

Current Status of Mass Marking, Electronic CWT Sampling and Mark Selective Fisheries



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Purpose

1. Coho and Chinook Mass Marking
 - Present and Future
 - DIT program
 - Marking trailers
2. Electronic CWT Sampling
 - ETD Equipment
 - Agency CWT Sampling Programs
3. Scope of MSFs
4. Data Management Issues
5. Concerns and Unresolved Issues Regarding the Viability of the CWT System

Coho Mass Marked Releases in 2002

Area	Agency	All Releases (millions)	Adipose Marks (millions)
Straight of Georgia	CDFO	10.0	7.8
W Coast Vancouver Is	CDFO	1.4	1.3
Puget Sound	WDFW	7.2	6.8
	Tribal	6.9	4.3
	USFWS	0.4	0.4
Coastal Washington	WDFW	5.7	5.5
	Tribal	1.0	0.2
	USFWS	0.9	0.7
Columbia River	WDFW	12.1	9.5
	USFWS	5.0	3.0
	ODFW	7.5	5.8
Coastal Oregon	ODFW	1.4	1.3
TOTAL		59.5	46.6 (78%)

Chinook Yearling Smolt Releases (2000 Brood)

Area	Agency	Total Releases (millions)	Adipose Marks (millions)
Puget Sound	WDFW	2.4	1.5
	NWIFC	0.2	0.1
	USFWS	0	0
Coastal Washington	WDFW	0.2	0.2
	NWIFC	0	0
	USFWS	0	0
Coastal Oregon	ODFW	1.5	0
Columbia River	WDFW	6.4	5.7
	USFWS	7.7	7.3
	ODFW	7.5	6.2
Snake River	USFWS	1.6	1.5
	IDFG	10.5	9.3
TOTAL		38.0	31.8 (84%)

Chinook Sub -Yearling Releases (2001 Brood)

Area	Agency	Total Releases (millions)	Adipose Marks (millions)
Puget Sound	WDFW	34.0	19.8
	NWIFC	13.0	10.1
	USFWS	0	0
Coastal Washington	WDFW	7.9	0
	NWIFC	1.0	0.3
	USFWS	3.4	0.5
Coastal Oregon	ODFW	1.5	0
Columbia River	WDFW	33.1	2.5
	USFWS	17.0	0.5
	ODFW	9.9	3.6
Snake River	USFWS	0	0
	IDFG	1.0	0.3
TOTAL		121.8	37.6 (31%)

Upcoming Changes in Chinook MM

Increases in fall chinook marking (millions)

Washington Coast = 4

Columbia River = 54

Total = 58 million







DIT Program

Need for DITs

- Hatchery CWT Indicator Stocks are used to represent adjacent wild stocks.
- Assumptions changed with MSFs
- DITs used to estimate non-landed mortalities of MSF on wild stocks

Issues

- Questions regarding Utility of DIT analysis (next presentation)
- List of DIT groups needs review/expansion
- # tags per DIT group needs review

Electronic CWT Detection

- Types of Equipment
- Implementation
- How well do they detect tags ?
- How durable is the equipment ?

The “Wand”





Feasibility of the Wand

- Method of choice in situations with low fish numbers or undeveloped sites
- No calibration required
- Very portable
- Cost = \$7,300 (US)

The “Tube” or “Tunnel”





Feasibility of the Tube

- Practical use is limited to high volume sites with level ground and clean fish
- Equipment calibration is critical
- Automatic sorting and counting capability
- Staging adaptations (e.g. tote lifts and custom tables may be necessary to reduce time and labor)
- Cost = \$29,700 (US)







Results of 1996 Coho Wand Tests

Sampling Type	Fish Sampled	CWTs	Detection Rate (%)	% False Detections
NWIFC Hatchery	2,594	670	99.6	1.5
NWIFC Comm.	1,967	131	100	0.5
NWIFC Stream	154	85	97.6	0.0
WDFW Hatchery	35,417	1,657	99.5	0.2
WDFW Comm.	1,614	78	100	0.8
WDFW Sport	1,157	61	85.2	3.6
Totals	42,903	2,682	mean = 99.1 or 97.0	Mean = 0.4 or 1.1

Results of 1996 Coho Tube Tests

Sampling Type	Fish Sampled	CWTs	Detection Rate (%)	% False Detections
CDFO Hatchery	3,183	77	98.7	1.2
CDFO Comm.	12,150	457	100	0.1
NWIFC Hatchery	1,187	194	100	2.8
NWIFC Comm.	2,833	154	92.2	2.1
WDFW Hatchery	26,476	770	100	1.1
WDFW Comm.	1,406	80	98.8	1.9
Totals	47,235	1,732	mean = 99.2 or 98.2	Mean = 0.9 or 1.5

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

Study	CWT	Number of Detections (%)			
		Standard Wand	Mouth Wand	Combined Wanding	Tube Detector
WDFW (2001)	1,332	1,205 (90.5)	1,309 (98.3)	1,323 (99.3)	1,332 (100)
NWIFC (2001)	368	367 (99.7)	353 (95.9)	367 (99.7)	279 (100)
ADFG (2004)	547	522 (95.4)	n/a	(99.6)	n/a

Equipment Durability

- 15 % annual maintenance/repair rate (2002 WDFW)
- 6% return rate of wands (2003 NMT)
- Wands still developing “hypersensitivity”

Electronic Sampling Programs

- What are our Current Sampling Rates?
- To Beep or not to Beep? (Where is Electronic Sampling Occuring?)
- Concerns & Issues with coastwide Implementation.

Summary of 2002 Fishery Sampling Rates

Region	% Sampled for CWTs	
	Coho	Chinook
Alaska	23.7	31.8
British Columbia	33.7	22.5
Western Washington	30.3	30.8
Columbia River	30.9	21.8
Oregon Coast	29.4	33.8
Mean =		28.1

CWT Sampling Methods

Region	Fishery	Method
Alaska	All	Visual
British Columbia	Coho Comm.	Electronic/Mark only?
	Coho Sport	Voluntary - Visual
	Chinook Comm.	Electronic/Mark only?
	Chinook Sport	Voluntary - Visual
Washington	Commercial	Electronic
	Sport	Electronic
Columbia River	Commercial	Electronic
	Sport	Electronic
Idaho	All	Electronic
Oregon Coast	Coho	Electronic
	Chinook	Visual
California	All	Visual

Electronic Sampling Issues

- Is the current sampling range adequate?
- Concerns with lack of Canadian commitment for chinook sampling.
- Canadian plans for mark-only sampling
 - Does that destroy the DIT system?
 - Does that destroy the viability of the CWT system in the face of MSFs?
- Lack of conversion to chinook mouth wand in Oregon
- Inadequate Agency budgets

Data Management Issues

- Compliance with new database formats
- Need to develop methods for reporting estimates of unmarked CWT released mortalities (from MSFs) and estimated unmarked CWT landings (for unmarked CWT fish from areas w/out ETD).
- Need to develop a fishery regulation database
- Need to modify PSC Post-Season fishery report to include results of MSFs

2002 Coho MSFs

Agency	Region	Fishery	Regulation	Catch	Mark %
CDFO	WCVI	Sport	Mixed bag	16,749	30 %
	ECVI	Sport	Clip only	4,633	42 %
WDFW	PS	Sport	Clip only	36,424	36 %
	Ocean	Sport	Clip only	88,550	57 %
		Troll	Clip only	1,700	58 %
ODFW	Ocean	Sport	Clip only	36,537	56%
		Troll	Clip only	1,515	unkn.
	Col. R.	Sport	Clip only	9,211	78 %

2002 Chinook MSFs

Agency	Region	Fishery	Regulation	Catch	Mark %
WDFW	Sky. R.	Sport	Clip only	258	39 %
	Ocean	none			
	SJF ¹	Sport	Clip only	3,507	45 %
ODFW	Ocean	none			
(Col. R.)	Willm. R.	Sport	Clip only	10,457	77 %
	< Bonn.	Sport	Clip only	21,816	59 %
	> Bonn.	Sport	Clip only	8,056	55%
	< Bonn.	Comm.	Clip only	14,238	50 %
	Snake R.	Sport	Clip only		

¹ 2003 Fishery

Summary of Mass Marking

- Coho programs stable since 1997 (1996 brood). Southern BC, WA, OR.
- Chinook programs stable since 2000 (1998 brood). Primarily Puget Sound falls and Columbia Basin spring/summers
- Big changes coming! – 58 million additional fall chinook from Columbia R. and coastal WA
- DIT program needs review

Summary of Electronic Sampling

Equipment

- High detection Rates
- Expensive and more labor intensive
- Challenges for processing plants

Sampling

- Current geographical range will need to expand
- Mouth wanding not adopted by all agencies
- Canadian plans for mark-only recoveries

Summary of Data Management

New Reporting Needs, Mortality Estimations, and Analytical Tools are all Lagging Behind the Implementation of MM and MSFs.

Summary of MSFs

- Widespread Coho MSFs – Southern BC through Oregon
- Limited Chinook MSFs – Primarily Spring Chinook in Columbia Basin & terminal fisheries
- Projected future fall chinook

Conclusions

Mass Marking is now an integral component of
NW hatchery production

Mass Marking will soon be comprehensive
throughout WA, OR, and ID.

MSFs will undoubtedly increase with the
expansion of chinook mass marking

Conclusions Cont.

Maintaining the viability of the CWT system will depend upon the following:

1. Implementation of ETD coastwide
 - Requires policy agreement and funding
2. Resolution of the new data management needs
 - Requires agencies giving these tasks a higher priority and more staff time
3. Development and application of new analytical tools in the presence of MSFs
 - Requires creative solutions and/or consensus on use of existing methods



References

- Mass Marking and Mark-Selective Fisheries for 2002. June 2004. Report of the Regional Coordination Working Group of the PSC SFEC
- Review of 2004 Mass Marking Proposals. June 2004. Selective Fishery Evaluation Committee
- Reliability and Feasibility of Using Electronic Detection for Recovery of CWTs in Coho. 1997. Ad-hoc SFEC, PSC.

The End

