September 1, 2010 (Corrected November 28, 2017)

Mr. Roger Elmore
Lookingglass Fish Hatchery
Oregon Department of Fish and Wildlife
Route 2 Box 89-D-B
Elgin, OR 97287

Dear Roger-

The Fish Passage Center has been marking fish from the Lookingglass Fish Hatchery facility over the last several years as part of the Smolt Monitoring Program (SMP) and the Comparative Survival Study (CSS). For purposes of these studies data are collected on either the juvenile life stage, or both the juvenile and adult life stages. The SMP provides information for in-season management of the hydrosystem and post-season analyses to the federal, state, and tribal fishery agencies. The CSS is a multi-year program that estimates survival rates over different life stages for spring and summer Chinook produced in major hatcheries. We would like to share with you an update of some of the information we developed under these studies for the fish used from the Lookingglass Hatchery facilities (Imnaha and Catherine Creek Acclimation Ponds).

Under the Smolt Monitoring Program, information is collected on the timing and migration speed from the hatchery to Lower Granite Dam. In addition, as part of the CSS study, juvenile survival estimates are developed for the hydrosystem between Lower Granite and Bonneville Dams, as well as survival to adulthood of different passage histories.

The tables below provide estimates of minimum, median, and maximum travel times from release to Lower Granite Dam for the Imnaha Acclimation Pond (IHAP) (Table 1) and Catherine Creek Acclimation Pond (CCAP) (Table 2) releases. These tables also provide the 95% confidence limits around the estimated median travel times. As with last year’s report, the travel times for the CCAP releases are estimated as the date of arrival at LGR minus the date of detection at the CCAP detection site (CCP).
As with last year, we are providing you with tables that present the estimated 10%, 50%, and 90% passage dates at Lower Granite Dam for the yearling spring Chinook juveniles that are released from each of these sites (Table 3 for IHAP and Table 4 for CCAP). We are also providing two figures to illustrate the 2010 passage timing for Lookingglass Hatchery yearling spring Chinook released for the CSS study. The first of these figures illustrates the passage timing of the 2010 release from IHAP, compared to that in 2009 and the 10-year average (2000-2009) (Figure 1). The second is a comparison of the passage timing of the 2010 release from CCAP, compared to that in 2009 and the 9-year average (2001-2009) (Figure 2).
Table 3. Imnaha Acclimation Pond – Estimated 10%, 50%, and 90% passage dates at Lower Granite Dam.

<table>
<thead>
<tr>
<th>Year</th>
<th>Release Date(s)</th>
<th>10% Passage Date</th>
<th>50% Passage Date</th>
<th>90% Passage Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>7-Apr</td>
<td>26-Apr</td>
<td>6-May</td>
<td>15-May</td>
</tr>
<tr>
<td>1998</td>
<td>6-Apr</td>
<td>24-Apr</td>
<td>2-May</td>
<td>9-May</td>
</tr>
<tr>
<td>1999</td>
<td>3/16, 4/5</td>
<td>30-Apr</td>
<td>11-May</td>
<td>21-May</td>
</tr>
<tr>
<td>2000</td>
<td>22-Mar</td>
<td>24-Apr</td>
<td>4-May</td>
<td>12-May</td>
</tr>
<tr>
<td>2001</td>
<td>21-Mar</td>
<td>26-Apr</td>
<td>2-May</td>
<td>15-May</td>
</tr>
<tr>
<td>2002</td>
<td>21-Mar</td>
<td>16-Apr</td>
<td>4-May</td>
<td>17-May</td>
</tr>
<tr>
<td>2003</td>
<td>1-Apr</td>
<td>24-Apr</td>
<td>5-May</td>
<td>16-May</td>
</tr>
<tr>
<td>2004</td>
<td>26-Mar</td>
<td>24-Apr</td>
<td>4-May</td>
<td>9-May</td>
</tr>
<tr>
<td>2006</td>
<td>3/21,3/30</td>
<td>22-Apr</td>
<td>2-May</td>
<td>13-May</td>
</tr>
<tr>
<td>2007</td>
<td>3/21,3/31</td>
<td>24-Apr</td>
<td>2-May</td>
<td>11-May</td>
</tr>
<tr>
<td>2008</td>
<td>25-Mar</td>
<td>30-Apr</td>
<td>8-May</td>
<td>16-May</td>
</tr>
<tr>
<td>2009</td>
<td>30-Mar</td>
<td>30-Apr</td>
<td>14-May</td>
<td>19-May</td>
</tr>
<tr>
<td>2010</td>
<td>1-Apr</td>
<td>30-Apr</td>
<td>11-May</td>
<td>20-May</td>
</tr>
</tbody>
</table>

Figure 1. Imnaha Acclimation Pond – Cumulative passage timing to Lower Granite Dam.
Table 4. Catherine Creek Acclimation Pond – Estimated 10%, 50%, and 90% passage dates at Lower Granite Dam.

<table>
<thead>
<tr>
<th>Year</th>
<th>Release Date(s)</th>
<th>10% Passage Date</th>
<th>50% Passage Date</th>
<th>90% Passage Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>2-Apr</td>
<td>4-May</td>
<td>15-May</td>
<td>22-May</td>
</tr>
<tr>
<td>2002</td>
<td>4/1-4/2</td>
<td>5-May</td>
<td>17-May</td>
<td>21-May</td>
</tr>
<tr>
<td>2004</td>
<td>3/15,3/30</td>
<td>21-Apr</td>
<td>4-May</td>
<td>16-May</td>
</tr>
<tr>
<td>2005</td>
<td>3/14,4/4</td>
<td>26-Apr</td>
<td>5-May</td>
<td>10-May</td>
</tr>
<tr>
<td>2006</td>
<td>27-Mar</td>
<td>30-Apr</td>
<td>7-May</td>
<td>19-May</td>
</tr>
<tr>
<td>2007</td>
<td>26-Mar</td>
<td>2-May</td>
<td>10-May</td>
<td>15-May</td>
</tr>
<tr>
<td>2008</td>
<td>24-Mar</td>
<td>5-May</td>
<td>13-May</td>
<td>20-May</td>
</tr>
<tr>
<td>2009</td>
<td>3/16,3/24</td>
<td>2-May</td>
<td>15-May</td>
<td>23-May</td>
</tr>
<tr>
<td>2010</td>
<td>29-Mar</td>
<td>1-May</td>
<td>13-May</td>
<td>20-May</td>
</tr>
</tbody>
</table>

Figure 2. Catherine Creek Acclimation Pond – Cumulative passage timing to Lower Granite Dam.

The tables below contain estimates calculated in the CSS study of juvenile survival in the hydrosystem between Lower Granite and Bonneville Dams and survival to adulthood of juvenile salmonids released from Imnaha Acclimation Pond (Table 3) and Catherine Creek Acclimation Pond (Table 4) in several categories. Those categories are: SAR(T), SAR(C₀), and Weighted SAR_LGR-to-LGR, where SAR(T) represents smolts transported from Lower Granite, Little Goose, or Lower Monumental Dam, SAR(C₀) represents smolts migrating in river (undetected at Snake River transportation collector sites), and SAR_LGR-to-LGR is a weighted estimate that is obtained by taking the proportion of the total population of smolts (tagged and untagged) at Lower Granite Dam in each study category and multiplying by the respective study category’s SAR_LGR-to-LGR. In effect, the weighted SAR_LGR-to-LGR is the estimated SAR for the overall hatchery release.
(without jacks). The data presented in Tables 3 and 4 were taken from the Draft 2010 CSS Annual Report, which can be downloaded from the FPC webpage (http://www.fpc.org/documents/CSS.html).

### Table 5. Imnaha Acclimation Pond – Spring Chinook Survival

<table>
<thead>
<tr>
<th>Release Date(s)</th>
<th>Migration Year</th>
<th>Juvenile Survival (LGR-BON)</th>
<th>Proportion Transported</th>
<th>T/C Ratio</th>
<th>SAR(T) %</th>
<th>Adult Survival</th>
<th>SAR(C0) %</th>
<th>Weighted SAR_{LGR-to-LGR}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr-7</td>
<td>1997</td>
<td>0.31</td>
<td>0.52</td>
<td>1.36</td>
<td>1.16</td>
<td>0.86</td>
<td>0.98</td>
<td></td>
</tr>
<tr>
<td>Apr-6</td>
<td>1998</td>
<td>0.53</td>
<td>0.85</td>
<td>1.55</td>
<td>0.85</td>
<td>0.55</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>3/16, 4/05</td>
<td>1999</td>
<td>0.54</td>
<td>0.78</td>
<td>1.89</td>
<td>2.69</td>
<td>1.43</td>
<td>2.41</td>
<td></td>
</tr>
<tr>
<td>22-Mar</td>
<td>2000</td>
<td>0.57</td>
<td>0.69</td>
<td>1.29</td>
<td>3.11</td>
<td>2.41</td>
<td>2.89</td>
<td></td>
</tr>
<tr>
<td>21-Mar</td>
<td>2001</td>
<td>0.37</td>
<td>0.98</td>
<td>10.8</td>
<td>0.62</td>
<td>0.06^H</td>
<td>0.61</td>
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</tr>
<tr>
<td>21-Mar</td>
<td>2002</td>
<td>0.50</td>
<td>0.66</td>
<td>1.75</td>
<td>0.79</td>
<td>0.45</td>
<td>0.68</td>
<td></td>
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<tr>
<td>1-Apr</td>
<td>2003</td>
<td>0.70</td>
<td>0.55</td>
<td>1.21</td>
<td>0.58</td>
<td>0.48</td>
<td>0.53</td>
<td></td>
</tr>
<tr>
<td>26-Mar</td>
<td>2004</td>
<td>0.56</td>
<td>0.89</td>
<td>1.64</td>
<td>0.38</td>
<td>0.23</td>
<td>0.36</td>
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<tr>
<td>3/26, 3/29</td>
<td>2005</td>
<td>0.60</td>
<td>0.86</td>
<td>1.77</td>
<td>0.28</td>
<td>0.16^C</td>
<td>0.27</td>
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<tr>
<td>3/21, 3/30</td>
<td>2006^D</td>
<td>0.50</td>
<td>0.67</td>
<td>0.62</td>
<td>0.77</td>
<td>1.25</td>
<td>0.80</td>
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<tr>
<td>3/21, 3/31</td>
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<td>0.69</td>
<td>0.23</td>
<td>0.63</td>
<td>1.02</td>
<td>0.63</td>
<td>0.66</td>
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<tr>
<td>25-Mar</td>
<td>2008^A,^D</td>
<td>0.34</td>
<td>0.54</td>
<td>1.43</td>
<td>1.75</td>
<td>1.22</td>
<td>1.64</td>
<td></td>
</tr>
</tbody>
</table>

A Migration year 2007 is incomplete with Age 2-salt adult returns through 7/26/2010
B Assumed SAR(C0) same as SAR(C1) for 2001
C In-river SAR is combination of groups C1 and C0
D Estimates for migration years 2006 through 2008 reflect use of new methodology developed for random pre-assignment of “monitor mode” and “return-to-river mode” operations. See 2010 CSS Annual Report for details.

### Table 6. Catherine Creek Acclimation Pond – Spring Chinook Survival

<table>
<thead>
<tr>
<th>Release Date(s)</th>
<th>Migration Year</th>
<th>Juvenile Survival (LGR-BON)</th>
<th>Proportion Transported</th>
<th>T/C Ratio</th>
<th>SAR(T) %</th>
<th>Adult Survival</th>
<th>SAR(C0) %</th>
<th>Weighted SAR_{LGR-to-LGR}</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/2</td>
<td>2001</td>
<td>0.25</td>
<td>0.96</td>
<td>5.33</td>
<td>0.23</td>
<td>0.04^E</td>
<td>0.22</td>
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</tr>
<tr>
<td>4/1-4/02</td>
<td>2002</td>
<td>0.65</td>
<td>0.71</td>
<td>1.81</td>
<td>0.89</td>
<td>0.49</td>
<td>0.77</td>
<td></td>
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<tr>
<td>3/12, 23, 3/23</td>
<td>2003</td>
<td>0.62</td>
<td>0.55</td>
<td>1.45</td>
<td>0.36</td>
<td>0.25</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>3/15, 3/30</td>
<td>2004</td>
<td>0.48</td>
<td>0.90</td>
<td>1.94</td>
<td>0.38</td>
<td>0.20</td>
<td>0.36</td>
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<tr>
<td>3/14, 4/04</td>
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<td>0.51</td>
<td>0.86</td>
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<td>0.44</td>
<td>0.18^C</td>
<td>0.40</td>
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<tr>
<td>27-Mar</td>
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<td>0.49</td>
<td>0.68</td>
<td>0.48</td>
<td>0.45</td>
<td>0.93</td>
<td>0.49</td>
<td></td>
</tr>
<tr>
<td>26-Mar</td>
<td>2007^B</td>
<td>0.72</td>
<td>0.47</td>
<td>1.35</td>
<td>0.50</td>
<td>0.37</td>
<td>0.43</td>
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</tr>
<tr>
<td>24-Mar</td>
<td>2008^A,^D</td>
<td>0.48</td>
<td>0.60</td>
<td>1.38</td>
<td>2.48</td>
<td>1.79</td>
<td>2.04</td>
<td></td>
</tr>
</tbody>
</table>

A Migration year 2007 is incomplete with Age 2-salt adult returns through 7/26/2010
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C In-river SAR is combination of groups C1 and C0
D Estimates for migration years 2006 through 2008 reflect use of new methodology developed for random pre-assignment of “monitor mode” and “return-to-river mode” operations. See 2010 CSS Annual Report for details.

Finally, figure 3 below is a time series of the Weighted SAR_{LGR-to-LGR} over the years of available data for Lookingglass Hatchery spring Chinook released at the Imnaha Acclimation Pond and Catherine Creek Acclimation Pond.
Figure 3. Weighted \( \text{SAR}_{\text{LGR-to-LGR}} \) for Lookingglass hatchery spring Chinook released from Imnaha Acclimation Pond (1997-2008) and Catherine Creek Acclimation Pond (2001-2008). Migration year 2008 is incomplete with Age 2-salt adult returns through 7/26/2010.

We hope that the information we have provided regarding the use and application of information from the marked groups at the hatchery over the last several years is of some use to you. If you would like any additional information regarding these releases please feel free to contact us.

Sincerely,

Michele DeHart
Fish Passage Center Manager

Cc: Pete Hassemer, IDF&G
    Bill Tweit, WDFW
    Jay Hesse, Nez Perce
    Tony Nigro, ODFW
    Ron Boyce, ODFW
    FPAC