Pacific Lamprey 2020 Regional Implementation Plan for the Oregon Coast Regional Management Unit North Coast Sub-Region



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I. Status and Distribution of Pacific lamprey in the RMU

A. General Description of the RMU

North Oregon Coast Sub-Region

The Oregon Coast Regional Management Unit is separated into two sub-regions equivalent to the USGS hydrologic unit accounting units 171002 (Northern Oregon Coastal) and 171003 (Southern Oregon Coastal). The North Oregon Coast sub-region includes all rivers that drain into the Pacific Ocean from the Columbia River Basin boundary in the north to the Umpqua River boundary in the south. It is comprised of seven 4th field HUCs ranging in size from 338 to 2,498 km². Watersheds within the sub-region include the Necanicum, Nehalem, Wilson-Trask-Nestucca, Siletz-Yaquina, Alsea, Siuslaw and Siltcoos Rivers (Figure 1; Table 1).



Figure 1. Map of watersheds within the Oregon Coast RMU, North Coast sub-region.

Drainage Size Watershed **HUC Number** Level III Ecoregion(s) (km^2) Necanicum 17100201 355 Coast Range Nehalem 17100202 2,212 Coast Range Wilson-Trask-Nestucca 2,498 Coast Range 17100203

1,964

1,786

2,006

338

Coast Range

Coast Range

Coast Range

Coast Range, Willamette Valley

Table 1. Drainage Size and Level III Ecoregions of the 4th Field Hydrologic Unit Code (HUC) Watersheds located within the North Oregon Coast sub-region.

B. Status of Species

Siletz-Yaquina

Alsea

Siuslaw

Siltcoos

Conservation Assessment and New Updates

17100204

17100205

17100206

17100207

Increased attention on Pacific lamprey has improved our understanding of this species in the North Coast sub-region. Monitoring efforts, in which lamprey are either the target species or information is collected during other species' monitoring, have expanded the amount of information available and the quality of this information in most watersheds.

Current Pacific Lamprey distribution in the North Coast sub-region is greatly reduced from historical range (Table 2; Figure 2). The 2018 Pacific Lamprey Assessment ranking of current distribution was reduced from 2011 rankings in all HUCs except the Necanicum. The decline in these areas is a result of more accurately calculating the numeric area of occupancy (versus using a visual estimate), rather than a decline in Pacific Lamprey range (USFWS 2018).

Population abundance was estimated within all HUCs using information provided by Oregon Department of Fish and Wildlife (ODFW). ODFW estimated a range of Pacific Lamprey population abundance using extrapolations of published information on the number of Pacific Lamprey per redd, average peak redd counts per mile, multiplied by the number of miles surveyed for Pacific Lamprey (Table 3; Table 4). As part of the monitoring for winter steelhead spawning populations, the Oregon Adult Salmonid Inventory and Sampling (OASIS) field crews have recorded counts of lamprey spawners and redds since 2009. These estimates are considered conservative abundance indices, as the surveys are focused on steelhead, and end before the completion of Pacific lamprey spawning (Jacobsen et al. 2014; Jacobsen et al. 2015; Brown et al. 2017, ODFW 2017).

There was consensus that lamprey populations have declined significantly from historical numbers approximately 50-60 years ago (i.e. Downey 1993). However, short-term population trend which is defined as the degree of change in population size over 3 lamprey generations, was not ranked (determined "unknown") because there is insufficient data available over the past 27 years. Abundance indices have generally increased over the 3 to 5 years (Table 3), but without a longer term data set it is unknown whether this apparent increase is simply an upswing in a larger cyclical trend.

Based on the ODFW data, and noting this information is limited, the Wilson-Trask-Nestucca, Siuslaw and Nehalem HUCs appear to support greater numbers of lamprey than the other HUCs in the North Coast (ODFW 2017).

Table 2. Population demographic and conservation status ranks (see Appendix 1) of the 4th Field HUC watersheds located within the North Oregon Coast sub-region. Note – coho salmon distribution was used as a surrogate estimate of historical lamprey range extent in areas where historical occupancy information was not available. Ranks highlighted in Yellow indicate a change from the 2011 Assessment.

Watarahad	HUC Number	Conservation	Historical	Current	Population Size	Short-Term Trend
watersheu	HUC Nulliber	Status Rank	Occupancy (km ²)	Occupancy (km ²)	(adults)	(% decline)
Necanicum	17100201	<mark>S2↑</mark>	250-1000	20-100	250-1000	Unknown
Nehalem	17100202	S2	1000-5000	100-500	1000-2500	Unknown
Wilson-Trask-Nestucca	17100203	S2	1000-5000	100-500	1000-2500	Unknown
Siletz-Yaquina	17100204	S2	1000-5000	100-500	1000-2500	Unknown
Alsea	17100205	S2	1000-5000	100-500	1000-2500	Unknown
Siuslaw	17100206	S2	1000-5000	100-500	2500-10,000	Unknown
Siltcoos	17100207	<mark>S1↓</mark>	250-1000	20-100	50-250	Unknown

Table 3. Minimum, mean, and maximum abundance indices for adult Pacific Lamprey in the North Coast RMU (ODFW 2017). Estimates are considered conservative.

Year	MIN	MEAN	MAX
2009	1,113	4,271	7,831
2010	289	1,109	2,032
2011	736	2,828	5,184
2012	758	2,911	5,337
2013	2,335	8,968	16,441
2014	1,162	4,459	8,175
2015	2,456	9,429	17,287
2016	2,500	9,597	17,594
2009-2016			
MEAN	1,419	5,447	9,985

Table 3. Mean abundance indices for adult Pacific	lamprey by HUC from	a 2009 to 2016 in the North	Coast RMU (ODFW 2017).
Estimates are considered conservative.			

HUC	Mean
Necanicum	177
Nehalem	923
Wilson-Trask-Nestucca	1,178
Siletz-Yaquina	885
Alsea	487
Siuslaw	1,157
Siltcoos	18



Figure 2. Current and historical known distribution for Pacific Lamprey: Oregon Coast Regional Management Unit, North Coast sub-region (USFWS Data Clearinghouse 2017). Historical Pacific Lamprey distribution depicted in map was obtained from published literature, tribal accounts and state and federal agency records.

Distribution and Connectivity

Fish passage was ranked a low threat in the majority of watersheds that were assessed in 2017 (USFWS 2018). However, recent barrier assessments in the Lower Nehalem, Tillamook Bay, Nestucca Neskowin and Sand Lake watersheds have identified a rather large number of barriers at stream-road crossings (for juvenile salmonids). It is likely many more structures could be passage barriers for lamprey given their physiological limitations (i.e. unable to jump, difficulty navigating past sharp angles or through areas with high water velocity, etc.) (see LTW 2020a and references therein). Culverts, tide gates and water diversions are prevalent throughout the North Coast sub-region and may limit or impede lamprey passage to an unknown extent. It is possible the rankings for passage scope and severity in the 2018 Pacific Lamprey Assessment are lower than they should be.

An extensive effort is currently underway in portions of the North Coast sub-region to identify and prioritize barrier structures for repair (retrofit), replacement, or removal; though, the focus of these efforts is juvenile salmonids. The following are examples of some of the passage improvement projects implemented by RMU partners in the past several years:

- City of Seaside's Diversion Dam was removed and intake screens upgraded on the South Fork Necanicum.
- ODOT breached several dikes in the lower mainstem Necanicum near RM5.
- Several tide gates in the lower North Fork of the Nehalem were replaced.
- Culvert removal in tributary of Siletz River (North Creek), opening access to 14 miles of habitat.
- Multiple culverts have been replaced or removed in the Wilson-Trask-Nestuccca HUC over the past several years as part of the Salmon Super Highway Project (SSH). SSH project partners plan to continue efforts to replace barrier culverts in these basins in coming years.
- A substantial barrier dam on the East Fork South Fork Trask River was removed during summer 2016 and another dam removal at Skookum Lake (Tillamook River Basin) was completed during summer 2017.
- Several perched culverts replaced with open bottom culverts in Necanicum (Joe Creek) and Nehalem HUCs, restoring access to over 15 miles of habitat.
- Upgrades at hatchery barriers and the Lord Creek Culvert in the Alsea watershed.
- Upgrade to Cedar Creek Hatchery barrier on Three Rivers in the Nestucca Basin.

For more information about how to provide or improve passage for adult Pacific Lamprey at barriers and road crossings, please refer to LTW (2020a).

C. Threats

Summary of Major Treats

The following table summarizes the key threats within the North Coast sub-region as identified by RMU participants during the Risk Assessment revision meeting in April 2017. Stream and floodplain degradation, water quality, and lack of awareness were all considered a moderate threat in the North Coast sub-region.

	Strea Floc Degr	am and odplain adation	Water Quality		Lack of Awareness		
Watershed	Scope	Severity	Scope	Severity	Scope	Severity	
North Oregon Coast							
Necanicum	3	3	2	2	4	2	
Nehalem	3	3	3	3	4	2	
Wilson-Trask-Nestucca	3	3	2	2	4	2	
Siletz-Yaquina	3	3	3	3	4	2	
Alsea	3	3	3	2	4	2	
Siuslaw	3	3	3	3	4	2	
Siltcoos	4	3	3	2.5	4	2	
Mean	3.14	3.00	2.71	2.50	4.00	2.00	
Rank	\mathbf{M}	Μ	Μ	Μ	Η	Μ	
Mean Scope & Severity	3	.07	2	.61	3.00		
Drainage Rank		Μ		Μ	Μ		

Table 3. Summary of the assessment results for the key threats of the North Oregon Coast sub-region.

Current Threats

The highest ranked threats in the sub-region are described below. Stream and Floodplain degradation and Water Quality were ranked slightly higher than in 2011; lack of awareness was determined to be a greater concern than 2011. Although not a key threat in 2017 (Mean Scope & Severity = 2.43), dewatering and Flow Management was also ranked higher than in 2011.

Stream and Floodplain Degradation

Stream and floodplain degradation was ranked moderate in scope and severity throughout all watersheds of the North Coast sub-region. Within lowlands, wetlands and side channels have been channelized, diked, diverted or drained to prevent flooding, create farmland or pastures, and provide land for commercial and residential development. In upland areas, historical and ongoing timber practices, agriculture, and urbanization have deforested or altered the function and diversity of riparian vegetation. Many watersheds in the RMU are lacking mature conifers that play a pivotal role in bank stability, water quality protection, thermal cover, and the provision of large woody debris.

Water Quality

Elevated water temperature is the primary water quality concern in the North Coast sub-region. Excessive temperatures generally occur during summer months and may be attributed to increased air temperature, lack of riparian cover, or reduced instream flows associated with water withdrawals for irrigation, municipal or residential use. The impacts of relatively warm water temperatures (e.g., $\geq 20^{\circ}$ C) on Pacific Lamprey embryonic development, physiology, adult migrations, reproductive capability and evolutionary pressures can be multitudinous and substantial (Clemens et al. 2016). Other water quality concerns in tributaries include low dissolved oxygen and presence of bacteria (e.g., fecal coliform, e coli), that may be associated with elevated water temperatures and agricultural or urban runoff. Monitoring and restoration efforts to improve and protect water quality for fish, wildlife, and human health are ongoing in the North Coast sub-region.

Lack of Awareness

Instream water work, whether for restoration activities or maintenance of diversions, can dewater areas or remove sediments in which juvenile lamprey are burrowed. Such actions without first salvaging lamprey may result in the death of hundreds of juveniles. Increasing public and agency awareness about the presence of juvenile lamprey in the sediments, adult lamprey spawning habitats and timing during in-water work, as well as the effect of water diversions, and education on actions to minimize these impacts, could greatly decrease localized mortality and injury to lamprey populations. For more information about how to minimize impact to native lampreys during in-water work, please consult LTW (2020b).

Dewatering and Flow Management

Stream flow conditions have generally improved in the Necanicum since the completion of the 2011 Assessment, however, the scope and/or severity of this threat has increased in the Alsea, Siuslaw, and Siltcoos basins. Water withdrawals for irrigation, municipal, or residential uses leave many watersheds in the North Coast sub-region dewatered or with inadequate flow during summer and fall months. Low flow levels can reduce habitat availability, prevent lamprey access to backwater or side channel habitats, and may contribute to mortality if incubating eggs or burrowing larvae are dewatered or exposed to a high temperature or low oxygen environment. The projected rise in human population and anticipated effects of climate change (i.e., elevated ambient temperatures, decreased surface water availability, altered flow regimes), may increase the frequency, duration and intensity of low flow conditions in the future.

Restoration Actions

Multiple projects are currently underway to restore floodplain connectivity, relocate or reconnect side channel habitat, enhance damaged riparian areas, and remove, replace or improve barriers to fish passage (e.g. culverts, tide gates, and diversion dams). Assessments that identify and prioritize future restoration work and passage problems are also ongoing in these areas. Although the majority of research and restoration projects are developed and implemented with adult and juvenile salmonids in mind, a growing number of projects are incorporating benefits for Pacific lamprey and some passage projects are targeting lamprey specifically. The following conservation actions were initiated or recently completed by RMU partners in the North Coast sub-region from 2012-2019.

HUC	Threat	Action Description	Туре	Status
RMU	Stream Degradation	Implementation of instream and floodplain habitat restoration activities (e.g. large wood and/or boulder placement, side channel and floodplain reconnection, channel reconstruction, bank stabilization, etc.).	Instream	Ongoing
RMU	Population	Distribution surveys of mainstem and principal tributaries	Survey	Ongoing
RMU	Lack of Awareness	Consideration of lamprey when planning and implementing instream habitat restoration work	Coordination	Ongoing
RMU	Passage	Map, assess and prioritize passage barriers in tributaries and evaluate available lamprey habitat upstream	Assessment	Proposed
RMU	Population	Conduct spawning ground surveys in mainstem and principal tributaries to monitor Pacific Lamprey distribution, timing, and number of redds to develop relative abundance indexes.	Survey	Ongoing
RMU	Population	Oregon Department of Fish and Wildlife Conservation Plan for Lampreys in Oregon <u>https://www.dfw.state.or.us/fish/CRP/coastal</u> <u>columbia_snake_lamprey_plan.asp</u>	Other	Complete
Necanicum	Passage	South Fork Necanicum diversion dam removed and intake screens updated/improved.	Instream	Complete
Necanicum	Stream Degradation	Culvert removal or replacement projects to restore access to spawning and rearing habitat.	Instream	Ongoing
Nehalem & Siuslaw	Stream Degradation	Coho Strategic Action Plan – identifies high priority conservation areas for restoration and monitoring. Will likely benefit other native aquatic species.	Instream	Underway
Nehalem	Passage	Several tide gate replacement projects on lower North Fork	Instream	Ongoing
Nehalem	Stream Degradation	Installation and evaluation of lamprey and salmonid response to Beaver Dam Analog stream channel restoration	Instream	Ongoing
Wilson – Trask – Nestucca	Stream Degradation	Numerous culvert removal or replacement projects as part of Salmon SuperHwy Project.	Instream	Ongoing
Wilson –	Passage	Removal of the East Fork South Fork Trask	Instream	Complete

North Coast sub-region - RIP Oregon Coast RMU

Trask –		River Hatchery Dam.		
Nestucca				
Wilson –	Passage	Skookum Reservoir Dam removal,	Instream	Underway
Trask –		Tillamook River Drainage		
Nestucca				
Siletz	Passage	Evaluation of passage constraints for	Instream	Proposed
		lamprey at Siletz Gorge Falls fish ladder/trap		
Siletz	Population	Environmental DNA to assess Pacific	Survey	Underway
		Lamprey distribution above falls & lobster		
		Creek Wild and Scenic River		
Alsea	Passage	Installation of Lamprey Passage Ramp at	Instream	Underway
		water diversion structure upstream from		
		Alsea River Hatchery on North Fork Alsea		
		River.		
Alsea	Passage	Monitoring relative abundance of larval	Assessment	Underway
		Pacific Lamprey upstream of water		
		diversion structure pre and post lamprey		
		ramp installation		
Alsea	Population	Environmental DNA pilot project to assess	Survey	Underway
		Pacific Lamprey distribution		
Siuslaw	Population	Environmental DNA to assess Pacific	Survey	Underway
		Lamprey distribution		
Siuslaw	Stream	Environmental DNA to monitor lamprey	Assessment	Underway
	Degradation	occupancy pre/post habitat restoration (e.g.,		
		Fivemile Bell)		
Siltcoos	Passage	Evaluation of passage constraints for	Assessment	Proposed
		lamprey at Siltcoos and Tahkenitch Dam		
		fish ladders.		
Siltcoos	Stream	Implementation of instream and floodplain	Instream	Ongoing
	Degradation	habitat restoration activities (Fivemile-Bell,		
		Grant Cr., Fiddle Cr.)		

II. Selection of Priority Actions

A. Prioritization Process

Participating members of the North Coast sub-region had a virtual meeting on April 16th, 2020 to discuss completed and ongoing conservation actions and identify specific projects and research needed to address threats and uncertainties within the region. The following projects were submitted by RMU partners for the North Coast sub-region in 2020:

- Coho Creek Fish Passage Project
- Tweedle Creek Meander Reconstruction Lamprey/Salmonid Habitat Restoration

B. High Priority Proposed Project Information

Project Title: Coho Creek Fish Passage Project Seaside

Project Applicant/Organization: Necanicum Watershed Council Contact Person: Angie Reseland Email: necanicumwatershed@gmail.com Phone: 503-717-1458

Project Type: Passage Improvement

Lamprey RMU population(s): North Oregon Coast Sub-Region Multi-RMU project? Please list RMUs

Watershed (5th HUC Field): 17100201 (Necanicum watershed)
NPCC Subbasin (4th HUC Field) name: Northern Oregon Coastal
Project Location: Seaside, Oregon
Project Coordinates (latitude and longitude, decimal degrees, NAD 1983): 45.986736, -123.915062

Total Requested funds: \$22,880

1. Short Project Summary (200 words or less):

Coho Creek is a tributary to Neawanna Creek in the Necanicum River watershed within Seaside city limits in Clatsop County. The culverts to be replaced are juvenile and adult fish passage barriers under certain flow conditions and impair natural channel processes impacting Pacific Lamprey, ESA listed coho, Chinook, chum, winter steelhead and cutthroat trout. The project involves three existing, undersized culverts. The project proposes to permanently remove two culverts and relocate the City's sewer main which currently is installed over the top of the culverts. In addition, the project proposes to replace the other existing undersized culvert crossing under Wahanna Road with a 19' open bottom, multiplate arch with natural stream simulation that meets the design criteria of 1.5x active channel width. The project will improve fish access to 1.4 miles of stream habitat and restore full tidal exchange to the site's tidally influenced freshwater stream-wetland complex. Project partners include: City of Seaside, OWEB, ODFW, USFWS.

2. Detailed Project Description (500 words or less):

The Coho Creek fish passage project will restore unimpeded aquatic organism passage to 1.4 miles of aquatic habitat and natural stream processes and improve tidal connectivity to benefit the upstream wetlands. In addition to replacing the existing undersized Wahana Road crossing culvert, two immediate upstream culverts that intersect the existing berm that are extremely degraded and partially blocked will be removed.

Objective #1 - Manage project communication to ensure the project is delivered on-time and onbudget.

NWC Coordinator will manage project communication including: regular check-ins with project partners, updates to the Council website and written updates on project progress to the Council. NWC and City of Seaside will enter into an MOU to outline roles and responsibilities and how grant funds will be distributed and how invoices will be processed for the project components to be paid by the City. The City will prepare and submit the project's state and federal permits and will prepare the project's bid book including engineering designs and technical specs. The project has been designed to fit SLOPES permit requirements and best management practices for salmon and lamprey, including meeting the guidelines provided in the newly released Barriers to Adult Pacific Lamprey at Road Crossings: Guidelines for Evaluating and Providing Passage, June 2020. NWC will provide the contract document and will advertise the project to potential contractors. NWC will contract with a construction contractor to implement the project. NWC will track project expenses, review invoices, submit payments for processing, document in-kind contributions, prepare and submit all project reports and required documentation. NWC Coordinator will establish project photo points and take before, after and monitoring photos and coordinate post project lamprey monitoring. The majority of the funding for implementation from OWEB and the City of Seaside has been secured.

Objective #2 - Implement construction actions to remove existing undersized culverts and replace with an appropriately sized bottomless pipe arch.

The project construction actions include removal of the existing 36" corrugated metal culvert from Coho Creek under Wahanna Road, Seaside Oregon and installation of a 19' bottomless arch culvert with natural streambed simulation that meets NOAA fish passage criteria of 1.5 x ACW for replacing a stream/road crossing. The project will also permanently remove two 36" corrugated metal culverts immediately upstream from the road crossing. The project will additionally relocate the City of Seaside's gravity-fed sewer main and water main that run thru the site. Project construction will take place during the in-water work window (July 1 - September 15, 2021). Once the project construction activities are completed, the site will be revegetated with native grass and shrubs.

3. Descriptive Photographs-Illustrations-Maps (limit to three total):

*See attached at end of document

4. Linkage of Actions to Identified Threats for Lampreys in RMU(s) (300 words or less):

- *What threat(s) to lampreys does this project address?* (See your <u>RIP(s)</u> for key threats) **Passage Water Quality Stream and Floodplain Degradation** <u>Choose an item.</u>
- Does this project address threat(s) to lampreys specific to this RMU only, or does the project address the threat(s) prevalent in multiple RMUs?

Single RMU \boxtimes , Multiple RMUs \square list additional RMUs:

• Describe how this project addresses key threat(s) to lampreys within the HUC(s) where project is proposed.

The culverts to be replaced/removed are juvenile and adult fish passage barriers under certain flow conditions and impair natural channel processes impacting Pacific Lamprey, coho, Chinook, cutthroat trout, chum and winter steelhead. The culvert is a 36" bare corrugated metal culvert on a 12' active channel width stream. The appropriate sized crossing here would be 19'. This vastly undersized culvert has limited hydraulic capacity and is a velocity barrier except at the lowest flows. The bare corrugation and lack of stream substrate further compound passage for lamprey species that are known to move using a 'burst-attachment' mode since the high velocities and corrugations can interrupt this mode of transport. The primary watershed problem identified in the project reach is impaired access to spawning and rearing habitat created by this grouping of three undersized culverts. The related watershed problem includes impaired natural channel processes including sediment transport and large wood distribution and constrained tidal influence to the upstream wetlands.

The project proposes to remove the two upstream culverts and relocate the City's sewer main (which currently is piped on top of the culverts) and replace the culvert under Wahanna Road with a new open bottom arch pipe.

Although greatly undersized, these three pipes were deemed a lower priority eight years ago when the failing upstream culvert on the school district's property was evaluated for replacement. Pacific Lamprey were observed in Coho Creek during the work area isolation and fish salvage phase of that culvert replacement which is upstream of the current project site. Adult and juvenile Pacific lamprey were present as well as an additional 15 lamprey juveniles that were too small to identify to species accurately. Staff present to verify lamprey species included USFWS and ODFW. Lamprey presence has been visually verified at this upstream site as recent as last year by ODFW.

Removal of the present culvert and replacement with a properly sized bottomless arch will restore full tidal connectivity and natural stream functions. This will be a major fish benefit as the currently under seeded and under-utilized habitat above Wahanna Road will be reconnected and available to all aquatic organisms seeking this area for rearing and refuge.

5. Species/Habitat Benefits (200 words or less):

The project will improve fish passage to 1.4 miles of spawning and rearing habits for Pacific Lamprey, Oregon Coast coho salmon, Chinook, chum, winter steelhead, and cutthroat trout. In addition, the project will restore channel connectivity between the tidally influenced downstream side of the culvert with the wetlands on the upstream side of the culvert, restoring access to an historic wetland complex and resolving the last fish passage impediment for this productive fish bearing tributary of the Neawanna. This action will benefit all life stages of Pacific Lamprey, Oregon Coast coho salmon, Chinook, chum, winter steelhead, and cutthroat

trout.

This project complements a culvert replacement project installed in 2012 by the Necanicum Watershed Council on Coho Creek. The upstream project replaced a failing, undersized culvert with a 16' wide open bottom arch. Pacific Lamprey were observed by ODFW and USFWS staff during the work area isolation and fish salvage phase.

6. Priority Objectives and Goals:

The project will improve fish passage to 1.4 miles of spawning and rearing habits for Pacific Lamprey, Oregon Coast coho salmon, Chinook, chum, winter steelhead, and cutthroat trout. In addition, the project will restore channel connectivity between the tidally influenced downstream side of the culvert with the freshwater tidally influenced wetlands on the upstream side of the culvert, restoring access to an historic wetland complex and resolving the last fish passage impediment for this productive fish bearing tributary of the Neawanna.

This project complements a culvert replacement project installed in 2012 by the Necanicum Watershed Council on Coho Creek. The upstream project replaced a failing, undersized culvert with a 16' wide open bottom arch. Lamprey were visually confirmed at this site upstream of the proposed project last year.

In the Pacific Lamprey 2019 Regional Implementation Plan for the Oregon Coast, stream and floodplain degradation was ranked moderate in scope and severity throughout all watersheds of the North Coast sub-region. It goes further to say that ".....structures could be passage barriers for lamprey given their physiological limitations (i.e. unable to jump, difficulty navigating past sharp angles or through areas with high water velocity, etc.). Culverts, tide gates and water diversions are prevalent throughout the North Coast sub-region and may limit or impede lamprey passage to an unknown extent.

The Pacific Lamprey Conservation Agreement (June 20, 2012) identifies impaired access to spawning habitat, rearing habitat, or migration corridors is identified as a primary limiting factor for Pacific Lamprey, Western River Lamprey, and Western Brook Lamprey in the Coastal region. The Coastal, Columbia, and Snake Conservation Plan for Lampreys in Oregon (February, 2020) also lists barriers and access to habitat as limiting factors to lamprey. This project addresses both of these issues to remove the blocked passage and open up additional floodplain habitat.

This project supports one of the primary actions of the Oregon Plan – Partnerships for Action. The Necanicum Watershed Council will partner with the City of Seaside to develop and implement locally-based measures to restore salmon and lamprey habitat, while the state agencies will help facilitate, guide and support local actions (page 2-13).

Through this project we will address additional limiting factors as identified in the Oregon Plan by "conserving and restoring natural watershed processes that create habitat characteristics favorable to salmonids and lamprey, addressing management of contiguous landscapes, and conserving habitats required by aquatic organisms during all life stages. (page 4-5).

7. Project Design / Feasibility:

- *Have the designs for the project been completed already or will they be completed before planned project implementation?* Yes ⊠ No□
- Are the appropriate permits (e.g., ESA consultation, Scientific Collection, fish health/transport, etc.) in place already or will they be in place before planned project implementation? <u>Yes ⊠ No□</u>
- *Can the project be implemented within the defined timeframe?* (*See BPA* & *NFHP requirements in the accompanying PLCI RIP Priority Project Guidance document*).

Project Activity Requiring a Permit or	Name of Permit or License	Entity Issuing Permit or License	Status
License			
Construction actions in waters of the	Joint Removal/Fill Permit	US Army Corps of Engineers	To be submitted, Fall 2020
U.S.			
Construction actions in essential salmonid habitat	Joint Removal/Fill Permit	OR Department of State Lands	To be submitted, Fall 2020
Federal permit requirement	Cultural Resources Review/Survey	SHPO	To be submitted, Fall 2020
Culvert replacement	Fish passage approval	ODFW	Approved June 2019
Construction in waters of the US	401 certification	DEQ	To be submitted Fall 2020

Yes⊠ No□

The project construction actions include removal of the existing 36" corrugated metal culvert from Coho Creek under Wahanna Road, Seaside Oregon and installation of a 19' bottomless arch culvert with natural streambed simulation that meets NOAA fish passage criteria of 1.5 x ACW for replacing a stream/road crossing. The project will also permanently remove two 36" corrugated metal culverts immediately upstream from the road crossing. These will NOT be replaced. The project will additionally relocate the City of Seaside's gravity-fed sewer main and water main that run thru the site.

Project construction will take place during the in-water work window (July 1 - September 15, 2020). To implement the project, Wahanna Road will be closed; no bypass is required which reduces construction costs substantially. All best management practices for work area isolation, erosion control, turbidity management, fish salvage (including lamprey specific measures), and stream simulation installation will be followed to ensure minimal temporary impacts to aquatic species. The City of Seaside will be in communication with the affected landowners about the temporary road closure when the project's implementation timeline is established. The time/distance for the alternate route is minimal (less than 10 minutes).

The contractor will excavate the road surface and remove the existing culvert. Material will be stockpiled and re- used to backfill the site to the extent possible. The old culvert will be recycled.

Unusable excavated materials will be removed from the project site in their entirety.

The City will handle construction actions at the existing water and sewer mains that will be bypassed. The City's 12" water main will have a temporary bypass installed. The sewer main bypass will consist of piping and sewer pumps.

The other affected utilities (telephone, natural gas, and cable) will be relocated by utility companies who will provide their own bypass or install new utilities as needed. These utility conduits will be replaced with horizontal, directionally drilled (HDD) conduits. The City's engineer will coordinate with the utility companies for staging and implementing these relocates.

After the utilities are relocated, excavation and base material installation for the new culvert footings will be installed. The foundations will be pre-cast which will significantly reduce construction time. Once the foundations are installed, the arch plate construction will commence.

The streambed substrate will consist of a matrix of rounded and angular imported material. The channel design will include a summer low flow channel where flows will be concentrated to ensure adequate depth for fish passage under low flow conditions and a winter high flow channel with a "bench" to provide channel capacity for storm events.

Once the arch plates are constructed – the new sewer and water mains will be installed above the culvert. Engineered structural fill will be placed to grade for the new road bed. Riprap will be installed to protect the upstream and downstream embankments (headwalls).

Concrete sidewalks and curbs will be constructed on the east side of the new crossing. Once the project construction activities are completed, the site will be revegetated with native grass and shrubs.

8. Partner Engagement and Support (200 words or less):

• What partners are supporting the project?

City of Seaside, ODFW, USFWS, OWEB, Necanicum Watershed Council

- What partners are active in implementing the project?
- City of Seaside and Necanicum Watershed Council
 - What partners are providing matching funds or in-kind services that directly contribute to the project?

The City of Seaside is providing \$222,761 in match for the project. OWEB is providing \$355,979 in match for the project. ODFW is providing \$2000 in match for the project.

The City of Seaside committed to the entire costs of Engineering services as match at the time of our OWEB application. Since the award of that grant, shortfalls in the City's budget due to the Covid-19 pandemic have caused them to eliminate the Engineering department. They have an Engineer on

contract that is familiar with the project and experienced in construction project management. The requested RFP funds will be used to pay the contracted Engineer to prepare bid and permit documents and manage the construction portion of the project. The requested funds will significantly reduce the financial burden to the City to install the project.

9. Monitoring and Reporting (200 words or less):

Pacific Lamprey are known to be present at the site, both above and below. We will work with partners (including USFWS and ODFW) to ensure that our work area isolation (dewatering) and fish salvage activities follow lamprey specific protocols, including slowly reducing water levels and using a lamprey specific e-fisher to salvage this species. The project will remove an undersized, bare corrugated and failing culvert that presents a likely obstacle to passage for several native fish species including lamprey species. The project design meets the recommendations for Passage at Road Crossings for lampreys: the project will remove the barrier culvert and replace it with one sized 1.5 times active channel width and using a natural stream bottom with stream simulation design. The culvert that was replaced upstream in 2012 is actually one of the Case Studies highlighted in the Lamprey Passage document. While past salvage efforts do document lamprey presence and use of this system already, we will work with ODFW to do post project observational surveys for lamprey redds. We don't feel there is a need to do additional presence / absence surveys given that Pacific Lamprey are already documented here, but will consider if there is a recommendation to do so by the Pacific Lamprey Conservation Team. This project opens up a total of 1.4 miles of upstream habitat. Most significantly, the habitat immediately upstream is a tidally influenced freshwater forested wetland which could provide excellent habitat for both juvenile coho and lamprey.

10. Project Budget :

Item	Unit Type	Unit Number	Ur	iit Cost	RI req	P Funds Secured In uested Kind Match		Total Costs		
A. Salaries, Wages and Benefits	77	1.75	1.0	25			1.0	< 105	0	× 105
Council Coordinator	Hours	1/5	3	35	3	-	2	6,125	3	6,125
Category Sub-total			1	-	\$	-	\$	6,125	\$	6,125
	1									
B. Contracted Services	a L'	lor	1.0	10			1.0	2 000	1.0	2 000
Foundation - Base Rock	Cubic yard	1100	5	40	5	-	5	3,800	5	3,800
Outlet Protection	Cubic yard	11180	3	30	3	-	3	35,400	3	35,400
Mobilization	Each	1	\$	30.000	\$		\$	30.000	\$	30.000
Temporary Protection and	Each	1	S	12,100	S		S	12,100	S	12,100
Direction of Traffic		1	-	12,100			-	12,100	, ¢	
Prepare As-built Construction	Each	1	\$	250	\$		\$	250	\$	250
Plans			-				-			
Care and Diversion of Water	Each	1	\$	16,000	\$		\$	16,000	\$	16,000
Fish Salvage	Each	1	\$	5,000	\$	-a	\$	5,000	\$	5,000
Turbidity Monitoring	Each	1	\$	500	\$		\$	500	\$	500
Temporary Erosion Control	Each	1	\$	6,500	\$		\$	6,500	\$	6,500
Excavation, Disposal, Hauling (all three culvert sites and all	Each	1	\$	65,029	\$		\$	65,029	\$	65,029
clearing/grubbing)	Task	6	0	01.575	¢	_	0	01.575	Ø	01 675
CMP Pipe Arch, 64 long, 19	Each	1	Э	21,575	3	-	3	21,575	3	21,375
Wide, 76 tall Dre cast Foundation Blocks	Fach	1	\$	18 920	\$		0	18 920	\$	18 020
Install Pre-cast Foundation	Each	1	\$	8 800	\$		\$	8 800	8	8 800
Blocks	Laci		Φ	0,000	φ			0,000	φ	0,000
Geo-tech Investigation (verify	Each	1	S	16.000	\$		\$	16,000	\$	16 000
depth to bedrock)	Laon	•		10,000	Ű			10,000	U.	10,000
Preserve Existing Utilities (waterline.	Each	1	\$	9.500	\$		\$	9,500	\$	9,500
telephone line,		-	-					1.000		0.40.000
natural gas line)										
Road Improvements (road surfacing, sidewalk	Each	1	\$	26,625	\$		\$	26,625	\$	26,625
installation)	1.00								0	
Relocate storm sewer	Each	1	\$	10,992	\$	-	\$	10,992	\$	10,992
Relocate Sanitary Sewer and	Each	1	\$	62,265	\$		\$	62,265	\$	62,265
Lateral Lines				1. C. 1						
Water Main Relocate	Each	1	\$	30,430	\$		\$	30,430	\$	30,430
Survey - Otak Consulting	Each	1	\$	8,000	\$	-	\$	8,000	\$	8,000
Engineers and Surveyors							-	1.020		
Construction surveying	Each	1	5	2,500	\$		5	2,500	5	2,500
Archaeology site survey	Each	1	5	5,000	5		\$	5,000	5	5,000
Erosion Control Security,	Acres	0.25	Э	1,600	9	-	3	400	3	400
Piparian Planting	Acres	0.25	2	4 000	¢		0	1 000	\$	1.000
Install New Dine Arch	Feet	64	\$	9,000	\$	-	0	51 200	\$	51 200
Construct Simulated	Feet	64	\$	452	\$	-	\$	28 900	8	28 900
Streambed								20,200		20,000
ODFW Fisheries Biologist	Hours	40	\$	50	\$	-	\$	2,000	\$	2,000
City Engineering Design	Hours	120	\$	80	\$	4	\$	9,600	\$	9,600
Engineering Design - Bid	Hours	120	\$	80	\$	9,600	\$	-	\$	9,600
Documents and Permits	100 C	122		1					0	
Project Management, City of	Hours	140	\$	80	\$	11,200	\$		\$	11,200
Seaside Engineer				17						_
Category Sub-total				1.1	\$	20,800	\$	518,286	\$	539,086
19 Oct	1									
C. Other	Tesh	ь	¢	000	P	_	1.0	007	e	-
DEQ Permit Pees	Еасп	1	13	985	0		0	985	0	
Category Sub-Total			1		10	-	1.3	985	1.3	-
D. Indirect costs: 10%	í		1		\$	2,080				
			-				-		-	
Total (Sum of A - D)			1		\$	22,880	\$	525,396	\$	548,276
	-	1	-	_			1			
Total RIP Funds Requested					\$	22,880				

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11. Timeline of major tasks and milestones

Element	Description	Start Date	End Date
Develop MOU between project partners	NWC will develop a MOU outlining roles and responsibilities with the City of Seaside	4/2021	6/2021
Prepare and submit permit applications	City of Seaside will be responsible for preparing and submitting all local, state and federal permit applications with support from the NW/C	1/2021	6/2021
Develop construction bid documents -	City of Seaside, with support from Necanicum Watershed Council will develop the project's construction bid documents	4/2021	6/2021
Solicit bids and select preferred contractor.	NWC with support from City of Seaside will solicit construction bids for the project, review proposals and select a contractor.	4/2021	6/2021
Coordinate fish salvage with ODEW	NWC will coordinate fish salvage activities with DOFW and recruit any needed volunteers.	7/2021	7/2021
Project construction	Construction will take place during ODFWs in-water work window.	7/2021	9/2021
Project construction inspection	City of Seaside will provide construction inspection for all project activities.	7/2021	9/2021
Project grant and permit reports	NWC will prepare and submit all grant and permit reporting requirements.	7/2021	12/2021
Project maintainance	City of Seaside and ODFW will conduct periodic phecks of the structure following high water events to ensure the site is functioning as designed. City of Seaside will be responsible for any needed maintenance or repairs.	7/2021	12/2022
Post project lamprey monitoring	NWC will coordinate post project lamprey monitoring activities with ODFW and USPWS and recruit any needed voluntears.	7/2021	12/2022

List the major project activities and time schedule for each, including post project implementation.

Element	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022
Develop MOU between project partners						1		
Prepare and submit permit applications								1
Develop construction bid documents				-		1		
Solicit bids and select preferred contractor					1	1		1
Coordinate fish salvage with ODFW					1			
Project construction							1	
Project construction inspection								
Project grant and permit reports			1			-		
Project maintenance		1			1			
Post project Lamprey monitoring								



Coho Creek Culvert Replacement – Seaside Site Photos

Photo 2: View of to be replaced culvert outlet



INOLUI CUASI SUU-IEGIUII - KIF UIEGUII CUASI KIVIU



Project Title: Tweedle Creek Meander Reconstruction – Lamprey/Salmonid Habitat Restoration – Carmichael Property

Project Applicant/Organization: Upper Nehalem Watershed Council Contact Person: Maggie Peyton – UNWC Executive Director Email: Maggi@nehalem.org Phone: (503) 396-2046

Project Type: Habitat Restoration

Lamprey RMU population(s): North Oregon Coast Sub-Region Multi-RMU project? Please list RMUs

Watershed (5th HUC Field): Northwest Oregon Coast NPCC Subbasin (4th HUC Field) name: Oregon-Washington Coastal Project Location: Nehalem (17100202) Project Coordinates (latitude and longitude, decimal degrees, NAD 1983): Latitude: -123.55, Longitude: 45.90

Total Requested funds: \$50,000

1. Short Project Summary (200 words or less):

This project abandons 1,280 feet of artificially straightened lower Tweedle Creek and re-establishes a historic relic toe slope channel footprint of 4,800 feet. This action will increase Mid-Nehalem River off-channel lamprey/salmonid stream rearing/spawning habitat nearly fourfold and will significantly enlarge and enhance an existing associated wetland complex (relic Nehalem oxbow). Grantee will begin by excavating/restoring the relic toe slope stream channel across a 1,250-foot section of floodplain to reconnect into the existing historic channel/wetland matrix and then plugging the existing Tweedle Creek channel to capture the live stream flow.

Additionally, this project will reconnect two small tributaries to Tweedle Creek, improve floodplain hyporheic connectivity including the wetland complex, create habitat conditions conducive to long-term beaver colonization, provide additional backwater habitat during high winter main stem flows, improve riparian conditions, and improve fish passage into the pond (associated with relic oxbow). All actions address the habitat needs of lamprey/salmonids that spawn/rear here and throughout the Nehalem River Basin Watershed.

Grade control(s) throughout the newly reestablished channel will be accomplished with LWD structures along the realigned channel and a minimum of two beaver dam analogues. Grantee will also install riparian fencing and a variety of native plant to further enhance the entire restoration site.

2. Detailed Project Description (500 words or less):

Aquatic habitat degradation, stream/floodplain disconnect, and hindered access into off-channel refuge has contributed to the decline of native lamprey and salmonid production throughout Oregon, including the habitat for ESA listed Coho and lamprey populations of the Nehalem River basin. This project seeks \$50,000 in cost share funding to restore the historic relic channel alignment and floodplain connectivity of lower Tweedle Creek and implement the proposed associated habitat restoration actions to significantly increase the availability of both low velocity off channel rearing during winter high flows and provide cooler summer refuge for these species away from the hotter main stem Nehalem by addressing these habitat limiting factors.

This project was selected because it exists in one of the NSAP's high priority 6th fields for restoration (main stem Nehalem) and addresses the needs of native species (native lamprey and salmonids) and a unique salmonid life history strategy for coho salmon also identified in the NSAP planning process (nomadic spring Coho fry dropping out of headwater reaches into the Mid / Lower Nehalem main stem).

The Tweedle Creek project will restore Lower Tweedle Creek (approximately 4,800 ft.) into its historic relic toe slope channel and reconnect it with the associated floodplain including two small tributaries, the existing wetlands/former oxbow channel of the Nehalem River, and into an off channel flow through pond located within the oxbow. In total, the project comprises about 40 acres and will enhance critical habitat for Pacific & Western Brook Lamprey, Coho/Chinook salmon, Winter Steelhead, Cutthroat Trout, and a host of other aquatic and terrestrial species. The project will also maintain connection of the soon to be abandoned "current" channel with the mainstem Nehalem, allowing it to continue to function as off channel/backwater refuge during high water events.

The Upper Nehalem Watershed Council will co-manage the project with their associated partners and the landowner. Planning, survey/design, permit acquisition, budget development, etc. are well underway (approximately 95% complete) with implementation set for the 2021 summer instream work period.

Funding through the Pacific Lamprey Conservation Initiative (Regional Implementation Plan) will address instream, off-channel, and wetland enhancements specific to lamprey life history/habitat needs and will mainly support adult spawning and juvenile rearing deficiencies for lamprey in this part of the Nehalem River Basin. Stream/floodplain connectivity, habitat complexity, and full recreation/restoration of several acres of historical habitat lost to floodplain development(s) (agricultural mostly) around the turn of the 19th century are all expected outcomes for this project.

Total miles/acres of stream/wetland habitat (inside and outside of project footprint) accessed by lamprey and anadromous fish after channel relocation and wetland enhancement = Approximately 2 miles/90+ acres.

Miles of stream to be treated with LWD/BDA (inside project footprint) = 0.9 miles

- A 0.9 mile stream reach in the vicinity of the wetland complex will be enhanced with BDA and LWD structures for stream/off channel pond/wetland/floodplain habitat improvements.
- Tweedle Creek Meander Rez (ignment-**Beaver Analog Project Channel Reroute & Channel Plug** Full Spanning LWD Complexes oriented dle Creek plug NT.
- 3. Descriptive Photographs-Illustrations-Maps (limit to three total):

PROJECT LOCATION MAP



- 4. Linkage of Actions to Identified Threats for Lampreys in RMU(s) (300 words or less):
 - What threat(s) to lampreys does this project address? (See your <u>RIP(s)</u> for key threats) Stream and Floodplain Degradation <u>Choose an item</u>. <u>Choose an item</u>. <u>Choose an item</u>.
 - Does this project address threat(s) to lampreys specific to this RMU only, or does the project address the threat(s) prevalent in multiple RMUs?
 Single RMU ⊠, Multiple RMUs □ list additional RMUs:
 - Describe how this project addresses key threat(s) to lampreys within the HUC(s) where project is proposed.

As identified within the RIP for the Oregon Coast Regional Management Unit – North Coast Sub-Region, the key identified threat is Stream and Floodplain Degradation within lowlands, wetlands, and side channels. These degradations are the result of past land management practices that channelized, diked, diverted or drained to prevent flooding, create farmland or pastures, and/or provide land for commercial and residential development. This project will undo the past degradations of lower Tweedle Creek by restoring the stream into its relic toe

slope channel and associated floodplain/wetland complex, increasing the available stream channel and floodplain habitat nearly fourfold for lamprey and the other associated affected species that utilize the existing habitat. In addition, the actions of this project restores the historic wetland complex, reconnects two small tributaries to lower Tweedle Creek thus improving stream flow, improves passage/connectivity into the former Oxbow of the Nehalem River that currently supports a large pond, and improves hyporheic connectivity that will better recharge the floodplain/wetlands for longer sustained summer flows and improved "cooler" water temperatures, all essential attributes for enhanced natural production.



5. Species/Habitat Benefits (200 words or less):

The literature is almost absent in lamprey presence documentation for Tweedle Creek. However, in 2009 Lamprey (adults and larvae) were documented by ODFW and Nehalem WSC during fish salvage operations at the Tweedle Creek road bridge location when the bridge was constructed to replace the culvert that was a fish passage impediment. 1 adult pacific lamprey, 10 western brook, and 19 pacific lamprey larvae were salvaged, verifying lamprey species are in this watershed. • How will the project provide meaningful measurable results to improve lamprey populations and/or their habitat conditions?

LWD and BDA structures enhance instream habitat. stream/floodplain connectivity/interactions, and natural stream channel processes thus improving critical habitat and access throughout the freshwater life cycles exhibited by the native lamprey species within this ecoregion. In turn, these functions provide expanded and improved spawning, rearing, and refuge habitat. Improved and expanded habitat also increases the over-all capacity for the affected organisms to flourish on the landscape, increasing their likelihood for survival, improved overall health, and enhancing the vigor of juveniles. Healthy juveniles (larvae in the case of Pacific Lamprey) mature into smolts/adults in preparation for the ocean portion of their life cycle and through enhanced survival live on into adulthood to return to freshwater to complete the cycle.

• What life stage or stages will benefit from action? How?

This project specifically addresses the juvenile rearing and adult spawning life stages of the anadromous Pacific Lamprey species and the entire life cycle of the freshwater Western Brook lamprey species.

• What other species may benefit from action?

Juvenile coho, steelhead, chinook, resident/anadromous cutthroat, cottids, and a host of amphibians, reptiles, birds, and mammals associated with wetland/floodplain habitats.

6. Priority Objectives and Goals:

- Indicate the strategies, and/or restoration/management plans are addressed by this project (when available relevant documents/websites are hyperlinked below for reference):
 - o <u>PLCI Conservation Agreement</u> \boxtimes
 - \circ National Fish Habitat Partnership National Conservation Strategies
 - o <u>USFWS Climate Change Strategies</u> □
 - <u>Bonneville Power Administration Northwest Power and Conservation Council</u> Columbia River Basin Fish and Wildlife Program □
 - <u>CRITFC Tribal Pacific Lamprey Restoration Plan for the Columbia River</u> Basin □
 - o <u>US Army Corps of Engineers Pacific Lamprey Passage Improvement</u> <u>Implementation Plan</u> □
 - \circ PUD Management Plan (please name below)
 - Other (please name below) \boxtimes

• Clearly describe how the project addresses the goals and objectives in the strategies, restoration/management plans indicated above (200 words or less).

Of the listed documents, this project mainly addresses the PLCI Conservation Agreement where Coastal Oregon – The Pacific Lamprey RMU in this region is stated to be at relatively lower risk than those of the Columbia River basin and the most serious threat in this region being stream and floodplain degradation. (PLCI Conservation Agreement). To the same degree but considered as an "other document", this project specifically addresses the RIP for the Oregon Coast Regional Management Unit – North Coast Sub-Region where the specific threat for lamprey is also identified as Stream and Floodplain Degradation within lowlands, wetlands, and side channels. This project addresses these plan's goals and objectives by restoring historic habitat, natural stream/floodplain processes and reconnecting two tributaries that were historically connected to lower Tweedle creek.

7. Project Design / Feasibility:

• *Have the designs for the project been completed already or will they be completed before planned project implementation?* Yes ⊠ No□

Grummel Engineering and associates completed the engineering and plan sets for the stream channel expansion design in Fall 2019. ODFW and Bio-Surveys conducted the field reconnaissance, completed their preferred lay-out of site locations, and have developed site specific specifications for beaver dam analogs and large woody debris structures in consultation with the project engineers and incorporated them into the plan sets.

• Are the appropriate permits (e.g., ESA consultation, Scientific Collection, fish health/transport, etc.) in place already or will they be in place before planned project implementation? <u>Yes ⊠ No</u>□

All work will be performed under a USACE removal fill permit, Clatsop County flood plain development permit, ODFW fish passage review/approval, Cultural resources consultation, and a NOAA ESA programmatic review.

- Can the project be implemented within the defined timeframe? (<u>See BPA</u> & <u>NFHP</u> requirements in the accompanying <u>PLCI RIP Priority Project Guidance document</u>). Yes
 <u>⊠</u> No□
- Please provide a brief description (200 words or less):

The construction/project completion time frame is defined by the project elements and by the funders who support the project. Given the amount of earth work(s), LWD/BDA installations, wetland/riparian plantings/enhancements, fencing, etc., the Tweedle project should take less than 6 weeks to construct, well within the instream work period of July 1 – August 31 for the Upper Nehalem River and Tributaries located upstream of Hwy 26 at Elsie. At this point UNWC

has obtained \$163,000 in cost share from NOAA towards engineering/design and to develop the project to the level that attracts additional funders for summer 2021 implementation.

8. Partner Engagement and Support (200 words or less):

• What partners are supporting the project?

The partners who are supporting the project are the Landowners (Carmichaels), UNWC, ODFW, NOAA, and Wild Salmon Center/funders. The project is also seeking to develop a partnership with Clatsop Co. SWCD to pursue additional cost share for riparian fencing and reforestation thru the Oregon Watershed Enhancement Board supported/funded Oregon Department of Agriculture - Strategic Implementation Area process to improve water quality on agricultural lands in the Cow Creek sub-basin which includes Tweedle Creek.

• What partners are active in implementing the project?

Partners who are active in the implementation of the project include the Landowner, UNWC, ODFW, Wild Salmon Center, NOAA and the project engineers.

• What partners are providing matching funds or in-kind services that directly contribute to the project?

Partners who are providing matching funds and/or in-kind services to the project include the Landowner, UNWC, ODFW, WSC and NOAA.

9. Monitoring and Reporting (200 words or less):

- How is completion of the project going to be documented? (See BPA and NFHP requirements <u>in</u> the accompanying <u>PLCI RIP Project Proposal Guidance document</u>).)
- How will the project's benefits to lampreys be monitored over time?

All restoration actions are georeferenced with all habitat structure locations having set photopoint documentation sites (downstream looking up/upstream looking down) to capture photos before, during, and after structure installation – for multiple years of monitoring. Field observations will be recorded during monitoring survey(s). Lamprey presence/absence survey(s) will be conducted by ODFW.

	Project Budget	Tweedle Creek Meander Restoration							
	ITEMS	Hours Units	Cost per Unit (\$)	RIP Funds Request (\$)	NOAA Cost Share (\$) (Secured)	OWEB Cost Share (\$) (un-secured)	ODFW In- kind (\$) (Secured)	Total	
Α	Personnel								
	a. UNWC Project Manager	200	\$ 35.00	\$ 1,500.00	\$ 5,500.00	\$ -	\$-	\$ 7,000.00	
В	Equipment Supplies		\$	\$-	\$-	\$-	\$-	\$-	
	a. 0		\$	\$-	\$-	\$-	\$-	\$-	
С	Travel								
	a. UNWC	1043	\$ 0.58	\$ 300.00	\$ 300.00	\$-		\$ 600.00	
D	Contracted Services								
	a. Engineer	1	lump sum	\$-	\$-	\$-	\$ 20,000.00	\$ 20,000.00	
	b. Consultant - Project Manager	1	lump sum	\$ -	\$ -	\$ -	\$ 7,000.00	\$ 7,000.00	
	c. Biologist - ODFW	200	\$ 50.00	\$-	\$-	\$-	\$ 10,000.00	\$ 10,000.00	
	c. Construction - Meander/lwd/BDA	1	lump sum	\$45,000.00	\$ 122,900.00	\$ -	\$	\$ 167,900.00	
	d. Riparian Fence	1	lump sum	\$-	\$-	\$ 10,000.00	\$ -	\$ 10,000.00	
	e. Riparian Planting	1	lump sum	\$ -	\$ -	\$ 15,000.00	\$	\$ 15,000.00	
Е	Administrative								
	a. Indirect	1	lump sum	\$ 3,200.00	\$ 2,571.00		\$-	\$ 5,771.00	
F	TOTAL		-	\$50,000.00	\$ 131,271.00	\$25,000.00	\$ 37,000.00	\$ 243,271.00	

10. Project Budget (including overhead):

11. Timeline of major tasks and milestones:

Workflow	Start Date/Month	End Date/Month	Responsible Party
Environmental compliance/permits	In progress	By Spring 2021	UNWC
Pre-project preparation	In progress	By project start Summer 2021	UNWC
Field surveys	Completed	Completed	Contractor & ODFW
Other tasks	In progress and as they develop	Summer 2021	ALL
Construction	July 2021	September 2021	UNWC/ODFW/Contractors
Riparian Fencing/Planting	September 2021	March 2022	
Reporting	As required	As completed	UNWC

North Coast sub-region - RIP Oregon Coast RMU

III. Literature Cited

- Clemens, B., C. Schreck, S. van de Wetering, & S. Sower. 2016. The potential roles of river environments in selecting for stream- and ocean-maturing Pacific Lamprey, *Entosphenus tridentatus* (Gairdner, 1836). pp. 299 – 322. *In*: A. Orlov, & R. J. Beamish (eds.) Jawless Fishes of the World. Cambridge Scholars.
- Brown E, R Jacobsen, J. Nott, M. Weeber and M. Lewis. 2017. Assessment of Western Oregon Adult Winter Steelhead and Lamprey – Redd Surveys 2016. Monitoring Program Report Number OPSWODFW-2016-09. Oregon Department of Fish and Wildlife, Salem, Oregon.
- Downey, T. D. Rilatos, A. Sondenaa, and B. Zybach. 1996. Skwakol: the Decline of the Siletz Lamprey Eel Population during the 20th Century. OSU Chapter, American Indians in Science and Engineering Society (AISES). Oregon State University, Corvallis, Oregon. 90 pp.
- Jacobsen R., J. Nott, E. Brown, M. Weeber and M. Lewis. 2014. Assessment of Western Oregon Adult Winter Steelhead – Redd Surveys 2014. Monitoring Program Report Number OPSW ODFW-2014-09. Oregon Department of Fish and Wildlife, Salem, Oregon.
- Jacobsen R., J. Nott, E. Brown, M. Weeber and M. Lewis. 2015. Assessment of Western Oregon Adult Winter Steelhead and Lamprey – Redd Surveys 2015. Monitoring Program Report Number OPSWODFW-2015-09. Oregon Department of Fish and Wildlife, Salem, Oregon.
- Lamprey Technical Workgroup. 2020a. Barriers to adult Pacific Lamprey at road crossings: guidelines for evaluating and providing passage. Original Version 1.0, June 29, 2020. 3199. + Appendices. Available: <u>https://www.fws.gov/pacificlamprey/LTWGMainpage.cfm</u>.
- Lamprey Technical Workgroup. 2020b. Best management guidelines for native lampreys during inwater work. Original Version 1.0, May 4, 2020. 26pp. + Appendices. Available: <u>https://www.fws.gov/pacificlamprey/LTWGMainpage.cfm</u>.
- ODFW (Oregon Department of Fish and Wildlife). 2017. Oregon Adult Salmonid Inventory and Sampling: Pacific lamprey Spawning Survey Data. Unpublished memo provided to the North Coast Pacific lamprey RMU for the April 5, 2017 meeting. ~12 pp.
- State of Oregon. https://www.oregon.gov/deq/wq/tmdls/Pages/TMDLs-Approved-by-EPA.aspx
- USFWS (U.S. Fish and Wildlife Service). 2018. Pacific Lamprey *Entosphenus tridentatus* assessment. February 1, 2019. USFWS, Washington D.C.

Appendix 1

The following are the definitions for interpreting the NatureServe conservation status ranks in Table 2.

SX Presumed Extirpated.—Species or ecosystem is believed to be extirpated from the jurisdiction (i.e., nation, or state/province). Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered. (= "Regionally Extinct" in IUCN Red List terminology).

SH Possibly Extirpated.—Known from only historical records but still some hope of rediscovery. There is evidence that the species or ecosystem may no longer be present in the jurisdiction, but not enough to state this with certainty. Examples of such evidence include: (1) that a species has not been documented in approximately 20–40 years despite some searching or some evidence of significant habitat loss or degradation; or (2) that a species or ecosystem has been searched for unsuccessfully, but not thoroughly enough to presume that it is no longer present in the jurisdiction.

SU Unrankable. .—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

S1 Critically Imperiled.—Critically imperiled in the jurisdiction because of extreme rarity or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the jurisdiction.

S2 Imperiled.—Imperiled in the jurisdiction because of rarity due to very restricted range, very few occurrences, steep declines, or other factors making it very vulnerable to extirpation from the jurisdiction.

S3 Vulnerable.—Vulnerable in the jurisdiction due to a restricted range, relatively few occurrences, recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure.—Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 Secure.—Common, widespread, and abundant in the jurisdiction.