

# SAMPLING PLAN: FIELD COLLECTION OF AMMOCOETES FOR PACIFIC LAMPREY TOXICITY STUDY

PREPARED BY STRATUS CONSULTING  
FOR THE  
PORTLAND HARBOR  
NATURAL RESOURCE TRUSTEE COUNCIL



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# **Sampling Plan: Field Collection of Ammocoetes for Pacific Lamprey Toxicity Study**

*Prepared for:*

Portland Harbor Natural Resource Trustee Council  
Confederated Tribes of the Warm Springs Reservation of Oregon  
Nez Perce Tribe  
Confederated Tribes of Siletz Indians  
Confederated Tribes of the Umatilla Indian Reservation  
Confederated Tribes of the Grand Ronde Community of Oregon  
National Oceanic and Atmospheric Administration  
Oregon Department of Fish and Wildlife  
U.S. Department of the Interior

*Prepared by:*

Stratus Consulting Inc.  
PO Box 4059  
Boulder, CO 80306-4059  
303-381-8000

*Contacts:*

Jeff Morris  
Jennifer Peers  
Joshua Lipton

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# 1. Introduction

This Sampling Plan<sup>1</sup> describes objectives and procedures for the collection of Pacific lamprey ammocoetes (PLAs) from the Siletz River (SR), Oregon. This collection is being performed under the aegis of the Portland Harbor Natural Resource Trustee Council (the Trustee Council) as part of a study of the potential toxicity of sediments in the Portland Harbor Study Area (PHSA) to PLAs. This plan only addresses the collection of ammocoetes. The collection of sediments is addressed in the *Sampling Plan: Field Collection of Sediments for Pacific Lamprey Toxicity Study* (Stratus Consulting, 2011b) and the analytical methods for the toxicity testing are addressed in the *Portland Harbor Pacific Lamprey Ammocoete Study: Laboratory Testing Plan* (Stratus Consulting, 2011a).

## 1.1 Background

Contaminants such as chlorinated hydrocarbons, petroleum-related compounds, metals, and other hazardous substances have been released from various sources and have come to be located in Portland Harbor (the Harbor) sediments. Many of these compounds are elevated in the Harbor compared to upstream locations. Sediments from specific areas in the Harbor have demonstrated toxicity to benthic invertebrates, and sediment-associated biota and fish collected from the area have accumulated contaminants (Windward Environmental, 2009). Habitat in the Harbor may be an important resting and foraging area for PLAs as they transition to the lower Columbia River and prepare for their marine life stage. PLAs collected from the Harbor have been found to contain higher concentrations of some organochlorine compounds than PLAs collected upstream (Integral Consulting and Windward Environmental, 2007).

The Trustee Council is evaluating potential natural resource injuries to PLAs. Insufficient information is available to determine if contaminant exposures to PLAs exceed concentrations which could cause injuries to or prevent colonization of the Harbor by PLAs. In addition, restoration efforts for PLAs could be more successful if sediment toxicity to the species were better understood.

The toxicity of contaminated sediments collected from within the PHSA to PLAs will be evaluated through multiple laboratory experiments. PLAs collected from the SR will be used to test PLA sensitivity to contaminated PHSA sediments by exposing PLAs to sediment collected from the PHSA and to reference and (or) control sediments.

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1. A previous draft of this plan, dated July 21, 2010, was used in the field. This revised version has been edited to clarify references to other project documents.

The testing facility for this study will be the Fish Performance and Genetics Laboratory (FPGL), 34349 Electric Road North, Corvallis, OR 97331. The FPGL is operated by the Oregon State University (OSU) Department of Fisheries and Wildlife – U.S. Geological Survey Cooperative Fish and Wildlife Research Unit. PLAs collected under this plan will be transported to the FPGL.

## **1.2 Objectives**

The purpose of the activity described in this Sampling Plan is to collect PLAs for use in toxicity evaluations to be conducted in the summer of 2010.

## **1.3 Document Organization**

Section 2 of this plan addresses project organization. The approach to sampling is presented in Section 3. Sample collection methods and quality assurance procedures are provided in Section 4.

# **2. Project Organization**

## **2.1 Team Organization and Responsibilities**

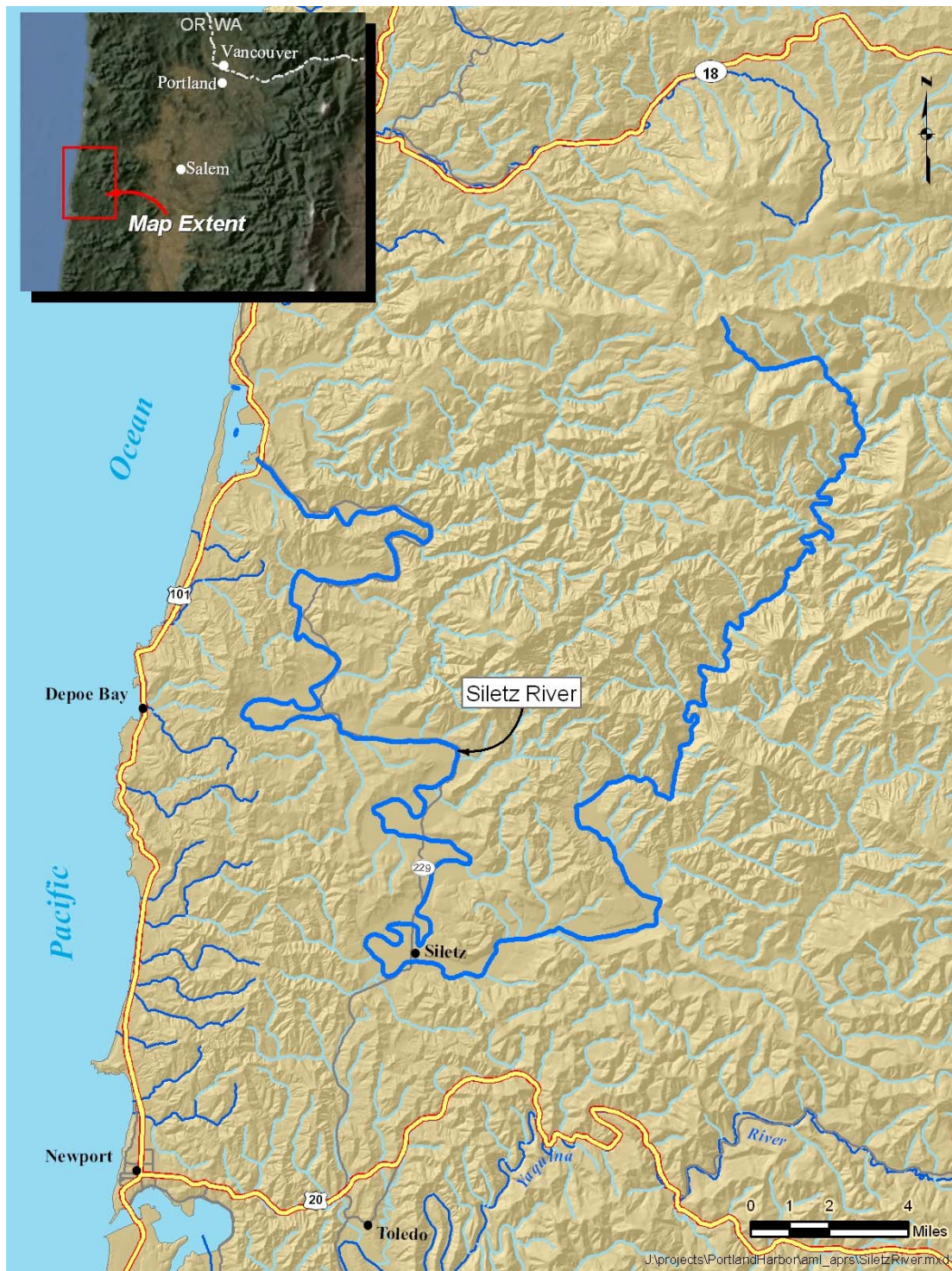
This collection will be conducted by the Aquatic Program Leader of the Confederated Tribes of Siletz Indians, Stan van de Wetering (Field Study Coordinator), and his staff. The Field Study Coordinator will also manage health and safety according to usual procedures for the Aquatic Program. The Study Coordinator, Jeff Morris with Stratus Consulting, will coordinate the collection effort and the transfer of ammocoetes to the laboratory at which toxicity tests are being performed (the FPGL; see Section 1.1).

## **2.2 Project Schedule**

Field sampling will occur during the summer of 2010; specific timing will depend on the weather and field crew availability.

# **3. Sampling Approach**

PLAs will be collected from the SR near Siletz, Oregon (Figure 1). PLA collection will be conducted by employees of the Siletz and Grand Ronde Tribes pursuant to sampling procedures previously developed and used by the Siletz Tribe.



**Figure 1. Siletz River, Oregon.**

## **4. Ammocoete Collection Procedures**

### **4.1 Ammocoete Collection**

Approximately 400 PLAs will be collected from clean reference locations in the mainstem of the SR near Siletz, Oregon. Sampling locations will be selected in the field by the Field Study Coordinator based on his expertise. PLAs will be collected from substrate using electroshocking techniques. The preferred size range of PLAs to be retained for this study will be 80–95 millimeters. However, PLAs outside of this size range may be retained for study.

### **4.2 Collection Documentation**

The field sampling team will document its sampling activities in a dedicated bound notebook. Field notebooks will be maintained as follows:

- ▶ Entries will be made in indelible, dark waterproof ink.
- ▶ Entries will be made while activities are in progress or as soon afterward as practical.
- ▶ Entries for each sampling site will be made on a new, blank page.
- ▶ The individual recording the information must initial and date each page of the notebook. If more than one individual makes entries, each must initial and date the page.
- ▶ Corrections will be made with a single line through the correction, so that the original text is legible, with the corrector's initials.
- ▶ This notebook will remain in the possession of the Field Study Coordinator (or other responsible individual if the Field Study Coordinator is not on site), or in a secure location at all times.
- ▶ At the conclusion of field work, all original files and documents will be stored at Stratus Consulting Inc., 1881 9th Street, Suite 201, Boulder, CO 80302.

The type of information that is anticipated to be included in the field notebook includes:

- ▶ Names of all field personnel
- ▶ Locations of collection
- ▶ Dates and times (based on a 24-hour clock) of the initiation of collection

- ▶ Approximate number of ammocoetes collected
- ▶ Record of any photographs taken, including photograph number, date, time, orientation, and a description of the subject (on a separate page)
- ▶ Weather conditions and other observations (if relevant)
- ▶ Any length/weight measurements collected from the population (if taken)
- ▶ Any deviations from this Sampling Plan.

### 4.3 Equipment and Supplies

Equipment and supplies will include all equipment necessary for collection and transport of ammocoetes, notebooks, safety equipment, and personal gear.

### 4.4 Holding and Transportation

Ammocoetes will be transported in aerated buckets or coolers with 1–2 inches of field sediment while in route to holding tanks at either the Lhuuke Illahee Fish Hatchery on the SR or the FPGL at OSU. At either facility, ammocoetes will be held in large circular tanks with at least 6 inches of substrate. The substrate in the holding tanks will be a mixture of wood chips and masonry sand, and the tanks will be supplied with a constant flow of well water or pond-conditioned well water from either facility.

## References

Integral Consulting and Windward Environmental. 2007. Portland Harbor RI/FS Round 3 Sampling for Lamprey (*Lampetra* sp.) Tissue Data Report. Draft. Prepared for the Lower Willamette Group by Integral Consulting Inc. and Windward Environmental LLC. August 24.

Stratus Consulting. 2011a. *Portland Harbor Pacific Lamprey Ammocoete Study: Laboratory Testing Plan*. Prepared for the Portland Harbor Natural Resource Trustee Council. Stratus Consulting Inc., Boulder, CO. January 28.

Stratus Consulting. 2011b. *Sampling Plan: Field Collection of Sediments for Pacific Lamprey Toxicity Study*. Prepared for the Portland Harbor Natural Resource Trustee Council. Stratus Consulting Inc., Boulder, CO. January 28.

Windward Environmental. 2009. Portland Harbor Remedial Investigation Appendix G. Baseline Ecological Risk Assessment. Draft under review by the U.S. Environmental Protection Agency. Prepared for the Lower Willamette Group by Windward Environmental LLC.