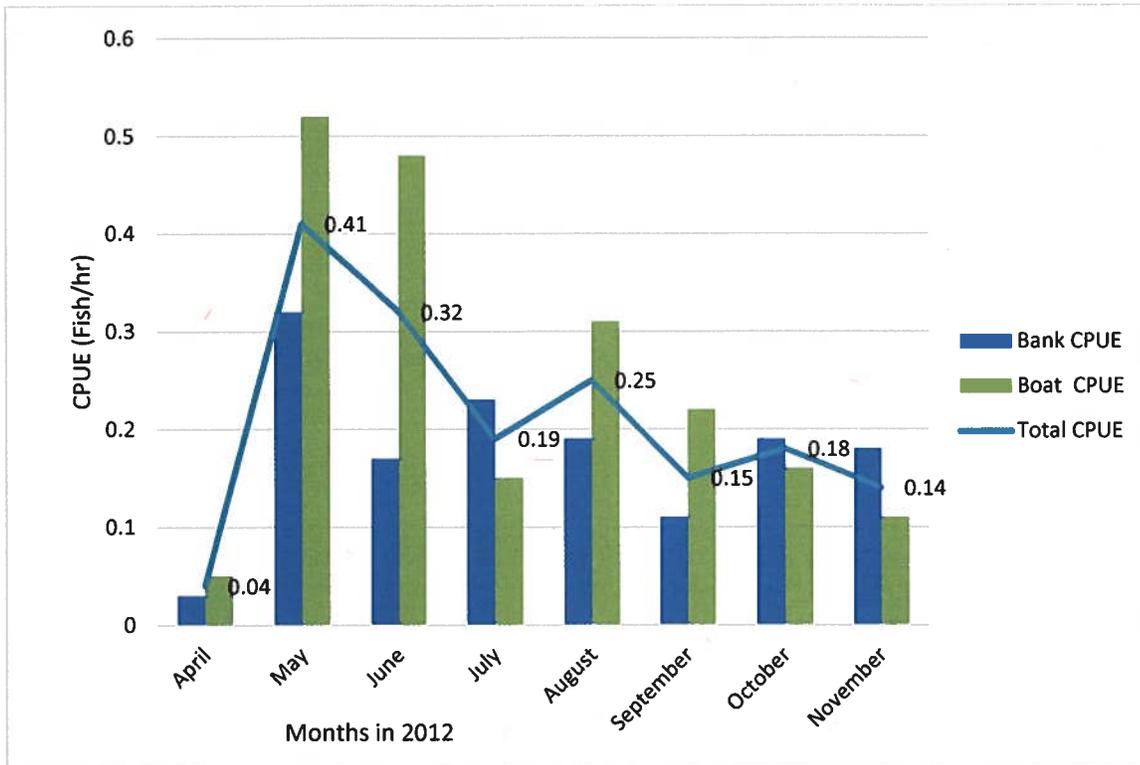


Figure 22. Angler catch rates (fish/hour) by month at Show Low Lake in 2012

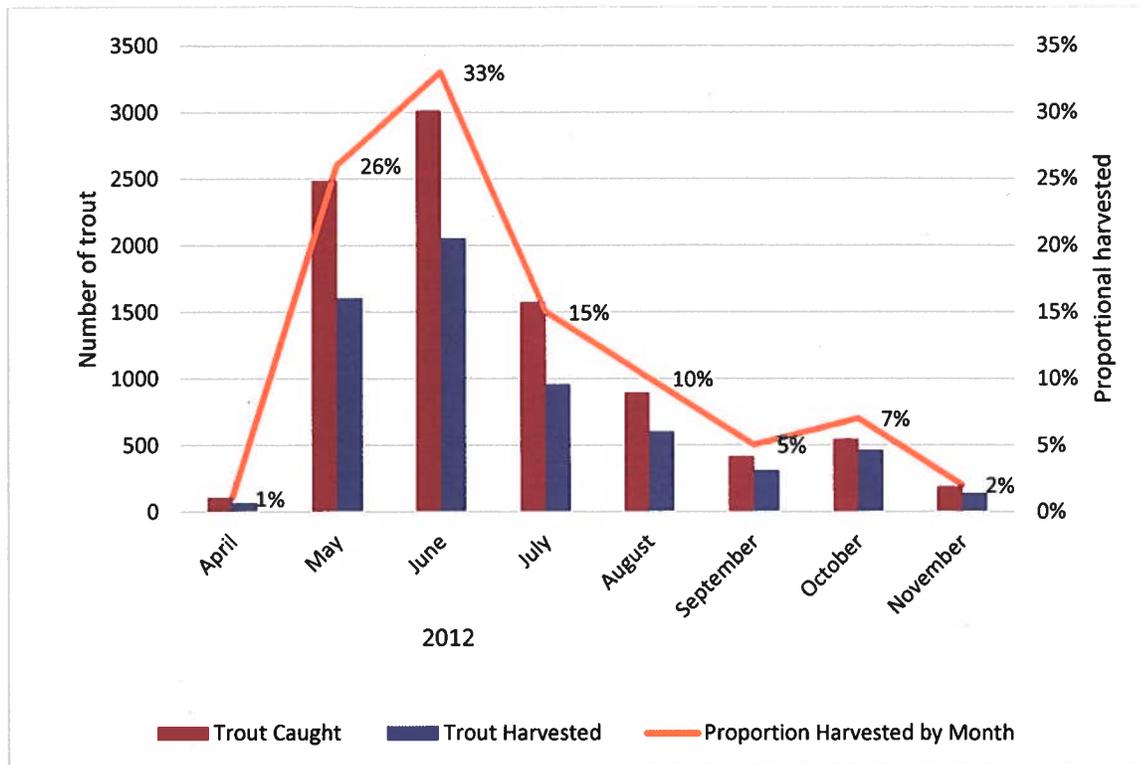


Figure 23. Rainbow Trout caught and harvested per month at Show Low Lake in 2012.

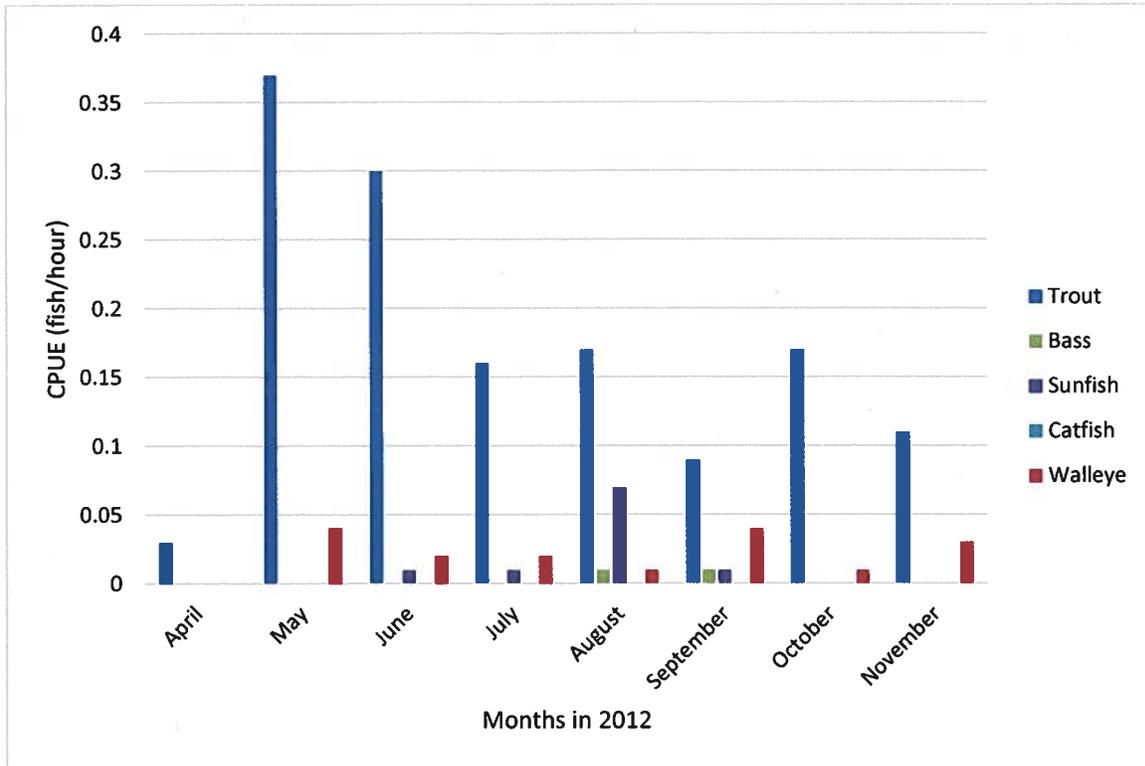


Figure 24. Angler catch rates (fish/hour) by species and month at Show Low Lake in 2012.

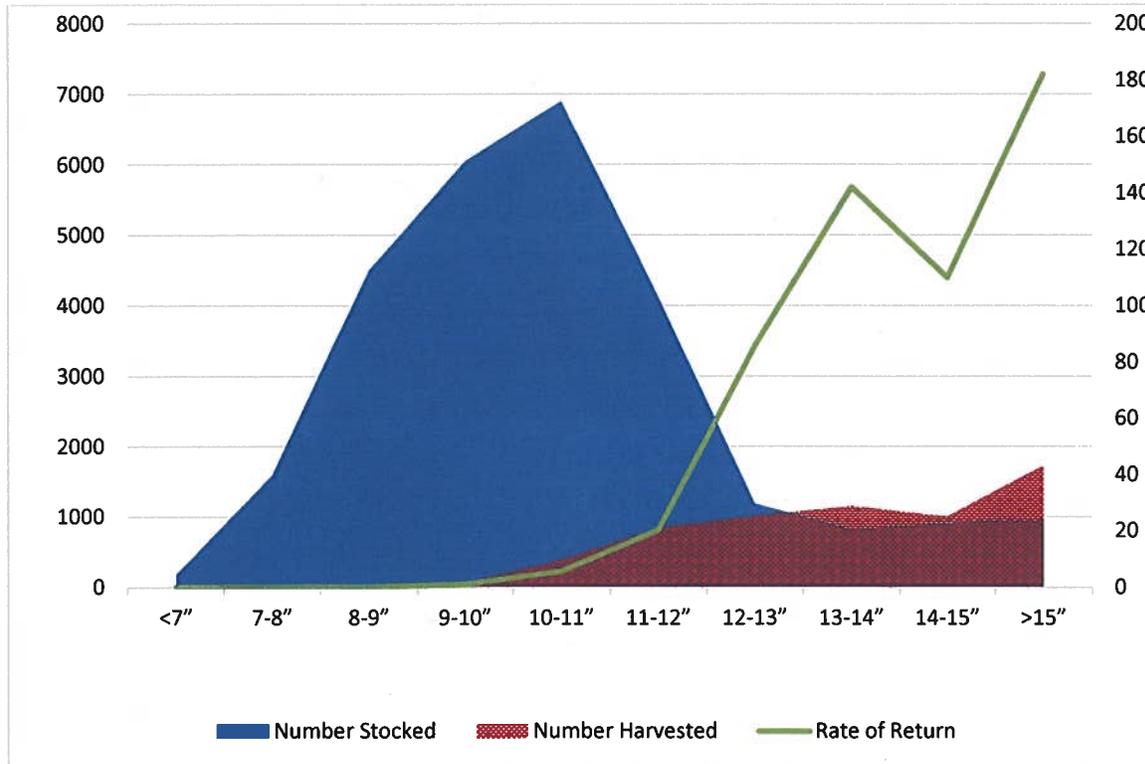


Figure 25. Estimated harvest and rate of return of Rainbow Trout by size stocked in Show Low Lake in 2012.

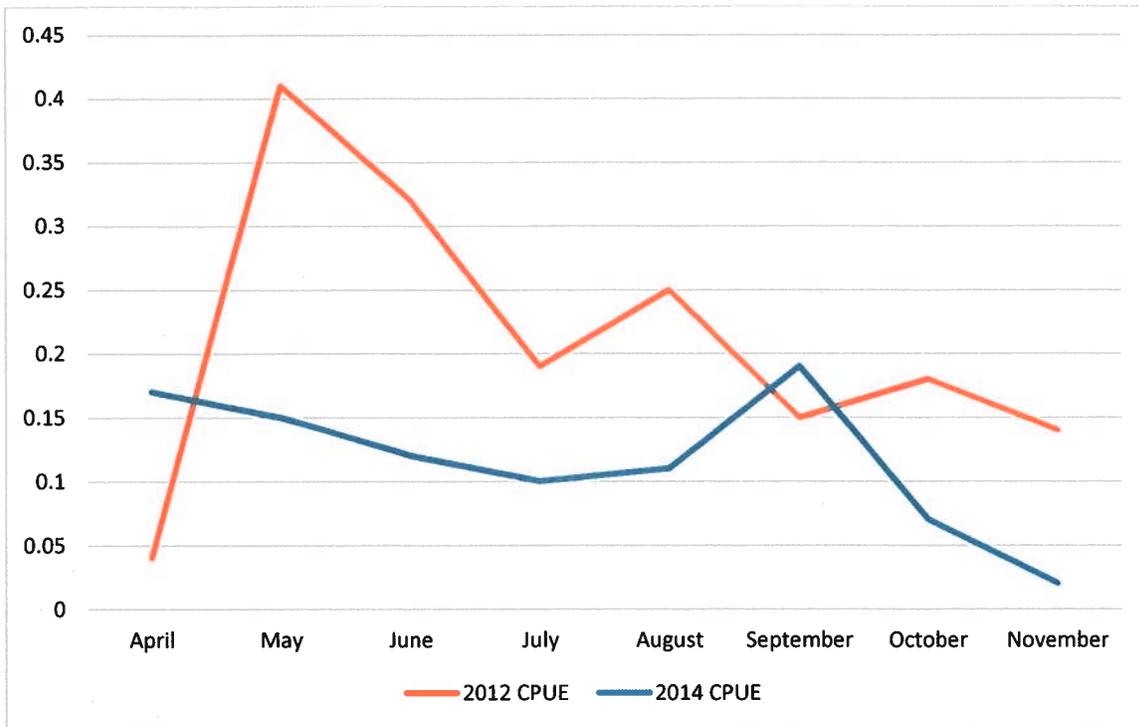


Figure 26. Average catch per unit of effort (fish per hour) of boat and bank anglers in 2012 and 2014 stocked in Show Low Lake, Arizona.

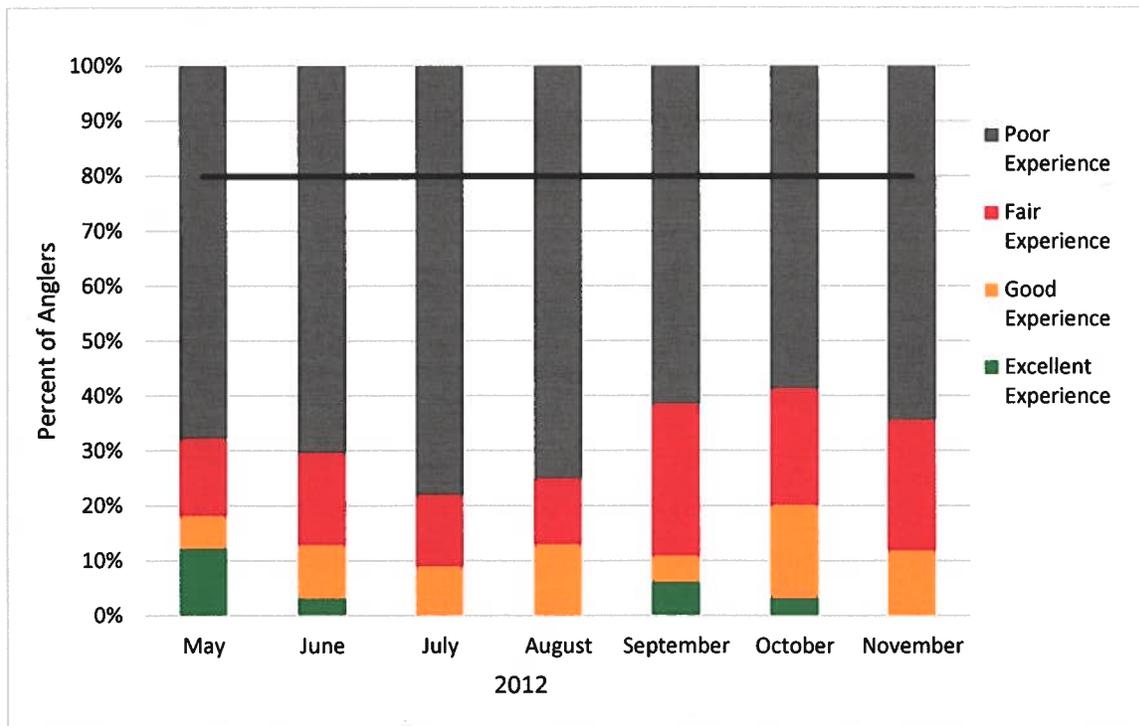


Figure 27. Satisfaction rates by month at Show Low Lake in 2012. Numbers represent percent of anglers rating their angling experience as Poor, Fair, Good, or Excellent that month. The solid black line indicates the 80% goal for each month for the cumulative experience rating of Fair, Good and Excellent.

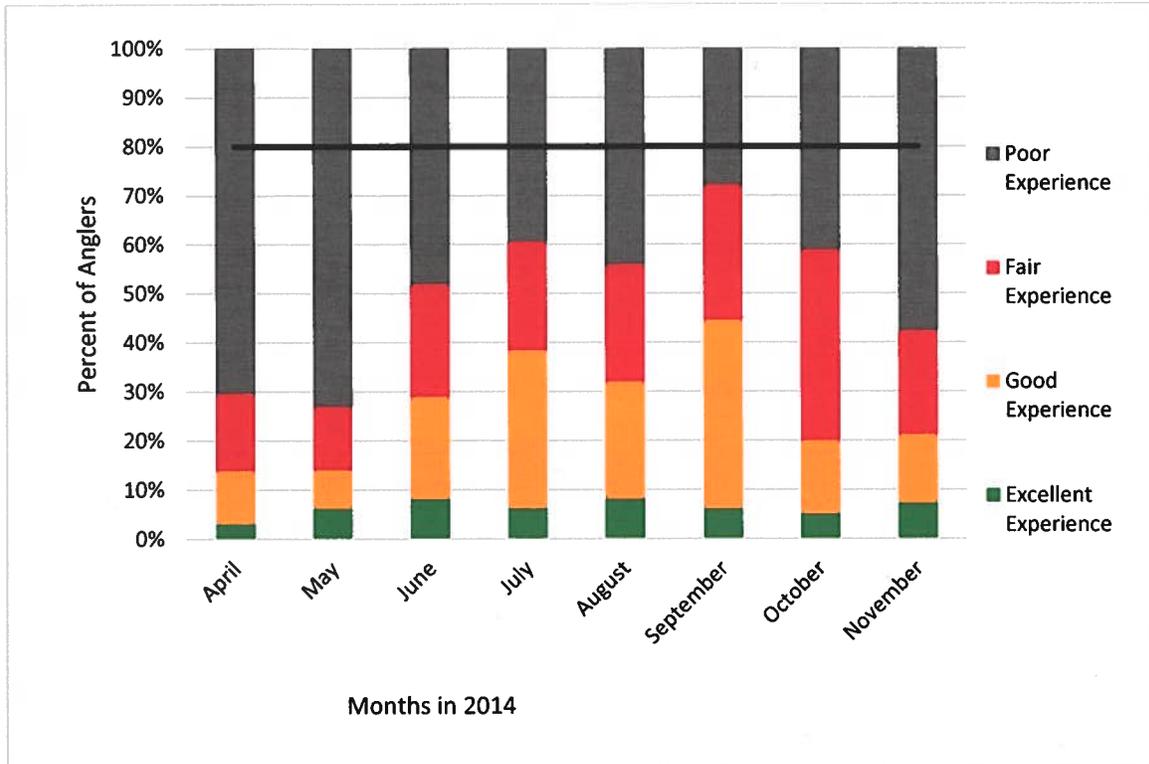


Figure 28. Satisfaction rates by month at Show Low Lake in 2014. Numbers represent percent of anglers rating their angling experience as Poor, Fair, Good, or Excellent that month. The solid black line indicates the 80% goal for each month for the cumulative experience rating of Fair, Good and Excellent.



Figure 29. Map of northwest corner of Show Low Lake where all the facilities are located. Department property is outlined in red.