

QUINNIPIAC RIVER FUND FINAL REPORT- 2019

Please complete and submit completed form via e-mail to dcanning@cfgnh.org at The Community Foundation for Greater New Haven by March 31, 2020 (or as otherwise stated on the terms of grant).

Date: 1/12/21

Group/Organization Name: Yale School of the Environment

Address: 195 Prospect Street

City, State, & Zip: New Haven, CT 06511

Telephone #: 203-432-5139

Project Name: Mercury in Ponds of the Quinnipiac River Watershed

Grant Number: 20190123

Name & title of person completing this form: Gaboury Benoit, Grinstein Class of 1954
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Please respond to the following statements:

1. List the specific objectives/outcomes of the project and tell how they were met during the grant period. Also, provide an update on any special conditions of the grant (if applicable).

Mercury (Hg) is perhaps the most toxic and widespread contaminant found in the global environment. Based on our past research supported by the Quinnipiac River Fund, we know that this metal is ubiquitous in the river system and occurs significantly in the worst bioavailable form, methyl mercury. There is also at least one legacy point source (on Wharton Brook) that continues to cause exceedingly elevated levels of Hg downstream at least as far as the main stem of the river. The project measured Hg in bottom sediments and in fish from ponds spanning the

river's watershed to see where it exceeds safety thresholds. These analyses have the immediate practical utility of assessing whether and where fish advisories should continue. They are also useful in understanding underlying biogeochemical cycling of Hg. This information can help watershed managers to take measures to limit human exposure to this toxic substance. Our work will add to the sparse record of Hg in the fish from Connecticut waters, the last systematic survey of which was conducted 10 years ago.

We have sampled ponds in all of the tributaries of the Quinnipiac River and in upper and lower portions of the main watershed as well, a total of 10 sub-regions. We succeeded in collecting sediments from 29 named ponds and captured fish from 21 of them, meeting our projected goals. Mercury measurements were completed on all these samples revealing levels above the EPA action limit of 300 ppb in many cases. Two long cores are being dated via ^{210}Pb to evaluate Hg over time. With this final task we achieve all goals proposed for the project.

2. Please share your successes, challenges and any lessons learned through the implementation of your project. Were there any unintended consequences or lessons learned that may affect how you operate your program moving forward?

Sampling fish is extremely difficult in two ways. First, because they are vertebrates, an extremely high level of institutional care is demanded in any research. Second, catching fish is a difficult kind of sampling!

3. What are the opportunities and needs of your organization as it continues to move forward with its work to positively impact the Quinnipiac River?

We expected that mercury levels in fish in the region might be low because of many years of restrictions on emissions of coal fired power plants. We found that none of the fish that we tested exceeded the EPA's advisory level (300 ppb), but that many were very close.

Eventually we might want to extend this investigation, perhaps partnering with anglers to test fish that are actually being eaten.

Also, please email a photo or image that can be uploaded along with your report to The Quinnipiac River Fund website to dcanning@cfgnh.org.

Mercury in Fish Muscle

