

LORING AIR FORCE BASE OPERABLE UNIT 13 REMEDIAL INVESTIGATION MONITORING – FISHERIES STUDIES

Client: U.S. Air Force and MWH Americas, Inc.

AS PART OF OPERABLE UNIT 13 REMEDIAL INVESTIGATION AND ENVIRONMENTAL RESTORATION at the former Loring Air Force Base in northern Maine, Woodlot has conducted remedial investigation and restoration support since 1993. Biota sampling and analysis has included extensive fish tissue sampling, macroinvertebrate tissue sampling, rock basket sampling, Rapid Bioassessment Protocol sampling and other natural community mapping surveys to evaluate risks to humans and ecological receptors.

Following the RI/FS and removal of 100,000 cubic yards of sediments containing PCBs, pesticides, PAHs, TPH and metals from a high-value brook trout stream and floodplain wetland, Woodlot conducted biological monitoring to evaluate contaminant concentrations in surface water, sediment, and biota in streams, ponds, lakes, and wetlands on and immediately surrounding the former Base as well as background sampling locations. Specifically, Woodlot has performed:

- Fish tissue sampling for laboratory analysis;
- Dragonfly nymph tissue sampling for laboratory analysis;
- Rock Basket and RBP Level III surveys for water quality evaluations;



Brook trout were measured, aged, sexed, and retained for sampling and analysis.



Woodlot staff employed several fish survey methods at Loring, including electrofishing from boats, backpack electrofishing, and gill netting.

- Surface water sampling for laboratory analysis;
- Sediment sampling for laboratory analysis; and
- Erosion surveys of PCB containment areas.

Woodlot conducted electrofishing surveys in several streams and water bodies on the site, with the goal of identifying fish populations and collecting brook trout tissue samples for laboratory analysis. Backpack and boat electrofishing units and gill nets were used to collect fish samples.

Each brook trout submitted for laboratory analysis was measured, sexed, and aged in the field using length and weight curves compiled with data provided by the Maine Department of Inland Fisheries and Wildlife. This method provided an estimate of the age of each fish submitted. To more accurately age each brook trout, Woodlot also examined scale samples and an age class was assigned to each individual sample.

After collection, fish tissue samples were filleted. Fillet and offal samples were prepared following sampling QA/QC procedures and were delivered to the lab for PCB and pesticide analysis.

Other biota sampling included dragonfly nymph tissue collection from the study area to confirm the contaminant pathway conceptual model. These data confirmed that contaminants of concern bioaccumulate in dragonfly nymphs. Brook trout then ingest the dragonfly nymphs and the contaminants of concern bioaccumulate in the higher trophic levels in the food chain.

Other accomplishments by Woodlot as part of this project include determining regional background PCB and pesticide concentrations in the Aroostook River watershed, biota sediment accumulation modeling, and determining human health contaminant action levels using background concentrations, site-specific risk assessments, and Maine Bureau of Health criteria.