Tagging Study: Update and Preliminary Results from 2017 and 2018

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Rasmuson Fisheries Research Center Fellowship
North Gulf of Alaska Applied Research Award
“Nothing in Evolutionary Biology Makes Sense Except in the Light of Ecology”
-P & R Grant 2008; SEEC Lab Motto
Tagging Study
Paddy and Erb Creeks in Western PWS
## Tag Dates

<table>
<thead>
<tr>
<th>Creek</th>
<th>Paddy Creek</th>
<th>Erb Creek</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tag Dates</td>
<td>Tag Dates</td>
<td>Tag Dates</td>
</tr>
<tr>
<td></td>
<td>August 11-12</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>August 26-27</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>August 11</td>
<td>August 12</td>
</tr>
<tr>
<td></td>
<td>August 19</td>
<td>August 20</td>
</tr>
<tr>
<td></td>
<td>August 28-29</td>
<td>August 29-30</td>
</tr>
<tr>
<td>n</td>
<td>100</td>
<td>99</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>200</td>
</tr>
</tbody>
</table>

### 2017
- Early
- Late

### 2018
- Early
- Mid
- Late
Tag Study Methods
# Tagging Summary

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paddy Creek</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tagged fish</td>
<td>200</td>
<td>500</td>
<td>499</td>
</tr>
<tr>
<td>Tag recovery rate</td>
<td>50%</td>
<td>73%</td>
<td>71%</td>
</tr>
<tr>
<td>Carcasses recovery rate</td>
<td>90%</td>
<td>58%</td>
<td>97%</td>
</tr>
<tr>
<td>Carcasses with otoliths</td>
<td>77</td>
<td>118</td>
<td>328</td>
</tr>
<tr>
<td>Hatchery origin</td>
<td>12</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td><strong>Erb Creek</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Exploratory Questions for Tagging Data

Do hatchery and wild pink salmon exhibit differences in life-history traits of:

- Length
- In-stream lifespan
- Egg retention rates

Photos: Craig Purchase, Marta Ree
Length

Male

Female

Photos: Craig Purchase; Paddy Creek 2018
Tag 2017: Hatchery Origin Females Tend to be Smaller
Tag 2018: Hatchery Origin Tend to be Larger
Mean Hat = 433, Mean Nat = 421
Tag 2018 vs HW: Similar Male Lengths
Mean Tag Length = 419 mm, Mean HW = 416 mm
In-stream Lifespan
Tag 2017: Paddy H and N Not Different

Mean In-stream Lifespan = 7 days
Tag 2018: Erb and Paddy do Not Statistically Differ (P=0.56)
Mean Days = 8 Erb, 6 Paddy
Egg Retention

P. Westley
C. Purchase
Tag 2017: Egg Retention Low for Natural and Hatchery Origin

- Natural: n = 41
- Hatchery: n = 8
Tag 2018: Egg Retention Low for Natural and Hatchery Origin

![Graph showing egg retention for Natural and Hatchery Origin in Recovery Creek.](image)

- **Erb**:
  - Natural: 11
  - Hatchery: 61
  - Total: 172

- **Paddy**:
  - Natural: 2
  - Hatchery: 61
  - Total: 63

- **Total**: 170 eggs
Summary
Questions?
Tag Data: Male Length Decreases over 2017 Season

- 2017: 39:8
- 2018: 219:13

Comparison of length (mm) over recovery date (DOY) for natural and hatchery fish.
HW Lengths Change over Seasons

Even Years

Odd Years

Female

Male

- Natural
- Hatchery

Recovery Date (DOY)

Length (mm)
## Depredation Numbers

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>Erb Creek</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Paddy Creek</td>
<td>Paddy Creek</td>
<td>Erb Creek</td>
<td></td>
</tr>
<tr>
<td>Tagged Fish</td>
<td>200</td>
<td>500</td>
<td>499</td>
<td>1199</td>
</tr>
<tr>
<td>Tags recovered</td>
<td>100</td>
<td>364</td>
<td>356</td>
<td>820</td>
</tr>
<tr>
<td>Carcasses recovered</td>
<td>90</td>
<td>211</td>
<td>346</td>
<td>647</td>
</tr>
<tr>
<td>Depredated carcasses</td>
<td>50</td>
<td>183</td>
<td>161</td>
<td>394</td>
</tr>
<tr>
<td>Carcasses with otoliths</td>
<td>77</td>
<td>118</td>
<td>328</td>
<td>523</td>
</tr>
<tr>
<td>Hatchery Origin</td>
<td>12</td>
<td>7</td>
<td>18</td>
<td>37</td>
</tr>
<tr>
<td>Senesced with lengths (Hatchery)</td>
<td>37 (11)</td>
<td>24 (1)</td>
<td>171 (6)</td>
<td>250</td>
</tr>
</tbody>
</table>
Wandering Tagged Fish?

- 2017: One Male tagged in Paddy went to Erb, two fish found in unnamed creek between Paddy and Erb.
- 2018: Two tagged fish found in same unnamed creek.
- All were natural origin