

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

2021 Strawberry Creek Weir Summary

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Introduction

The Wisconsin Department of Natural Resources (DNR) operates three salmon and trout egg collection facilities on Lake Michigan tributaries, including the Strawberry Creek Salmon Spawning Facility, or Strawberry Creek Weir (SCW) discussed herein. SCW is located in Sturgeon Bay, Wisconsin in Door County and has been in operation since the early 1970s. SCW is the DNR's primary egg collection facility for Chinook Salmon *Oncorhynchus tshawytscha* and typically provides the entire egg quota needed by the DNR to produce Chinook Salmon for stocking into Lake Michigan.

This basic report summarizes the number of fish processed at SCW during 2021. Please note that these numbers cannot be interpreted as absolute numbers of fish returned. Many variables impact these spawning runs, including stream flow, lake level, water temperature, stocking numbers, survival, harvest, dates of operation for each weir, etc. These factors vary from year to year and can impact the number of fish available and processed at each egg collection facility. Egg collection goals also vary from year to year, depending on projected stocking quotas, DNR production needs and egg requests from other states or agencies.

Spring 2021 Strawberry Creek Summary

Approximately 110,000 Chinook Salmon fingerlings from the Wild Rose State Fish Hatchery were stocked into a rearing pond at SCW on April 13, 2021. These Chinooks were reared in the pond for five weeks and released on May 20. Rearing activities involved feeding twice daily, monitoring conditions (i.e., temperature, dissolved oxygen) and routine maintenance. To release these Chinooks, a seine net was used to direct Chinooks out of the pond and into the creek. Screens were pulled on the downstream end of the pond on May 19. The pond was seined twice on May 20 and three times on June 3.

All Chinooks stocked lake-wide from 2011-2016 were marked with adipose fin clips and coded wire tags (CWTs). This program then shifted focus to steelhead *Oncorhynchus mykiss*.

All Chinooks stocked at Strawberry Creek in 2021 still had adipose fin clips but didn't have CWTs. In addition to the adipose clip, a right ventral clip was given to about 30,000 Chinooks stocked at Strawberry Creek in 2021 for future age assignments.

Autumn 2021 Strawberry Creek Summary

The SCW and pond were operated for Chinook Salmon spawning for 18 days from Oct. 1 to Oct. 18, 2021. The weir was open and fishing for 15 nights. The weir or access to the pond was temporarily closed on Oct. 3 and 10 to prevent overcrowding in the holding pond and then closed for the season on Oct. 18. Specific work dates for egg and data collections were Oct. 4, 7, 11, 14 and 18. The number of Chinook Salmon processed for data each day, respectively, were 630, 1,054, 678, 616 and 473 (a total of 3,451). Overall, 474 female Chinooks were spawned, and over 2.3 million eggs were collected (Table 1). These Chinook eggs were transferred to the Wild Rose State Fish Hatchery, where they were incubated, hatched and raised until the following spring for stocking into several Lake Michigan tributaries.

A water pump powered by a diesel engine to supplement stream flow at SCW was operated continuously from Oct. 1-18, 2021. Even without operating the pump during 2021, plenty of standing water was available in Strawberry Creek for Chinook Salmon to easily swim upstream. This relatively high stream water level was due in part to a high lake level and a similar elevation with the proximity of SCW to the lake (< 0.5 stream miles downstream). Even with high water, operating the pump still seemed to help the Chinook run by providing even more water and flow.

In addition to the 3,451 spawning Chinook Salmon processed for data, another 832 mortalities were removed from the pond and tallied at SCW during 2021 (a total of 4,283). This number of Chinook (4,283) is close to the long-term average of 4,630 (Figure 1).

Almost all Chinook Salmon at SCW were processed for data, including length (millimeters), weight (kilograms), gender, lamprey scars and fin clips. Fish health samples were also collected from a subsample. The total length for male Chinooks ranged from 20.0 to 45.1 inches and averaged 34.8. Females ranged from 23.1 to 42.8 inches (total length) and averaged 36.2. The average weight of age-3 female Chinooks in 2021 was 19.0 pounds (N=249) based on known age-3 fish from fin clips at Strawberry Creek (Figure 2).

Table 1. Numbers of Chinook Salmon processed for data, females spawned, eggs collected and average number of eggs per female at Strawberry Creek Weir during autumn 2021. (Note: Every fish wasn't always removed from the pond each day, and instead fish were sometimes processed at a later date).

Date	Chinooks Processed	Females Spawned	Eggs Collected	Average Eggs Per Female
Oct. 4, 2021	630	96	532,763	5,550
Oct. 7, 2021	1,054	108	557,508	5,162
Oct. 11, 2021	678	120	646,654	5,389
Oct. 14, 2021	616	90	310,342	3,931
Oct. 18, 2021	473	60	334,488	5,575

Totals	3,451*	474	2,381,755	5,121
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*An additional 832 Chinooks were removed from the pond and stream and were just tallied from Sept. 23 to Dec. 2 (3,451 processed + 832 tallied = 4,283 total).

**Some Chinook got into the pond after being closed too, so an additional 82 were removed from the pond and processed for data on Oct. 25.

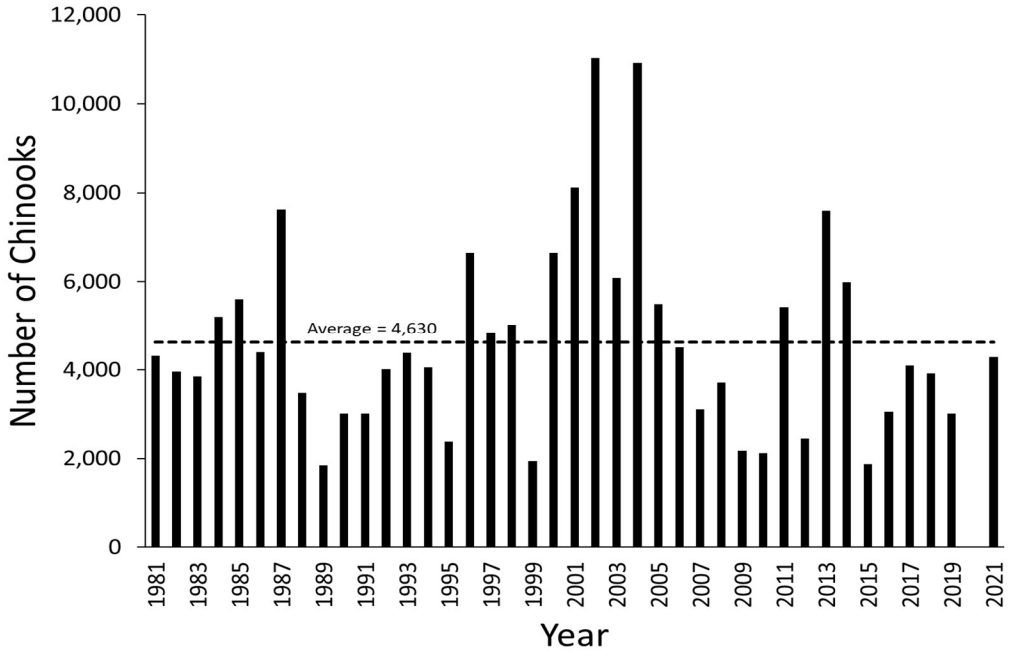


Figure 1. Numbers of Chinook Salmon handled during autumn spawning operations at the Strawberry Creek Weir per year from 1981-2021 (2020 data not available). The long-term average is 4,630 (dotted line). Several factors impact these numbers including stream flow from rainfall and supplemental water pumping, lake level, water temperature, stocking numbers, survival rates, dates of operation for the weir, etc.

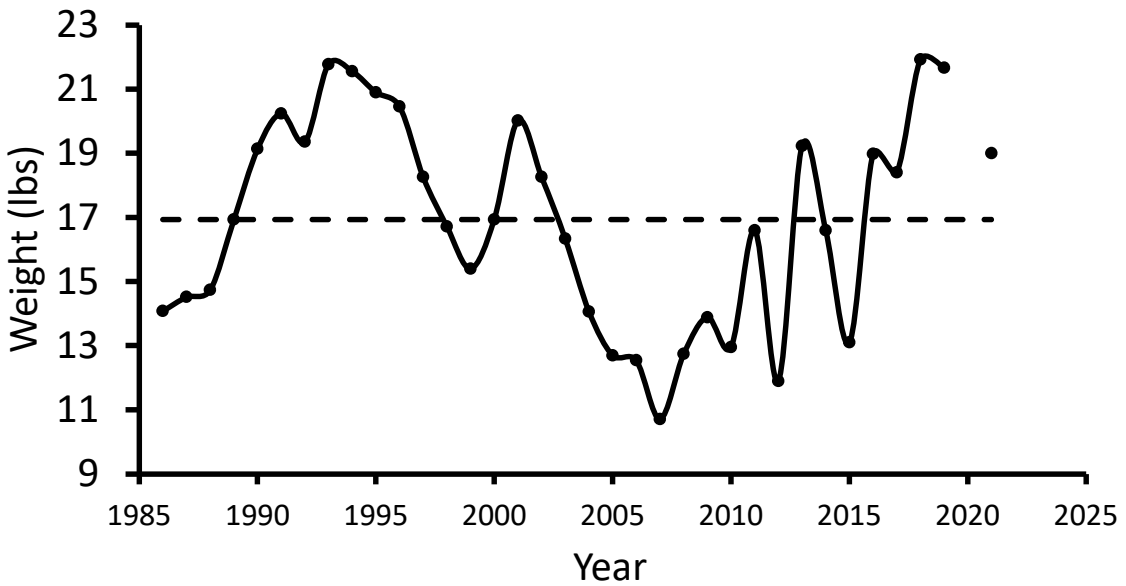


Figure 2. The average weight of age-3 female Chinook Salmon processed at the Strawberry Creek Weir per year from 1986-2021 (2020 data not available). The long-term average is 16.9 pounds (dotted line). Many factors impact Chinook size including alewife biomass, Chinook abundance and the ratio of predator/prey (etc.).

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