

FINAL REPORT

Walker Lake 2022 Fishery Survey



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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 2022. This is the sixth year that Aqua Link performed a fishery assessment for Walker Lake.

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.

Historically, low to moderate levels of planktonic algae (algal blooms) and mats of filamentous algae have been 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).

Aqua Link monitors the water quality of Walker Lake annually (2016-2022) for those parameters associated with lake eutrophication and trophic state. The lake water quality monitoring program and the 2022 lake water quality data are fully discussed in the *Walker Lake 2022 Baseline Water Quality Monitoring Program Final Report* (Aqua Link 2023).

In 2022, Walker Lake is best described as a moderately shallow, boarder-line highly mesotrophic to slightly eutrophic lake, that thermally stratifies during the summer months. Lakes classified as boarder-line highly mesotrophic to slightly eutrophic typically contain moderately high amounts of nutrients, moderate water clarity for most of the year, and elevated 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 2022 study period.

The Association also retained Aqua Link to conduct aquatic macrophyte (aquatic vascular plant) surveys in 2017-2022. Based on the May 2022 macrophyte survey, the aquatic macrophyte community in Walker Lake continues to be diverse and healthy with the exception of the invasive plant, variable leaf milfoil, which has spread throughout the majority of the perimeter and beyond. Variable leaf milfoil 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 milfoil 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 2022 treatment season with the application of herbicides.

In 2022, Aqua Link performed a fishery survey (assessment) of Walker Lake which is the subject of this report. The fish survey represents a one-day comprehensive assessment of the lake's fishery using electrofishing equipment. Fishery data collected in 2022 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.



Figure 1.1 Smallmouth Bass Collected During the Fishery Survey

2. Methods & Observations

Aqua Link visited Walker Lake on October 10, 2022 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 both species of 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 16-foot Carolina Skiff 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 1061 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 2022

Overall, Aqua Link generally performs fishery surveys in either the early spring or 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 and water extends to about 21.5 feet deep. 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, 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 milfoil, 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, fell 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 2022 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 these data will not accurately predict the total number of fish in Walker Lake, these data do in fact provide all parameters required to assess the fishery as a whole.

4.1. Species Composition & Catch Rates

During the 2022 survey, a total of 346 fish were captured in Walker Lake (Table 4.1). The fish species captured were alewife (*Alosa pseudoharengus*), black crappie (*Pomoxis nigromaculatus*), bluegill (*Lepomis macrochirus*), brown bullhead (*Ameiurus nebulosus*), chain pickerel (*Esox niger*), golden shiner (*Notemigonus crysoleucas*), 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 bluegill followed by yellow perch (Table 4.1 and Figure 4.1). The most prevalent predatory species was largemouth bass with a total of 29 specimens ranging from 2 to 20 inches. The next most prevalent predator species was

smallmouth bass with a total of 9 specimens between 3 and 10.5 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, one chain pickerel was also captured at approximately 10 inches, but five other pickerel were observed, all of which were of larger size.

Table 4.1 Summary of Captured Fish & Catch Rates in Walker Lake in 2022

<i>Fish Species</i>	<i>Walker Lake</i>	
	<i>No.</i>	<i>Catch Rate (No. per hr)</i>
Alewife	13	7.8/hr
Black Crappie	4	2.4/hr
Bluegill	171	102.6/hr
Brown Bullhead	2	1.2/hr
Chain Pickerel	1	0.6/hr
Golden Shiner	7	4.2/hr
Largemouth Bass	29	17.4/hr
Pumpkinseed	36	21.6/hr
Smallmouth Bass	9	5.4/hr
Yellow Perch	74	44.4/hr
Total	346	-----

Overall, bluegill, one of the favorite prey of largemouth bass, were the most prevalent species captured (Table 4.1 and Figure 4.2). Another primary prey species captured in Walker Lake were yellow perch, which were abundant. Moderate numbers of golden shiners and alewife, which are a common prey species for large and smallmouth bass were found in small schools on 3 of the 5 runs. It is likely there are more alewife and golden shiners throughout.

Lastly, the catch rates for all fish species captured and the species composition are presented in Table 4.1 and Figure 4.2. Overall, the calculated catch rates for all fish species are moderate to high for bluegill, moderate for yellow perch, and low to moderate for other fish species.

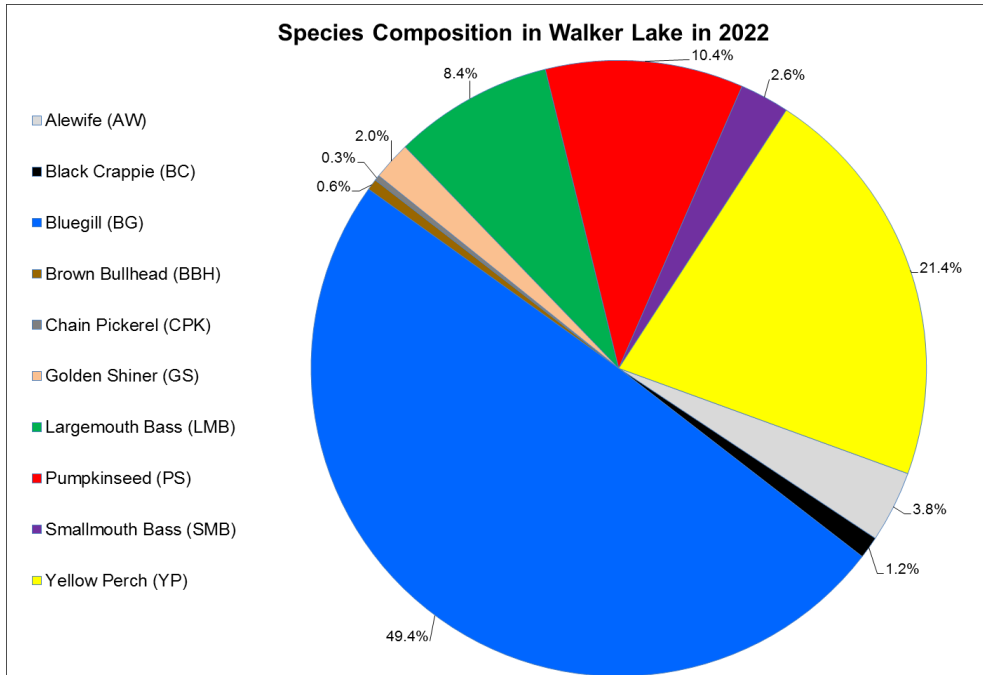


Figure 4.1 Species Composition in Walker Lake in 2022

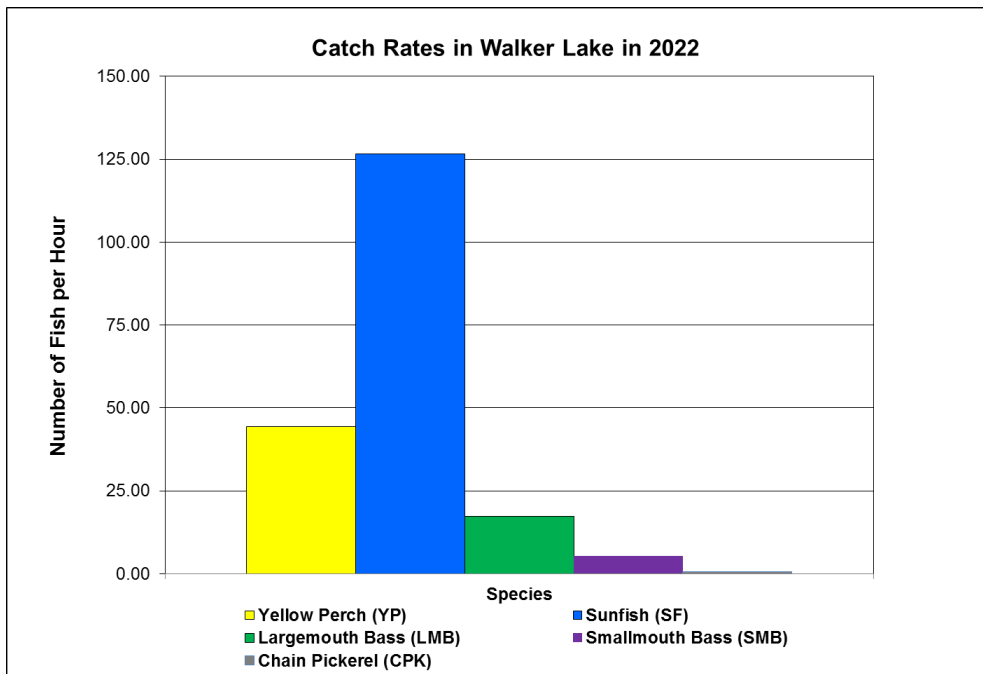


Figure 4.2 Catch Rates in Walker Lake in 2022

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). A comparison of these data presented in Figures 4.3 and 4.4. Overall, the black bass collected from Walker Lake are considered average when compared to average length and weight data reported by the PFBC (Figures 4.3 and 4.4.)

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 twenty-nine largemouth bass were captured in the 2 to 21-inch range with the largest specimen weighing nearly 4 pounds (Figure 4.3). It should be noted that 2 larger fish (18⁺ inches in length) were observed but avoided being captured by our field team.

Bluegill, often the favorite prey of largemouth bass, were captured and observed in greater quantity in comparison to all previous surveys performed at Walker Lake. Yellow perch, another prey of bass, were the second highest captured species behind bluegill. Overall, a substantial amount of preferred bait fish including yellow perch, golden shiner, alewife, pumpkinseed, black crappie, and bluegill are available to sustain a healthy and prolific largemouth bass fishery in Walker Lake.

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 nine smallmouth bass were captured during the 2022 fishery survey. These nine specimens ranged from 3 to 10.5 inches, with the largest smallmouth bass weighing one half pound. The 2022 survey provided the second highest number of smallmouth bass with 9 individuals compared to 10 individuals captured in 2016.

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 2022 fisheries survey data collected, we found a high amount of reproductive success with high numbers of bait fish such as bluegill, but limited evidence of recent reproductive success with the yellow perch population. There are, however, plentiful forage fish to sustain a healthy smallmouth bass fishery in Walker Lake.

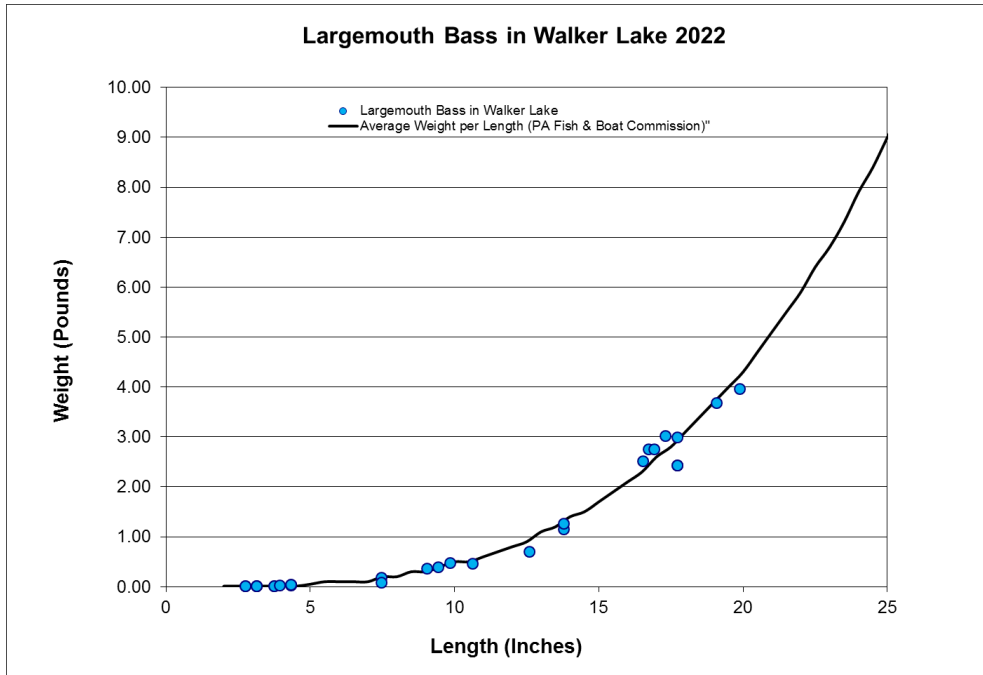


Figure 4.3 Largemouth Bass Length & Weight Data for Walker Lake in 2022

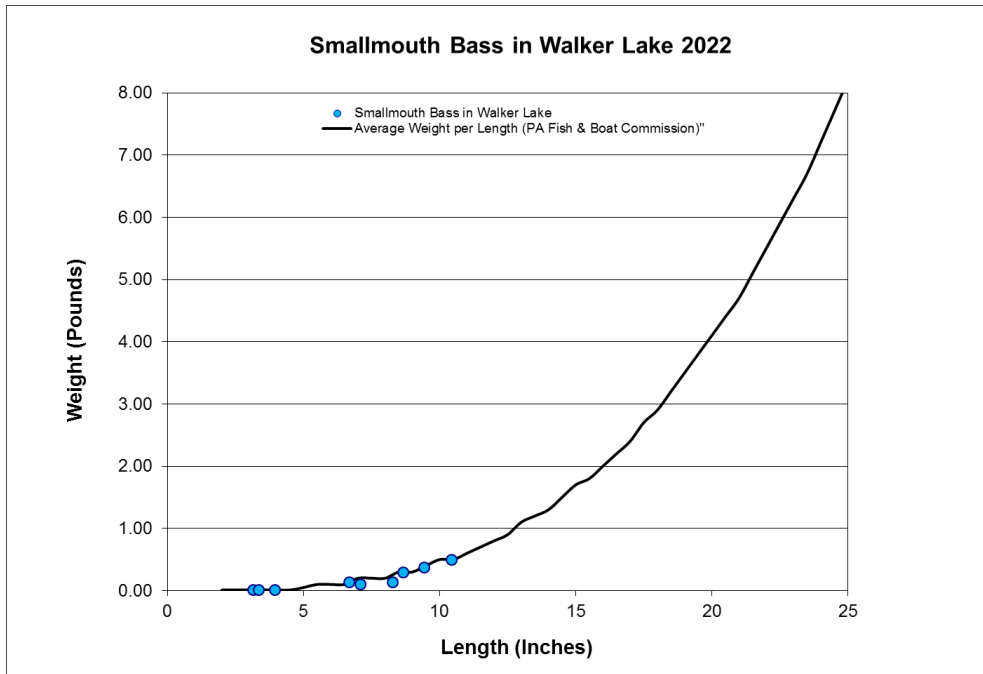


Figure 4.4 Smallmouth Bass Length & Weight Data for Walker Lake in 2022

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 4.9.

The size distribution of largemouth bass in Walker Lake is shown in Figure 4.5. A total of twenty-nine largemouth bass were collected and the majority of these were found in the 3-to-6-inch and 15-to-18-inch size class. No bass were collected beyond 20 inches and twelve largemouth bass collected during the survey were larger than 12 inches (12 to 20 inches). The large quantity of individuals captured between 3 and 6 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 in the past 2022 season.

The size distribution of smallmouth bass in Walker Lake is shown in Figure 4.6. During the 2022 fisheries survey, a total of nine smallmouth bass were captured ranging from 3 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 (black crappie, bluegill, and pumpkinseed) in Walker Lake is shown in Figure 4.7. A total of 211 combined specimens were collected where bluegill was most dominant with 171 individuals captured. This is the second highest number of sunfish individuals captured behind 2016, when 278 individuals were captured. Most sunfish were sampled in the 0 to 2 and 4 to 6-inch size classes. 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, often due to predation.

The size distribution of yellow perch in Walker Lake is illustrated in Figure 4.8. A total of 74 yellow perch were collected during this study. Yellow perch were the second most abundant fish species captured in 2022. Most yellow perch were between 4 to 8-inches. The largest individual sampled was just over 11 inches. The number of individuals sampled in each size class usually decreases with increasing size class.

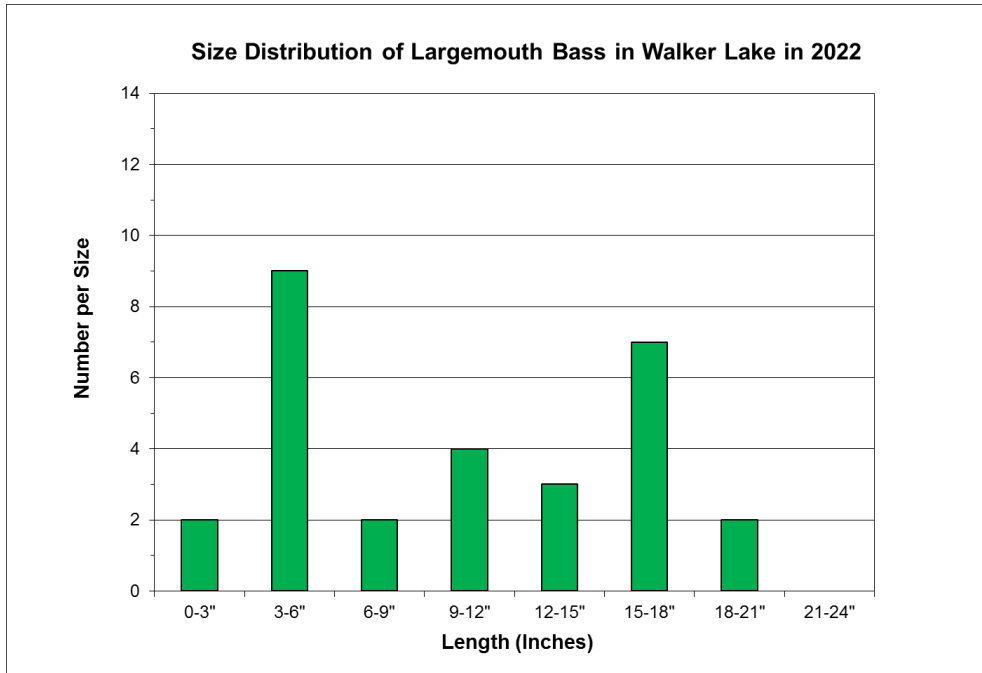


Figure 4.5 Size Distributions of Largemouth Bass in Walker Lake in 2022

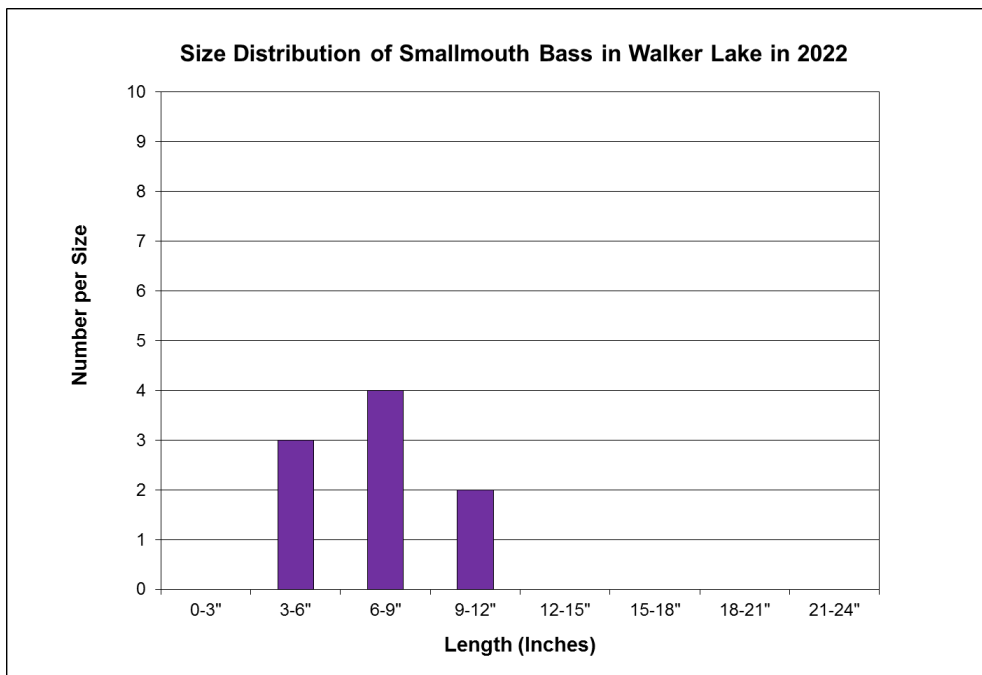


Figure 4.6 Size Distributions of Smallmouth Bass in Walker Lake in 2022

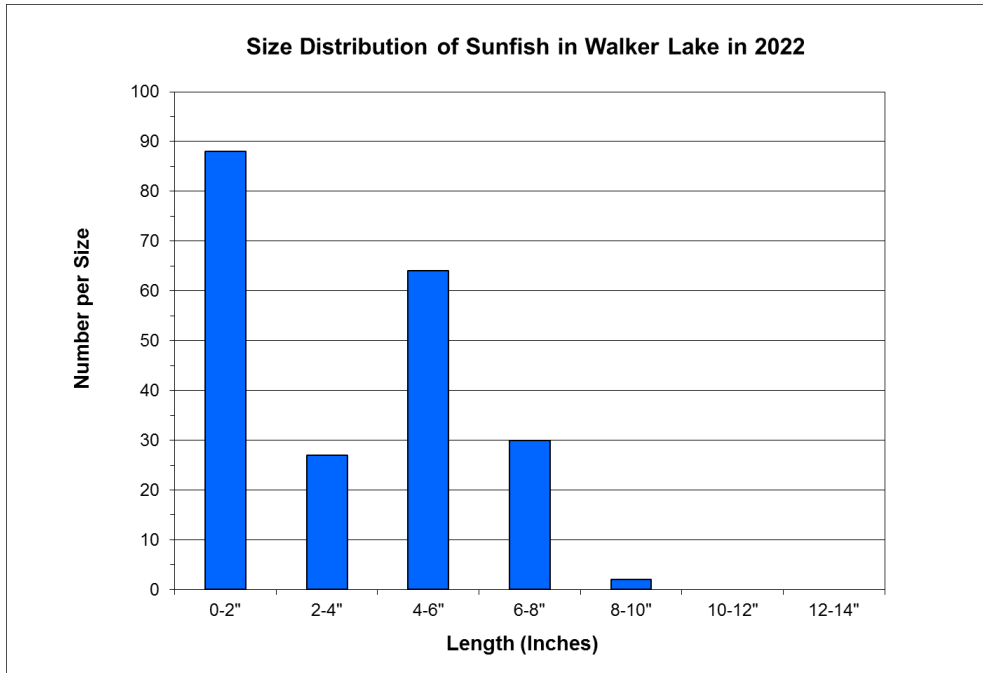


Figure 4.7 Size Distributions of Sunfish in Walker Lake in 2022

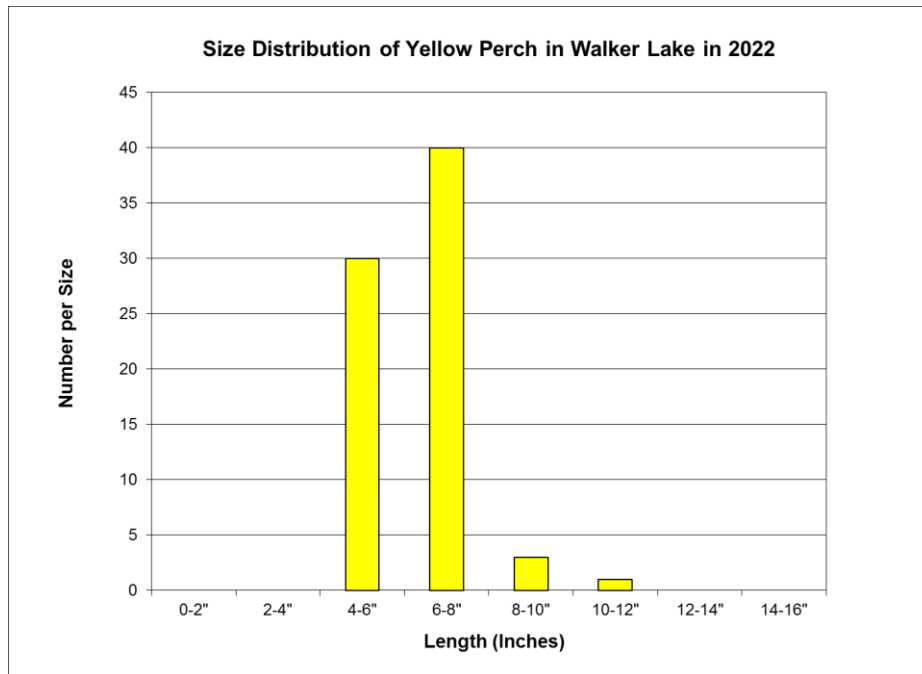


Figure 4.8 Size Distributions of Yellow Perch in Walker Lake in 2022

Due to the overall number of individuals captured and lack of fish captured between 0 to 4 inches may indicate a disruption in reproduction within the past 2021 to 2022 seasons. It is possible, however, that 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 lack of these smaller fish may be related to predation by black bass and chain pickerel. There could also be some environmental stressor that may have interrupted yellow perch breeding in the past 2021-2022 seasons. The large number of perch continuously found through the years, generally indicates past reproductive success and a healthy habitat.

The size distribution of chain pickerel in Walker Lake is presented in Figure 4.9. One individual was sampled, slightly larger than 10 inches. It is noted that five specimens were missed during sampling. Four of these pickerel were estimated between 12 to 18 inches and one individual was approximately 25 inches in length. 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.

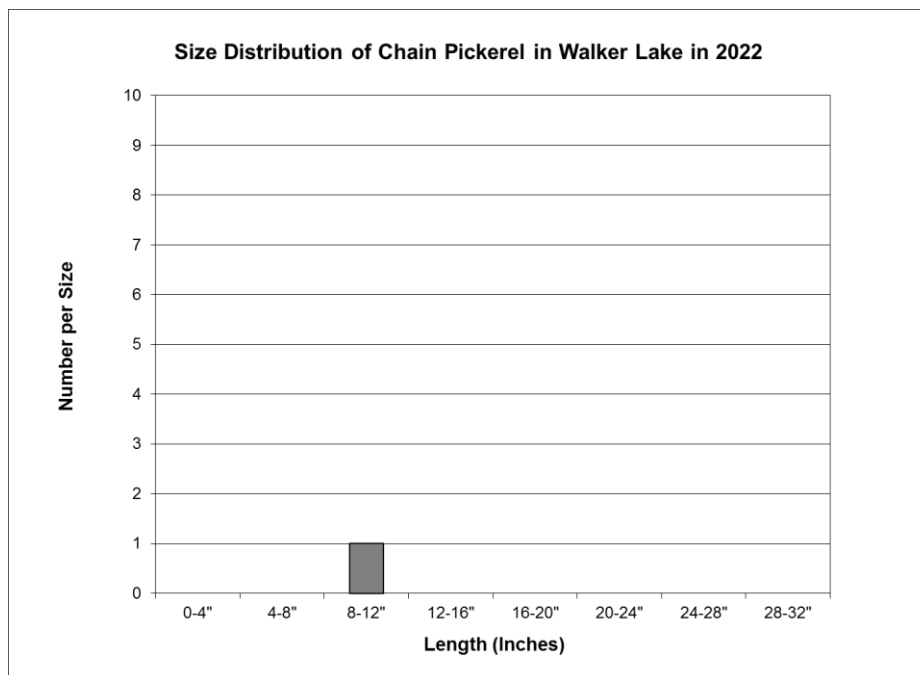


Figure 4.9 Size Distributions of Chain Pickerel in Walker Lake in 2022

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 2022, the observed primary predatory fish species were largemouth bass and smallmouth bass. The primary prey species consisted of sunfish (black crappie, bluegill, and pumpkinseed), yellow perch, alewife, and golden shiner.

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:

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

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 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; black crappie, 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 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

The proportional stock density for both black bass and sunfish in Walker Lake is shown in Figure 4.10. The PSD value of 28 for sunfish suggests that sunfish were slightly crowded in Walker Lake and limited numbers of quality sunfish to be caught larger or equal to the quality length measurement of over 6 inches. Out of the 211 total sunfish captured during the 2022 survey, more than half of sunfish, 116 individuals were found larger than stock length, but only 32 individuals were greater than or equal to quality length.

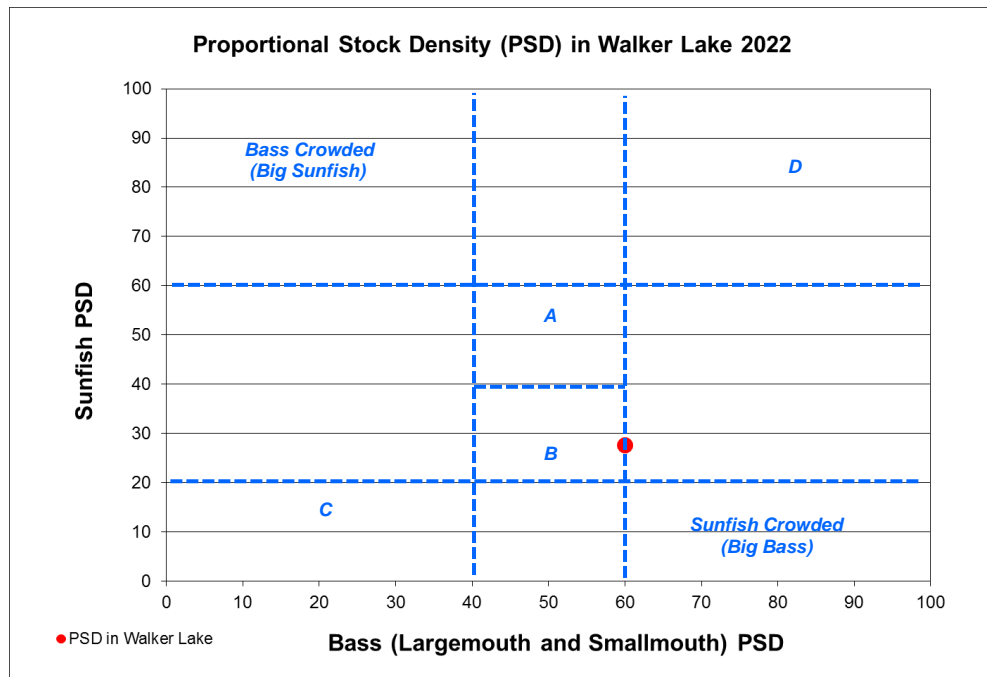


Figure 4.10 Proportional Stock Densities in Walker Lake in 2022

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 2022 study was 60. This PSD suggests there is a 60 percent chance when a black bass is caught, this bass will be 12 inches or greater. Out of the 38 total black bass captured during the 2022 survey, more than half of black bass, 20 individuals were found larger than stock length (8 inches or greater), and 12 individuals were greater than or equal to quality length (12 inches or greater).

The PSD for sunfish ((black crappie, bluegill, and pumpkinseed) for the 2022 study was 28. This PSD suggests there is only a 28 percent chance that when a sunfish is caught, this fish will be 6 inches or greater. Out of the 211 total sunfish captured during the 2022 survey, 116 individuals were found larger than stock length (3 inches or greater) and only 32 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 20 bass were larger than the stock length, for this study, N=20. The value for sunfish for this study was N=116, since 116 sunfish were larger than the stock length.

5. Fishery Data Trend Analysis

Fisheries data over time (2016 – 2017 & 2019 – 2022) 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 (Figure 5.1). A further decrease in size was observed in 2021. The 2022 PSD increased again for black bass when compared to 2021. The 2022 PSD suggests that the black bass population majority was represented by individuals of moderate to large size. As noted previously, 38 black bass (smallmouth and largemouth bass combined) were captured in 2022. Of these, twenty bass were greater than the stock length (equal to or greater than 8 inches) and twelve 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 (Figure 5.2). Increases in size were observed in 2021 and remained consistent to the PSD value observed in 2022. Overall, the 2022 PSD value for sunfish indicates that the sunfish population (black crappie, bluegill, and pumpkinseed) in the

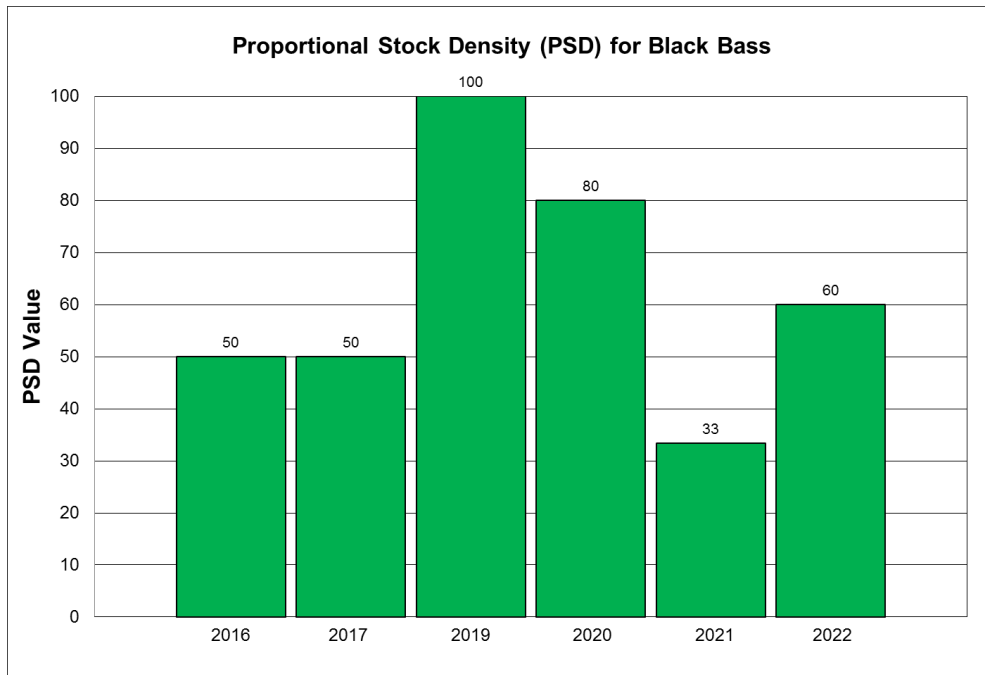


Figure 5.1 Proportional Stock Densities for Black Bass from 2016 to 2022

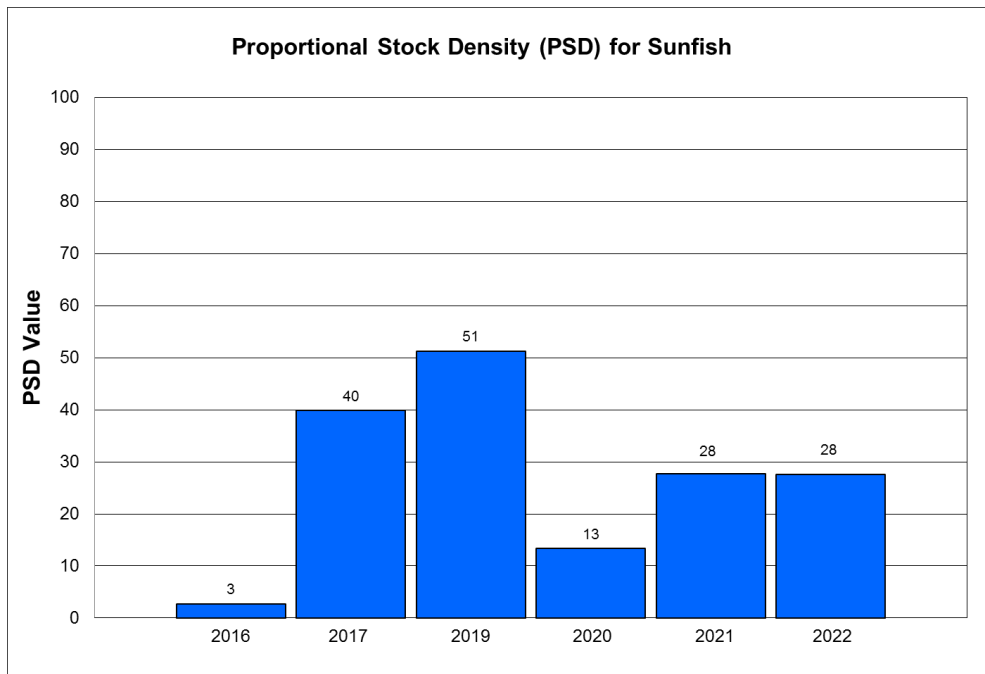


Figure 5.2 Proportional Stock Densities for Sunfish from 2016 to 2022

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). Sunfish, on the other hand, have larger sampling sizes in Walker Lake. Therefore, the PSD values for sunfish are more precise.

The number of black bass captured 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 and N = 20 in 2022.

6. Conclusions and Recommendations

The 2022 survey indicated that Walker Lake contained a diverse fishery represented by ten different species. The fish species captured during this fishery survey were: alewife (*Alosa pseudoharengus*), black crappie (*Pomoxis nigromaculatus*), bluegill (*Lepomis macrochirus*), brown bullhead (*Ameiurus nebulosus*), chain pickerel (*Esox niger*), golden shiner (*Notemigonus crysoleucas*), largemouth bass (*Micropterus salmoides*), pumpkinseed (*Lepomis gibbosus*), smallmouth bass (*Micropterus dolomieu*), and yellow perch (*Perca flavescens*).

In the 2022 fishery study, the most dominant fish species were sunfish (combination of black crappie, 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 ranged from mid-sized (8 inch) to large (up to 20 inches). A moderate number of black bass 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 moderate to high numbers of sunfish, primarily bluegill, in the 3 to 6-inch range, and fewer individuals over 6 inches. Anglers targeting black bass would likely catch few bass and some fish may be greater than 12 inches in size.

The largemouth bass population in 2022 was represented by size classes ranging from 2⁺ inches (young of the year, YOY) to 20 inches. The number of fish captured varied between different size classes with the 3-to-6-inch size class had the greatest number of individuals. This indicates a healthy and reproductive largemouth bass fishery in Walker Lake. In addition, the captured largemouth bass were considered average when compared to the average length and weight data presented by the PA Fish and Boat Commission (PFBC).

Smallmouth bass were found in Walker Lake during the 2022 fisheries assessment. Nine individuals were collected, ranging from 3 to 10.5 inches. The nine smallmouth bass collected were considered average 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. It is worthy to note that schools of fish were observed on a fish finder at greater depths. These fish were most likely smallmouth bass, yellow perch, and possibly crappie.

Based upon our experience and proportional stock density, we would currently expect to see a higher number of black bass greater than 8 inches caught by anglers than previous years. Also, there were more bass captured less than 8 inches during this study compared to previous study events. This may be due to a smaller abundance of pickerel either outcompeting or preying upon the smaller bass. The bass population may have improved slightly in part due to the substantial availability of prey (e.g. black crappie, bluegill, pumpkinseed, golden shiner, alewife, and yellow perch) to sustain a quality black bass population in the lake. Overall, total numbers of bass remain low to moderate when compared to other lakes in the region. Although more mid-sized to large bass were found in this study compared to previous years, the abundance of bass continues to be lower than expected. One reason fewer large black bass were captured could have been due to over harvesting of legal sized bass and under sampling 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 (black crappie, bluegill, and pumpkinseed) were captured in abundance, with 211 specimens collected between the three species. Of these specimens, only 2 sunfish exceeded 8 inches. The majority of the individuals were in the 0-to-2-inch and 4-to-6 inch range. Bluegill were the most collected sunfish species with 171 individuals. Overall, the sunfish population in Walker Lake was found to be successfully reproducing. The proportional stock density indicates that few sunfish collected were considered to be of quality length when compared to other sunfish reaching maturity (stock length). Furthermore, many of the sunfish collected (95 out of 211 individuals) were below stock length. Typically, another sunfish species, red breast sunfish, is found in Walker Lake. During 2022 these were not captured, but it is highly likely they still inhabit the lake.

Yellow perch were the second most abundant species collected in Walker Lake in 2022. Overall, 74 individuals were collected and the majority of the perch were in the 4 to 8-inch size class. This was also true in 2020 and 2021. 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 2022. However, the individuals in the 0-to-4-inch classes were lacking. 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.

Unlike 2021, when 14 chain pickerel were captured, chain pickerel were found in lower numbers in 2022 with a total of 1 individual netted. However, five pickerel were missed while sampling in 2022. Four of these pickerel were estimated between 12 to 18 inches and one individual was approximately 25 inches in length. 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. In previous surveys prior to 2021, chain pickerel were not found in great numbers.

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 2023. 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 250 largemouth bass in the 5-6-inch size range should be stocked in the lake in 2023. If smallmouth bass are not stocked, then the largemouth stocking should be increased to 350 fish.
6. Approximately 100 black crappie should be stocked in 2023. 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 100 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 2022 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 2023, 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 2023 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 2023. 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 2022 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 2022* 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

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APPENDIX A

2022 Lake Fishery Data

Walker Lake
ALI Project No. 1577-28

Prepared by Aqua Link, Inc.

Fish Survey Data - Species Found

10/10/2022

Species	%	Total	Catch Rate per Hour
Alewife (AW)	3.8	13	7.80
Black Crappie (BC)	1.2	4	2.40
Bluegill (BG)	49.4	171	102.60
Brown Bullhead (BBH)	0.6	2	1.20
Chain Pickerel (CPK)	0.3	1	0.60
Golden Shiner (GS)	2.0	7	4.20
Largemouth Bass (LMB)	8.4	29	17.40
Pumpkinseed (PS)	10.4	36	21.60
Smallmouth Bass (SMB)	2.6	9	5.40
Yellow Perch (YP)	21.4	74	44.40
Total	100.0	346	

Walker Lake
ALI Project No. 1577-28

Prepared by Aqua Link, Inc.

Fish Survey Data
Run #1 - 3
Time: 20 Minutes for each run

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

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	1	LMB	1	43.0	1250	16.93	2.76
2	2	LMB	1	50.5	1795	19.88	3.96
3	3	LMB	1	35.0	520	13.78	1.15
4	4	LMB	1	35.0	575	13.78	1.27
5	5	LMB	1	32.0	320	12.60	0.71
6	6	SMB	1	24.0	167	9.45	0.37
7	7	SMB	1	17.0	60	6.69	0.13
8	8	YP	1	15.0	21	5.91	0.05
9	9	YP	1	28.0	216	11.02	0.48
10	10	GS	1	13.0	28	5.12	0.06
11	11	YP	1	24.0	85	9.45	0.19
12	12	GS	1	14.0	26	5.51	0.06
13	13	YP	1	19.0	30	7.48	0.07
14	14	YP	1	16.5	40	6.50	0.09
15	15	YP	1	16.5	33	6.50	0.07
16	16	GS	1	12.0	16	4.72	0.04
17	17	YP	1	16.0	35	6.30	0.08
18	18	YP	1	17.0	50	6.69	0.11
19	19	GS	1	7.0	2	2.76	0.00
20	20	YP	1	16.0	44	6.30	0.10
21	21	YP	1	16.5	43	6.50	0.09
22	22	YP	1	16.0	34	6.30	0.07
23	23	YP	1	15.5	34	6.10	0.07
24	24	GS	1	8.0	3	3.15	0.01
25	25	BC	1	17.5	67	6.89	0.15
26	26	PS	1	18.5	141	7.28	0.31
27	27	BG	1	18.0	84	7.09	0.19
28	28	PS	1	15.0	63	5.91	0.14
29	29	BG	1	9.0	12	3.54	0.03
30	30	BG	1	17.0	95	6.69	0.21
31	31	BC	1	13.0	31	5.12	0.07
32	32	BG	1	14.5	51	5.71	0.11
33	33	BG	1	3.5	2	1.38	0.00
34	34	BG	1	19.0	143	7.48	0.32
35	35	BG	1	3.5	2	1.38	0.00
36	36	BG	1	10.0	20	3.94	0.04
37	37	PS	1	14.0	45	5.51	0.10
38	38	BG	1	13.0	37	5.12	0.08
39	39	BG	1	12.0	32	4.72	0.07
40	40	BG	1	14.0	50	5.51	0.11
41	41	BG	1	14.0	47	5.51	0.10
42	42	BG	1	4.0	3	1.57	0.01
43	43	PS	1	10.5	16	4.13	0.04
44	44	BG	1	18.5	113	7.28	0.25
45	45	BG	1	5.0	3	1.97	0.01
46	46	BG	1	4.5	2	1.77	0.00
47	47	BG	1	4.5	2	1.77	0.00
48	48	BG	1	4.0	2	1.57	0.00
49	49	BG	1	4.0	2	1.57	0.00
50	50	BG	1	3.5	2	1.38	0.00

Walker Lake
ALI Project No. 1577-28

Prepared by Aqua Link, Inc.

Fish Survey Data
Run #1 - 3
Time: 20 Minutes for each run

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

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
51	51	PS	1	9.0	13	3.54	0.03
52	52	PS	1	10.0	16	3.94	0.04
53	53	BG	1	4.0	2	1.57	0.00
54	54	BC	1	11.5	23	4.53	0.05
55	55	BG	1	5.0	2	1.97	0.00
56	56	BG	1	4.0	1	1.57	0.00
57	57	BG	1	4.5	2	1.77	0.00
58	58	BG	1	5.5	2	2.17	0.00
59	59	BG	1	3.5	1	1.38	0.00
60	60	BG	1	4.0	1	1.57	0.00
61	61	BG	1	4.0	2	1.57	0.00
62	62	BG	1	13.0	37	5.12	0.08
63	63	BG	1	15.0	53	5.91	0.12
64	64	BG	1	15.0	66	5.91	0.15
65	65	BG	1	3.0	1	1.18	0.00
66	66	BG	1	5.0	2	1.97	0.00
67	67	BG	1	3.0	1	1.18	0.00
68	68	BG	1	4.0	1	1.57	0.00
69	69	BG	1	4.0	2	1.57	0.00
70	70	BG	1	4.0	2	1.57	0.00
71	71	BG	1	4.0	2	1.57	0.00
72	72	BG	1	3.0	1	1.18	0.00
73	73	BG	1	3.0	1	1.18	0.00
74	74	BG	1	3.0	1	1.18	0.00
75	75	YP	1	24.5	134	9.65	0.30
76	76	BG	1	15.0	66	5.91	0.15
77	77	BG	1	3.0	1	1.18	0.00
78	78	BG	1	3.0	1	1.18	0.00
79	79	BG	1	3.0	1	1.18	0.00
80	80	BG	1	1.5	1	0.59	0.00
81	81	BG	1	13.0	19	5.12	0.04
82	82	PS	1	9.5	9	3.74	0.02
83	83	BG	1	3.0	1	1.18	0.00
84	84	BG	1	8.5	10	3.35	0.02
85	85	GS	1	7.0	3	2.76	0.01
86	86	BG	1	4.5	2	1.77	0.00
87	87	BG	1	3.0	1	1.18	0.00
88	88	BG	1	3.0	1	1.18	0.00
89	89	BG	1	3.0	1	1.18	0.00
90	90	BG	1	7.0	6	2.76	0.01
91	91	YP	1	18.0	50	7.09	0.11
92	92	BC	1	7.5	4	2.95	0.01
93	93	BG	1	6.5	5	2.56	0.01
94	94	BG	1	4.5	2	1.77	0.00
95	95	BG	1	3.0	1	1.18	0.00
96	96	YP	1	17.0	43	6.69	0.09
97	97	YP	1	15.5	43	6.10	0.09
98	98	BG	1	4.5	2	1.77	0.00
99	99	BG	1	3.0	1	1.18	0.00
100	100	YP	1	15.5	37	6.10	0.08

Walker Lake
ALI Project No. 1577-28

Prepared by Aqua Link, Inc.

Fish Survey Data
Run #1 - 3
Time: 20 Minutes for each run

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

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
101	101	BG	1	3.0	1	1.18	0.00
102	102	BG	1	2.0	1	0.79	0.00
103	103	BG	1	2.0	1	0.79	0.00
104	104	LMB	1	9.5	7	3.74	0.02
105	105	BG	1	6.0	2	2.36	0.00
106	106	BG	1	4.0	2	1.57	0.00
107	107	BG	1	4.0	2	1.57	0.00
108	108	PS	1	11.5	21	4.53	0.05
109	109	BG	1	10.5	19	4.13	0.04
110	110	BG	1	3.0	1	1.18	0.00
111	111	PS	1	6.5	3	2.56	0.01
112	112	LMB	2	45.0	1355	17.72	2.99
113	113	BG	2	16.0	74	6.30	0.16
114	114	LMB	2	27.0	210	10.63	0.46
115	115	YP	2	15.5	44	6.10	0.10
116	116	SMB	2	26.5	225	10.43	0.50
117	117	CPK	2	26.0	132	10.24	0.29
118	118	PS	2	20.0	73	7.87	0.16
119	119	PS	2	20.0	103	7.87	0.23
120	120	PS	2	17.0	46	6.69	0.10
121	121	BG	2	19.5	62	7.68	0.14
122	122	LMB	2	19.0	82	7.48	0.18
123	123	YP	2	16.0	36	6.30	0.08
124	124	LMB	2	10.0	8	3.94	0.02
125	125	LMB	2	8.0	5	3.15	0.01
126	126	BG	2	4.5	2	1.77	0.00
127	127	BG	2	4.0	2	1.57	0.00
128	128	BG	2	4.0	2	1.57	0.00
129	129	BG	2	4.0	2	1.57	0.00
130	130	BG	2	3.5	1	1.38	0.00
131	131	BG	2	4.0	2	1.57	0.00
132	132	BG	2	4.0	2	1.57	0.00
133	133	BG	2	4.5	2	1.77	0.00
134	134	LMB	2	24.0	174	9.45	0.38
135	135	BG	2	14.0	44	5.51	0.10
136	136	LMB	2	25.0	217	9.84	0.48
137	137	LMB	2	23.0	165	9.06	0.36
138	138	BG	2	12.5	34	4.92	0.07
139	139	LMB	2	7.0	5	2.76	0.01
140	140	BG	2	4.0	2	1.57	0.00
141	141	BG	2	4.0	2	1.57	0.00
142	142	BG	2	4.0	2	1.57	0.00
143	143	BG	2	4.0	2	1.57	0.00
144	144	YP	2	15.5	36	6.10	0.08
145	145	YP	2	17.0	46	6.69	0.10
146	146	LMB	2	11.0	17	4.33	0.04
147	147	BG	2	4.0	2	1.57	0.00
148	148	BG	2	15.0	50	5.91	0.11
149	149	BG	2	2.0	1	0.79	0.00
150	150	BG	2	2.0	1	0.79	0.00

Walker Lake
ALI Project No. 1577-28

Prepared by Aqua Link, Inc.

Fish Survey Data
Run #1 - 3
Time: 20 Minutes for each run

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

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
151	151	BG	2	2.0	1	0.79	0.00
152	152	LMB	2	11.0	14	4.33	0.03
153	153	YP	2	16.0	34	6.30	0.07
154	154	BG	2	4.0	2	1.57	0.00
155	155	BG	2	4.0	2	1.57	0.00
156	156	BG	2	4.0	2	1.57	0.00
157	157	BG	2	13.5	36	5.31	0.08
158	158	BG	2	4.0	2	1.57	0.00
159	159	BG	2	4.0	2	1.57	0.00
160	160	BG	2	4.0	2	1.57	0.00
161	161	BG	2	4.0	2	1.57	0.00
162	162	BG	2	4.0	2	1.57	0.00
163	163	BG	2	4.0	2	1.57	0.00
164	164	BG	2	4.0	2	1.57	0.00
165	165	BG	2	19.0	111	7.48	0.24
166	166	BG	2	4.0	2	1.57	0.00
167	167	BG	2	16.0	74	6.30	0.16
168	168	BG	2	15.0	59	5.91	0.13
169	169	BG	2	14.0	47	5.51	0.10
170	170	YP	2	20.0	86	7.87	0.19
171	171	YP	2	16.0	35	6.30	0.08
172	172	PS	2	15.5	60	6.10	0.13
173	173	BG	2	14.0	42	5.51	0.09
174	174	PS	2	14.0	45	5.51	0.10
175	175	PS	2	13.5	36	5.31	0.08
176	176	BG	2	14.0	43	5.51	0.09
177	177	BG	2	15.0	54	5.91	0.12
178	178	LMB	2	11.0	17	4.33	0.04
179	179	LMB	2	7.0	5	2.76	0.01
180	180	BG	2	4.0	2	1.57	0.00
181	181	BG	2	4.0	2	1.57	0.00
182	182	BG	2	4.0	2	1.57	0.00
183	183	BG	2	4.0	2	1.57	0.00
184	184	LMB	2	8.0	5	3.15	0.01
185	185	BG	2	4.0	2	1.57	0.00
186	186	BG	2	4.0	2	1.57	0.00
187	187	BG	2	4.0	2	1.57	0.00
188	188	BG	2	4.0	2	1.57	0.00
189	189	BG	2	4.0	2	1.57	0.00
190	190	BG	2	4.0	2	1.57	0.00
191	191	BG	2	4.0	2	1.57	0.00
192	192	BG	2	4.0	2	1.57	0.00
193	193	BG	2	4.0	2	1.57	0.00
194	194	BG	2	4.0	2	1.57	0.00
195	195	BG	2	4.0	2	1.57	0.00
196	196	LMB	3	45.0	1102	17.72	2.43
197	197	LMB	3	42.0	1140	16.54	2.51
198	198	LMB	3	44.0	1366	17.32	3.01
199	199	PS	3	18.0	110	7.09	0.24
200	200	YP	3	16.0	38	6.30	0.08

Walker Lake
ALI Project No. 1577-28

Prepared by Aqua Link, Inc.

Fish Survey Data
Run #1 - 3
Time: 20 Minutes for each run

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

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
201	201	YP	3	14.0	26	5.51	0.06
202	202	YP	3	17.5	46	6.89	0.10
203	203	BBH	3	21.5	111	8.46	0.24
204	204	PS	3	18.0	103	7.09	0.23
205	205	SMB	3	22.0	134	8.66	0.30
206	206	PS	3	20.0	152	7.87	0.34
207	207	BG	3	13.0	41	5.12	0.09
208	208	PS	3	17.0	95	6.69	0.21
209	209	BG	3	14.0	57	5.51	0.13
210	210	BG	3	18.0	112	7.09	0.25
211	211	BG	3	17.0	82	6.69	0.18
212	212	PS	3	19.0	65	7.48	0.14
213	213	PS	3	18.5	54	7.28	0.12
214	214	PS	3	19.0	57	7.48	0.13
215	215	YP	3	13.5	11	5.31	0.02
216	216	BG	3	13.5	20	5.31	0.04
217	217	YP	3	14.0	17	5.51	0.04
218	218	BG	3	17.5	50	6.89	0.11
219	219	PS	3	20.5	72	8.07	0.16
220	220	YP	3	15.5	19	6.10	0.04
221	221	BG	3	18.0	85	7.09	0.19
222	222	BG	3	19.5	104	7.68	0.23
223	223	YP	3	22.0	59	8.66	0.13
224	224	PS	3	15.0	28	5.91	0.06
225	225	YP	3	15.0	17	5.91	0.04
226	226	YP	3	15.5	14	6.10	0.03
227	227	BG	3	11.0	14	4.33	0.03
228	228	BG	3	14.0	21	5.51	0.05
229	229	YP	3	15.0	14	5.91	0.03
230	230	YP	3	13.5	10	5.31	0.02
231	231	YP	3	14.0	12	5.51	0.03
232	232	YP	3	14.5	19	5.71	0.04
233	233	BG	4	21.5	90	8.46	0.20
234	234	BG	4	12.5	20	4.92	0.04
235	235	YP	4	15.0	14	5.91	0.03
236	236	GS	4	6.5	2	2.56	0.00
237	237	PS	4	11.0	12	4.33	0.03
238	238	BG	4	10.0	8	3.94	0.02
239	239	YP	4	15.5	15	6.10	0.03
240	240	YP	4	16.0	14	6.30	0.03
241	241	PS	4	10.5	8	4.13	0.02
242	242	PS	4	9.5	6	3.74	0.01
243	243	BG	4	9.0	5	3.54	0.01
244	244	BG	4	9.0	6	3.54	0.01
245	245	YP	4	15.0	5	5.91	0.01
246	246	SMB	4	21.0	62	8.27	0.14
247	247	YP	4	14.0	12	5.51	0.03
248	248	BG	4	12.5	17	4.92	0.04
249	249	YP	4	18.5	37	7.28	0.08
250	250	SMB	4	18.0	46	7.09	0.10

Walker Lake
ALI Project No. 1577-28

Prepared by Aqua Link, Inc.

Fish Survey Data
Run #1 - 3
Time: 20 Minutes for each run

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

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
251	251	YP	4	16.0	45	6.30	0.10
252	252	YP	4	15.0	18	5.91	0.04
253	253	BG	4	15.0	43	5.91	0.09
254	254	BG	4	4.0	2	1.57	0.00
255	255	PS	4	10.0	10	3.94	0.02
256	256	BG	4	14.0	25	5.51	0.06
257	257	YP	4	14.5	18	5.71	0.04
258	258	BG	4	13.5	30	5.31	0.07
259	259	LMB	4	8.0	2	3.15	0.00
260	260	PS	4	8.5	5	3.35	0.01
261	261	PS	4	9.0	6	3.54	0.01
262	262	PS	4	8.0	5	3.15	0.01
263	263	PS	4	7.5	5	2.95	0.01
264	264	YP	4	18.0	31	7.09	0.07
265	265	YP	4	14.0	15	5.51	0.03
266	266	BG	4	12.0	15	4.72	0.03
267	267	BG	4	10.5	8	4.13	0.02
268	268	PS	4	8.5	7	3.35	0.02
269	269	AW	4	9.0	3	3.54	0.01
270	270	BG	4	9.5	9	3.74	0.02
271	271	BG	4	9.5	6	3.74	0.01
272	272	BG	4	9.0	6	3.54	0.01
273	273	BG	4	14.0	26	5.51	0.06
274	274	AW	4	8.5	3	3.35	0.01
275	275	AW	4	8.5	3	3.35	0.01
276	276	AW	4	8.5	3	3.35	0.01
277	277	AW	4	8.5	3	3.35	0.01
278	278	AW	4	8.5	3	3.35	0.01
279	279	AW	4	8.5	3	3.35	0.01
280	280	SMB	4	8.5	3	3.35	0.01
281	281	SMB	4	8.0	2	3.15	0.00
282	282	YP	4	17.0	26	6.69	0.06
283	283	YP	4	18.0	24	7.09	0.05
284	284	PS	4	8.5	5	3.35	0.01
285	285	LMB	4	45.0	1100	17.72	2.43
286	286	BG	5	14.5	61	5.71	0.13
287	287	BG	5	17.0	40	6.69	0.09
288	288	BG	5	15.0	32	5.91	0.07
289	289	YP	5	14.5	18	5.71	0.04
290	290	YP	5	15.5	17	6.10	0.04
291	291	BG	5	13.0	23	5.12	0.05
292	292	YP	5	13.5	12	5.31	0.03
293	293	YP	5	14.0	15	5.51	0.03
294	294	BG	5	15.0	45	5.91	0.10
295	295	BG	5	20.0	76	7.87	0.17
296	296	YP	5	15.0	13	5.91	0.03
297	297	YP	5	14.5	18	5.71	0.04
298	298	PS	5	13.5	25	5.31	0.06
299	299	BG	5	14.5	34	5.71	0.07
300	300	YP	5	14.5	19	5.71	0.04

Walker Lake
ALI Project No. 1577-28

Prepared by Aqua Link, Inc.

Fish Survey Data
Run #1 - 3
Time: 20 Minutes for each run

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

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
301	301	BG	5	13.5	22	5.31	0.05
302	302	BG	5	14.0	27	5.51	0.06
303	303	YP	5	15.0	15	5.91	0.03
304	304	BG	5	14.0	41	5.51	0.09
305	305	BG	5	12.0	19	4.72	0.04
306	306	AW	5	8.5	3	3.35	0.01
307	307	YP	5	16.0	27	6.30	0.06
308	308	BBH	5	25.5	124	10.04	0.27
309	309	BG	5	13.0	28	5.12	0.06
310	310	YP	5	15.5	23	6.10	0.05
311	311	YP	5	13.5	19	5.31	0.04
312	312	BG	5	14.0	25	5.51	0.06
313	313	BG	5	17.5	60	6.89	0.13
314	314	BG	5	13.0	21	5.12	0.05
315	315	BG	5	13.0	21	5.12	0.05
316	316	PS	5	9.0	5	3.54	0.01
317	317	YP	5	14.0	17	5.51	0.04
318	318	YP	5	15.0	22	5.91	0.05
319	319	AW	5	8.0	3	3.15	0.01
320	320	BG	5	14.0	23	5.51	0.05
321	321	SMB	5	10.0	4	3.94	0.01
322	322	YP	5	15.0	13	5.91	0.03
323	323	LMB	5	9.5	6	3.74	0.01
324	324	AW	5	8.0	3	3.15	0.01
325	325	AW	5	8.0	3	3.15	0.01
326	326	AW	5	8.0	3	3.15	0.01
327	327	YP	5	16.0	14	6.30	0.03
328	328	YP	5	14.5	13	5.71	0.03
329	329	YP	5	16.5	23	6.50	0.05
330	330	BG	5	14.5	40	5.71	0.09
331	331	BG	5	20.0	76	7.87	0.17
332	332	YP	5	17.0	22	6.69	0.05
333	333	BG	5	13.0	18	5.12	0.04
334	334	LMB	5	19.0	39	7.48	0.09
335	335	YP	5	13.0	7	5.12	0.02
336	336	YP	5	16.0	15	6.30	0.03
337	337	BG	5	12.0	9	4.72	0.02
338	338	YP	5	16.0	18	6.30	0.04
339	339	BG	5	11.5	19	4.53	0.04
340	340	AW	5	8.0	3	3.15	0.01
341	341	YP	5	15.5	16	6.10	0.04
342	342	BG	5	13.5	24	5.31	0.05
343	343	YP	5	13.5	13	5.31	0.03
344	344	YP	5	14.0	11	5.51	0.02
345	345	LMB	5	48.5	1669	19.09	3.68
346	346	LMB	5	42.5	1247	16.73	2.75

Key for ID: Largemouth Bass (LMB)

Fish Survey Data - Largemouth Bass

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	139	LMB	2	7.0	5	2.76	0.01
2	179	LMB	2	7.0	5	2.76	0.01
3	125	LMB	2	8.0	5	3.15	0.01
4	184	LMB	2	8.0	5	3.15	0.01
5	259	LMB	4	8.0	2	3.15	0.00
6	104	LMB	1	9.5	7	3.74	0.02
7	323	LMB	5	9.5	6	3.74	0.01
8	124	LMB	2	10.0	8	3.94	0.02
9	146	LMB	2	11.0	17	4.33	0.04
10	152	LMB	2	11.0	14	4.33	0.03
11	178	LMB	2	11.0	17	4.33	0.04
12	122	LMB	2	19.0	82	7.48	0.18
13	334	LMB	5	19.0	39	7.48	0.09
14	137	LMB	2	23.0	165	9.06	0.36
15	134	LMB	2	24.0	174	9.45	0.38
16	136	LMB	2	25.0	217	9.84	0.48
17	114	LMB	2	27.0	210	10.63	0.46
18	5	LMB	1	32.0	320	12.60	0.71
19	3	LMB	1	35.0	520	13.78	1.15
20	4	LMB	1	35.0	575	13.78	1.27
21	197	LMB	3	42.0	1140	16.54	2.51
22	346	LMB	5	42.5	1247	16.73	2.75
23	1	LMB	1	43.0	1250	16.93	2.76
24	198	LMB	3	44.0	1366	17.32	3.01
25	112	LMB	2	45.0	1355	17.72	2.99
26	196	LMB	3	45.0	1102	17.72	2.43
27	285	LMB	4	45.0	1100	17.72	2.43
28	345	LMB	5	48.5	1669	19.09	3.68
29	2	LMB	1	50.5	1795	19.88	3.96

Key for ID: Smallmouth Bass (SMB)

Fish Survey Data - Smallmouth Bass

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	281	SMB	4	8.0	2	3.15	0.00
2	280	SMB	4	8.5	3	3.35	0.01
3	321	SMB	5	10.0	4	3.94	0.01
4	7	SMB	1	17.0	60	6.69	0.13
5	250	SMB	4	18.0	46	7.09	0.10
6	246	SMB	4	21.0	62	8.27	0.14
7	205	SMB	3	22.0	134	8.66	0.30
8	6	SMB	1	24.0	167	9.45	0.37
9	116	SMB	2	26.5	225	10.43	0.50

Fish Survey Data - Sunfish

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

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	92	BC	1	7.5	4	2.95	0.01
2	54	BC	1	11.5	23	4.53	0.05
3	31	BC	1	13.0	31	5.12	0.07
4	25	BC	1	17.5	67	6.89	0.15
5	80	BG	1	1.5	1	0.59	0.00
6	102	BG	1	2.0	1	0.79	0.00
7	103	BG	1	2.0	1	0.79	0.00
8	149	BG	2	2.0	1	0.79	0.00
9	150	BG	2	2.0	1	0.79	0.00
10	151	BG	2	2.0	1	0.79	0.00
11	65	BG	1	3.0	1	1.18	0.00
12	67	BG	1	3.0	1	1.18	0.00
13	72	BG	1	3.0	1	1.18	0.00
14	73	BG	1	3.0	1	1.18	0.00
15	74	BG	1	3.0	1	1.18	0.00
16	77	BG	1	3.0	1	1.18	0.00
17	78	BG	1	3.0	1	1.18	0.00
18	79	BG	1	3.0	1	1.18	0.00
19	83	BG	1	3.0	1	1.18	0.00
20	87	BG	1	3.0	1	1.18	0.00
21	88	BG	1	3.0	1	1.18	0.00
22	89	BG	1	3.0	1	1.18	0.00
23	95	BG	1	3.0	1	1.18	0.00
24	99	BG	1	3.0	1	1.18	0.00
25	101	BG	1	3.0	1	1.18	0.00
26	110	BG	1	3.0	1	1.18	0.00
27	33	BG	1	3.5	2	1.38	0.00
28	35	BG	1	3.5	2	1.38	0.00
29	50	BG	1	3.5	2	1.38	0.00
30	59	BG	1	3.5	1	1.38	0.00
31	130	BG	2	3.5	1	1.38	0.00
32	42	BG	1	4.0	3	1.57	0.01
33	48	BG	1	4.0	2	1.57	0.00
34	49	BG	1	4.0	2	1.57	0.00
35	53	BG	1	4.0	2	1.57	0.00
36	56	BG	1	4.0	1	1.57	0.00
37	60	BG	1	4.0	1	1.57	0.00
38	61	BG	1	4.0	2	1.57	0.00
39	68	BG	1	4.0	1	1.57	0.00
40	69	BG	1	4.0	2	1.57	0.00
41	70	BG	1	4.0	2	1.57	0.00
42	71	BG	1	4.0	2	1.57	0.00
43	106	BG	1	4.0	2	1.57	0.00
44	107	BG	1	4.0	2	1.57	0.00
45	127	BG	2	4.0	2	1.57	0.00
46	128	BG	2	4.0	2	1.57	0.00
47	129	BG	2	4.0	2	1.57	0.00
48	131	BG	2	4.0	2	1.57	0.00
49	132	BG	2	4.0	2	1.57	0.00
50	140	BG	2	4.0	2	1.57	0.00

Fish Survey Data - Sunfish

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

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
51	141	BG	2	4.0	2	1.57	0.00
52	142	BG	2	4.0	2	1.57	0.00
53	143	BG	2	4.0	2	1.57	0.00
54	147	BG	2	4.0	2	1.57	0.00
55	154	BG	2	4.0	2	1.57	0.00
56	155	BG	2	4.0	2	1.57	0.00
57	156	BG	2	4.0	2	1.57	0.00
58	158	BG	2	4.0	2	1.57	0.00
59	159	BG	2	4.0	2	1.57	0.00
60	160	BG	2	4.0	2	1.57	0.00
61	161	BG	2	4.0	2	1.57	0.00
62	162	BG	2	4.0	2	1.57	0.00
63	163	BG	2	4.0	2	1.57	0.00
64	164	BG	2	4.0	2	1.57	0.00
65	166	BG	2	4.0	2	1.57	0.00
66	180	BG	2	4.0	2	1.57	0.00
67	181	BG	2	4.0	2	1.57	0.00
68	182	BG	2	4.0	2	1.57	0.00
69	183	BG	2	4.0	2	1.57	0.00
70	185	BG	2	4.0	2	1.57	0.00
71	186	BG	2	4.0	2	1.57	0.00
72	187	BG	2	4.0	2	1.57	0.00
73	188	BG	2	4.0	2	1.57	0.00
74	189	BG	2	4.0	2	1.57	0.00
75	190	BG	2	4.0	2	1.57	0.00
76	191	BG	2	4.0	2	1.57	0.00
77	192	BG	2	4.0	2	1.57	0.00
78	193	BG	2	4.0	2	1.57	0.00
79	194	BG	2	4.0	2	1.57	0.00
80	195	BG	2	4.0	2	1.57	0.00
81	254	BG	4	4.0	2	1.57	0.00
82	46	BG	1	4.5	2	1.77	0.00
83	47	BG	1	4.5	2	1.77	0.00
84	57	BG	1	4.5	2	1.77	0.00
85	86	BG	1	4.5	2	1.77	0.00
86	94	BG	1	4.5	2	1.77	0.00
87	98	BG	1	4.5	2	1.77	0.00
88	126	BG	2	4.5	2	1.77	0.00
89	133	BG	2	4.5	2	1.77	0.00
90	45	BG	1	5.0	3	1.97	0.01
91	55	BG	1	5.0	2	1.97	0.00
92	66	BG	1	5.0	2	1.97	0.00
93	58	BG	1	5.5	2	2.17	0.00
94	105	BG	1	6.0	2	2.36	0.00
95	93	BG	1	6.5	5	2.56	0.01
96	90	BG	1	7.0	6	2.76	0.01
97	84	BG	1	8.5	10	3.35	0.02
98	29	BG	1	9.0	12	3.54	0.03
99	243	BG	4	9.0	5	3.54	0.01
100	244	BG	4	9.0	6	3.54	0.01

Fish Survey Data - Sunfish

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

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
101	272	BG	4	9.0	6	3.54	0.01
102	270	BG	4	9.5	9	3.74	0.02
103	271	BG	4	9.5	6	3.74	0.01
104	36	BG	1	10.0	20	3.94	0.04
105	238	BG	4	10.0	8	3.94	0.02
106	109	BG	1	10.5	19	4.13	0.04
107	267	BG	4	10.5	8	4.13	0.02
108	227	BG	3	11.0	14	4.33	0.03
109	339	BG	5	11.5	19	4.53	0.04
110	39	BG	1	12.0	32	4.72	0.07
111	266	BG	4	12.0	15	4.72	0.03
112	305	BG	5	12.0	19	4.72	0.04
113	337	BG	5	12.0	9	4.72	0.02
114	138	BG	2	12.5	34	4.92	0.07
115	234	BG	4	12.5	20	4.92	0.04
116	248	BG	4	12.5	17	4.92	0.04
117	38	BG	1	13.0	37	5.12	0.08
118	62	BG	1	13.0	37	5.12	0.08
119	81	BG	1	13.0	19	5.12	0.04
120	207	BG	3	13.0	41	5.12	0.09
121	291	BG	5	13.0	23	5.12	0.05
122	309	BG	5	13.0	28	5.12	0.06
123	314	BG	5	13.0	21	5.12	0.05
124	315	BG	5	13.0	21	5.12	0.05
125	333	BG	5	13.0	18	5.12	0.04
126	157	BG	2	13.5	36	5.31	0.08
127	216	BG	3	13.5	20	5.31	0.04
128	258	BG	4	13.5	30	5.31	0.07
129	301	BG	5	13.5	22	5.31	0.05
130	342	BG	5	13.5	24	5.31	0.05
131	40	BG	1	14.0	50	5.51	0.11
132	41	BG	1	14.0	47	5.51	0.10
133	135	BG	2	14.0	44	5.51	0.10
134	169	BG	2	14.0	47	5.51	0.10
135	173	BG	2	14.0	42	5.51	0.09
136	176	BG	2	14.0	43	5.51	0.09
137	209	BG	3	14.0	57	5.51	0.13
138	228	BG	3	14.0	21	5.51	0.05
139	256	BG	4	14	25	5.51	0.06
140	273	BG	4	14.0	26	5.51	0.06
141	302	BG	5	14.0	27	5.51	0.06
142	304	BG	5	14.0	41	5.51	0.09
143	312	BG	5	14.0	25	5.51	0.06
144	320	BG	5	14.0	23	5.51	0.05
145	32	BG	1	14.5	51	5.71	0.11
146	286	BG	5	14.5	61	5.71	0.13
147	299	BG	5	14.5	34	5.71	0.07
148	330	BG	5	14.5	40	5.71	0.09
149	63	BG	1	15.0	53	5.91	0.12
150	64	BG	1	15.0	66	5.91	0.15

Fish Survey Data - Sunfish

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

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
151	76	BG	1	15.0	66	5.91	0.15
152	148	BG	2	15.0	50	5.91	0.11
153	168	BG	2	15.0	59	5.91	0.13
154	177	BG	2	15.0	54	5.91	0.12
155	253	BG	4	15.0	43	5.91	0.09
156	288	BG	5	15.0	32	5.91	0.07
157	294	BG	5	15.0	45	5.91	0.10
158	113	BG	2	16.0	74	6.30	0.16
159	167	BG	2	16.0	74	6.30	0.16
160	30	BG	1	17.0	95	6.69	0.21
161	211	BG	3	17.0	82	6.69	0.18
162	287	BG	5	17.0	40	6.69	0.09
163	218	BG	3	17.5	50	6.89	0.11
164	313	BG	5	17.5	60	6.89	0.13
165	27	BG	1	18.0	84	7.09	0.19
166	210	BG	3	18.0	112	7.09	0.25
167	221	BG	3	18.0	85	7.09	0.19
168	44	BG	1	18.5	113	7.28	0.25
169	34	BG	1	19.0	143	7.48	0.32
170	165	BG	2	19.0	111	7.48	0.24
171	121	BG	2	19.5	62	7.68	0.14
172	222	BG	3	19.5	104	7.68	0.23
173	295	BG	5	20.0	76	7.87	0.17
174	331	BG	5	20.0	76	7.87	0.17
175	233	BG	4	21.5	90	8.46	0.20
176	111	PS	1	6.5	3	2.56	0.01
177	263	PS	4	7.5	5	2.95	0.01
178	262	PS	4	8.0	5	3.15	0.01
179	260	PS	4	8.5	5	3.35	0.01
180	268	PS	4	8.5	7	3.35	0.02
181	284	PS	4	8.5	5	3.35	0.01
182	51	PS	1	9.0	13	3.54	0.03
183	261	PS	4	9.0	6	3.54	0.01
184	316	PS	5	9.0	5	3.54	0.01
185	82	PS	1	9.5	9	3.74	0.02
186	242	PS	4	9.5	6	3.74	0.01
187	52	PS	1	10.0	16	3.94	0.04
188	255	PS	4	10.0	10	3.94	0.02
189	43	PS	1	10.5	16	4.13	0.04
190	241	PS	4	10.5	8	4.13	0.02
191	237	PS	4	11.0	12	4.33	0.03
192	108	PS	1	11.5	21	4.53	0.05
193	175	PS	2	13.5	36	5.31	0.08
194	298	PS	5	13.5	25	5.31	0.06
195	37	PS	1	14.0	45	5.51	0.10
196	174	PS	2	14.0	45	5.51	0.10
197	28	PS	1	15.0	63	5.91	0.14
198	224	PS	3	15.0	28	5.91	0.06
199	172	PS	2	15.5	60	6.10	0.13
200	120	PS	2	17.0	46	6.69	0.10

Walker Lake
ALI Project No. 1577-28

Prepared by Aqua Link, Inc.

Fish Survey Data - Sunfish

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

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
201	208	PS	3	17.0	95	6.69	0.21
202	199	PS	3	18.0	110	7.09	0.24
203	204	PS	3	18.0	103	7.09	0.23
204	26	PS	1	18.5	141	7.28	0.31
205	213	PS	3	18.5	54	7.28	0.12
206	212	PS	3	19.0	65	7.48	0.14
207	214	PS	3	19.0	57	7.48	0.13
208	118	PS	2	20.0	73	7.87	0.16
209	119	PS	2	20.0	103	7.87	0.23
210	206	PS	3	20.0	152	7.87	0.34
211	219	PS	3	20.5	72	8.07	0.16

Key for ID: Yellow Perch (YP)

Fish Survey Data - Yellow Perch

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	335	YP	5	13.0	7	5.12	0.02
2	215	YP	3	13.5	11	5.31	0.02
3	230	YP	3	13.5	10	5.31	0.02
4	292	YP	5	13.5	12	5.31	0.03
5	311	YP	5	13.5	19	5.31	0.04
6	343	YP	5	13.5	13	5.31	0.03
7	201	YP	3	14.0	26	5.51	0.06
8	217	YP	3	14.0	17	5.51	0.04
9	231	YP	3	14.0	12	5.51	0.03
10	247	YP	4	14.0	12	5.51	0.03
11	265	YP	4	14.0	15	5.51	0.03
12	293	YP	5	14.0	15	5.51	0.03
13	317	YP	5	14.0	17	5.51	0.04
14	344	YP	5	14.0	11	5.51	0.02
15	232	YP	3	14.5	19	5.71	0.04
16	257	YP	4	14.5	18	5.71	0.04
17	289	YP	5	14.5	18	5.71	0.04
18	297	YP	5	14.5	18	5.71	0.04
19	300	YP	5	14.5	19	5.71	0.04
20	328	YP	5	14.5	13	5.71	0.03
21	8	YP	1	15.0	21	5.91	0.05
22	225	YP	3	15.0	17	5.91	0.04
23	229	YP	3	15.0	14	5.91	0.03
24	235	YP	4	15.0	14	5.91	0.03
25	245	YP	4	15.0	5	5.91	0.01
26	252	YP	4	15.0	18	5.91	0.04
27	296	YP	5	15.0	13	5.91	0.03
28	303	YP	5	15.0	15	5.91	0.03
29	318	YP	5	15.0	22	5.91	0.05
30	322	YP	5	15.0	13	5.91	0.03
31	23	YP	1	15.5	34	6.10	0.07
32	97	YP	1	15.5	43	6.10	0.09
33	100	YP	1	15.5	37	6.10	0.08
34	115	YP	2	15.5	44	6.10	0.10
35	144	YP	2	15.5	36	6.10	0.08
36	220	YP	3	15.5	19	6.10	0.04
37	226	YP	3	15.5	14	6.10	0.03
38	239	YP	4	15.5	15	6.10	0.03
39	290	YP	5	15.5	17	6.10	0.04
40	310	YP	5	15.5	23	6.10	0.05
41	341	YP	5	15.5	16	6.10	0.04
42	17	YP	1	16.0	35	6.30	0.08
43	20	YP	1	16.0	44	6.30	0.10
44	22	YP	1	16.0	34	6.30	0.07
45	123	YP	2	16.0	36	6.30	0.08
46	153	YP	2	16.0	34	6.30	0.07
47	171	YP	2	16.0	35	6.30	0.08
48	200	YP	3	16.0	38	6.30	0.08
49	240	YP	4	16.0	14	6.30	0.03
50	251	YP	4	16.0	45	6.30	0.10

Key for ID: Yellow Perch (YP)

Fish Survey Data - Yellow Perch

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
51	307	YP	5	16.0	27	6.30	0.06
52	327	YP	5	16.0	14	6.30	0.03
53	336	YP	5	16.0	15	6.30	0.03
54	338	YP	5	16.0	18	6.30	0.04
55	14	YP	1	16.5	40	6.50	0.09
56	15	YP	1	16.5	33	6.50	0.07
57	21	YP	1	16.5	43	6.50	0.09
58	329	YP	5	16.5	23	6.50	0.05
59	18	YP	1	17.0	50	6.69	0.11
60	96	YP	1	17.0	43	6.69	0.09
61	145	YP	2	17.0	46	6.69	0.10
62	282	YP	4	17.0	26	6.69	0.06
63	332	YP	5	17.0	22	6.69	0.05
64	202	YP	3	17.5	46	6.89	0.10
65	91	YP	1	18.0	50	7.09	0.11
66	264	YP	4	18.0	31	7.09	0.07
67	283	YP	4	18.0	24	7.09	0.05
68	249	YP	4	18.5	37	7.28	0.08
69	13	YP	1	19.0	30	7.48	0.07
70	170	YP	2	20.0	86	7.87	0.19
71	223	YP	3	22.0	59	8.66	0.13
72	11	YP	1	24.0	85	9.45	0.19
73	75	YP	1	24.5	134	9.65	0.30
74	9	YP	1	28.0	216	11.02	0.48

Walker Lake
ALI Project No. 1577-28

Prepared by Aqua Link, Inc.

Fish Survey Data - Pickerel

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

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	117	CPK	2	26.0	132	10.24	0.29

Walker Lake
ALI Project No. 1577-28

Key for ID: Brown Bullhead (BBH)

Fish Survey Data - Catfish

10/10/2022

Count	ID #	Fish ID	Run	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	203	BBH	3	21.5	111	8.46	0.24
2	308	BBH	5	25.5	124	10.04	0.27

Fish Survey Data - Golden Shiner, Alewife

Key for ID: Golden Shiner (GS)
Alewife (AW)

10/10/2022

Count	ID #	Fish ID	Run #1-5	Length (cm)	Weight (g)	Length (in)	Weight (lb)
1	319	AW	5	8.0	3	3.15	0.01
2	324	AW	5	8.0	3	3.15	0.01
3	325	AW	5	8.0	3	3.15	0.01
4	326	AW	5	8.0	3	3.15	0.01
5	340	AW	5	8.0	3	3.15	0.01
6	274	AW	4	8.5	3	3.35	0.01
7	275	AW	4	8.5	3	3.35	0.01
8	276	AW	4	8.5	3	3.35	0.01
9	277	AW	4	8.5	3	3.35	0.01
10	278	AW	4	8.5	3	3.35	0.01
11	279	AW	4	8.5	3	3.35	0.01
12	306	AW	5	8.5	3	3.35	0.01
13	269	AW	4	9.0	3	3.54	0.01
14	236	GS	4	6.5	2	2.56	0.00
15	19	GS	1	7.0	2	2.76	0.00
16	85	GS	1	7.0	3	2.76	0.01
17	24	GS	1	8.0	3	3.15	0.01
18	16	GS	1	12.0	16	4.72	0.04
19	10	GS	1	13.0	28	5.12	0.06
20	12	GS	1	14.0	26	5.51	0.06

Fish Survey Data - PSD

Walker Lake
PSD (Proportional Stock Density)

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

10/10/2022
PSD 2022

Walker Lake Black Bass PSD

$$\frac{12}{20} \times 100 = 60$$

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

Black Bass

Length Range (inches)	Count
0-2"	0
2-4"	11
4-6"	3
6-8"	4
8-10"	6
10-12"	2
12-14"	3
14-16"	0
16-18"	7
18-20"	2
20-22"	0

Total per length (inches)

total 38

Walker Lake Sunfish PSD

$$\frac{32}{116} \times 100 = 28$$

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

Sunfish

Length Range (inches)	Count
0-2"	88
2-3"	7
3-4"	20
4-5"	16
5-6"	48
6-8"	30
8-10"	2
10-12"	0
12-14"	0

Total per length (inches)

total 211

Walker Lake Yellow Perch PSD

$$\frac{4}{74} \times 100 = 5$$

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

Yellow Perch

Length Range (inches)	Count
0-2"	0
2-3"	0
3-4"	0
4-5"	0
5-6"	30
6-8"	40
8-10"	3
10-12"	1
12-14"	0

Total per length (inches)

total 74

APPENDIX B

2022 Collected Fish Species Photo Gallery

Walker Lake Fish Species



Bluegill (*Lepomis macrochirus*)



Pumpkinseed (*Lepomis gibbosus*)



Black Crappie (*Pomoxis nigromaculatus*)



Largemouth Bass (*Micropterus salmoides*)



Smallmouth Bass (*Micropterus dolomieu*)



Yellow Perch (*Perca flavescens*)



Chain Pickerel (*Esox niger*)



Golden Shiner (*Notemigonus crysoleucas*)



Brown Bullhead (*Ameiurus nebulosus*)



Alewife (*Alosa pseudoharengus*)