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Norton Sound Fish Disease Workshop

**Kawerak Inc.
P.O. Box 948
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Reporting To

Norton Sound Sustainable Salmon Initiative

C/O

**Alaska Department of Fish and Game
Commercial Fisheries Division, AYK Region
333 Raspberry Road
Anchorage, Alaska 99518-1599
Final Report March 2007**

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ABSTRACT

This workshop gathered key organizations and communities to discuss fisheries diseases found throughout the Norton Sound and Alaska. This workshop was a result of the concerns voiced by the residents of the Norton Sound as many residents have identified fish diseases as a topic of concern, and have noticed abnormalities and diseased looking fish in many streams in Norton Sound. The workshop brought fish disease experts and village residents to Nome for one day. The workshop successfully 1) provided an opportunity for individuals to learn the biology of fish diseases and incidence in Alaska 2) provided instructions and techniques for safe food preservation and handling, 3) allowed the dissemination of information to a wide audience regarding the prevalence and distribution of the types of fish diseases common in Norton Sound, 4) provided information regarding the safety of consuming certain diseased fish and 5) provided local subsistence users with information on how to collect samples suspected of having disease for potential analysis by a pathology laboratory. The products of this Fish Disease Workshop are a poster explaining how area residents can submit diseased or abnormal fish for testing and a report summarizing the workshop.

PROJECT SUMMARY

This Norton Sound Fish Disease Workshop was planned in response to concerns expressed by local residents regarding obvious morphological abnormalities noticed on harvested salmon. Reports of spots, fungus, worms or bulging eyes on fish are relatively common during the summer months. During public meetings, there were accounts of fish showing signs of disease. During the most recent Kawerak board meeting, for instance, a Shaktoolik representative wanted to know what was causing some salmon to have scales like sandpaper. People fishing the Eldorado River have noticed salmon and grayling with circular sores near the tail. Many reports came from people fishing on the Pilgrim River that the sockeye are full of worms. Also, Kawerak receives many phone calls regarding the appearance of signs of disease on fish in Norton Sound. Henry Oyoumick, the Watershed Coordinator for the Native Village of Unalakleet, has been sending samples of diseased fish from the Unalakleet River to the Alaska Department of Fish and Game pathology laboratory for analysis. Generally, people relay these accounts in a quest for knowledge about their resources, to determine if these abnormalities affect the palatability of salmon and to understand if these abnormalities might translate into effects on escapement.

Tamara Burton and Dr. Paul Hershberger, both knowledgeable in the field of fish disease in Western Alaska, were invited to the Fish Disease Workshop. Tamara is a fish pathologist with the Alaska Department of Fish and Game in Anchorage; Paul is research scientist with the United States Geological Survey. These two experts provided informational presentations about the prevalence and types of fish disease and gross abnormalities in Western Alaskan rivers and participated in discussions regarding fish disease observed by local residents in Norton Sound.

The objective of this project, then, was to mutually educate local residents, scientists and managers about the occurrence and types of fish disease and gross abnormalities in Norton Sound Rivers through a Fish Disease Workshop.

A total of 18 people attended the one-day workshop (Appendix 1). Invitations were sent to all of the IRA's throughout Norton Sound inviting one representative from the community. Kawerak covered the expense for village representatives, including travel, room and per diem and representatives came from Wales, Nome, White Mountain, Elim, Koyuk, Unalakleet and St. Michael. Also, key organizations and individuals that were interested in fish disease or conduct fisheries work in Norton Sound were specifically invited, including Nome Fisherman's Association, United States Geological Survey and Alaska Department of Fish and Game. As well, organizations that support fisheries research, through funding (Norton Sound Economic Development Corporation, Norton Sound Initiative, Bureau of Land Management) were contacted and invited to attend. The workshop was open to the general public, and community announcements were made on local radio stations.

Two scientists recognized as experts in their field were invited to participate in and give an informational presentation during the workshop. The presentations gave workshop attendees a chance to learn background information and biology of various fish diseases found in Alaska with special attention focused on Ichthyophonus. The two invited speakers were Tamara Burton, a fish pathologist from the Alaska Department of Fish and Game in Anchorage Alaska, and Dr. Paul Hershberger, from the Marrowstone Marine Station in Nordland Washington.



Figure 1. Dr. Paul Hershberger presenting information on *Ichthyophonus* in Alaska.

PUBLIC INPUT AND DISCUSSION

The workshop was a great opportunity for representatives from the small communities and Nome to offer their observations and ask questions. For example Henry Oyoumick from Unalakleet offered information on salmon returning with raised scales, and wondered if the condition was safe for human consumption. It was revealed that this condition was caused by a type of copepod that attached itself to the base of scales and results in the scales being raised. Fish exhibiting this condition are, in fact, safe to eat. Henry felt that increases in toxins and poorer environments contributed to increases in disease found in all animals. He noted that these poorer conditions may be contributing to Chinook salmon moving North.

A common question posed by participants at the Fish Disease Workshop and namely by Frank Oxereok Jr. from Wales, was regarding the safety of consuming fish exhibiting abnormalities. The answer was that most of these abnormalities are caused by viruses, bacteria and parasites which are accustomed to living in relatively cool environments and therefore they would not grow well in humans due to higher body temperature. Also cooking and freezing fish kills many of the potentially problematic parasites. There were, however, two parasites that can lead to health problems in humans if infected fish is eaten raw:

1. *Anisakis* is a parasitic nematode found in herring and other fish as well as marine mammals, which can infect humans. Normally this nematode can be found around the visceral organs, muscles and in the skin of fish. In humans, *Anisakis* infection creates Anisakiasis, which can potentially cause anaphylactic reactions. However, cooking or freezing kills the parasite and the presenters recommended cooking all fish to 140°F for 5 minutes or freezing fish to -4°F for 60 hours.
2. *Diphyllobothrium* (fish or broad tapeworm) is the largest tapeworm that can infect humans. It can be contracted by eating undercooked fish caught in Western Alaska. This tapeworm can last for decades and can cause abdominal discomfort and vitamin B¹²

deficiency. The presenters recommended cooking all parts of the fish to at least 133°F for 5 minutes or freezing fish to 0°F for 24 hours.

Although one objective for this workshop was originally intended to define the location and extent of fish disease in Norton Sound, this was not a realistic objective for two reasons. Firstly, it is not possible to identify disease, even after a workshop such as this, because identification often requires a microscope as well as other technological equipment to properly identify fish disease and abnormalities. Secondly, the vast majority of fish disease found throughout Alaska and its presence in Norton Sound would not be a surprise to pathologists or managers. This workshop, however, did provide information and specific directions on how to submit samples to ADF&G pathologists, and whom to contact regarding observed fish abnormalities. Although not originally part of the workshop, this information is very useful to the participants to ensure that potentially diseased samples can get properly identified and cataloged as part of the State database.

Participants appreciated the information on how to submit samples for testing. This information is summarized in a poster, which will be distributed to the villages in the Norton Sound. Because identification of disease is exceedingly difficult due to the need for specific equipment and training, the Alaska Department of Fish and Game Pathology Laboratory accepts submitted samples from the public and pays for the shipment of samples from the villages.

The workshop was informative and appreciated by all who attended. For several years the Kawerak Inc. Fisheries Department has received calls enquiring about diseases and abnormalities found during subsistence activities. Understandably, when information about these diseases is lacking, uneasiness is created and fish resources could be wasted as a result. In addition to the workshop and poster, disease identification booklets, now being created by ADF&G and Yukon River Drainage Fisherman's Association, will be distributed by the Kawerak, Inc. Fisheries Department to the villages and other organizations in the Norton Sound.

Appendix 1.

List of Workshop Participants:

<u>Name</u>	<u>Representing</u>	<u>Phone</u>
Phillip Brown	White Mountain	638.2200
Lauri Medlin	ADF&G	443.5167
Paul Thompson	ADF&G	443.5167
Rose Fosdick	Kawerak, Inc.	443.4377
Sandy Tahbone	Nome	443.4142
Frank Oxereok Jr.	Wales	664.2125
Austin Ahmasuk	Kawerak, Inc.	443.4265
Tamara Burton	ADF&G	267.2394
Bernadette Joe	St. Michael	923.3222
Henry Oyoumick	Unalakleet	624.3622
Joel Saccheus	Elim	890.4257
Gary Todd	ADF&G	443.5167
Amy Flaherty	KNOM	443.5221
Jim Menard	ADF&G	443.5167
Tim Smith	Nome Fisherman's Association	443.5352
Merlin Henry	Koyuk	963.3251
Timothy Kroeker	Kawerak, Inc.	443.4273
Paul Hershberger	USGS	360.385.1007 ext.225