



## Strawberry Creek Salmon Spawning Facility: 2017 Summary (report completed 02/12/2019)

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**Photos:** Sign at entrance to Strawberry Creek Salmon Spawning Facility (left, 2015); Strawberry Creek Facility (middle, 2012); Processing Chinooks at Strawberry Creek (right, 2014) with volunteer Rick Hanney sorting fish (front), DNR fisheries technician Tim Kroeff collecting bio-data (middle), and USFWS technician Zach Kleemann collecting CWT snouts (back).

**Basic Introduction:** The Strawberry Creek Salmon Spawning Facility is a Chinook salmon egg collection facility located in Sturgeon Bay, WI. Strawberry Creek is the primary source of Chinook salmon eggs for WI DNR hatcheries, and typically 100% of WI DNR's eggs for hatchery production of Chinooks are collected at Strawberry Creek. Each spring, fingerling Chinook salmon are briefly reared in a pond at Strawberry Creek. This is a flow through pond filled directly with creek water to help with imprinting (i.e., this helps young Chinooks recognize the stream, so they'll return as mature adults). Chinooks released from the pond into Strawberry Creek swim about 0.4 miles downstream to the Bay of Sturgeon Bay and out to Lake Michigan. During October, mature adult Chinooks return to Strawberry Creek for spawning. Eggs are collected and fertilized at Strawberry Creek and then transferred to state fish hatcheries for incubation, hatching, and rearing. Recently, the Wild Rose State Fish Hatchery has produced all or most of the Chinook salmon stocked annually into Wisconsin tributaries to Lake Michigan. Additionally, a lifecycle characteristic of Pacific salmon including Chinook is that they typically spawn once and then die. Many salmon carcasses collected at Strawberry Creek are distributed to contractors (e.g., for fertilizer or animal feed), food pantries, and raptor rehabilitation centers. Extra eggs not needed for hatchery production are also collected by a contractor for resale as fishing bait. Education and outreach are important at the Strawberry Creek Salmon Spawning Facility too. Many tours are held at Strawberry Creek each year including school classes, Boy Scout troops, and retirement groups. Visitors and volunteers are common and welcomed.

**Spring 2017 Overview:** Approximately 122,500 Chinook salmon fingerlings from the Wild Rose State Fish Hatchery were stocked into a rearing pond at Strawberry Creek on May 4, 2017. These Chinooks were reared in the pond for 4 weeks and released on June 2. Rearing activities involved feeding twice daily, monitoring conditions (i.e., temp, dissolved oxygen), and routine maintenance. To release these Chinooks, a seine was used to direct Chinooks out of the pond and into the creek. Adipose fin clips and coded wire tags (CWTs) were used to mark all Chinooks stocked lake-wide from 2011-2016, but this program then shifted focus to steelhead. All Chinooks stocked at Strawberry Creek in 2017 still had adipose fin clips, but didn't have CWTs. A right vent clip (in addition to the adipose clip) was given to about 30,000 Chinooks stocked at Strawberry Creek in 2017 for future age assignments.

## Strawberry Creek Salmon Spawning Facility: 2017 Summary

### Fall 2017 Overview:

The Strawberry Creek weir (SCW) and pond were open for 21 consecutive days for Chinook salmon spawning from September 28 to October 19, 2017. Specific work dates for egg and data collections were October 2, 5, 9, 12, 16, and 19. This work at Strawberry Creek was successful overall, with decent numbers of Chinook salmon returned, biological data collected, and egg collection goals met.

A water pump powered by a diesel engine to supplement stream flow at SCW was operated continuously from September 28 to October 19, 2017. Even without operating the pump during 2017, 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 close proximity of SCW to the lake (< 0.5 stream miles downstream). Without the pump running during 2017, the water downstream of SCW appeared stagnant, without much downstream flow. Downstream flow increased when the pump was turned on, which seemed to quickly trigger the annual Chinook spawning run.

A total of 4,101 spawning Chinook salmon were handled at SCW during 2017 (table 1). A total of 420 female Chinooks were spawned and over 2.2 million eggs collected (table 1). This number (4,101) is below the long term average of 4,731 (for 1981-2016) but was an increase compared to 3,047 in 2016 and 1,869 in 2015 (figure 1). A sufficient number of Chinook eggs were collected at SCW during 2017 to meet WI DNR's hatchery production goals for planned Chinook stocking in 2018.

Almost all Chinook salmon at SCW were processed for data including: length (mm), weight (kg), gender, lamprey scars, and fin clips. A total of 865 snouts were collected by USFWS and WI DNR at SCW during 2017 for CWT extraction, and a routine fish health inspection was conducted on October 9th. Chinook total lengths ranged from 12.9 to 44.0 inches and averaged 31.0 for males. Females ranged from 24.0 to 42.5 inches (total length) and averaged 35.6. The average weight of known age-3 female Chinook salmon at Strawberry Creek in 2017 was 18.41 pounds (N=327). This weight was similar to 18.98 last year for 2016 (N = 926), but up from 13.1 pounds in 2015 (N = 329) and up from a long term average of 16.5 pounds (figure 2). Weights of age-3 female Chinooks were below average during 9 of the past 14 years from 2004-2017 (figure 2), although above average weights were measured recently in 2013, 2016, 2017.

Most Chinook carcasses and unused eggs from Strawberry Creek during 2017 were purchased by contracted vendors. During recent years, these vendors have included a commercial bait dealer, fertilizer plant, and/or animal feed company. During 2017, a total of 35,500 pounds of fish and a total of 5,720 pounds of eggs were distributed from Strawberry Creek to vendors. Fish totaling 8,000 pounds were also donated to local food pantries and raptor rehabilitation centers.



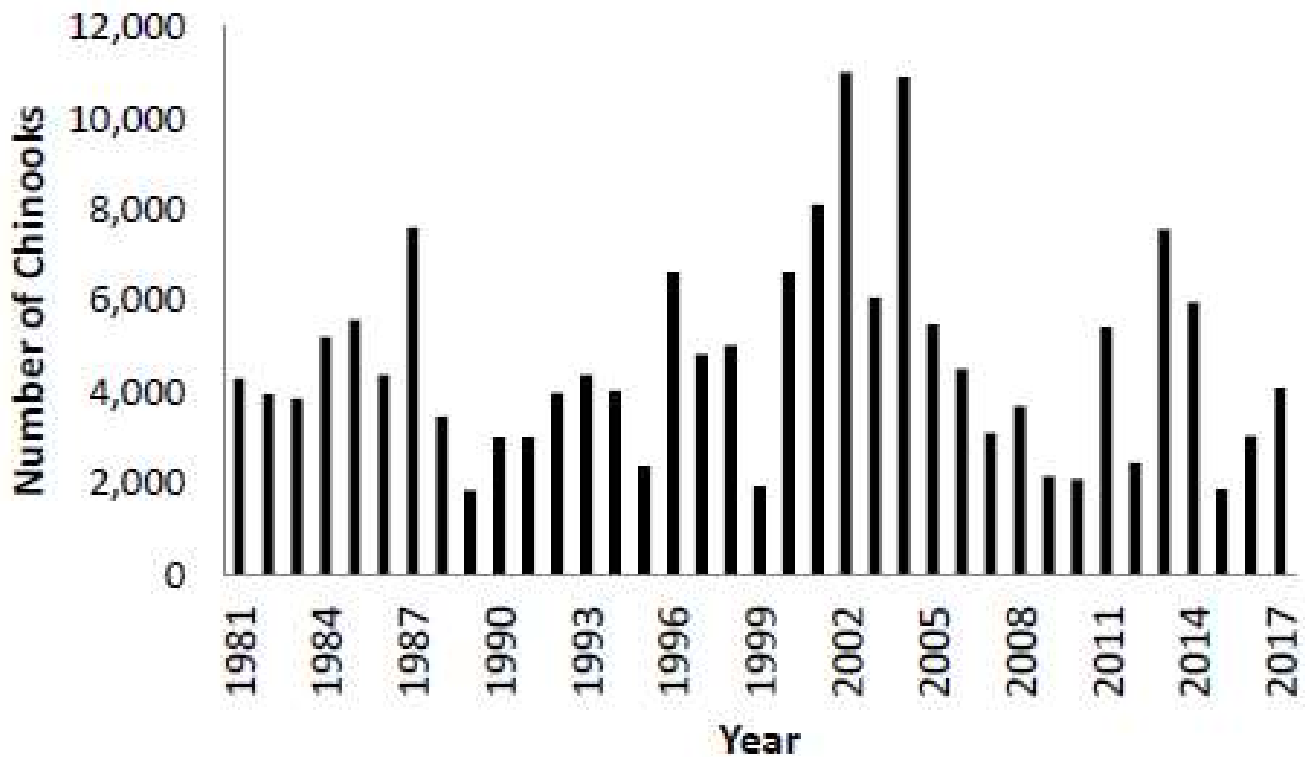
### Strawberry Creek Salmon Spawning Facility: 2017 Summary

**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 2017. (Note: Every fish wasn't always removed from the pond each day, and instead unprocessed fish were sometimes saved for future egg collections.)

Date	Chinooks Processed	Females Spawned	Eggs Collected	Average Eggs per Female
Mon Oct 2, 2017	51	N/A	0 (hard)	0
Thurs Oct 5, 2017	632	108	543,971	5,032
Mon Oct 9, 2017	793	108	573,277	5,308
Thurs Oct 12, 2017	1,284	96	507,919 (discarded)	5,291
Mon Oct 16, 2017	702	48	262,800	5,475
Thurs Oct 19, 2017	431	60	356,359	5,939
<b>TOTALS</b>	<b>3,893*</b>	<b>420</b>	<b>2,244,326</b>	<b>5,344</b>

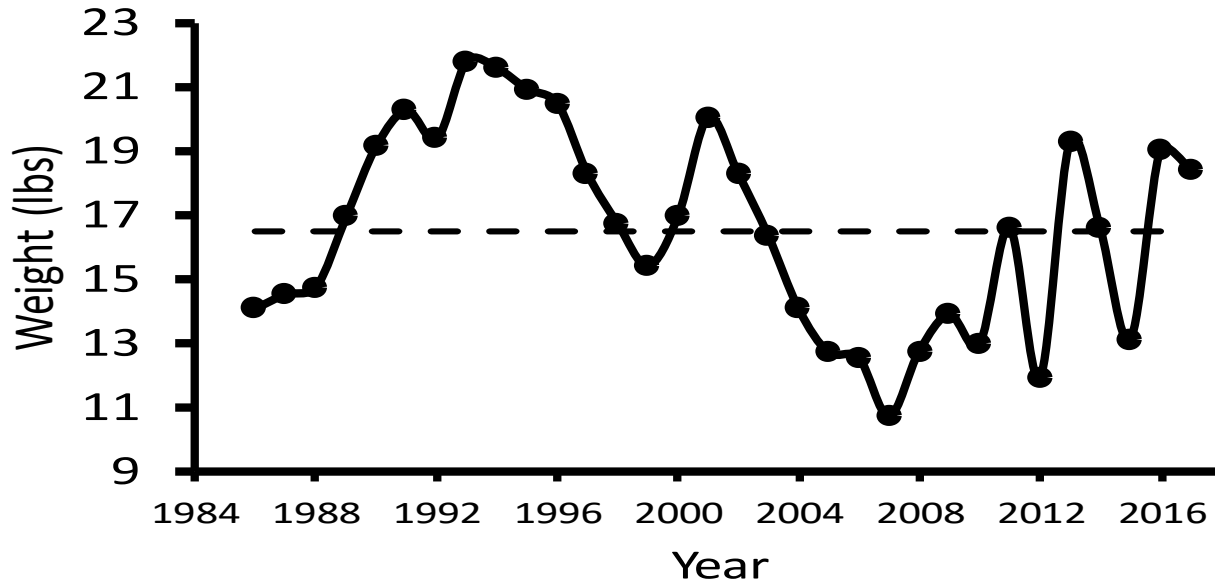
\*An additional 208 Chinooks were removed from the pond and stream and were just tallied from September 29 to October 19 (3,893 processed + 208 tallied = 4,101 total).

**Figure 1.** Numbers of Chinook salmon handled during autumn spawning operations at Strawberry Creek weir, per year from 1981-2017. The return for 2017 (4,101) was below the long term average of 4,731 (for 1981-2016) but was above a recent low of 1,869 in 2015. Several factors impact these returns including: stream flow from rainfall and supplemental water pumping, weather, water temperature, lake level, stocking numbers, survival rates, facility operation dates, etc.



### Strawberry Creek Salmon Spawning Facility: 2017 Summary

**Figure 2.** Average weights for age-3 female Chinook salmon collected at Strawberry Creek annually from 1986-2017. Recent ages were determined using coded wire tags (CWTs). The long term average is 16.5 pounds (dotted line).



**Photo.** Chinook salmon held by DNR fisheries technician Lucas Koenig with DNR fisheries technician Tim Kroeff (back, left) at the Strawberry Creek Salmon Spawning Facility during fall 2017.

