Conference and Workshop on
Age and Size at Maturity of Chinook Salmon and other Pacific Salmonids
(with emphasis on the Columbia River)

Embassy Suites Hotel at Portland Airport, Oregon
May 17-19, 2011

PROGRAM (as of May 2, 2011)

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DAY 1. Tuesday, May 17, 2011: What do the data tell us?

12:30 pm Welcome – *Doug Olson (USFWS)*

Session 1. Why are we here?

12:35-1:05 pm Comanager Panel Discussion – *Moderator: Joe Krakker (USFWS)*

- **Tim Roth (USFWS):** *Age and size at maturity – Much ado about nothing or does it really matter?*
- **Becky Johnson (NPT):** *Hatchery management questions and issues.*
- **Jay Hesse (NPT):** *Natural population questions and issues.*
- **Chris Kern (ODFW):** *Harvest management questions and issues.*
- **Don Campton (USFWS):** *Science questions and issues.*
- **Questions from audience.**

Session 2: Do we have a problem? Is there evidence that the age and/or size at maturity of Chinook salmon (or other species) are changing?

1:10-5:40 pm Case Studies and Populations. *Moderator: Rich Carmichael (ODFW)*

1:10 **Steve Pastor (USFWS) and Doug Olson (USFWS):** *National Fish Hatchery observations: variation and trends in age composition and length at return for spring Chinook, tule fall Chinook, upriver-bright fall Chinook, coho, and steelhead.*

1:30 **Marc Johnson (ODFW) and Tom Friesen (ODFW):** *Declines in age and size of upper Willamette River spring Chinook salmon.*

1:50 **Andrew Murdoch (WDFW) and Mike Hughes (WDFW):** *Influence of hatchery origin spawners on size and age of naturally produced spring Chinook salmon in the Wenatchee Basin and summer Chinook salmon in the upper Columbia Basin.*

2:20 **Curt Knudsen (Oncorh Consulting), Bill Bosch (YN), Steve Schroder (WDFW), Mark Johnston (YN), and Dave Fast (YN):** *Trends in demographic and phenotypic traits of upper Yakima River hatchery- and natural-origin spring Chinook salmon.*

2:40 **Paul Hoffarth (WDFW) and Todd Pearsons (Grant County PUD):** *Comparison of size and age at maturity of hatchery and natural origin upriver-bright fall Chinook to the Hanford Reach.*

3:00 Question and Answers: Lower, Mid, and Upper Columbia River panel.

3:15 Break

3:30 Debbie Milks (WDFW), Mark Schuck (WDFW), and Bill Arnsberg (NPT): *Snake River fall Chinook - effects of supplementation on population age structure.*

3:50 Michael Gallinat (WDFW) and Mark Schuck (WDFW): *Tucannon River spring Chinook - age and size at maturity through 25 years of supplementation.*

4:10 Debra Eddy (ODFW), Rich Carmichael (ODFW), Tim Hoffnagle (ODFW), and Joseph Feldhaus (ODFW): *Patterns and trends in age composition and size-at-maturity for hatchery and natural-origin Imnaha River Chinook salmon.*

4:30 Brian Leth (IDFG), **Jason Vogel (NPT), and John Cassinelli (IDFG):** *Age at maturity and length at age for hatchery and natural populations of spring and summer run Chinook salmon in Idaho streams.*

5:00 Kathryn Kostow (ODFW) and Kevleen Melcher (ODFW): *Historic trends in size and age structure of Chinook salmon captured in Columbia River mainstem fisheries.*

5:20 Snake River and Mainstem Fishery Panel: Questions and Answers

5:35 Rich Carmichael (ODFW): Summary and Wrap-up

5:40 pm Adjourn to hotel lounge. Dinner on own.

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DAY 2: Wednesday, May 18, 2011: What does the science tell us?

8:00 am **Introductory remarks – *Don Campton (USFWS).***

Session 3: What are the effects of hatchery practices on age and size at maturity?

8:05 am **Physiology and Nutrition. *Moderators: Don Larsen (NMFS) and Ann Gannam (USFWS).***

- **8:05** **Penny Swanson (NMFS):** *Timing of puberty in salmon.*
- **8:30** **Brian Beckman (NMFS):** *Environmental regulation of puberty in salmon.*
- **8:45** **Don Larsen (NMFS):** *Hatchery influences on puberty in male salmon.*
- **9:00** **Pat Connolly (USGS):** *Residualization and maturation versus smolting factors for O. mykiss parr.*
- **9:15** **Guillaume Salze (University of Guelph, Ontario, Canada):** *Dietary modulation of puberty and the maturation process in fish.*
- **9:30** **Ann Gannam (USFWS):** *Feed changes over time, ingredients and methods of manufacture, are they having an impact on age/size at maturity of hatchery fish?*
- **9:45** **General Discussion**

10:00 am **Break**

10:15 am **Genetics and Breeding. *Moderator: Don Campton (USFWS).***

- **10:15** **Don Campton (USFWS):** *Heritability of age and size at maturity for salmonid fishes: Can hatchery spawning practices result in genetic changes over time?*
- **10:35** **Christian Smith (USFWS):** *Precocious males and genetic resources: What if we remove the jacks?*
- **10:50** **Dave Hankin (Humboldt State University):** *Does random selection and breeding of adult Chinook salmon in hatchery broodstocks result in earlier age and smaller size at maturity over multiple generations?*
- **11:20** **General Discussion**

11:30 am – 12:30 pm: Lunch buffet in hotel lobby (included with registration fee)

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Session 4: What are the effects of the natural environment, population processes, and anthropogenic factors on age and size at maturity?

12:30 pm **Age and size effects on reproductive behavior, breeding success, and fitness.** ***Moderator: Barry Berejikian (NMFS).***

12:30 **Steve Schroder (WDFW):** *Effects of size at maturity on breeding success and lifetime fitness in males and females and implications for the productivity of natural populations.*

12:55 **Ewann Berntson et al. (NMFS):** *Reproductive success of jacks in natural streams (Catherine Creek, Wenatchee River).*

1:15 **Barry Berejikian et al. (NMFS):** *The effects of frequency dynamics (proportion of jacks) on breeding and reproductive success.*

1:40 **General Discussion.**

2:00 pm **Effects of anthropogenic and environmental factors on age and size at maturity. Moderator:** ***Kathryn Kostow (ODFW).***

2:00 **Greg Ruggerone:** *Density-dependent growth, maturation, and survival of Chinook salmon at sea.*

2:30 **Jeff Hard (NMFS):** *The demographic and evolutionary implications of harvest for age and size at maturation in Chinook salmon.*

3:00 **Break**

3:15 **Neala Kendall* (UW), Jeff Hard (NMFS), and Tom Quinn (UW):** *Changes in age and size at maturity related to fishery selection: lessons learned from Alaskan populations applied to Columbia River Chinook salmon.*

3:35 **Tom Cooney (NMFS):** *Differences in Fishery Selectivity on Male and Female Columbia River Fall Chinook.*

3:55 **Steve Haeseker (USFWS):** An evaluation of the effects of outmigration experience on age-at-maturity

4:15 **William Connor (USFWS):** *Variation in age and size at return associated with fall Chinook salmon juvenile life history.*

4:35 **Robin Waples (NMFS):** *The shift toward yearling smolts in Snake River fall Chinook salmon: evolution or phenotypic plasticity?*

4:55 **Kathryn Kostow* (ODFW), Henry Yuen (USFWS), and Chris Kern (ODFW):** *The quest for environmental and anthropometric variables that explain annual variation in upriver spring Chinook age structure.*

5:15 **General Discussion**

5:30 pm **Adjourn to hotel lounge. Dinner on own.**

END OF CONFERENCE PORTION OF WORKSHOP

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NOTE: Day 3 is an invitation-only working meeting among comanagers and presenters to address management issue for hatchery and natural populations in the Columbia River.

DAY 3. Thursday, May 19, 2011: Comanager Workshop. What should we do to achieve management goals for natural and hatchery populations of Chinook salmon in the Columbia River?

Session 5, with 3 discussion sub-sessions: What have we already done to address management problems and what should we do in the future?

NOTE: The listed times below are flexible guidelines to facilitate discussion and debate.

8:00 am **Introduction. Tim Roth (USFWS)**

8:10 am **Session 5a: Hatchery spawning protocols.** ***Moderator: Don Campton (USFWS)***

- **Mark Schuck (WDFW) and Bill Young (NPT):** *Recent changes in brood stock collection and spawning protocols for Snake River Fall Chinook*
- **Tim Hoffnagle (ODFW), Mike McLean (CTUIR), and Peter Cleary (NPT):** *Breeding protocols to minimize effects of age 3 males in spring Chinook supplementation programs in NE Oregon*

9:50-10:05 am **Break**

10:05 am **Session 5b: Hatchery rearing practices.** ***Moderator: Larry Telles (USFWS)***

- **Mark Schuck (WDFW) and Bill Young (NPT):** *Snake River Fall Chinook size and age at release*
- **Joseph Feldhaus (ODFW):** *Size at release studies of Imnaha River spring Chinook to evaluate how size influences age at return and survivial*
- **Dave Hankin (Humboldt State U.):** *Effects of month of release (and size at release within month) on maturation schedules and age/size at age.*
- **Don Larsen (NMFS) and Brian Beckman (NMFS):** *Cle Elum Hatchery supplementation and growth modulation study to reduce high mini-jack rates (11 year avg. 40% of males) for Yakima River Spring Chinook (BY 2002-2004).* This study monitored pre-release minijack rates, juvenile survival and adult return under the two rearing regimes of conventional and low winter growth (NOAA).
- **Lance Clarke (ODFW):** *Umatilla Fall Chinook mini-jack proposed study* Umatilla FH: *Production scale evaluation of diet and feeding regimes to effect mini jack rates and age at return.* Presentation would provide background for the problem (too many mini jacks) and the experimental design for the study (no data or results yet).

11:45-12:45 **Lunch on your own**

12:50 pm **Session 5c: Escapement management.** ***Moderator: TBD***

Tim Hoffnagle (ODFW), Mike McLean (CTUIR), and Peter Cleary (NPT): *Control of natural spawner escapement composition via sliding scale management.*

2:30 pm **Workshop wrap-up: next steps. Moderator: Don Campton (USFWS**

3pm **Adjourn**

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