



**KENAI  
WATERSHED  
FORUM**

## Environmental DNA Project

### **Kenai Watershed Forum**

44129 Sterling Highway  
Soldotna, AK 99669  
(907) 260-5449  
[www.kenaiwatershed.org](http://www.kenaiwatershed.org)

**Project:** Environmental DNA to address invasive species  
**USFWS Cooperative Agreement Award Number:** F16AC00877  
**Reporting Period:** June 1, 2016 – December 31, 2018  
**Report Date:** December 2018  
**Completed By:** Jennifer Hester, Kenai Watershed Forum

The purpose of this agreement is to: analyze water samples for noxious and invasive species utilizing environmental DNA.

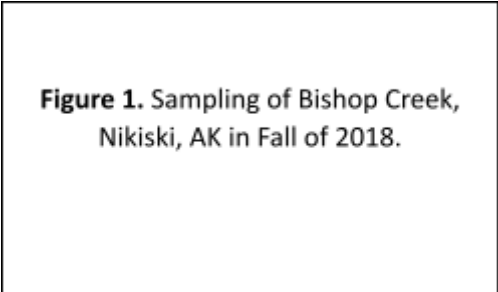
## Goals & Objectives

Attain the objectives & achieve the outcome measures as outlines within the attached project description:

- a. Determine sampling locations & acquire permits
- b. Sample for the presence of noxious & invasive species
- c. Organize data & submit findings to ADF&G, AKEPIC & KPFHP
- d. Create an instructional video

## Overview of Work Accomplished During Reporting Period

- a. In fall of 2017 the Kenai Watershed Forum assisted ADF&G with pike eDNA sampling to test filter types, field sampling procedures, electrophoresis in house verses sent to USFWS. The results from this study concluded that the electrophoresis through the USFWS lab is preferred, along with the in-field filtering backpack unit was not suitable for the water bodies sampled. The equipment experienced mechanical difficulties and clogging. The preferred method based on this study was to gather water samples, bring the samples back to the lab to be filtered utilizing cellulose or microfiber. The filter size used for pike was of a higher dimension than that used for elodea.
- b. The marker for elodea is not validated as of December 2018 by the USFWS genetics lab in Anchorage. The KWF is assisting the genetics lab with the validation by completing a field survey of water samples taken from the North/South Lakes where elodea is present. The sample design created by the USFWS genetics lab is straightforward: immediately



**Figure 1.** Sampling of Bishop Creek, Nikiski, AK in Fall of 2018.

next to elodea a 1L water sample & replicate need to be taken. Samples taken with repeats at 2m increments are then filtered and sent to the genetics lab. With every ten samples, a blank of distilled water brought into the field also needs to be filtered & tested. In the fall of 2018 the 4 markers that were developed are in field validation status at Fort. Wainwright in a gravel pit to examine the distance and seasonality of detection. The KWF will add to the validation process after the Ft. Wainwright study is complete, the filters can remain frozen until the genetics lab is ready for the next step in the validation process.

- c. Sampling in the Nikiski area occurred in the Fall of 2018. Seven sites were chosen. These samples will not get processed until the marker is validated, but will remain frozen and viable until that point in time. Upon completion of the marker's validation and the testing of the eDNA sites from Nikiski, a final report will be completed and a presentation at Alaska Committee on Noxious and Invasive Plant Management will be given (projected for Fall 2019).

**Figure 2.** The seven sites in Nikiski sampled in Fall 2018.

- d. Video recording of the field sampling & laboratory processing were filmed in the Fall of 2018. The outreach coordinator, Katrina Liebich, with USFWS offered assistance with the footage. Utilizing the footage from the KWF, this collaboration will allow for a higher quality production and incorporate USFWS footage of fisheries and watersheds.

