

Field Name	Field Value
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Web_Address	
Renewal	No
Permit_Number	<b>2010-010</b>
Activity	Research
Project	Biochemical markers in fish as indicators of ecosystem health
Dates	May 31st - July 31st
Group_Size	5
Research_Area	No
Sensitive_Area	Yes
Bath_Pond	Yes
North_Fork	Yes
Tamarack_Bog	Yes
Other_Areas	Yes
Panzner_Wetlands	Yes
Building	No
Prep_Work	
Sampling_Collecting	Yes
Sampling_Methods	Fish will be collected from the stream through electroshocking. They will be euthanized with an overdose of MS-222. Forty specimens will be removed from each stream and any bycatch will be returned.
Description	Recently, ecotoxicologists have established molecular tools to assess stream water quality. These include various molecular and physiological measurements in fish. I will measure these parameters in fish from Bath Creek and North Fork. Bath creek is a recently restored and therefore disturbed stream, and North fork is a high quality stream. Comparing fat content and enzyme levels will indicate relative habitat quality in these streams. Species being considered for capture, euthanasia, and testing are the Northern Fathead Minnow, the Creek Chub, the Stoneroller Minnow, and the Bluntnose Minnow. Only one species will be examined and 40 specimens will be removed from each stream. Fish will be collected via electroshocking and euthanized with an overdose of MS-222. By-catch will be returned to the stream after recovery. An alternative back up comparison to Bath Creek and North Fork will be between Pazner

	Wetlands and Tamarack Bog/Wetland. Central Mudminnows would be used in this comparison and the same sample size and euthanasia procedure would be used.
Agreement	Accept