

Western Washington University Western CEDAR

Salish Sea Ecosystem Conference

2014 Salish Sea Ecosystem Conference (Seattle, Wash.)

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

Joseph Smith University of Washington

Thomas P. (Thomas Peter) Quinn *University of Washington*

Kurt L. 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, Joseph; Quinn, Thomas P. (Thomas Peter); Fresh, Kurt L.; Chamberlin, Joshua; Spilsbury-Pucci, Dawn; Moore, Stephanie K.; and Goetz, Fred, "Movements of sub-adult Chinook salmon, Oncorhynchus tshawytscha, in Puget Sound, Washington, as indicated by ultrasonic tracking" (2014). *Salish Sea Ecosystem Conference*. 238.

https://cedar.wwu.edu/ssec/2014ssec/Day2/238

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, Joseph Smith, Thomas P. (Thomas Peter) Quinn, Kurt L. Fresh, Joshua Chamberlin, Dawn Spilsbury-Pucci, Stephanie K. Moore, and Fred Goetz





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?



Jessica Rohde

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



2008 Sanborn
mage © 2008 TerraMetrics

TAGGING











DEMOGRAPHICS (CHINOOK SALMON)

| criteria | category | n |
|---------------|--------------|----------------|
| Analyses | Included | 55 |
| | Excluded | 65 |
| Tagging Event | Fall | 27 |
| | Summer | 28 |
| Туре | Resident (H) | 39 (24) |
| | Migrant (H) | 16 (12) |
| Genetics | Migrant | 5 SSF/HC |
| | | 1 Whidbey |
| | | 1 LF |
| | Resident | 11 SSF/HC |
| | | 2 Whidbey |
| | | 2 LF & 1 HC |

DEMOGRAPHICS (CHINOOK SALMON)

| Biotics | Group | Avg (STDEV) |
|-----------------|----------|---------------|
| Length | Resident | 276 (58.2) mm |
| | Migrant | 275 (44.5) mm |
| Weight | Resident | 267 (143.7) g |
| | Migrant | 276 (157.2) g |
| Condition Index | Resident | 1.2 (0.09) |
| | Migrant | 1.2 (0311) |

HORIZONTAL MOVEMENT



All fish detected B) Whidbey Basin: n=15 A) Straits: n=13 by basins: Puget Sound Strait of 48. Georgia (aritude (°N) Similk Bay C) Admiralty Inlet: n=25 D) Main Basin: n=51 South Skagit Island -10.12 Strait of Juan de Fuca Whidbey Basi 48.3 Tagging Locations 5 km Infer -122.7 -122.6 -122.5 -122.4 Appletree Cove Kingston 47.8 President Point President Point Jefferson Point Jefferson Head Main Basin (N°) 442.2 42.2 Tagging Locations Port Madison W Port Madison with Sound E) South Basin: n=16 Tagging locations Jefferson Point Similk Bay 47.6 South Skagit Island Jefferson Head OBlakely Harbor ORestoration 5 km Mariner's Cove Indianola -122.6 -122.4 122.5 -122.3Appletree Cove Port Madison W Longitude (°W) Kingston Port Madison President Point Blakely Harbor President Point E Restoration

Residents detected by basin:





FISH DISTRIBUTION



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)



MIGRANTS

1040305 Distance Travelled from Tagging (miles)

7/27/2007

7/29/2007



1040676 Distance Travelled from Tagging (miles)





4997 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!