FINAL REPORT

Walker Lake
2023 Fishery Survey

Prepared for:

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1. Introduction

Walker Lake Landowners Association Inc. (hereinafter referred to as the Association) retained Aqua Link to assess the fishery of Walker Lake during the fall of 2023. This is the seventh year that Aqua Link has performed a fishery assessment for Walker Lake and this assessment is the subject of this report. This fish survey represents a one-day comprehensive assessment of the lake's fishery using electrofishing equipment. Fishery data collected in 2023 were also compared to the previous fisheries data collected by Aqua Link. This final report includes the methods for performing the survey, all collected and analyzed fishery data, a discussion of the study results, and our recommendations to improve the lake's fishery.

Walker Lake is located off of Twin Lakes Road in Shohola Township, Pike County, Pennsylvania. The 110-acre man-made impoundment was created by constructing a dam on a wetland stream. The receiving stream is Walker Lake Creek, which flows into Twin Lakes Creek, and ultimately drains into the Delaware River. This lake runs in a Northeast direction with the most notable features lying at the far Northern end. At this end are the dam and spillway, as well as the community boat launch. Walker Lake is considered moderately shallow with an average depth of approximately 2.2 meters (7.3 feet) and a maximum depth of approximately 6.6 meters (21.5 feet). More bathymetry information can be found in *Walker Lake Bathymetric Lake Mapping 2021 Final Report* (Aqua Link 2022). Walker Lake is owned and maintained by the Walker Lake Landowners Association.

Since 2016, Aqua Link monitors the water quality of Walker Lake annually for those parameters associated with lake eutrophication and trophic state. The lake water quality monitoring program and the 2023 lake water quality data are fully discussed in the *Walker Lake 2023 Baseline Water Quality Monitoring Program Final Report* (Aqua Link 2023).

In 2023, Walker Lake is best described as a moderately shallow, eutrophic lake, that thermally stratifies during the summer months. Lakes classified as eutrophic typically moderate to high amounts of nutrients, fair to moderate water clarity for most of the year, and moderate to high amounts of algae (phytoplankton) and aquatic plants during the growing season (May through September). During thermal stratification, dissolved oxygen levels rapidly decreased within deeper lake waters (hypolimnion). The thermocline, which is the point where the temperature change is the greatest, divides the epilimnion (surface waters) and the hypolimnion (bottom waters), was located at a 2.0 to 4.5 meters (6.6 to 14.8 feet) during the 2023 study period.

The Association also retained Aqua Link to conduct aquatic macrophyte (aquatic vascular plant) surveys in 2017-2023. Based on the May 2023 macrophyte survey, the aquatic macrophyte community in Walker Lake continues to be diverse and healthy with the exception of the invasive plant, variable-leaf watermilfoil, which has spread throughout the majority of the perimeter and beyond. Variable-leaf watermilfoil is a submerged aquatic plant that is native to the United States;

however, it is more commonly found in the Southern states. This aggressively growing aquatic plant forms dense mats that can impede and impair recreational use of waterways such as fishing, boating and swimming. Native plants are often outcompeted by stands of variable-leaf watermilfoil which can lead to the alteration of habitats utilized by fish species. Historically, the aquatic plant of most concern in Walker Lake was bladderwort. Bladderwort is a native, highly beneficial plant but can be a nuisance to recreational activities and threaten lake diversity when the population goes unchecked. Both nuisance plants were controlled in Walker Lake during the 2023 treatment season with the application of herbicides. In addition, emergent vegetation in areas within close proximity to the dam was treated twice in 2023. Some floating leaved plants such as lilies or watershield were also targeted as requested near the western and central portions of Walker Lake near some dock and shoreline areas during 2023.

In addition, low to moderate levels of planktonic algae (algal blooms) and mats of filamentous algae have been historically treated with copper sulfate (aquatic pesticide or algaecide) during the growing season, as needed. Submerged aquatic vegetation and floating leaved aquatic vegetation treatments have been applied to the lake on an as needed basis as determined by the Association and more recently, as recommended by Aqua Link. Nuisance aquatic plants have been controlled both mechanically (hand pulling or cutting by hand) by lakeside property owners and the use of aquatic pesticides (herbicides). A summary of how aquatic vegetation was managed by Aqua Link is described in the *Walker Lake 2023 Baseline Water Quality Monitoring Program Final Report* (Aqua Link 2023).

Figure 1.1 Chain Pickerel Collected During the Fishery Survey

2. Methods & Observations

Aqua Link visited Walker Lake on October 17, 2023 to reassess the lake's fishery using electrofishing (electroshocking) techniques. Fisheries data are presented in terms of fish species composition, black bass (smallmouth and largemouth) length and weight comparisons to the Pennsylvania Fish and Boat Commission (PFBC) average data, size dynamics for important fish species, and proportional stock densities (PSD) for bass and sunfish. Size dynamics were presented for smallmouth and largemouth bass, sunfish, yellow perch, and chain pickerel. PSDs were determined for black bass and sunfish. All data acquired and analyzed as part of the Walker Lake fishery survey are presented in Appendix A.

Aqua Link used a 20-foot Polar Kraft equipped with electrofishing equipment (Smithroot Electrofisher VI-A unit, using 14 cathode droppers) to sample the fishery. The amperage of the Smith Root electrofishing unit was held steady at 5.5 amps using pulsating direct current at 1,061 VDC. Five 20-minute runs were performed which surveyed both shallow and open water habitats (Figure 2.1). During each run, stunned fish were netted and placed into a live well (water tank) on the electrofishing boat. After each 20-minute run, all captured fish were placed into poly tubs and processed on shore. Each captured fish was identified to species, weighed (grams), and measured (centimeters). Thereafter, all processed fish were placed safely back into the lake.

Figure 2.1 Electroshocking Locations Walker Lake for 2023

Overall, Aqua Link generally performs fishery surveys in either the early spring or during the autumn season. These seasons are the two periods of least stress for fish, as spawning season is avoided, and water temperatures are neither too hot nor too cold. Electroshocking at these times of the year avoids fish mortality, and ensures that captured fish will return to the lake unharmed.

3. Habitat Evaluation

Aqua Link has served as the lake consultant to the Association since 2016 (Section 1). Based upon our firsthand knowledge and this survey, Walker Lake contains a moderate number of aquatic habitats for the lake's fishery. Fish habitats in lakes may include, but are not limited to deep water drop offs, aquatic vegetation, timber, large rocks and rock piles.

Overall, Walker Lake is considered a relatively shallow lake with one deeper pocket of water. The deepest part of the lake is the southern section of the lake which reaches a depth of about 21.5 feet. In contrast, the central and northern sections of the lake are relatively shallow with depths not exceeding 6 to 10 feet. The lake water depths are fully documented in the *Walker Lake Bathymetric Survey 2021 Final Report* as performed by Aqua Link (Aqua Link 2022).

In addition to some limited deeper water habitat, Walker Lake contains one island, some docks, a few sunken tree stumps, and some fallen trees extending into the lake. The island is located in the Northern section of the lake near the boat launch. Some rock piles are located along the Eastern shoreline in the midsection of the lake. In addition, the lake contains some stands of floating leaved (water lilies and water shield) and submerged aquatic plants (primarily bladderwort, variable-leaf watermilfoil, and leafy pondweed) throughout the lake.

In general, different kinds of aquatic habitats are needed for different fish species to reproduce and thrive. Aquatic habitats include aquatic vegetation (weed beds), stumps, felled trees, submerged timber, rock piles, boulders, islands, sunken islands, under cut banks with roots, and deep-water drop-offs. Aquatic habitats serve many purposes in aquatic ecosystems. First and foremost, primary producers such as periphyton (i.e. attached algae) and macrophytes (i.e. aquatic vegetation) grow on various structures serving as a base for the entire ecosystem. Primary producers are a food source for primary consumers such as zooplankton, macroinvertebrates, and herbivorous fish. These organisms then serve as prey for secondary consumers, namely smaller fish species such as sunfish and perch. Ultimately these fish serve as forage for tertiary consumers (i.e. large predatory fish), such as black bass (largemouth and smallmouth combined).

Aquatic habitats (structure) also serve as ambush points for predatory fish like bass and pickerel. Ambush points are various forms of cover where fish await passing prey and quickly capture forage fish, without expelling excess energy in pursuit. When less energy is used while feeding, predatory fish are able to grow to larger sizes and accumulate more mass. Aquatic plants and timber also provide excellent habitat for spawning and successful growth of juvenile fish.

With regards to reproduction, broadcast spawners, such as yellow perch, deposit eggs in aquatic vegetation while other species, such as black bass (largemouth and smallmouth combined) and sunfish, prefer hard bottomed areas rich in cover in which they can create spawning beds and effectively guard eggs and fry. Once the eggs hatch, most juveniles seek areas with dense

vegetation in order to avoid predation from larger fish, ultimately increasing their survival rate. Lack of refuge for juvenile fish can decrease their rates of survival and may likely also lead to cannibalism if members of the same species are present or are more easily preyed upon.

4. Fishery Data & Results

Acquired fisheries data are presented in terms of fish species composition, black bass length and weight comparisons to state data, size dynamics for important fish species, and proportional stock densities (PSD) for black bass (largemouth and smallmouth combined) and sunfish. Refer to Appendix A for all data acquired and analyzed as part of the Walker Lake fishery survey. Fishery data comparisons between the years of 2016 and 2023 are presented using PSD data. Refer to Appendix A for all data acquired and analyzed as part of the Walker Lake fishery survey.

It should be noted that for this survey, only a portion of the 110-acre lake was sampled, as electrofishing and the subsequent data collection is a very time-consuming survey technique. The collected data represents fish species composition data as well as data relating to species and ecosystem health. While this data will not accurately predict the total number of fish in Walker Lake, this data does in fact provide all parameters required to assess the fishery as a whole.

4.1. Species Composition & Catch Rates

During the 2023 survey, a total of 280 fish were captured in Walker Lake (Table 4.1). The fish species captured were bluegill *(Lepomis macrochirus)*, brown bullhead catfish (*Ameiurus nebulosus*), chain pickerel *(Esox niger)*, largemouth bass *(Micropterus salmoides)*, pumpkinseed *(Lepomis gibbosus)*, smallmouth bass (*Micropterus dolomieu*), and yellow perch *(Perca flavescens)*. A color photograph of each fish species captured can be seen in Appendix B.

The most prevalent prey species were yellow perch followed by bluegill (Table 4.1 and Figure 4.1). The most prevalent predatory species was largemouth bass with a total of 59 specimens ranging from 2 to over 18 inches. The next most prevalent predator species was smallmouth bass with a total of seven specimens between 2 and 11 inches. Smallmouth bass are a species that prefers deeper water and specimens may have been at depths out of range of the electroshocking equipment. In addition, three chain pickerel was also captured measuring from 6 to over 15 inches, as well as a few other pickerel of larger size that were observed, but avoided capture.

Overall, yellow perch, one of the favorite prey species of black bass, were the most prevalent species captured (Table 4.1 and Figure 4.2). Another primary prey species captured in Walker Lake were bluegill, which were abundant. Several pumpkinseed sunfish were also caught, which are another favorite prey species of predatory fish.

Lastly, the catch rates for all fish species captured along with the species composition are presented in Table 4.1 and Figures 4.1 and 4.2. Overall, sunfish (combined bluegill and pumpkinseed) had the highest recorded catch rate with bluegill being the dominate sunfish species, while the highest recorded single species catch rate was yellow perch. Largemouth bass were recorded at a higher catch rate than previous years with over 35 specimens per hour, doubling the

Table 4.1 Summary of Captured Fish & Catch Rates in Walker Lake in 2023

Fish Species	*Walker Lake*	
	No.	*Catch Rate (No. per hr)*
Bluegill	71	42.6/hr
Brown Bullhead	4	2.4/hr
Chain Pickerel	3	1.8/hr
Largemouth Bass	59	35.4/hr
Pumpkinseed	39	23.4/hr
Smallmouth Bass	7	4.2/hr
Yellow Perch	97	58.2/hr
Total	**280**	**-----**

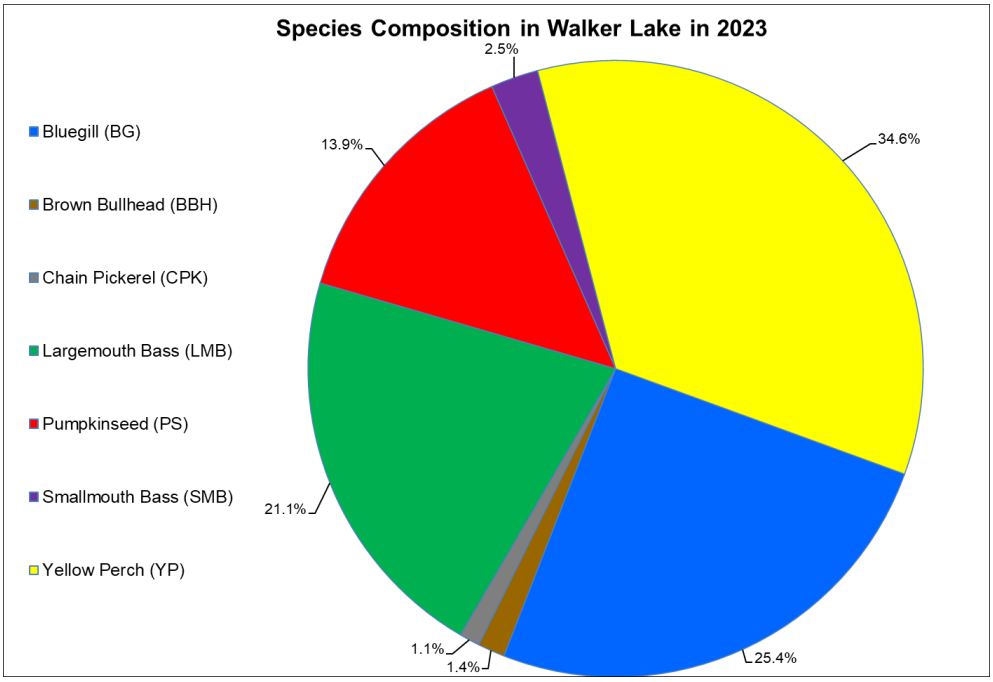

Figure 4.1 Species Composition in Walker Lake in 2023

catch rate of largemouth bass from last year's fishery survey. Overall, the calculated catch rates for all fish species are moderate for bluegill and yellow perch, and low to moderate for other fish species.

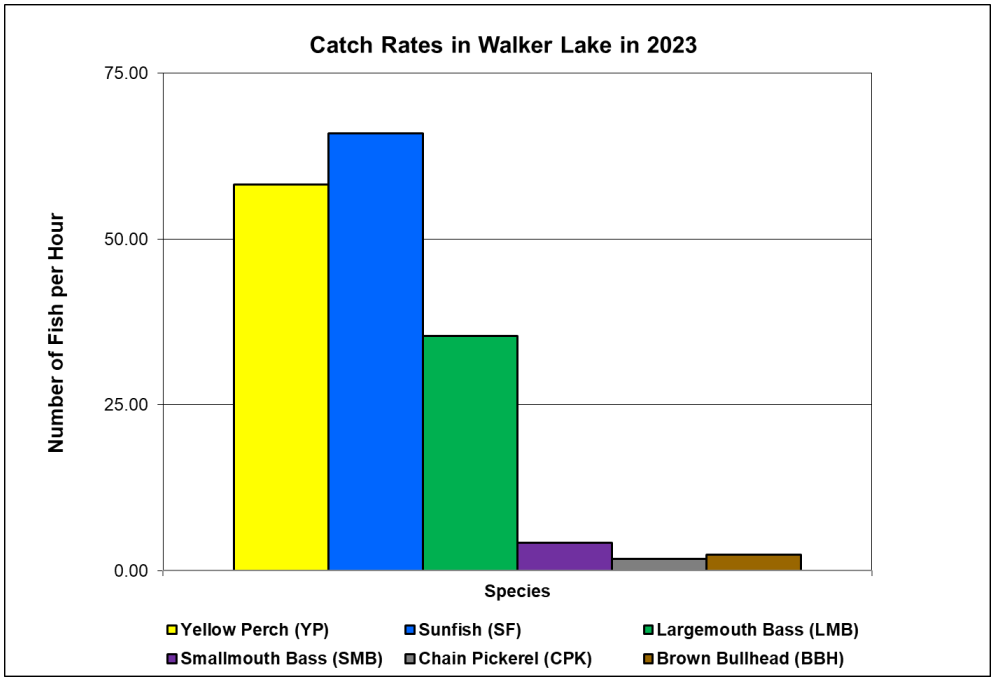

Figure 4.2 Catch Rates in Walker Lake in 2023

4.2. Black Bass – Length & Weight Comparisons

Length and weight data for captured black bass (combination of largemouth and smallmouth bass) in Walker Lake were compared to average length and weight data reported by the Pennsylvania Fish and Boat Commission (PFBC). Comparisons of these data are presented in Figures 4.3 and 4.4. Generally, the black bass collected from Walker Lake are considered average size when compared to average length and weight data reported by the PFBC.

Largemouth bass are an apex predator in aquatic ecosystems and are coveted among anglers due to their aggressive nature and willingness to strike many types of baits and lures. During this survey a total of 59 largemouth bass were captured in the 2 to over 18-inch range with one of largest specimens weighing over 4 pounds (Figure 4.3). When compared to all fishery surveys performed by Aqua Link, 59 is the highest number of largemouth bass captured, doubling the amount caught in the 2022 fishery survey. It should be noted that 2 larger fish (18^{+} inches in length) were observed, but avoided being captured by our field team.

Yellow perch, one of the favorite prey species of largemouth bass, were captured and observed in similar, but greater quantity in comparison to the previous two surveys performed at Walker Lake. Bluegill, another favorite prey of bass, were the second highest captured species behind yellow perch. Overall, a substantial amount of preferred bait fish including yellow perch, bluegill, and pumpkinseed are available to sustain a healthy and prolific largemouth bass fishery in Walker Lake. However, there were fewer bait species captured during the 2023 fishery survey than in previous years with alewives, black crappie, and golden shiners being absent from this survey. It is largely unknown why alewives, black crappie, and golden shiners were not captured in 2023.

Smallmouth bass, the other black bass species found in Walker Lake, prefer the deeper and cooler, well oxygenated water of lakes. Growth rates of smallmouth bass are dependent on water temperature, water quality, and the availability of prey that they can ambush from structure in the lake. Structure that smallmouth bass prefer includes rocky bottoms, aquatic vegetation that serve as cover for ambushing, sunken timber and woody debris. A total of seven smallmouth bass were captured during the 2023 fishery survey. These seven specimens ranged from 2 to 11 inches, with the largest smallmouth bass weighing over 1/2 pound.

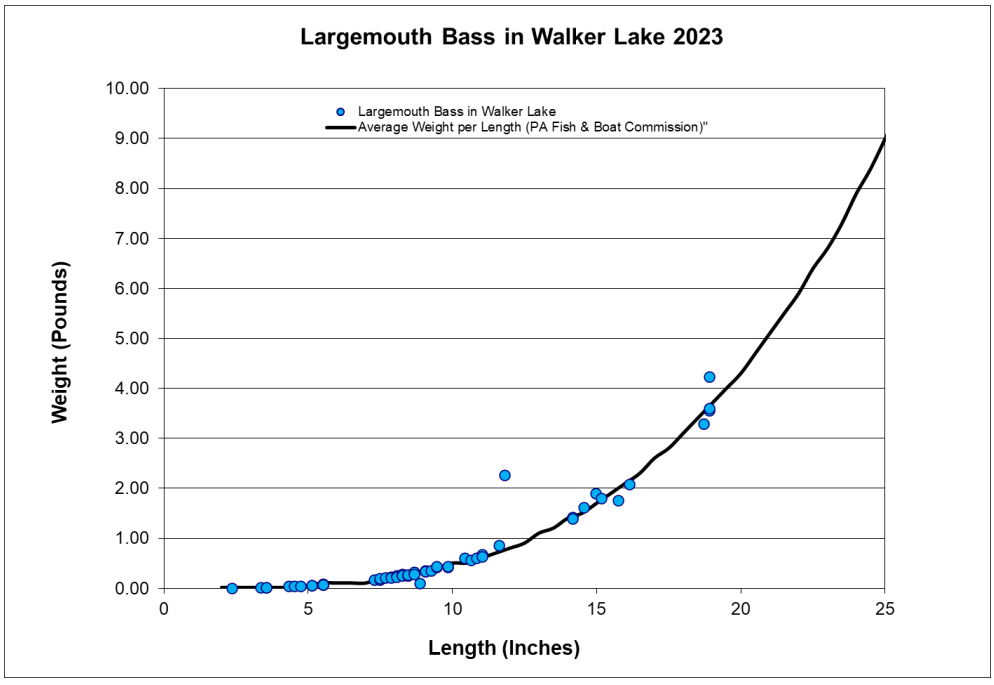

Figure 4.3 Largemouth Bass Length & Weight Data for Walker Lake in 2023

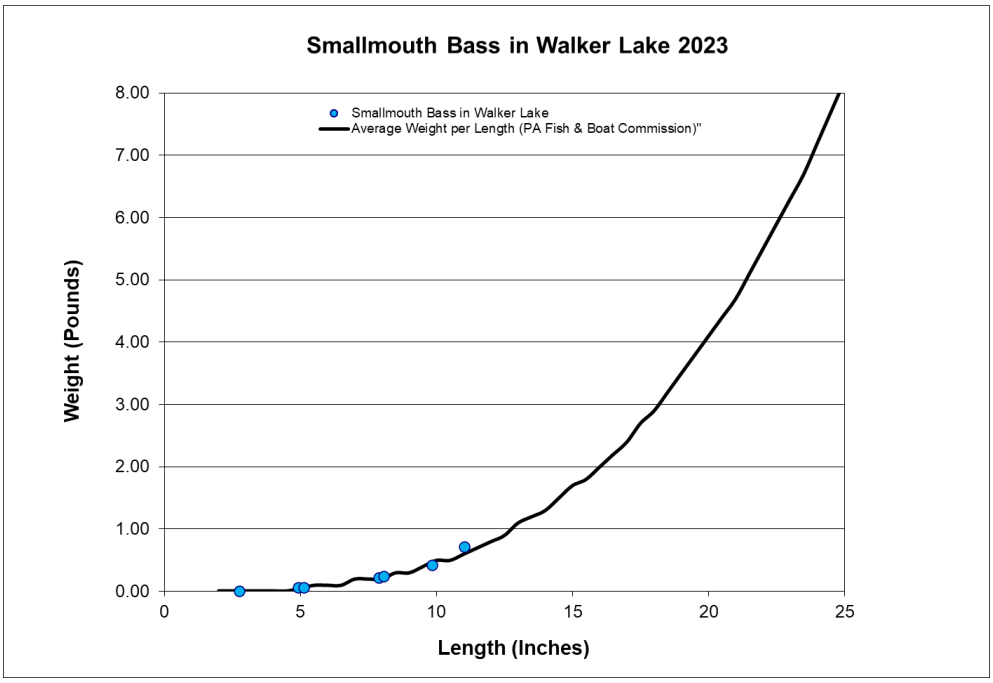

Figure 4.4 Smallmouth Bass Length & Weight Data for Walker Lake in 2023

Juvenile smallmouth bass primarily feed upon various crustaceans, such as crayfish, zooplankton, and other small aquatic organisms that are readily available to prey upon in a lake. As smallmouth bass mature, they become opportunistic feeders, in which they feed upon any prey that is readily available within their environment. Like largemouth bass, smallmouth bass will feed upon bluegill and their preferred species of prey, the yellow perch. Based off the 2023 fisheries survey data collected, we found a high amount of reproductive success with moderate numbers of bait fish such as yellow perch, bluegill, and pumpkinseed, providing plentiful forage fish to sustain a healthy smallmouth bass fishery in Walker Lake.

4.3. Size Distribution

The size distributions of largemouth bass, smallmouth bass, sunfish (combination of bluegill and pumpkinseed), yellow perch, and chain pickerel in Walker Lake are presented in Figures 4.5 through 5.1.

The size distribution of largemouth bass in Walker Lake is shown in Figure 4.5. A total of 59 largemouth bass were collected and the majority of these were found in the 6 to 9-inch and 9 to 12-inch size class. No bass were collected beyond 20 inches and 11 largemouth bass collected during the survey were larger than 12 inches (12 to 19 inches). The moderate quantity of

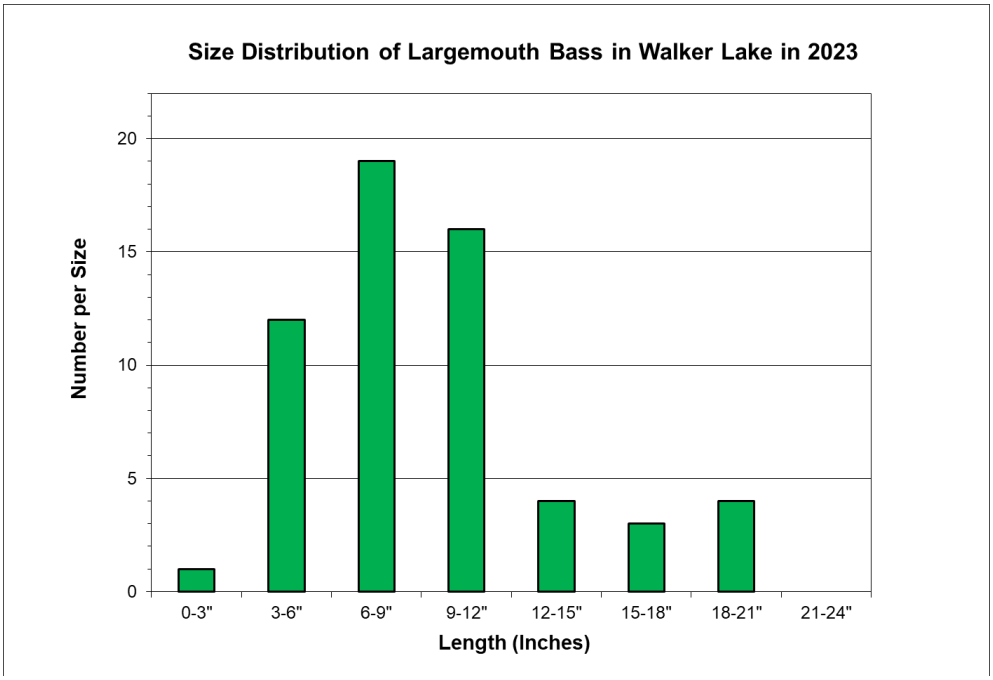

Figure 4.5 Size Distributions of Largemouth Bass in Walker Lake in 2023

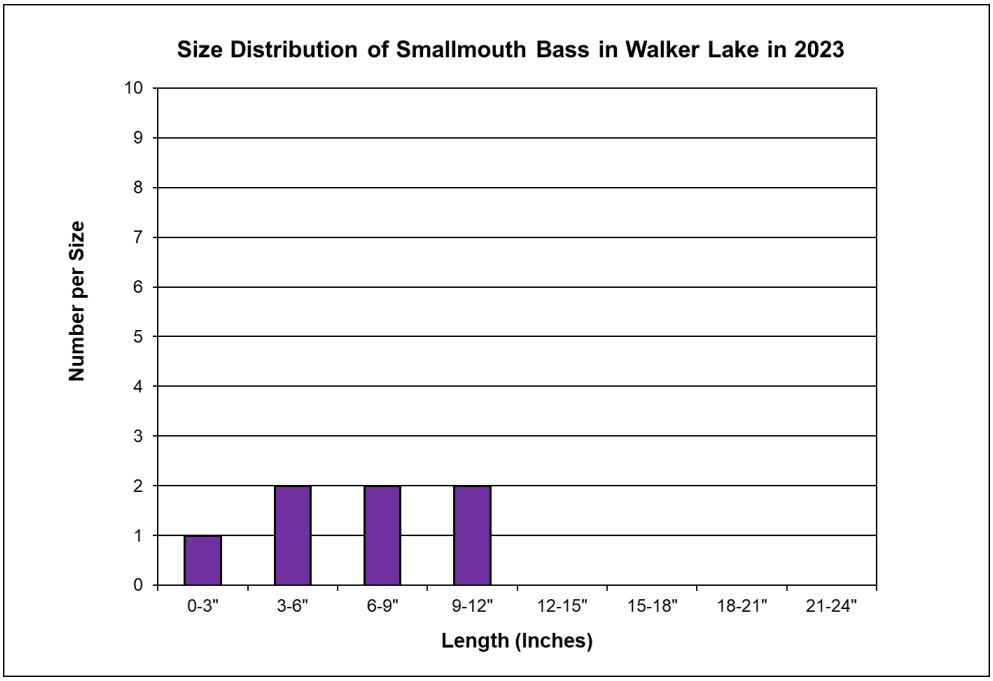

Figure 4.6 Size Distributions of Smallmouth Bass in Walker Lake in 2023

individuals captured between 3 and 12 inches indicates successful breeding recently, likely in the past two or three seasons. Limited numbers of juveniles between 0 and 3 inches could be due to a variety of factors. Most likely, these smaller individuals were deep under the cover of areas of dense vegetation and out of reach of the field staff. Another possible reason for the lower numbers of these smaller fish may be related to predation by other larger black bass and chain pickerel. There could also be some environmental stressor that may have interrupted largemouth bass breeding earlier in the 2023 season.

The size distribution of smallmouth bass in Walker Lake is shown in Figure 4.6. During the 2023 fisheries survey, a total of seven smallmouth bass were captured ranging from 0 to 12-inch classes and only two smallmouth bass were greater than 9 inches. Historically, numbers of smallmouth bass collected in Walker Lake are lower in comparison to largemouth bass. However, although a limited number of individuals were captured, we continue to see various size classes of smallmouth bass which suggest that the smallmouth bass population continues to experience reproductive success year to year.

The size distribution of sunfish (bluegill and pumpkinseed) in Walker Lake is shown in Figure 4.7. A total of 110 combined sunfish specimens were collected where bluegill was most dominant with 71 individuals in addition to 39 pumpkinseed individuals captured. Most sunfish were sampled in the 2 to 4-inch and 4 to 6-inch size classes, which shows that young from the previous year are surviving and growing into adulthood with a significant number reaching over 6 inches in length. Young of the year were also collected, 0 to 2-inch size class, which represents a successful breeding population. The graph generally shows a descending shape, where the number of individuals decreases with size class. This is typical and an indication of a healthy population, with the expectancy of overall mortality to increase as these fish age, partially due to predation.

The size distribution of yellow perch in Walker Lake is illustrated in Figure 4.8. A total of 97 yellow perch were collected during this study. Yellow perch were the most abundant single fish species captured in 2023. Most yellow perch were between 6 to 8-inches with three specimens measuring over 11 inches. Yellow perch were also captured in the smaller size classes representing a breeding population of fish. The number of individuals sampled in each size class usually decreases with increasing size class.

The size distribution of chain pickerel in Walker Lake is presented in Figure 4.9. Three specimens were captured during the 2023 survey, with one individual measuring over 15 inches long. It is to be noted that a few larger pickerel were observed but avoided capture by the survey team. Since pickerel are ambush predators, dense vegetation is their preferred habitat. It is expected that this species may be more prevalent in Walker Lake than the survey indicated due to the likelihood that pickerel were in deep cover, making capture difficult and also this species has a tendency to escape electroshocking equipment due to the species' elongated body and higher resistance to electrical currents.

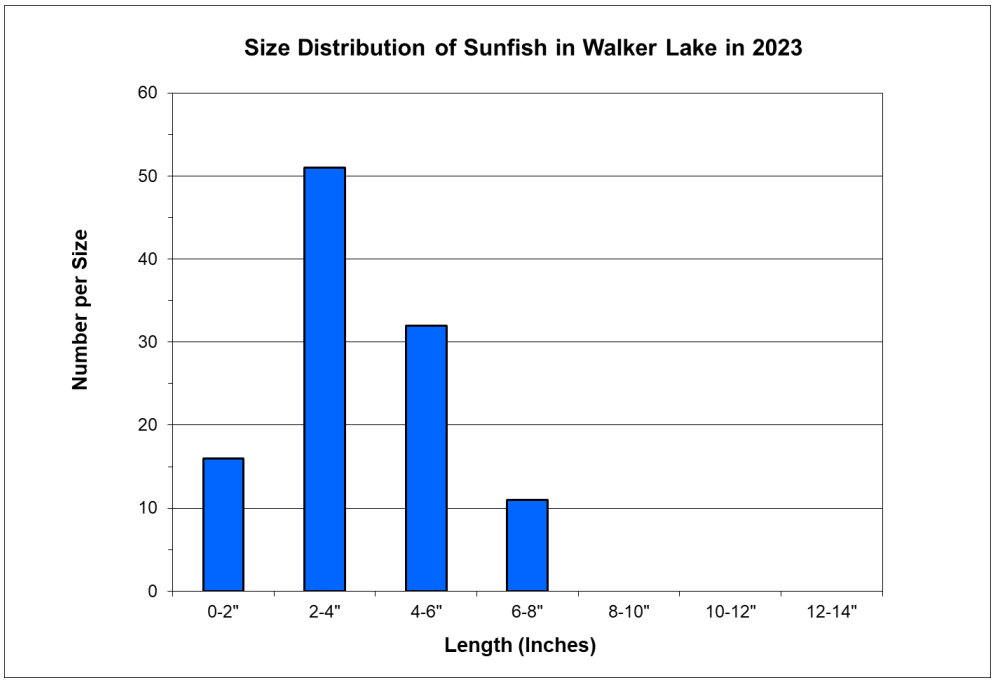

Figure 4.7 Size Distributions of Sunfish in Walker Lake in 2023

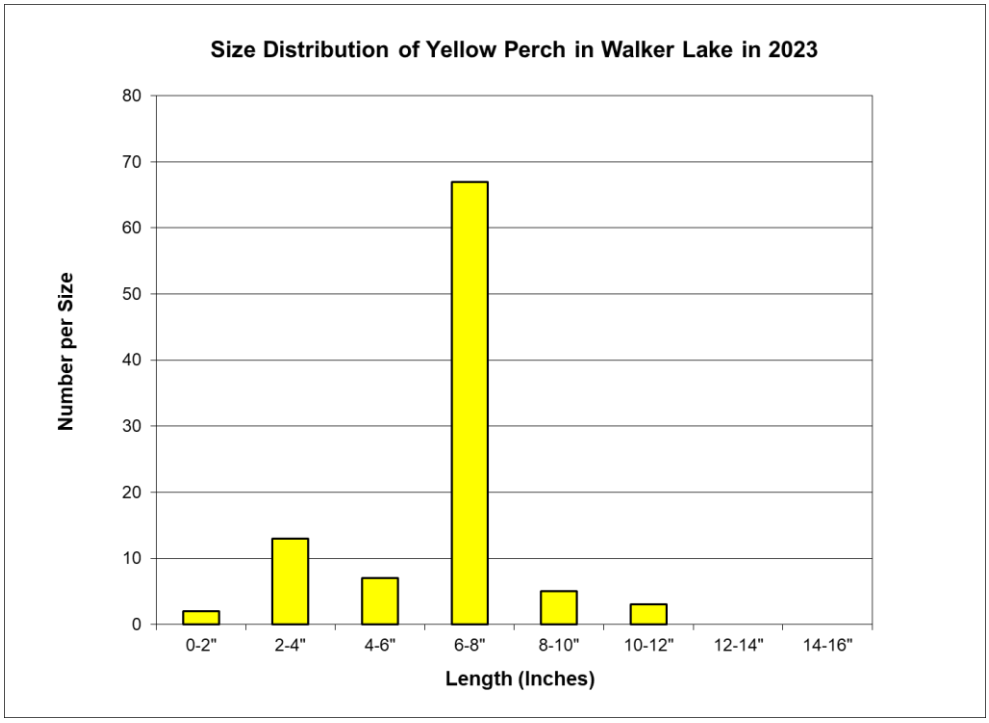

Figure 4.8 Size Distributions of Yellow Perch in Walker Lake in 2023

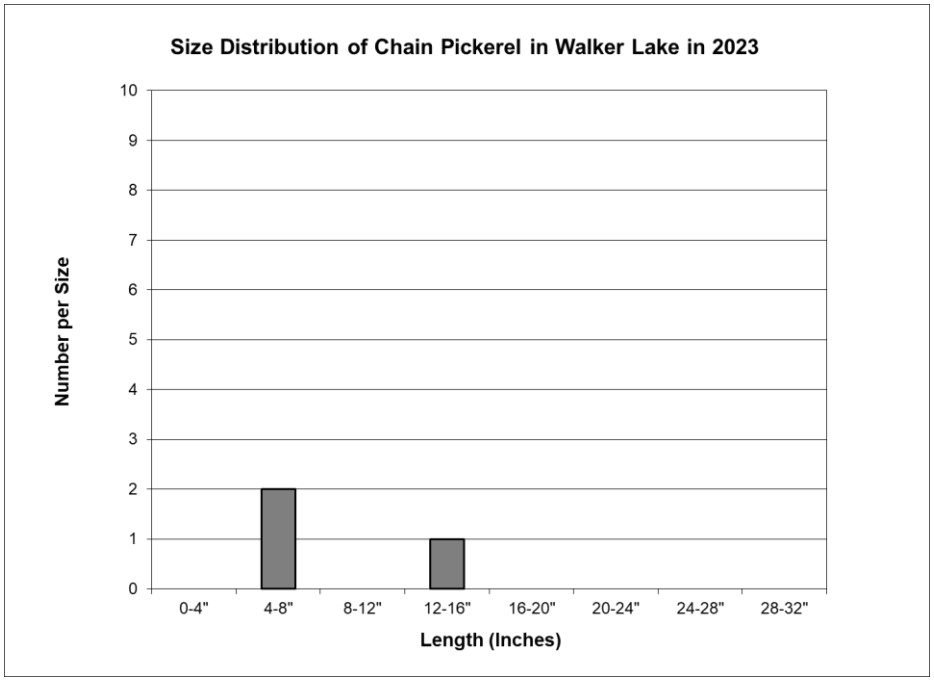

Figure 4.9 Size Distributions of Chain Pickerel in Walker Lake in 2023

In summary, the size distribution of largemouth bass, smallmouth bass, sunfish, yellow perch, and chain pickerel in Walker Lake indicates a fairly diverse fish assemblage. In the 2023 fishery survey, the observed primary predatory fish species were largemouth bass and smallmouth bass. The primary prey species consisted of sunfish (bluegill and pumpkinseed) and yellow perch. Chain pickerel and brown bullhead catfish were caught in fewer numbers, but the presence of these fish species represents additional populations of predatory fish within Walker Lake.

4.4. Proportional Stock Density (PSD)

Proportional stock density (PSD) is a measure of fish species size structure. The general concept of proportional stock density indicates the percent of adult fish that are large. The metric is the percentage of quality-sized individuals within the total number of stock-sized individuals. Stock and quality size designations vary by species. Fishery biologists and managers commonly determine proportional stock densities for fourteen different commercially and recreationally important fish species.

The equation for proportional stock density (PSD) is as follows:

$$PSD = \frac{\text{Number of fish > or = quality length}}{\text{Number of fish > or = stock length}} \times 100$$

Minimum lengths for stock and quality fish of a particular species are cited throughout the literature, which includes lengths reported by Gabelhouse and Anderson. Other important size categories beyond quality are preferred, memorable and trophy-sized fish. Stock length is commonly defined as the approximate length at maturity for a species, minimum length effectively sampled by traditional fishing gear, and the minimum length of fish that provide recreational value (Willis, Murphy and Guy 1993).

Fishery biologists and managers commonly determine PSDs for largemouth bass and bluegill in ponds and lakes in the Northeastern U.S. Overall, the goal to manage a fishery is to balance the fishery between predator and prey as well as to achieve desired size of fish (Swistock and Soderberg 2006). A balanced largemouth bass and bluegill fishery is often centrally located on PSD graphs where the PSD values for largemouth bass and bluegill are plotted on the X and Y-axes, respectively.

Although the PSD is traditionally determined as a relationship of bluegill and largemouth bass; bluegill and pumpkinseed were combined during this study to show their relationship to black bass (largemouth and smallmouth bass). Please note that each year has varied as far as species collected. Species were selected for the PSD calculation based on the species collected for that individual year as well as the most representative for that group, whether it is black bass or sunfish.

For this study in Walker Lake, the stock lengths for sunfish (combination of bluegill and pumpkinseed) and black bass (combination of largemouth and smallmouth bass) were equal to or greater than 3 inches and equal to or greater than 8 inches, respectively. The quality lengths for sunfish and black bass were equal to or greater than 6 inches and equal to or greater than 12 inches, respectively.

Walker Lake PSD

The proportional stock density for both black bass and sunfish in Walker Lake is shown in Figure 4.10. The PSD of 26 for black bass suggests that the black bass population may be slightly crowded by small to mid-sized individuals with limited numbers of quality bass to be caught larger or equal to the quality length measurement of over 12 inches. Out of 66 total black bass captured during the 2023 survey, 43 were stock length or larger, but only 11 individuals were greater than or equal to quality length. The PSD value of 13 for sunfish suggests that the sunfish population

was fairly crowded with smaller individuals in Walker Lake with limited numbers of quality sunfish to be caught larger or equal to the quality length measurement of over 6 inches. Out of the 110 total sunfish captured during the 2023 survey, 86 were stock length or larger, but only 11 individuals were greater than or equal to quality length.

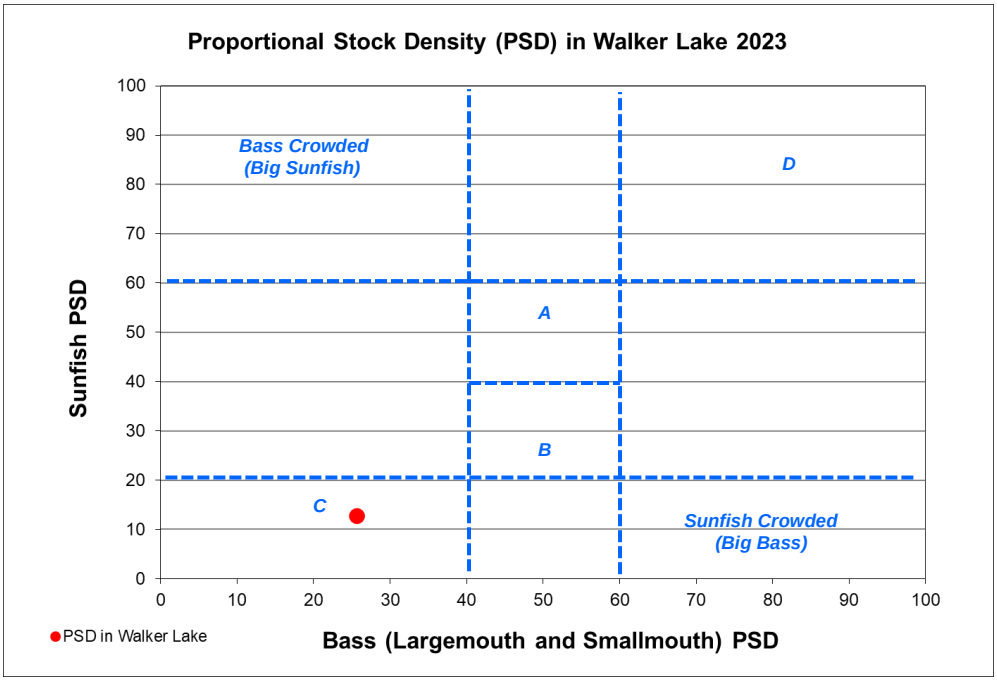

Figure 4.10 Proportional Stock Densities in Walker Lake in 2023

Notes: A (Good sunfish fishing), B (Good sunfish & bass fishing), C (Low fertility? Excess weeds? Too many species? Other?) D (Rare condition such as severe environmental event caused widespread juvenile death? Other?)

The PSD for black bass (smallmouth and largemouth bass) for the 2023 study was 26. This PSD suggests that there is approximately a 25 percent chance when a black bass is caught, this bass will be 12 inches or greater. Out of the 66 total black bass captured during the 2023 survey more than half of black bass, 43 individuals, were found larger than stock length (8 inches or greater), and 11 individuals were greater than or equal to quality length (12 inches or greater).

The PSD value for sunfish (bluegill and pumpkinseed) for the 2023 study was 13. This PSD suggests that there is approximately a 13 percent chance when a sunfish is caught, this sunfish will be 6 inches or greater. Out of the 110 total sunfish captured during the 2023 survey more than half of sunfish, 86 individuals, were found larger than stock length (3 inches or greater), and 11 individuals were greater than or equal to quality length (6 inches or greater).

It should be mentioned that the PSD value becomes more precise when more fish are captured. A smaller sample size can sway this value dramatically. The recommended minimum number of individuals (fish equal to or longer than the stock length) for calculating the PSD is 20 (N=20). Therefore, it is important to recognize the PSD value as a current status indicator of a fishery, but not the only method of measurement. Since 43 bass were larger than or equal to the stock length, for this study, N=43. The value for sunfish for this study was N=86, since 86 sunfish were larger than or equal to the stock length.

5. Fishery Data Trend Analysis

Fisheries data over time (2016 – 2017 & 2019 – 2023) were compared to one another by comparing the proportional stock density (PSD) for bass and sunfish. This comparison is presented in Figures 5.1 and 5.2. Proportional stock density (PSD) was discussed in detail in Section 4.4.

The comparison of the PSD values for black bass indicates that the size of bass increased from 2016 to 2019, but decreased in slightly 2020. A further decrease in size was observed in 2021. The 2022 PSD increased again for black bass when compared to 2021, then decreased again in 2023 to the lowest recorded PSD value for black bass (Figure 5.1). The 2023 PSD suggests that the black bass population majority was represented by individuals of small to moderate size. As noted previously, 66 black bass (smallmouth and largemouth bass combined) were captured in 2023. Of these, 43 bass were greater than the stock length (equal to or greater than 8 inches) and 11 of those bass were greater than the quality length (equal to or greater than 12 inches).

The comparison of the PSD values for sunfish indicates that the size of sunfish increased from 2016 to 2019, but decreased in 2020. Increases in size were observed in 2021 and remained consistent in 2022, but decreased in 2023 to match the recorded PSD value of 2020 (Figure 5.2). Overall, the 2023 PSD value for sunfish indicates that the sunfish population (bluegill and pumpkinseed) in the lake is dominated by smaller fish. The majority of the sunfish that were captured were less than 6 inches in length.

As mentioned previously, the PSD values become more precise when more fish are captured with the recommended minimum number of stock length fish for calculating the PSD equaling 20 (N=20). Since the numbers of black bass captured are typically low to moderate in Walker Lake, there will be less precision when calculating the black bass PSD (15 to 38 total number of black bass each year from 2016 through 2022). However, the 2023 survey captured a total of 66 black bass, which is the highest number of black bass recorded in any of the fishery surveys. The higher number of individual black bass caught suggests this year's PSD value as a more accurate representation of the black population within Walker Lake than in previous years. In contrast, sunfish have traditionally had larger sampling sizes for several years in Walker Lake. Therefore, the PSD values for sunfish are more precise and have been throughout the years of surveys.

The number of black bass that were equal to or greater than the stock length (N) captured during each fishery survey as performed by Aqua Link are as follows: N = 6 in 2016, N = 10 in 2017, N = 5 in 2019, N = 5 in 2020, N = 6 in 2021, N = 20 in 2022, and N = 43 in 2023. The number of sunfish that were equal to or greater than the stock length (N) captured during each fishery survey are as follows: N = 254 in 2016, N = 118 in 2017, N = 39 in 2019, N = 45 in 2020, N = 47 in 2021, N = 116 in 2022, and N = 86 in 2023.

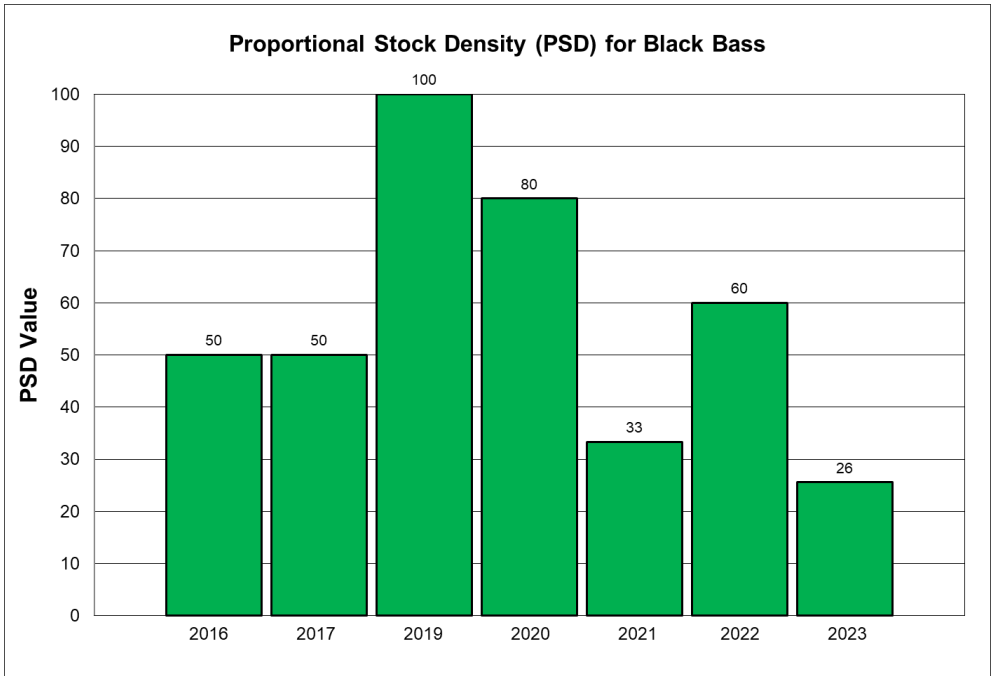

Figure 5.1 Proportional Stock Densities for Black Bass from 2016 to 2023

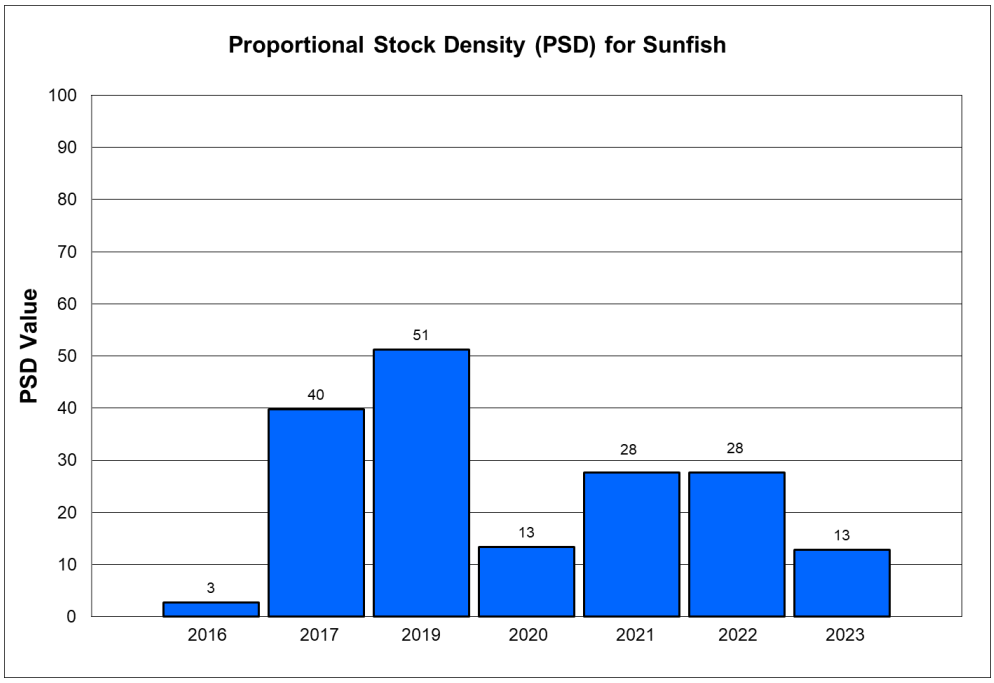

Figure 5.2 Proportional Stock Densities for Sunfish from 2016 to 2023

6. Conclusions and Recommendations

The 2023 survey indicated that Walker Lake contained a diverse fishery represented by seven different species. The fish species captured during this fishery survey were: bluegill *(Lepomis macrochirus)*, brown bullhead (*Ameiurus nebulosus*), chain pickerel *(Esox niger)*, largemouth bass *(Micropterus salmoides)*, pumpkinseed *(Lepomis gibbosus)*, smallmouth bass (*Micropterus dolomieu*), and yellow perch *(Perca flavescens)*.

In the 2023 fishery study, the most dominant fish species were sunfish (combination of bluegill and pumpkinseed) followed by yellow perch. Although plentiful, the majority of these forage fish were considered small in size and rarely exceeded 8 inches. As for top predators, black bass was the dominant species and the majority of captured fish were in the mid-sized range, 8 to 12 inches. The majority of black bass captured, 65%, were measured at or greater than stock length (8 inches or greater in size). A moderately low number of black bass, (11), were captured of quality size of 12 inches and greater.

Based upon the above, it is expected that the typical angler will catch moderate to moderately high numbers of sunfish, primarily bluegill, in the 3 to 6-inch range, and few individuals over 6 inches. An angler can expect to catch moderately high numbers of yellow perch with sizes larger than sunfish, with over 77% of all yellow perch captured in the 2023 survey recorded at over 6 inches long. Anglers targeting black bass would likely catch moderate numbers of bass, but fewer quality length bass (greater than or equal to 12 inches), with the majority of all black bass recorded in the 2023 survey being under 12 inches in length. Since numbers of largemouth bass captured were considerably greater than smallmouth bass captured, anglers would likely catch more largemouth bass.

The largemouth bass population in 2023 was represented by size classes ranging from 2^{+} inches (young of the year, YOY) to just under 19 inches in length. The number of fish captured varied between different size classes with the 6 to 9-inch size class being the greatest number of individuals. This could indicate natural growth of largemouth in a larger size class when compared to last year, or could be due to the capture of largemouth bass stocked within the year. In addition, the captured largemouth bass were generally considered average size when compared to the average length and weight data presented by the PA Fish and Boat Commission (PFBC).

Seven smallmouth bass were captured in Walker Lake during the 2023 fisheries assessment, ranging from 2 to just over 11 inches. The 7 smallmouth bass collected were considered average size when compared to the PFBC average length and weight data. No individuals were captured in the largest size classes. It is expected that these larger individuals are present but spend their time in open water habitat at depths greater than electroshocking equipment could reach at the time of assessment.

Based upon our experience and the proportional stock density value, we would currently expect to see a higher number of black bass greater than 8 inches caught by anglers than previous years since there were more bass captured over 8 inches during this study compared to previous study events. This may be due to the presence of stocked black bass being captured or the natural growth of the bass populations. The bass population may have improved slightly in part due to the substantial availability of prey (bluegill, pumpkinseed, yellow perch, etc.) to sustain a quality black bass population in the lake. Overall, total numbers of bass were considered moderate when compared to other lakes in the region. Although there was a low PSD value for bass species during the 2023 survey, the highest number of bass were recorded this year showing signs of a successful stocking program and/or the presence of a naturally reproducing population. One reason fewer large black bass were captured could have been due to over harvesting of legal sized bass and under sampling of the smallmouth bass population. It is possible that some anglers are removing larger black bass and sunfish from the lake even though the lake has imposed no harvest restrictions.

Sunfish (bluegill, and pumpkinseed) were captured in the highest numbers, with 110 specimens collected between the two species. It should be noted that no black crappie, which fall under the sunfish category, were captured during this survey, as opposed to the 2022 survey which recorded their presence. Of all the sunfish specimens caught, none exceeded 8 inches. The majority of the individuals were in the 2 to 4-inch range with the next highest being the 4 to 6-inch range. Bluegill were the most collected sunfish species with 71 individuals. Overall, the sunfish population in Walker Lake was found to be healthy, possibly due to a combination of successful natural reproduction and having a stocking program in place. The proportional stock density indicates that few sunfish collected were considered to be of quality length (equal to or greater than 6 inches) when compared to other sunfish reaching maturity (stock length at equal to or greater than 3 inches). However, many of the sunfish collected (86 out of 110 individuals) were at or greater than stock length. Two sunfish species, red breast along with the aforementioned black crappie, were absent from this survey but that does not rule out the presence of these fish within Walker Lake.

Yellow perch were the most abundant single species collected in Walker Lake in 2023. Overall, 97 individuals were collected and the majority of the perch were in the 6 to 8-inch size class. This data shows an increase in size class of the majority of perch from the previous three years, providing good opportunities for anglers to catch quality fish and ample prey for predatory fish. Based off of this year's survey, we can conclude that there were good growth rates and survivability of yellow perch in Walker Lake during 2023. However, the individuals in the size classes below 6 inches were limited. This was possibly due to lack of capture with onsite conditions, predation, or possibly some overcrowding of the species. Overall, the yellow perch population is thriving and providing a good prey source for black bass.

This year's survey yielded three chain pickerel, opposed to the singular pickerel caught during the 2022 survey. Historically there have been low capture rates of chain pickerel in Walker Lake aside from the 2021 survey, and this is most likely due to the difficulty of capture for species.

Since pickerel are ambush predators, dense vegetation is their preferred habitat. It is expected that this species may be more prevalent in Walker Lake than the survey indicated due to the likelihood that pickerel were in deep cover making capture difficult, as well as this species having a tendency to escape electroshocking equipment due to the species' elongated body and higher resistance to electrical currents.

Based upon these conclusions, Aqua Link offers the following recommendations to improve the fishery in Walker Lake:

1. Artificial fish habitat structures should be placed strategically throughout the lake's littoral zone (shallow shoreline areas) to improve the habitat for largemouth bass and to promote areas of growth for juveniles of different species.

2. Artificial fish habitat structures for smallmouth bass should be installed where shallow waters drop off into deeper lake waters. In turn, this habitat would also be utilized by yellow perch as well.

3. Artificial fish habitat structures for crappie should be installed in the deeper pocket of water in the southern end of the lake at the lake monitoring station, (Station WL2). In turn, this habitat would also be utilized by yellow perch as well.

4. Approximately 100 smallmouth bass in the 5-6-inch size range should be stocked in the lake in 2024. These added fish would supplement the fishery well, leading to a more balanced PSD value and an overall higher chance of catching a quality smallmouth in the lake.

5. Approximately 150 largemouth bass in the 5-6-inch size range should be stocked in the lake in 2024. <u>If smallmouth bass are not stocked, then the largemouth stocking should be increased to 250 fish</u>.

6. Approximately 150 black crappie should be stocked in 2024. The recommended size is 4-6-inch fingerlings. Increasing black crappie numbers will help smallmouth bass populations and increase sunfish angling.

7. It is also recommended to stock 150 lbs. of golden shiners to supplement the amount of food for the yellow perch population. This will help the yellow perch population reach greater size classes which will then help create food for an increasing black bass population. Fathead minnows would be an appropriate alternative to golden shiners.

8. It is highly recommended to encourage catch and release angling for both largemouth bass and smallmouth bass. Catch and release angling both species of bass is a proven method in fisheries management.

9. It is also recommended that the use of barbless hooks be encouraged for bass angling. The use of barbless hooks is recommended when targeting black bass (largemouth and smallmouth bass). This practice will reduce physical damage or mortality to any bass that are caught - especially if any bass are "gut hooked".

10. Fishery surveys should be performed annually in Walker Lake. Newly acquired fisheries data should be analyzed and compared to those data in the existing 2016 through 2023 database. These data will provide lake managers with the ability to critically evaluate whether implemented various lake management techniques are in fact improving the lakes' fishery.

    In 2024, Aqua Link suggests that fish scale analysis on selected individuals of largemouth and smallmouth bass be performed to determine, more accurately, growth rates among these individuals. These selected fish would also be tagged with a uniquely numbered tag with the hope of recapturing the same fish on a future surveying effort. If successful, the second time that fish would be captured, Aqua Link will be able to collect valuable length and weight data to confirm a very accurate growth rate of that individual.

    In addition to electrofishing, Aqua Link recommends the use of trap nets for the 2024 fishery survey. It is often very useful to use more than a single fish sampling technique to capture fish. It is likely that the use of traps nets, which are set overnight for 24-hours, will allow for the capture of more black bass, pickerel, and black crappie. In addition, trap nets will likely increase the precision of black bass PSD values with expected higher numbers of individuals captured.

11. Aqua Link encourages the Association to implement a volunteer creel survey program to supplement data acquired by Aqua Link during the electroshocking event. Creel survey data could be incorporated into the fishery report in order to get a more accurate representation of fish species and sizes that are present in Walker Lake.

12. Annual aquatic macrophyte (aquatic vascular plant) follow up surveys should be performed to identify what species of aquatic plants continue to be present along with their overall abundance. These surveys should also accurately delineate the location and relative abundance of any non-native, invasive

aquatic plants that are found for later control and/or eradication. Many of these plants tend to be very aggressive and spread quickly by out-competing other native plant species. Controlling the spread of these aquatic plants can be very costly if not detected early.

Based upon these surveys, aquatic macrophyte maps should be updated annually showing the locations and relative abundances of all major plant species found throughout the entire lake basin. These maps should also include the locations where any non-native, invasive aquatic plants were found.

13. Routine floating leaf and submerged aquatic vegetation treatments should continue to be performed to ensure the health of the water body and to control the growth of nuisance aquatic vegetation.

14. The Association should continue collecting baseline water quality data in 2024. Lake water quality has a significant impact on the health of fish and the overall composition of the fishery community. Newly acquired water quality data should be analyzed and compared to those data in the existing 2016 through 2023 database. The overall importance of collecting baseline lake water quality data on an annual basis cannot be over emphasized. Without these data, lake associations become severely limited in their capacity of determining whether lake water quality is actually improving, degrading, or remaining unchanged. In addition, annual baseline data allows lake managers the ability to critically evaluate whether implemented in-lake or watershed restoration techniques are actually improving lake water quality.

15. All recommendations provided in the *Walker Lake Water Quality Report 2023* are strongly advised - as any improvements to the lake water quality will also benefit the lake's fishery.

All of our recommendations, as discussed above, will require a high level of expertise in the field of lake management. Some of our recommendations will also require obtaining state permits prior to implementation. Aqua Link is a nationally recognized consulting firm specializing in pond and lake management and we are fully capable of implementing all of the recommendations offered in this report.

7. Literature Cited

Aqua Link, Inc. 2017-18 & 2020-23. 2016-17 & 2019-22 *Walker Lake Fisheries Survey – Final Report*. Prepared for the Walker Lake Landowners Association.

Aqua Link, Inc. 2017-23. 2016-22 *Walker Lake Baseline Water Quality Monitoring Program Final Report*. Prepared for the Walker Lake Landowners Association.

Aqua Link, Inc. 2022. 2021 Walker Lake Bathymetric Survey – Final Report. Prepared for the Walker Lake Landowners Association.

Lorantas, R., Kristine, D., and Hobbs, C. PFBC Warmwater Unit. 2005. Largemouth Bass, Smallmouth Bass, and Spotted Bass Management and Fishing in Pennsylvania. www.fish.state.pa.us/pafish/bass_black/00bass_overview.htm, Pennsylvania.

Routledge, David. Article: How to Assess the Fish in Your Farm Pond. Oklahoma.

Swistock, Bryan R and Soderberg, Richard W. 2006. Pond Fisheries Management. Website: www.psu.edu. College of Agricultural Sciences – Cooperative Extension.

Soderberg, Dick. *Bass Management in Farm Ponds* [PowerPoint slides]. Retrieved from http://www.mansfield.edu/fisheries/

Texas A & M Agrilife Extension. 2018. Variable-leaf Watermilfoil. Retrieved from https://aquaplant.tamu.edu/plant-identification/alphabetical-index/variable-leaf-watermilfoil/

Willis, David W., Murphy, Brian R., Guy, Christopher S. South Dakota State University and Texas A & M University 1993. Article: Stock Density Indices: Development, Use, and Limitations. Brookings, SD and College Station, TX.

APPENDIX A

2023 Lake Fishery Data

Walker Lake **Prepared by Aqua Link, Inc.**
ALI Project No. 1577-32

Fish Survey Data - Species Found

10/17/2023

Species	%	Total	Catch Rate per Hour
Bluegill (BG)	25.4	71	42.60
Brown Bullhead (BBH)	1.4	4	2.40
Chain Pickerel (CPK)	1.1	3	1.80
Largemouth Bass (LMB)	21.1	59	35.40
Pumpkinseed (PS)	13.9	39	23.40
Smallmouth Bass (SMB)	2.5	7	4.20
Yellow Perch (YP)	34.6	97	58.20
Total	**100.0**	**280**	

Walker Lake
ALI Project No. 1577-32

Prepared by Aqua Link, Inc.

Fish Survey Data
Run #1 - 5
Time: 20 Minutes for each run

10/17/2023

Key for ID:
Chain Pickerel (CPK)
Grass Pickerel (GPK)
Brown Bullhead (BBH)
Golden Shiner (GS)
Yellow Perch (YP)
White Crappie (WC)
Black Crappie (BC)
Bluegill (BG)
Pumpkinseed (PS)
Bluespotted Sunfish (BSS)
Redbreast Sunfish (RBS)
Largemouth Bass (LMB)
Smallmouth Bass (SMB)
Alewife (AW)

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	1	YP	1	29.0	289	11.42	0.64
2	2	LMB	1	23.0	157	9.06	0.35
3	3	SMB	1	20.0	101	7.87	0.22
4	4	LMB	1	37.0	736	14.57	1.62
5	5	LMB	1	41.0	944	16.14	2.08
6	6	LMB	1	48.0	1920	18.90	4.23
7	7	LMB	1	19.0	81	7.48	0.18
8	8	LMB	1	20.0	103	7.87	0.23
9	9	YP	1	28.0	236	11.02	0.52
10	10	LMB	1	13.0	26	5.12	0.06
11	11	LMB	1	13.0	28	5.12	0.06
12	12	YP	1	20.0	87	7.87	0.19
13	13	YP	1	16.0	54	6.30	0.12
14	14	BG	1	7.0	3	2.76	0.01
15	15	BG	1	8.5	10	3.35	0.02
16	16	BG	1	4.0	1	1.57	0.00
17	17	BG	1	5.0	2	1.97	0.00
18	18	BG	1	4.0	1	1.57	0.00
19	19	YP	1	6.5	3	2.56	0.01
20	20	YP	1	7.0	4	2.76	0.01
21	21	BG	1	4.0	1	1.57	0.00
22	22	YP	1	5.0	1	1.97	0.00
23	23	BG	1	20.0	160	7.87	0.35
24	24	YP	1	16.0	45	6.30	0.10
25	25	PS	1	16.0	82	6.30	0.18
26	26	LMB	1	22.5	43	8.86	0.09
27	27	YP	1	5.0	1	1.97	0.00
28	28	BG	1	4.0	1	1.57	0.00
29	29	BG	1	9.0	11	3.54	0.02
30	30	YP	1	17.0	46	6.69	0.10
31	31	YP	1	16.0	43	6.30	0.09
32	32	YP	1	7.0	4	2.76	0.01
33	33	LMB	1	23.0	155	9.06	0.34
34	34	LMB	1	21.5	116	8.46	0.26
35	35	YP	1	20.0	88	7.87	0.19
36	36	LMB	1	21.0	119	8.27	0.26
37	37	BG	1	14.5	57	5.71	0.13
38	38	PS	1	14.0	53	5.51	0.12
39	39	BG	1	10.5	12	4.13	0.03
40	40	BG	1	4.0	1	1.57	0.00
41	41	YP	1	16.0	41	6.30	0.09
42	42	PS	1	15.0	60	5.91	0.13
43	43	YP	1	16.0	46	6.30	0.10
44	44	YP	1	16.0	42	6.30	0.09
45	45	YP	1	17.5	56	6.89	0.12
46	46	YP	1	16.5	45	6.50	0.10
47	47	BG	1	11.0	24	4.33	0.05
48	48	BG	1	9.0	12	3.54	0.03
49	49	BG	1	3.5	1	1.38	0.00
50	50	LMB	1	9.0	6	3.54	0.01

Walker Lake
ALI Project No. 1577-32

Prepared by Aqua Link, Inc.

Fish Survey Data
Run #1 - 5
Time: 20 Minutes for each run

10/17/2023

Key for ID:
Chain Pickerel (CPK)
Grass Pickerel (GPK)
Brown Bullhead (BBH)
Golden Shiner (GS)
Yellow Perch (YP)
White Crappie (WC)
Black Crappie (BC)
Bluegill (BG)
Pumpkinseed (PS)
Bluespotted Sunfish (BSS)
Redbreast Sunfish (RBS)
Largemouth Bass (LMB)
Smallmouth Bass (SMB)
Alewife (AW)

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
51	51	BG	1	10.5	23	4.13	0.05
52	52	PS	1	9.5	15	3.74	0.03
53	53	BG	1	9.5	18	3.74	0.04
54	54	PS	1	10.0	21	3.94	0.05
55	55	BG	1	9.0	10	3.54	0.02
56	56	YP	1	7.5	7	2.95	0.02
57	57	YP	1	7.0	6	2.76	0.01
58	58	YP	1	6.0	5	2.36	0.01
59	59	YP	1	7.5	6	2.95	0.01
60	60	BG	1	5.0	1	1.97	0.00
61	61	BG	1	5.0	1	1.97	0.00
62	62	BG	1	5.0	1	1.97	0.00
63	63	YP	1	6.0	4	2.36	0.01
64	64	BBH	1	23.0	145	9.06	0.32
65	65	YP	1	18.5	61	7.28	0.13
66	66	YP	1	19.0	60	7.48	0.13
67	67	YP	1	7.0	4	2.76	0.01
68	68	LMB	2	27.0	256	10.63	0.56
69	69	YP	2	18.5	65	7.28	0.14
70	70	LMB	2	25.0	190	9.84	0.42
71	71	YP	2	29.0	271	11.42	0.60
72	72	LMB	2	28.0	305	11.02	0.67
73	73	YP	2	18.0	55	7.09	0.12
74	74	LMB	2	23.0	161	9.06	0.35
75	75	YP	2	19.0	65	7.48	0.14
76	76	BG	2	15.0	72	5.91	0.16
77	77	YP	2	14.0	28	5.51	0.06
78	78	YP	2	17.0	57	6.69	0.13
79	79	LMB	2	24.0	195	9.45	0.43
80	80	PS	2	12.0	25	4.72	0.06
81	81	YP	2	18.5	61	7.28	0.13
82	82	PS	2	15.0	66	5.91	0.15
83	83	YP	2	17.0	50	6.69	0.11
84	84	YP	2	18.5	56	7.28	0.12
85	85	YP	2	18.5	65	7.28	0.14
86	86	PS	2	15.5	74	6.10	0.16
87	87	YP	2	17.5	55	6.89	0.12
88	88	YP	2	17.5	51	6.89	0.11
89	89	PS	2	15.5	70	6.10	0.15
90	90	YP	2	16.0	39	6.30	0.09
91	91	PS	2	16.0	81	6.30	0.18
92	92	YP	2	17.5	59	6.89	0.13
93	93	BG	2	15.5	73	6.10	0.16
94	94	YP	2	18.5	58	7.28	0.13
95	95	YP	2	16.0	46	6.30	0.10
96	96	YP	2	15.5	35	6.10	0.08
97	97	SMB	2	12.5	25	4.92	0.06
98	98	YP	2	8.0	5	3.15	0.01
99	99	PS	2	10.5	16	4.13	0.04
100	100	PS	2	8.0	8	3.15	0.02

Walker Lake
ALI Project No. 1577-32

Prepared by Aqua Link, Inc.

Fish Survey Data
Run #1 - 5
Time: 20 Minutes for each run

10/17/2023

Key for ID:
Chain Pickerel (CPK)
Grass Pickerel (GPK)
Brown Bullhead (BBH)
Golden Shiner (GS)
Yellow Perch (YP)
White Crappie (WC)
Black Crappie (BC)
Bluegill (BG)
Pumpkinseed (PS)
Bluespotted Sunfish (BSS)
Redbreast Sunfish (RBS)
Largemouth Bass (LMB)
Smallmouth Bass (SMB)
Alewife (AW)

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
101	101	BG	2	1.0	2	0.39	0.00
102	102	LMB	2	47.5	1494	18.70	3.29
103	103	BG	3	10.0	18	3.94	0.04
104	104	LMB	3	19.0	88	7.48	0.19
105	105	LMB	3	27.5	274	10.83	0.60
106	106	LMB	3	28.0	290	11.02	0.64
107	107	BBH	3	30.0	412	11.81	0.91
108	108	BG	3	14.5	55	5.71	0.12
109	109	YP	3	16.5	46	6.50	0.10
110	110	YP	3	18.0	59	7.09	0.13
111	111	YP	3	21.5	110	8.46	0.24
112	112	YP	3	20.5	85	8.07	0.19
113	113	LMB	3	22.0	134	8.66	0.30
114	114	YP	3	15.5	44	6.10	0.10
115	115	BG	3	15.5	56	6.10	0.12
116	116	YP	3	15.0	40	5.91	0.09
117	117	LMB	3	22.0	147	8.66	0.32
118	118	LMB	3	21.0	128	8.27	0.28
119	119	LMB	3	20.5	118	8.07	0.26
120	120	YP	3	17.0	66	6.69	0.15
121	121	BG	3	8.5	11	3.35	0.02
122	122	BG	3	8.0	7	3.15	0.02
123	123	LMB	3	22.0	129	8.66	0.28
124	124	LMB	3	23.5	162	9.25	0.36
125	125	YP	3	19.5	75	7.68	0.17
126	126	LMB	3	12.0	19	4.72	0.04
127	127	YP	3	16.0	41	6.30	0.09
128	128	BG	3	19.0	161	7.48	0.35
129	129	YP	3	18.5	63	7.28	0.14
130	130	YP	3	16.5	46	6.50	0.10
131	131	BG	3	14.5	55	5.71	0.12
132	132	YP	3	16.0	50	6.30	0.11
133	133	YP	3	15.5	38	6.10	0.08
134	134	BG	3	12.0	32	4.72	0.07
135	135	PS	3	14.0	54	5.51	0.12
136	136	BG	3	14.0	54	5.51	0.12
137	137	BG	3	11.0	26	4.33	0.06
138	138	YP	3	16.5	40	6.50	0.09
139	139	YP	3	16.0	39	6.30	0.09
140	140	BG	3	10.0	19	3.94	0.04
141	141	BG	3	10.5	23	4.13	0.05
142	142	LMB	3	11.0	20	4.33	0.04
143	143	PS	3	10.0	15	3.94	0.03
144	144	YP	3	13.0	21	5.12	0.05
145	145	LMB	3	8.5	10	3.35	0.02
146	146	PS	3	7.5	10	2.95	0.02
147	147	PS	3	7.0	5	2.76	0.01
148	148	PS	3	8.0	10	3.15	0.02
149	149	BG	3	9.0	16	3.54	0.04
150	150	PS	3	9.0	13	3.54	0.03

Walker Lake
ALI Project No. 1577-32

Prepared by Aqua Link, Inc.

Fish Survey Data
Run #1 - 5
Time: 20 Minutes for each run

10/17/2023

Key for ID:
Chain Pickerel (CPK)
Grass Pickerel (GPK)
Brown Bullhead (BBH)
Golden Shiner (GS)
Yellow Perch (YP)
White Crappie (WC)
Black Crappie (BC)
Bluegill (BG)
Pumpkinseed (PS)
Bluespotted Sunfish (BSS)
Redbreast Sunfish (RBS)
Largemouth Bass (LMB)
Smallmouth Bass (SMB)
Alewife (AW)

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
151	151	BG	3	3.5	1	1.38	0.00
152	152	BG	3	14.0	54	5.51	0.12
153	153	YP	3	16.5	43	6.50	0.09
154	154	LMB	3	26.5	276	10.43	0.61
155	155	LMB	3	19.5	95	7.68	0.21
156	156	YP	3	15.5	34	6.10	0.07
157	157	LMB	3	14.0	34	5.51	0.07
158	158	BG	3	14.0	60	5.51	0.13
159	159	LMB	3	9.0	9	3.54	0.02
160	160	YP	3	17.0	52	6.69	0.11
161	161	YP	3	16.5	52	6.50	0.11
162	162	YP	3	19.5	88	7.68	0.19
163	163	YP	3	15.5	43	6.10	0.09
164	164	BG	3	4.0	1	1.57	0.00
165	165	YP	3	15.0	40	5.91	0.09
166	166	YP	3	18.0	54	7.09	0.12
167	167	PS	3	16.0	79	6.30	0.17
168	168	YP	3	17.5	52	6.89	0.11
169	169	YP	3	18.0	57	7.09	0.13
170	170	YP	3	15.0	36	5.91	0.08
171	171	YP	3	15.0	37	5.91	0.08
172	172	BG	3	11.0	26	4.33	0.06
173	173	YP	3	15.5	35	6.10	0.08
174	174	BG	3	11.0	23	4.33	0.05
175	175	BG	3	10.0	18	3.94	0.04
176	176	BG	3	9.5	18	3.74	0.04
177	177	BG	3	8.5	12	3.35	0.03
178	178	BG	3	8.0	11	3.15	0.02
179	179	BG	3	9.5	15	3.74	0.03
180	180	BG	3	8.5	12	3.35	0.03
181	181	BG	3	9.5	15	3.74	0.03
182	182	BG	3	10.5	21	4.13	0.05
183	183	BG	3	9.0	12	3.54	0.03
184	184	BG	3	8.5	14	3.35	0.03
185	185	PS	3	9.5	16	3.74	0.04
186	186	BG	3	4.5	1	1.77	0.00
187	187	BG	3	9.0	13	3.54	0.03
188	188	LMB	3	6.0	3	2.36	0.01
189	189	BG	3	7.0	6	2.76	0.01
190	190	LMB	3	48.0	1612	18.90	3.55
191	191	LMB	3	38.0	865	14.96	1.91
192	192	LMB	3	48.0	1635	18.90	3.60
193	193	SMB	3	28.0	324	11.02	0.71
194	194	LMB	3	25.0	198	9.84	0.44
195	195	LMB	3	21.5	121	8.46	0.27
196	196	PS	3	7.5	8	2.95	0.02
197	197	YP	3	14.5	36	5.71	0.08
198	198	LMB	3	11.5	20	4.53	0.04
199	199	PS	3	8.0	11	3.15	0.02
200	200	LMB	3	30.0	1030	11.81	2.27

Walker Lake
ALI Project No. 1577-32

Prepared by Aqua Link, Inc.

Fish Survey Data
Run #1 - 5
Time: 20 Minutes for each run

10/17/2023

Key for ID:
Chain Pickerel (CPK)
Grass Pickerel (GPK)
Brown Bullhead (BBH)
Golden Shiner (GS)
Yellow Perch (YP)
White Crappie (WC)
Black Crappie (BC)
Bluegill (BG)
Pumpkinseed (PS)
Bluespotted Sunfish (BSS)
Redbreast Sunfish (RBS)
Largemouth Bass (LMB)
Smallmouth Bass (SMB)
Alewife (AW)

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
201	201	LMB	3	20.0	100	7.87	0.22
202	202	BBH	3	27.0	288	10.63	0.63
203	203	PS	3	8.0	8	3.15	0.02
204	204	BG	3	4.0	1	1.57	0.00
205	205	PS	3	16.0	76	6.30	0.17
206	206	BG	3	9.0	14	3.54	0.03
207	207	BG	3	9.0	15	3.54	0.03
208	208	BG	3	7.0	7	2.76	0.02
209	209	PS	3	8.0	13	3.15	0.03
210	210	BG	3	7.0	6	2.76	0.01
211	211	BG	3	5.0	3	1.97	0.01
212	212	CPK	4	40.0	400	15.75	0.88
213	213	LMB	4	38.5	815	15.16	1.80
214	214	CPK	4	15.5	17	6.10	0.04
215	215	PS	4	10.0	17	3.94	0.04
216	216	LMB	4	21.5	119	8.46	0.26
217	217	BG	4	15.0	57	5.91	0.13
218	218	SMB	4	25.0	192	9.84	0.42
219	219	SMB	4	20.5	110	8.07	0.24
220	220	LMB	4	20.5	106	8.07	0.23
221	221	YP	4	18.0	59	7.09	0.13
222	222	YP	4	16.5	50	6.50	0.11
223	223	YP	4	17.0	54	6.69	0.12
224	224	YP	4	17.5	56	6.89	0.12
225	225	YP	4	16.5	44	6.50	0.10
226	226	PS	4	10.0	15	3.94	0.03
227	227	BG	4	14.5	63	5.71	0.14
228	228	YP	4	18.0	52	7.09	0.11
229	229	YP	4	19.0	78	7.48	0.17
230	230	YP	4	16.5	50	6.50	0.11
231	231	YP	4	18.0	61	7.09	0.13
232	232	PS	4	9.0	11	3.54	0.02
233	233	PS	4	9.0	12	3.54	0.03
234	234	LMB	4	36.0	645	14.17	1.42
235	235	BG	4	14.5	52	5.71	0.11
236	236	LMB	4	21.5	125	8.46	0.28
237	237	LMB	4	21.0	115	8.27	0.25
238	238	YP	4	18.0	60	7.09	0.13
239	239	PS	4	9.5	12	3.74	0.03
240	240	YP	4	19.5	74	7.68	0.16
241	241	LMB	4	29.5	390	11.61	0.86
242	242	LMB	4	36.0	631	14.17	1.39
243	243	LMB	4	23.0	154	9.06	0.34
244	244	BG	4	12.0	34	4.72	0.07
245	245	PS	4	14.0	57	5.51	0.13
246	246	LMB	4	24.0	196	9.45	0.43
247	247	BG	4	7.0	10	2.76	0.02
248	248	LMB	5	40.0	800	15.75	1.76
249	249	YP	5	18.0	58	7.09	0.13
250	250	YP	5	22.5	122	8.86	0.27

Walker Lake
ALI Project No. 1577-32

Prepared by Aqua Link, Inc.

Fish Survey Data
Run #1 - 5
Time: 20 Minutes for each run

10/17/2023

Key for ID:
Chain Pickerel (CPK)
Grass Pickerel (GPK)
Brown Bullhead (BBH)
Golden Shiner (GS)
Yellow Perch (YP)
White Crappie (WC)
Black Crappie (BC)
Bluegill (BG)
Pumpkinseed (PS)
Bluespotted Sunfish (BSS)
Redbreast Sunfish (RBS)
Largemouth Bass (LMB)
Smallmouth Bass (SMB)
Alewife (AW)

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
251	251	YP	5	21.0	90	8.27	0.20
252	252	LMB	5	18.5	79	7.28	0.17
253	253	BG	5	9.5	14	3.74	0.03
254	254	PS	5	14.0	55	5.51	0.12
255	255	YP	5	17.0	52	6.69	0.11
256	256	LMB	5	14.0	42	5.51	0.09
257	257	BG	5	13.5	51	5.31	0.11
258	258	SMB	5	13.0	26	5.12	0.06
259	259	LMB	5	14.0	32	5.51	0.07
260	260	YP	5	19.0	79	7.48	0.17
261	261	PS	5	14.5	65	5.71	0.14
262	262	LMB	5	14.0	32	5.51	0.07
263	263	PS	5	15.0	73	5.91	0.16
264	264	PS	5	10.0	20	3.94	0.04
265	265	YP	5	22.5	128	8.86	0.28
266	266	PS	5	9.5	23	3.74	0.05
267	267	YP	5	18.0	65	7.09	0.14
268	268	YP	5	18.0	67	7.09	0.15
269	269	YP	5	6.0	3	2.36	0.01
270	270	PS	5	16.0	87	6.30	0.19
271	271	YP	5	15.5	37	6.10	0.08
272	272	YP	5	7.5	5	2.95	0.01
273	273	PS	5	14.0	50	5.51	0.11
274	274	BBH	5	23.0	172	9.06	0.38
275	275	PS	5	8.0	12	3.15	0.03
276	276	BG	5	8.0	7	3.15	0.02
277	277	SMB	5	7.0	4	2.76	0.01
278	278	BG	5	8.5	11	3.35	0.02
279	279	YP	5	7.0	5	2.76	0.01
280	280	CPK	5	19.0	40	7.48	0.09

Walker Lake **Prepared by Aqua Link, Inc.**
ALI Project No. 1577-32

Key for ID: Largemouth Bass (LMB)

Fish Survey Data - Largemouth Bass

10/17/2023

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	188	LMB	3	6.0	3	2.36	0.01
2	145	LMB	3	8.5	10	3.35	0.02
3	50	LMB	1	9.0	6	3.54	0.01
4	159	LMB	3	9.0	9	3.54	0.02
5	142	LMB	3	11.0	20	4.33	0.04
6	198	LMB	3	11.5	20	4.53	0.04
7	126	LMB	3	12.0	19	4.72	0.04
8	10	LMB	1	13.0	26	5.12	0.06
9	11	LMB	1	13.0	28	5.12	0.06
10	157	LMB	3	14.0	34	5.51	0.07
11	256	LMB	5	14.0	42	5.51	0.09
12	259	LMB	5	14.0	32	5.51	0.07
13	262	LMB	5	14.0	32	5.51	0.07
14	252	LMB	5	18.5	79	7.28	0.17
15	7	LMB	1	19.0	81	7.48	0.18
16	104	LMB	3	19.0	88	7.48	0.19
17	155	LMB	3	19.5	95	7.68	0.21
18	8	LMB	1	20.0	103	7.87	0.23
19	201	LMB	3	20.0	100	7.87	0.22
20	119	LMB	3	20.5	118	8.07	0.26
21	220	LMB	4	20.5	106	8.07	0.23
22	36	LMB	1	21.0	119	8.27	0.26
23	118	LMB	3	21.0	128	8.27	0.28
24	237	LMB	4	21.0	115	8.27	0.25
25	34	LMB	1	21.5	116	8.46	0.26
26	195	LMB	3	21.5	121	8.46	0.27
27	216	LMB	4	21.5	119	8.46	0.26
28	236	LMB	4	21.5	125	8.46	0.28
29	113	LMB	3	22.0	134	8.66	0.30
30	117	LMB	3	22.0	147	8.66	0.32
31	123	LMB	3	22.0	129	8.66	0.28
32	26	LMB	1	22.5	43	8.86	0.09
33	2	LMB	1	23.0	157	9.06	0.35
34	33	LMB	1	23.0	155	9.06	0.34
35	74	LMB	2	23.0	161	9.06	0.35
36	243	LMB	4	23.0	154	9.06	0.34
37	124	LMB	3	23.5	162	9.25	0.36
38	79	LMB	2	24.0	195	9.45	0.43
39	246	LMB	4	24.0	196	9.45	0.43
40	70	LMB	2	25.0	190	9.84	0.42

Key for ID: Largemouth Bass (LMB)

Fish Survey Data - Largemouth Bass

41	194	LMB	3	25.0	198	9.84	0.44
42	154	LMB	3	26.5	276	10.43	0.61
43	68	LMB	2	27.0	256	10.63	0.56
44	105	LMB	3	27.5	274	10.83	0.60
45	72	LMB	2	28.0	305	11.02	0.67
46	106	LMB	3	28.0	290	11.02	0.64
47	241	LMB	4	29.5	390	11.61	0.86
48	200	LMB	3	30.0	1030	11.81	2.27
49	234	LMB	4	36.0	645	14.17	1.42
50	242	LMB	4	36.0	631	14.17	1.39
51	4	LMB	1	37.0	736	14.57	1.62
52	191	LMB	3	38.0	865	14.96	1.91
53	213	LMB	4	38.5	815	15.16	1.80
54	248	LMB	5	40.0	800	15.75	1.76
55	5	LMB	1	41.0	944	16.14	2.08
56	102	LMB	2	47.5	1494	18.70	3.29
57	6	LMB	1	48.0	1920	18.90	4.23
58	190	LMB	3	48.0	1612	18.90	3.55
59	192	LMB	3	48.0	1635	18.90	3.60

Walker Lake **Prepared by Aqua Link, Inc.**
ALI Project No. 1577-32

Key for ID: Smallmouth Bass (SMB)

Fish Survey Data - Smallmouth Bass

10/17/2023

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	277	SMB	5	7.0	4	2.76	0.01
2	97	SMB	2	12.5	25	4.92	0.06
3	258	SMB	5	13.0	26	5.12	0.06
4	3	SMB	1	20.0	101	7.87	0.22
5	219	SMB	4	20.5	110	8.07	0.24
6	218	SMB	4	25.0	192	9.84	0.42
7	193	SMB	3	28.0	324	11.02	0.71

Walker Lake **Prepared by Aqua Link, Inc.**
ALI Project No. 1577-32

Fish Survey Data - Sunfish

Key for ID: Bluegill (BG)
Bluespotted Sunfish (BSS)
Pumpkinseed (PS)
Redbreast Sunfish (RBS)
Black Crappie (BC)
White Crappie (WC)

10/17/2023

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	101	BG	2	1.0	2	0.39	0.00
2	49	BG	1	3.5	1	1.38	0.00
3	151	BG	3	3.5	1	1.38	0.00
4	16	BG	1	4.0	1	1.57	0.00
5	18	BG	1	4.0	1	1.57	0.00
6	21	BG	1	4.0	1	1.57	0.00
7	28	BG	1	4.0	1	1.57	0.00
8	40	BG	1	4.0	1	1.57	0.00
9	164	BG	3	4.0	1	1.57	0.00
10	204	BG	3	4.0	1	1.57	0.00
11	186	BG	3	4.5	1	1.77	0.00
12	17	BG	1	5.0	2	1.97	0.00
13	60	BG	1	5.0	1	1.97	0.00
14	61	BG	1	5.0	1	1.97	0.00
15	62	BG	1	5.0	1	1.97	0.00
16	211	BG	3	5.0	3	1.97	0.01
17	14	BG	1	7.0	3	2.76	0.01
18	189	BG	3	7.0	6	2.76	0.01
19	208	BG	3	7.0	7	2.76	0.02
20	210	BG	3	7.0	6	2.76	0.01
21	247	BG	4	7.0	10	2.76	0.02
22	122	BG	3	8.0	7	3.15	0.02
23	178	BG	3	8.0	11	3.15	0.02
24	276	BG	5	8.0	7	3.15	0.02
25	15	BG	1	8.5	10	3.35	0.02
26	121	BG	3	8.5	11	3.35	0.02
27	177	BG	3	8.5	12	3.35	0.03
28	180	BG	3	8.5	12	3.35	0.03
29	184	BG	3	8.5	14	3.35	0.03
30	278	BG	5	8.5	11	3.35	0.02
31	29	BG	1	9.0	11	3.54	0.02
32	48	BG	1	9.0	12	3.54	0.03
33	55	BG	1	9.0	10	3.54	0.02
34	149	BG	3	9.0	16	3.54	0.04
35	183	BG	3	9.0	12	3.54	0.03
36	187	BG	3	9.0	13	3.54	0.03
37	206	BG	3	9.0	14	3.54	0.03
38	207	BG	3	9.0	15	3.54	0.03
39	53	BG	1	9.5	18	3.74	0.04
40	176	BG	3	9.5	18	3.74	0.04

Walker Lake **Prepared by Aqua Link, Inc.**
ALI Project No. 1577-32

Fish Survey Data - Sunfish

Key for ID: Bluegill (BG)
Bluespotted Sunfish (BSS)
Pumpkinseed (PS)
Redbreast Sunfish (RBS)
Black Crappie (BC)
White Crappie (WC)

10/17/2023

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
41	179	BG	3	9.5	15	3.74	0.03
42	181	BG	3	9.5	15	3.74	0.03
43	253	BG	5	9.5	14	3.74	0.03
44	103	BG	3	10.0	18	3.94	0.04
45	140	BG	3	10.0	19	3.94	0.04
46	175	BG	3	10.0	18	3.94	0.04
47	39	BG	1	10.5	12	4.13	0.03
48	51	BG	1	10.5	23	4.13	0.05
49	141	BG	3	10.5	23	4.13	0.05
50	182	BG	3	10.5	21	4.13	0.05
51	47	BG	1	11.0	24	4.33	0.05
52	137	BG	3	11.0	26	4.33	0.06
53	172	BG	3	11.0	26	4.33	0.06
54	174	BG	3	11.0	23	4.33	0.05
55	134	BG	3	12.0	32	4.72	0.07
56	244	BG	4	12.0	34	4.72	0.07
57	257	BG	5	13.5	51	5.31	0.11
58	136	BG	3	14.0	54	5.51	0.12
59	152	BG	3	14.0	54	5.51	0.12
60	158	BG	3	14.0	60	5.51	0.13
61	37	BG	1	14.5	57	5.71	0.13
62	108	BG	3	14.5	55	5.71	0.12
63	131	BG	3	14.5	55	5.71	0.12
64	227	BG	4	14.5	63	5.71	0.14
65	235	BG	4	14.5	52	5.71	0.11
66	76	BG	2	15.0	72	5.91	0.16
67	217	BG	4	15.0	57	5.91	0.13
68	93	BG	2	15.5	73	6.10	0.16
69	115	BG	3	15.5	56	6.10	0.12
70	128	BG	3	19.0	161	7.48	0.35
71	23	BG	1	20.0	160	7.87	0.35
72	147	PS	3	7.0	5	2.76	0.01
73	146	PS	3	7.5	10	2.95	0.02
74	196	PS	3	7.5	8	2.95	0.02
75	100	PS	2	8.0	8	3.15	0.02
76	148	PS	3	8.0	10	3.15	0.02
77	199	PS	3	8.0	11	3.15	0.02
78	203	PS	3	8.0	8	3.15	0.02
79	209	PS	3	8.0	13	3.15	0.03
80	275	PS	5	8.0	12	3.15	0.03

Walker Lake **Prepared by Aqua Link, Inc.**

ALI Project No. 1577-32

Fish Survey Data - Sunfish

Key for ID: Bluegill (BG)
Bluespotted Sunfish (BSS)
Pumpkinseed (PS)
Redbreast Sunfish (RBS)
Black Crappie (BC)
White Crappie (WC)

10/17/2023

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
81	150	PS	3	9.0	13	3.54	0.03
82	232	PS	4	9.0	11	3.54	0.02
83	233	PS	4	9.0	12	3.54	0.03
84	52	PS	1	9.5	15	3.74	0.03
85	185	PS	3	9.5	16	3.74	0.04
86	239	PS	4	9.5	12	3.74	0.03
87	266	PS	5	9.5	23	3.74	0.05
88	54	PS	1	10.0	21	3.94	0.05
89	143	PS	3	10.0	15	3.94	0.03
90	215	PS	4	10.0	17	3.94	0.04
91	226	PS	4	10.0	15	3.94	0.03
92	264	PS	5	10.0	20	3.94	0.04
93	99	PS	2	10.5	16	4.13	0.04
94	80	PS	2	12.0	25	4.72	0.06
95	38	PS	1	14.0	53	5.51	0.12
96	135	PS	3	14.0	54	5.51	0.12
97	245	PS	4	14.0	57	5.51	0.13
98	254	PS	5	14.0	55	5.51	0.12
99	273	PS	5	14.0	50	5.51	0.11
100	261	PS	5	14.5	65	5.71	0.14
101	42	PS	1	15.0	60	5.91	0.13
102	82	PS	2	15.0	66	5.91	0.15
103	263	PS	5	15.0	73	5.91	0.16
104	86	PS	2	15.5	74	6.10	0.16
105	89	PS	2	15.5	70	6.10	0.15
106	25	PS	1	16.0	82	6.30	0.18
107	91	PS	2	16.0	81	6.30	0.18
108	167	PS	3	16.0	79	6.30	0.17
109	205	PS	3	16.0	76	6.30	0.17
110	270	PS	5	16.0	87	6.30	0.19

Walker Lake **Prepared by Aqua Link, Inc.**
ALI Project No. 1577-32

Key for ID: Yellow Perch (YP)

Fish Survey Data - Yellow Perch

10/17/2023

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	22	YP	1	5.0	1	1.97	0.00
2	27	YP	1	5.0	1	1.97	0.00
3	58	YP	1	6.0	5	2.36	0.01
4	63	YP	1	6.0	4	2.36	0.01
5	269	YP	5	6.0	3	2.36	0.01
6	19	YP	1	6.5	3	2.56	0.01
7	20	YP	1	7.0	4	2.76	0.01
8	32	YP	1	7.0	4	2.76	0.01
9	57	YP	1	7.0	6	2.76	0.01
10	67	YP	1	7.0	4	2.76	0.01
11	279	YP	5	7.0	5	2.76	0.01
12	56	YP	1	7.5	7	2.95	0.02
13	59	YP	1	7.5	6	2.95	0.01
14	272	YP	5	7.5	5	2.95	0.01
15	98	YP	2	8.0	5	3.15	0.01
16	144	YP	3	13.0	21	5.12	0.05
17	77	YP	2	14.0	28	5.51	0.06
18	197	YP	3	14.5	36	5.71	0.08
19	116	YP	3	15.0	40	5.91	0.09
20	165	YP	3	15.0	40	5.91	0.09
21	170	YP	3	15.0	36	5.91	0.08
22	171	YP	3	15.0	37	5.91	0.08
23	96	YP	2	15.5	35	6.10	0.08
24	114	YP	3	15.5	44	6.10	0.10
25	133	YP	3	15.5	38	6.10	0.08
26	156	YP	3	15.5	34	6.10	0.07
27	163	YP	3	15.5	43	6.10	0.09
28	173	YP	3	15.5	35	6.10	0.08
29	271	YP	5	15.5	37	6.10	0.08
30	13	YP	1	16.0	54	6.30	0.12
31	24	YP	1	16.0	45	6.30	0.10
32	31	YP	1	16.0	43	6.30	0.09
33	41	YP	1	16.0	41	6.30	0.09
34	43	YP	1	16.0	46	6.30	0.10
35	44	YP	1	16.0	42	6.30	0.09
36	90	YP	2	16.0	39	6.30	0.09
37	95	YP	2	16.0	46	6.30	0.10
38	127	YP	3	16.0	41	6.30	0.09
39	132	YP	3	16.0	50	6.30	0.11
40	139	YP	3	16.0	39	6.30	0.09

Walker Lake **Prepared by Aqua Link, Inc.**
ALI Project No. 1577-32

Key for ID: Yellow Perch (YP)

Fish Survey Data - Yellow Perch

10/17/2023

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
41	46	YP	1	16.5	45	6.50	0.10
42	109	YP	3	16.5	46	6.50	0.10
43	130	YP	3	16.5	46	6.50	0.10
44	138	YP	3	16.5	40	6.50	0.09
45	153	YP	3	16.5	43	6.50	0.09
46	161	YP	3	16.5	52	6.50	0.11
47	222	YP	4	16.5	50	6.50	0.11
48	225	YP	4	16.5	44	6.50	0.10
49	230	YP	4	16.5	50	6.50	0.11
50	30	YP	1	17.0	46	6.69	0.10
51	78	YP	2	17.0	57	6.69	0.13
52	83	YP	2	17.0	50	6.69	0.11
53	120	YP	3	17.0	66	6.69	0.15
54	160	YP	3	17.0	52	6.69	0.11
55	223	YP	4	17.0	54	6.69	0.12
56	255	YP	5	17.0	52	6.69	0.11
57	45	YP	1	17.5	56	6.89	0.12
58	87	YP	2	17.5	55	6.89	0.12
59	88	YP	2	17.5	51	6.89	0.11
60	92	YP	2	17.5	59	6.89	0.13
61	168	YP	3	17.5	52	6.89	0.11
62	224	YP	4	17.5	56	6.89	0.12
63	73	YP	2	18.0	55	7.09	0.12
64	110	YP	3	18.0	59	7.09	0.13
65	166	YP	3	18.0	54	7.09	0.12
66	169	YP	3	18.0	57	7.09	0.13
67	221	YP	4	18.0	59	7.09	0.13
68	228	YP	4	18.0	52	7.09	0.11
69	231	YP	4	18.0	61	7.09	0.13
70	238	YP	4	18.0	60	7.09	0.13
71	249	YP	5	18.0	58	7.09	0.13
72	267	YP	5	18.0	65	7.09	0.14
73	268	YP	5	18.0	67	7.09	0.15
74	65	YP	1	18.5	61	7.28	0.13
75	69	YP	2	18.5	65	7.28	0.14
76	81	YP	2	18.5	61	7.28	0.13
77	84	YP	2	18.5	56	7.28	0.12
78	85	YP	2	18.5	65	7.28	0.14
79	94	YP	2	18.5	58	7.28	0.13
80	129	YP	3	18.5	63	7.28	0.14

Walker Lake **Prepared by Aqua Link, Inc.**
ALI Project No. 1577-32

Key for ID: Yellow Perch (YP)

Fish Survey Data - Yellow Perch

10/17/2023

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
81	66	YP	1	19.0	60	7.48	0.13
82	75	YP	2	19.0	65	7.48	0.14
83	229	YP	4	19.0	78	7.48	0.17
84	260	YP	5	19.0	79	7.48	0.17
85	125	YP	3	19.5	75	7.68	0.17
86	162	YP	3	19.5	88	7.68	0.19
87	240	YP	4	19.5	74	7.68	0.16
88	12	YP	1	20.0	87	7.87	0.19
89	35	YP	1	20.0	88	7.87	0.19
90	112	YP	3	20.5	85	8.07	0.19
91	251	YP	5	21.0	90	8.27	0.20
92	111	YP	3	21.5	110	8.46	0.24
93	250	YP	5	22.5	122	8.86	0.27
94	265	YP	5	22.5	128	8.86	0.28
95	9	YP	1	28.0	236	11.02	0.52
96	1	YP	1	29.0	289	11.42	0.64
97	71	YP	2	29.0	271	11.42	0.60

Walker Lake **Prepared by Aqua Link, Inc.**
ALI Project No. 1577-32

Key for ID: Chain Pickerel (CPK)
Grass Pickerel (GPK)

Fish Survey Data - Pickerel

10/17/2023

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	214	CPK	4	15.5	17	6.10	0.04
2	280	CPK	5	19.0	40	7.48	0.09
3	212	CPK	4	40.0	400	15.75	0.88

Walker Lake
ALI Project No. 1577-32

Key for ID: Brown Bullhead (BBH)

Fish Survey Data - Catfish

10/17/2023

Count	ID #	Fish ID	Run	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	64	BBH	1	23.0	145	9.06	0.32
2	274	BBH	5	23.0	172	9.06	0.38
3	202	BBH	3	27.0	288	10.63	0.63
4	107	BBH	3	30.0	412	11.81	0.91

Walker Lake **Prepared by Aqua Link, Inc.**
ALI Project No. 1577-32

Fish Survey Data - PSD

Walker Lake
PSD (Proportional Stock Density)

$$PSD = \frac{\text{Number of Fish > or = Quality Length}}{\text{Number of Fish > or = Stock Length}} \times 100$$

10/17/2023
PSD 2023

Walker Lake Black Bass PSD

$$\frac{11}{43} \times 100 = 26$$

PSD for Bass
Quality Length > or = 12"
Stock Length > or = 8"

Black Bass	Total per length (inches)
0-2"	0
2-4"	5
4-6"	11
6-8"	7
8-10"	24
10-12"	8
12-14"	0
14-16"	6
16-18"	1
18-20"	4
20-22"	0
total	66

Walker Lake Sunfish PSD

$$\frac{11}{86} \times 100 = 13$$

PSD for Sunfish
Quality Length > or = 6"
Stock Length > or = 3"

Sunfish	Total per length (inches)
0-2"	16
2-3"	8
3-4"	43
4-5"	12
5-6"	20
6-8"	11
8-10"	0
10-12"	0
12-14"	0
total	110

Walker Lake Yellow Perch PSD

$$\frac{8}{82} \times 100 = 10$$

PSD for Yellow Perch
Quality Length > or = 8"
Stock Length > or = 5"

Yellow Perch	Total per length (inches)
0-2"	2
2-3"	12
3-4"	1
4-5"	0
5-6"	7
6-8"	67
8-10"	5
10-12"	3
12-14"	0
total	97

APPENDIX B

2023 Collected Fish Species Photo Gallery

Walker Lake Fish Species

Bluegill *(Lepomis macrochirus)*

Pumpkinseed *(Lepomis gibbosus)*

Largemouth Bass *(Micropterus salmoides)*

Smallmouth Bass *(Micropterus dolomieu)*

Yellow Perch (*Perca flavescens*)

Chain Pickerel (*Esox niger*)

Brown Bullhead (*Ameiurus nebulosus*)