



# Chief Joseph Hatchery 2013 Annual Program Review

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## CJH Tagging and Marking Plan

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*Chief Joseph Hatchery Science Program*



# Project Summary: Tagging/Marking

- Critical to our ability to evaluate the effectiveness of the hatchery fish.
- Important for us to plan management actions based on in-season forecasts.
- Essential to understanding how CJH fish are being utilized in fisheries (ocean, lower Col. River, local)
- Answers many specific questions:  
(e.g. weir evaluation, spatial distribution, stray rates)



## OBJECTIVES

SAR

Harvest

Stray rates

Predation

Weir effects

Smolt to smolt

Reduce pHOS

In-season forecast

Selective fisheries

Spawner abundance

Broodstock collection

Spawner distribution

## MARKING TECHNIQUE

Radio tag

PIT tag

CWT

Adipose fin clip

## MONITORING METHOD

Dam counts

PIT tag arrays

Smolt trap

Wells Dam run comp

Interrogation at weir(s)

Creel survey

Purse seine

Carcass recoveries

Redd survey

Table 3. Tagging elements - CJHP RM&E Plan and its analytical function.

Table 3. Tagging elements - CJHP RM&E Plan and its analytical function.		Adipose Clip	CWT	PIT	Radio
ISIT Key Assumptions					
Smolt to Adult Survival (SAR)			x	x	
	Juvenile Migration Survival			x	
	Adult Migration Survival			x	
Pre-Terminal Harvest		x	x		
Terminal Harvest and Weir (effects)					
	Max Rate on Integrated/Segregated HORs	x	x		
	Induced NOR Loss as % of Segregated HOR rate			x	x
	Weir Factor (Efficiency)			x	x
	Mark Rate - Integrated/Segregated HORs	x	x	x	
	Weir Mort. (NORs) as % of Weir Factor			x	x
	Terminal NOR rate	x	x		
	Total NOR Exploitation Rate	x	x		
HORs Spawning in Nature					
	Stray Rate of Integrated HORs to Segregated Hatchery	x	x		
	Stray Rate of Segregated HORs to Natural Spawning	x	x	x	
Okanogan Hatchery Release					
	Recruits/Spawner	x	x	x	
	% Hatchery Program 1 Spawning below Weir	x	x	x	
CJHP Decision Rules					
Natural escapement					
	Min NOR escapement	x	x	x	x
	Max allowable pHOS integrated	x	x		
	Max allowable pHOS segregated	x			
Hatchery Program					
	pNOB target	x	x		
	Run size at which pNOB is achieved	x	x		
	NOR broodstock allocation	x	x		
Harvest					
	Max allowable % impact to NOR	x			
Stock Status and Trend Evaluations					
Abundance (NOR and HOR) (preseason forecast, in-season update, post season actual)		x	x	x	x
	Productivity (R/S)	x	x		
	Spatial Structure	x	x	x	x
Other Information Provided by Tagging/Marking					
	Mark-selective harvest effects on pHOS and PNI	x	x		
	Interception and repeat capture rate of the purse seine and weir			x	x
Presence/interception rate of out-of-population fish in broodstock collection areas (CJH ladder, confluence, weir)					x
	NOR spawning below the weir	x			x
	Pre-spawn holding locations				x
	Pre-spawn mortality (NOR)				x
	% NOR at Wells that are destined for Okanogan, Methow, Other	x			x
	Migration timing in relation to water temperature				x
	run timing in relation to spawn timing				x
	Movement/roaming between populations or spawning areas			x	x

ISIT Key Assumptions

CJHP Decision Rules

Other Information Provided by Tagging/Marking

Table 3. Tagging elements - CJHP RM&E Plan and its analytical function.				
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<b>ISIT Key Assumptions</b>				
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Juvenile Migration Survival			X	
Adult Migration Survival			X	
Pre-Terminal Harvest	X	X		
Terminal Harvest and Weir (effects)				
Max Rate on Integrated/Segregated HORs	X	X		
Induced NOR Loss as % of Segregated HOR rate			X	X
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Mark Rate - Integrated/Segregated HORs	X	X	X	
Weir Mort. (NORs) as % of Weir Factor			X	X
Terminal NOR rate	X	X		
Total NOR Exploitation Rate	X	X		
<b>HORs Spawning in Nature</b>				
Stray Rate of Integrated HORs to Segregated Hatchery	X	X		
Stray Rate of Segregated HORs to Natural Spawning	X	X	X	
<b>Okanogan Hatchery Release</b>				
Recruits/Spawner	X	X	X	
% Hatchery Program 1 Spawning below Weir	X	X	X	

**Table 3. Tagging elements - Continued.....**

	<b>Adipose Clip</b>	<b>CWT</b>	<b>PIT</b>	<b>Radio</b>
<b>CJHP Decision Rules</b>				
<b>Natural escapement</b>				
Min NOR escapement	X	X	X	X
Max allowable pHOS integrated	X	X		
Max allowable pHOS segregated	X			
<b>Hatchery Program</b>				
pNOB target	X	X		
Run size at which pNOB is achieved	X	X		
NOR broodstock allocation	X	X		
<b>Harvest</b>				
Max allowable % impact to NOR	X			
<b>Stock Status and Trend Evaluations</b>				
Abundance (NOR and HOR) (preseason forecast, in-season update, post season actual)	X	X	X	X
Productivity (R/S)	X	X		
Spatial Structure	X	X	X	X

**Table 3. Tagging elements - Continued.....**

<b>Other Information Provided by Tagging/Marking</b>	<b>Adipose Clip</b>	<b>CWT</b>	<b>PIT</b>	<b>Radio</b>
Mark-selective harvest effects on pHOS and PNI	X	X		
Interception and repeat capture rate of the purse seine and weir			X	X
Presence/interception rate of out-of-population fish in broodstock collection areas (CJH ladder, confluence, weir)				X
NOR spawning below the weir	X			X
Pre-spawn holding locations				X
Pre-spawn mortality (NOR)				X
% NOR at Wells that are destined for Okanogan, Methow, Other	X			X
Migration timing in relation to water temperature				X
run timing in relation to spawn timing				X
Movement/roaming between populations or spawning areas			X	X



# Tagging Plan; Long term

summer/fall Chinook full program

Mark Group	Target max smolt released	Life-stage released	% CWT	Adipose Fin-Clip	PIT tag
Okanogan Integrated	1,100,000				
Similkameen	250,000	Yearling	100%	100%	5,000
Riverside Pond	275,000	Yearling	100%	100%	5,000
Omak Pond	275,000	Yearling	100%	100%	0
	300,000	Sub-Yearling	100%	100%	5,000
Chief Joseph Segregated	500,000	Yearling	0%	100%	5,000
	400,000	Sub-Yearling	0%	100%	5,000
Natural Origin	Rotary Screw Trap and Confluence Beach Seine				up to 25,000

# Tagging Plan; Near term

summer/fall Chinook 2012

- *2012 not CJH*
- *CPUD funded program in Similkameen*
  - *100% Adipose Clipped and CWT*
  - *~5,100 PIT tags (for release in 2013)*



# Tagging Plan; Near term

summer/fall Chinook

- DPUD tagged natural origin smolts in Wells Pool using a beach seine.
  - 2011 n=11,976
  - 2012 n=15,311
  - 2013 n=similar effort



# Tagging Plan; Near term Cont....

summer/fall Chinook 2013

- 2013 pre-smolts are still not CJH (BY2012, released in 2014)
- CPUD funded program in Similkameen (167k)
  - ✓ 100% Adipose Clipped and CWT
  - 5,000 PIT tags (for release in 2014)
    - CPUD does not plan to tag them
    - CJH program will tag them (while at Eastbank Hatchery)
- DPUD fish in Omak Pond (48k)
  - ✓ 100% Adipose Clipped and CWT
  - 5,000 PIT tags (for release in 2014)
    - DPUD does not plan to tag them
    - CJH program will tag them (while at Wells Hatchery?)

# Tagging Plan; Near term Cont....

summer/fall Chinook 2014

60 % of full program

Tagging plan consistent with full program



# Tagging Plan; Long term

## spring Chinook



Mark Group	Target max smolt released	Life-stage released	% (#) CWT	Adipose Fin-Clip	PIT
Chief Joseph Segregated	700,000	Yearling	29% (200k)	100%	5,000
Reintroduction (10j fish from Winthrop)					
Tonasket Pond	200,000	Yearling	100%	100%	5,000
Natural Origin	Rotary Screw Traps	Yearling	0%	0%	5,000

# Tagging Plan; Near term

spring Chinook 2013

60 % production level for segregated program

Segregated Program---adults and eggs

Reintroduction program: USFWS -100% AC and CWT

CCT needs to PIT tag them while at WNFH.

# Tagging Plan; Near term

## spring Chinook 2014

60 % production level for segregated program

Mark Group	Target max smolt released	Life-stage released	% (#) CWT	Adipose Fin-Clip	PIT
Chief Joseph Segregated	<del>700,000</del> 420,000	Yearling	<del>29%</del> 48%(200k)	100%	5,000
Reintroduction (10j fish from Winthrop)					
Tonasket Pond	200,000	Yearling	100%	100%	5,000
Natural Origin	Rotary Screw Traps	Yearling	0%	0%	Up to 5,000

Questions?

Thank you

