

Addressing the Potential Effects of Hatchery Interactions on the ESA-listed Species, Hood Canal (Washington) Summer Chum Salmon

Tim Tynan
NOAA Fisheries



Chris Weller
Point No Point Treaty Council



Thom H. Johnson
Washington Department of Fish and Wildlife



Introduction



With ESA listings and concerns for recovery of wild popl'ns, there is increasing focus on potential interactions b/w hatchery and wild fish



State and Tribal Co-managers in Washington decided to 1) identify potential negative impacts of hatcheries on ESA-listed summer chum salmon and 2) identify mitigative measures to minimize any risks to summer chum



We describe here the approach used and report on initial outcomes

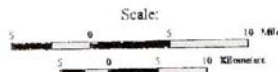
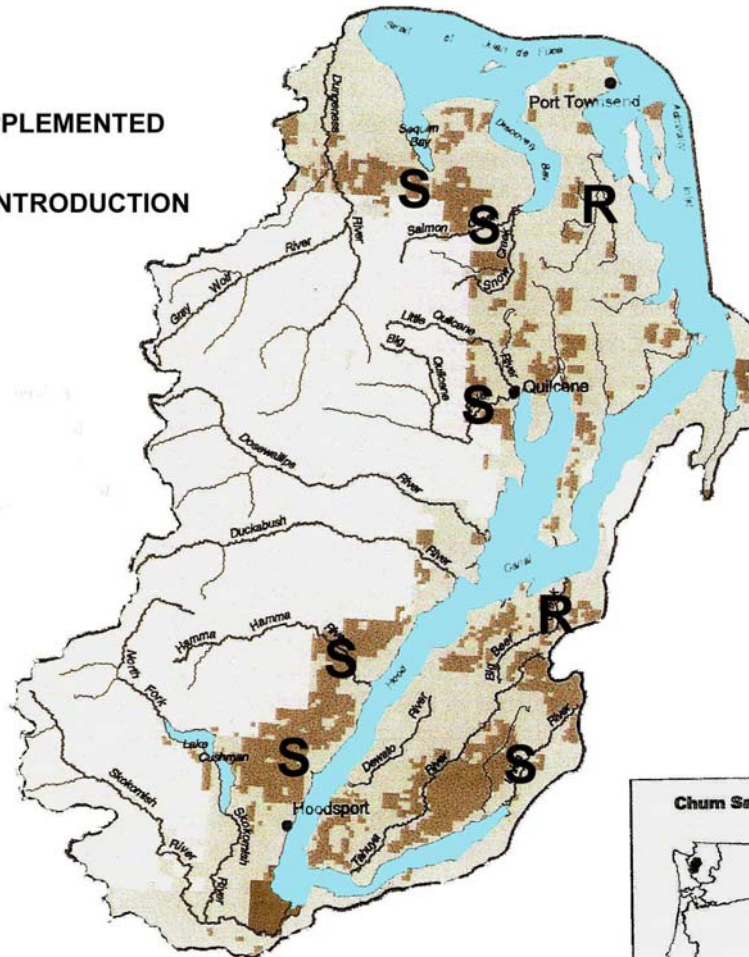
Background

- March 1999, ESA listing of Hood Canal summer chum salmon Evolutionarily Sig. Unit (ESU)
- In April 2000, Co-managers completed the “Summer Chum Salmon Conservation Initiative, An Implementation Plan to Recover Summer Chum in the Hood Canal and Strait of Juan de Fuca Region”
<http://www.wa.gov/wdfw/fish/chum/chum.htm>
- In 2002, ESA 4(d) rule requirements incorporated the hatchery conservation measures identified in the SCSCI (i.e., Resource Mgt Plan – RMP)

HOOD CANAL SUMMER CHUM SALMON ESU

S SUPPLEMENTED

R REINTRODUCTION



Background (cont.):

- Use of hatcheries is long-standing and important in the Hood Canal region with WDFW, Tribal, and USFWS facilities, and cooperative projects by volunteer fish enhancement groups
- Hatchery objectives include providing surplus fish for harvest, mitigation for fish production losses due to habitat degradation, and wild salmonid stock recovery
- Rear chinook, coho, chum, and pink salmon and steelhead; trout also, but not discussed here

Assessing **Potential Risks** of Hatchery Activities on Summer Chum



Overlaid summer chum life history with release/migration timing of hatchery fish

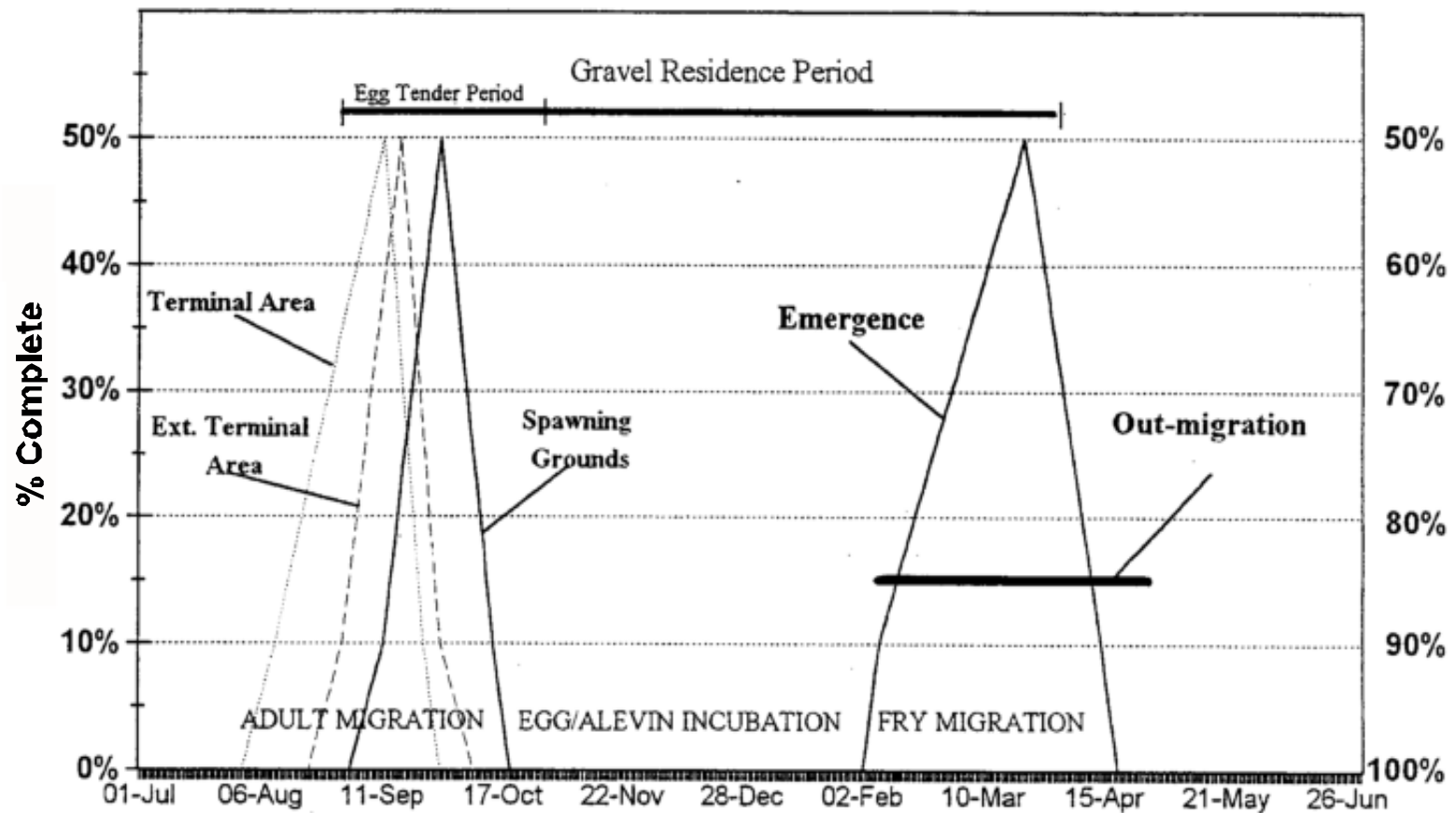


Direct impacts: **risks** due to physical operation of hatcheries



Ecological impacts due to interactions b/w hatchery fish and summer chum: **risks** due to predation, competition/behavior modification, fish disease transfer

Summer Chum Salmon Life History, Hood Canal



General Approach

- Developed ratings for each risk category
- Identified appropriate risk aversion (r.a.) measures for each risk category
- Identified monitoring/evaluation (m&e) measures to help make sure the risk aversion measures were implemented successfully
- Then, rated risks of each hatchery program and identified the r.a. and m&e measures needed to reduce any moderate or high risk to a low risk

Risk Ratings for Hatchery Operations

HIGH risks:

- Broodstock trap on summer chum stream and not checked 2X a day or hold chum for >24 hrs or not handled properly
- Water intakes/outlets are not screened
- Water withdrawal reduces flows w/ negative impact on summer chum stream
- Out of compliance with NPDES permit

Risk Ratings for Competition and Behavioral Modification

HIGH Risks:

- If not part of a formal recovery program, unable to remove >90% of returning hatchery chinook, coho, fall chum or pink spawners (i.e., risk of redd super-imposition and/or competition)
- Unfed or fed fall chum or pink fry released before Apr. 1st (i.e., overlaps with natural outmigration timing)
- Release timing of hatchery fish is unknown

MODERATE Risks:

- Fall chinook released from marine area netpens (i.e., potential straying of spawners into summer chum streams)

Risk Aversion Measures for Fish Disease Transfer

- Apply protocols of Pacific Northwest Fish Health Protection Committee (PNFHPC 1989) and Salmonid Disease Control Policy of the Fisheries Co-managers of Washington State (NWIFC and WDFW 1998);
- Inspect prior to release all hatchery production by WDFW or USFWS fish pathologists to certify their disease status and health condition.

Implementation

- Risk aversion and m&e measures were specified for each hatchery program and implemented beginning in 1999
- Most programs were rated Low risk for all categories

Implementation (cont.)

- Programs with High or Moderate risks implemented common measures:
 - Delayed release of fall chum or pink fry until after April 1st; Reasons: to reduce risks of predator attraction or competition for food, or changes in feeding behavior or use of preferred migration areas by summer chum fry
 - Discontinued programs releasing hatchery-origin chinook or fall chum in summer chum streams, unless part of a formal recovery program; Reasons: to reduce risk of competition, redd super-imposition and behavior modification with summer chum adults
 - Must follow fish health protocols and reporting requirements; Note: applied to several volunteer/coop projects

Results

- Risk assessment process and implementation have generally been successful
- Some hatchery programs have been terminated in response to concern about hatchery interactions
- Required changes have been done with limited effect on day-to-day hatchery operations
 - Some complications with loadings and pond mgt, but all do-able
 - Terminated programs eased up other programs
 - All volunteer coop projects are now consistent with guidelines
- Hatchery interactions measures have been incorporated in hatchery ESA 4(d) rule issued by NOAA Fisheries
- Bottom line: risks to summer chum are reduced.