



# COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION

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U.S. Army Corp of Engineers  
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Michele Dehart, [MDehart@fpc.org](mailto:MDehart@fpc.org)  
Manager  
Fish Passage Center  
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Dear John Day Dam Operations Manager and Fish Passage Center Manager:

The Columbia River Inter-Tribal Fish Commission (CRITFC) is requesting approval for John Day Dam (JDA) Smolt Monitoring Program (SMP) project staff, in coordination with the U.S. Army Corps of Engineers (USACE), to collect non-lethal tissue samples for genetic analysis from a representative sample of approximately 1,000 juvenile and 500 larval Pacific lamprey at the JDA SMP facility (see attached proposal) during routine condition monitoring from March through September 2021 (study proposal enclosed).

Genetic analysis of tissues from out-migrating juvenile lamprey provides critical information for monitoring and evaluation of tribal lamprey translocation programs. In addition, these samples allow further refinement of lamprey life history attributes in the Columbia River basin including length at age, age at metamorphosis and outmigration, differential growth among natal rearing sites, and tributary of origin. This information will be critical in developing an effective research, monitoring and evaluation program for translocation and artificial propagation, strategies that the tribes have been utilizing to boost abundance of this species. This information is therefore key to determining the efficacy of management of this species and may also be used to adaptively manage various restoration and conservation actions.

Sample protocol:

A non-lethal fin clip (1-2 mm diameter) will be collected from already anesthetized lamprey after the condition monitoring is complete (additional 5-10 seconds of fish handling). Once sampled, the fish will be immediately returned to the SMP recovery tank. The tissue will be stored dry on Whatman paper and does not require any additional solutions or chemicals.

Due to COVID restrictions, CRITFC staff will not access the JDA SMF unless pre-approved. Instead, supplies will be shipped to the facility and genetic samples will be shipped back to CRITFC (at CRITFC's expense).

The following CRITFC staff may occasionally assist with the project (provide instructions and supplies, pick up genetic samples):

- Greg Silver

Enclosed in this letter is a statement (where applicable) of the project work plans, project impact statements, project funding, MSDS statement, permits, list of authorized vehicles, activity and job hazard analysis, and a job safety report for the proposed work.

The CRITFC point of contact is Greg Silver. If you require any further information or have any questions, please do not hesitate to contact Greg Silver at (503) 731-1297.

Sincerely,



Jaime A. Pinkham  
Executive Director

Enclosures

Cc: Rick Martinson, PSMFC, Supervisory Fisheries Biologist, Smolt Monitoring, John Day and Bonneville dams, [rickd@gorge.net](mailto:rickd@gorge.net)  
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Enclosure:

**PROJECT WORK PLAN:** There will not be any installations requiring electrical or mechanical devices. The plan involves handling lamprey at the Smolt Monitoring Facility only. The schedule is TBD.

**PROJECT IMPACT STATEMENT:** I do not foresee any effects that this work may have on the normal project operations and maintenance.

**JOB HAZARD SAFETY ANALYSIS:** CRITFC staff will wear the proper safety equipment while conducting work activities at the JDD SMP. CRITFC staff will use handrails on stairs to avoid falls. CRITFC staff will wear appropriate clothing (long sleeves, long pants, boots) while on site. The CRITFC staff will follow the general safety guidelines set out in the USCOE JDD guidelines.

**MATERIAL SAFETY DATA SHEET (MSDS):** No hazardous materials, chemicals, oils will be brought on the project.

**FUNDING ARRANGEMENTS:** Research related work does not require funding from USACE or JDD SMP.

**COORDINATION AT PROJECT LEVEL:** Coordination has been made at the project level.

**SECURITY ACCESS:** CRITFC staff will submit a security access form prior to accessing the dam and will carry their picture project ID at all times. Id will be provided to the guard each time a CRITFC staff enters the facility. The list of vehicles will be included with the security access form.

Enclosure:

**Title: 2021 Lamprey Monitoring and Research Considerations (Genetics Sampling) - Mainstem Columbia River**

**BACKGROUND**

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR), the Confederated Tribes and Bands of the Yakama Nation (YN), and the Nez Perce Tribe (NPT) have been collecting adult Pacific lamprey from Bonneville Dam (BON), The Dalles Dam (TDA), and John Day Dam (JDA) and releasing them into rivers and streams within ceded lands of the upper Columbia and Snake River basins since the early 2000s. A genetic parentage baseline of translocated adult lamprey has been developed by genotyping all adult Pacific lamprey collected and released by tribal translocation programs since 2013 using single-nucleotide polymorphism (SNP) markers. This parentage baseline can be used to assign the larval and juvenile lamprey offspring collected in future years. Through genetic monitoring, CRITFC and tribal biologists can monitor the success of translocation programs and quantify the effectiveness of each translocation effort. In addition, genetic monitoring provides valuable insights into Pacific lamprey biology, ecology, and life history.

Collection of larval and juvenile Pacific lamprey to monitor translocation programs includes tissue sampling lampreys collected in tributaries of the upper Columbia and Snake River basins through screw trapping and electrofishing. On the mainstem Columbia River, lamprey genetic monitoring can be conducted through tissue sampling of larval and juvenile lamprey collected in mainstem dam juvenile bypass systems. To this end, JDA is the most useful and appropriate location on the mainstem Columbia River for implementing genetics monitoring of outmigrating juvenile/larval Pacific lamprey. JDA is the first hydropower project downstream of all three tribal translocation program release locations in the Umatilla, Grande Ronde, Yakima, Upper Columbia, and Snake River basins. Therefore, juvenile/larval lamprey collected in the juvenile bypass system at JDA can be genotyped and used to monitor and evaluate all three tribal Pacific lamprey translocation programs. As part of the CRITFC Pacific lamprey genetics monitoring programs, we propose to collect tissue samples from larval and juvenile lamprey collected in juvenile bypass systems at JDA in 2021 (and MCN and BON starting in 2021 or 2022 (depending on COVID-19 restrictions)). This effort is a continuation of tissue sampling activities that were conducted at JDA in 2017 through 2020. Objectives of this monitoring programs are as follows.

**OBJECTIVES:**

- 1) Determine relative proportion of translocation offspring among the total abundance of larval and juvenile lamprey passing the juvenile bypass at JDA.
- 2) Describe life history characteristics of larval and juvenile lamprey emigrating from the Columbia River Basin.

Meeting these objectives requires some form of representative genetic sampling, with sufficient intensity/timing to obtain adequate sample size. Sampling location(s) is variable across objectives. While a long-term and integrated sampling strategy supporting lamprey passage

management is developed, maintaining some consistency with recent genetics sampling efforts will help inform Objectives 1 and 2.

## **METHODS:**

### Sampling Strategies for Individual Objectives

Approach: Continue effort initiated at JDA in 2017 to monitor larval and juvenile Pacific lamprey outmigration in the mainstem Columbia River. Collect tissue samples from a representative subset of lamprey for genetic analysis to determine larval and juvenile natal origins, relative contribution of CRITFC member tribe translocation programs to lamprey abundance, relative abundance by stream segment/tributary, and age and size at migration. Estimate relative proportion of translocation vs. volitional larval and juvenile production passing the juvenile bypass at JDA. Annual collection of approximately 1000 juvenile (macrophthalmia) and 500 larval (ammocoete) tissue samples at JDA is needed to achieve this objective.

To achieve this objective, we will need to:

- Collect a representative sample across the run time of Pacific lampreys migrating through JDA and being collected in the juvenile bypass.
- Collect tissue samples from a subset of lamprey for genetic analysis, about 1000 juvenile samples annually taken via a consistent sample rate across the run (e.g., ~10-20% rate). Larval samples could have a lower total sample size (~500) target given the lower encounter rates.

## **JDA DAM:**

### **20JDA21 COVID-19 Daytime condition sampling proposal**

Under the 20JDA21 MOC, current COVID-19 restrictions and preventative measures will limit the number of staff at the John Day Dam Smolt Monitoring Facility (SMF). As a result, John Day Fisheries proposes to reduce juvenile salmon and steelhead sampling to a level needed to meet condition sampling during the 2021 fish passage season. Condition sampling will target 100 fish of the predominate salmonid species for condition sampling every other day from 0700 – 1300.

Within the constraints of the handling permit, and under the reduced sampling effort, CRITFC proposes that the SMP staff collect genetic samples from lamprey encountered.

Sample size:

- Up to 20 juveniles, and
- Up to 20 larvae

Continue collection of condition data on larval and juvenile lamprey collected in the JDA juvenile bypass including predation, injury, mortality, disease (including fungus), length, weight, condition factor, and life stage proportion. We propose that the SMP staff collect condition data on lamprey encountered.

Sample size:

- Up to 100 juveniles, and
- Up to 100 larvae

Collect data on timing of out migration (within 24-h periods and across days throughout the run).

## **FLEXIBILITY**

The 20JDA21 MOC states:

**Lamprey** No impacts to adult lamprey but reduced numbers of juvenile lamprey collection is likely with the COVID-19 condition sampling strategy which reduced hours of sampling that eliminates evening samples. *SMF staff will be ready to assist researchers to collect lamprey outside of the proposed hours of collection when needed.* SMF staff has the flexibility to start the collection up to three hours earlier to accommodate researcher needs. Specific collection needs and timing of additional collection will need to be coordinated between the researcher and SMF staff.

The Corps and the SMP staff have agreed to begin condition monitoring at ~3 am during a subset of days in March. Additionally, the staffs have agreed to sample on an hourly basis during some of the days where the sampling effort begins at 3 am (when able). The objective of hourly sampling is to test whether stock composition (i.e. relative proportions of natal origins to the various streams represented in our sibship and parentage baselines) remains constant within a 24-hour period. This assumption is important due to the way that sampling has shifted to a narrow window of daylight hours on typical sampling days. If we find that the assumption fits the data (i.e., stock composition is constant across a 24 hour period), then we would have a higher degree of confidence that the reduction of hours of sampling can still provide a “representative” sample of all fish utilizing the bypass facility in a 24 hour period. Within the constraints of the handling permit, during these extended hours or when there are large pulses of lamprey, we propose that the SMP staff collect tissue samples from lamprey encountered.

Sample size:

- Up to 50 juveniles, and
- Up to 50 larvae

Continue collection of condition data on larval and juvenile lamprey collected in the JDA juvenile bypass including predation, injury, mortality, disease (including fungus), length, weight, condition factor, and life stage proportion. We propose that the SMP staff collect condition data from lamprey encountered.

Sample size:

- Up to 100 juveniles, and
- Up to 100 larvae

Collect data on timing of out migration (within 24-h periods and across days throughout the run).

## **FUTURE GENETIC MONITORING AT OTHER DAMS:**

Given the proposed decision by the Fish Passage Center to eliminate 24-hour SMP sampling at JDA in 2022, CRITFC is interested in requesting assistance in pursuing genetic monitoring at other mainstem dams including McNary (MCN) and Bonneville (BON) dams. There are disadvantages to moving juvenile lamprey sampling/genetics monitoring from JDA, including MCN being above the Umatilla River and not allowing for evaluation of CTUIR translocation program, and BON JBS juvenile lamprey catch rates being much lower than JDA. However, 24-hour SMP sampling at MCN and BON will likely provide a larger, more representative sample of juvenile and larval lamprey moving downstream in the Columbia River than condition monitoring at JDA going forward. Therefore, should the proposed elimination of the 24-hour SMP at JDA move forward in 2022, tissue sampling of juvenile and larval lamprey at MCN and BON will be critical for continuation of lamprey genetics monitoring in the mainstem Columbia River.

CRITFC proposes to coordinate with MCN and BON dam SMP staffs to inquire about the potential for sampling of juvenile/larval lamprey at their facilities in 2021. However, due to COVID restrictions (limited staff/access), implementation of lamprey tissue sampling at MCN and BON may not occur until 2022.

## **PERMIT:**

The FPC has acquired the 2021 handling permits from NOAA, WDFW, and ODFW for the BON, JDA, and McNary Dams. The FPC requested approval to add lamprey to the permits and the requests were approved.

(Note: this proposal is for genetic sampling only, collection of live fish for research purposes will be covered in separate research proposals when passage studies are occurring).