

**WASHINGTON DEPARTMENT OF FISH AND WILDLIFE**

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**Subj:** August Hatchery and Natural Production Report

**Date:** 9 September 2016

**Cc:** Distribution list.

**HATCHERY ACTIVITIES**

All juvenile fish at the Wells and Methow hatcheries were held on 100% well water during the month of August.

**2015 Twisp Spring Chinook Salmon**

A total of 40,393 fish were on-station at the end of the month with one additional fish reported as mortality. These fish were on average 105.4 mm and were at 40 fish per pound (FPP) during the month. The number of fish on-station that apply to HCP mitigation obligations are listed in Appendix A.

**2015 Methow Composite Spring Chinook Salmon**

A total of 202,521 fish were on-station at the end of the month with 8 additional fish reported as mortalities. These fish were on average 105.4 mm and were at 40 FPP during the month. The number of fish on-station that apply to HCP mitigation obligations are listed in Appendix A.

**2016 Brood Spring Chinook Salmon**

Tangle netting was used during the month of August to increase the number of wild broodstock, and resulted in one wild female, and four wild males collected for broodstock, bringing the collection totals to six females and four males. Spawning of 2016 Methow Hatchery spring Chinook was completed 7 September. A total of 117 fish were spawned, of which 81 (69%) were wild (Table 1). A total of 21 surplus hatchery males were not used. Pre-spawn mortality included three wild females, two wild males, and one hatchery female. Live-spawning of wild males occurred on most spawn days to maximize WxW and HxW crosses by spawning some males more than once. Eyed eggs from hatchery females (HxW crosses) in excess of program goals will be culled. Alternatively, surplus eyed eggs could be transferred to WNFH depending on need.

Table 1. 2016 Methow Hatchery spring Chinook salmon broodstock spawning summary.

| Date   | Males |    | Females |    | Crosses (females) |       | Estimated egg take  |                     |
|--------|-------|----|---------|----|-------------------|-------|---------------------|---------------------|
|        | H     | W  | H       | W  | MetComp           | Twisp | MetComp             | Twisp               |
| 3-Aug  | 0     | 0  | 8       | 0  | 7                 | 1     | 26,600              | 3,800               |
| 10-Aug | 0     | 0  | 13      | 7  | 18                | 2     | 68,400              | 7,600               |
| 17-Aug | 0     | 0  | 11      | 13 | 23                | 1     | 87,400              | 3,800               |
| 24-Aug | 0     | 7  | 2       | 13 | 11                | 4     | 38,200 <sup>a</sup> | 12,667 <sup>b</sup> |
| 26-Aug | 0     | 0  | 1       | 7  | 8                 | 0     | 26,600              | 0                   |
| 31-Aug | 0     | 25 | 1       | 3  | 4                 | 0     | 15,200              | 0                   |
| 31-Aug | 0     | 4  | 0       | 2  | 2                 | 0     | 7,600               | 0                   |
| Total  | 0     | 36 | 36      | 45 | 73                | 8     | 270,000             | 27,867              |

<sup>a</sup> One female with only ~200 eggs.

<sup>b</sup> One female with ~1,267 eggs.

### **2015 Wells Summer Chinook Salmon**

Wells Hatchery had 336,304 summer Chinook Salmon progeny for the yearling program on-station at the end of the month after subtracting 187 fish listed as mortalities and accounting for a negative adjustment of 6,707 fish during the month. These fish were at approximately 47 FPP and are being reared to fulfill HCP mitigation obligations (Appendix A).

### **2016 Wells Summer Chinook Salmon**

Wells Hatchery began collecting adult Chinook broodstock for the yearling and subyearling programs during July and retained a total of 790 fish by the end of August, with an additional 7 fish reported as pre-spawn mortalities (0.88%). An additional 554 surplus adipose fin-clipped adult Chinook were provided to the Spokane Tribe on 17 August.

### **2016 Summer Steelhead**

Wells and Methow hatcheries had a total of 517,714 steelhead fry on-station at the end of the month including an estimated 34,716 Omak WxW progeny, 61,435 Twisp progeny, and 421,563 progeny for Okanogan, Columbia, and Methow River release. Mortality included 316 Omak fry and 2,068 fry from the Okanogan, Columbia, and Methow release programs. These progeny are being reared to fulfill HCP mitigation obligations (Appendix A).

### **2017 Summer Steelhead**

Trapping of 2017 brood summer steelhead began in August and a total of 75 adults were trapped by 6 September, with 28 of those fish being retained for hatchery broodstock. Wild fish (as determined from external marks) have totaled about 35% of the fish trapped, although scale sample confirmation of fish origin has not been completed to-date.

### **2015 Spokane Rainbow**

Wells Hatchery had 36,052 rainbow trout fry on-station at the end of the month after subtracting 48 mortalities. These fish were at about 14 FPP and were reared to fulfill the Off-License Settlement Agreement (Appendix B).

### **2016 White Sturgeon**

Wells Hatchery had 17,246 sturgeon progeny on-station at the end of the month after subtracting 1,569 mortalities, and accounting for a negative population adjustment of 6,272 fish. White sturgeon progeny are reared at Wells Hatchery under the Aquatic Settlement Agreement (Appendix C).

## **NATURAL PRODUCTION ACTIVITIES**

### **PIT Tag Antenna Arrays**

Data collected at all Methow basin PIT tag interrogation sites operated under this program, including Twisp (TWR), lower Methow (LMR), Lost River (LOR), Early Winters Creek (EWC), Gold Creek (GLC), Libby Creek (LBC), and Wolf Creek (WFC) are uploaded to the PTAGIS database regularly, and can be viewed at the following website: <http://www.ptagis.org/data/quick-reports/small-scale-site-detections>

### **2016 Smolt Trapping**

River conditions were favorable for trapping at both the Methow and Twisp sites and both sites operated without interruption during the month. At the end of August, river discharge at the Twisp site was barely enough to rotate the trap cone, but the trap still operated and captured fish. During the month, sub yearling wild Chinook parr were the primary species captured at both the Methow and Twisp trap sites (Table 2). Biological data collected from trapped fish is detailed in Table 3. Methow River discharge for the period operated ranged from 12.1 to 28.9 m<sup>3</sup>s, providing expected trap efficiencies greater than 1.5 percent. Twisp River discharge for the period operated ranged from 1.3 to 4.2 m<sup>3</sup>s, providing expected trap efficiencies greater than 17.7 percent.

Table 2. Monthly salmonid captures at Methow Basin smolt traps in 2016. SHR = wild steelhead/rainbow. F-M = February to May total.

| Species/origin      | Methow |       |      |     | Twisp |      |      |     | Basin total |
|---------------------|--------|-------|------|-----|-------|------|------|-----|-------------|
|                     | F-M    | June  | July | Aug | F-M   | June | July | Aug |             |
| Yearling Chin/wild  | 479    | 8     | 0    | 0   | 401   | 2    | 0    | 0   | 890         |
| Yearling Chin/hatch | 3,339  | 0     | 0    | 0   | 2,177 | 0    | 0    | 0   | 5,516       |
| Sub Chin/wild-parr  | 515    | 1,163 | 236  | 9   | 31    | 265  | 240  | 67  | 2,526       |
| Sub Chin/wild-fry   | 3,931  | 648   | 8    | 0   | 131   | 54   | 10   | 0   | 4,782       |
| SHR/wild-trans.     | 188    | 3     | 0    | 0   | 154   | 6    | 0    | 0   | 351         |
| SHR/wild-parr       | 86     | 10    | 0    | 3   | 120   | 29   | 17   | 40  | 305         |
| SHR/wild-fry        | 0      | 2     | 18   | 2   | 0     | 0    | 44   | 7   | 73          |
| Steelhead/hatchery  | 417    | 56    | 0    | 0   | 2,041 | 40   | 12   | 4   | 2,570       |
| Coho/wild-smolt     | 118    | 0     | 0    | 0   | 47    | 2    | 0    | 0   | 167         |
| Coho/wild-parr      | 8      | 5     | 0    | 0   | 8     | 0    | 3    | 0   | 24          |
| Coho/wild-fry       | 0      | 0     | 0    | 0   | 1     | 1    | 1    | 0   | 3           |
| Coho/hatchery       | 97     | 1     | 0    | 0   | 0     | 0    | 0    | 0   | 98          |
| Bull Trout          | 1      | 1     | 0    | 0   | 7     | 2    | 0    | 1   | 12          |
| Cutthroat Trout     | 0      | 0     | 1    | 0   | 0     | 1    | 3    | 1   | 6           |
| Sockeye/wild-fry    | 18     | 0     | 0    | 0   | 0     | 0    | 0    | 0   | 18          |
| Total               | 9,197  | 1,897 | 263  | 14  | 5,118 | 402  | 330  | 120 | 17,341      |

Table 3. Biological sampling of juvenile salmonids captured at Methow Basin smolt traps during August.

| Species/stage            | Location | Length (mm) |      |    | Weight (g) |      |    | Mean K-factor |
|--------------------------|----------|-------------|------|----|------------|------|----|---------------|
|                          |          | Mean        | SD   | N  | Mean       | SD   | N  |               |
| Sub Chinook/wild/parr    | Methow   | 90.1        | 6.3  | 9  | 9.7        | 2.3  | 9  | 1.3           |
| Sub Chinook/wild/parr    | Twisp    | 79.5        | 10.2 | 67 | 6.4        | 2.3  | 67 | 1.2           |
| Steelhead/wild/parr      | Methow   | 108.0       | 66.1 | 3  | 24.8       | 33.2 | 3  | 1.2           |
| Steelhead/wild/parr      | Twisp    | 115.2       | 48.4 | 40 | 25.2       | 22.5 | 40 | 1.1           |
| Steelhead/wild/fry       | Methow   | 27.0        | 1.4  | 2  | --         | --   | -- | --            |
| Steelhead/wild/fry       | Twisp    | 40.6        | 7.5  | 7  | --         | --   | -- | --            |
| Steelhead/hatchery/smolt | Twisp    | 196.5       | 29.8 | 4  | 86.9       | 36.0 | 4  | 1.1           |
| Cutthroat Trout          | Twisp    | 213.0       | --   | 1  | 108.3      | --   | 1  | 1.1           |

Appendix A. Number of fish reared at Wells and Methow hatcheries to meet Douglas County PUD Habitat Conservation Plan mitigation objectives and other hatchery rearing agreements. Values are derived by applying fixed mitigation levels to the entire population on-station, and do not necessarily reflect separate rearing or release strategies.

| Brood year | Species          | Life stage     | Program  | Target release No.         | Month   |         |         |         |         |         |         |         |         |         |         |         | Total released /transfer |         |
|------------|------------------|----------------|--|----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------------------------|---------|
|            |                  |                |  |                            | Sep '15 | Oct     | Nov     | Dec     | Jan '16 | Feb     | Mar     | Apr     | May     | Jun     | Jul     | Aug     |                          |         |
| 2014       | Spring Chinook   | Yearling smolt | CCPUD NNI                                      | 60,516<br><i>released</i>  | --      | 71,930  | 71,892  | 71,878  | 71,862  | 71,847  | 71,821  | --      | --      | --      | --      | --      | --                       | 71,812  |
| 2014       | Spring Chinook   | Yearling smolt | GCPUD Priest Rapids NNI                        | 134,126<br><i>released</i> | 180,827 | 159,425 | 159,341 | 159,307 | 159,272 | 159,240 | 159,183 | --      | --      | --      | --      | --      | --                       | 159,161 |
| 2014       | Spring Chinook   | Yearling smolt | DCPUD Wells NNI                                | 29,123<br><i>released</i>  | 39,263  | 34,616  | 34,598  | 34,591  | 34,583  | 34,576  | 34,564  | --      | --      | --      | --      | --      | --                       | 34,559  |
| 2015       | Spring Chinook   | Yearling smolt | CCPUD NNI                                      | 60,516<br><i>released</i>  | --      | 67,531  | 67,531  | 67,367  | 65,494  | 65,330  | 65,270  | 65,259  | 65,211  | 65,701  | 65,697  | 65,695  | --                       | --      |
| 2015       | Spring Chinook   | Yearling smolt | GCPUD Priest Rapids NNI                        | 134,126<br><i>released</i> | --      | 149,676 | 149,676 | 149,310 | 145,158 | 144,794 | 144,664 | 144,638 | 144,531 | 145,618 | 145,610 | 145,604 | --                       | --      |
| 2015       | Spring Chinook   | Yearling smolt | DCPUD Wells NNI                                | 29,123<br><i>released</i>  | --      | 32,499  | 32,499  | 32,420  | 31,519  | 31,440  | 31,411  | 31,405  | 31,382  | 31,618  | 31,616  | 31,615  | --                       | --      |
| 2014       | Summer Chinook   | Yearling smolt | DCPUD Fixed Hatchery Compensation              | 320,000<br><i>released</i> | 358,953 | 358,953 | 358,953 | 358,953 | 358,953 | 358,953 | 358,953 | 43,953  | --      | --      | --      | --      | --                       | 350,000 |
| 2015       | Summer Chinook   | Sub-yearling   | DCPUD Fixed Hatchery Compensation              | 484,000<br><i>released</i> | --      | --      | --      | 560,543 | 494,310 | 427,696 | 427,075 | 439,709 | --      | --      | --      | --      | --                       | 439,709 |
| 2015       | Summer Chinook   | Yearling smolt | DCPUD Fixed Hatchery Compensation              | 320,000<br><i>released</i> | --      | --      | --      | 350,845 | 350,845 | 350,845 | 348,172 | 345,069 | 344,395 | 344,121 | 343,198 | 336,304 | --                       | --      |
| 2015       | Summer steelhead | Yearling smolt | DCPUD Fixed Hatchery Compensation <sup>1</sup> | 300,000<br><i>released</i> | 356,072 | 339,722 | 312,263 | 312,164 | 310,570 | 310,158 | 310,143 | 134,985 | --      | --      | --      | --      | --                       | 307,697 |
| 2015       | Summer steelhead | Yearling smolt | DCPUD Wells NNI <sup>1</sup>                   | 8,000<br><i>released</i>   | 9,494   | 9,059   | 8,327   | 8,324   | 8,282   | 8,270   | 8,270   | 3,599   | --      | --      | --      | --      | --                       | 8,205   |
| 2015       | Summer steelhead | Yearling smolt | GCPUD Priest Rapids NNI                        | 80,000<br><i>released</i>  | 94,940  | 90,592  | 83,270  | 83,243  | 82,819  | 82,709  | 82,705  | 35,996  | --      | --      | --      | --      | --                       | 82,052  |

<sup>1</sup>40,000 Inundation steelhead to be released in the Twisp with 8,000 NNI fish to total 48,000. 100,000 inundation steelhead to be released in the Methow as a safety net program. 160,000 inundation steelhead to be released directly to the Columbia.

Appendix A. Continued.

| Brood year | Species          | Life stage     | Program  | Target release No.           | Month   |     |     |     |         |     |     |     |     |         |         |         | Total released /transfer |
|------------|------------------|----------------|--|------------------------------|---------|-----|-----|-----|---------|-----|-----|-----|-----|---------|---------|---------|--------------------------|
|            |                  |                |  |                              | Sep '15 | Oct | Nov | Dec | Jan '16 | Feb | Mar | Apr | May | Jun     | Jul     | Aug     |                          |
| 2016       | Summer steelhead | Yearling smolt | DCPUD Fixed Hatchery Compensation <sup>1</sup> | 300,000<br><i>released</i>   | --      | --  | --  | --  | --      | --  | --  | --  | --  | 358,776 | 371,024 | 373,452 | --                       |
| 2016       | Summer steelhead | Yearling smolt | DCPUD Wells NNI <sup>1</sup>                   | 8,000<br><i>released</i>     | --      | --  | --  | --  | --      | --  | --  | --  | --  | 9,567   | 9,893   | 9,958   | --                       |
| 2016       | Summer steelhead | Yearling smolt | GCPUD Priest Rapids NNI                        | 80,000<br><i>released</i>    | --      | --  | --  | --  | --      | --  | --  | --  | --  | 95,673  | 98,939  | 99,587  | --                       |
| 2016       | Summer steelhead | Yearling smolt | GCPUD Priest Rapids NNI                        | 20,000<br><i>transferred</i> | --      | --  | --  | --  | --      | --  | --  | --  | --  | 34,627  | 34,010  | 34,716  | --                       |

Appendix B. Fish reared at Wells or Methow hatcheries under the Off-License Settlement Agreement.

| Brood year | Species            | Life stage | Program         | Target (pounds) disposition           | Month   |         |         |         |         |          |         |         |         |         |         |         | Total released /transfer |
|------------|--------------------|------------|-----------------|---------------------------------------|---------|---------|---------|---------|---------|----------|---------|---------|---------|---------|---------|---------|--------------------------|
|            |                    |            |                 |                                       | Sep '15 | Oct     | Nov     | Dec     | Jan '16 | Feb      | Mar     | Apr     | May     | Jun     | Jul     | Aug     |                          |
| 2014       | Rainbow trout      | Juv        | WDFW sport fish |                                       | 54,078  | 33,778  | 33,728  | 33,670  | 33,647  | 33,617   | 13,732  | 10,709  | 3,037   | --      | --      | --      | 50,717                   |
|            |                    |            |                 |                                       | (8,261) | (5,703) | (6,855) | (8,598) | (9,861) | (11,566) | (6,638) | (4,951) | (1,380) | (740)   | (--)    | (--)    |                          |
|            |                    |            |                 |                                       | --      | 20,075  | --      | --      | --      | --       | 19,850  | 2,180   | 7,162   | 1,700   | --      | --      |                          |
| 2015       | Rainbow trout      | Juv        | WDFW sport fish | Number (pounds) released              | --      | --      | --      | --      | 75,181  | 74,402   | 73,936  | 63,618  | 63,352  | 60,608  | 36,100  | 36,052  | 20,000<br>(873)          |
|            |                    |            |                 |                                       | (--)    | (--)    | (--)    | (--)    | (75)    | (39)     | (114)   | (260)   | (792)   | (1,377) | (1,570) | (2,488) |                          |
|            |                    |            |                 |                                       | --      | --      | --      | --      | --      | --       | --      | --      | --      | --      | 20,000  | --      |                          |
| 2015       | Lahontan cutthroat | Juv        | WDFW sport fish | Goal is 20,000 pounds annual combined | --      | --      | --      | --      | --      | --       | --      | --      | --      | --      | --      | --      | 126,910                  |
|            |                    |            |                 |                                       | (--)    | (--)    | (--)    | (--)    | (--)    | (--)     | (--)    | (--)    | (--)    | (--)    | (--)    | (--)    |                          |
|            |                    |            |                 |                                       | --      | --      | --      | --      | --      | --       | --      | --      | --      | --      | --      | --      |                          |
| 2016       | Lahontan cutthroat | Juv        | WDFW sport fish |                                       | --      | --      | --      | --      | --      | --       | --      | 200,000 | 161,503 | 156,757 | --      | --      | 150,000<br>(200)         |
|            |                    |            |                 |                                       | (--)    | (--)    | (--)    | (--)    | (--)    | (--)     | (--)    | (200)   | (161)   | (156)   | --      | (--)    |                          |
|            |                    |            |                 |                                       | --      | --      | --      | --      | --      | --       | --      | --      | --      | --      | 150,000 | --      |                          |
| 2015       | Kokanee            | Eyed-eggs  | Palmer Lake     |                                       | 420,000 | --      | --      | --      | --      | --       | --      | --      | --      | --      | --      | --      | 329,576                  |
|            |                    |            |                 |                                       | (420)   | (329)   | (--)    | (--)    | (--)    | (--)     | (--)    | (--)    | (--)    | (--)    | (--)    | (--)    |                          |
|            |                    |            |                 |                                       | --      | 329,576 | --      | --      | --      | --       | --      | --      | --      | --      | --      | --      |                          |

Appendix C. Fish reared at Wells Hatchery pursuant to the Aquatic Settlement Agreement – White Sturgeon Management Plan.

| Brood year | Species        | Life stage       | Program                              | Target disposition     | Month   |        |       |       |         |       |       |       |       |        |        |        | Total released/culled /transferred |    |
|------------|----------------|------------------|--------------------------------------|------------------------|---------|--------|-------|-------|---------|-------|-------|-------|-------|--------|--------|--------|------------------------------------|----|
|            |                |                  |                                      |                        | Sep '15 | Oct    | Nov   | Dec   | Jan '16 | Feb   | Mar   | Apr   | May   | Jun    | Jul    | Aug    |                                    |    |
| 2015       | White sturgeon | Juvenile rearing | Wells White Sturgeon Supplementation | <i>Up to 5,000</i>     | 20,992  | 11,728 | 8,638 | 7,665 | 7,416   | 7,405 | 5,203 | 5,198 | 5,153 | --     | --     | --     | 1,462<br>5,000<br>5,288            |    |
|            |                |                  |                                      | <i>Culled</i>          | --      | --     | 1,462 | --    | --      | --    | --    | --    | --    | --     | --     | --     |                                    |    |
|            |                |                  |                                      | <i>Transferred</i>     | --      | 2,800  | --    | --    | --      | --    | 2,200 | --    | --    | --     | --     | --     |                                    | -- |
|            |                |                  |                                      | <i>Wells reservoir</i> | --      | --     | --    | --    | --      | --    | --    | --    | --    | 5,288  | --     | --     |                                    |    |
| 2016       | White sturgeon | Juvenile rearing | Wells White Sturgeon Supplementation | <i>Up to 5,000</i>     | --      | --     | --    | --    | --      | --    | --    | --    | --    | 35,845 | 25,087 | 17,246 | --                                 |    |
|            |                |                  |                                      | <i>Culled</i>          | --      | --     | --    | --    | --      | --    | --    | --    | --    | --     | --     | --     |                                    |    |
|            |                |                  |                                      | <i>Transferred</i>     | --      | --     | --    | --    | --      | --    | --    | --    | --    | --     | --     | --     |                                    |    |
|            |                |                  |                                      | <i>Wells reservoir</i> | --      | --     | --    | --    | --      | --    | --    | --    | --    | --     | --     | --     |                                    |    |