



Hood Canal Coordinating Council

Hood Canal & Eastern Strait of Juan de Fuca Summer Chum Salmon Recovery Plan

Executive Summary

“The overall goal of the Summer Chum Salmon Recovery Plan is to recover and obtain delisting of the summer-timed chum salmon populations in Hood Canal and the eastern Strait of Juan de Fuca watershed, including restoration of populations in watersheds where summer chum have been extirpated.”

*— Hood Canal and Eastern Strait of Juan de Fuca
Summer Chum Salmon Recovery Plan, May 2007*

In March of 1999, NOAA Fisheries (NOAA) determined that summer chum salmon originating from Hood Canal and the eastern Strait of Juan de Fuca represented an Evolutionarily Significant Unit (ESU) and formally listed these fish under the Endangered Species Act (ESA) as a species threatened with extinction.

In 2002, the Hood Canal Coordinating Council (HCCC) took the lead in development of the Hood Canal and Eastern Strait of Juan de Fuca Summer Chum Salmon Recovery Plan (SRP). This recovery work is part of the State of Washington's regional recovery planning effort for all ESA-listed salmon.

The HCCC is a non-profit, watershed-based Council of Governments established in 1985 in response to concerns about water quality problems and related natural resource issues in the watershed. The HCCC is made up of a Board of Directors, including the County Commissioners from Jefferson, Kitsap and Mason Counties and elected Tribal Council Members from the Skokomish and Port Gamble S'Klallam Tribes. In 2005, the state of Washington designated HCCC as the regional recovery organization for Hood Canal Summer Chum.

The SRP is designed to ensure the long-term survival and health of summer chum salmon originating from the Hood Canal and eastern Strait of Juan de Fuca watersheds. The SRP lays out a comprehensive strategy intended to meet the technical requirements for a recovery plan under ESA (shown in box on page 4) while respecting political, economic, historical, social, and cultural values and realities in the planning area. Though the SRP does not specifically address other ESA-listed species in the region (Puget Sound Chinook and bull trout), it is expected that these species will benefit from recovery actions.

Timeline

- Hood Canal & Eastern Strait of Juan de Fuca Summer Chum Salmon listed as threatened with extinction under Endangered Species Act - 1999
- Summer Chum Salmon Conservation Initiative finalized - 2000
- HCCC designated lead for Hood Canal & Eastern Strait of Juan de Fuca Summer Chum Salmon recovery planning - 2002
- Draft Summer Chum Salmon Recovery Plan prepared - 11/2005
- Final Summer Chum Salmon Recovery Plan adopted by NOAA Fisheries - 5/2007

Why Are Summer Chum in Trouble?

The abundance of summer chum salmon originating from the Hood Canal and the eastern Strait of Juan de Fuca dropped severely in the 1980's, and the number of adults returning from the ocean decreased to all time lows in 1989 and 1990 with less than a thousand spawners each year.

In a 1992 report, state and tribal biologists identified three primary factors that have contributed to the decline of summer chum salmon in Hood Canal and eastern Strait of Juan de Fuca streams: habitat loss, fishery exploitation, and climate-related changes in stream flow patterns.

Several key habitat factors were identified as degraded in nearly all watersheds:

1. Forest conditions along streams used by summer chum: these stands are now dominated by small trees and deciduous species and are frequently too narrow to provide quality habitat for summer chum.
2. Instream habitat: in most watersheds stream-side development, water withdrawal, and channel manipulations (removal of large wood, dredging, bank armoring) have severely damaged salmon habitat.
3. Floodplains diked for residences and businesses and converted to agriculture: this has reduced the storage area of floodwaters. Habitat is degraded in the diked portions of the channel that is not allowed to meander naturally across the floodplain.
4. Most subestuaries developed for human use: this has resulted in loss or degradation of summer chum rearing habitat. Road and dike construction, ditching, dredging, filling, and other modifications have all taken their toll. In spite of their importance to salmon, these habitats have received only limited conservation attention to date.

Definitions

Evolutionarily Significant Unit:

A population that 1) is substantially reproductively isolated and 2) represents an important component in the evolutionary legacy of the species. An ESU usually is composed of multiple independent populations (2 in the case of Hood Canal summer chum salmon-Hood Canal and Strait of Juan de Fuca).

Subestuary:

The term *subestuary* refers to the estuarine portion of a stream beginning at the upper extent of tidal influence and extending downstream to the outer edge of the delta. The *natal subestuary* would be the subestuary on the natal spawning river of a salmon population.

Additionally, available information suggests that shoreline development (bulkhead and dock construction) may threaten summer chum habitat at the scale of the entire Hood Canal and eastern Strait of Juan de Fuca region.

What efforts preceded the Salmon Recovery Plan?

In 1992, in response to the significant decline in summer chum population numbers, the state and tribal fisheries co-managers began to implement recovery actions in the management areas over which they have direct authority: harvest regimes and hatchery supplementation programs. The co-managers began to provide greater protection to summer chum in harvest plans, and together with the U.S. Fish and Wildlife Service (USFWS) and citizen groups, the co-managers initiated three summer chum hatchery supplementation programs in Hood Canal.

Those actions were expanded in later years and led to the development of the “Summer Chum Salmon Conservation Initiative - An Implementation Plan to Recover Summer Chum in the Hood Canal and Strait of Juan de Fuca Region” (SCSCI) in 2000. The SCSCI provided extensive details on the factors causing the decline of summer chum salmon and developed a more formal and comprehensive strategy for the recovery and restoration of summer chum populations. The SCSCI, which focused on harvest and hatchery supplementation programs, was intended to provide for the recovery of summer chum salmon when integrated with habitat protection and

restoration. The SCSCI was also expected to evolve as new information was gathered and knowledge of summer chum salmon was enhanced.

How was the Salmon Recovery Plan developed?

The HCCC developed the SRP by incorporating co-manager harvest and hatchery planning contained in the SCSCI and by coordinating with local county staffs and Boards of County Commissioners in Kitsap, Mason, Jefferson and Clallam County to develop a strategic approach to protecting and restoring summer chum habitat. The fisheries co-managers, the counties, citizens groups and others in the planning area have already implemented many projects, programs, and regulatory measures that are helping summer chum directly and indirectly. The SRP has incorporated and builds on those efforts and supports their continuation and the voluntary development of new efforts.

In addition to specifically giving credit for work already completed or underway, the SRP also recognizes and demonstrates that the burden of salmon recovery goes beyond local governments and encompasses the responsibilities of state and federal governments and associated entities. The SRP provides a strategic and specific list of recommended actions (both projects and programs) needed for the recovery of summer chum and to ensure the SRP's primary goal of removing summer chum from the ESA list is achieved. All recovery actions recommended in the SRP are strictly voluntary in nature, and they are considered necessary to achieve recovery under the ESA.

The technical basis for much of the SRP came from existing information and research for stock assessment, watershed assessment, and recovery planning for summer chum. Significant sources were the SCSCI; Limiting Factors Assessments for Watershed Resource Inventory Areas (WRIAs) 14, 15, 16, 17, and 18; and refugia studies prepared for Jefferson and Kitsap counties.

The SRP was submitted to NOAA Fisheries in June of 2005 for review and comment as part of the process of becoming the federally-sanctioned recovery plan for Hood Canal/eastern Strait of Juan de Fuca Summer Chum. There will also be an extensive period for public comment in the summer of 2006 once NOAA publishes the SRP in the federal register. After the public comment period, the SRP will be revised, as appropriate, and adopted by NOAA Fisheries during the fall of 2006 as the final recovery plan.

Summer Chum Salmon Recovery Goals

The Puget Sound Technical Recovery Team (TRT) is the NOAA technical group that is charged with defining measurable criteria for determining when delisting is warranted. While the TRT has developed planning targets for most of the chinook populations identified for the Puget Sound Chinook ESU, similar TRT viability goals and planning targets for summer chum salmon are not yet available. The TRT is currently identifying population abundance, diversity, spatial structure and productivity levels necessary for Hood Canal summer chum ESU viability.

In developing the SCSCI, the fisheries co-managers developed interim recovery goals for each of the eight existing summer chum populations as numeric targets of summer chum salmon abundance and escapement. For example, the target escapement (number of adults returning to spawn) for the Jimmycomelately summer chum population is 330. The average for the period of 1993-2004 was 231 or 70% of the target. The co-managers also described goals for the aspects of diversity, spatial structure and productivity. The combination of habitat, harvest and hatchery actions outlined in the SRP is expected to help populations throughout the ESU reach the identified recovery goals.

The current draft of the SRP relies on the interim recovery goals established by the fisheries co-managers in lieu of criteria from the TRT. The TRT criteria are expected to be released in the spring of 2006. Preliminary analysis from the TRT show that the co-manager goals are nested within the viability criteria. Once the TRT viability analysis is available, it is anticipated that comparisons and reconciliation with the co-manager approach will occur as part of the SRP adaptive management process.

SRP Methodology and Structure

The HCCC delineated six “conservation units” in the planning area as geographic groupings of the summer chum populations that have been identified and targeted for recovery by the co-managers and the TRT. See Figure 1 on page 5. Populations that share similar ecological and political characteristics were grouped together. The conservation units were developed as a means to provide organization to the analyses and approaches for recovery of the targeted populations.

The SRP provides the following specifics for each conservation unit:

- Geographic boundaries and descriptions;
- Status of associated summer chum populations;
- Specific factors for decline of each population and current land use development patterns; and
- Specific recommended actions (projects and programmatic) to achieve recovery of target populations.

Table 1 (attached) presents the six conservation units, associated populations (excluding the extinct populations that are not currently being reintroduced), the identified factors for decline of those populations, and key recommended actions for each target population.

Required elements under ESA for a recovery plan:

1) Objective, measurable criteria for determining when delisting is warranted;

The co-managers developed interim recovery goals for target summer chum populations. The TRT viability analysis is in development and is expected to be available in 2006 for review and integration with the SRP.

2) A comprehensive list of site-specific management actions necessary to achieve the SRP’s goal for recovery of the species;

The SRP contains comprehensive list, which is summarized in Table 1.

3) An estimate of the cost and time required to carry out those actions.

The SRP provides detailed cost estimates.



Figure 1. Hood Canal Summer Chum Conservation Units. Produced by PetersonGIS.

What are the recommended actions for recovery in the Salmon Recovery Plan?

The SRP's comprehensive list of recommended actions can be categorized into three general areas: habitat, harvest and hatcheries. Recommended habitat actions were developed in collaboration with county staff and other land managers. Harvest and hatchery actions were developed within the SCSCI and referenced within the SRP.

Habitat

The SRP includes an extensive list of projects and regulatory programs that, although voluntary, need to be enacted or continued in order to recover Hood Canal summer chum. Regulatory or programmatic recommended actions are part of a policy, program, or planning process. Project recommended actions are restoration or protection efforts that address a specific issue in a specific watershed, such as sedimentation or other limiting factor. A summary of programmatic and project recommendations within the SRP are summarized in Table 1 (attached).

These actions support the eight existing summer chum populations, referred to as target populations. The highest priority habitat actions recommended in the SRP are focused on the lower two miles of the Lilliwaup, Hamma Hamma, Duckabush, Dosewallips, Jimmycomelately, Snow/Salmon, Big/Little Quilcene and Union Rivers; the estuaries of those rivers; and the marine nearshore areas within a one mile radius of those river mouths.

Each Board of County Commissioners has adopted a suite of programmatic recommendations according to their respective policies and procedures. The counties will be able to use the SRP in the development, modification and revisions of their respective regulatory programs related to the Growth Management Act and Shoreline Management Programs.

Spawning and rearing in one part of the ESU are necessarily dependent on other areas for life history requirements of migration, feeding, protection, and physiological transitions of salmon populations. The recommended actions for each conservation unit in the SRP are meant to work in concert with actions developed for the other conservations units to achieve overall ESU-wide recovery.

Within the Hood Canal and the eastern Strait of Juan de Fuca some recovery actions must be addressed with a watershed-scale approach. This reality poses special challenges because the problems are complicated, the geographic scale is large, and the solutions are very costly. Two such problems are the following:

- Highway 101 is supported by earthen fill causeways that block and destroy habitat and cause functional degradation of estuaries and nearshore processes. This problem exists along the west side of Hood Canal and along the eastern Strait of Juan de Fuca. To address the problem of roads that span estuaries and river mouths, the Washington State Department of Transportation (WSDOT) will need local political support and substantial amounts of funding from the State Legislature and the US Congress.

- Excessive sediment delivery to many major rivers and streams from erosion on US Forest Service (USFS) roads is another large problem all along the west side of Hood Canal and in the eastern Strait of Juan de Fuca. To address this problem the USFS will need political support and substantial funding to close the many failing roads that are no longer used for logging access and to upgrade and stabilize roads still used for resource protection and management or for recreation. An adequate and stable budget for road maintenance is also needed to reduce the risks of sedimentation from inadequately maintained roads in the future.

Definitions

Terminal area fisheries: Fisheries that occur in or within close proximity to where summer chum salmon are produced (i.e., spawning grounds). These fisheries can be both marine and freshwater fisheries.

Preterminal area fisheries: Fisheries that occur in marine areas outside of the terminal areas.

Harvest

According to the SCSCI, two different types of harvest have contributed to the decline of summer chum salmon in the region: pre-terminal fisheries in the Strait of Juan de Fuca (marine waters seaward of Hood Canal and Discovery and Sequim Bays) and terminal fisheries in most of the marine waters of Hood Canal. For Hood Canal summer chum stocks, pre-terminal harvests occur annually, primarily in fisheries for pink and sockeye salmon in the Strait of Juan de Fuca. The impact of these fisheries during the period of decline of Hood Canal stocks has been rated low. After 1974, an added level of fishery exploitation began to occur in the terminal area, resulting in high exploitation rates through the 1980s. Terminal harvest has been rated as a major impact on Hood Canal summer chum salmon.

To address this impact, the co-managers instituted harvest management regimes designed to allow the rebuilding and maintenance of self-sustaining summer chum populations throughout Hood Canal and eastern Strait of Juan de Fuca. The regimes established in the SCSCI are part of an ongoing program that the co-managers monitor and adapt to new information.

The SRP concluded that the harvest management regime established by the fisheries co-managers for Hood Canal/eastern Strait of Juan de Fuca summer chum salmon is working according to expectations and contributes to recovery of the species. The SRP supports the continuation of these regimes, which includes zero direct harvest of listed species and conservative fishing regulations for other stocks to reduce the incidental harvest of summer chum.

Hatcheries

The co-managers initiated a supplementation program in 1992 that releases hatchery-raised fish to address the high risk of extinction of certain summer chum stocks. These efforts are also intended to reintroduce summer chum into watersheds where they have become extinct and to generally increase the likelihood of recovery of summer chum to a healthy status. This program uses strict criteria and monitoring to minimize the potential negative impacts of hatcheries, such as reducing diversity within and between wild stocks.

Summer chum salmon supplementation programs are operated on Lilliwaup Creek, Hamma Hamma River, and Jimmycomelately Creek. Summer chum salmon are being reintroduced into two streams where they had gone extinct: Big Beef Creek and the Tahuya River. Supplementation or reintroduction programs have been terminated on several streams because they have met the production level goals specified in the SCSCI. Projects that have been terminated include Big Quilcene River, Salmon Creek, Chimacum Creek, and the Union River. The last releases of fish from these programs occurred in 2004.

The SRP supports the continuation of the supplementation programs underway or planned in the planning area.

How will habitat actions in the SRP be implemented?

The successful implementation of the SRP's extensive list of recommended habitat restoration and protection projects, as well as regulatory and land use programs, will require significant funds and the collective and coordinated work of the counties, tribes, WDFW, citizens groups, and numerous agencies, groups and individuals inside and outside the planning area.

The SRP is based on voluntary implementation. None of the many organizations that are needed to play a role in implementation are obligated to participate. It is anticipated that these organizations will choose to participate to advance their missions, as part of funding and contractual agreements, and in response to public education and outreach. For example, the HCCC, in cooperation with many groups throughout Hood Canal, has led a highly effective and efficient Lead Entity process for the past six years, obtaining funding for numerous salmon habitat restoration and protection projects from the state's Salmon Recovery Funding Board (SRFB). This process involves developing a strategy that prioritizes habitat restoration and protection actions using pertinent science to obtain funding through the competitive SRFB process on the state level.

It is anticipated that the HCCC will continue to be the focal point for project development and implementation and that the HCCC will continue to coordinate the many organizations and projects involved in the SRP, even though it has no regulatory authority over these organizations.

In addition to the need for extensive voluntary action for the SRP to be successful, adequate funding for the recommended project actions and programs is critical for the SRP to succeed. The cost of implementation over the first ten years will be approximately \$136 million, the bulk of which is project costs. The SRP provides details about these funding estimates as well as potential strategies and options to meet the funding needs.

Regardless of funding and participation issues, there remains uncertainty whether projects and programs will be implemented as intended and/or will have the expected results. The SRP incorporates this uncertainty in its overall strategic approach by instituting a monitoring and adaptive management structure (both for projects and programs) to help the SRP evolve and respond as information and situations change to ensure that the ultimate goals and objectives for summer chum recovery can be achieved.

A full copy of the SRP is available on the HCCC website at: www.hccc.wa.gov.

Table 1: Hood Canal Summer Chum Conservation Unit/Key Actions Summary Table

This table provides a summary description of the target populations, recommended actions and habitat factors for decline for each of the conservation units in the Summer Chum Evolutionarily Significant Unit that includes the majority of the Hood Canal watershed. A complete description of the these populations, actions and factors is included in the Hood Canal Summer Chum Recovery plan found at the Hood Canal Coordinating Council website www.hccc.wa.org.

Conservation Unit	Target Stocks ¹	Recommended Key Actions	Habitat Factors for Decline
<p>Eastern Strait of Juan de Fuca</p> <p>This unit includes the Dungeness River, Jimmymcomelately Creek, Salmon Creek, Snow Creek, and Chumacum Creek watersheds. Also included are the marine nearshore waters stretching from Chumacum Creek estuary, extending along the western shore of Admiralty Inlet, and including Discovery Bay, Sequim Bay, and the Dungeness River estuary. Marine offshore waters of Admiralty Inlet and the eastern Strait of Juan de Fuca are also included. The eastern portion lies within Jefferson County and the western portion within Clallam County.</p>	<p>Jimmymcomelately</p> <p>Stock produced in Jimmymcomelately Creek, where they spawn up to RM 1.5, are targeted for recovery by co-managers and PSTRT. One of two existing stocks making up Strait of Juan de Fuca aggregation.</p>	<p>Programmatic Actions</p> <ul style="list-style-type: none"> • Clallam County enforce and monitor existing zoning for the Jimmymcomelately watershed. • Implement National Forest road maintenance and road abandonment plans. • Complete the Jimmymcomelately Creek-Lower Sequim Bay Estuary Restoration Project. • Continue the Jimmymcomelately Creek Summer Chum Salmon Supplementation Project. 	<p>Loss of channel complexity; sediment aggradation; riparian degradation; estuarine habitat loss and degradation</p>
<p>Salmon/Snow</p> <p>Stock produced in Salmon and Snow Creek watersheds, where they spawn up to RM 2.0 in Salmon Creek and RM 3.0 in Snow Creek, are targeted for recovery by co-managers and PSTRT. One of two existing stocks making up Strait of Juan de Fuca aggregation.</p>	<p>Programmatic Actions</p> <ul style="list-style-type: none"> • Support the Snow/Salmon Watershed Fish and Wildlife Management Plan process. • Jefferson County enforce and monitor present zoning for the upper watersheds. • Implement a Community Nearshore Restoration program for Discovery Bay. • Monitor results of the now terminated Salmon Creek Summer Chum Salmon Supplementation Project. • Promote agricultural Best Management Practices programs. <p>Projects</p> <ul style="list-style-type: none"> • Remove railroad grade, fill, and levees along estuary to restore salt marsh and tide flat. • Decommission National Forest roads. 	<p>Loss of channel complexity; increase in peak flows; riparian degradation; estuarine habitat loss and degradation; increased sedimentation</p>	<p>Loss of channel complexity; increase in peak flows; riparian degradation; estuarine habitat loss and degradation; increased sedimentation</p>

Conservation Unit	Target Stocks ¹	Recommended Key Actions	Habitat Factors for Decline
<p>Eastern Strait of Juan de Fuca (cont.)</p>	<p>Chimacum²</p> <p>The indigenous Chimacum Creek summer chum stock was extirpated, but a naturally spawning aggregation, using transplanted Salmon/Snow stock as donor, has been reintroduced. Chimacum Creek is considered at least initially, an extension of the Salmon/Snow summer chum stock.</p>	<p><u>Projects</u></p> <ul style="list-style-type: none"> • Make fee-simple purchase of or create conservation easement for: 1) remaining estuary parcels, 2) mainstream floodplain, and 3) parcels downstream of federal lands. • Monitor results of the now terminated Chimacum Creek Summer Chum Salmon Reintroduction Project. 	<p>Increased fine sediments; increased peak flow, freshwater wetland loss, and channel instability; low flows; estuarine habitat loss</p>
<p>Quilcene</p> <p>This unit includes the Big Quilcene River and Little Quilcene River watersheds as well as the Tarboo Creek and Thorndyke Creek watersheds. Also included are the marine nearshore waters and estuaries of the Dosewallips River, Quilcene Bay, Dabob Bay, and the Toandos Peninsula to the west side of Hood Canal and north through Port Ludlow.</p>	<p>Big/Little Quilcene</p> <p>Stock naturally produced in Big and Little Quilcene watersheds, where they spawn up to RM 2.8 and RM 3 respectively, are targeted for recovery by co-managers and PSTRT. One of six existing stocks making up Hood Canal aggregation.</p>	<p><u>Programmatic Actions</u></p> <ul style="list-style-type: none"> • Support the recommendations of the WRIA 17 watershed planning process regarding the City of Port Townsend water supply. Support City of Port Townsend's efforts to ensure adequate spawning flow in the lower Big Quilcene. • Support and monitor Jefferson County's present zoning. • Monitor results of the now terminated Quilcene National Fish Hatchery Summer Chum Supplementation Project. <p><u>Projects</u></p> <ul style="list-style-type: none"> • Remove dikes along the Big Quilcene River and Little Quilcene River and nearshore to restore salt marsh habitat. • Remove landfill and bulkhead between Boat Haven Marina and Indian George Creek on Quilcene-Dabob Bay to restore historic salt marsh and intertidal habitat. 	<p>Low flows; loss of channel complexity; sediment aggradation; riparian degradation; estuarine habitat loss and degradation</p>

Conservation Unit	Target Stocks ¹	Recommended Key Actions	Habitat Factors for Decline
<p>Hamma Hamma-Duckabush-Dosewallips</p> <p>This unit includes the Hamma Hamma, Duckabush, and Dosewallips River watersheds, their estuaries, the marine nearshore areas around these areas and the mid Hood Canal marine waters.</p>	<p>Hamma Hamma</p> <p>Stock naturally produced in Hamma Hamma watershed, where they spawn up to RM 2 in Hamma Hamma R. and up to RM 1.8 in John Ck, are targeted for recovery by co-managers and PSTRT. One of six existing stocks making up Hood Canal aggregation.</p>	<p>Programmatic Actions</p> <ul style="list-style-type: none"> Continue and monitor the Hamma Hamma River Summer Chum Salmon Supplementation Project. Develop a comprehensive floodplain management and restoration plan for the Lower Hamma Hamma watershed. <p>Projects</p> <ul style="list-style-type: none"> Remove fill and relocate structures along north side of Wacetickeh estuary and north of shellfish facility to restore marsh. 	<p>Loss of channel complexity; altered sediment dynamics; riparian degradation; estuarine habitat loss and degradation</p>
	<p>Duckabush</p> <p>Stock naturally produced in Duckabush watershed, where they spawn up to RM 3.5 in Duckabush R., are targeted for recovery by co-managers and PSTRT. One of 6 extant stocks making up Hood Canal aggregation.</p>	<p>Programmatic Actions</p> <ul style="list-style-type: none"> Support and monitor Jefferson County zoning for Duckabush watershed. <p>Projects</p> <ul style="list-style-type: none"> Remove dike along Robinson Road. Remove levees and rip-rap in lower river to restore channel sinuosity. 	
	<p>Dosewallips</p> <p>Stock naturally produced in Dosewallips watershed, where they spawn up to RM 4.3, are targeted for recovery by co-managers and PSTRT. One of six existing stocks making up Hood Canal aggregation.</p>	<p>Programmatic Actions</p> <ul style="list-style-type: none"> Support and monitor Jefferson County zoning for Dosewallips watershed. Develop Dosewallips River comprehensive floodplain management plan. <p>Projects</p> <ul style="list-style-type: none"> Remove dikes in vicinity of mainstem Dosewallips River and estuary to restore estuarine habitat and channel complexity. Restore Sylopash slough tidal prism and riparian area. 	

Conservation Unit	Target Stocks ¹	Recommended Key Actions	Habitat Factors for Decline
<p>Lilliwaup-Skokomish</p> <p>This unit includes the Lilliwaup River and Skokomish River watersheds, as well as the estuaries and nearshore up to the Hamma Hamma watershed.</p>	<p>Lilliwaup</p> <p>Stock naturally produced in Lilliwaup Creek, where they spawn up to RM 0.7, are targeted for recovery by co-managers and PSTRT. One of six extant stocks making up Hood Canal aggregation. The indigenous summer chum stock in the Skokomish was extirpated, but summer chum spawning, presumably from few strays, is observed.</p>	<p>Programmatic Actions</p> <ul style="list-style-type: none"> Support and monitor Mason County zoning and develop comprehensive plan. Support stormwater management planning for Hoodsport and Skokomish areas. Continue and monitor the Lilliwaup Creek Summer Chum Salmon Supplementation Project. <p>Projects</p> <ul style="list-style-type: none"> Remove bulkhead, fill, and diking to restore nearshore processes, juvenile migration corridor, and salt marsh habitat. 	<p>Loss of channel complexity; riparian degradation; estuarine habitat loss and degradation</p>
<p>Union</p> <p>This unit includes the Union River and Tahuya River watersheds and the marine nearshore waters east of the town of Union near the mouth of the Skokomish River north to Rendsland Creek.</p>	<p>Union</p> <p>Stock naturally produced in Union watershed, where they spawn up to RM 2.5 in Union R., are targeted for recovery by co-managers and PSTRT. One of six existing stocks making up Hood Canal aggregation.</p>	<p>Programmatic Actions</p> <ul style="list-style-type: none"> Support Mason County zoning and comprehensive plan/CAO updates and monitor results. Monitor results of the now terminated Union River Summer Chum Salmon Supplementation project and continue and monitor the on-going program to collect broodstock for reintroduction of summer chum in the Tahuya River. <p>Projects</p> <ul style="list-style-type: none"> Remove dike, tide gates, fill, bulkhead, and levees to restore habitat. 	<p>Loss of channel complexity; riparian degradation; estuarine habitat loss and degradation</p>
	<p>Tahuya²</p> <p>The indigenous Tahuya summer chum stock was extirpated, but a self-sustaining naturally spawning aggregation, using transplanted Union stock as donor, is being reintroduced. Spawning in the Tahuya R can occur up to RM 8.0.</p>	<p>Programmatic Actions</p> <ul style="list-style-type: none"> Support Mason County zoning and comprehensive plan/CAO updates and monitor results. Continue and monitor the Tahuya River Reintroduction/Union River Supplementation project. <p>Projects</p> <ul style="list-style-type: none"> Remove helicopter landing pad downstream from Northshore Road. 	<p>Loss of channel complexity; riparian degradation; estuarine habitat loss and degradation; water quality, temperature</p>

Conservation Unit	Target Stocks ¹	Recommended Key Actions	Habitat Factors for Decline
<p>West Kitsap</p> <p>This unit includes Big Beef Creek, Big Anderson Creek, and the Dewatto River watersheds, their estuaries and associated marine nearshore areas.</p>	<p>Big Beef²</p> <p>The indigenous Big Beef summer chum stock was extirpated, but a self-sustaining naturally spawning aggregation using transplanted Quilcene stock is being reintroduced. The indigenous summer chum stocks in Dewatto and Big Anderson are extirpated. Spawning in the Dewatto, presumably from few strays, is observed.</p>	<p><u>Programmatic Actions</u></p> <ul style="list-style-type: none"> • Update Kitsap County's Shoreline Master Plan and CAOs and monitor results. • Conduct a Nearshore Assessment. • Adopt the Kitsap County Draft Shoreline Environmental Designations. • Continue and monitor the Big Beef Creek Summer Chum Salmon Reintroduction project. <p><u>Projects</u></p> <ul style="list-style-type: none"> • Restore natural tidal processes and sediment transport in subestuary by addressing causeway and hatchery weir. • Remove fill. 	<p>Loss of channel complexity; riparian degradation; estuarine habitat loss and degradation; summer low and peak flows</p>

(1) Existing summer chum populations with identified interim recovery goals by the co-managers.

(2) No interim recovery goals identified for these populations, but the TRT is considering goals as part of the two independent summer chum population aggregations: Hood Canal or Strait of Juan de Fuca. Each of these populations is considered extinct but is being reintroduced.