

Root River Steelhead Facility

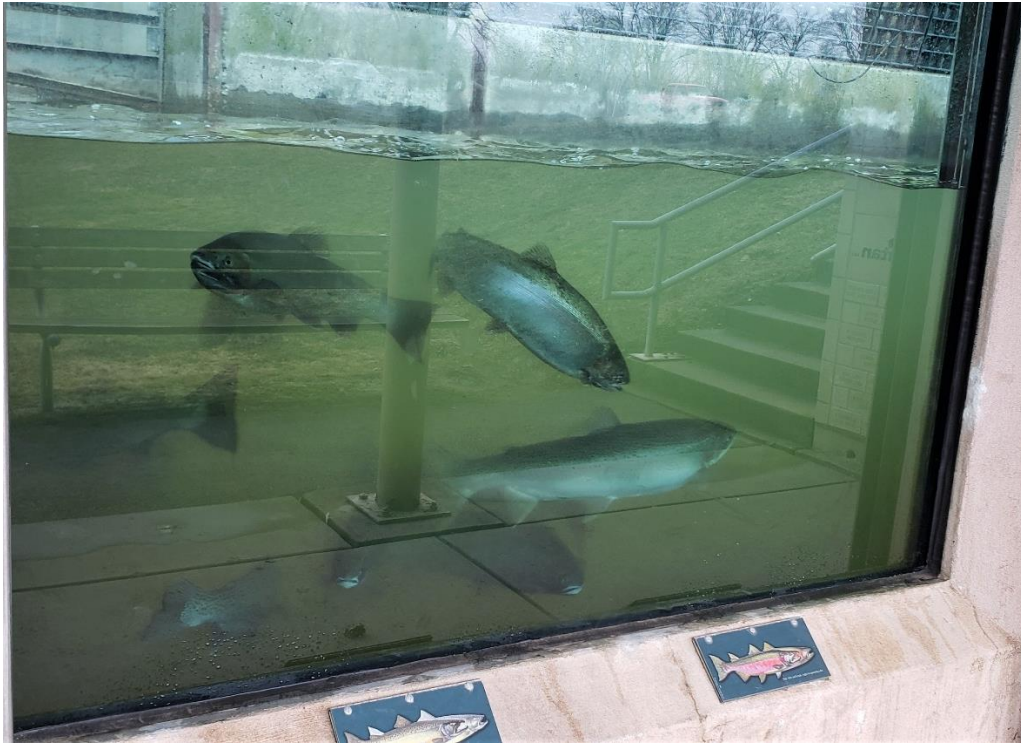


Photo credit: Wisconsin DNR

Fall 2019 through Spring 2020



WISCONSIN DEPARTMENT OF NATURAL RESOURCES
Fisheries Management

Root River Steelhead Facility

Fall 2019 and Spring 2020

October 2023

WRITTEN BY

LAURA SCHMIDT

DNR Fisheries Management
Southern Lake Michigan Fisheries Work Unit
600 E. Greenfield Ave.
Milwaukee, WI 53204

Abstract – A total of 1,432 Chinook salmon, 1,215 coho salmon, 149 steelhead and nine brown trout were examined during fall 2019 and spring 2020 at the Root River Steelhead Facility (RRSF). A total of 728 coho were spawned, and approximately 1,017,000 eggs were collected for our hatcheries.

Due to the COVID-19 public health emergency and the Governor's Executive Order #12, steelhead spawning activities at RRSF were modified during the spring of 2020. Restrictions were placed on the number of staff present at the facility, and therefore, no biological data was collected from fish after March 23. The focus of our effort was egg collection for our hatchery system to provide steelhead for stocking in the future. The facility was in operation for two processing dates prior to the Governor's Executive Order #12. 128 steelhead were captured during those processing days.

A total of 108 female steelhead were spawned at the Root River, and 140 females were spawned at the Besadny Anadromous Fisheries Facility.

The number of fish captured at RRSF is a subset of the seasonal migration in the Root River. RRSF does not stop every fish in the river, as they are able to move upstream past the facility before it is operational in early spring and fall, and some fish are able to bypass the facility during the sampling season when the river is at high flows.

Due to Viral Hemorrhagic Septicemia (VHS) protocols, no Skamania strain steelhead brood fish have been collected from RRSF since the fall of 2006. Historically, adult Skamania were transported in the fall from RRSF to Kettle Moraine Springs State Fish Hatchery, where they were held until they were ready to spawn the following January/February. VHS rules now prohibit the transfer of live fish from RRSF to a hatchery, and therefore, the Skamania program was suspended, with none stocked between 2008 and 2017. Skamania were stocked in 2018 and 2019, which were raised from eggs collected by Indiana DNR. Without Skamania brood stock collection, RRSF is operated later in the fall, allowing Chinooks to migrate upriver past the facility

early in the season. This accounts for lower numbers of fish processed at RRSF in recent fall seasons.

In 2018, the U.S. Fish and Wildlife Service's mass-marking program began marking all rainbow trout stocked into Lake Michigan with an adipose clip and coded-wire tag. All rainbow trout will continue to be marked with coded-wire tags and adipose clips for a period of five years, which will provide opportunities for analysis of movement and straying rates of stocked fish, growth rates and estimates of natural reproduction.

In the fall of 2019 at RRSF the standard weight of a 30-inch Chinook salmon was 10.1 pounds, which was slightly higher than the previous year. The standard weight for a 22-inch coho salmon was 3.7 pounds, which was about the same as the previous fall. The standard weight for a 22-inch steelhead was 4.1 pounds, which was slightly higher than the previous year. We did not encounter enough brown trout at RRSF to calculate a standard weight.

The following tables and figures report the results of data collected at the RRSF during the fall of 2019 and spring 2020. These data contribute to a long-term index of Chinook, coho and steelhead populations in the Root River and are collected to fulfill three objectives: 1) track the abundance of salmonid returns, 2) measure the growth and condition of each species and/or strain, and 3) estimate return rate of each species. For a complete description of methods and calculations, see Thompson and Eggold (2007).

For spring 2020, growth, age and return rates of steelhead were only calculated for the Chambers Creek strain, the primary strain handled in the two processing dates that occurred.

REFERENCES

Thompson, J. and B. Eggold. 2007. Root River Steelhead Facility, Fall 2006 and Spring 2007. Publication number PUB-FH-836 2007. Wisconsin Department of Natural Resources, Milwaukee, Wisconsin. 22 pages.

Table 1. Summary of Chinook salmon, coho salmon, steelhead and brown trout captured at the Root River Steelhead Facility during 2010 to 2020.

| Harvest Year | Harvested | Passed Upstream | Misc. Samples | Total |
|-----------------------|-----------|-----------------|---------------|-------|
| CHINOOK SALMON | | | | |
| Fall 2010 | 7 | 1,067 | 434 | 1,508 |
| Fall 2011 | 117 | 1,798 | 206 | 2,121 |
| Fall 2012 | 201 | 1,462 | 167 | 1,830 |
| Fall 2013 | 486 | 1,070 | 392 | 1,948 |
| Fall 2014 | 533 | 1,646 | 44 | 2,223 |
| Fall 2015 | 384 | 880 | 45 | 1,309 |
| Fall 2016 | 518 | 1,375 | 152 | 2,045 |
| Fall 2017 | 696 | 1,542 | 524 | 2,762 |
| Fall 2018 | 794 | 326 | 5 | 1,125 |
| Fall 2019 | 578 | 818 | 36 | 1,432 |
| COHO SALMON | | | | |
| Fall 2010 | 256 | 1,355 | 71 | 1,682 |
| Fall 2011 | 240 | 1,258 | 130 | 1,628 |
| Fall 2012 | 153 | 659 | 37 | 849 |
| Fall 2013 | 216 | 1,281 | 169 | 1,666 |
| Fall 2014 | 60 | 1,295 | 33 | 1,388 |
| Fall 2015 | 60 | 1,351 | 25 | 1,436 |
| Fall 2016 | 60 | 1,324 | 133 | 1,517 |
| Fall 2017 | 66 | 2,290 | 180 | 2,536 |
| Fall 2018 | 61 | 2,397 | 29 | 2,487 |
| Fall 2019 | 60 | 1,117 | 38 | 1,215 |
| STEELHEAD | | | | |
| Fall 2010 | 0 | 65 | 0 | 65 |
| Spring 2011 | 120 | 642 | 4 | 766 |
| Fall 2011 | 0 | 18 | 0 | 18 |
| Spring 2012 | 116 | 113 | 3 | 232 |
| Fall 2012 | 0 | 16 | 2 | 18 |
| Spring 2013 | 120 | 179 | 2 | 301 |
| Fall 2013 | 0 | 7 | 0 | 7 |
| Spring 2014 | 120 | 852 | 7 | 979 |
| Fall 2014 | 0 | 11 | 0 | 11 |
| Spring 2015 | 60 | 711 | 3 | 774 |
| Fall 2015 | 0 | 9 | 0 | 9 |
| Spring 2016 | 60 | 1,293 | 0 | 1,353 |
| Fall 2016 | 0 | 43 | 0 | 43 |
| Spring 2017 | 120 | 774 | 1 | 895 |
| Fall 2017 | 0 | 9 | 0 | 9 |
| Spring 2018 | 62 | 990 | 0 | 1,052 |
| Fall 2018 | 0 | 20 | 0 | 20 |
| Spring 2019 | 91 | 651 | 0 | 742 |
| Fall 2019 | 8 | 13 | 0 | 21 |
| Spring 2020 | 18 | 110 | 0 | 128 |
| BROWN TROUT | | | | |
| Fall 2010 | 0 | 78 | 1 | 79 |
| Fall 2011 | 0 | 57 | 4 | 61 |
| Fall 2012 | 0 | 112 | 22 | 134 |
| Fall 2013 | 0 | 166 | 1 | 167 |
| Spring 2014 | 0 | 1 | 0 | 1 |
| Fall 2014 | 13 | 174 | 5 | 192 |
| Fall 2015 | 0 | 52 | 34 | 86 |
| Fall 2016 | 0 | 11 | 5 | 16 |
| Fall 2017 | 0 | 12 | 3 | 15 |
| Fall 2018 | 0 | 80 | 0 | 80 |
| Fall 2019 | 0 | 9 | 0 | 9 |

Table 2. Number of Chinook salmon harvested, passed upstream and sampled at the Root River Steelhead Facility during fall 2019.

| Date | Number Harvested | Number Passed Upstream | Number of Miscellaneous Samples | Total Number of Fish |
|---------------|------------------|------------------------|---------------------------------|----------------------|
| Sep 19, 2019 | 10 | 4 | 0 | 14 |
| Sep 23, 2019 | 22 | 13 | 0 | 35 |
| Sep 26, 2019 | 59 | 24 | 0 | 83 |
| Sep 30, 2019 | 50 | 148 | 23 | 221 |
| Oct 03, 2019 | 50 | 112 | 3 | 165 |
| Oct 09, 2019 | 53 | 7 | 1 | 61 |
| Oct 12, 2019 | 0 | 183 | 2 | 185 |
| Oct 14, 2019 | 49 | 0 | 0 | 49 |
| Oct 17, 2019 | 70 | 91 | 0 | 161 |
| Oct 21, 2019 | 73 | 140 | 1 | 214 |
| Oct 24, 2019 | 87 | 76 | 3 | 166 |
| Oct 28, 2019 | 46 | 13 | 3 | 62 |
| Oct 31, 2019 | 5 | 3 | 0 | 8 |
| Nov 04, 2019 | 3 | 2 | 0 | 5 |
| Nov 07, 2019 | 1 | 2 | 0 | 3 |
| Totals | 578 | 818 | 36 | 1,432 |

Table 3. Average weight, average length, standard weight (predicted weight at a given length based on a length-weight regression) and trophy weight (95th percentile) for the major salmonid species returning to the Root River Steelhead Facility from fall 2010 to spring 2020. The lengths used for the calculation of standard weight are: 30 inches for Chinook, 22 inches for coho, 22 inches for steelhead and 20 inches for brown trout. Note: Fall 2016, Fall 2017, and Fall 2019 were omitted for brown trout due to low returns.

| Season | Number Used In Analysis | Average Weight (Pounds) | Average Length (Inches) | Standard Weight | Trophy Weight |
|-----------------------|-------------------------|-------------------------|-------------------------|-----------------|---------------|
| CHINOOK SALMON | | | | | |
| 2010-11 | 674 | 9.5 ± 3.6 | 29.9 ± 4.4 | 8.8 | 15.0 |
| 2011-12 | 564 | 10.9 ± 5.0 | 30.3 ± 5.0 | 9.6 | 18.5 |
| 2012-13 | 694 | 10.6 ± 3.4 | 31.5 ± 3.9 | 8.6 | 16.0 |
| 2013-14 | 1,085 | 12.5 ± 6.2 | 31.6 ± 5.8 | 9.6 | 21.5 |
| 2014-15 | 945 | 11.8 ± 3.0 | 32.2 ± 3.2 | 9.0 | 16.4 |
| 2015-16 | 920 | 11.7 ± 3.7 | 31.6 ± 4.2 | 9.0 | 16.9 |
| 2016-17 | 870 | 10.1 ± 5.3 | 29.5 ± 5.4 | 9.5 | 19.1 |
| 2017-18 | 868 | 11.1 ± 5.3 | 30.3 ± 5.0 | 9.5 | 19.1 |
| 2018-19 | 852 | 13.8 ± 6.0 | 32.6 ± 5.6 | 9.8 | 22.5 |
| 2019-20 | 1,415 | 15.3 ± 5.6 | 33.6 ± 4.5 | 10.1 | 24.6 |
| COHO SALMON | | | | | |
| 2010-11 | 1,249 | 5.4 ± 2.2 | 24.9 ± 4.0 | 3.4 | 8.6 |
| 2011-12 | 786 | 7.4 ± 2.3 | 26.9 ± 3.7 | 3.6 | 10.3 |
| 2012-13 | 715 | 4.0 ± 1.7 | 22.4 ± 3.8 | 3.5 | 6.4 |
| 2013-14 | 786 | 8.2 ± 2.4 | 28.1 ± 3.4 | 3.6 | 11.3 |
| 2014-15 | 1,353 | 6.2 ± 1.8 | 25.9 ± 3.3 | 3.5 | 8.6 |
| 2015-16 | 1,161 | 4.5 ± 1.5 | 23.3 ± 2.9 | 3.5 | 7.0 |
| 2016-17 | 1,042 | 5.2 ± 2.8 | 23.8 ± 5.0 | 3.6 | 9.4 |
| 2017-18 | 1,249 | 8.3 ± 2.4 | 27.7 ± 3.2 | 3.9 | 11.6 |
| 2018-19 | 1,742 | 7.8 ± 2.4 | 26.9 ± 3.3 | 3.8 | 11.2 |
| 2019-20 | 1,177 | 7.4 ± 3.2 | 26.5 ± 4.7 | 3.7 | 11.6 |
| STEELHEAD | | | | | |
| 2010-11 | 827 | 4.8 ± 2.3 | 23.5 ± 4.1 | 3.7 | 8.8 |
| 2011-12 | 247 | 5.7 ± 1.8 | 25.4 ± 2.8 | 3.7 | 8.9 |
| 2012-13 | 315 | 4.5 ± 2.1 | 23.2 ± 4.3 | 3.6 | 7.7 |
| 2013-14 | 605 | 5.6 ± 2.5 | 24.6 ± 4.3 | 3.6 | 9.6 |
| 2014-15 | 779 | 4.1 ± 1.9 | 22.6 ± 3.9 | 3.3 | 7.6 |
| 2015-16 | 1,047 | 4.9 ± 1.9 | 24.0 ± 2.2 | 3.8 | 7.3 |
| 2016-17 | 933 | 6.6 ± 2.2 | 25.9 ± 3.5 | 3.8 | 9.8 |
| 2017-18 | 1,044 | 6.9 ± 2.1 | 26.3 ± 2.9 | 3.9 | 10.8 |
| 2018-19 | 747 | 6.7 ± 2.5 | 25.7 ± 3.4 | 3.8 | 11.1 |
| 2019-20 | 143 | 6.2 ± 2.8 | 24.9 ± 4.6 | 4.1 | 10.3 |
| BROWN TROUT | | | | | |
| 2010-11 | 78 | 6.5 ± 2.9 | 24.0 ± 3.3 | 3.4 | 14.7 |
| 2011-12 | 57 | 5.6 ± 2.5 | 22.0 ± 4.5 | 4.0 | 11.1 |
| 2012-13 | 112 | 5.5 ± 1.6 | 23.1 ± 2.5 | 3.8 | 8.1 |
| 2013-14 | 167 | 5.8 ± 1.4 | 22.8 ± 1.7 | 4.1 | 8.3 |
| 2014-15 | 184 | 5.7 ± 2.0 | 22.7 ± 2.7 | 4.0 | 10.2 |
| 2015-16 | 84 | 5.9 ± 2.1 | 22.6 ± 2.5 | 4.0 | 10.8 |

Table 4. Number of coho salmon harvested, passed upstream and sampled at the Root River Steelhead Facility during fall 2019.

| Date | Number Harvested | Number Passed Upstream | Number of Miscellaneous Samples | Total Number of Fish |
|---------------|------------------|------------------------|---------------------------------|----------------------|
| Sep 19, 2019 | 0 | 8 | 0 | 8 |
| Sep 23, 2019 | 0 | 3 | 0 | 3 |
| Sep 26, 2019 | 0 | 8 | 0 | 8 |
| Sep 30, 2019 | 0 | 28 | 0 | 28 |
| Oct 03, 2019 | 0 | 25 | 0 | 25 |
| Oct 09, 2019 | 0 | 56 | 0 | 56 |
| Oct 12, 2019 | 0 | 116 | 0 | 116 |
| Oct 14, 2019 | 0 | 22 | 0 | 22 |
| Oct 17, 2019 | 0 | 15 | 0 | 15 |
| Oct 21, 2019 | 0 | 18 | 0 | 18 |
| Oct 24, 2019 | 0 | 34 | 0 | 34 |
| Oct 28, 2019 | 0 | 396 | 17 | 413 |
| Oct 31, 2019 | 0 | 6 | 1 | 7 |
| Nov 04, 2019 | 60 | 303 | 19 | 382 |
| Nov 07, 2019 | 0 | 79 | 1 | 80 |
| Totals | 60 | 1,117 | 38 | 1,215 |

Table 5. Estimated age composition of coho salmon (sexes combined) examined at the Root River Steelhead Facility during fall, 2010 through 2019. Ages were assigned by length-frequency of measured fish.

| Year of Return | Percent Age Composition | | Number Used in Analysis | Total Return |
|----------------|-------------------------|-----|-------------------------|--------------|
| | 1+ | 2+ | | |
| 2010 | 12% | 88% | 1,249 | 1,682 |
| 2011 | 6% | 94% | 761 | 1,628 |
| 2012 | 21% | 79% | 715 | 849 |
| 2013 | 5% | 95% | 786 | 1,666 |
| 2014 | 6% | 94% | 1,353 | 1,388 |
| 2015 | 9% | 91% | 1,161 | 1,436 |
| 2016 | 29% | 71% | 1,042 | 1,517 |
| 2017 | 5% | 95% | 1,249 | 2,536 |
| 2018 | 5% | 95% | 1,746 | 2,487 |
| 2019 | 15% | 85% | 1,178 | 1,215 |

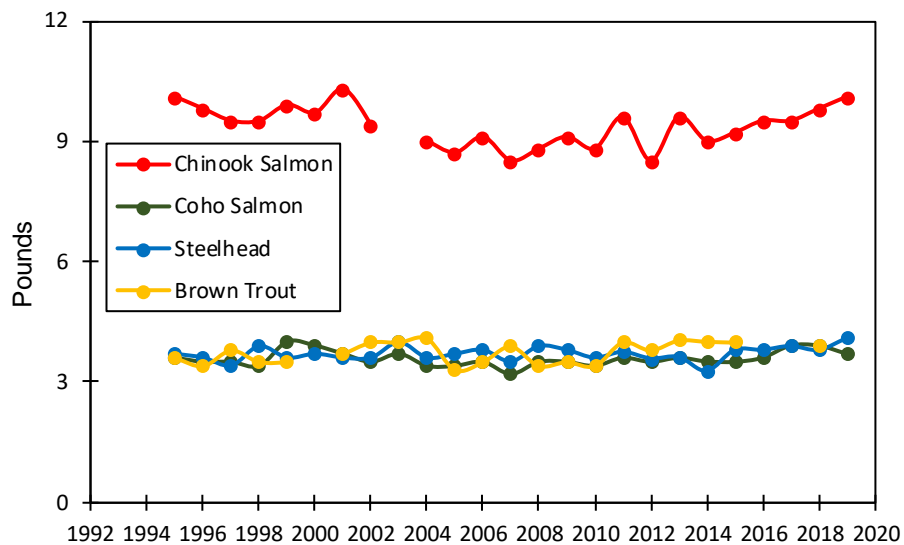


Figure 1. Standard weight for the major salmonid species returning to the Root River Steelhead Facility from 1995 to 2019. Note: Fall 2016, fall 2017 and fall 2019 were omitted for brown trout due to low returns.

Table 6. Number of steelhead harvested, passed upstream and sampled at the Root River Steelhead Facility during fall 2019 and spring 2020.

| Date | Number Harvested | Number Passed Upstream | Number of Miscellaneous Samples | Total Number of Fish |
|---------------|------------------|------------------------|---------------------------------|----------------------|
| Sep 23, 2019 | 0 | 1 | 0 | 1 |
| Sep 26, 2019 | 1 | 0 | 0 | 1 |
| Sep 30, 2019 | 1 | 0 | 0 | 1 |
| Oct 09, 2019 | 1 | 0 | 0 | 1 |
| Oct 12, 2019 | 0 | 1 | 0 | 1 |
| Oct 21, 2019 | 1 | 2 | 0 | 3 |
| Oct 24, 2019 | 2 | 3 | 0 | 5 |
| Oct 28, 2019 | 1 | 1 | 0 | 2 |
| Oct 31, 2019 | 2 | 2 | 0 | 4 |
| Nov 07, 2019 | 0 | 2 | 0 | 2 |
| Mar 19, 2020 | 4 | 15 | 0 | 19 |
| Mar 23, 2020 | 14 | 95 | 0 | 109 |
| Totals | 27 | 122 | 0 | 149 |

Table 7. Return rate of steelhead to the Root River weir during 2004 through 2019. Number at age were estimated by expanding the proportion at each age in the aged sample against the return of known-strain steelhead. Fall data include only Skamania; spring data combine Chambers Creek and Ganaraska returns.

| Year Class | Number stocked | Return Time | Number at Age | | | | | | | Total | Return Rate |
|------------|----------------|--------------|---------------|------------|------------|------------|------------|-----------|----------|-------------|--------------|
| | | | Age 1 | Age 2 | Age 3 | Age 4 | Age 5 | Age 6 | Age 7 | | |
| 2004 | 35,930 | Fall | 0 | 3 | 29 | 0 | 1 | 0 | 0 | 33 | 0.09% |
| | 55,033 | Spring | 0 | 30 | 73 | 18 | 16 | 5 | 0 | 142 | 0.26% |
| | 90,963 | Total | 0 | 33 | 102 | 18 | 17 | 5 | 0 | 175 | 0.19% |
| 2005 | 34,452 | Fall | 0 | 3 | 0 | 14 | 2 | 1 | 0 | 20 | 0.06% |
| | 54,346 | Spring | 0 | 60 | 90 | 133 | 32 | 1 | 2 | 318 | 0.59% |
| | 88,798 | Total | 0 | 63 | 90 | 147 | 34 | 2 | 2 | 338 | 0.38% |
| 2006 | 35,210 | Fall | 0 | 0 | 63 | 27 | 1 | 1 | 0 | 92 | 0.26% |
| | 57,934 | Spring | 0 | 67 | 486 | 191 | 67 | 4 | 0 | 815 | 1.41% |
| | 93,144 | Total | 0 | 67 | 549 | 218 | 68 | 5 | 0 | 907 | 0.97% |
| 2007 | 34,556 | Fall | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 3 | 0.01% |
| | 47,628 | Spring | 2 | 13 | 36 | 49 | 15 | 1 | 0 | 116 | 0.24% |
| | 82,184 | Total | 2 | 15 | 36 | 49 | 16 | 1 | 0 | 119 | 0.14% |
| 2008 | 0 | Fall | - | - | - | - | - | - | - | - | - |
| | 84,275 | Spring | 0 | 14 | 252 | 47 | 2 | 0 | 0 | 315 | 0.37% |
| | 84,275 | Total | 0 | 14 | 252 | 47 | 2 | 0 | 0 | 315 | 0.37% |
| 2009 | 0 | Fall | - | - | - | - | - | - | - | - | - |
| | 57,165 | Spring | 0 | 145 | 115 | 97 | 47 | 1 | 2 | 407 | 0.71% |
| | 57,165 | Total | 0 | 145 | 115 | 97 | 47 | 1 | 2 | 407 | 0.71% |
| 2010 | 0 | Fall | - | - | - | - | - | - | - | - | - |
| | 55,119 | Spring | 0 | 3 | 47 | 99 | 15 | 2 | 0 | 166 | 0.30% |
| | 55,119 | Total | 0 | 3 | 47 | 99 | 15 | 2 | 0 | 166 | 0.30% |
| 2011 | 0 | Fall | - | - | - | - | - | - | - | - | - |
| | 54,029 | Spring | 0 | 74 | 316 | 81 | 23 | 3 | 0 | 497 | 0.92% |
| | 54,029 | Total | 0 | 74 | 316 | 81 | 23 | 3 | 0 | 497 | 0.92% |
| 2012 | 0 | Fall | - | - | - | - | - | - | - | - | - |
| | 54,111 | Spring | 0 | 182 | 336 | 318 | 74 | 60 | 0 | 970 | 1.79% |
| | 54,111 | Total | 0 | 182 | 336 | 318 | 74 | 60 | 0 | 970 | 1.79% |
| 2013 | 0 | Fall | - | - | - | - | - | - | - | - | - |
| | 56,723 | Spring | 0 | 198 | 835 | 559 | 139 | 41 | | 1772 | 3.12% |
| | 56,723 | Total | 0 | 198 | 835 | 559 | 139 | 41 | | 1772 | 3.12% |
| 2014 | 0 | Fall | - | - | - | - | - | - | - | - | - |
| | 62,848 | Spring | 0 | 21 | 87 | 64 | 12 | | | 184 | 0.29% |
| | 62,848 | Total | 0 | 21 | 87 | 64 | 12 | | | 184 | 0.29% |
| 2015 | 0 | Fall | - | - | - | - | - | - | - | - | - |
| | 55,352 | Spring | 0 | 78 | 495 | 219 | 5 | | | 797 | 1.44% |
| | 55,352 | Total | 0 | 78 | 495 | 219 | 5 | | | 797 | 1.44% |
| 2016 | 0 | Fall | - | - | - | - | - | - | - | - | - |
| | 55,133 | Spring | 0 | 36 | 214 | 9 | | | | 259 | 0.47% |
| | 55,133 | Total | 0 | 36 | 214 | 9 | | | | 259 | 0.47% |
| 2017 | 0 | Fall | - | - | - | - | - | - | - | - | - |
| | 90,572 | Spring | 0 | 28 | 37 | | | | | 65 | 0.07% |
| | 90,572 | Total | 0 | 28 | 37 | | | | | 65 | 0.07% |
| 2018 | 0 | Fall | - | - | - | - | - | - | - | - | - |
| | 90,572 | Spring | 0 | 15 | | | | | | 15 | 0.02% |
| | 90,572 | Total | 0 | 15 | | | | | | 15 | 0.02% |

*Note – Skamania strain broodstock are no longer collected at the Root River weir, and none were stocked from 2008 - 2017. Skamania were stocked in 2018, which is reflected in the total number stocked for the 2017 year class.

Table 8. Estimated age composition of steelhead (sexes combined) examined at the Root River Steelhead Facility during 2004 – 2020. Age is based on age-length key developed from known-age fin clipped steelhead. Total number represents the number of steelhead used in the analysis. Spring 2020 ages are based only on the Chambers Creek strain, and coded-wire tag ages are not included in the table below*.

| Year of Return | Percent Age Composition | | | | | | | Total Number |
|----------------|-------------------------|------|------|------|------|------|-----|--------------|
| | 1+ | 2+ | 3+ | 4+ | 5+ | 6+ | 7+ | |
| Fall - 2004 | - | 0.8 | 41.6 | 52.8 | 0.8 | 4.0 | - | 125 |
| Spring - 2005 | - | 14.7 | 15.3 | 54.5 | 14.5 | 0.6 | 0.4 | 490 |
| Fall - 2005 | - | - | 79.8 | 7.3 | 0.1 | 6.4 | 5.5 | 109 |
| Spring - 2006 | - | 4.2 | 38.4 | 18.4 | 38.1 | 0.6 | 0.3 | 354 |
| Fall - 2006 | - | 0.6 | 55.6 | 24.2 | 15.6 | 1.9 | 1.3 | 475 |
| Spring - 2007 | - | 17.4 | 21.1 | 28 | 7.8 | 22.0 | 3.7 | 218 |
| Fall - 2007 | - | 4.8 | 43.5 | 6.5 | - | 40.4 | 4.8 | 62 |
| Spring - 2008 | - | 34.6 | 46.2 | 9.3 | 6.6 | 2.2 | 1.1 | 182 |
| Spring - 2009 | 0.3 | 1.9 | 73.5 | 20.1 | 2.4 | 0.8 | 0.3 | 370 |
| Fall - 2009 | - | 2.8 | 76.4 | 16.7 | 1.4 | 2.8 | - | 72 |
| Spring - 2010 | - | 5.0 | 12.8 | 68.0 | 11.4 | 1.8 | 1.1 | 281 |
| Fall - 2010 | - | 14.3 | - | 78.6 | 7.1 | - | - | 14 |
| Spring - 2011 | 0.2 | 28.2 | 48.9 | 9.4 | 13.1 | 0.2 | - | 497 |
| Fall - 2011 | - | 33.3 | 66.7 | - | - | - | - | 6 |
| Spring - 2012 | - | 1.7 | 61.6 | 25.0 | 8.1 | 2.3 | 1.2 | 172 |
| Fall - 2012 | - | 100 | - | - | - | - | - | 1 |
| Spring - 2013 | - | 33.5 | 21.2 | 43.9 | 0.9 | 0.5 | - | 212 |
| Spring - 2014 | - | 28.3 | 49.1 | 15.3 | 7.3 | - | - | 399 |
| Spring - 2015 | - | 31.4 | 53.2 | 12.8 | 2.4 | 0.2 | - | 617 |
| Spring - 2016 | - | 1.7 | 69.5 | 26.5 | 1.9 | 0.2 | 0.2 | 909 |
| Spring - 2017 | - | 9.7 | 10.9 | 69.7 | 9.3 | 0.4 | - | 775 |
| Spring - 2018 | - | 4.5 | 62.4 | 8.0 | 17.5 | 7.6 | - | 794 |
| Spring - 2019 | - | 5.4 | 41.6 | 42.6 | 2.4 | 8 | - | 500 |
| Spring - 2020 | - | 22.7 | 56.1 | 13.6 | 7.6 | - | - | 66 |

*Coded-wire tags were recovered from 16 adipose-only clipped steelhead in spring 2020. All 16 fish were age-3 and ranged in size from 21.4 inches to 27.2 inches.

Table 9. Average length (inches) and weight (pounds) at age (± 1 SD) of fall-run Skamania-strain steelhead at the Root River Steelhead Facility during 1996 to 2012. No Skamania were captured from Fall 2013 – Fall 2019. Data from 2000 - 2004 were taken from fish transported and held at Kettle Moraine Springs Hatchery, so some weight loss likely occurred.

| Season | Strain | Age 2+ | Age 3+ | Age 4+ | Age 5+ | Age 6+ | Age 7+ |
|-----------|----------|-----------------------------|---|---|--|---|--|
| Fall 1998 | Skamania | | 25.8 (± 1.4) | 30.0 (± 2.1) | 31.9 (± 2.0) | | |
| | | | 5.1 (± 0.8) N = 22 | 8.0 (± 1.6) N = 44 | 9.5 (± 1.5) N = 19 | | |
| Fall 1999 | Skamania | | 28.3 (± 1.6) | 29.0 (± 1.2) | 31.6 (± 2.1) | 32.2 (± 0.6) | |
| | | | 7.3 (± 0.8) N = 14 | 8.0 (± 1.1) N = 25 | 10.6 (± 0.4) N = 2 | 10.0 (± 1.1) N = 4 | |
| Fall 2000 | Skamania | 26.4 (± 0) | 27.8 (± 1.2) | 30.2 (± 2.0) | 28.9 (± 0.5) | 31.2 (± 1.0) | 32.3 (± 2.3) |
| | | 7.0 (± 1.4) N = 2 | 7.5 (± 1.0) N = 19 | 8.5 (± 2.0) len N = 37 wt N = 38 | 8.6 (± 1.0) N = 8 | 10.6 (± 1.8) N = 6 | 10.1 (± 1.8) N = 8 |
| Fall 2001 | Skamania | | 27.0 (± 1.3) | 25.5 (± 0.6) | 31.5 (± 1.4) | 30.5 (± 1.1) | 32.6 (± 1.6) |
| | | | 6.8 (± 1.1) len N = 135 wt N = 53 | 6.6 (± 0.2) len N = 3 wt N = 2 | 9.3 (± 1.5) len N = 5 wt N = 3 | 10.1 (± 1.9) len N = 15 wt N = 10 | 10.9 (± 1.3) len N = 7 wt N = 5 |
| Fall 2002 | Skamania | | 26.6 (± 1.4) | 28.7 (± 1.6) | 30.0 (± 0.9) | 30.3 (± 0.7) | 32.2 (± 0.9) |
| | | | 6.2 (± 1.4) len N = 69 wt N = 11 | 8.0 (± 1.3) len N = 132 wt N = 41 | 7.3 len N = 4 wt N = 1 | 7.8 (± 1.1) len N = 6 wt N = 2 | 10.4 (± 1.1) len N = 31 wt N = 8 |
| Fall 2003 | Skamania | 25.4 (± 1.6) | 26.1 (± 1.9) | 29.5 (± 1.4) | 32.1 (± 2.4) | 30.7 | |
| | | 6.3 (± 1.7) N = 10 | 6.4 (± 1.2) N = 66 | 8.6 (± 1.0) N = 16 | 10.9 (± 1.8) N = 17 | 7.5 N = 1 | |
| Fall 2004 | Skamania | 24.0 (± 0) | 26.3 (± 2.1) | 29.2 (± 1.7) | 31.8 (± 0) | 32.5 (± 2.6) | |
| | | 4.4 (± 0) N = 1 | 6.2 (± 1.3) N = 52 | 7.9 (± 1.5) N = 66 | 10.1 (± 0) N = 1 | 10.0 (± 1.6) N = 5 | |
| Fall 2005 | Skamania | | 27.0 (± 1.2) | 28.6 (± 1.1) | 29.1 (± 0) | 30.1 ($\pm .9$) | 32.2 (± 0.7) |
| | | | 6.0 (± 0.8) N = 85 | 7.3 (± 1.0) N = 12 | 7.1 (± 0) N = 1 | 8.1 (± 1.1) N = 7 | 9.1 (± 1.1) N = 6 |
| Fall 2006 | Skamania | 27.3 (± 0.6) | 27.3 (± 1.2) | 30.2 (± 1.7) | 29.7 (± 1.4) | | 32.0 (± 1.0) |
| | | 6.0 (± 1.5) N = 4 | 7.0 (± 1.0) N = 262 | 9.4 (± 1.8) N = 114 | 8.7 (± 1.6) N = 81 | | 11.6 (± 1.3) N = 6 |
| Fall 2007 | Skamania | | 27.5 (± 0.9) | 27.0 (± 1.5) | | 31.7 (± 1.2) | 30.2 (± 0.3) |
| | | | 6.2 (± 1.2) N = 28 | 7.2 (± 2.2) N = 5 | | 9.2 (± 1.4) N = 27 | 9.0 (± 0.8) N = 3 |
| Fall 2008 | Skamania | | 26.8 (± 1.9) | | 27.1 (± 0) | | 30.9 (± 0) |
| | | | 6.1 (± 1.5) N = 2 | | 8.6 (± 0) N = 1 | | 8.3 (± 0) N = 1 |
| Fall 2009 | Skamania | | 27.8 (± 1.4) | 30.3 (± 1.6) | | 33.0 (± 0) | |
| | | | 6.8 (± 1.1) N = 65 | 8.5 (± 1.7) N = 10 | | 13.1 (± 0) N = 1 | |
| Fall 2010 | Skamania | | | 28.8 (± 2.1) | 28.7 (± 0) | | |
| | | | | 7.2 (± 1.3) N = 20 | 8.2 (± 0) N = 1 | | |
| Fall 2011 | Skamania | | | | 30.0 (± 0) | | |
| | | | | | 9.6 (± 0) N = 1 | | |
| Fall 2012 | Skamania | | | | | 28.9 (± 0) | 32.3 (± 0) |
| | | | | | | 7.6 (± 0) N = 1 | 10.1 (± 0) N = 1 |

Table 10. Average length (inches) and weight (pounds) at age (± 1 SD) of spring-run Chambers Creek-strain steelhead at the Root River Steelhead Facility during 2010 to 2020.

| Season | Strain | Age 2+ | Age 3+ | Age 4+ | Age 5+ | Age 6+ | Age 7+ |
|-------------|--------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Spring 2010 | Chambers Cr. | 18.0 (± 0.7) | 24.5 (± 1.9) | 27.9 (± 2.0) | 28.6 (± 2.0) | 29.0 (± 2.0) | 34.0 (± 1.4) |
| | | 2.0 (± 0.1) | 4.6 (± 0.3) | 6.8 (± 1.3) | 7.3 (± 1.7) | 7.7 (± 0.7) | 12.1 (± 1.5) |
| | | N = 5 | N = 8 | N = 102 | N = 22 | N = 3 | N = 2 |
| Spring 2011 | Chambers Cr. | 18.4 (± 1.8) | 25.0 (± 1.8) | 28.3 (± 1.5) | 29.0 (± 1.5) | | |
| | | 2.1 (± 0.9) | 5.4 (± 1.3) | 7.0 (± 0.8) | 8.0 (± 1.4) | | |
| | | N = 47 | N = 82 | N = 12 | N = 31 | | |
| Spring 2012 | Chambers Cr. | 16.9 (± 0) | 25.0 (± 1.4) | 28.2 (± 1.5) | 27.3 (± 1.6) | 30.2 (± 1.1) | 30.9 (± 0.2) |
| | | 1.6 (± 0) | 5.2 (± 0.8) | 7.6 (± 1.5) | 6.4 (± 1.2) | 8.2 (± 0.7) | 8.7 (± 0.2) |
| | | N = 1 | N = 48 | N=17 | N = 2 | N = 4 | N = 2 |
| Spring 2013 | Chambers Cr. | 17.8 (± 0.8) | 23.8 (± 1.2) | 27.5 (± 1.7) | | | |
| | | 1.9 (± 0.3) | 4.4 (± 0.6) | 6.4 (± 1.1) | | | |
| | | N = 30 | N = 15 | N = 41 | | | |
| Spring 2014 | Chambers Cr. | 18.0 (± 1.6) | 25.9 (± 1.6) | 27.8 (± 1.7) | 29.2 (± 1.3) | | |
| | | 2.0 (± 0.9) | 5.9 (± 0.9) | 7.3 (± 1.1) | 8.5 (± 1.5) | | |
| | | N = 72 | N = 120 | N = 29 | N = 14 | | |
| Spring 2015 | Chambers Cr. | 16.6 (± 1.8) | 22.8 (± 1.4) | 27.7 (± 1.8) | 27.6 (± 1.7) | 32.4 (± 0) | |
| | | 1.5 (± 0.6) | 3.7 (± 0.7) | 6.6 (± 1.4) | 6.7 (± 1.6) | 9.2 (± 0) | |
| | | N = 77 | N = 149 | N = 48 | N = 8 | N = 1 | |
| Spring 2016 | Chambers Cr. | 18.0 (± 0.5) | 23.4 (± 1.4) | 25.8 (± 1.2) | 28.3 (± 1.4) | 28.0 (± 0) | 28.4 (± 0.1) |
| | | 2.1 (± 0.2) | 4.4 (± 0.8) | 5.6 (± 0.9) | 8.2 (± 1.4) | 6.5 (± 0) | 7.3 (± 0.3) |
| | | N = 6 | N = 260 | N = 101 | N = 6 | N = 1 | N = 2 |
| Spring 2017 | Chambers Cr. | 18.1 (± 1.1) | 25.4 (± 1.8) | 27.7 (± 1.9) | 28.1 (± 1.7) | 30.7 (± 1.5) | |
| | | 2.2 (± 0.6) | 6.0 (± 1.1) | 7.6 (± 1.5) | 7.7 (± 1.6) | 11.2 (± 1.6) | |
| | | N = 53 | N = 52 | N = 247 | N = 42 | N = 3 | |
| Spring 2018 | Chambers Cr. | 18.9 (± 1.7) | 25.8 (± 1.4) | 28.1 (± 1.5) | 28.8 (± 2.0) | 29.7 (± 1.2) | |
| | | 2.7 (± 0.9) | 6.2 (± 1.0) | 8.4 (± 1.6) | 8.9 (± 1.9) | 8.8 (± 1.3) | |
| | | N = 19 | N = 282 | N = 43 | N = 59 | N = 32 | |
| Spring 2019 | Chambers Cr. | 17.2 (± 1.3) | 24.3 (± 1.5) | 28.3 (± 2.1) | 29.1 (± 1.2) | 30.6 (± 1.6) | |
| | | 1.8 (± 0.5) | 5.3 (± 1.0) | 8.1 (± 1.8) | 8.9 (± 1.0) | 10.3 (± 2.0) | |
| | | N = 8 | N = 90 | N = 127 | N = 5 | N = 21 | |
| Spring 2020 | Chambers Cr. | 17.4 (± 4.2) | 25.4 (± 4.3) | 30.6 (± 2.7) | 29.6 (± 2.9) | | |
| | | 2.1 (± 2.2) | 5.9 (± 2.4) | 10.3 (± 2.6) | 8.7 (± 2.1) | | |
| | | N = 15 | N = 37 | N = 9 | N = 5 | | |

Table 11. Average length (inches) and weight (pounds) at age (± 1 SD) of spring-run Ganaraska-strain steelhead at the Root River Steelhead Facility during 2002 to 2019.

| Season | Strain | Age 2+ | Age 3+ | Age 4+ | Age 5+ | Age 6+ | Age 7+ |
|-------------|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|------------------|
| Spring 2010 | Ganaraska | 17.0 (± 1.1) | 23.8 (± 1.8) | 26.2 (± 1.9) | 26.6 (± 1.8) | 29.3 (± 0.6) | 33.0 (± 0) |
| | | 1.8 (± 0.3) | 4.5 (± 1.0) | 6.1 (± 1.2) | 6.1 (± 1.4) | 9.9 (± 1.7) | 10.2 (± 0) |
| | | N = 11 | N = 18 | N = 91 | N = 11 | N = 3 | N = 1 |
| Spring 2011 | Ganaraska | 17.7 (± 1.1) | 23.3 (± 1.5) | 26.8 (± 1.6) | 27.2 (± 1.5) | 30.4 (± 0) | |
| | | 2.0 (± 0.4) | 4.5 (± 0.8) | 6.6 (± 1.5) | 7.0 (± 1.4) | 8.9 (± 0) | |
| | | N = 95 | N = 161 | N = 26 | N = 34 | N = 1 | |
| Spring 2012 | Ganaraska | 17.2 (± 2.0) | 24.4 (± 1.9) | 26.5 (± 1.5) | 25.0 (± 1.8) | | |
| | | 2.3 (± 1.4) | 4.8 (± 1.1) | 6.3 (± 1.4) | 5.2 (± 0.8) | | |
| | | N = 4 | N = 62 | N = 26 | N = 11 | | |
| Spring 2013 | Ganaraska | 17.4 (± 1.9) | 23.2 (± 0.9) | 26.1 (± 1.6) | 27.7 (± 1.0) | 27.4 (± 0) | |
| | | 1.9 (± 0.8) | 4.1 (± 0.5) | 5.9 (± 1.0) | 6.75 (± 1.3) | 7.4 (± 0) | |
| | | N = 42 | N = 30 | N = 52 | N = 2 | N = 1 | |
| Spring 2014 | Ganaraska | 17.4 (± 0.9) | 24.6 (± 2.0) | 27.9 (± 2.1) | 27.8 (± 2.3) | | |
| | | 1.9 (± 0.3) | 5.4 (± 1.2) | 7.9 (± 1.5) | 7.9 (± 1.9) | | |
| | | N = 41 | N = 76 | N = 32 | N = 15 | | |
| Spring 2015 | Ganaraska | 16.5 (± 2.0) | 22.3 (± 1.2) | 26.4 (± 1.6) | 27.8 (± 1.0) | | |
| | | 1.5 (± 0.6) | 3.6 (± 0.7) | 5.9 (± 1.1) | 6.9 (± 1.0) | | |
| | | N = 117 | N = 179 | N = 31 | N = 7 | | |
| Spring 2016 | Ganaraska | 17.8 (± 0.8) | 22.9 (± 1.2) | 25.5 (± 1.6) | 27.1 (± 1.0) | 29.5 (± 0) | |
| | | 1.9 (± 0.3) | 4.3 (± 0.7) | 5.8 (± 1.0) | 6.8 (± 1.1) | 8.8 (± 0) | |
| | | N = 9 | N = 372 | N = 140 | N = 11 | N = 1 | |
| Spring 2017 | Ganaraska | 17.7 (± 1.1) | 23.2 (± 1.5) | 26.8 (± 1.6) | 27.6 (± 1.4) | | |
| | | 1.9 (± 0.4) | 4.7 (± 0.9) | 7.1 (± 1.3) | 7.6 (± 1.5) | | |
| | | N = 22 | N = 33 | N = 293 | N = 30 | | |
| Spring 2018 | Ganaraska | 17.7 (± 0.7) | 25.2 (± 1.7) | 27.8 (± 1.3) | 28.1 (± 1.8) | 29.5 (± 0.9) | |
| | | 1.8 (± 0.4) | 6.1 (± 1.1) | 8.2 (± 1.2) | 8.6 (± 1.7) | 9.9 (± 1.4) | |
| | | N = 16 | N = 208 | N = 20 | N = 78 | N = 28 | |
| Spring 2019 | Ganaraska | 17.9 (± 1.2) | 23.7 (± 1.6) | 28.0 (± 1.9) | 28.4 (± 1.5) | 28.8 (± 1.4) | |
| | | 2.0 (± 0.5) | 5.1 (± 1.1) | 8.6 (± 1.7) | 8.4 (± 1.3) | 8.8 (± 1.6) | |
| | | N = 10 | N = 118 | N = 86 | N = 7 | N = 19 | |

Table 12. Population estimates for Chinook, coho and steelhead returning to the Root River during spring 2007 through fall 2017. Population estimates were not calculated in fall 2011, 2012, 2014, 2015 and 2018 and spring 2012, 2015, 2018, 2019 and 2020 due to a lack of recaptured fish. Fall steelhead are mostly Skamania, but also include other strains.

| Year | Species | # marked fish | # recaptured fish | # marked fish in recapture sample | Population size (\pm) 1 SD |
|-------------|--------------------|---------------|-------------------|-----------------------------------|--------------------------------|
| Spring 2007 | RBT - Chambers Cr. | 139 | 13 | 1 | 973 \pm 520 |
| | RBT - Ganaraska | 65 | 6 | 0 | 455 \pm 298 |
| | RBT - Skamania | 17 | 2 | 0 | 51 \pm 29 |
| Fall 2007 | Chinook salmon | 3,501 | 28 | 13 | 7,540 \pm 1,530 |
| | Coho salmon | 592 | 3 | 0 | 2,368 \pm 1,450 |
| | Fall steelhead | 98 | 1 | 1 | 98 \pm 0 |
| | Brown trout | 242 | 3 | 0 | 968 \pm 593 |
| Spring 2008 | RBT - Chambers Cr. | 48 | 6 | 0 | 336 \pm 219 |
| | RBT - Ganaraska | 34 | 6 | 0 | 238 \pm 155 |
| | RBT - Skamania | 6 | 2 | 0 | 18 \pm 10 |
| Fall 2008 | Chinook salmon | 987 | 28 | 18 | 1,535 \pm 216 |
| | Coho salmon | 2,071 | 7 | 2 | 5,523 \pm 2,183 |
| | Brown trout | 243 | 1 | 1 | 243 \pm 0 |
| Spring 2009 | RBT - Chambers Cr. | 278 | 7 | 1 | 1,112 \pm 556 |
| | RBT - Ganaraska | 260 | 6 | 2 | 607 \pm 229 |
| Fall 2009 | Fall steelhead | 99 | 2 | 0 | 297 \pm 171 |
| | Brown trout | 95 | 10 | 1 | 523 \pm 273 |
| Fall 2010 | Chinook salmon | 1,067 | 25 | 15 | 1,778 \pm 290 |
| | Coho salmon | 1,355 | 22 | 10 | 2,981 \pm 696 |
| | Fall steelhead | 65 | 8 | 1 | 293 \pm 149 |
| | Brown trout | 78 | 10 | 0 | 858 \pm 578 |
| Spring 2011 | RBT - Chambers Cr. | 114 | 3 | 1 | 228 \pm 93 |
| | RBT - Ganaraska | 264 | 14 | 5 | 739 \pm 265 |
| Spring 2013 | RBT - Chambers Cr. | 32 | 9 | 1 | 155 \pm 80 |
| | RBT - Ganaraska | 68 | 7 | 0 | 544 \pm 360 |
| Fall 2013 | Chinook salmon | 1,070 | 3 | 2 | 1,427 \pm 357 |
| | Coho salmon | 1,281 | 2 | 2 | 1,281 \pm 0 |
| Spring 2014 | RBT - Chambers Cr. | 348 | 13 | 9 | 503 \pm 93 |
| | RBT - Ganaraska | 172 | 1 | 0 | 344 \pm 172 |
| Spring 2016 | RBT - Chambers Cr. | 470 | 22 | 4 | 2,585 \pm 1,169 |
| | RBT - Ganaraska | 671 | 18 | 4 | 3,019 \pm 1,331 |
| Fall 2016 | Chinook salmon | 1,375 | 36 | 6 | 8,250 \pm 3,074 |
| | Coho salmon | 1,324 | 4 | 0 | 6,620 \pm 4,187 |
| Spring 2017 | Chambers Creek | 328 | 22 | 1 | 3,772 \pm 2,081 |
| | Ganaraska | 322 | 49 | 5 | 3,156 \pm 1,337 |
| Fall 2017 | Chinook salmon | 1,542 | 22 | 3 | 8,867 \pm 3,604 |
| | Coho salmon | 2,290 | 6 | 3 | 4,008 \pm 1,173 |

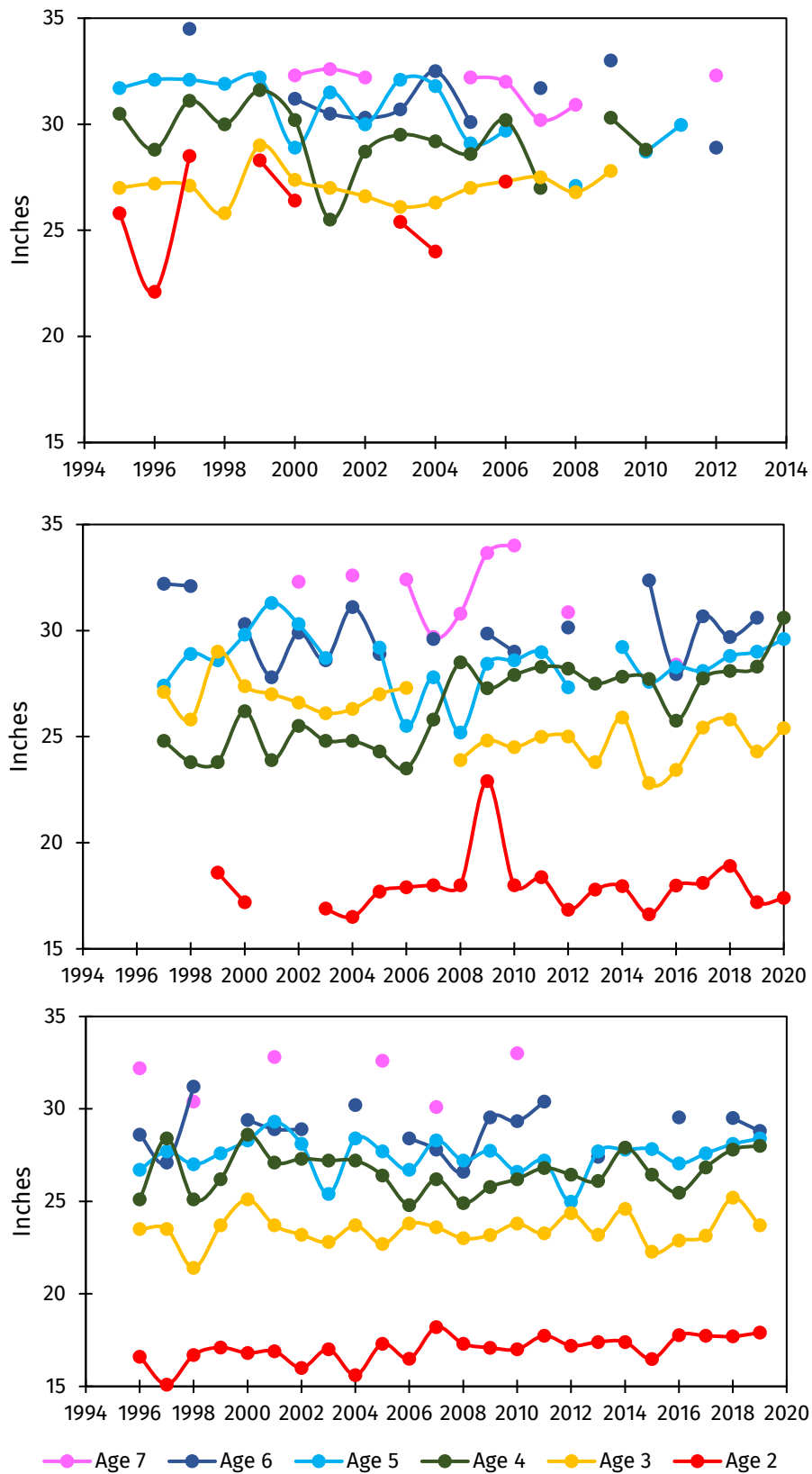


Figure 2. Steelhead mean length-at-age at the Root River Steelhead Facility during 1996 to 2020. Skamania data from 2001 - 2004 were taken from fish transported and held at Kettle Moraine Springs Hatchery. 2020 includes updated length-at-age for the Chambers Creek strain only.

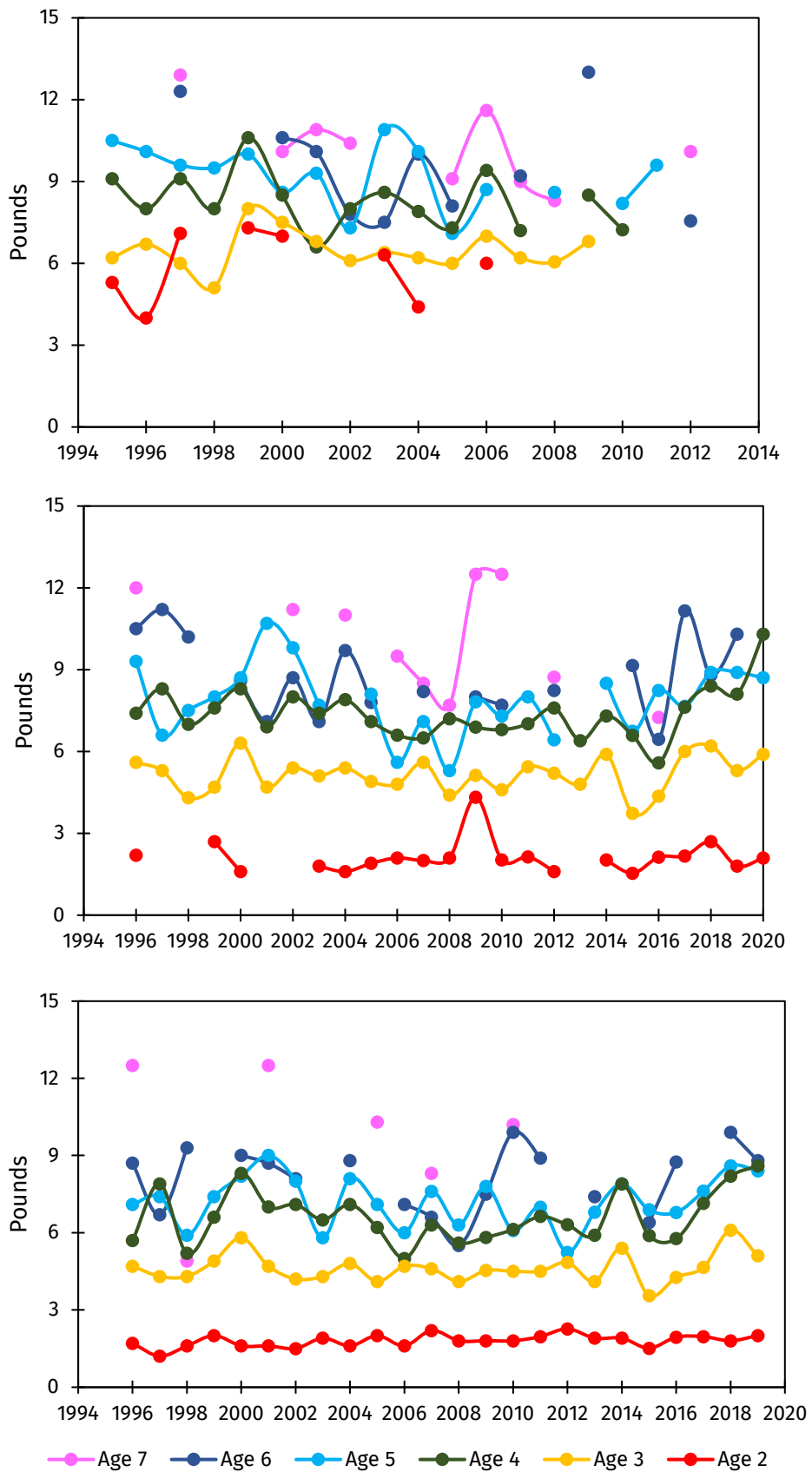


Figure 3. Steelhead mean weight-at-age at the Root River Steelhead Facility during 1996 to 2019. Skamania data from 2001- 2003 were taken from fish transported and held at Kettle Moraine Springs Hatchery. 2020 includes updated weight-at-age for the Chambers Creek strain only.

APPENDIX A. ROOT RIVER STOCKING NUMBERS

Table A-1. Number of fingerling Chinook salmon stocked in the Root River during 1994 - 2019. Chinook salmon were marked with an oral dose of Oxytetracycline (OTC) during 2001 and 2006 - 2010. Totals for 1999, 2006 and 2013 represent reductions in statewide stocking quotas, and the totals for 2007 - 2016 represents a reallocation to decrease Chinook stocking by 33,000 in the Root River in order to increase coho by 33,000.

| Year Stocked | Total Number | Strain | Finclip |
|--------------|--------------|---------------|--------------------------|
| 1994 | 75,533 | Lake Michigan | LP |
| | 60,000 | Lake Michigan | None |
| 1995 | 99,000 | Lake Michigan | RP |
| | 69,250 | Lake Michigan | None |
| 1996 | 158,000 | Lake Michigan | None |
| 1997 | 142,500 | Lake Michigan | None |
| 1998 | 161,500 | Lake Michigan | None |
| 1999 | 143,100 | Lake Michigan | None |
| 2000 | 142,900 | Lake Michigan | None |
| 2001 | 143,973 | Lake Michigan | None (OTC) |
| 2002 | 140,280 | Lake Michigan | None |
| 2003 | 143,935 | Lake Michigan | None |
| 2004 | 143,900 | Lake Michigan | None |
| 2005 | 144,035 | Lake Michigan | None |
| 2006 | 113,945 | Lake Michigan | None (OTC) |
| 2007 | 80,972 | Lake Michigan | None (OTC) |
| 2008 | 69,000 | Lake Michigan | None (OTC) |
| 2009 | 80,950 | Lake Michigan | None (OTC) |
| 2010 | 44,156 | Lake Michigan | A-CWT (OTC) |
| | 41,588 | Lake Michigan | A-CWT (non-OTC) |
| 2011 | 20,154 | Lake Michigan | A-CWT |
| 2012 | 112,616 | Lake Michigan | A-CWT |
| 2013 | 75,046 | Lake Michigan | A-CWT |
| 2014 | 76,933 | Lake Michigan | A-CWT |
| 2015 | 52,120 | Lake Michigan | A-CWT (regular stocking) |
| | 25,640 | Lake Michigan | A-CWT (net pen stocking) |
| 2016 | 50,918 | Lake Michigan | A-CWT (regular stocking) |
| | 25,352 | Lake Michigan | A-CWT (net pen stocking) |
| 2017 | 7,467 | Lake Michigan | A (regular stocking) |
| | 43,561 | Lake Michigan | A-CWT (regular stocking) |
| | 31,300 | Lake Michigan | A-CWT (net pen stocking) |
| 2018 | 51,383 | Lake Michigan | A-CWT (regular stocking) |
| | 32,748 | Lake Michigan | A-CWT (net pen stocking) |
| 2019 | 42,626 | Lake Michigan | A (regular stocking) |
| | 42,079 | Lake Michigan | A (net pen stocking) |

Table A-2. Number of coho salmon stocked in the Root River during 1998 – 2019. Targets were 40,600 spring yearlings and 10,000 fall fingerlings. In 2007, the target was changed to 73,600 spring yearlings and 10,000 fall fingerlings.

| Year Stocked | Total Number | Strain | Finclip | Age |
|--------------|--------------|---------------|---------|--------------------|
| 1998 | 33,666 | Lake Michigan | None | Spring yearling 1+ |
| | 10,000 | Lake Michigan | None | Fall fingerling 0+ |
| 1999 | 45,945 | Lake Michigan | None | Spring yearling 1+ |
| | 13,824 | Lake Michigan | None | Fall fingerling 0+ |
| 2000 | 41,375 | Lake Michigan | None | Spring yearling 1+ |
| | 10,030 | Lake Michigan | None | Fall fingerling 0+ |
| 2001 | 27,970 | Lake Michigan | None | Spring yearling 1+ |
| | 11,080 | Lake Michigan | A-CWT | Spring yearling 1+ |
| | 10,260 | Lake Michigan | None | Fall fingerling 0+ |
| 2002 | 29,954 | Lake Michigan | None | Spring yearling 1+ |
| | 10,648 | Lake Michigan | A-CWT | Spring yearling 1+ |
| | 12,285 | Lake Michigan | None | Fall fingerling 0+ |
| 2003 | 31,514 | Lake Michigan | None | Spring yearling 1+ |
| | 10,845 | Lake Michigan | A-CWT | Spring yearling 1+ |
| 2004 | 40,623 | Lake Michigan | None | Spring yearling 1+ |
| | 14,500 | Lake Michigan | None | Fall fingerling 0+ |
| 2005 | 9,755 | Lake Michigan | A-CWT | Spring yearling 1+ |
| | 30,855 | Lake Michigan | None | Spring yearling 1+ |
| | 12,739 | Lake Michigan | None | Fall fingerling 0+ |
| 2006 | 36,510 | Lake Michigan | None | Spring yearling 1+ |
| | 7,560 | Lake Michigan | A-CWT | Spring yearling 1+ |
| | 10,000 | Lake Michigan | None | Fall fingerling 0+ |
| 2007 | 61,888 | Lake Michigan | None | Spring yearling 1+ |
| | 10,000 | Lake Michigan | A-CWT | Spring yearling 1+ |
| | 29,188 | Lake Michigan | None | Fall fingerling 0+ |
| 2008 | 56,697 | Lake Michigan | None | Spring yearling 1+ |
| | 10,813 | Lake Michigan | A-CWT | Spring yearling 1+ |
| | 11,369 | Lake Michigan | None | Fall fingerling 0+ |
| 2009 | 63,194 | Lake Michigan | None | Spring yearling 1+ |
| | 10,463 | Lake Michigan | A-CWT | Spring yearling 1+ |
| 2010 | 62,705 | Lake Michigan | None | Spring yearling 1+ |
| | 10,930 | Lake Michigan | A-CWT | Spring yearling 1+ |
| 2011 | 68,934 | Lake Michigan | None | Spring yearling 1+ |
| | 10,675 | Lake Michigan | A-CWT | Spring yearling 1+ |
| 2012 | 75,153 | Lake Michigan | None | Spring yearling 1+ |
| | 10,968 | Lake Michigan | A-CWT | Spring yearling 1+ |
| 2013 | 83,608 | Lake Michigan | None | Spring yearling 1+ |
| 2014 | 79,080 | Lake Michigan | None | Spring yearling 1+ |
| 2015 | 83,015 | Lake Michigan | None | Spring yearling 1+ |
| | 10,008 | Lake Michigan | None | Fall fingerling 0+ |
| 2016 | 60,021 | Lake Michigan | None | Spring yearling 1+ |
| | 10,010 | Lake Michigan | None | Fall fingerling 0+ |
| 2017 | 76,432 | Lake Michigan | None | Spring yearling 1+ |
| | 13,001 | Lake Michigan | None | Fall fingerling 0+ |
| 2018 | 76,241 | Lake Michigan | None | Spring yearling 1+ |
| 2019 | 76,609 | Lake Michigan | None | Spring yearling 1+ |

Table A-3. Number of steelhead stocked in the Root River during 2002 – 2019. Stocking targets were 35,000 per strain, reduced to 27,000 Chambers Creek and Ganaraska after 1998.

| Year Stocked | Total Number | Strain | Finclip |
|--------------|--------------|----------------|---------|
| 2000 | 37,010 | Skamania | RMRV |
| | 27,287 | Chambers Creek | LMLV |
| | 27,118 | Ganaraska | BV |
| 2001 | 35,247 | Skamania | ARM |
| | 27,060 | Chambers Creek | ALM |
| | 27,100 | Ganaraska | ALV |
| 2002 | 33,634 | Skamania | RM |
| | 27,064 | Chambers Creek | LMLV |
| | 27,125 | Ganaraska | ARV |
| 2003 | 35,448 | Skamania | RMRV |
| | 27,123 | Chambers Creek | LMLV |
| | 27,150 | Ganaraska | BV |
| 2004 | 35,145 | Skamania | RM |
| | 31,039 | Chambers Creek | LM |
| | 27,881 | Ganaraska | ALV |
| 2005 | 35,930 | Skamania | ARM |
| | 27,058 | Chambers Creek | ALM |
| | 27,975 | Ganaraska | ARV |
| 2006 | 34,452 | Skamania | RMRV |
| | 27,398 | Chambers Creek | LMLV |
| | 26,948 | Ganaraska | BV |
| 2007 | 35,210 | Skamania | RM |
| | 22,890 | Chambers Creek | LM |
| | 35,044 | Ganaraska | ALV |
| 2008 | 34,556 | Skamania | ARM |
| | 24,839 | Chambers Creek | ALM |
| | 22,789 | Ganaraska | ARV |
| 2009 | 34,571 | Chambers Creek | LMLV |
| | 49,704 | Ganaraska | BV |
| 2010 | 27,913 | Chambers Creek | LM |
| | 29,252 | Ganaraska | ALV |
| 2011 | 28,104 | Chambers Creek | ALM |
| | 27,015 | Ganaraska | ARV |
| 2012 | 26,998 | Chambers Creek | LMLV |
| | 27,031 | Ganaraska | BV |
| 2013 | 26,995 | Chambers Creek | LM |
| | 27,116 | Ganaraska | ALV |
| 2014 | 27,118 | Chambers Creek | ALM |
| | 29,535 | Ganaraska | ARV |
| 2015 | 31,389 | Chambers Creek | LMLV |
| | 31,459 | Ganaraska | BV |
| 2016 | 27,134 | Chambers Creek | LM |
| | 28,218 | Ganaraska | ALV |
| 2017 | 28,085 | Chambers Creek | ALM |
| | 27,048 | Ganaraska | ARV |
| 2018 | 30,293 | Chambers Creek | ALM |
| | 26,252 | Ganaraska | ARV |
| | 34,027 | Skamania | ARM |
| 2019 | 34,511 | Skamania | ARM-CWT |
| | 8,503 | Chambers Creek | A-CWT |
| | 32,034 | Chambers Creek | ALM-CWT |
| | 33,884 | Ganaraska | ALV-CWT |