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A simple protocol for sampling environmental DNA from flowing waters at remote field sites

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Protocol status: Working

We use this protocol and it's working

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Keywords: eDNA, field filtration, self-desiccating filters, filter housing, bleach, storage, Smith-Root eDNA Citizen Scientist Sampler, rivers, weirs, sonar, counting towers, fish, aquatic, sampling environmental dna, abundance of salmon spawner, standardized edna sample collection, salmon escapement assessment site, waters at remote field site, involving edna sample collection, duplicate samples of river water, salmon spawner, edna sampling, edna sample collection, waters at remote site, environmental dna, boreal rivers in the arctic, potential contamination in sample, contamination at site, edna sample, edna quantification, sampling frequency, sample collection, potential contamination, contamination, several months at remote field camp, target species that same day, remote field camp, river water, dna, sample, abundance, boreal river, duplicate sample, river

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Disclaimer

This protocol was designed for and tested in nonglacial rivers in Alaska.

Abstract

We developed this protocol in 2021 to for standardized eDNA sample collection at salmon escapement assessment sites in non-glacial, boreal rivers in the Arctic-Yukon-Kuskokwim Region of Alaska. The protocol is designed to allow researchers without any prior training in molecular techniques to collect eDNA samples and store them for up to several months at remote field camps without access to freezers or refrigeration. The protocol is also designed to minimize contamination at sites where eDNA sampling is conducted by personnel who may have also handled the target species that same day. We designed and implemented this protocol as part of a research project that tested eDNA quantification as a potential approach to estimating the abundance of salmon spawners in rivers. However, the protocol is flexible and could be applied in other projects involving eDNA sample collection from flowing waters at remote sites. We filtered duplicate samples of river water once daily and collected a weekly field blank to assess potential contamination in samples. The levels of replication and sampling frequency can be adjusted to fit the research question as well as budgetary and logistical constraints of the project

Attachments



eDNA Citizen Scienti...

1.1MB

Image Attribution

Dr. Erik Schoen, University of Alaska Fairbanks



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