Pacific Lamprey

2022 Regional Implementation Plan

for the

Washington Coast

Regional Management Unit

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I. Status and Distribution of Pacific lamprey in the RMUs

A. General Description of the RMUs

The Washington Coast Region comprises all the Washington watersheds that discharge directly into the Pacific Ocean (Figure 2). This region is rain-dominated, and most watersheds flow west from the Olympic Mountain Range and Willapa Hills portions of the Coast Range. The Upper Chehalis River also drains a small portion of the Cascade Mountains. The Washington Coast Region includes the Hoh-Quillayute, Queets-Quinault, Upper Chehalis, Lower Chehalis, Grays Harbor, and Willapa Bay watersheds, delineated by the 4th field HUC, ranging in size from 1,471-3,393 km^2 (Table 2).

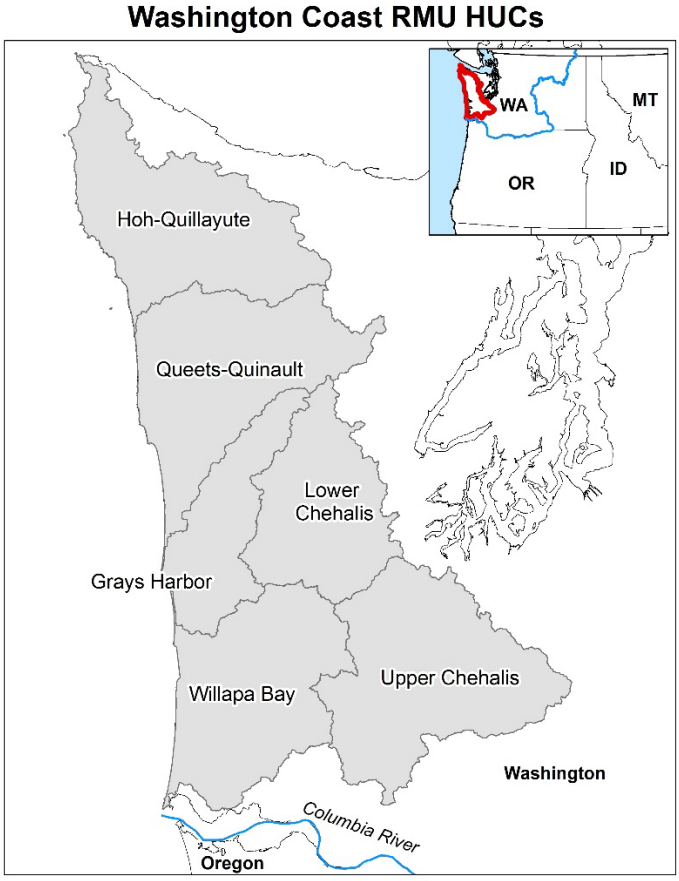

Figure 1. Map of watersheds within the Washington Coast RMU.

Table 1. Drainage Size and Level III Ecoregions of the 4th Field Hydrologic Unit Code (HUC) Watersheds located within the Washington Coast Region.

Watershed	HUC Number	Drainage Size (km^2)	Level III Ecoregion(s)
Hoh-Quillayute	17100101	3,186	Coast Range, North Cascades
Queets-Quinault	17100102	3,082	Coast Range, North Cascades
Upper Chehalis	17100103	3,393	Coast Range, Puget Lowland, Cascades
Lower Chehalis	17100104	2,170	Coast Range, Puget Lowland
Grays Harbor	17100105	1,471	Coast Range
Willapa Bay	17100106	2,849	Coast Range

B. Status of Species

Conservation Assessment and New Updates

Pacific Lamprey have yet to be a management priority in many coastal watersheds for federal or state agencies on the Washington Coast RMU. However, over the past few years, there have been steps toward a more focused and collaborative approach to collecting targeted Pacific Lamprey data and incorporating lamprey into management activities at the RMU level. The Washington Coast RMU, along with the Puget Sound/Strait of Juan de Fuca RMU, held inaugural annual meetings in 2021 to discuss and coordinate lamprey conservation needs. This collaboration continued in 2022 and facilitated a substantial increase in understanding Pacific Lamprey distributions and evaluating their conservation status. The 2022 RMU meeting had participants from tribes, local, state, and federal agencies, and non-profits. State and federal coordination occurred through the Interagency Special Status/Sensitive Species Program (ISSSSP), facilitated by the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS) staff with participation from US Fish and Wildlife Service (USFWS), and Washington Department of Fish and Wildlife (WDFW). These meetings aim to collaboratively manage rare aquatic species that are not managed under the Endangered Species Act, and Pacific Lamprey was a particular focus of these meetings.

There is still a need for targeted lamprey data collection, identification, field methods training for biologists and managers, sharing of best management guide resources, and continued collaboration in the RMU. However, progress on these fronts has been made over the past year. To facilitate the 2022 update to the Pacific Lamprey Agreement, a focused effort was made by partners to collate and share information regarding Pacific Lamprey distributions, population trends, and local threats. Every five years the Pacific Lamprey Conservation Initiative (PLCI), through the RMUs, revises the Pacific Lamprey Assessment (Luzier et al. 2011). The Assessment utilizes local partners' knowledge and expertise to evaluate Pacific Lamprey distribution, population demographics, and threats at the 4th field

HUC (watershed) level. This information is used to inform NatureServe, a diagnostic tool that characterizes the conservation risks of Pacific Lamprey across their historical range. Information about current Pacific lamprey distribution, population size, trends, and watershed threats was collected from partners in the Washington Coast region through an online Assessment questionnaire and virtual meeting held on March 14, 2022. A summary of these key findings is included in this Regional Implementation Plan, and a complete analysis will be included in the 2022 Pacific Lamprey Assessment.

This partner-driven data collection effort and subsequent NatureServe evaluation have resulted in updates to the two watersheds where the conservation status rank was evaluated in 2018, as well as the completion of the initial ranking status for the remaining four watersheds (Table 2). Compiling enough data to run the model and derive the initial conservation status ranking was the primary goal for the RMU and has dramatically advanced our understanding of Pacific Lamprey populations in this region. Significant data gaps still exist but based on the data collected, we have identified areas to focus outreach efforts and increased participation, as well as locations where more data or increased survey precision could result in future gains for the next Assessment.

Within the RMU, five watersheds had a conservation status rank of Imperiled (S2): Hoh-Quillayute, Upper Chehalis, Lower Chehalis, Grays Harbor, and Willapa Bay. The Queets-Quinault ranked as Critically Imperiled (S1). The Hoh-Quillayute and Queets-Quinault watersheds had less data available to make the ranking assessment, notably no current population size data or trend estimates. Due to the need for more information in these two watersheds, this initial ranking is more likely to change in the future due to an increase in data, which may not necessarily reflect a change in population status.

Distribution

Lamprey distribution information is currently being gathered by several tribes, agencies, and non-profits (e.g., environmental DNA (eDNA) sampling, occupancy sampling, and spawning data) in western Washington tributaries. Existing lamprey distribution and occupancy information are primarily based upon anecdotal observations or collected incidentally while monitoring for salmonid species. Most lamprey data on the Washington Coast has been collected through WDFW's Spawning Ground Surveys (SGS, https://data.wa.gov/Natural-Resources-Environment/WDFW-SGS/idwx-fext), which are conducted for steelhead during the winter and spring (typically January-June). This timing broadly overlaps with Pacific Lamprey spawning timeframes, though in most watersheds, Pacific Lamprey continue to spawn into the summer months after steelhead spawning and associated surveys have concluded; therefore, the distribution information and the population estimate are likely underestimate for the entire RMU. WDFW has collected consistent data since 2006 in Willapa Bay, Grays Harbor, Lower Chehalis, and Upper Chehalis. The Olympic National Park has also collected lamprey spawning in the Hoh-Quillayute and Queets-Quinault watersheds. Other data sources included observations reported through WDFW's Scientific Collection Permit process, observations submitted by tribes, agencies, and other entities to PLCI, as well as eDNA samples collected by various projects. There have been significant eDNA samples collected in the Lower and Upper Chehalis Basins through WDFW, which have also been used to expand the distribution information.

From 2017 to 2021, the known distribution increased by 42% from 1352 sq/km to 1926 sq/km. Especially significant gains in collating distribution data were made in Grays Harbor and the Hoh-

Quillayute. However, even after compiling new data, this updated distribution only represents roughly 16% of the estimated historic Pacific Lamprey extent for the RMU. Portions of the basins may be currently inaccessible to Pacific Lamprey caused by habitat fragmentation, including barriers that exist for lamprey but not for salmonids. Additionally, there are still locations and sampling efforts that are not explicitly include lamprey in surveys. Expanding these efforts into the future would identify more areas of occupancy as well as lamprey specific barriers.

Abundance

Pacific Lamprey abundance within the RMU was determined by expert opinion in combination with estimates from available spawning ground survey (SGS) observations made by the Washington Department of Fish and Wildlife (WDFW, https://wdfw.wa.gov/fishing/management/sgs-data) and the Olympic National Park. Lamprey nest and adult counts are made by crews conducting spawning surveys for steelhead, typically from January –June. However, this lamprey data in many watersheds are more limited for population abundance estimates than the equivalent data collected for salmon and steelhead in the same areas. Lamprey data is not collected as consistently and are often incidental observations. However, four of the watersheds in this RMU have had relatively consistent data collection since 2006 and represent the most accurate abundance estimates in western Washington. The Hoh-Quillayute and Queets-Quinault watersheds had limited data, and abundance was not estimated.

Though there is an overlap in Pacific Lamprey and steelhead spawning timing, Pacific Lamprey tends to continue spawning later into the summer than steelhead. A pilot study in 2010 and 2012 surveyed the full extent of the Pacific Lamprey spawning window in the Willapa Bay watershed. The WDFW crews documented 36 -70% of the Pacific Lamprey nests after the steelhead SGS concluded for the year (unpublished data, personal communication C. Holt WDFW 2021). Given all this caveats, the estimates for Pacific Lamprey population abundance in the Washington Coast are likely underestimates across all watersheds.

Short-term Population Trend

There is broad consensus that lamprey populations have declined significantly compared to historic returns approximately 50-60 years ago (Close et al., 2004; Columbia River Inter-Tribal Fish Commission, 2011; Luzier et al., 2011; Clemens et al., 2017). Short-term population trends, which is defined as the degree of change in population size over three lamprey generations (≈36 years), were evaluated in the six Washington Coast watersheds; however, in all cases, the data available covered fewer than 36 years, with the greatest consistency in Willapa Bay, Grays Harbor, Lower Chehalis, and the Upper Chehalis over the past 15 years. The Hoh-Quillayute had the least data and documented expert opinion, resulting in an “Unknown" trend evaluation. In the Queets-Quinault, expert opinion supports some degree of declining Pacific Lamprey populations, which for this model was conservatively estimated at 10-30%. Both these watersheds warrant further inquiry into population trend data and the collection of any additional existing records. The Upper and Lower Chehalis watersheds were found to have “Stable” populations based on the 15 years of available data and expert opinion. The Grays Harbor and Willapa Bay watersheds were ranked as "Declining 10-30%" based on 15 years of consistent data collection and expert opinion. Trend data will continue to improve in the watersheds with long-standing lamprey monitoring programs.

Table 2. Population demographic and Conservation Status Ranks of the 4th Field HUC watersheds in the Washington Coast Region. SU = Unrankable, SH = Possibly Extirpated, S1 = Critically Imperiled, S2 = Imperiled, S3 = Vulnerable. The ranks highlighted in Yellow are new in 2022. Arrows (↑↓) indicate the direction of change if the ranking differs from the 2018 rank.

Watershed	HUC Number	Conservation Status Rank	Historical Occupancy (km2)	Current Occupancy (km2)	Current Population Size (adults)	Short-term Trend (% decline)
Hoh-Quillayute	17110001	S2	1,000-5,000	100-500	Unknown	Unknown
Queets-Quinault	17110002	S1	1,000-5,000	100-500	Unknown	Declining?
Upper Chehalis	17110003	S2	1,000-5,000	100-2000	1,000-2,500	Stable
Lower Chehalis	17110004	S2↓	1,000-5,000	100-500	1,000-2,500	Stable
Grays Harbor	17110005	S2	1,000-5,000	100-500	250-1000	Declining 10-30%
Willapa Bay	17110006	S2	1,000-5,000	500-2000	1,000-2,500	Declining 10-30%

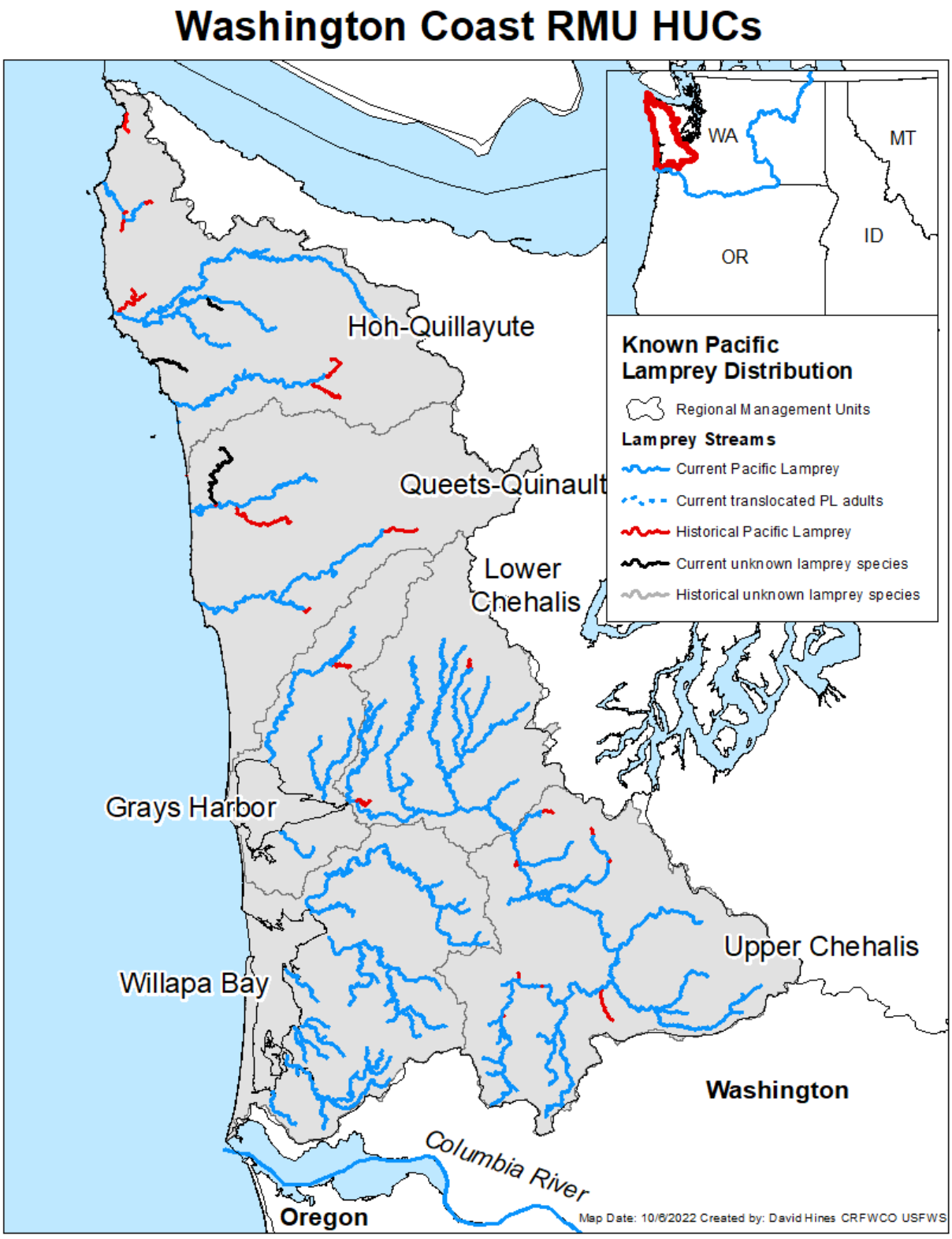

Figure 4. Current Pacific Lamprey distribution and location of 20 4th Field HUCs in the Washington Coast RMU (USFWS Data Clearinghouse 2017).

Current Threats

Threats were evaluated using the NatureServe Model to define the scope and severity of each of the seven threats identified for the region. The scope is the proportion of the watershed or population affected by the threat. Severity is the degree to which the impacts are irreversible or the time scale needed for recovery. Both scope and severity were ranked from Insignificant (1) to High (4). If there was insufficient information to quantify the scope and/or severity, it was ranked Unknown (0). The Unknown ranking down does not mean the threat is not present on the landscape, but it does highlight a data gap and potential area to focus future investigations. This was the first attempt to rank these threats for this RMU. In some cases, the better-understood influences of these threats on salmonid were the only available information and used instead of lamprey-specific data. Over the next five years, the goal will be to continue expanding awareness of how these threats impact lamprey and hone these threats rankings to reflect lamprey characteristics and responses.

On the Washington Coast, climate change and stream and floodplain degradation were identified as the key threats (>2.5) to Pacific Lamprey for the RMU as a whole (Table 3). Climate Change was ranked as a high threat (>3.49) for Mean Scope and Severity and the overall Average Scope/Severity. Stream and floodplain degradation was ranked a moderate threat (2.5-3.49). Within individual watersheds, passage, water quality, flow management and dewatering, predation, and lack of awareness were also recognized as threats but were ranked low (1.5-2.49) for Mean Scope and Severity and not considered key threats at the RMU level. However, these five threats may have significant local impacts and received a moderate ranking for scope and/or severity in some watersheds. Below is a brief description of the threats within the RMU in order of rank, from highest to lowest.

Climate Change (3.58)

Climate Change received the highest threat ranking for the RMU and was the highest or tied for the highest threat in all six watersheds. When ranking this threat in the RMU, contributors were asked to consider whether climate change would result in a potential increase in summer maximum water temperature [1° to 3°], alterations in precipitation patterns/intensity, diminished snowpack, shifts in the timing of snowmelt and peak flows, more extreme high and low flows, and/or an increase in the risk and extent of wildfires, which would have an impact on Pacific Lamprey populations. Across all watersheds, climate change received a moderate to high rank for Average Scope/Severity. Changes to snowpack, stream flow patterns, and stream temperatures were the primary concerns in these watersheds.

Climate change acts as a positive feedback cycle for many other threats, increasing their impacts on the region. More severe winter rainfall events may increase the frequency and intensity of flooding, bank erosion, and scouring of streambeds. Warmer summer temperatures and low summer base flows increase water temperatures to the detriment of Pacific Lamprey. These conditions may restrict lamprey habitat availability, hamper adult migration, reduce reproductive capability, or contribute to increased mortality if incubating eggs, burrowing larvae, or migrating juveniles are exposed to relatively warm temperatures (>20°C) for an extended duration (Clemens et al., 2016). Temperature increases could also shift or expand the range of non-native predatory fish, putting further stress on larval and adult lamprey (Lawrence et al., 2014). In

addition to temperature concerns, water withdrawals for irrigation, municipal, or residential uses further depress already low summer stream flows. 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.

Climate change is identified as a critical threat across the range of Pacific Lamprey, but the feasibility of making tangible changes will be challenging and require large-scale institutional changes. Focusing stream restoration efforts on actions that improve other identified threats, including instream complexity and floodplain connectivity, restoring tidal wetland habitats, removing unneeded impoundments, or revegetating riparian areas, can provide multiple benefits to the aquatic ecosystem (e.g., improving water quality, reducing flooding, increase channel stability, etc.) and can help make systems more resilient to climate change in the future (Justice et al., 2017). Focusing future restoration and conservation efforts toward following discrete threats is necessary to buffer against or mitigate adverse consequences of Climate Change.

Stream and Floodplain Degradation (3.00)

Floodplain development, stream channelization, road building (e.g., channel confinement, simplification, habitat fragmentation), flood reduction (e.g., channel straightening, levees), dredging, mining, and vegetation removal (e.g., grazing, deforestation, agriculture) contribute to Pacific Lamprey habitat degradation. Four of the six watersheds ranked this treat as moderate to high for scope and severity. Grays Harbor and Willapa Bay stream and floodplain degradation was the highest or tied for the highest threat present on the landscape. The Hoh-Quillayute watersheds had the lowest ranks for this threat since a large portion of the watershed is in the Olympic National Park. The Queets-Quinault had the same scope rating as the Hoh-Quillayute (low, 11-30% of the watershed is impacted) but a higher severity ranking, reflecting a longer-term recovery. The most significant impacts from urban and agricultural development, including channel confinement, simplification, riparian clearing, and levee building, are in the areas closest to the ocean and along the mainstem rivers. These modifications impact the reaches where migrating Pacific Lamprey must transit to and from the ocean. Timber harvest practices have also resulted in stream and floodplain degradation in this region and were highlighted in discussion for several watersheds, the Hoh-Quillayute, Grays River, and Willapa Bay.

Water Quality (2.21)

Though not a key threat for the entire RMU, water quality was ranked as a key threat in the Upper Chehalis and Willapa Bay watersheds. High water temperatures were identified as these watersheds' primary water quality issues. Additionally, high turbidity issues were discussed as a concern. The combination of the regions' flashy hydrographs and simplified and channelized streams results in high sediment loads, which climate change could further exacerbate. Though our understanding of water quality impacts on lamprey is still evolving, the limited information points to toxins and high water temperatures resulting in negative impacts on lamprey (Nilsen et al. 2015 and Clemens 2022). Data gathering and documentation regarding water quality issues related to Pacific Lamprey populations will be important in the two most impacted watersheds on the Washington Coast. Future temperature monitoring relative to climate change will also be essential across the RMU.

Lack of Awareness (1.92)

Pacific Lamprey have not been a focus of broad conservation efforts in the RMU, and information about their presence, basic biology, habitat needs, passage requirements, are not widely known and considered in management decisions. However, in the Upper and Lower Chehalis, along with Willapa Bay and Grays Harbor, concentrated efforts have been made to collect lamprey spawning ground surveys, larval data, and eDNA. The Aquatic Species Restoration Plan (ASRP) in the Chehalis River basin has led to concentrated fish and habitat sampling, including focused evaluations of Pacific Lamprey (Winkowski & Kendall, 2018). There have also been collaborations on this basin's lamprey data collection and outreach. However, there still needs to be more awareness regarding the lamprey life cycle, species identification, habitat requirements, and inclusion restoration design and construction planning. This threat can act as a positive feedback cycle with other threats; if a lack of awareness is pervasive in a watershed, the greater the likelihood that the other issues (passage, screening, habitat protection/restoration) are not incorporating lamprey-specific requirements. The need to educate biologists, managers, permit reviewers, funding sources, and the general public will continue to be an essential component of Pacific Lamprey recovery efforts in this region.

Passage (1.79)

Passage ranked highest in Willapa Bay, Lower Chehalis, and Within the RMU. Passage impediments to Pacific Lamprey range from small road crossings and private tide gates to large-scale hydroelectric facilities.

The proposed dam in the Upper Chehalis includes lamprey-specific passage infrastructure, but the designs are still being determined. Dam removals or modifications can improve or restore Pacific Lamprey access in this RMU, where numerous smaller dams exist across the landscape. This work can be accomplished with improvements for salmonid species, but some barriers pose a more significant threat to Pacific Lamprey migration and need to be assessed using lamprey guidelines. Fishway guidelines for improving lamprey passage can be found in the Lamprey Technical Workgroup (2022) whitepaper.

Since 2013, in Western Washington (excluding Willapa Bay), there has been a concentrated effort to evaluate state-owned salmonid passage barriers and increase efforts to remove prioritized barriers to comply with a federal court injunction that requires that the State fulfill the treaty-based duty to preserve fish runs. Hundreds of culverts still need to be assessed for providing anadromous salmonid passage (https://geodataservices.wdfw.wa.gov/hp/fishpassage/index.html). Overall, this effort and other culvert replacement projects will likely improve lamprey passage in many places, especially if stream-simulation culvert designs are employed or bridges are used to replace culverts. However, during the assessment process, barriers that block lamprey, but not salmonid passage, are not being identified, prioritized, or replaced; therefore, the documented fish passage barriers underestimate the barriers that exist for lamprey. Additionally, lamprey's unique swimming and climbing capabilities are not explicitly considered when designing or evaluating passage structures. Culverts with excessive water velocity (>0.86 m/s), inadequate attachment points,

perched outlets, or added features with abrupt 90-degree angles (e.g., baffles, fish ladder steps, outlet aprons), may obstruct the passage of adult lamprey (Lamprey Technical Workgroup 2022; Moser et al., 2002; Mesa et al., 2003; Stillwater Sciences, 2014; Crandall & Wittenbach, 2015). Many impassable culverts and tide gates occur low in watersheds where there are higher concentrations of urban and agricultural land use, preventing access to a large portion of the habitat. Expanding understanding of lamprey passage requirements and assessing road crossings, tide gates, and dams using lamprey-specific criteria is another area that merits focus throughout the RMU. Guidelines for evaluating and providing Pacific Lamprey passage at road crossings can be found in the Lamprey Technical Workgroup (2020a).

Dewatering and Flow Management (1.60)
Rapid fluctuations in reservoir and stream water levels from irrigation diversions, power hydropeaking operations, and instream activities (e.g., channel reconstruction, barrier removals, habitat restoration) can isolate or dewater stream habitats. These unnatural water level fluctuations can impede migration or strand eggs and larval lamprey in the substrate. Additionally, the screens and pumps associated with water management infrastructure and dewatering activities can lead to the impingement or entrainment of lamprey. The Upper Chehalis ranked the scope moderate, due to more small scale diversions and instream activities, along with one large-scale hydroelectric dam, the Skookumchuck Dam. The Lower Chehalis remains unknown due to a lack of information. Recommendations for reducing impacts on lamprey during in-water work can be found in Lamprey Technical Workgroup (2020b) whitepaper.

Predation (1.54)
Both the Chehalis watersheds noted non-native fish as a predation issue throughout the mainstream river and lower reaches of many tributaries. The scope was moderate, impacting 31-70% of the watersheds, but the severity of the threat is currently unknown. For all other watersheds, predation was ranked low to insignificant. Future investigations could focus on non-native species known to predate on lamprey at various life stages, e.g., bass species. Likewise, evaluations of passage barriers could be paired with predation assessments; predation by native predators can be exacerbated by passage impediments that delay or prevent migration. This is a threat where more information is needed across the RMU, but to date is not a significant contributor to Pacific Lamprey population declines on the Washington Coast.

Table 3: Summary of the Assessment results for the top three threats, including two key threats (Mean Scope/Severity ≥ 2.5) of the Washington Coast region. Insignificant 0-1.49, Low 1.5-2.49, Moderate 2.5-3.49, High 3.5-4.

	Stream and Floodplain Degradation		Water Quality		Climate Change	
Watershed	Scope	Severity	Scope	Severity	Scope	Severity
Hoh-Quillayute	2	2	2	2	3	3
Queets-Quinault	2	4	1	1	3	4
Upper Chehalis	3	3	3	3	4	3
Lower Chehalis	3	3	2	2	4	4
Grays Harbor	3	3	2	2	3	3
Willapa Bay	4	4	3	3.5	4	4
Average Scope/Severity	2.83	3.17	2.17	2.25	3.50	3.67
Rank	M	M	L	L	M	M
Mean Scope and Severity	3.00		2.21		3.58	
Watershed Rank	Moderate		Low		High	

Restoration and Research Actions

Significant data gaps persist across the watersheds in this RMU; however, significant strides have been made in compiling available population data and information regarding threats over the last several years. In the Upper Chehalis, Lower Chehalis, Grays Harbor, and Willapa Bay watersheds Pacific Lamprey have been explicitly and constantly documented and monitored for over 15 years. However, in some areas there is still a broad lack of awareness of Pacific Lamprey's presence, migration requirements, swimming capacity, and habitat utilization inhibits the incorporation of lamprey into monitoring (e.g., Stream Typing), evaluations and prioritizations (e.g., passage), and restoration actions (stranding from dewatering). Even the widespread data collection efforts across the region, including at smolt traps, often only report "lamprey ." The critical data regarding species and/or life stage used to inform population assessments and management discissions is not being recorded. Expanded efforts to train partners to identify lamprey species and life stage is necessary for this region. This has begun in the region and will expand in 2023 with PLCI funding to support training.

To date, the lamprey restoration activities that have occurred or are occurring within these RMUs are being performed by organizations focused on salmon and steelhead recovery in Washington Coast RMU. Many instream and floodplain habitat restoration activities have been identified in

watershed management plans, and culvert replacements driven by the federal court injunction are reconnecting miles of streams to anadromous salmonids. The vast majority of these actions have been funded and designed for salmon recovery, but this work may improve habitat conditions for lamprey as well. The following lamprey research and restoration actions were initiated by RMU partners in the Washington Coast RMU (Table 4).

Table 4. Conservation actions implemented that specifically target or impact Pacific Lamprey in the Washington Coast RMUs.

HUC	Threat	Action Description	Type	Status
RMU	Population	Coordinate lamprey conservation and data sharing through RMU.	Coordination	Ongoing
RMU	Population	Environmental DNA sampling to better understand lamprey distribution.	Survey	Ongoing
RMU	Lack of Awareness	Consideration of lamprey when planning and implementing instream habitat restoration work	Coordination	Ongoing
RMU	Population	Spawning ground surveys, smolt trap monitoring, and fish distribution surveys	Survey	Ongoing
RMU	Population	Extended spawning survey pilot to be implemented for two years in Willapa Bay to evaluate Pacific Lamprey spawning outside of steelhead timeframe	Survey	Completed
RMU	Population	State and Federal agency collaboration on rare aquatic species management, focusing on Pacific Lamprey	Coordination	Ongoing
RMU	Populations	USFS and Trout Unlimited are developing a multi-species eDNA assay that would detect nine salmonid species and Pacific Lamprey	Survey	Ongoing
RMU	Passage	Evaluation of lamprey passage at hatcheries	Survey	Proposed

II. Selection of Priority Actions

Table 5: Participants that filled out the questionnaire or joined the Washington Coast RMU meeting on March 14, 2022

Alaska Department of Fish and Game – Sabrina Garcia	Hoh Indian Tribe- Brian Hoffman and Julie Koehlinger	Olympic National Park – Katie Kierczynski
Partners for Fish and Wildlife Program – Kirsten Brennan	Quileute Nation – Caroline Walls and Chris Wagemann	US Forest Service (USFS) – Jessica Higgins
US Fish and Wildlife Service – Monica Blanchard, William Richie, Joe Skalicky	University of Alaska – Trent Sutton	Washington Department of Fish and Wildlife – Kim Figlar-Barnes. Lea Ronne, Lyle Jennings, Lauren Bauernschmidt, Laura Heironimus, Katherine Sutton, Barbara Mcclellan, Mike Scharpf
Washington Department of Natural Resources - Kyle Martens		

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