From: Thompson, Brad <Brad.Thompson@dfo-mpo.gc.ca>
Sent: Sunday, May 24, 2009 3:03 PM
To: Higgins, Mark <Mark.Higgins@dfo-mpo.gc.ca>; MacWilliams, Christine <Christine.MacWilliams@dfo-mpo.gc.ca>; Lofthouse, Doug <Doug.Lofthouse@dfo-mpo.gc.ca>
Cc: Bennett, William <William.Bennett@dfo-mpo.gc.ca>; Celli, David <David.Celli@dfo-mpo.gc.ca>; Hwang, Jason <Jason.Hwang@dfo-mpo.gc.ca>
Subject: RE: Nadina Gill Samples

Thanks to all of you who have put in time on this. The bottom line, we are no further ahead in finding out why the majority of the Nadina Channel population died, pre spawning. Our system to try and solve these problems or at least learn from them appears to be very broken.

Perhaps a little more perspective on this facility and I know some of you are aware of these details.
Nadina River Spawning Channel has:
No indeterminate employees.
Only one paid Temp help worker, the entire working season.
Backup help from Fulton staff if required/if possible, during normal working hours.
There is No overtime budget for this facility.
There is no travel expense budget for this facility.
The O&M budget is stretched to it's maximum.
The samples taken were done, on suggestion at the drop of a hat and on personal time.
One of the most fish, dedicated staff I have ever seen and they continue to work eagerly with what they have to enhance the Nadina River Sockeye population.

If a disease issue is suspected in the future I would suggest the best option, is for:
1.The Fulton/Nadina staff, to identify the need for help as early as possible through notification to our support Biologist.

2. Samples be taken by PBS staff or trained alternatives.
I'm at a loss as to where the money would come from but I'm hoping it wouldn't stop the process.
Thanks, Brad.

Brad Thompson, Babine Project Manager
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-----Original Message-----
From: Higgins, Mark
Sent: May 13, 2009 2:31 PM
To: MacWilliams, Christine; Lofthouse, Doug; Thompson, Brad
Cc: Bennett, William
Subject: RE: Nadina Gill Samples

Thanks for your help Chris, Your suggestions to send fixative and sampling procedures is good. I actually talked with Bill after this submission about how to improve upon sample submissions like this and we agreed that it might be useful for Bill to put together kits with fixative, laminated instructions, sample submission forms, dissecting tools, pictures and anything else that may be needed in a cooler that could be sent quickly to someone in the field to try and obtain samples that would be of use in diagnostics. I don't know if time has permitted Bill to pursue this. The kit may or may not include sampling gear for bac-T and virus. The big problem with sending something like this out is

the man power on the other end to perform the sampling. Finding time to take the samples can also be difficult, as situations like this where there is only 1 or 2 field crew, there are many more pressing duties that take up their time (i.e. clearing fences, pitching dead fish etc). It is unfortunate that we no longer have the necessary resources to send field crew out to help in these situations, but we can try to get good information from the field. Mark.

-----Original Message-----

From: MacWilliams, Christine

Sent: May 13, 2009 1:31 PM

To: Lofthouse, Doug; Thompson, Brad

Cc: Bennett, William; Higgins, Mark

Subject: RE: Nadina Gill Samples

Hey guys, just trying to get a better picture of what happened. I'm including some pictures (see attachment) so you see what poor fixation means. Whenever tissue is cut off from it's blood supply, there's a race between cell death and the ability of the fixative to penetrate the tissue and preserve the cells. The best samples are from healthy, living fish. Senescent salmon barely alive on streambank on a hot day make it very challenging to get good samples. Because gills are so fragile (normally a couple of cells wide around a blood channel) they degrade faster than any other tissue type. We can work around this by trying to sample from pinks gills only; avoiding sampling the outer gill arch as this is the most exposed and most likely damaged from environmental sources; in warm weather - keeping the bottles of fixative on ice in a cooler so the immersed tissues are cooled and decay a bit slower and give the fixative more time to do its job; keeping sample sizes down - no more than 1 cm wide in any dimension, as fixative can't penetrate more than 0.5 cm; and having a reasonable tissue:volume ratio (1:5 is minimal; 1 part tissue to 10 parts fixative is recommended - as the fixative penetrates the tissues, the concentration in the remaining fluid goes down and the ability to penetrate and fix tissue also goes down - 1:10 helps ensure the amount of the active ingredient, formaldehyde, isn't limited).

As I said, spawning channels are hard to sample from. Bill gets samples from several channels each year, and the majority are in the same condition as the samples you sent in. His frustration comes from finding out that a year class of Nadina sockeye died prespawning and all we have are these 11 gill arches and they are virtually useless. This is not a unique situation. There is an poorly defined, inadequately funded response protocol for wild fish kills.

Bill would be happy to send jars of fixative and discuss sampling procedures, tissues to take and appropriate number of samples, how to ship samples, etc, with anyone. He is also willing to travel anywhere to either do training on how to take samples or to do sampling during a stock loss investigation (if his schedule allows and manager ok's the time), but the histo department has no money budgeted for travel, so the external party usually has to pay for this.

For major PSM like you experienced last year, samples should be taken for bacteriology, virology and histology. Samples should be taken from a full tissue suite (gills, heart, liver, head and posterior kidney, spleen, muscles and brain. Notes should be taken and included with the sample submission detailing the case history (# dead, # at risk, any clinical signs or abnormal behaviours noted, any available water quality information, etc etc). plus site, species, lifestage, method of killing (anaesthesia, blunt cranial trauma, found dead, etc.), contact info of the submitter and the jars should be well labelled with the type of fixative and the date of sample. And samples should be submitted to the lab promptly.

I hope this helps bridge more communication between you and Bill (250-756-7060), since field samples for histology are the easiest for lay people to take (compared to bacteriology and virology samples) and often more informative.

Chris

<< File: gill histo.ppt >>

From: Lofthouse, Doug

Sent: May 13, 2009 9:06 AM

To: Thompson, Brad

Cc: MacWilliams, Christine

Subject: FW: Nadina Gill Samples

Hey Brad,

Given Mark's email response below, I followed-up with a phone call to him to pose a couple of additional questions;

1) **What did he mean by "poor fixation"?** He responded that it was likely an issue of too much tissue and not enough preservative in each sample container (I think a ratio of >5:1 preservative to tissue is proffered). Given that fact, it's likely that most of the bacteria presence and gill features noted were post-sampling occurrences.

2) **What's the Histologists problem?** Inferences that these samples were *taken for no reason* or that they *weren't from a stock that experienced a serious epizootic* got my back-up as soon as I read his email below! Mark claims that he did explain the situation to the fellow, and that he got him to understand our interest in/potential importance of those samples. How do you say "overreaction"?????

So, I really appreciate the time you put into acquiring those samples, and it's too bad that they weren't in appropriate condition for their purposes. As to future sampling, I think it really depends on how those Nadina fish do/what levels of PSM we experience in the future.

That's about it,

Doug

-----Original Message-----
From: Higgins, Mark
Sent: Tuesday, May 12, 2009 2:37 PM
To: Lofthouse, Doug
Subject: FW: Nadina Gill Samples

Doug, Sorry that I did not send this when it came in. Bill was not in a good mood when he wrote this, so I wanted to talk to him before sending…then I got on to something else and forgot to forward to you. Basically, because of poor fixation, there was nothing that could be garnered from these specimens. If we would like to obtain samples from this coming year, I would suggest getting Dave Patterson to try and collect some if Brenda Donas is no longer going to do this work. Mark.

-----Original Message-----
From: Bennett, William
Sent: January 30, 2009 2:24 PM
To: Higgins, Mark
Subject: Nadina Gill Samples

Hi Mark,

Here is the pathology report for the above.

In the future I will not accept samples from these people unless there is some sort of project that I am involved in or there is a serious epizootic and I am invloved in a larger diagnostic effort. In other words taking samples just for the sake of taking samples is just simply a waste of time and really not a good enough reason to spend the resources on this type of haphazard sampling effort. If they want to give me a call we can talk re: some sort of histopahtology project but unless there is a project or larger diagnostic effort I am not interested in processing samples for no reason.

<< File: 0901 Nadina Sockeye 0130.doc >>

Cheers

William R. Bennett
Histologist

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