Proportions of hatchery fish in escapements of summer-run Chum Salmon in Southeast Alaska, 2013-2015

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Acknowledgements

Prince William Sound Science Center
Sitka Sound Science Center
ADF&G Regional Mark, Tag, And Age Laboratory

Piston and Heinl. 2012a,b. Hatchery chum salmon straying in Southeast Alaska.
What is the extent and annual variability of straying in SEAK chum salmon escapements?

1,200 chum streams

Two runs: summer and fall

Three stock groups

81 escapement index streams
  NSI: 66
  NSO: 6
  SSE: 9

32 streams selected for study
  NSI: 24
  NSO: 3
  SSE: 5
SEAK Summer Chum Salmon Escapements
By Management Unit

Red = Estimated Escapement  Black = 2011 Escapement Goal Lower Bound
Blue = Pre-hatchery Period Average  Green = Hatchery Period Average
2014 – SEAK Chum
By: Stream

- Fish
  - Admiralty: 0.04
  - King Salmon: 0.002
  - Swan Cove: 0.00
- Prospect: 0.04
- Glen: 0.00
- Chuck: 0.07
- Harding: 0.05
- King: 0.02
- Marten: 0.03

- Greens: 0.00
- Sawmill: 0.19
- Freshwater: 0.02
- Seal Bay: 0.00
- Little Goose: 0.00
- Kodashan: 0.03
- Sister Lake: 0.01
- Ford: 0.00
- Ushk: 0.02
- Rodman: 0.01
- Ralphs: 0.0001
- W Crawfish: 0.14
- E of Snug: 0.00
- Johnston: 0.00
- Petrof: 0.01
- Hidden: 0.004
- Saginaw: 0.00

- Whitewater: 0.00
- Chaik: 0.00
- Chik: 0.00
- W Crawfish: 0.00
- E of Snug: 0.00

- Ushk: 0.08
- Ford: 0.03
- Ushk: 0.02
- Ford: 0.01

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Summary of Annual Observations

- 96 stream/year observations
- 14 with no hatchery fish
- 72 pHOS < 0.05
- 9 pHOS 0.05 - 0.10
- 15 pHOS > 0.10
- Highest observation 0.85 (Fish Creek)
Relationship of hatchery fractions to distance from the nearest release site in SEAK summer chum escapements, 2013-2015.
Relationship of hatchery fractions to peak stream counts in SEAK summer chum escapements, 2013-2015.
Estimated Hatchery Fraction SEAK Summer Chum For Management Unit and Regional Escapements 2013-2015.

<table>
<thead>
<tr>
<th>Management unit</th>
<th>Number of streams sampled</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSE</td>
<td>5</td>
<td>0.078</td>
<td>0.030</td>
<td>0.036</td>
</tr>
<tr>
<td>NSI</td>
<td>24</td>
<td>0.019</td>
<td>0.034</td>
<td>0.080</td>
</tr>
<tr>
<td>NSO</td>
<td>3</td>
<td>0.016</td>
<td>0.018</td>
<td>0.017</td>
</tr>
<tr>
<td>SEAK Region</td>
<td>32</td>
<td>0.025</td>
<td>0.031</td>
<td>0.062</td>
</tr>
</tbody>
</table>
Conclusions

- Proportion hatchery strays in streams is affected by distance from hatchery release sites and size of natural spawning escapement.

- Proportion of hatchery strays can be highly variable between years at the stream level.

- Hatchery origin chum salmon can be expected at low levels in most chum salmon spawning streams in SEAK, and at higher levels in systems with relatively small escapements closer to hatchery release sites.

- At the management unit and regional levels, the proportion of hatchery strays in the escapement was typically <0.04, and did not exceed 0.08 in this study.