May 1st, 3:30 PM - 5:00 PM

Movements of sub-adult Chinook salmon, Oncorhynchus tshawytscha, in Puget Sound, Washington, as indicated by ultrasonic tracking

Anna Kagley
Northwest Fisheries Science Center (U.S.), anna.kagley@noaa.gov

Joe Smith
University of Washington

Thomas Quinn
University of Washington

Kurt Fresh
Northwest Fisheries Science Center (U.S.)

Joshua Chamberlin
Northwest Fisheries Science Center (U.S.)

See next page for additional authors

Follow this and additional works at: https://cedar.wwu.edu/ssec

Part of the Terrestrial and Aquatic Ecology Commons

Kagley, Anna; Smith, Joe; Quinn, Thomas; Fresh, Kurt; Chamberlin, Joshua; Spilsbury-Pucci, Dawn; and Moore, Stephanie, "Movements of sub-adult Chinook salmon, Oncorhynchus tshawytscha, in Puget Sound, Washington, as indicated by ultrasonic tracking" (2014). Salish Sea Ecosystem Conference. 238.

This Event is brought to you for free and open access by the Conferences and Events at Western CEDAR. It has been accepted for inclusion in Salish Sea Ecosystem Conference by an authorized administrator of Western CEDAR. For more information, please contact westerncedar@wwu.edu.
Speaker
Anna Kagley, Joe Smith, Thomas Quinn, Kurt Fresh, Joshua Chamberlin, Dawn Spilsbury-Pucci, and Stephanie Moore

This event is available at Western CEDAR: https://cedar.wwu.edu/ssec/2014ssec/Day2/238
MOVEMENTS OF SUB-ADULT SALMON IN THE SALISH SEA

Anna Kagley, Joe Smith, Kurt Fresh, Thomas Quinn, Dawn Spilsbury-Pucci, Stephanie Moore, Joshua Chamberlin & Fred Goetz
RESIDENT OR MIGRANT?

Geographic Range (Distance)

- Headwaters
- River
- Estuary
- Puget Sound
- Salish Sea
- Pacific Ocean

Time

- Early Rearing
- Rearing
- Fluvial
- Estuary Resident
- Nearshore Resident
- PS Resident
- PS Semi-Resident
- Ocean-bound
- Adult Migration
- Juvenile Migration
- Spawning
CHINOOK AND COHO SALMON:

Differences between resident and migrant

Resident movements on a spatial scale:
1. Puget Sound
2. Between basins
3. Within basin habitat-use
4. Vertical

 Movements of individual residents on temporal scales:
1. Seasonal
2. Diel

Possible abiotic/biotic drivers

Movements of the population
## DEMOGRAPHICS (CHINOOK SALMON)

<table>
<thead>
<tr>
<th>criteria</th>
<th>category</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyses</td>
<td>Included</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>Excluded</td>
<td>65</td>
</tr>
<tr>
<td>Tagging Event</td>
<td>Fall</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Summer</td>
<td>28</td>
</tr>
<tr>
<td>Type</td>
<td>Resident (H)</td>
<td>39 (24)</td>
</tr>
<tr>
<td></td>
<td>Migrant (H)</td>
<td>16 (12)</td>
</tr>
<tr>
<td>Genetics</td>
<td>Migrant</td>
<td>5 SSF/HC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 Whidbey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 LF</td>
</tr>
<tr>
<td></td>
<td>Resident</td>
<td>11 SSF/HC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Whidbey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 LF &amp; 1 HC</td>
</tr>
</tbody>
</table>
# DEMOGRAPHICS (CHINOOK SALMON)

<table>
<thead>
<tr>
<th>Biotics</th>
<th>Group</th>
<th>Avg (STDEV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>Resident</td>
<td>276 (58.2) mm</td>
</tr>
<tr>
<td></td>
<td>Migrant</td>
<td>275 (44.5) mm</td>
</tr>
<tr>
<td>Weight</td>
<td>Resident</td>
<td>267 (143.7) g</td>
</tr>
<tr>
<td></td>
<td>Migrant</td>
<td>276 (157.2) g</td>
</tr>
<tr>
<td>Condition Index</td>
<td>Resident</td>
<td>1.2 (0.09)</td>
</tr>
<tr>
<td></td>
<td>Migrant</td>
<td>1.2 (0311)</td>
</tr>
</tbody>
</table>
HORIZONTAL MOVEMENT
All fish detected by basins:
Residents detected by basin:

A) Admiralty Inlet: 11 tags
B) Main Basin: 34 tags
C) South Basin: 15 tags
D) Whidbey Basin: 9 tags

Tagging locations:
- Similk Bay
- South Skagit Island
- Mariner’s Cove
- President Point
- President Point E
- Port Madison W
- Port Madison
- Appletree Cove
- Jefferson Point
- Jefferson Head
- Blakely Harbor
- Indianola
- Restoration

Map showing tagging locations in Puget Sound.
Most detections in Central Puget Sound – where tagged

1 Resident and 1 Migrant Briefly entered HC

6 Residents and 2 Migrants entered Whidbey Basin. (3 of those were tagged there)
3133 Distance Travelled from Tagging (miles)

1040305 Distance Travelled from Tagging (miles)

1040676 Distance Travelled from Tagging (miles)
PATTERNS:

Differences between resident and migrant:
   30% of presumed residents left
   no obvious H/W, size, genetic differences

Resident movements on a spatial scale:
   1. Puget Sound: basin fidelity
   2. Between basins, didn’t follow N to S pattern
   3. Within basin habitat-use: receivers closer to shore
   4. Vertical: residents move slower, behavior patterns

Movements of individual residents on temporal scales:
   1. Seasonal: no large scale differences
   2. Diel: Go see Joe’s talk!

Possible abiotic/biotic drivers: Temp, Sal, DO, predators?
Movements of the population: TBD!
FUTURE WORK: SAN JUAN ISLANDS
COLLABORATION:

Sharing Receivers:
  Steelhead Recovery
  Orcas

Sharing Data:
  OTN/ATN
  IOOS
  Hydra
• Jay Field
• Iris Kemp
• Jessica Rohde
• Kim Guibault
• Jason Hall
• Eva Schemmel
• Kinsey Frick
• Casey Rice
• Scott Stelzner
• Kelly Andrews
• Mary Moser
• Eric Jeanes

THANKS!