



Horsetooth Reservoir

FISH SURVEY AND MANAGEMENT DATA

Kyle Battige - Aquatic Biologist (Fort Collins)

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General Information: Horsetooth Reservoir (1900 acres) provides quality fishing for walleye, small-mouth bass, and rainbow trout. Anglers may also catch white bass, crappie, bluegill, and perch. The lake is open year round to fishing. For more information visit the Larimer County park website: <https://www.larimer.org/naturalresources/parks/horsetooth-reservoir>

Location: Larimer County. From I-25, go west on Harmony Road 7 miles to where it becomes CR 38E at Taft Hill Road. Continue west 4 more miles on CR 38E to park entrance.

Recreational Management: Larimer County

Fishery Management: Coldwater and coolwater angling

Amenities

- Three Boat Ramps (only two are open in 2022)
- Swim Beach
- Modern Restrooms
- RV hook-ups
- Tent Camping
- Camper Cabins
- Hiking Trails
- Marina
- Picnic Areas

Regulations

- Walleye regulation: 5 fish bag limit, no size restriction
- Minimum size for small-mouth is 12"
- Statewide bag and possession limits apply for all other species
- Fishing prohibited in inlet March 15 - May 31
- Entry requires a Larimer County Parks Pass: available on site

Previous Stocking

2022

Rainbow Trout
Walleye (3.6 million fry)

2021

Rainbow Trout
Walleye (3.6 million fry)
Splake

2020

Rainbow Trout

2019

No Stocking

2018

Rainbow Trout

2017

No stocking

2016

Splake
Wiper

2015

Cutthroat Trout

2014

Bluegill
Rainbow Trout
Cutthroat Trout

Mercury Advisory

Some fish in Horsetooth have been found to have significant levels of mercury. A consumption advisory is in effect. For more information go to:

<https://www.colorado.gov/pacific/cdphe/wq-fish-consumption-horsetooth-reservoir>

Sportfishing Notes

Walleye

Fish rock structures when water temps are 40-55°F.

Later, fish are scattered but tube jigs, lindy rigs, and triple ripples are good choices.

White Bass

Watch for surface activity in the coves, small fish or birds on the surface, that indicate feeding fish below.

Smallmouth Bass

Try rock rip-rap areas with crayfish imitations.



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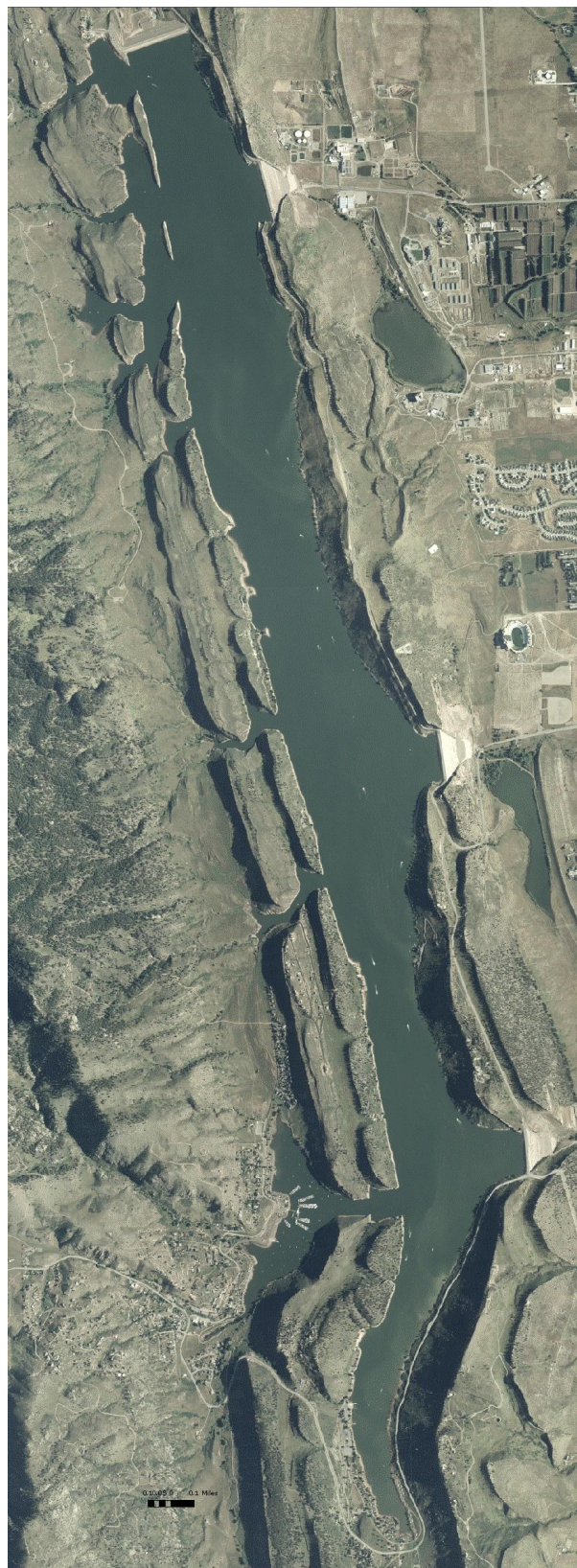
History

Construction of Horsetooth Reservoir was completed in 1949. It is part of the Colorado-Big Thompson Project (CBT) transporting water from the west slope and storing it for east slope use. Water operations are conducted by the Bureau of Reclamation and Northern Water. Expect large water fluctuations in the reservoir from seasonal water use.

Horsetooth has been managed for cool and coldwater fish assemblies since the 1950's. Various proportions of rainbows, cutthroats, browns, lake trout, and splake have made up the coldwater assembly over time. Coolwater fish like walleye, smallmouth bass, white bass, and yellow perch have been stocked historically and now maintain self-sustaining populations.

Horsetooth has had a very dynamic fishery. A large yellow perch population provided a great forage for walleye from the filling of the reservoir until the late 1960's when the perch population crashed. As a result of the perch crash, walleye body condition and growth fell to unacceptable levels. So, rainbow smelt (pictured below) were introduced as an alternative forage. This led to a boom in walleye fishing in the 1980's and 90's. The smelt ended up eating themselves out of house and home, affecting the recruitment of walleye and other fish. The smelt population subsequently crashed and brought the whole reservoir ecosystem down with it. Smelt disappeared in 1996 and were not seen again for over a decade.

Efforts since 2000 have focused on trying to re-establish a quality forage base without the potentially detrimental effects that smelt had on the fishery. Spottail shiners, emerald shiners, and gizzard shad have been successfully introduced and represent a significant component of the fishery. However, smelt numbers began to rise around 2010 and have undergone another boom cycle. Smelt numbers have gone down the last several years, but hopefully will avoid a total crash. Walleye condition and recruitment rose with the increased number of smelt, although the last few years walleye recruitment has been extremely low, likely due to competition and predation pressures from smelt on juvenile walleye. Thus, CPW has stocked walleye fry in 2021 and 2022 in an attempt to bolster walleye recruitment. It is yet to be determined whether supplemental stocking will be successful and sufficient to maintain walleye numbers while smelt numbers will hopefully find an equilibrium.





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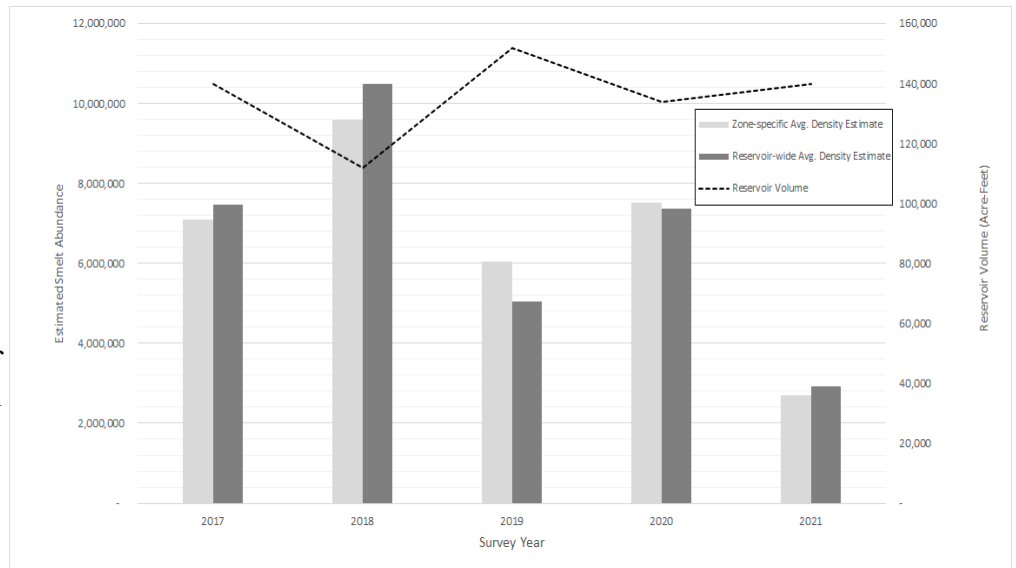
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Fishery Management

Rainbow Smelt:

CPW sonar data from 2017 to 2021 suggests a dynamic and variable smelt population (figure to the right). Estimates in 2021 suggested roughly three million smelt in Horsetooth Reservoir. This number was down from a peak of approximately 10 million in 2018. Smelt impact the reservoir and fishery in a number of ways. A large smelt population provides a readily available prey base for adult walleye; however, adult smelt can prey on juvenile walleye and also directly compete for zooplankton, in particular large-bodied *Daphnia* which are an important prey for juvenile walleye. Adult smelt up to eight inches have been sampled during vertical netting targeting smelt. Continued sonar efforts will be important in determining trends in the smelt population, which drive the Horsetooth fishery.



Other prey species:

There are a number of other prey species present in Horsetooth Reservoir, including (pictured from right to left): bluegill, gizzard shad, rainbow smelt, small-mouth bass, and yellow perch. Having a diverse prey base helps maintain balance in the fishery. However, the smelt population is what is driving the current fishery in Horsetooth Reservoir.

Trout Fishery:

Catchable (approximately ten inch) rainbow trout have been stocked in large numbers Horsetooth Reservoir in 2021 and 2022, 50K and 40K respectively. The goal of these fish is to put added predation pressure on smelt in an attempt to maintain more consistent smelt populations and allow for successful walleye recruitment. These fish will also provide additional angling opportunities and should reach large sizes in a few years, likely up to eight pounds. Rainbow trout stocking will be evaluated each year to determine the appropriate number of trout to be stocked and their impact on the smelt population and fishery in general.





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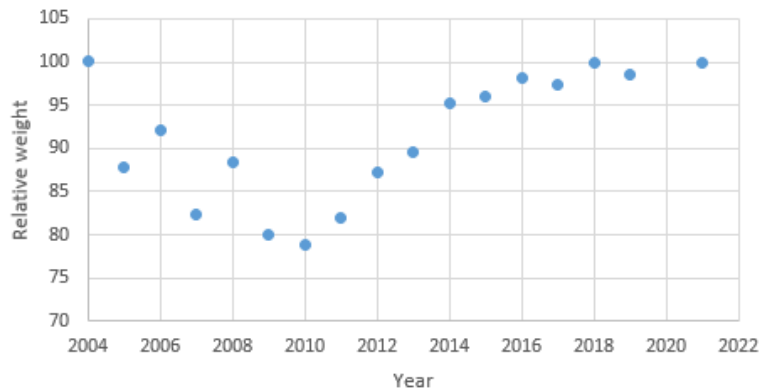
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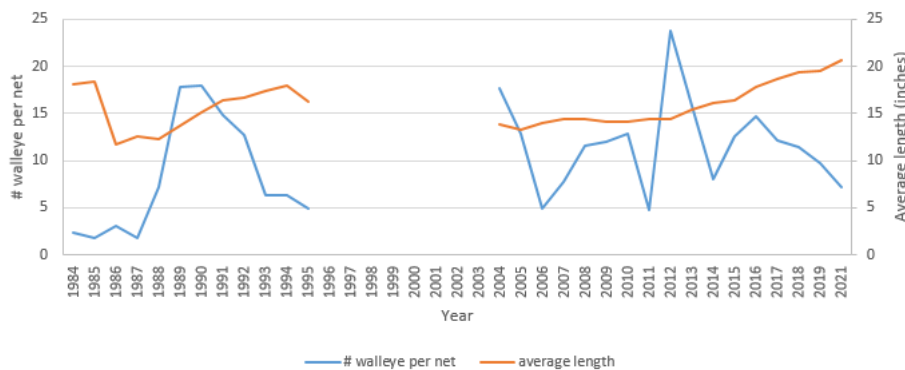
Fishery Management: Walleye

Body condition (relative weight) of walleye in Horsetooth has remained relatively high and above average since 2014. Increasing body condition corresponded directly with when CPW started seeing the resurgence of smelt in Horsetooth. The strong smelt forage base accounts for this high body condition as smelt provide an energy rich prey item. Anglers should expect relatively healthy fish in 2022 as smelt continues to be a dominant prey item for walleye.

Walleye: Average Relative Weight



Walleye: Gill Net Trends

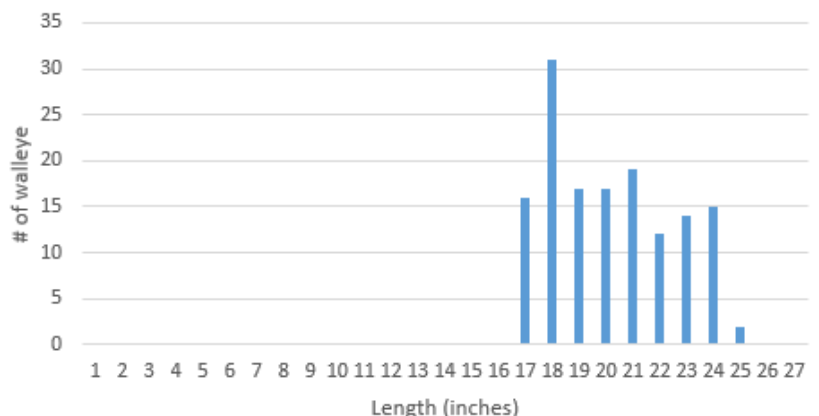


The figure to the left shows the number of walleye captured per gill net and average length from standardized gill netting data. CPW sets the same 20 gill nets in Horsetooth every year around the end of May to reduce the impact of environmental variables on catch rates. Catch rates have been decreasing since 2016 with fewer walleye captured per gill

net. Average length and catch rates for larger individuals (greater than 18 inches) has been increasing over the last few years as fish grow into those upper size classes. However, we are not capturing smaller individuals, in particular 10-15 inch fish (figure below) were not sampled in 2021, suggesting a loss of walleye recruitment. In other words, the fish that are present continue to grow and do alright; however, there are not many smaller and younger walleye in the population to backfill numbers and perpetuate the walleye fishery.

The lack of recruitment of smaller sized walleye is likely a combination of a number of factors. It appears that there are still plenty of adult fish in the reservoir to spawn and potentially sustain the population, but recruitment of young walleye is not happening as readily. This could be due to environmental conditions and water levels, but more likely, predation and competition impacts from the smelt population on walleye recruitment. Horsetooth Reservoir had not been stocked with walleye since 1997, but walleye fry (~0.25 inches) were stocked in the spring of 2021 and 2022 to supplement walleye recruitment. Continued assessment will be important to evaluate the success of these fry stockings to see if stocked walleye recruit into 10-15 inch fish in 2-3 years.

Walleye: 2021 Length Frequency





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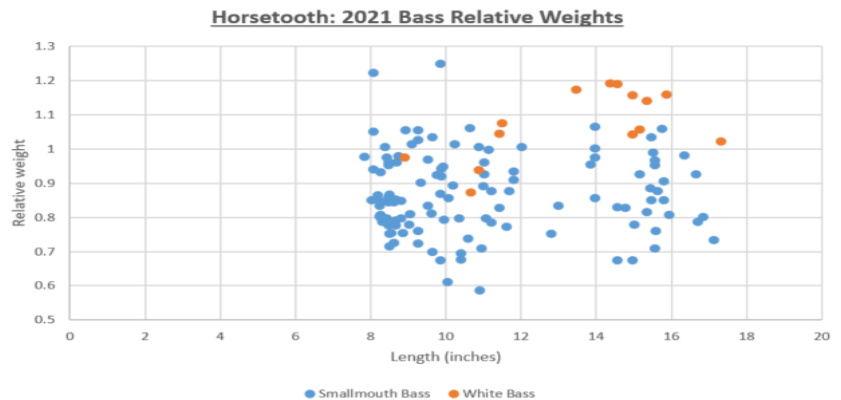
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Fishery Management: Smallmouth and White Bass

The average temperature in Horsetooth is colder than most comparable lakes in the area because the water comes through the Colorado-Big Thompson Project pipeline from a very cold Grand Lake. Relatively slow growth rates makes Horsetooth a poor candidate for trophy smallmouth management. It takes several years for a smallmouth to reach harvestable size at the protected 12 inch minimum size limit. This limit allows sufficient age and growth for successful reproduction. With this regulation, smallmouth bass currently do not have recruitment limitations in Horsetooth and the population is completely sustained through natural reproduction.

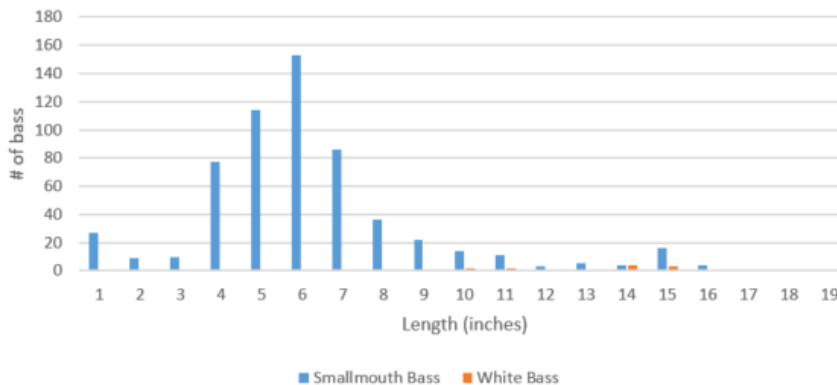


The relative weight figure above shows a body condition factor which is a relationship between an individual fish length and its weight compared to a standardized weight. Fish smaller than eight inches are not included in the analysis. As you can see there is a range of values for relative weights with no direct relationship. There are small and large bass in good (greater than 93) and poor condition (less than 93). Overall, smallmouth bass are in average condition.

Combined length frequency data from gill netting and boat electrofishing (top figure to the left) shows a diverse size range of smallmouth bass, with fish up to 16 inches being sampled. The number of quality bass captured has increased over the last decade and remains high, likely a result of bass having benefited from the diversified prey base with the resurgence of smelt.

The lower length frequency figure shows data only from gill netting. It is good to see the strong cohorts of smaller individuals in the figure above; however, their abundance makes it difficult to see the quality sized individuals because there are naturally fewer of them. As you can see quite a few quality smallmouth and white bass were sampled in 2021.

Horsetooth: 2021 Length Frequency
(Electrofishing & Gill Netting)



Horsetooth: 2021 Length Frequency
(Gill Netting)

