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Testimony of Rose Paul, Director of Critical Lands and Conservation Science

Why are Lake Champlain tributary fauna special?

History of ancient connection to Mississippi River watershed

- Rare species not found elsewhere in New England; we are at the western edge of their range
- 12 species of mussels are found in our lower LC rivers, 7 of which are either rare or endangered, and population surveys show they are declining; mussels are sensitive to TFM and Bayluscide chemicals at just above the killing threshold for sea lamprey; zebra mussels have overwhelmed their habitat in bays, leaving the lower rivers as the last refuges for them (zm don't do well in flowing waters)
- More than 6 species of fish are sensitive to TFM, including the rare fish: Stonecats (endangered); Channel Darters (endangered); northern brook lamprey (endangered) American brook lamprey (threatened), silver lamprey (not considered rare), young of the year Lake Sturgeon(endangered)
- Mudpuppies are another edge of range species, an aquatic salamander, considered rare and a species of greatest conservation need in Vermont. Mudpuppies mature at 6 years of age. If streams are treated every 4 years, will there be any mudpuppies left?
- Species on edge of range can offer genetic diversity that may be important in times of population pressure such as climate change may pose.
- Some of these species are declining in the Great Lakes with an over 50 year history of lampricide treatment: mudpuppies, silver lamprey, channel darter.

The sea lamprey is most likely a native fish in lake champlain, and its abundance in the 20th century is due to its prey fish being artificially abundant through stocking (Dr. Ross Bell, UVM, letter to End Spp Comm on August 21, 2001.)

Ellen Marsden et al, Journ. Great Lakes Research 2003 published paper –the experimental program ran from 1990-1998, 24 TFM treatments on 13 tributary systems, most received 2 treatments each 4 years apart. Summarizing the 8 year experimental treatment program: overharvesting and dams adversely affected lake trout and Atlantic salmon; it is uncertain whether sea lamprey were a factor in their decline. Lake trout extirpated by late 1800, none found in surveys between 1928 & 1953. Stocking began in 1973 from a Seneca Lake strain. Sporadic

atlantic salmon stocking began in 1962 (doesn't say when they were extirpated.) Hatchery fish which haven't learned to elude predators may have fed the sea lamprey population. Summary of some nontarget mortalities from this paper:

	# killed	# trtmts w/over 50 mortalities
American brook lamprey	40,851	5
Silver lamprey	8,619	
Northern Brook lamprey	209	
Stonecat	6,730	6
Log perch	1,057	3
Mudpuppy	1,923	3

But in these 8 years, there was no treatment of the Missisquoi, Lamoille or LaPlatte rivers with many rare fish and mudpuppies.

In October 2-3, 2009 a post-TFM treatment of non-target mortality assessment of the Lamoille River was conducted just below the lowest dam, the Peterson Dam, down to the lake, the treated area. Over 500 dead mudpuppies were collected representing multiple age classes. This caught the attention of amphibian biologists because it was a much bigger kill than had happened in various past treatments.

Fall 2000 lampricide treatment from Great Chazy River, NY, Alvin Breisch, NYS DEC
69 mudpuppies collected, plus 193 2-lined salamanders and 124 frog tadpoles (several spp.)

Sept 1996: 25 mudpuppies killed in Great Chazy River, NY

Sept 1999: 185 mudpuppies killed in the Ausable River, NY after TFM treatment

In the Winooski River treatment of October 2004, 26 dead juvenile Mudpuppies were found in the 5-30% of the river sections where visibility was adequate to survey. (Jim Andrews memo on behalf of VT Reptile and Amphibian Scientific Advisory Group to the Endangered Species Committee. The Sci Adv Group on Reptiles and Amphibians recommended that the permit application to treat the Winooski River be denied because the **"Fish and Wildlife Dept has not provided information that was requested by the ESC early this year consisting of a chart showing non-target and target mortality along with concentrations of TFM measured in both methods from all previous treatments."**

What is the long-term plan for lamprey control?

- Pesticides forever? Is there the possibility that an Integrated Pest Management approach can be used when sea lamprey populations are stably reduced?
- Raking nests was dismissed in early 2000s, but people need jobs and it cost the public \$8.5 million dollars to run the chemical treatment program for 8 years. Is nest raking or some other innovative form of control feasible when there are fewer lamprey?