

Environmental DNA (eDNA) Sampling for Fisheries



Stream water is pumped through a filter which is then analyzed for DNA from the species of interest.

Environmental DNA (eDNA) is an emerging technique to efficiently and effectively sample for the presence of fish species in streams and rivers. eDNA is DNA that animals leave behind in water as they move through it.

Water samples are collected from streams of interest, filtered, and then analyzed for the presence of the target species' DNA. This method is less invasive, less costly, and likely more effective than traditional approaches to studying

fish presence. With eDNA sampling, fisheries scientists can map the location of endangered salmon or monitor their migration over time and make more informed management decisions.

Project Experience

Mapping Salmon Distribution, Payette National Forest, ID

Endangered Species Act-listed salmon and trout use the Big Creek drainage in Idaho for migration and spawning, but there is limited data on the full upstream extent of their migration. Hart Crowser designed and implemented a study to use eDNA to map the distribution of four salmon and trout species in three creeks and their tributaries. Hart Crowser biologists hiked to remote mountainous streams to collect samples for eDNA analysis and used the results to map species presence. This information can be used to prioritize Best Management Practices such as fish passage improvements.

Eulachon Migration Timing, Columbia River, OR and WA

Eulachon, a threatened smelt species, migrate from the ocean up the Columbia River to spawn, much like salmon. However, the timing of this upstream migration is not well known; state in-water work windows established to protect salmonids do not account for these recently listed fish. To address concerns about when in-water work should be conducted, Hart Crowser has partnered with Oregon State University to implement a study using eDNA to investigate the timing of the eulachon migration. Our biologists are regularly sampling transects at crucial locations in the river for presence of eulachon DNA. These eDNA results are being used to define the temporal and physical distribution of eulachon to support permitting and operations by the Port of Portland.

