

# MTA Mark Recovery Lab, Juneau Process and Progress Report

Lorna Wilson, Fishery Biologist II

Bev Agler, Fishery Biologist III

Megan Lovejoy, Fish and Wildlife Technician IV



Mark Tag and Age Laboratory, Alaska Department of Fish and Game, Juneau

Alaska Hatchery Research Project Stakeholder and Science Panel Meeting

*December 2014*

# Overview

Thermal marks

Process

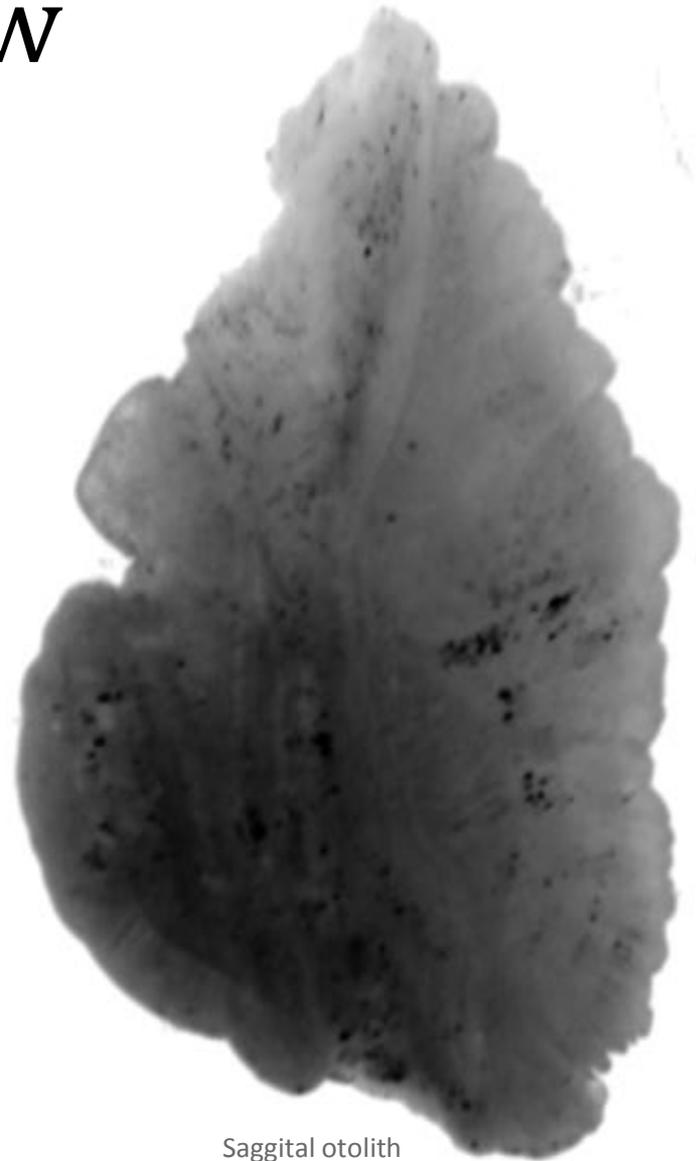
- Sample and tray log-in
- Otolith preparation
- Otolith reading
- Read assessment

Recoveries

- Stream stray
- Pedigree

Progress

Recommendations

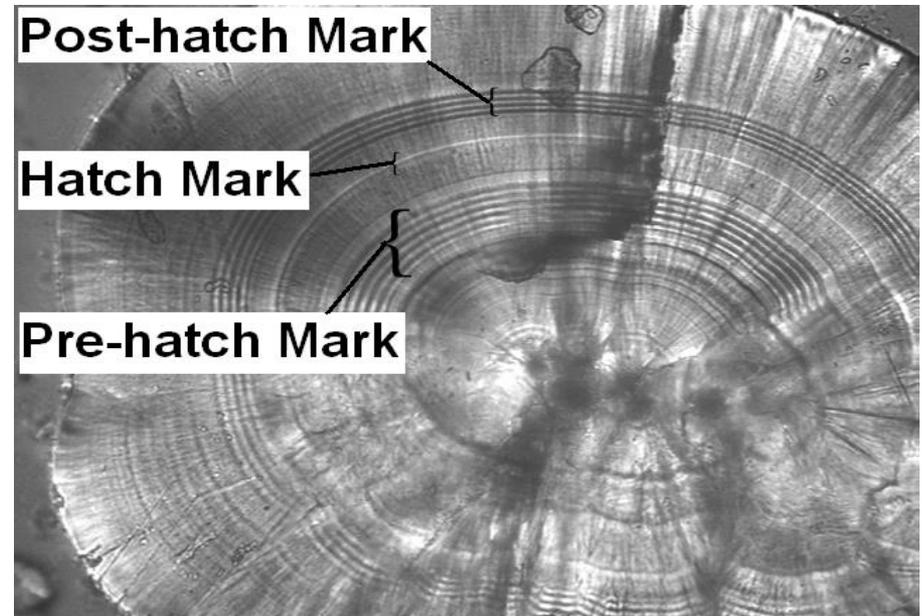
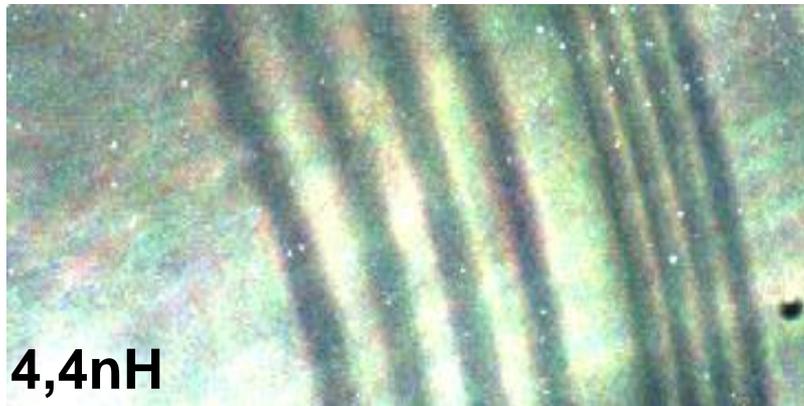
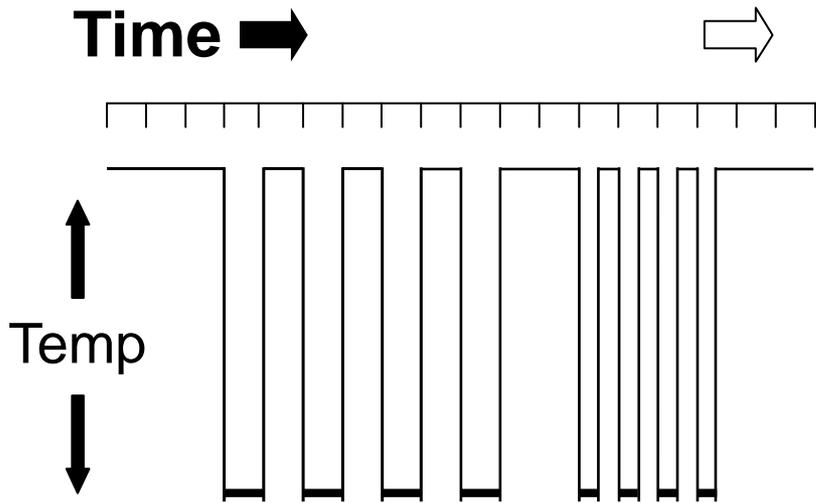


Saggital otolith

# Thermal marks

Dark ring in otolith created by changing water temperature and fish growth.

Sequence of temperature changes = Unique Mark Patterns.



Marks are applied to eggs or alevins.

# Sample and Tray Log-in

Samples grouped by week, stream code, and species

Auto-filled: Species, stage, source, and gear type

Entered: Location, date, stream code, collectors, contact, and comments

**New Sample Data** (\* Denotes required fields.)  Autofilter my selections

Project Type\* HWI Species\* CHUM Stage\* ADULT Source\* ESCAPEMENT SURVEY Sample Location\* JUNEAU Stat Area(s)\* OR Quadrant\* District 113 SubDistrict 32

Due to noncommercial Source, Harvest Code is not required. Gear\* NOT REQUIRED Sample Date\* 08/22/2014 StatWeek\* 34 HWI Col. Type\* OTOLITH ONLY

AStream W CRAWFISH CR 113-32 (NOT N/ Canada Watershed Tender Samplers B.A., D.M., A.W., A.P., and J.K.

Logged By\* LIWILSON InSeason Fishery Definition Email Contact Information Type TO Contact Name E. Eric Knudsen, Ph.D. Sent Date 09/30/2014

Sample Comment HWI project

**Login Data** (Scan or enter Tray # as Year + 3 digit Tray #) (Press CTRL-S to select the Last Cell based on the Tray)

262 total specimens logged.

Tray#	Last Cell #	Shipped From	Conveyor	Login Comment	Logging User	Login Date/Time
20145253	96	Hand-delivered	Hand Delivered	Picked these up from Ben at the airport	MWLOVEJO	9/30/2014 10:00:44 AM

Tray data entered:

- Pedigree or Stream stray
- Tray number
- Last cell
- Shipping method

2015 Pedigree linked by bar code

	1	2	3	4	5	6
A	1	9	17	25	33	41
B	2	10	18	26	34	42
C	3	11	19	27	35	43
D	4	12	20	28	36	44
E	5	13	21	29	37	45
F	6	14	22	F4	38	46
G	7	15	23	31	39	47
H	8	16	24	32	40	48

Cell Number: F4 # of Specimens: 30 Cancel

Pedigree

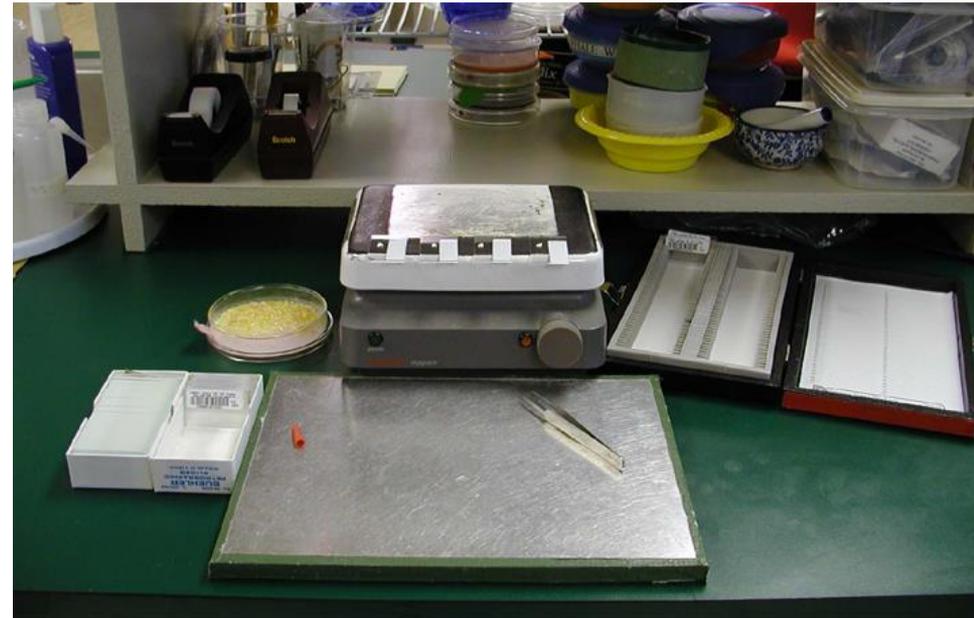
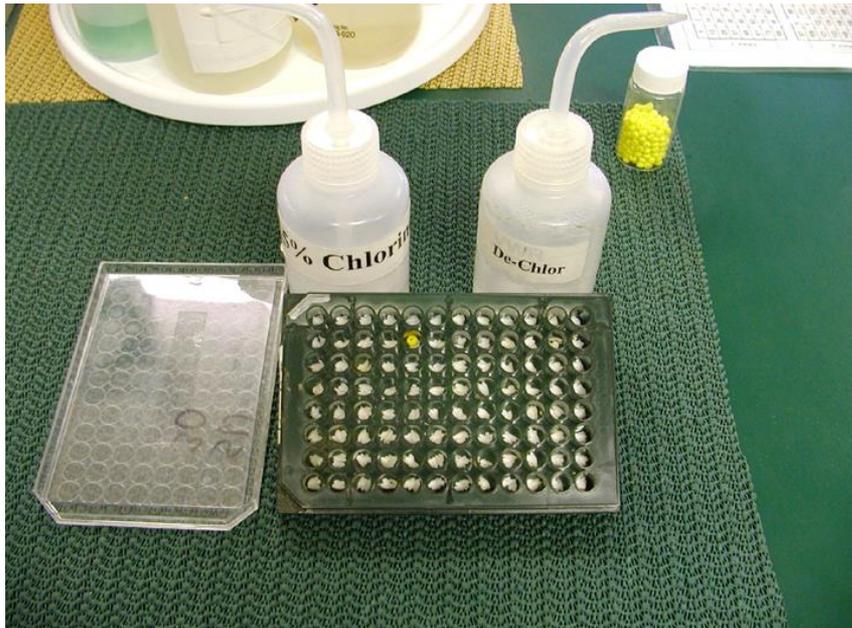
	1	2	3	4	5	6	7	8	9	10	11	12
A	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
B	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
C	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
D	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12
E	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
F	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
G	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12
H	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12

Cell Number: D12 # of Specimens: 48 Cancel

Stream stray

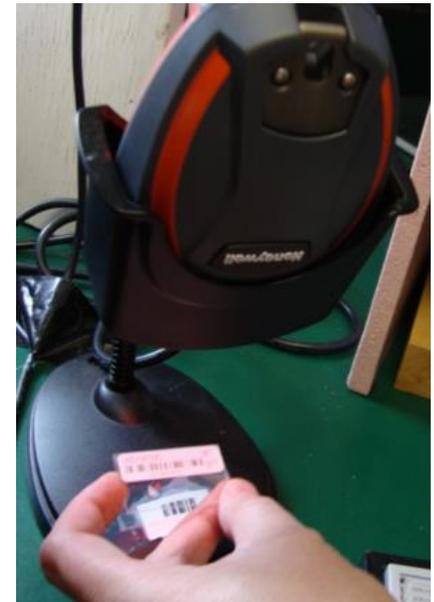
# Tray and Otolith Preparation

- Trays are cleaned with 5% bleach then de-chlor (0.7% sodium thiosulfate) solutions.
- Beads are used to keep track of missing otoliths; each well should have two otoliths.
- Slides are labelled with barcodes.
- The left otolith is mounted on non-labelled side.



# Otolith Reading

- Specimen number entered using a barcode scanner.
- Otoliths are ground until primordia are visible.
- Readability, mark presence, mark ID, and age entered using touch screens.



**SAMPLE INFORMATION** 2012.07.03.10.20

Sample ID: 201400192    Project Type: HWI  
 Species: CHUM    Gear: NOT REQUIRED  
 Stage: ADULT    Harvest:  
 Stat Area: 11372    Location/Port: JUNEAU  
 Stat Week: 35    Sample Date: 8/25/2014  
 Sample Comment: HWI project

Select an Age, Mark ID and Hatch Code for the specimen.  
 Select the appropriate status depending on the otolith used and the Left or Right readability.  
 Type any comments deemed important.  
 Standard comments may be entered by clicking 'Add/Edit Comment'.

Disable Sound Effects

Exit    Help    About

---

Read Method: Microscope    Read Number: 3    Read Year: 2014    Total Later Reads: 0  
 Specimen #: 001    Reader: LIWILSON

Barcode: 201400192001    Data Complete/Next Oto

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Age: 0.4    Mark Status: Y N    Mark ID: DEEPINLETHF09    Questionable Status: ?    Hatch Code: 3,4nH

View Image

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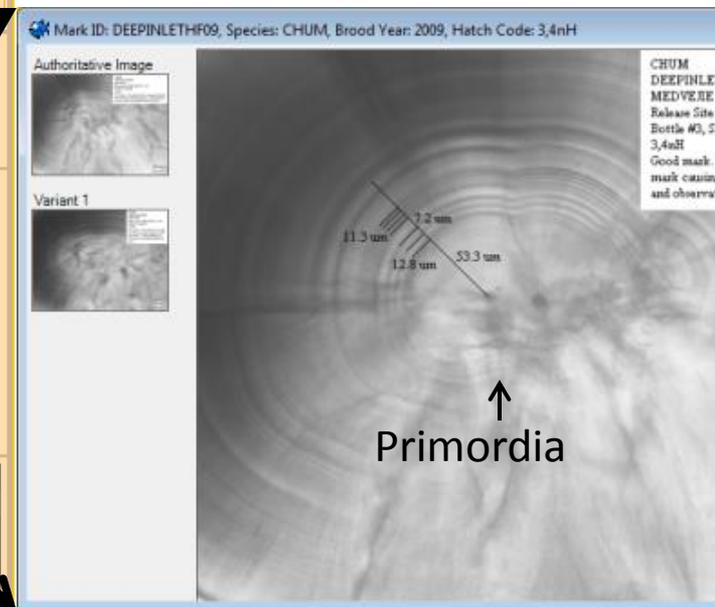
Prep Used: LEFT    Left Prep Status: Core Vis, OK    Right Prep Status:    Read Status: OK

Add/Edit Comment

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Previous Specimen Edit Grid (Columns in light blue are not modifiable) for SampleID: 201400192

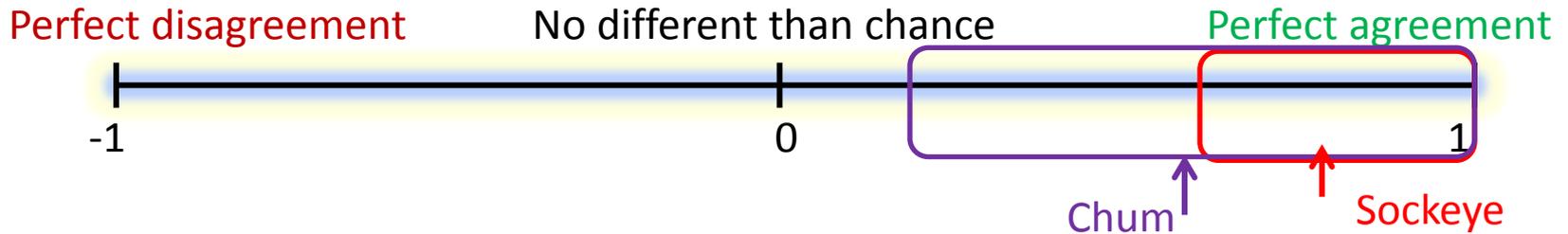
Spec	Tray#	Cell#	R#	Marked?	Quest.	Mark ID	Hatch Code	Age	Read Status	Oto Used	L Oto Status	R Oto Status
192	5028	096	2	No					OK	LEFT	Core Vis, OK	
191	5028	095	2	No					OK	LEFT	Core Vis, OK	
190	5028	094	2	No					OK	LEFT	Core Vis, OK	
189	5028	093	2	No					OK	LEFT	Core Vis, OK	
188	5028	092	2	No					OK	LEFT	Core Vis, OK	
187	5028	091	2	No					OK	LEFT	Core Vis, OK	
186	5028	090	2	No					OK	LEFT	Core Vis, OK	



# Read assessment

Readers prepare by studying thermal marks.

Agreement on marks for an area measured with *Kappa*:



Reader ability to detect mark presence or absence is modelled.

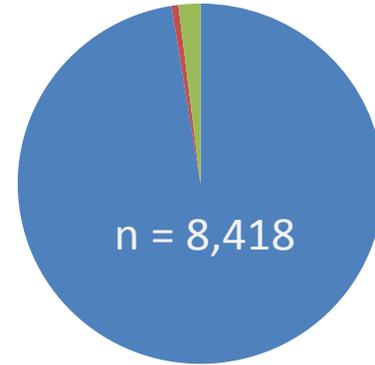
Two reads of all chum salmon otoliths and conflicts are resolved.

Reads distributed among reader pairs, areas, and time.

# Stream Stray

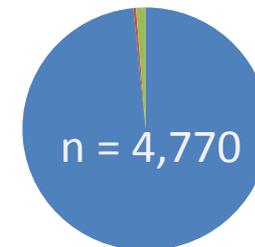
Reads assigned among four areas, four readers, time

2013 32 streams

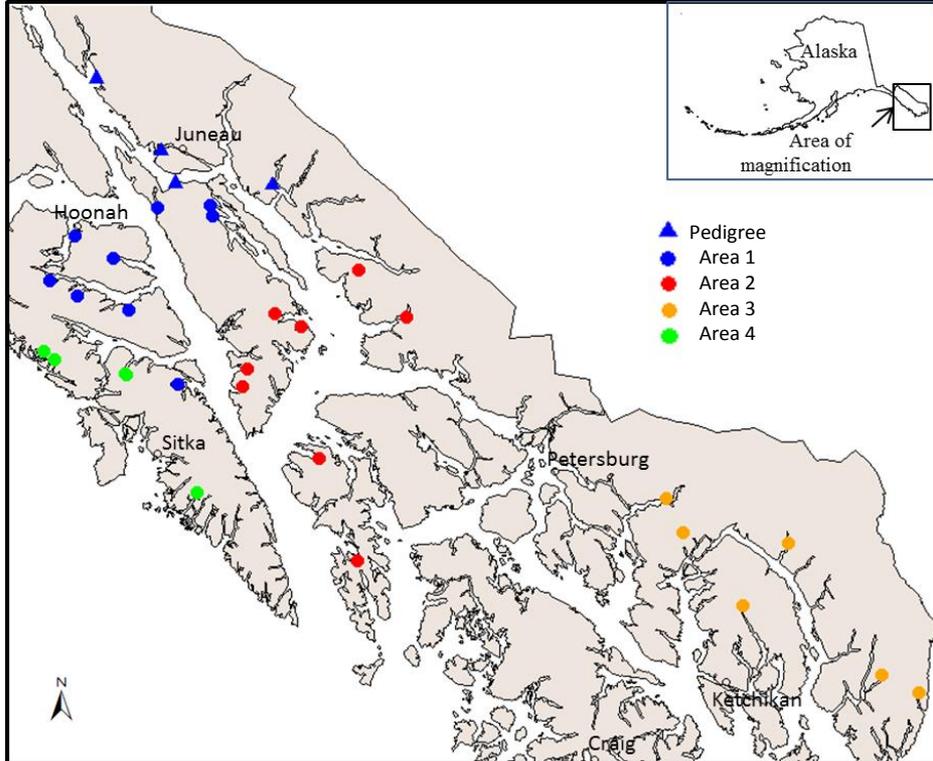


■ Readable ■ Missing both ■ Unreadable

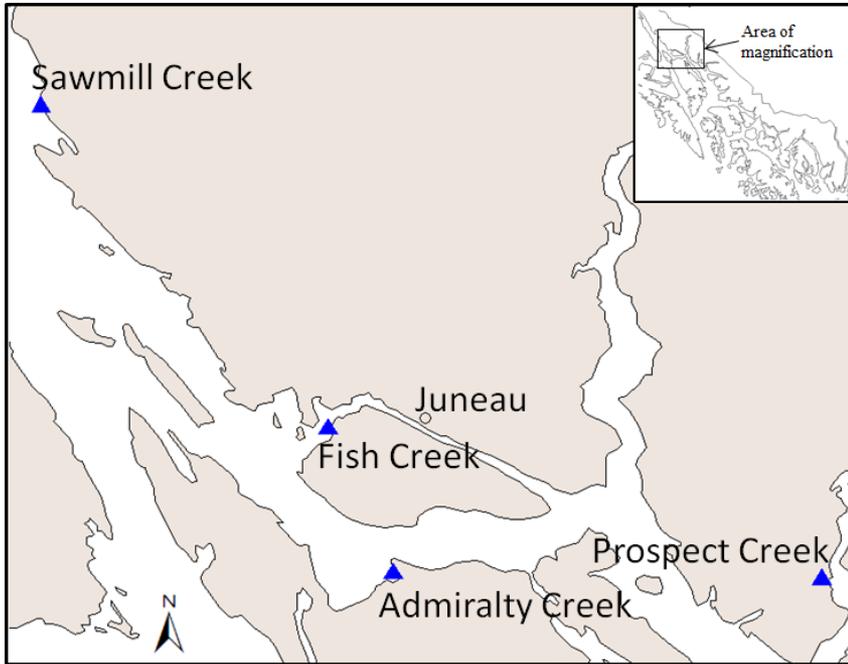
2014 28 streams



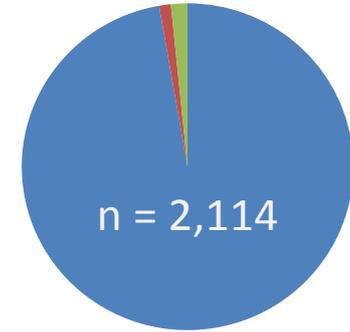
Tray inventory received prior to shipment in 2013.  
Trays were clean in both years.



# Pedigree



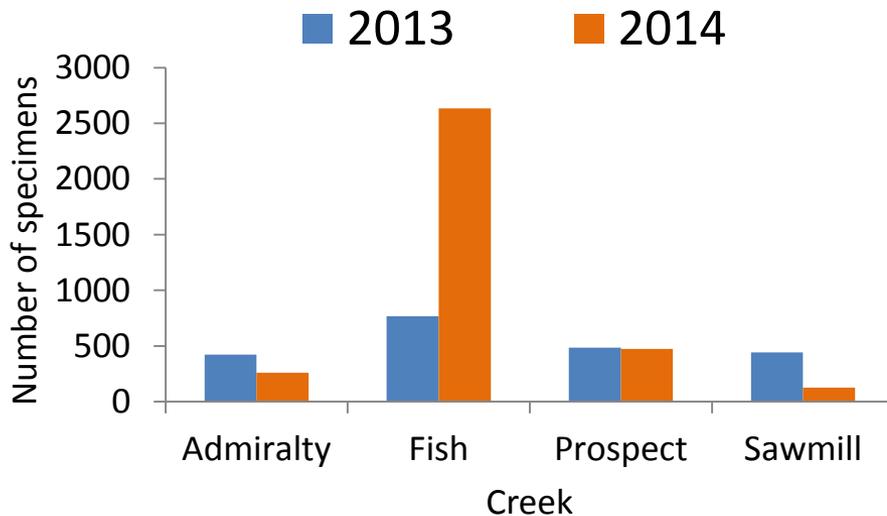
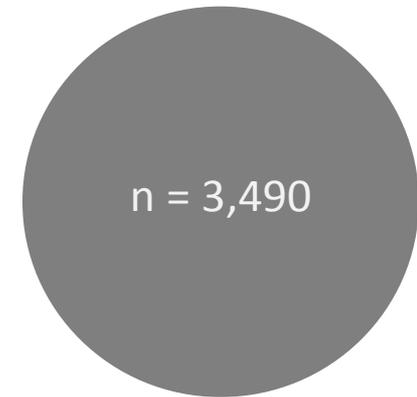
2013



■ Readable ■ Missing both ■ Unreadable

2014

Reads are in progress



# Pedigree

2013

Otoliths transferred from DWP to circular well trays.

Tray inventory sent prior to receiving shipment.

*Considerations:*

- Transfer error unknown



Deep Well Plate (DWP)

2014

Tissue removed first and transferred to another DWP.

Tray inventory sent after request.

*Considerations:*

- Few labels difficult to read
- DWP tray cleaning necessary; biological residue, sand in wells
- Few wells had 3 or 4 otoliths, otoliths replaced with beads
- Few wells were missing one or two otoliths but missing beads

# Progress

## 2013

Stream and pedigree reads are final.

## 2014

### *Stream stray*

First and second reads are complete.

Conflict resolution in progress.

Expected completion: end of January 2015.

### *Pedigree*

Trays are logged in and otoliths are currently being mounted.

No otoliths first or second read.

Expected completion: Winter 2015

## Recommendations

Send tray inventories with tray shipment.

Send trays earlier and in large batches.

### *Pedigree*

- Refine method for specimen placement in DWP.

- Improve DWP labels or cover with tape.

### *Mark verification*

Planned otolith exchange between Cordova and Juneau thermal mark labs to assess otolith read accuracy.

# Thank you

MTA Programmers

Tim Frawley

Bil Rosky

MTA Mark Lab Crew

John Baker

Joe Cashen

Jenn Chahanovich

Dan DeSloover

Chelsea Lechner

Jon Livermore

Casey McConnell

Jodi Neil

