

From: Bill Bakke <bmbakke@teleport.com>
To: MetCen.MRC-PO(cieckoc),MetCen.GWIA("fcnesq@cybernw...
Date: Fri, Nov 20, 1998 10:42 AM
Subject: Stream Health

DEBRIS DAM DYNAMICS
by Jim Yuskavitch

Oregon Department of Fish and Wildlife Fish Restoration and Enhancement
Program grant helps restore natural food cycle to Knowles Creek in Lane County

In scientific parlance, it's called trophic dynamics. But Charley Dewberry, restoration coordinator for the Eugene-based conservation organization Pacific Rivers Council, explains it more simply as "watershed digestion," a concept that is key for long-term recovery of salmon in Oregon.

Beginning in the early 1980s, Dewberry, along with other researchers, began to conduct fish surveys in the lower Siuslaw River in the Oregon Coast Range. "Over the years," says Dewberry, "we found that the more coho salmon there were, the smaller they were. And the fewer the fish, the larger they were, suggesting food limitations." In other words, there seemed to be only enough food in the river system to sustain either a large number of small fish or a few large ones. And with the natural reproduction of coho salmon in the river basin at less than one percent of historic levels, this new-found information suggested that simply restoring habitat without investigating why there was a shortage of organic material to sustain the salmon would not be enough to recover fish populations.

The answer to that question seems to lie largely in how surrounding forest lands are managed, and how that management effects the rivers and streams that flow through those forests.

"A lot of organic matter comes down through the stream channel from the uplands in debris torrents," explains Dewberry. "What I found was that debris torrents differ significantly in managed forests than in old-growth forests." In a properly functioning stream system, these torrents would occur at regular intervals, distributing organic material and nutrients throughout the system, providing fish and other aquatic life with food. But that did not appear to be happening in the Siuslaw basin.

The idea of stream trophic dynamics works something like this: winter flooding would send logs, root wads and other debris careening downstream, eventually jamming up to form debris dams. Like beads on a string, these debris dams would form up and down the stream. Occasionally, high water would break one of these dams, sending organic material downstream. Over time, debris dams would continually form and break causing a relatively constant flow of organic material to pass through the stream system. But,



Oregon

John A. Kitzhaber, M.D., Governor

Department of Human Resources

Health Division

800 NE Oregon Street # 21

Portland, OR 97232-2162

(503) 731-4030 Emergency

(503)

(503)

FAX

TTY-Nonvoice (503) 731-4031

June 5, 1998

Emily Roth
Wildlife Manager, Smith-Bybee Lakes
Metro Parks and Greenspaces
Metro
600 NE Grand Avenue
Portland OR 97232-2162



Re: Your request for review and comment on the 1995 Parametrix screening risk assessment for Smith-Bybee Resource Management Area

Dear Ms. Roth:

This is to respond to your letter of June 3 and to confirm our recent telephone discussions about our position on the safety of fish from Smith and Bybee Lakes within your designated management area. I apologize for failing to ensure that you were advised of our recent conclusions and recommendations to the City of Portland, relative to the 1995 Parametrix report.

We received your voice message of April 20 regarding inclusion of Smith and Bybee Lakes in the City of Portland brochure concerning fish from Columbia Slough. We had not reviewed the fish data from the Parametrix report, but we did so immediately. Based on that review and on our existing data for the lakes, we recommended that reference to Smith and Bybee Lakes not be included in the fish brochure.

Enclosed are copies of our discussion of the contaminant findings.

We do not believe that a fish advisory or warnings about the safety of fish from Smith and Bybee Lakes are warranted. I would be glad to discuss further with you or with your committee.

Sincerely:

Kenneth W. Kauffman, RS
Environmental Toxicology Section, ESC
Oregon Health Division

CC: Duncan Gilroy
Chee Choy, City of Portland
Hilda Adams, Multnomah County Env Health

Assisting People to Become Independent, Healthy and Safe
An Equal Opportunity Employer

TK
Memo: Duncan Gilroy

Re: Smith and Bybee Lakes 1995 Screening Level Risk Assessment report by Parametrix

From: Ken Kauffman

April 22, 1998

Because of the insistence by some departments of the city of Portland that we include Smith and Bybee lakes in our Columbia Slough advisory, I have studied through the 1995 SLRA by Parametrix on the Smith-Bybee Management Area. I have focused specifically on Smith and Bybee Lakes, and more specifically on the fish tissue data in the report. The report is much broader than the lakes, taking in 1784 acres (almost 3 square miles of area), and much broader than the question of fish quality in the lakes. It addresses fish and crayfish quality in parts of Columbia Slough and other water bodies in the same management area. It also evaluates soils, sediments, water, etc. and attempts to assess the additive effects of contaminants in all these media on humans, wildlife, etc.

The data we are concerned with in the lake fish boils down to six composite samples analyzed in 1994. They consisted of two composites each of carp, bass and mixed species from Smith-Bybee Lakes. One of the composites for each species was tested wholebody, and the other was tested as fillet only. Crayfish were tested in parts of the slough but none were found in the lakes. I doubt that this means there are none--they were probably just too difficult to catch.

The assessment report concludes that fish-eating poses moderate, long-term hazards due to the presence of PCB's. It ranks the lakes as lowest priority of the waterbodies in the study area, in terms of degree and kind of risks to humans and the environment. This conclusion is based on the finding of 254 ppb Aroclor 1260 in the wholebody carp composite sample. The wholebody bass and mixed species, as well as the three fillet samples are all reported as nondetect for Aroclors. This gives us a single data point for PCB in fish tissue. If we calculate the mean PCB level for the six composites, using half the DL (87 ppb), the mean level comes down to only 79 ppb. EPA's recommended screening value for PCB in fish tissue is 0.01 ppm or 10 ppb. The one Smith-Bybee sample exceeds this by 25.4X. Even if we use the lower figure, the screen level is exceeded by a factor of almost 8X.

We have discussed the PCB and fish problem a number of times, but I don't think we have ever ~~decided~~ exactly what our advisory criteria ought to be for PCB's. The 254 ppb is in the ballpark of the 380 ppb level that Cathy Neumann used in calculating the existing Columbia Slough advisory. The calculated mean value of 79 ppb is quite a lot lower but still well within an order of magnitude.

We have discussed the fact that marine market fish have PCB loads ranging up to the FDA market limit of 1000 ppb, and a good share of them are above 10 ppb. Levels in Smith and Bybee lakes fall within this lower range of market fish.

over

I have compared all of the other organic and metal findings from the Parametrix report, and none of them come near fish advisory screen levels except for PCB. (Arsenic is noted in the Parametrix report as the second chemical of human health significance, but apparently the conclusion comes from soil, sediment and water exposure assessments, because there are no arsenic in fish tissue in the Parametrix report. They report nondetect for all samples and a DL of 0.1 ppb. The EPA screen value for arsenic in fish tissue is 10 ppm.

For these reasons, I don't think we should propose a fish advisory for these lakes:

1. The PCB data is too scanty (six composite samples and only one "hit");
2. The PCB data is too uncertain (detection limits and quantification limits are too near the one reported finding. (DL=87, PQL= 270; and findings 254 ppb with five ND's) ;
3. The EPA screen value of 10 ppb is based on cancer slope alone, assuming lifetime risk and protection equal to or less than one in a million. Are we ready to go with it for this ubiquitous compound?
4. Market fish and other meat products that a person might turn to as alternatives to eating these sport fish probably have PCB levels similar to, and in some cases much higher than 10 ppb.

I haven't reported this to Emily Roth or anyone else yet. Should we discuss it?

cc: Ron Hall