Eel Recovery Notes [11/17/04] & Contaminant Summary [06/19/05], For Eels Killed Out-Migrating Through Benton Falls Dam.

Ed Friedman, Friends of Merrymeeting Bay

After going to a BEP Hearing in the am I went up to Benton Falls to see if I could recover any eels for contaminants testing. [Deputy DEP Commissioner had assured BEP folks that the run was over and that they would take care of the problem by next season.]. Walking out to the gravel bar several hundred yards below the dam in chest waders, I worked the eddy and recovered 17 eels in various stages of decay from alive but dying, to gross old remnants. Totals: 1 alive, not severed but hemorrhaging from aft end; 3 that were probably 1-3 days old; 3 that were probably 3-5 days; and 10 that were older than a week with 3 of those being reduced to mostly skin or mush.

Photographed all in situ and took the 6 best ones with me for possible contaminant testing putting the rest back in the river. Doug Watts has seen multiple eagles feeding on dead eels at this site. Thus, long sequestered toxins are reintroduced into the food chain, often right to the top. When I left, I stopped to photograph the river section from above, near the road headed south and met Murray Carpenter from Northern Sky News. He is doing a story on this and photographed me with two of the eels back down by the river. Should be out a week from Friday.

Stopped at DMR on the way home and eels were inspected by Tom Squiers, Jason Bartlett, Nate Gray, Judy Moody, and Skip?. The average weight on these eels was close to 3 lbs. each with the live one being noticeably lighter at 2 lbs. 12 oz. [perhaps how she slipped through in one piece]. Lengths were in the 750mm range. Eels packaged in heavy aluminum foil wrap over original light foil and then double bagged in plastic and in my chest freezer.

I was actually in the river for about 45 minutes. Arrived at parking area about noon and left site at 1:20. Weather conditions were sunny, clear and warm with temperatures estimated in the upper 50s. Eels were scooped up with large dip net. Did not investigate tailrace or any other area than along the bank on the walk down to the eddy. One old dried eel was found on the bank. There was one bald eagle perched in a tree just downstream for most of the time I was in the river. It then took off and was soaring low between the dam and me as though hunting or scouting.

Eel weights:
1. 3lb 4oz
2. 2lb 15oz
3. 3lb 1oz
4. 3lb 2oz
5. 3lb 3oz
6. 2lb 12oz [live-internal injuries, not severed][to taxidermist]

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Late December 2004. Bodies sent to Terry Wade at Texas A&M for Contaminant Analysis, Heads to Ken Oliveira at UMASS Dartmouth for Ageing. Received data mid May and early June of 2005. See Spreadsheet for data and narrative for QA/QC.

Conclusions. 6/19/05

Eels were all females and mostly in their early 20s. Fish Tissue Action Levels [FTALs] are the levels at which the Maine State Toxicologist is likely to promulgate fish consumption advisories based on tissue contaminant levels. For most compounds there are cancer and non-cancer levels [a lower number and higher number respectively]. These numbers describe the contaminant level for which the Maine Bureau of Public Health's acceptable risk standards [whether 1 in a 1000, or 10,000, or 1,000,000] are exceeded based on a certain dietary intake. For PCBs as an example, the FTAL for cancer is 11 parts per billion [ppb] but for non-cancer medical problems the FTAL of concern rises to 43 ppb. With one exception the sample eels had levels well into the hundreds. FTALs are issued in weight wet and Texas A&M reported levels in dry weight. For PCB levels, I have converted dry weight to wet weight [ww].

Highlighted on the spreadsheet are some of the compounds present at elevated levels for which the state does have published FTALs [PCBs and Dieldrin for example]. Others, including the DDT breakdown products, Maine has no FTALs for and they are not shaded though they appear elevated. Also shaded are the World Health Organization' s [WHO] list of most toxic PCB congeners, their *Chlorination Levels* [CL] and which ones are considered *Planers*. These are the worst of the worst and are chemically most similar to dioxins.

Interestingly, eel # 1 is the youngest of the samples and as expected has the smallest PCB body burden yet is highest in mercury. This may reflect both age [does not have the bio-accumulation of the older eels] and diet [it may have a substantially different diet, one higher in mercury.

There is a great deal of information about the American eel and its plight to be found in this "cybrary" section of the FOMB web site. To summarize here for those new to the issue:
1. Eel populations are declining drastically across their range.
2. A lack of up and downstream passage around hydroelectric dams is likely a major contributor to this decline and a body burden of contaminants may be as well.
3. Dams have been hardened up in the last 20 years and often what was once stone and timber cribwork and fairly permeable to a young elvers migrating upstream is now an impermeable concrete face with the turbine or penstock providing the only through route.
4. When the eels migrate to the Sargasso Sea for their once in a lifetime spawning run the only way through nearly every dam in Maine is through the whirring blades of the turbine hole where if the blades don't kill them the pressure change may.
5. Safe downstream passage may be obtained by either shutting down the dam during night hours for the fall migration season or through the use of an eel excluder over the turbine intake in combination with a deep gate passage [at the river bottom] through the dam. Currently in Maine, Damariscotta Mills shuts down at night and Cobbeseecontee in Gardiner has installed an excluder and opens a deep gate. Both facilities are owned by Ridgewood Hydro and are the only Maine dams providing safe passage.
6. Multiple eagles have been observed feeding on dead eels at the Benton Falls site. Thus, long sequestered toxins are reintroduced into the food chain, often right to the top where bioaccumulation and magnification are already major issues.

7. Doug and Tim Watts wrote and filed a petition in the fall of 2004 formally requesting that the American eel be placed on the endangered species list. A petition for species listing starts a formal process of evaluation [supposedly within a set time period] by the US Fish and Wildlife Service [USFWS] and cooperating agencies [in this case the National Marine Fisheries Service –NMFS- part of the National Oceanic and Atmospheric Agency –NOAA. As of 06/19/05 the Petition has been reviewed by the Northeast region of USFWS and forwarded to the national office in Washington, D.C.