



# Chinook Salmon – DFO T-Wand Study 2013 / 2014



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Nov 17, 2014  
CWTIT Meeting, Seattle





# T-wands for Chinook Salmon

## Objective:

Examine the accuracy of the ETD T-wand at 'standard' and 'new' for detecting CWTs in Chinook salmon

## Methods (attempted blind sample designs)

2013 Escapement (Chilliwack River Hatchery): heads on, DFO staff, all fish screened with T-wand with standard setting and R9500 tube. All beep-positive heads to head lab

2014 Escapement (Chilliwack River Hatchery): heads on, DFO staff, all fish screened with T-wand with adjusted lower setting and R9500 tube. All beep-positive heads to head lab



# T-wands: Definitions

## T-wand 'setting'

- settings controlled digitally
- refers to the strength of the signal that T-wand will accept as a tag and beep
- translates to a detection range because a tag beyond that range will not produce enough of a signal to activate the beep

NMT "Standard" Setting	New Setting (Green Tape applied to wand)
Lab Range: 6 cm	Lab Range: 5.25 cm
To allow sampler to easily find a tag that was in the 5.5 cm range	To reduce interference, without compromising high detection range

NMT is maintaining database of settings for each wand by serial number



## Hatchery – T-wand vs. Tube Results (2013) - Adults

	'Beep'	'No Beep'	Total
<b>T-WAND:</b> 0% of CWTs missed, 3.2% false positive			
Tagged	<u>276</u>	0	276
Not Tagged	9	<u>666</u>	675
Total	285	666	951
<b>TUBE:</b> 0% of CWTs missed, 5.2% false positive			
Tagged	<u>276</u>	0	276
Not Tagged	15	<u>660</u>	675
Total	291	660	951



## Hatchery – T-Wand Results by Clip Status - Adults (2013)

mark rate for sample: 19.6%

<b>T-WAND</b>	<b>‘Beep’</b>	<b>‘No Beep’</b>	<b>Total</b>
<b>Marked (AFC): 0% of CWTs missed, .6% false positive</b>			
<b>Tagged</b>	<u><b>180</b></u>	<b>0</b>	<b>180</b>
<b>Not Tagged</b>	<b>1</b>	<u><b>5</b></u>	<b>6</b>
<b>Total</b>	<b>181</b>	<b>5</b>	<b>186</b>
<b>Unmarked: 0% of CWTs missed, 7.7% false positive</b>			
<b>Tagged</b>	<u><b>96</b></u>	<b>0</b>	<b>96</b>
<b>Not Tagged</b>	<b>8</b>	<u><b>661</b></u>	<b>669</b>
<b>Total</b>	<b>104</b>	<b>661</b>	<b>765</b>





## Hatchery – T-wand vs. Tube Results (2014)

	'Beep'	'No Beep'	Total
<b>T-WAND:</b> 0% of CWTs missed, 3.6% false positive			
Tagged	<u>350</u>	0	350
Not Tagged	13	<u>946</u>	959
Total	363	946	1309
<b>TUBE:</b> 0% of CWTs missed, 4.6% false positive			
Tagged	<u>350</u>	0	350
Not Tagged	17	<u>942</u>	959
Total	367	946	1309



# Hatchery – T-Wand Results by Clip Status (2014)

mark rate for sample: 15.7%

<b>T-WAND</b>	<b>‘Beep’</b>	<b>‘No Beep’</b>	<b>Total</b>
<b>Marked (AFC): 0% of CWTs missed, 1.5% false positive</b>			
<b>Tagged</b>	<u><b>197</b></u>	<b>0</b>	<b>197</b>
<b>Not Tagged</b>	<b>3</b>	<u><b>6</b></u>	<b>9</b>
<b>Total</b>	<b>200</b>	<b>6</b>	<b>206</b>
<b>Unmarked: 0% of CWTs missed, 6% false positive</b>			
<b>Tagged</b>	<u><b>153</b></u>	<b>0</b>	<b>153</b>
<b>Not Tagged</b>	<b>10</b>	<u><b>940</b></u>	<b>950</b>
<b>Total</b>	<b>163</b>	<b>940</b>	<b>1103</b>

## Conclusions

- Significant improvement over earlier “blue” models
- “New” setting does not result in loss of data





# Considerations

- Attempted Blind Study
  - DFO trained staff, with vested interest in success in sampling following correct protocols
- Training & Standard Operating Protocols (SOPs)
  - Test Interference – to remove / recognize environment and metallic items on sampler (e.g. watch, buttons, cell phone)
  - Each wand marked to ensure correct side of wand used
  - Correct movement over head & sides of fish, no matter size
- Use of 'Test Standard'
  - Inconsistent results
  - Affects samplers' confidence in tool

