

Web-based North Pacific Salmon Otolith Mark Directory

William Johnson

Alaska Department of Fish and Game

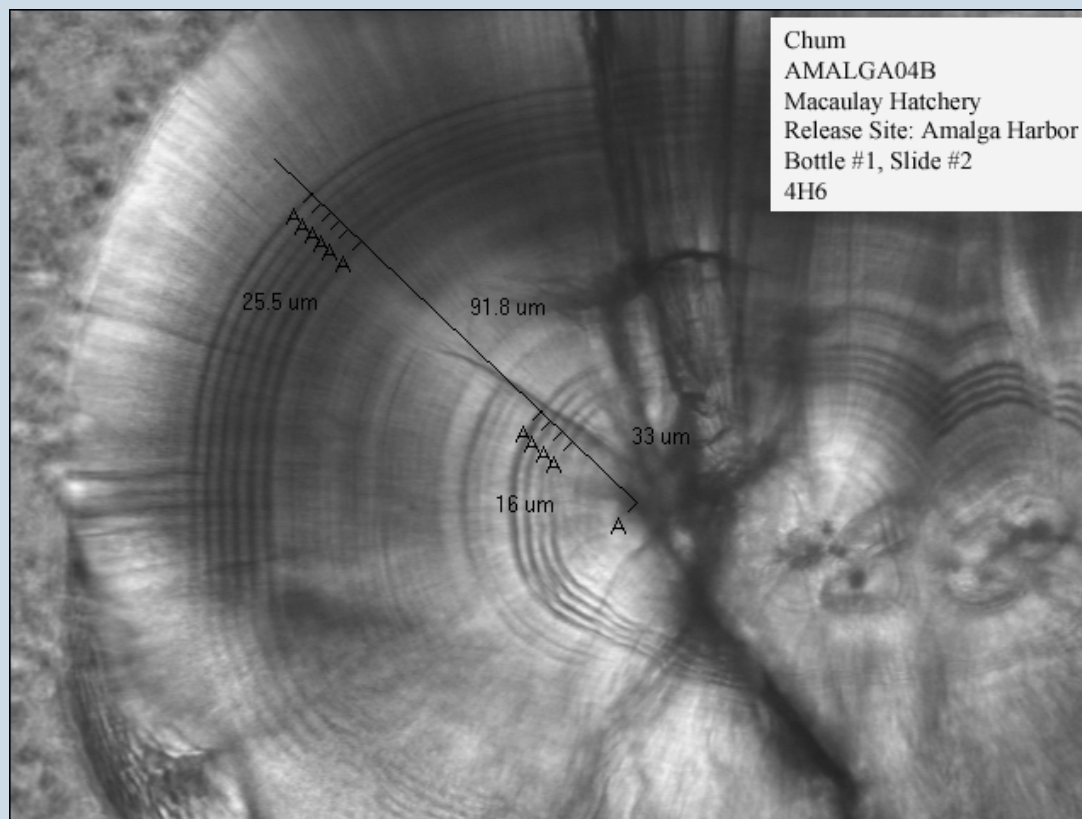
October 23, 2006



Otolith Mark Technologies

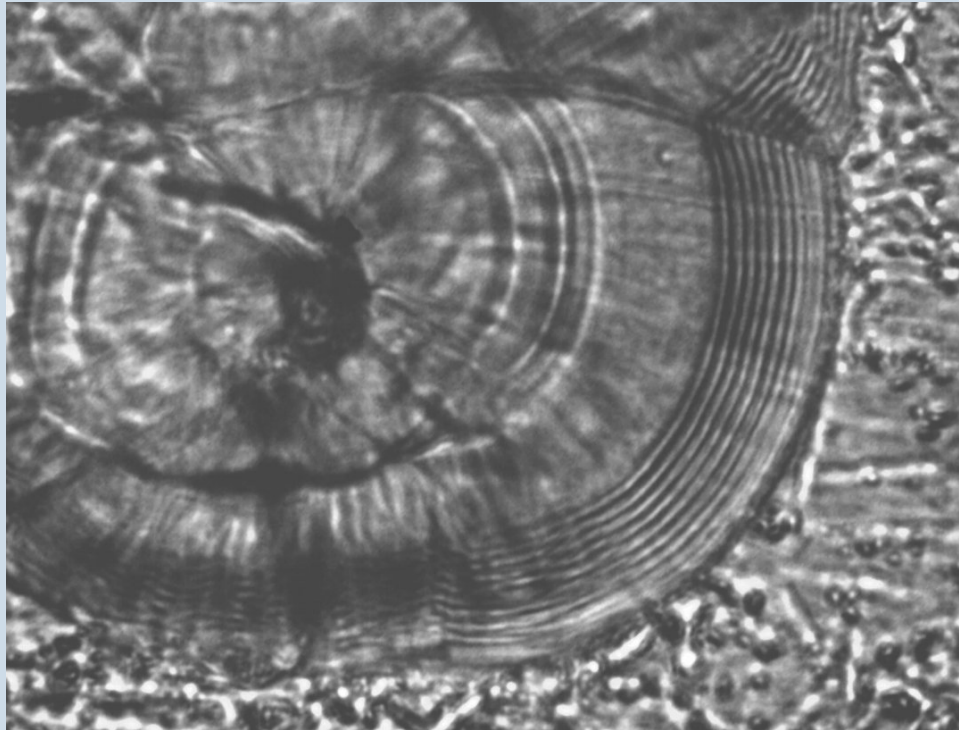
- Thermal
- Dry
- Calcein
- Alizarin
- Strontium

Thermal Marked Otolith



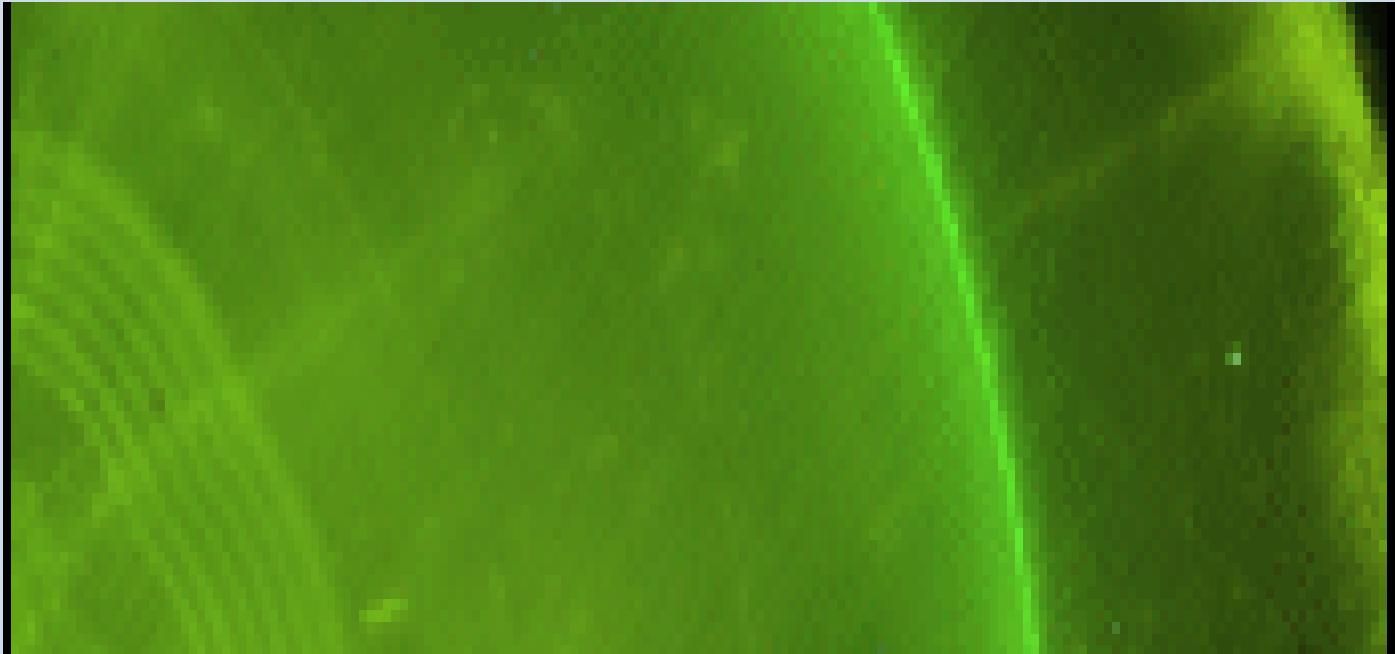
Visible under normal light

Dry Marked Otolith



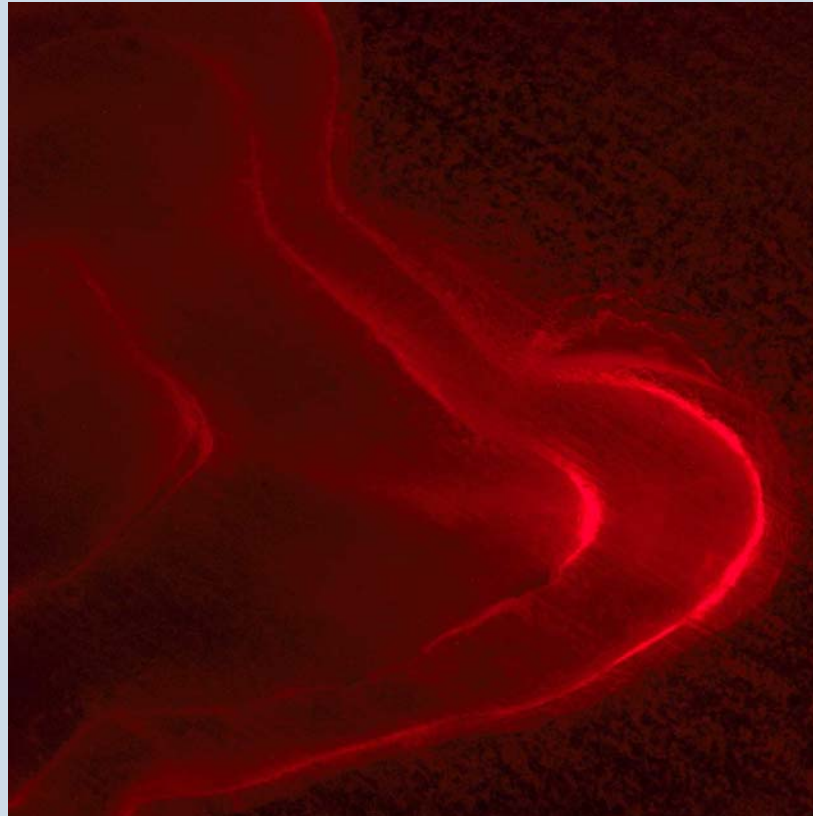
Visible under normal light

Calcein Marked Otolith



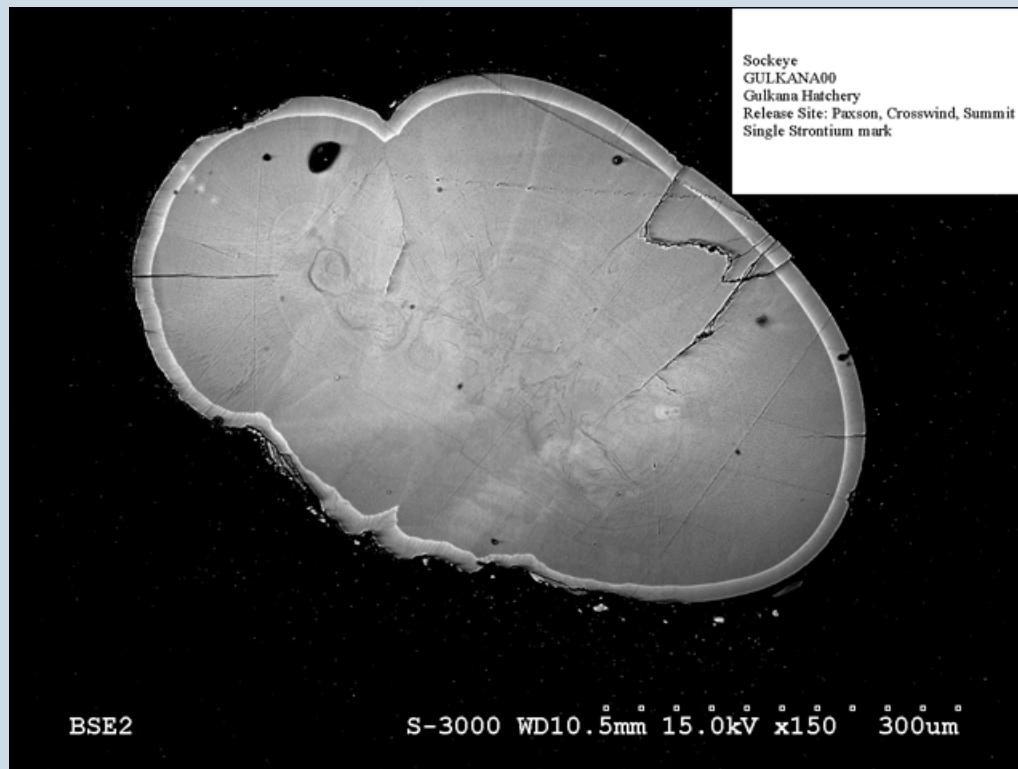
Visible under ultraviolet light

Alizarin Marked Otolith



Visible under ultraviolet light

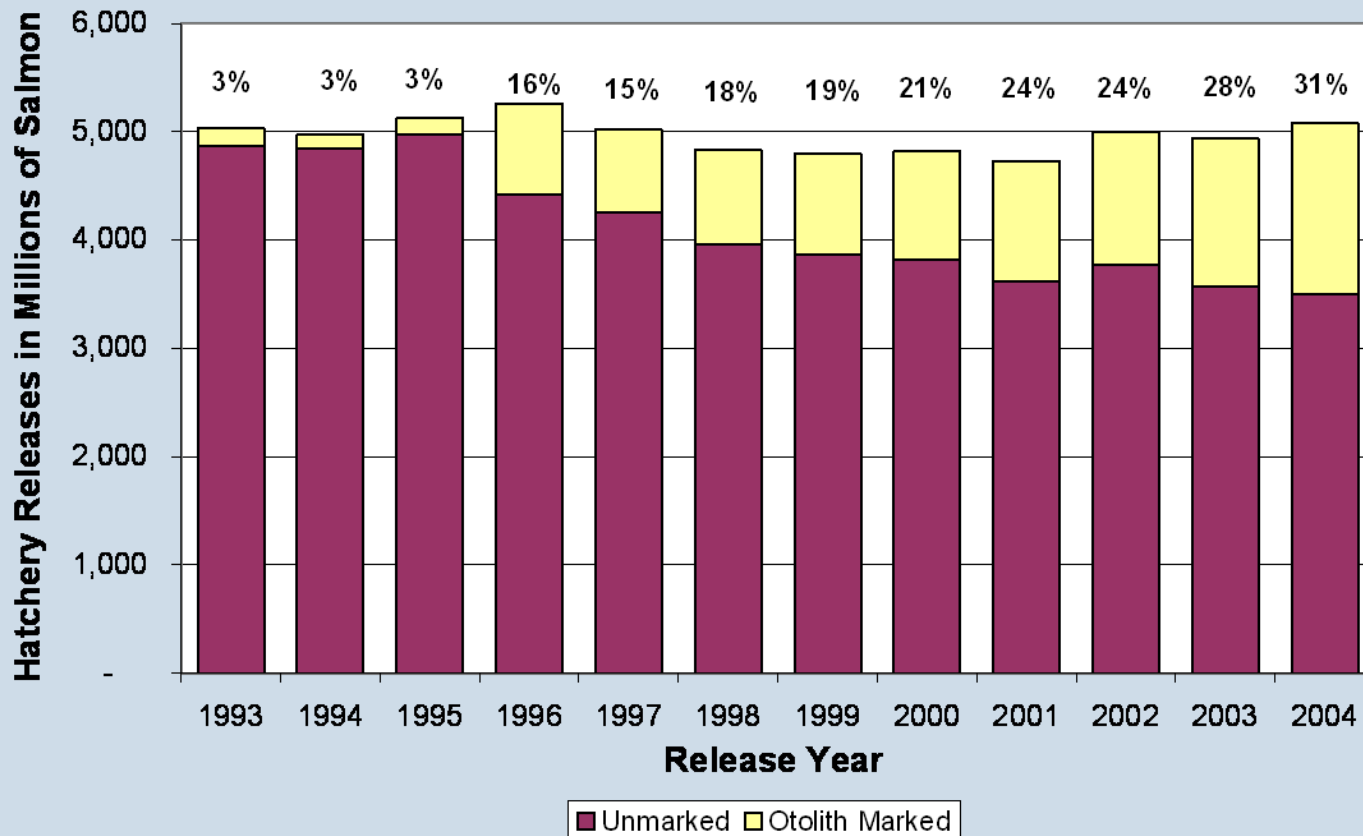
Strontium Marked Otolith



Visible under electron microscope

Marking Rates Increasing

Growth of Otolith Marking in the North Pacific



The Problem

- High seas recoveries are made
 - Research cruises
 - Basis
 - OCC
 - Observed commercial fisheries
- Salmon are sampled
- Specimen otoliths are collected and read
- How can the fish's origin be determined from the otolith mark?

Working Group on Salmon Marking



The Old Solution



North Pacific Anadromous Fish Commission
Working Group on Salmon Marking

Welcome
to the
North Pacific Anadromous Fish Commission's
Working Group on Salmon Marking

General Information on [Otoliths](#) and [Thermal Marking](#)

Information on the [NPAFC Working Group on Salmon Marking's](#) activities

Access our [Mark Database](#)

- WGoSM Home
- Otoliths
- Thermal Mark
- Mark Database
- Mark Group
- Otolith Links
- NPAFC Home
- Glossary
- Contact Us



The New Solution

**NORTH PACIFIC
ANADROMOUS FISH
COMMISSION**


Working Group on Salmon Marking

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IN THIS SECTION...
[WGOSM Web Site](#)

[▶ WGOSM Home](#)
[My Marks](#)
[Mark Entry](#)
[Mark Audit](#)
[Mark Reports](#)

[Mark Coordinators](#)
[Mark Documents](#)
[Mark Links](#)
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Welcome to the Working Group on Salmon Marking

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Approximately 20% of the total hatchery fish released in 2000 were otolith marked. In 2004 30% were otolith marked. As the number of marked fish increases, it is becoming a concern that duplicate thermal marks originating from different hatcheries will be encountered during ocean sampling.

Unfortunately, there are practical limits on the number of mark patterns available for use due to the narrow marking window at hatcheries. Complex patterns increase the costs for hatcheries and preclude a quick analysis of the pattern for timely stock management.

The North Pacific Anadromous Fish Commission (NPAFC) Working Group on Salmon Marking was established in 1998 to coordinate the application of otolith mark patterns and improve the accuracy of mark recognition among member nations.



Web Site Educational Items

- Glossary of terms
- Frequently asked questions
- Links to other otolith mark web sites
- NPAFC Technical Documents
- Mark Coordinator contact page

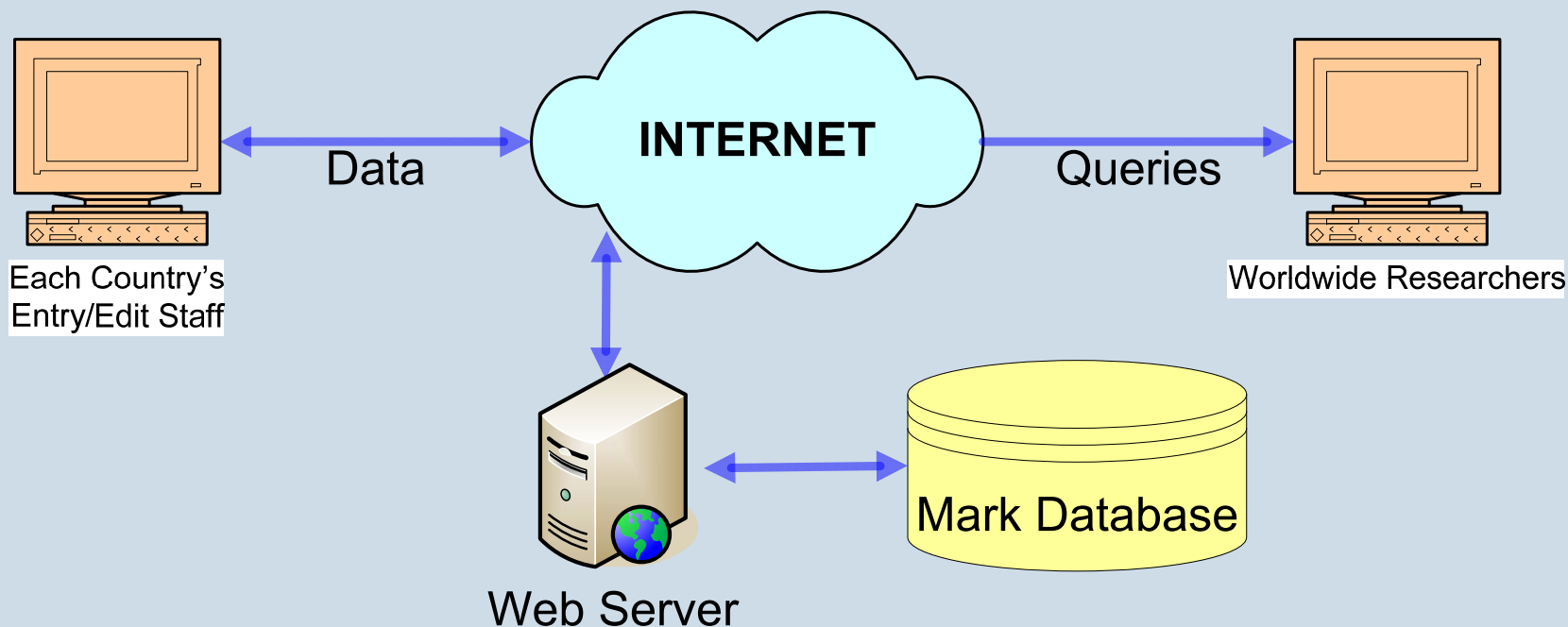


Web Site Database Repository

- Data entry by local mark coordinators
- Flexible query and report

Layout of New System

Each country enters and manages its own data



Improved Data Management

- Entirely browser based - no special workstation software is needed
- Countries directly enter their data and photos
- High reliability and hardened security
- Permanent archives





NPAFC Mark Repository Update

Local Mark Name: RU00-01

NPAFC ID: RU00-01

Retrieve

Save

Clear

Delete

General Information

Country: RUSSIA

Species: CHUM

State/Province: MAGADAN

Brood Year: 2000

Region: Tavy Bay

Run: - Select -

Agency: ORV

select existing Facility: OLSKY HATCHERY

select existing Stock: YAMA RIVER

or enter new Facility:

or enter new Stock:

Mark Information

Help



☐ Thermal/Dry ☐ Alizarin ☐ Calcein ☐ Strontium ☒ Hatch Mark

Otolith Mark(s):

☐ A ☐ C ☐ D ☐ S ☒ T ☐ X

Coded Wire Tag(s):



Fin Mark(s):

☐ AD ☐ AN ☐ CD ☐ D ☐ FB ☐ LM ☐ LP ☐ LV
☐ RM ☐ RP ☐ RV

Hatch Code: 6H

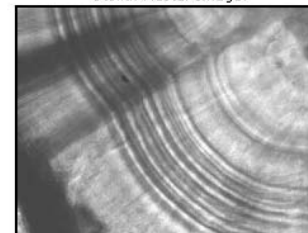
RBr: 1:1.6

Thermal Mark Schedule: (6X)24H:24C

Temperature Shift: up 3C

Mark Comment:

Otolith Master Image:



Upload Image

Clear Image

Release Information

Responsible Person: Elena Akinicheva

Contact Email: otolith@magniro.ru

Date Last Released: 6/27/2001

Stage: FED FRY

Release Year: 2001

Length: mm

Number Released: 2370000

Weight: 0.39 grams

existing Site: - Select -

Add

new Site:

Add

All Sites: OLA RIVER

Remove

Save

Save and return to My Mark

Create New Mark ID

Save and Print

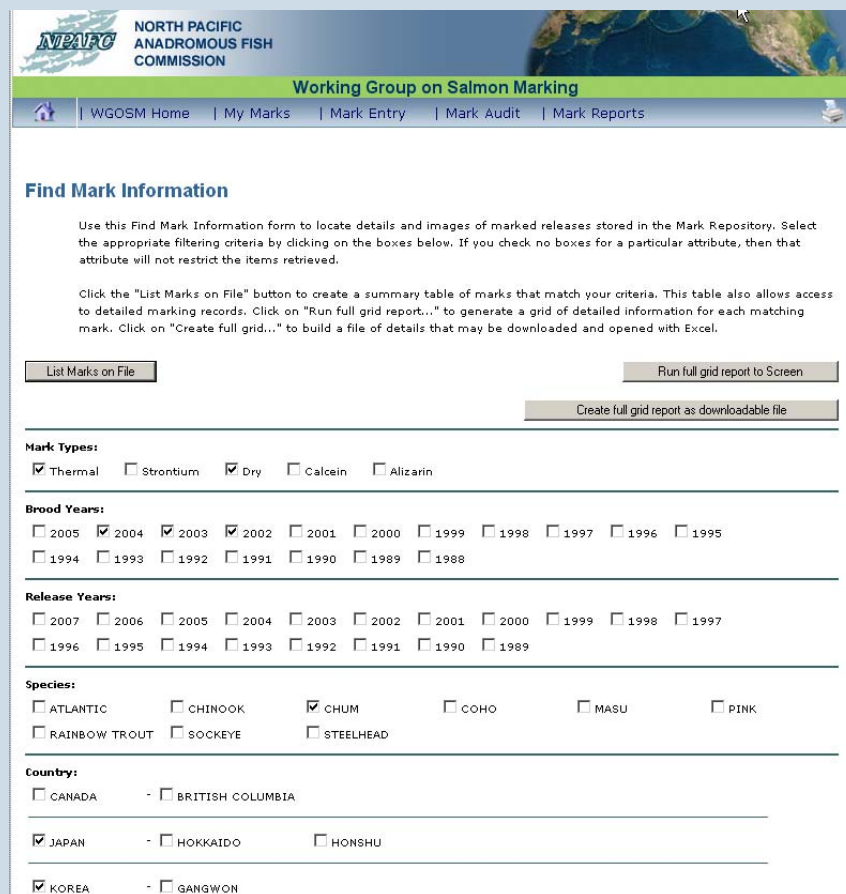


Working Group on Salmon Marking



Improved Querying

Many selection attributes



NORTH PACIFIC ANADROMOUS FISH COMMISSION

Working Group on Salmon Marking

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Find Mark Information

Use this Find Mark Information form to locate details and images of marked releases stored in the Mark Repository. Select the appropriate filtering criteria by clicking on the boxes below. If you check no boxes for a particular attribute, then that attribute will not restrict the items retrieved.

Click the "List Marks on File" button to create a summary table of marks that match your criteria. This table also allows access to detailed marking records. Click on "Run full grid report..." to generate a grid of detailed information for each matching mark. Click on "Create full grid..." to build a file of details that may be downloaded and opened with Excel.

[List Marks on File](#) [Run full grid report to Screen](#) [Create full grid report as downloadable file](#)

Mark Types:

☒ Thermal ☐ Strontium ☒ Dry ☐ Calcein ☐ Alizarin

Brood Years:

☐ 2005 ☒ 2004 ☒ 2003 ☒ 2002 ☐ 2001 ☐ 2000 ☐ 1999 ☐ 1998 ☐ 1997 ☐ 1996 ☐ 1995
☐ 1994 ☐ 1993 ☐ 1992 ☐ 1991 ☐ 1990 ☐ 1989 ☐ 1988

Release Years:

☐ 2007 ☐ 2006 ☐ 2005 ☐ 2004 ☐ 2003 ☐ 2002 ☐ 2001 ☐ 2000 ☐ 1999 ☐ 1998 ☐ 1997
☐ 1996 ☐ 1995 ☐ 1994 ☐ 1993 ☐ 1992 ☐ 1991 ☐ 1990 ☐ 1989

Species:

☐ ATLANTIC ☐ CHINOOK ☒ CHUM ☐ COHO ☐ MASU ☐ PINK
☐ RAINBOW TROUT ☐ SOCKEYE ☐ STEELHEAD

Country:

☐ CANADA - ☐ BRITISH COLUMBIA

☒ JAPAN - ☐ HOKKAIDO ☐ HONSHU

☒ KOREA - ☐ GANGWON

Improved Querying

- Search by Pattern
- Wild Card Search

Hatch Codes:

Select Hatch Codes below and/or specify one here:

Use '%' as wild card.

RBr:

[Help](#)

																																																																																																																																																																																																																																																																																												
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<input type="radio"/> Thermal/Dry	<input type="radio"/> Alizarin	<input type="radio"/> Calcein	<input type="radio"/> Strontium	<input checked="" type="radio"/> Hatch Mark	<input type="radio"/> Wild Card
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Working Group on Salmon Marking

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Marks on File

The following table lists all marks reported to the NPAFC Working Group on Salmon Marking that fit the criteria of your search. Any Mark ID names displayed in blue are web links. You may click on these links to bring up Mark Detail reports showing data for those specific release groups, as well as images of the marked otoliths.

NPAFC ID	Local Mark ID	Brood Year	Release Year	Species	Country	State / Province	Facility	Hatch Code	Image
JP03-48	JP03-48	2003	2005	MASU	JAPAN	HO	Yakumo Hatchery	5H	
JP04-41	JP04-41	2004	2005	MASU	JAPAN	HO	Tokushibetsu Hatchery	5-3wH	✓
JP04-45	JP04-45	2004	2005	MASU	JAPAN	HO	Yakumo Hatchery	5H	✓
JP03-38	JP03-38	2003	2004	MASU	JAPAN	HO	Yakumo Hatchery	5H	✓
JP03-40	JP03-40	2003	2004	MASU	JAPAN	HO	Yakumo Hatchery	5H	✓
RU03-12	RU03-12	2003	2004	CHUM	RUSSIA	MG	Olsky Hatchery	5nH	
RU03-14	RU03-14	2003	2004	CHUM	RUSSIA	MG	Tauysky Hatchery	5H	
RU03-20	RU03-20	2003	2004	COHO	RUSSIA	MG	Tauysky Hatchery	5H	
AK03-34	COOKINLET03COHO	2003		COHO	UNITED STATES	AK	FORT RICHARDSON	5H	
AK04-41	PORTARMSTRONG04COHO	2004	2006	COHO	UNITED STATES	AK	PORT ARMSTRONG	5H	
AK04-42	COOKINLET04COHO	2004	2006	COHO	UNITED STATES	AK	FORT RICHARDSON	5H	✓
AK03-33	PORTARMSTRONG03COHO	2003	2005	COHO	UNITED STATES	AK	PORT ARMSTRONG	5H	
AK03-66	BURNETTINLET03	2003	2005	SOCKEYE	UNITED STATES	AK	BURNETT INLET	5,2H	✓
AK04-22	WHN04A	2004	2005	CHUM	UNITED STATES	AK	WALLY NOERENBERG	5,2H	
AK04-65	SWEETHEART04	2004	2005	SOCKEYE	UNITED STATES	AK	SNETTISHAM	5,3nH	✓
AK04-72	AUKE04	2004	2005	PINK	UNITED STATES	AK	AUKE CREEK	5H	
AK03-11	WHN03A	2003	2004	CHUM	UNITED STATES	AK	WALLY NOERENBERG	5H	✓
AK03-24	AMALGA03A	2003	2004	CHUM	UNITED STATES	AK	MACAULAY	5H	✓
AK03-67	TATSAMENIE03N	2003	2004	SOCKEYE	UNITED STATES	AK	SNETTISHAM	5H	✓
WA03-05	WA03-05	2003	2004	CHINOOK	UNITED STATES	WA	Kendall Creek Hatchery	5H	

Number of Rows Returned: 20 out of a possible 20.
Query took no time at all.

[Back to Selection Page](#)


Improved Reports

- Summary listings
- Detailed downloadable files

Microsoft Excel - Book2

File Edit View Insert Format Tools Data Window Help

Type a question for help

A1 LOCAL_MARK_NAME

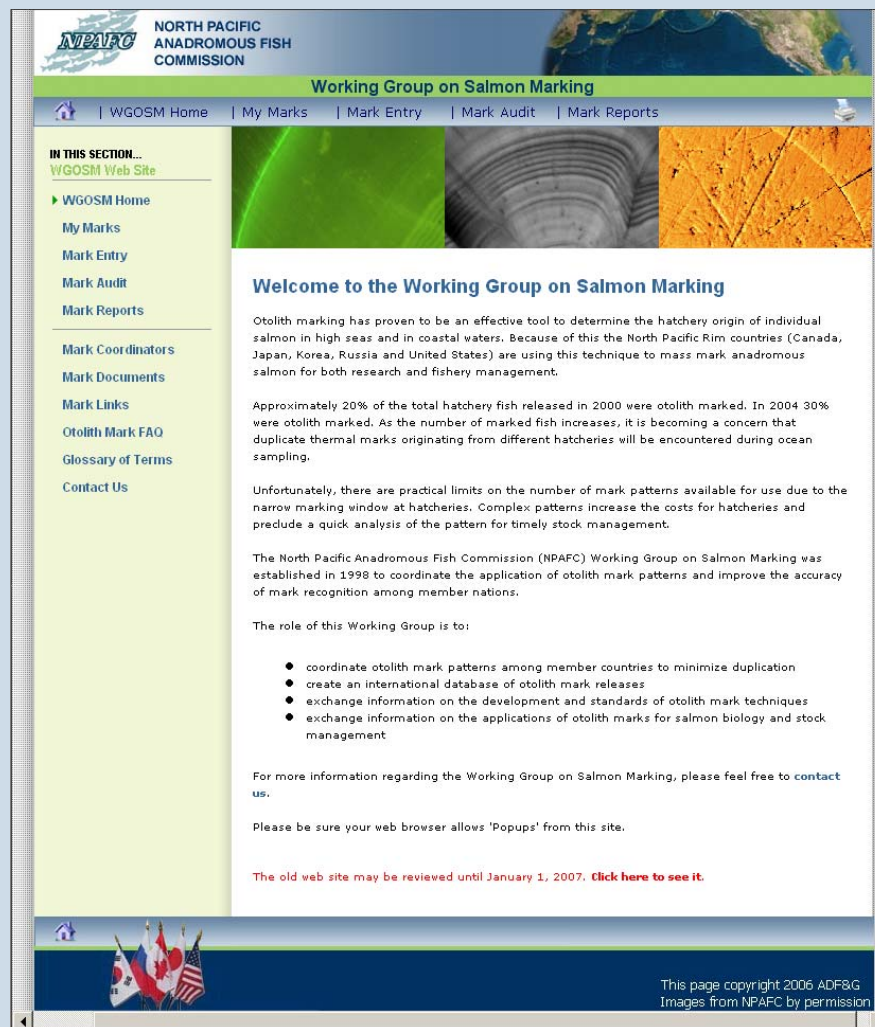
	A	B	C	D	E	F	G	H
	LOCAL_MARK_NAME	NPAFC_ID	BROOD_YEAR	SPECIES	AGENCY	FACILITY	RELEASE_YEAR	STOCK
1								
2	JP03-48	JP03-48	2003	MASU	NATIONAL SALMON RESOURCE CENTER	Yakumo Hatchery	2005	Yurappu River
3	JP04-41	JP04-41	2004	MASU	NATIONAL SALMON RESOURCE CENTER	Tokushibetsu Hatchery	2005	Tokushibetsu F
4	JP04-45	JP04-45	2004	MASU	NATIONAL SALMON RESOURCE CENTER	Yakumo Hatchery	2005	Shiribetsu River
5	JP03-38	JP03-38	2003	MASU	NATIONAL SALMON RESOURCE CENTER	Yakumo Hatchery	2004	Shiribetsu River
6	JP03-40	JP03-40	2003	MASU	NATIONAL SALMON RESOURCE CENTER	Yakumo Hatchery	2004	Yurappu River
7	RU03-12	RU03-12	2003	CHUM	MAGADAN INSTITUTE FISH & OCEAN	Olsky Hatchery	2004	Kulkuty River
8	RU03-14	RU03-14	2003	CHUM	OKHOTSKRYBVOD	Tauysky Hatchery	2004	Tauy River
9	RU03-20	RU03-20	2003	COHO	OKHOTSKRYBVOD	Tauysky Hatchery	2004	Tauy River
10	RU02-01	RU02-01	2002	COHO	OKHOTSKRYBVOD	Armansky Hatchery	2003	Yama River
11	RU02-07	RU02-07	2002	CHUM	MAGADAN INSTITUTE FISH & OCEAN	Olsky Hatchery	2003	Kulkuty River
12	PORT ARMSTRONG COHO	AK04-41	2004	COHO	ARMSTRONG KETA INC (AK)	PORT ARMSTRONG	2006	PORT ARMSTRONG



Need for Uniform Hatch Code

- Current codes are not clearly defined
- Jurisdictions modify coding to meet local interests
- Coast-wide Uniform Hatch Code scheme is proposed in NPAFC paper #971

Live Demonstration



NPAFC NORTH PACIFIC ANADROMOUS FISH COMMISSION

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WGOSM Home | My Marks | Mark Entry | Mark Audit | Mark Reports

IN THIS SECTION...
[WGOSM Web Site](#)
[WGOSM Home](#)
[My Marks](#)
[Mark Entry](#)
[Mark Audit](#)
[Mark Reports](#)
[Mark Coordinators](#)
[Mark Documents](#)
[Mark Links](#)
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The role of this Working Group is to:

- coordinate otolith mark patterns among member countries to minimize duplication
- create an international database of otolith mark releases
- exchange information on the development and standards of otolith mark techniques
- exchange information on the applications of otolith marks for salmon biology and stock management

For more information regarding the Working Group on Salmon Marking, please feel free to [contact us](#).

Please be sure your web browser allows 'Popups' from this site.

The old web site may be reviewed until January 1, 2007. [Click here to see it.](#)

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