

A photograph showing several racks of salmon fillets hanging from a wooden log structure outdoors. The fillets are a vibrant orange-red color, indicating they are being dried. The background consists of green grass and trees. The text "Scientific Salmon Monitoring Project" is overlaid in yellow on the top left of the image.

Scientific Salmon Monitoring Project

**Leila Nyberg and Laurel A. Royer
Purdue University**

Photo: L. Dehn

A note from Laurel and Leila:

Greetings! We are students at Purdue University doing environmental science research, and we wanted to do something to help when we heard about the problems with your salmon. We started work on this project in February 2008. Our hope is that this book will contribute to finding a solution, and possibly inspire some future scientists! A regular supply of heart samples will help our fish experts help you. Good luck with the fish sampling, and thank you for participating in this project. We hope to meet you sometime in the future.

Best Wishes,

Handwritten signatures of Laurel and Leila in cursive script.

Your booklet will guide you through sampling and note taking for each fish.

Please take notes on both sides of the data sheets at the end of this booklet. Each data sheet has space for information for up to five fish.

You will need at least two razor blades and a pair of gloves for each fish sampled. These are provided for you in your sampling packet.

Carefully following all guidelines will ensure that your samples are still good when they reach the scientists at Purdue University.

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Ichthyophonus

The purpose of this booklet is to make it easy and convenient for you to help scientists study a parasite called *Ichthyophonus* in your salmon population. *Ichthyophonus* is a disease found in ocean fishes, and has been known recently to infect Alaskan salmon as they feed on other infected fish during their ocean migration. This disease is a tiny parasite that can sometimes be seen as white spots on the heart, kidney, liver, and even in the flesh of salmon (primarily in Chinook or king salmon, but also in coho (silver) or chum (dog) salmon). *Ichthyophonus* is NOT at all harmful to humans, but has been shown to cause health problems and death in salmon. In an effort to better understand how severe this disease is in the salmon that you catch for subsistence, we have assembled this booklet with instructions on how to collect samples from your fish before you store them away for your subsistence. Again, we emphasize that infected fish are not harmful to humans, and should not be wasted or discarded.

Guidelines for Photographs

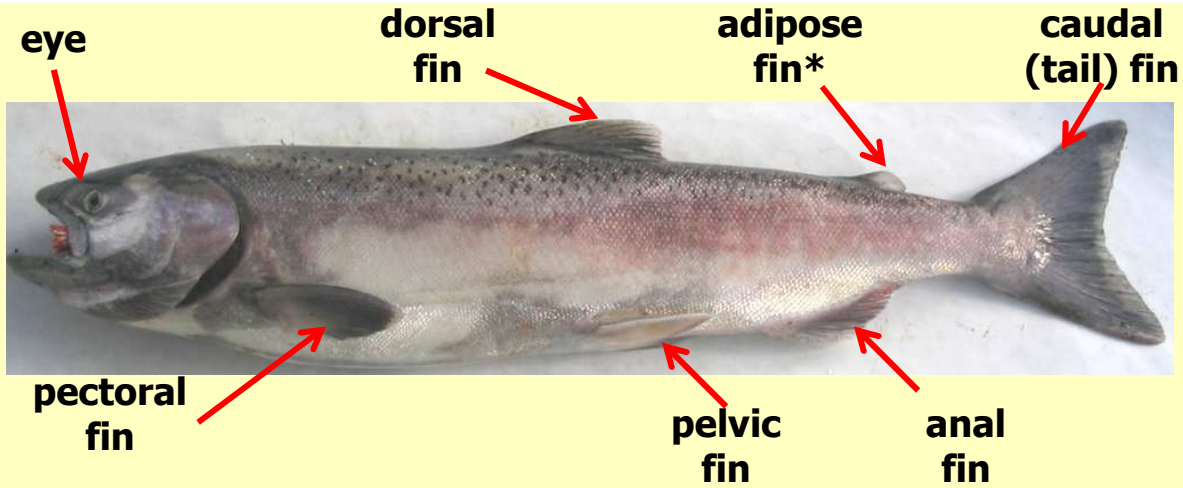
Waterproof cameras are provided to help your sampling work. It's important to make sure the scientists will be able to match each fish in your photographs with its heart sample you send back to Purdue. Photograph your fish next to a piece of paper with its sample number written so it shows up well in the photograph, like this:



You may want to photograph both external and internal anatomy of your fish so the scientists will have more information about any abnormalities you may find.

Photo: L. Dehn

EXTERNAL FISH ANATOMY



***Fish with missing adipose fins have probably been Coded-Wire-Tagged by ADFG.**

Please note scars, sores, sea lice, and any external abnormalities you might find on your fish on your data sheet.

Photo: L. Dehn

Measuring the fish



To measure your fish, place the measuring tape at center of the eye and extend to the fork of the tail. Write down the length on your data sheet.

DISSECTING THE FISH

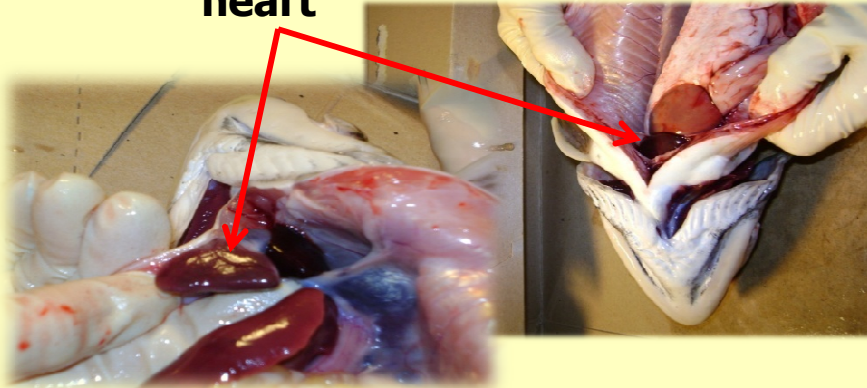


Using a sterile razor blade, carefully cut up and down the front of the belly in a single line so you can clearly see the internal organs.

Locating the fish heart

heart

Important!
Please don't touch
the heart with the
same razor blade
used to cut open
the fish.



The heart is the red organ shown inside the fish toward its head. Very careful handling of the heart will help the scientists get the information they need about how *Ichthyophonus* is affecting your salmon. A healthy fish heart will have a smooth, even surface with no white spots on it.

***Ichthyophonus* on and inside the heart**



Photo: L. Dehn

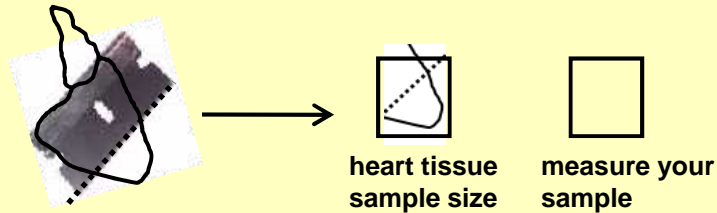
This is the heart of an infected fish. Notice the white spots of *Ichthyophonus* all through it.

***Ichthyophonus* is usually found in internal organs but may be also be on the outside of infected fish. This is why you need a new, clean razor blade to cut into the heart and take the sample that you'll send to the scientists. Being very careful with this step will help avoid cross-contamination.**

SAMPLING THE HEART

After opening fish up, please use a **NEW razor blade and gloves** before cutting into the heart. This is to prevent contamination of your sample.

Your heart tissue sample should come from the same spot for each sample you take. You do not need a very big sample. Use the picture below as a guide.



Remember to mark the sample number from your data sheet on the tube with your sample.



Place your heart sample into the tube with preservative. You need to do this so that the sample can safely travel to Purdue University for analysis.



STORAGE AND SHIPPING

Once you have collected your samples from the fish, store the tubes in the freezer until they are ready to ship to Purdue. Ship the tubes in their bags to Purdue University in the cooler that you received with the samples, including the frozen ice blocks and your data sheets.

Shipping address:

**Dr. Krista Nichols
Purdue University
Department of Biological Sciences
915 W State Street
West Lafayette, IN 47907**

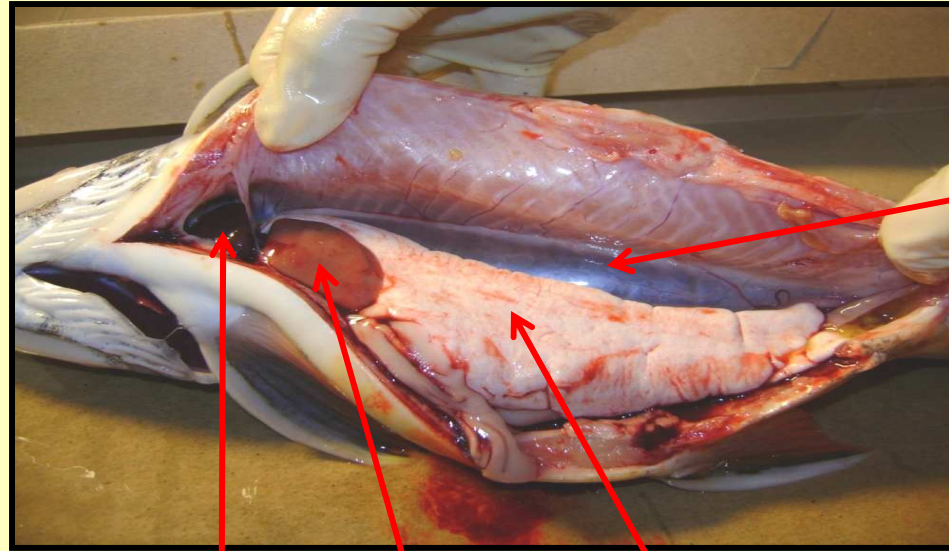
**Toll-Free: 877.285.0017
(765.496.6848)
kmnichol@purdue.edu**

Need more sampling supplies? Contact Dr. Nichols.

Examining internal organs

The pictures on the next two pages show internal organs of healthy, normal male and female fish. You can use these as a guide for comparison with the internal organs of your fish. If you notice any abnormalities in your fish, make a note of them in the “Comments and Abnormalities**” section of your data sheet.**

Internal organs (male)



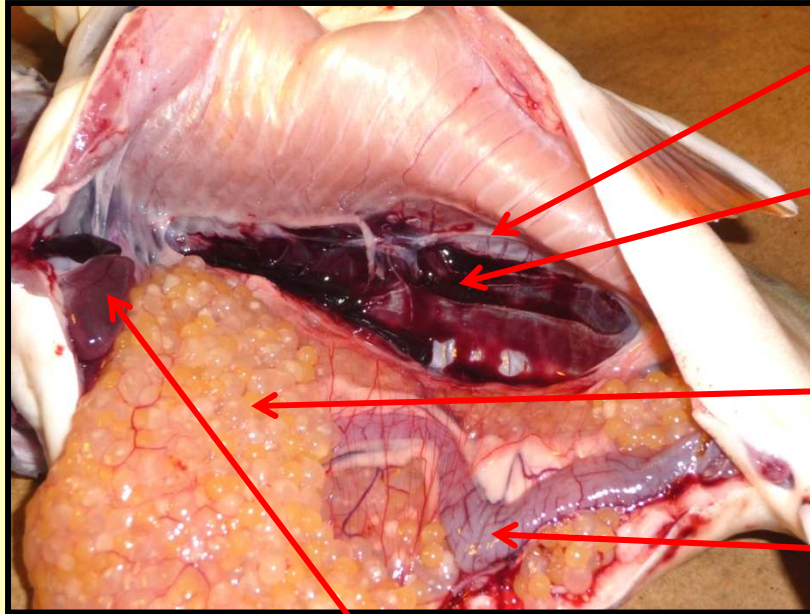
Heart

Liver

Testes

Swim bladder

Internal organs (female)



**swim
bladder
(cut open)**

**kidney
(behind swim
bladder)**

ovaries

intestines

heart

SAMPLE DATA SHEET

Collected by: _____

Sample ID	Date	Species	LOCATION		Total Length (mm)	Sex M or F
			Name	GPS coord.		

Data sheet continues on the back

Sample ID	Comments and abnormalities	Check the box of the sample taken			
		heart	parasite	other	photo

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Collected by: _____

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Data sheet continues on the back

Sample ID	Comments and abnormalities	Check the box of the sample taken			
		heart	parasite	other	photo

The authors

Photo Caption:



Photos: K. Nichols

Laurel A. Royer (left) is a graduate student in the Department of Agronomy. She is studying in the area of Environmental Chemistry.

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Leila Nyberg (right) is a graduate student in the School of Civil Engineering and the Ecological Sciences and Engineering Program. She is studying in the area of Environmental Engineering.

Leila's email: lnyberg@purdue.edu

Both students are studying at Purdue University in West Lafayette, Indiana.

This project has truly been a team effort. Thanks to Dr. Krista Nichols (Purdue University), Dr. Marisol Sepulveda (Purdue University), and Dr. Lara Dehn (University of Alaska, Fairbanks), our fish experts, for providing content for this book. Thanks to Dr. Mike Smolen (Alaska Native Youth Institute) for giving us the opportunity to get involved in this ongoing effort, and for his continued advice and support. We also appreciate the contributions of Brent Ladd and Dr. Kevin Gibson (Purdue University).

Except where noted, photographs by Laurel A. Royer and Leila Nyberg

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