

Preliminary Results of a Wand Study on Hatchery Chinook

Ron Olson

Northwest Indian Fisheries Commission

Olympia Washington



Background

Previous wand studies on Chinook have shown variable results

Early Chinook Wandering Studies

Study	Detection Rate
ADFG (1995)	98 %
NWIFC/USFWS (1999)	99 %
CDFO (1999)	96 %
WDFW (1999)	91 %

Results of Chinook Mouth Wanding Studies

		% Detections		
Study	# CWTs	Standard Wanding	Combined Wanding	Tube Detector
WDFW, 2001 Hatchery	1,332	90.5	99.3	100
NWIFC, 2001 Hatchery	368	99.7	99.7	100
ADFG, 2004-06 Troll	2,534	98.2	99.9	
CDFO, 2003-04 Gill net	115		61.7	
CDFO, 2006 Troll	435		94.0	
CDFO, 2004-05 Spawning ground	591		91.0	

Background cont.

- Current Chinook Wanding
Recommendations are to use both methods (external and mouth) on large Chinook
- NMT now has the ability to improve the detection capability of many wands
- Wands with detection depths of ≥ 32 mm are identified with a silver battery cap.

Purpose

- Measure the detection rate of “tuned up” wands on adult Chinook
- Determine if the additional step of mouth wandling is still necessary

Variables

- Sampling Location (3)
- Fish length
- Fish sex
- Samplers (4)
- Wands (4)

Controls

- All fish were mature fall Chinook from hatchery broodstock
- All stocks/locations had CWT returns from DIT groups (2 x 200K)
- All returning CWTs were standard length and of the latest generation of wire
- All wands had silver caps and titanium shields

Nisqually Clear Creek Hatchery



Clear Creek CWT Sampling



Clear Creek Fish Give-a-Way



Suquamish Grovers Creek Hatchery



Grovers Creek Hatchery



Quinault Lake Hatchery



Quinault Lake Far-North Migrating Coastal Fall Chinook Stock



Procedures



Initial Wandering on Exterior Surface

Validation with “Tube” or “Tunnel” Detector



Sorting Gate on Tube



Post-Tube Check With Mouth Wanding



Length and Sex Recorded for all CWT Detections



Snout Removal for Laboratory Dissection



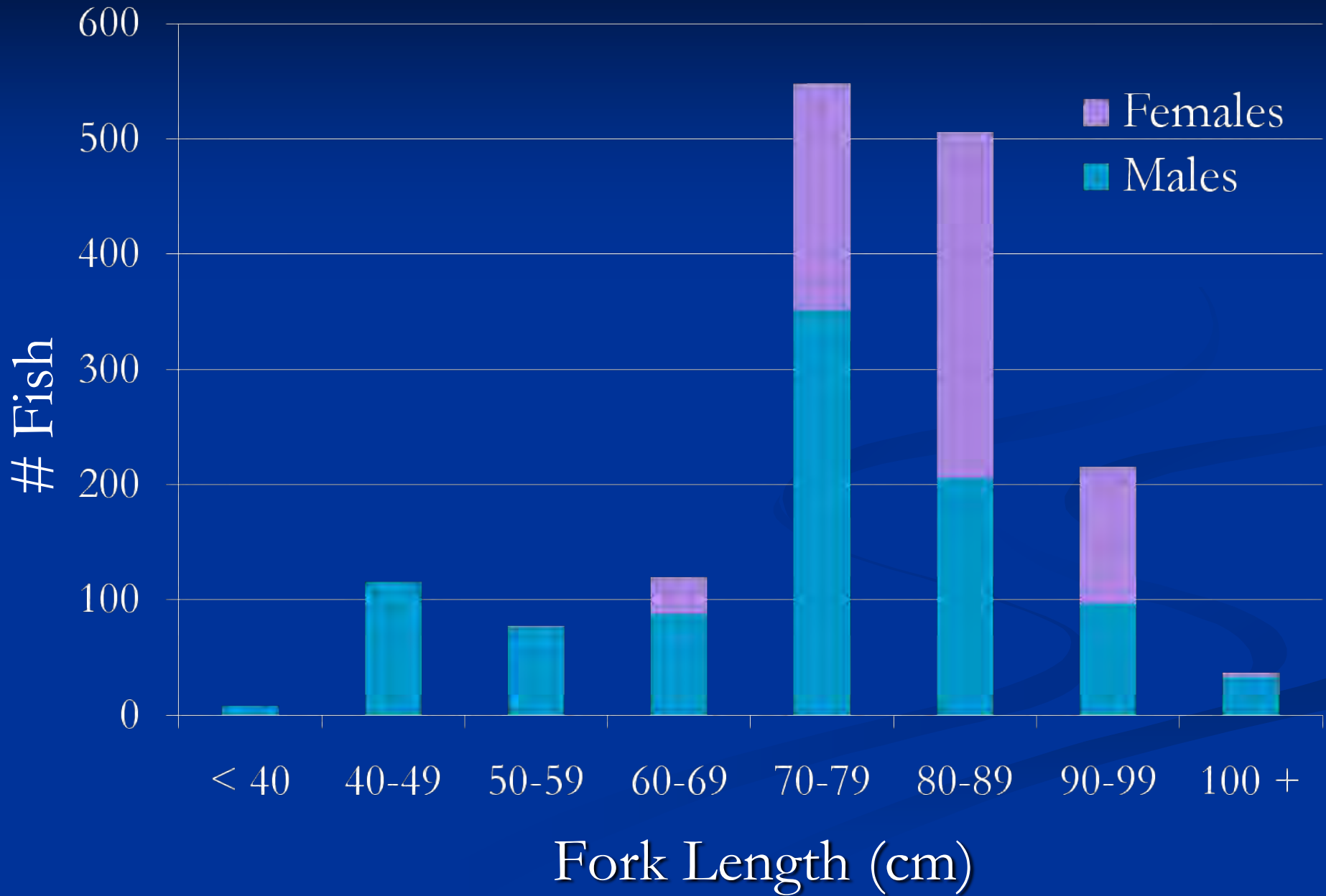
Results



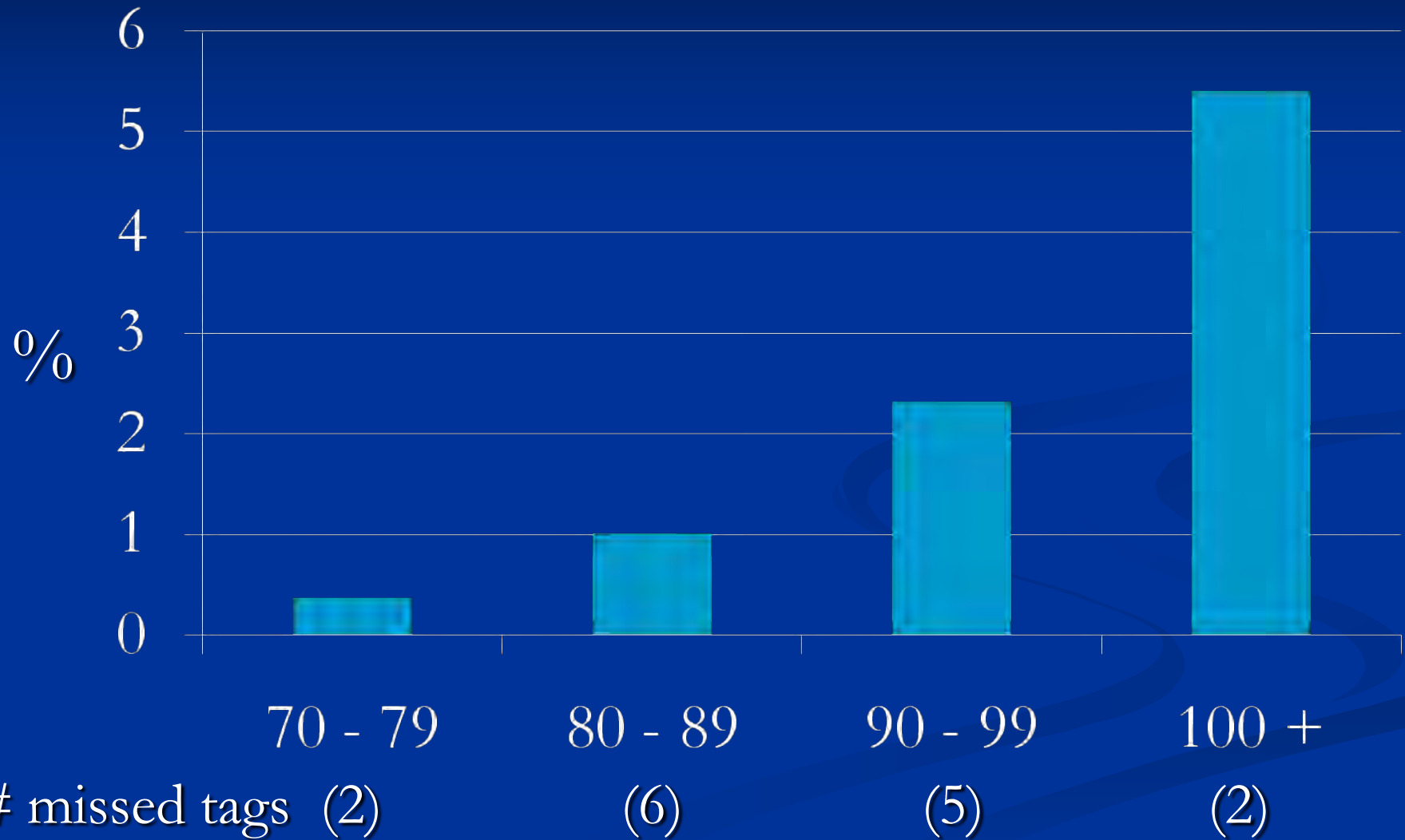
Detection of CWTs, by Location

Hatchery	# Fish Sampled	# CWTs	# CWTs Missed	Detection %
Clear Cr.	1,298	94	5	94.7
Grovers	1,614	1,343	2	99.9
Quinault	246	191	8	95.8
total/mean	3,158	1,628	15	99.1

Length-Frequency of CWT Fish



Percent of missed tags, by FL (cm)



Detection of CWTs, by Sex

Sex	# CWTs (≥ 70 cm FL)	% Detection	# Missed CWTs
Male	687	98.9	12
Female	620	99.5	3

Detection of CWTs, by Sampler

Sampler	# Fish Sampled	# CWTs in Sample	Detection %
RO	736	303	97.4
BP	761	372	98.7
AS	843	710	99.7
KP	818	243	100

Detection of CWTs, by Wand

Wand	# Fish	# CWTs	# CWTs Missed	Detection %
10485	900	440	12	97.3
11254	1,206	370	1	99.7
11255	278	240	0	100
11263	774	578	2	99.7

CWT Detection Depth of Wands

Wand	Pre-Season depth (mm)	Post-Season depth (mm)	# Missed Tags
10485	38	36	12
11254	39	40	1
11255	40	37	0
11263	40	38	2

Signal Strength of Test Standard

Wanding in short axis to standard			
Wand #	Yes	Intermittent	No
10485			X
11254		X	
11255		X	
11263		X	

Wanding in long axis to standard			
Wand #	Yes	Intermittent	No
10485	X		
11254	X		
11255	X		
11263	X		

Details of the 15 Missed Tags

Depth range (mm from snout surface)	Mean Depth (mm from snout surface)
18 – 48	30.2

Secondary Wanding of the 15 fish with Missed Tags

# Detections w/ mouth wanding	# Detections w/ second surface wanding
13 (87 %) *	7 (47 %)

* Theoretical total detection rate of 99.9%

Summary

- 3,158 adult Chinook were sampled with “tuned up” wands at three hatcheries
- Out of 1,628 CWTs, 15 were missed, for a total detection rate of 99.1%
- The percent of missed tags was correlated w/FL
- Males had slightly lower detection rates than females

Summary Cont.

- 12 of the 15 missed tags (80%) were from one wand
- The offending wand had the shortest detection depth and the weakest test signal
- Combination wanding would have detected 13 of the 15 missed CWTs

Preliminary Recommendations

- The “tuned up” wands had high detection rates and should be the model used for Chinook sampling
- Agencies may want to test the detection depth (or signal strength) of their wands and use the most sensitive ones for Chinook sampling

Recommendations Cont.

- It seems prudent to continue with the Mark Committee / PSC SFEC recommendation to use the combination wandling technique on larger fish (i.e. ≥ 80 cm FL)
- Agency programs need to have good quality control measures in place to ensure proper wandling technique & functional equipment



The End