

VOUCHER SAMPLING GUIDELINES

INTRODUCTION

The Thermal Mark Lab examines reference (voucher) samples to confirm that the thermal mark observed on the otoliths matches the assigned mark. In addition, the Lab describes a mark's characteristics in the Mark Summary Report to quantify variability within marks. This report includes a representative image of the thermal mark, measurements of the thermal mark, the thermal profile (if received), and a description of groups that do not show the intended mark (variants). Images and measurements of reference samples are used to identify the origin of adult salmon upon their return.

THERMAL MARK DOCUMENTATION

Sample collection

Our goal is to receive representative samples of each thermal mark to maintain a collection of potential marks that may be observed in Alaska fisheries. Thermal mark appearance is affected by temperature and fish development. A mark group is a group of fish with the same water flow configuration and temperature history. For each thermal mark, there are usually several mark groups. In addition, a mark group may have several lots. If a mark group has multiple lots, be sure to collect samples from at least the earliest and latest egg takes.

Sample collection should occur approximately one month after completing the thermal mark and prior to ponding. Receiving samples early helps us to provide timely feedback about thermal mark success and allows for collection of additional samples if samples are lost or inadvertently destroyed.

Please put at least 50 fish in each bottle. Do not mix fish from different mark groups or lots in one bottle.

- If you release less than one million fish, send a minimum of two bottles.
- If you release between one and five million fish, send two to five bottles.
- If you release between five and 40 million fish, send one bottle per two million fish.
- If you release more than 40 million fish, send a maximum of 20 bottles.

Sample across mark groups and lots. Feel free to contact us if you need help determining how many samples to collect.

Storage

Place each sample in an adequately-sized bottle with enough 90% ethanol to cover the fry. The ratio of ethanol to fish should be approximately 2 to 1. Decant and replace the alcohol preservative after the first 24 hours or when the color changes. After decanting, let the fish soak for a minimum of five days so the fish are thoroughly preserved. **DO NOT use formaldehyde, methanol, or isopropyl alcohol**; these solutions damage the otoliths. We will provide bottles upon request.

Labels

Label each bottle on the outside and insert an additional label inside the bottle. Use a pencil when completing the label, or for printed labels, test the printed labels in a sample bottle to

make sure the ink does not disappear because alcohol will dissolve most inks. The label should include the following information:

- Hatchery name
- Brood year
- Species
- Thermal mark hatch code
- Collection date
- Cumulative temperature units (CTU's) at the start and end of marking
- Lot number
- Incubator number (or trough, module, row, stack, tray/box, etc.)

The Thermal Mark Lab can send bottle labels printed on *Rite In The Rain* paper.

Thermal Mark Reports

Complete a Thermal Mark Report for each thermal mark hatch code applied. This acts as a packing slip for the sample bottles. Please include issues with mark application on the Thermal Mark Report.

Thermal profiles, which describe the water temperature across the marking period, can be used to further understand each mark's unique characteristics. Include these temperature histories for each mark group with your voucher shipment. Electronic file types (.xls, xlsx, or .hobo) are preferred. These thermal histories can be emailed when the voucher shipment is sent.

Sample shipment

Decant the alcohol after a minimum of five days, leaving the alcohol-soaked fry in the bottle. Tightly cap the bottles and ship immediately by 2nd day air. *Do not ship the bottles full of alcohol.* The U.S. Postal Service has classified ethyl alcohol as a hazardous substance because of its flammable nature. You can send the samples and all associated marking information, Attn: Bev Agler, Lorna Wilson, or Megan Lovejoy:

Via US Postal Service:

Alaska Department of Fish and Game
Division of Commercial Fisheries
Attn: Thermal Mark Lab
PO BOX 115526
Juneau AK 99811-5526

Via other methods (FedEx, UPS, Air Cargo):

Alaska Department of Fish and Game
Division of Commercial Fisheries
Attn: Thermal Mark Lab
10107 Bentwood Place
Juneau, AK 99801

Notifications

You will receive an email notification the vouchers are logged-in to our system. Another email will be sent when the mark evaluation is complete. The latter email will include a link to the voucher summary report. Please let us know if you do not receive these emails, and we will correct your email address in our directory. Please let us know when hatchery or facility contacts have changed.

Please do not hesitate to contact us if you have any questions:

Bev Agler (907) 465-3498, Bev.Agler@alaska.gov;
Lorna Wilson (907) 465-2424, Lorna.Wilson@alaska.gov; or
Megan Lovejoy (907) 465-5972, Megan.Lovejoy@alaska.gov.

THERMAL MARK LAB PUBLIC WEBSITE

The Thermal Mark Lab public website (<http://mtalab.adfg.alaska.gov/OTO/>) has links to the mark and voucher summary reports, general information about thermal and other types of otolith marking, and links to the port sampling manual and voucher sampling guidelines.

THERMAL MARKING IN THE NORTH PACIFIC OCEAN

The North Pacific Anadromous Fish Commission (NPAFC) Working Group on Salmon Marking (<http://wgosm.npafc.org/default.asp>) hosts contact information for mark coordinators by area, links to the NPAFC technical papers regarding salmon marking processes and reporting, and provides general information about thermal marking otolith. The Working Group's role is to:

- Coordinate otolith mark patterns among the NPAFC 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

Dion Oxman is the mark coordinator for Alaska. You can contact him via email:

Dion.Oxman@alaska.gov; or phone: (907)465-3499.

Questions? Contact Bev Agler at the ADF&G Thermal Mark Lab in Juneau at (907)465-3498 or e-mail bev.agler@alaska.gov.

VOUCHER BOTTLE LABELS

HATCHERY: _____ BY: _____
Species: _____ Stock: _____
Release Site(s): _____
Lot: _____ Inc: _____ Tray: _____
Sample Date: _____
Pre/post CTU's: _____ / _____
Hatch Code: _____

HATCHERY: _____ BY: _____
Species: _____ Stock: _____
Release Site(s): _____
Lot: _____ Inc: _____ Tray: _____
Sample Date: _____
Pre/post CTU's: _____ / _____
Hatch Code: _____

HATCHERY: _____ BY: _____
Species: _____ Stock: _____
Release Site(s): _____
Lot: _____ Inc: _____ Tray: _____
Sample Date: _____
Pre/post CTU's: _____ / _____
Hatch Code: _____

HATCHERY: _____ BY: _____
Species: _____ Stock: _____
Release Site(s): _____
Lot: _____ Inc: _____ Tray: _____
Sample Date: _____
Pre/post CTU's: _____ / _____
Hatch Code: _____

HATCHERY: _____ BY: _____
Species: _____ Stock: _____
Release Site(s): _____
Lot: _____ Inc: _____ Tray: _____
Sample Date: _____
Pre/post CTU's: _____ / _____
Hatch Code: _____

HATCHERY: _____ BY: _____
Species: _____ Stock: _____
Release Site(s): _____
Lot: _____ Inc: _____ Tray: _____
Sample Date: _____
Pre/post CTU's: _____ / _____
Hatch Code: _____

Thermal Mark Report

Include one form for each mark.

AGENCY: _____

HATCH CODE: _____

FACILITY: _____

MARK ID: _____

SPECIES: _____

HEAT SOURCE: _____

STOCK ID: _____

RELEASE SITE(S): _____

BROOD YEAR: _____

MARK DESCRIPTION (temp cycle and change): _____

| Mark group | Lot | Trough or tray | Sample date | Pre-mark ambient temp | Pre-mark CTU | Post-mark ambient temp | Post-mark CTU | Comment |
|------------|-----|----------------|-------------|-----------------------|--------------|------------------------|---------------|---------|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |

Please label bottles completely. Include this form as well as electronic temperature data for each mark group (.xls, .xlsx, or .hobo files are okay) with your voucher shipment, if possible.