Oregon Coast Coho Conservation Plan
For the State of Oregon

Prepared by
Oregon Department of Fish and Wildlife
In Partnership with State and Federal Natural Resource Agencies

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Introduction

The purpose of this Conservation Plan is to ensure the continued viability of the Oregon Coast Coho Evolutionary Significant Unit (ESU) and to achieve a desired status that provides substantial ecological and societal benefits. The Oregon Coast Coho ESU is viable (*see* Table 2; State of Oregon 2005) and does not currently require protection under the federal Endangered Species Act (ESA) (NOAA Fisheries 2006). The current status of this ESU reflects a reduction in fishery harvest, improved hatchery management, and extensive habitat restoration work initiated or maintained under the Oregon Plan for Salmon and Watersheds (Oregon Plan). This Conservation Plan maintains and enhances support of the Oregon Plan and meets the requirements of Oregon's Native Fish Conservation Policy (NFCP) (OAR 635-007-0502 to 0509). This Conservation Plan does not propose new land-use regulations, maintains existing regulatory programs, and enhances support for non-regulatory cooperative conservation. A key element of this Plan is to provide a higher and more effective level of support to local conservation groups and private landowners (e.g., Soil and Water Conservation Districts, watershed councils, industrial forestland owners, Salmon and Trout Enhancement Program (STEP) volunteers, and other individuals and groups). These community-based organizations have demonstrated an impressive record of planning, prioritizing, and implementing habitat improvement projects through their participation in the Oregon Plan.

This document is the State of Oregon's Conservation Plan for the Oregon Coast coho Evolutionary Significant Unit (ESU). It was prepared by the Oregon Department of Fish and Wildlife (ODFW) in partnership with other state and federal natural resource agencies. The Conservation Plan incorporates findings presented in the Oregon Coastal Coho Assessment (State of Oregon 2005; *hereafter referred to as the 2005 OCCA)* and extensive experience implementing the Oregon Plan since 1997. Oregonians have demonstrated extensive and diverse support for non-regulatory, community-based, habitat improvement work under the Oregon Plan. Participants in this effort include watershed councils, Soil and Water Conservation Districts, Salmon-Trout Enhancement Program volunteers, industrial and private landowners and a variety of non-governmental organizations and individuals. Information put together for the 2005 OCCA show that implementation of the Oregon Plan across this ESU has included significant investments ($107 million from 1997 to 2003) in restoration work by private landowners and state and federal agencies; private landowners voluntarily contributed about one-third of these funds; Oregon Watershed Enhancement Board restoration grants supported roughly $13 million during this timeframe.

The Conservation Plan was developed during an iterative process by considering substantial review, discussion, critique, and recommendations from three primary groups: a diverse public Stakeholder Team (see Appendix 1), the Oregon Plan Core Team, and the federal Technical Recovery Team (TRT) established for this ESU. The Conservation Plan describes commitments by the State of Oregon that will conserve the sustainability of this ESU and restore biological attributes necessary to achieve a science-based,

socially established desired status goal. Achievement of the desired status goal will provide significant ecological, economic and cultural benefits for all Oregonians. Hereafter, the Oregon Coast Coho Conservation Plan for the State of Oregon will be referred to as the Conservation Plan or simply the Plan.

This Conservation Plan, in supporting the Oregon Plan, is a dynamic strategy that will adapt and be modified over time in response to learning from monitoring data and implementation experience. The intent of this Plan is to conserve[1] and enhance Oregon Coast coho. The primary strategy, like the Oregon Plan, is to support efforts to improve habitat for coho salmon and other native fish[2] and wildlife species through on-the-ground, non-regulatory work by community-based entities and individuals.

This Plan meets the requirements for conservation plans described in Oregon's Native Fish Conservation Policy (NFCP). The NFCP was adopted by the OFWC in 2002 to support and increase the effectiveness of the 1997 Oregon Plan. The Conservation Plan does not replace or supersede the Oregon Plan. Fundamentally, the Conservation Plan is designed to improve the status of the ESU and virtually all of its constituent populations by increasing the productive capacity of the coho and their habitat to levels significantly higher than where the ESU could be considered a potential candidate for listing under federal ESA. Significantly, Oregon notes that all of the actions in this Conservation Plan are expected to benefit co-existing native species and water quality across the ESU.

The NFCP employs conservation plans to identify and implement appropriate strategies and actions necessary to restore native fish in Oregon to levels that provide benefits to the citizens of the state. This is achieved through a sequential process:

1. Define the management unit, or ESU.
2. Determine its current status.
3. Define a desired status.
4. Determine any gap between current and desired status and the factors causing the gap (limiting factors).
5. Identify and implement strategies and actions that address the limiting factors.
6. Monitor and evaluate the ESU status and actions implemented and use adaptive management to make adjustments necessary to achieve desired status.

The Conservation Plan contains the elements identified above and is also intended to be consistent with and contain most of the elements required by a federal ESA Recovery Plan. The primary required elements of a federal Recovery Plan include 1) objective and measurable criteria for delisting, 2) site-specific actions required for recovery, and 3) estimates of the time and cost of implementing the plan. A key distinction between this Plan and a federal Recovery Plan is the ESU is currently viable; the measurable criteria therefore establish biological objectives well beyond de-listing requirements, more akin to "broad sense" recovery goals in federal recovery plans.

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[1] As defined in Oregon Administrative Rule (OAR), the term *conservation* means managing for sustainability of native fish so present and future generations may enjoy their ecological, economic, recreational and aesthetic benefits (OAR 635-007-0501-10).

[2] *Native fish* are defined as indigenous to Oregon and include both naturally and hatchery produced fish (OAR 635-007-0501-36).

Structure and Biology of the Oregon Coast coho ESU

The Oregon Coast coho ESU includes naturally produced coho salmon in 56 populations – as defined by the National Oceanic and Atmospheric Administration (NOAA) TRT (Lawson et al. 2004) – from the Necanicum River near Seaside to the Sixes River near Port Orford. Twenty one of these populations are classified as potentially or functionally independent because they occur in basins with sufficient historical habitat to have persisted through several hundred years of normal variations in marine and freshwater conditions. These anadromous salmon spawn in rather small low-gradient streams from November through March, the offspring spend the next summer and following winter in freshwater, and then migrate through estuaries to the ocean in the spring of their second year of life. The vast majority of coho salmon then spend one and one half years (two summers) in the ocean, remaining principally off the Northern California and Oregon coast, before returning to their home streams to spawn.

Current Status of the ESU

The Oregon Coast coho ESU is not currently listed for protection under federal or state endangered species acts. Following a comprehensive assessment, Oregon concluded the ESU is currently viable and sustainable (2005 OCCA). In other words, Oregon Coast coho populations generally demonstrate sufficient abundance, productivity, distribution, and diversity to be sustained under the current and foreseeable future range of environmental conditions, even including conditions somewhat more adverse than were observed during the 1990s, a period characterized by adverse ocean survival conditions, drought, and flood across the ESU. NOAA's Federal Register Notice (NOAA Fisheries 2006) contained the following statement:

> *After considering the best available scientific and commercial information available, we have concluded that the ESU is not in danger of extinction throughout all or a significant portion of its range, nor is it likely to become so within the foreseeable future. (page 3033)*

Desired Status and Measurable Criteria

This Conservation Plan describes a desired status for future condition and performance of the Coast coho ESU that goes substantially beyond minimum viability to achieve social objectives. The desired status vision statement for this ESU is: *Populations of naturally produced coho salmon are sufficiently abundant, productive, and diverse (in terms of life histories and geographic distribution) such that the ESU as a whole is 1) self-sustaining into the foreseeable future, and 2) providing significant ecological, cultural, and economic benefits.* This vision statement is consistent with the mission statement for the Oregon Plan.

The vision statement and measurable, scientifically-based objectives for desired status were developed collaboratively with the Stakeholder Team and represents consensus among members. The goal targets an average return of spawners to the ESU that ranges from a low of greater than 100 thousand spawners when marine survival is extremely low

(this is about twice the spawners observed during 1993-1996) to a high of over 800 thousand spawners when marine survival is high (this is about three or four times the spawners observed in 2002 and 2003). This Plan describes a set of measurable criteria that will be monitored and evaluated to determine if and when the desired status goal has been achieved (see Appendix 2). These measurable criteria include parameters such as abundance, productivity, distribution, persistence, diversity, and habitat.

Oregon's Coho Conservation Strategy

Oregon is relying on a combination of existing regulatory programs plus effective long-term participation in non-regulatory conservation work to achieve the desired status goal for the Coast coho ESU. The existing regulatory programs were not intended to improve habitat to the extent needed to achieve the desired status goal outlined in this plan. The state has determined that the best way to increase the quantity and quality of coho habitat throughout the ESU, and achieve desired status, is through the voluntary participation of landowners and local groups.

Thus, the primary strategy to achieve the desired status in this Conservation Plan is based on the following general premise: ***Habitat management and improvement is the key to protecting and enhancing coastal coho; much of the most important coho habitat is on private land; habitat improvement on private land is most likely to occur through incentive-based cooperative partnerships with landowners; and the Oregon Plan provides the best vehicle for securing these partnerships and implementing habitat improvements.***

Policies and actions in this Plan will address the potential effects of human activities, or threats, across the full life-cycle of the Coast coho ESU including management activities upstream from the distribution of coho salmon, downstream through tributaries, mainstems, estuaries where coho reside and/or migrate, and the ocean. Principal activities that could potentially limit or support achievement of the desired status goal for the ESU include fishery harvest, hatchery operation, land use management, and on-the-ground work to increase the productive capacity of coho habitat. These policies and actions are framed to 1) conserve the existing productivity, distribution, diversity of coho salmon and habitat across the ESU and 2) improve the productive capacity of coho populations and habitat. Both elements are considered essential to achieve Oregon's desired status goal.

The long-term effectiveness of this Conservation Plan requires developing and implementing conservation and restoration strategies at scales within populations. Oregon will continue to support local watershed entities as they implement population-specific actions at scales appropriate for conservation. These finer resolution strategies will include prioritized and time sequenced action plans across all land ownerships. This conservation plan is not intended to prescribe habitat actions at local scales, but instead, establish direction and sideboards to help local conservation entities custom tailor restoration activities to address specific limiting factors within their watersheds.

Key Conservation Commitments

Oversight

- *Desired status goal*. This Conservation Plan establishes policy regarding the desired status for the ESU and constituent populations within the ESU. The desired status goal (and measurable criteria) in this Conservation Plan is significant because it provides a quantitative target for the ESU that can be used to evaluate the Plan's effectiveness over time.
- *Regulatory programs*. State and federal agencies will continue to implement, monitor compliance with, and enforce their existing, legislatively mandated, regulatory programs.
- The Oregon Plan Core Team is responsible for providing policy guidance and accountable for implementation of conservation efforts statewide (i.e., the Oregon Plan), including this Conservation Plan. An Oregon Plan Regional Management and Implementation Team will be responsible for tracking and coordinating implementation and preparing reports described as part of Oregon's adaptive management commitment in this Plan.

Implementation

- *Modified hatchery programs with minimal impact to fisheries.* Two coho hatchery programs are being altered in a manner that is designed to achieve viability for the affected populations while having little or no impact on the selective coho sport fishery in the ocean and increasing commercial and sport harvest opportunities in the lower Columbia River.
- *Conservation priorities*. The plan provides information intended to guide funding and action investments in watershed conservation by diverse management entities.
- *Oregon Plan Habitat Strategy*. The strategy is to provide more effective financial and technical support and outreach to private landowners to maintain and increase participation in cooperative conservation actions. Implementing the strategy will support the viability of the ESU and will help achieve the desired status for habitat – roughly a doubling in the amount of high quality habitat across the ESU. The habitat strategy enhances the Oregon Plan approach for developing cooperative conservation partnerships and conducting effective habitat restoration projects.

  The habitat strategy of this Conservation Plan will provide additional resources to community-based conservation networks (e.g., watershed councils, Soil and Water Conservation Districts, STEP volunteers, and other community groups) and private landowners engaging in voluntary, cooperative conservation projects. Oregon has over ten years of positive experience implementing habitat restoration under the Oregon Plan (State of Oregon 2005). Specifically, this strategy will provide 1) a better understanding of coho's ecological needs, 2) a better understanding of where and how habitat restoration can be most effective, 3) improved financial incentives to conduct voluntary habitat restoration, and 4) more technical support for project designs, permits, monitoring and reporting for restoration projects. Although this is not a new initiative, it will better focus

assistance and support for Oregon Plan participants so that their involvement can be most effective.

This strategic approach – recognizing and building upon the good work already completed under the Oregon Plan and a growing level of participation in Oregon Plan programs – is currently supported by the Oregon Forest Industries Council, Oregonian's for Food and Shelter, and the Oregon Farm Bureau. Enhanced partnerships among private forest and agricultural landowners represent a powerful means of increasing the level of investment and participation in effective voluntary habitat-improvement work on private lands. The Oregon Plan Core Team will coordinate this strategy among participating entities and seek to gain support from other groups throughout the ESU.

The Oregon Plan Habitat Strategy will focus on a bottom-up approach for developing and implementing actions, effectively utilizing the Oregon Plan network of conservation groups and partners. Regional or ESU-wide projects and programs that span multiple local jurisdictions can be brought directly to the Oregon Plan Regional Management and Implementation Team for consideration and implementation.

- *Multi-agency effort.* State and federal agencies provided detailed descriptions of their respective contributions to the Conservation Plan along with abstract summaries of their actions. Abstracts are in the main body of this Conservation Plan, detailed descriptions are in Appendix 3 to the Conservation Plan. Funding available to support conservation infrastructures (especially SWCDs and watershed councils) will be maintained and most likely, modestly increased during the next biennium (2007-2009).

<u>Research, Monitoring and Evaluation</u>

- *Research.* Although not comprehensive, eight topics that merit research are identified, including ocean conditions, pinnipeds and a better understanding of high quality coho habitat. These topics include information needs that are particularly relevant to achieving Oregon's desired status goal for this ESU.
- *Monitoring.* Monitoring within the ESU has been modified to improve estimates of coho spawners; juvenile coho density and distribution; and habitat quality.
- *Evaluation to support adaptive management.* First, Oregon commits to assess the ESU and the effectiveness of the Conservation Plan (in 6 years, every 12 years thereafter, or as needed). Second, Oregon will produce a succinct annual report – *an early warning system* –that will alert Oregon to the need to reconsider the status of the Coast coho ESU, monitoring, and management systems in place throughout the ESU.

Reaching Desired Status – Time Frame Expectations

Whereas immediate benefits to coho are expected as the actions identified in the Plan are implemented, the desired status goal for this ESU is ambitious and unlikely to be achieved in the near term. Achieving the desired status goal will require

institutionalization of the cooperative conservation commitments embedded in the Oregon Plan and this Conservation Plan, sustained leadership, extensive non-regulatory participation by private landowners, funding, reassessment, and adaptive management. With the enhanced level of habitat monitoring proposed in this plan, Oregon will be able to determine the trajectory of habitat condition and the approximate time-frame required to achieve the desired status goal. A 50 year time-frame is probably the most realistic scenario to achieve the desired status goal for the ESU, given likely levels of funding, the time required to resolve scientific uncertainty, and the time required for habitat actions to effect fish survival and production.

Oregon is relying on a combination of the current regulatory programs plus effective long-term participation in non-regulatory, cooperative conservation work to achieve the desired status goal for the Coast coho ESU. The Oregon Plan habitat strategy is designed to support effective work by the existing cooperative conservation network (including SWCDs, watershed councils, STEP volunteers and others) across the ESU. This effort is expected to increase participation in non-regulatory cooperative conservation work by private landowners, especially landowners in areas with the greatest potential to create high quality coho habitat and support achievement of the desired status goal for the ESU.

Oregon is generally optimistic that the elements of this Conservation Plan will achieve the desired status goal for the ESU, based on the following observations.

- Coho salmon are broadly distributed across all 21 independent populations within the ESU and spawning escapements during recent years of relatively favorable ocean survival have been higher on average than in the last 5 decades.
- The ESU is currently viable and adaptive management has virtually eliminated significant adverse impacts of fishery harvest and hatchery programs on the ESU.
- Practical methodologies exist to improve the environmental conditions currently limiting productive capacity of the ESU.
- An extensive and diverse locally-based infrastructure of committed groups and individuals has demonstrated a decades-long track record of restoration commitment and action. The fiscal support for restoration efforts and infrastructure support in the ESU is likely to increase.

Introduction

The purpose of this Conservation Plan is to ensure the continued viability of the Oregon Coast Coho Evolutionary Significant Unit (ESU) and to achieve a desired status that provides substantial ecological and societal benefits. The Oregon Coast Coho ESU is viable (State of Oregon 2005) and does not currently require protection under the federal Endangered Species Act (ESA) (NOAA Fisheries 2006). The current status of this ESU reflects a reduction in fishery harvest, improved hatchery management, and extensive habitat restoration work initiated or maintained under the Oregon Plan for Salmon and Watersheds (Oregon Plan). This Conservation Plan maintains and enhances support of the Oregon Plan and meets the requirements of Oregon's Native Fish Conservation Policy (NFCP) (OAR 635-007-0502 to 0509). This Conservation Plan does not propose new land-use regulations, maintains existing regulatory programs, and enhances support for non-regulatory cooperative conservation. A key element of this Plan is to provide a higher and more effective level of support to local conservation groups and private landowners (e.g., Soil and Water Conservation Districts, watershed councils, industrial forestland owners, Salmon and Trout Enhancement Program (STEP) volunteers, and other individuals and groups). These community-based organizations have demonstrated an impressive record of planning, prioritizing, and implementing habitat improvement projects through their participation in the Oregon Plan.

The Oregon Plan is a comprehensive partnership between government, communities, private landowners, industry and citizens funded by the Oregon Legislature. Efforts under the Oregon Plan include regulatory and non-regulatory programs designed to restore native salmon runs, improve water quality and maintain healthy watersheds and human communities throughout Oregon.

State agencies that participate in the Oregon Plan have the legal and regulatory authorizations, staffing, and commitment to carry out their conservation commitments (e.g., Oregon Coastal Coho Assessment (State of Oregon 2005; hereafter referred to as the 2005 OCCA)). Oregonians have demonstrated extensive and diverse support for non-regulatory, community-based, habitat improvement work under the Oregon Plan. Participants in this effort include watershed councils, Soil and Water Conservation Districts, Salmon and Trout Enhancement Program volunteers, industrial and private landowners and a variety of non-governmental organizations and individuals. Implementation of the Oregon Plan across this ESU from 1997 to 2003 included significant investments ($107 million) in restoration work by private landowners and state and federal agencies; private landowners voluntarily contributed about one-third of these funds; Oregon Watershed Enhancement Board restoration grants supported roughly $13 million during this timeframe. In addition, the Pacific Coast Salmon Recovery Fund constitutes a small, but important, portion of the money used by OWEB to carry out conservation activities. These dollars are used mostly for non-capital expenditures (assessment, monitoring, education, and outreach).

In concert, these regulatory and non-regulatory elements support the Oregon Plan mission:

> *To restore the watersheds of Oregon and to recover the fish and wildlife populations of those watersheds to productive and sustainable levels in a manner that provides substantial environmental, cultural and economic benefits.*

This document is Oregon's Conservation Plan for the Oregon Coast coho ESU and has been prepared by the Oregon Department of Fish and Wildlife (ODFW) in partnership with state and federal natural resource agencies. The Conservation Plan incorporates findings presented in the 2005 OCCA and extensive experience implementing the Oregon Plan since 1997. The Conservation Plan was developed during an iterative process by considering substantial review, discussion, critique, and recommendations from three primary groups: a diverse public Stakeholder Team, the Oregon Plan Core Team, and a Technical Recovery Team (TRT). This active participation has helped improve the Conservation Plan. A report by the facilitation contractor and a record of written critique submitted regarding each draft of the Conservation Plan is included as Appendix 1.

This document is the Conservation Plan for the Oregon Coast Coho ESU. Oregon's NFCP stipulates developing conservation plans for Species Management Units (SMUs) that will be formally defined by adoption of each respective conservation plan. ESU and SMU are both terms that refer to a group of populations from an area that share similar genetic and ecological characteristics. Because the Oregon Coast Coho ESU and the SMU are identical, the remainder of this Conservation Plan will refer only to the Oregon Coast Coho ESU or the ESU.

This Conservation Plan represents a significant step forward for the Oregon Plan through implementation of the NFCP. The Plan gives Oregon the ability to immediately implement an effective conservation program across this ESU. Oregon has established a desired status goal for the ESU that, by a very large margin, will exceed a level where the ESU would be considered viable (see Table 2). Oregon's conservation commitments are designed to improve the productive capacity of the coho and their supporting habitat. The Plan contains measurable criteria by which progress may be evaluated in the future. The Conservation Plan describes commitments by the State of Oregon and its federal partners that ensure the sustainability of this ESU and will restore biological attributes necessary to achieve a science-based, socially established desired status goal. Achievement of the desired status goal will provide significant ecological, economic and cultural benefits for all Oregonians.

Native Fish Conservation Policy

The Native Fish Conservation Policy (NFCP) was adopted by the Oregon Fish and Wildlife Commission (OFWC) in 2002 as an essential policy refinement that supports implementation of the Oregon Plan. The NFCP employs conservation plans as a means to identify and implement appropriate strategies and actions to restore and maintain native fish in Oregon to levels that provide benefits to the citizens of the state. As defined in Oregon Administrative Rule (OAR), the term *conservation* means managing

for sustainability of native fish so present and future generations may enjoy their ecological, economic, recreational and aesthetic benefits (OAR 635-007-0501-10). *Native fish* are defined as indigenous to Oregon and include both naturally and hatchery produced fish (OAR 635-007-0501-36).

The NFCP focuses on the conservation of naturally produced fish because they are the basis for federal ESA listings and are the foundation for productive hatchery programs. The NFCP represents a maturation of the Oregon Plan by providing monitoring data, scientific analyses, and focused restoration priorities that improve the effectiveness of conservation efforts under the Oregon Plan.

The NFCP employs conservation plans to identify and implement appropriate strategies and actions necessary to restore native fish in Oregon to levels that provide benefits to the citizens of the state. This is achieved through a sequential process:

1. Define the management unit, or ESU.
2. Determine its current status.
3. Define a desired status.
4. Determine any gap between the two and the factors causing the gap (limiting factors).
5. Identify strategies and actions that address the limiting factors.
6. Monitor and evaluate the ESU status and actions implemented and use adaptive management to make adjustments.

The Oregon Coast Coho Conservation Plan also considers and adds support to Basin Fish Management Plans that were developed in the 1990's. These Basin Fish Management Plans provide fish management guidance for most freshwater fish species in the basins of the Coos, Salmon, Siletz, Yaquina, Alsea, Yachats, Siuslaw, Tenmile Lakes, and Mid-Coast Small Ocean Tributaries. While these basin plans provide guidance just for ODFW fish management, this Conservation Plan documents management strategies, actions, and commitments for all Oregon natural resource agencies.

Salmon Management Planning – Historical Perspectives

Declines in salmon populations, salmon catch, and the adverse impacts of various traditional land and water use practices have been the subject of successive restoration plans since the late 1800s. Each of these plans proposed actions to improve the abundance of salmon available for harvest. Essentially, all of these plans failed to achieve their stated intent. All of the salmon restoration plans created prior to the Oregon Plan noted the adverse effects of traditional land and water uses, but none offered any substantive means of protecting or restoring habitat. These historical salmon management plans were created solely by an Oregon fisheries agency, independently, and without support of the various state and federal management agencies that directly affected the watersheds that support salmon throughout their life cycle. Oregon fishery agencies historically proposed to employ legally authorized management action, namely, hatchery production and harvest management.

Consistent with the management philosophy of the time, historical salmon management plans proposed to employ hatchery production 1) to replace lost or altered salmon habitat

and 2) to maintain or increase salmon harvest. These historical salmon management plans also tended to treat each salmon species (i.e., coho salmon, chinook salmon, steelhead, and so on) as rather homogeneous animals – the philosophy was that a fish is a fish and fish from one river were exchangeable with fish from another river. Science and experience has shown that these philosophies and management practices were overly optimistic and technically inaccurate.

A Coho Salmon Management Plan adopted by ODFW in1982 represented a change in thinking and set the management stage for subsequent development of the Oregon Plan, because it introduced the importance of stock differences, impacts of hatchery production, potential to over-harvest naturally produced salmon, and noted the impacts of various land use management practices on production potential. The Oregon Plan and this Conservation Plan are very different than the salmon management plans created prior to the 1982 plan because these and other recent plans 1) recognize natural production as the foundation of ESU sustainability; 2) recognize effects of fishery harvest, hatchery programs, marine survival, predation, and various land use practices across the entire life cycle of the fish; and 3) include commitments from the management entities that affect the fish.

Recent Conservation Planning for the Oregon Coast Coho ESU

The Oregon Coast coho ESU has, since 1995, been subject of extensive conservation planning; data gathering; scientific and policy analysis; restoration action by government and private landowners using public and private funds; and contentious debate and litigation regarding whether the ESU should or should not be listed. Since 1997, the ESU has been provisionally not-listed, listed, held in abeyance from being listed, and most recently not-listed by NOAA.

In January 2006, the National Marine Fisheries Service published in the Federal Register their finding that the Oregon Coast coho ESU does not warrant listing as an endangered or threatened species under the ESA (NOAA Fisheries 2006). This decision by NOAA is currently being contested in Federal court. Oregon does not expect the outcome of the current litigation to be the final chapter in the ongoing debate over the ecological and policy status of the ESU.

Considering the ongoing debate and litigation, the Conservation Plan contains the elements required under NFCP and is also intended to contain most of the elements required by a federal ESA Recovery Plan. The primary required elements of a federal Recovery Plan include 1) objective and measurable criteria for delisting, 2) site-specific actions required for recovery, and 3) estimates of the time and cost of implementing the plan. A key distinction exists between this Conservation Plan and a federal Recovery Plan. Specifically, whereas ESA Recovery Plans focus on criteria actions needed to achieve delisting of species, this Conservation Plan is developed for a species that is not listed under federal ESA. This Plan, therefore, establishes criteria and identifies actions needed to achieve a socially established desired status goal that reaches substantially beyond minimum viable status, similar to broad sense recovery objectives identified in some federal recovery plans. This Conservation Plan would need to be modified

somewhat in order to serve as a federal Recovery Plan, such as revising delisting criteria and actions.

Biological Features of the Oregon Coast Coho ESU

Coho salmon are widely distributed, essentially ubiquitous, in large and small Oregon Coastal river basins in this ESU and were historically well distributed in Oregon tributaries to the Columbia River. During pre-development times (circa 1850) coho salmon were far more abundant than Chinook salmon in the majority of Oregon coastal streams, and the runs of coho salmon to these areas was likely only approached or exceeded by runs of chum salmon in rivers along the northern portion of the Oregon coast.

Coho were the most abundant salmon species in rivers of the Oregon Coast Coho ESU and were the most numerous species in commercial and recreational catches off the Oregon coast during the 1950s through the 1970s. Whereas spawning runs of naturally produced Chinook salmon in Oregon coastal streams have demonstrated a stable or increasing trend since 1950, production (catch plus spawning escapement) of naturally produced coho salmon declined to historically low levels since the 1950s. However, returns of spawning coho to the Coast coho ESU since 2000 have been higher than decadal averages since the 1950s. This improvement is primarily related to two factors: 1) harvest related mortality in ocean fisheries has decreased from levels of over 80% to levels generally less than 15%, and 2) marine survival improved from the very low levels observed during the 1990s.

When compared to Chinook salmon and steelhead, coho salmon exhibit a relatively less complex life history. The vast majority of coho migrate as juveniles through estuaries to the ocean after spending one winter in freshwater and then spend two summers in the ocean before returning to spawn as 3-year old adults in the autumn and winter. Coho salmon normally spawn in relatively small tributaries with moderate to low gradient stream reaches and, as adults, return to spawning areas close to where they were hatched. Juvenile coho salmon migrate to the ocean as smolts in the spring, typically from late April, May, and early June. As smolts, coho may be present in estuaries for a period of weeks to perhaps a month during their migration to the ocean. As noted elsewhere in this Conservation Plan and in the 2005 OCCA, production of coho smolts in the Coast coho ESU is particularly limited by the availability of complex stream habitat that provides shelter to over-wintering juveniles during periods when flows are high, water temperatures are low, and food availability is limited. Oregon notes, however, that considerable uncertainty exists regarding the duration and value of estuarine residence by juvenile and adult coho; and the potential to improve estuarine habitat to the benefit of coho and other native species.

Oregon coastal coho tend to make relatively short ocean migrations. Coho from this ESU are present in the ocean from northern California to southern British Columbia, but the bulk of the ocean harvest of coho from this ESU would be expected to be off the Oregon coast. This ESU is strongly influenced by ocean conditions off the Oregon Coast, especially by the timing and intensity of upwelling (a condition characterized by near-

shore ocean currents providing cool, nutrient-rich water that stimulates production of food that supports coho and other fish species).

Various estimates have been proposed to represent the size of the coho runs returning to the Oregon Coast during the 1800s and early 1900s. For the purposes of this discussion, the Conservation Plan accepts that historical (pre-development) coho runs to the Coast coho ESU may have been in the range of one to two million fish during periods of favorable ocean conditions. If true, and if the runs were not fished (harvested) this represents concentrations of several hundred spawners per mile across the ESU, assuming that roughly 4,000 miles of spawning habitat was available to these fish. Such densities of coho spawners are within the range with spawner densities that have been observed for this species in many undisturbed watersheds throughout the Pacific Northwest.

Densities of spawning coho from 1993 - 1999 (a period characterized by very poor marine survival of coho salmon) often averaged in the range of 10 to 15 spawners per mile. Densities of spawning coho during 2000 - 2006 (when ocean survival was better) have averaged in the range of 30 to 60 fish per mile. These recent densities of coho spawners are far below historical numbers; however the density of naturally produced coho in most populations has been higher in recent years than in the past five decades.

2005 Oregon Coastal Coho Assessment: Key Findings

- ESU population structure. The TRT identified 56 coho populations as components of the ESU; 21 are classified as functionally or potentially independent (hereafter independent) and 35 are classified as dependent populations.
- Viability analysis. The ESU is viable and sustainable.
- Population limiting factors. Stream complexity and water quality are the primary limiting factors for the vast majority of, but not all, populations. The term *stream complexity* refers to any of the various combinations of conditions that result in over-winter shelter conditions sufficient to support sustainable populations through adverse marine survival periods. Habitats with higher levels of complexity also tend to provide benefits to all coho life stages.
- Current regulatory programs. A wide variety of Oregon and federal laws and conservative management practices related to watershed function, stream and estuary alteration, fish harvest management, and hatchery practices have been implemented since the 1950s and, most significantly, from the 1970s through the present. Taken as a whole, these laws and policies represent a significant improvement over legal protections and management practices that were historically common across the ESU. Oregon concluded that the framework of existing regulatory programs is sufficient to maintain or slightly improve the viability of the ESU (2005 OCCA).
- Threats to ESU viability. The most significant threats to this ESU noted in the 2005 OCCA would be if 1) a significant decrease occurred in marine survival of coho (compared to what was observed during 1993 – 1999), and/or 2) a significant reduction occurred in the availability of high quality, complex stream habitat to support over-wintering juvenile coho.
- Coho distribution and conservation opportunities. A very high proportion (~90%) of stream reaches with the highest potential to produce coho is on private lands, including forest, agricultural, and urban lands. Land use practices and management

objectives vary considerably across the distribution of coho from high gradient headwaters to estuaries.

1. ESU Population Structure

Oregon has adopted the population structure proposed by the NOAA Technical Recovery Team (Lawson et al. 2004) for the Coastal coho ESU. The NOAA TRT identifies 57 *populations* comprising five population *strata* within the ESU. Within these 5 strata, 21 populations (Figure 1) are thought to occur in basins with sufficient historical habitat to have persisted through several hundred years of normal variations in marine and freshwater conditions These have been classified as *potentially independent* and *functionally independent* populations. Potentially independent populations were historically self-sustaining but also likely were demographically influenced by neighboring functionally independent populations. Functionally independent populations were historically self-sustaining and likely had relatively little demographic influence from neighboring populations (Lawson et al. 2004). This Plan will subsequently refer to all of the 21 previously mentioned populations as independent populations. Independent populations identified by the NOAA TRT are listed in Table 1; their location within the ESU is shown in Figure 1.

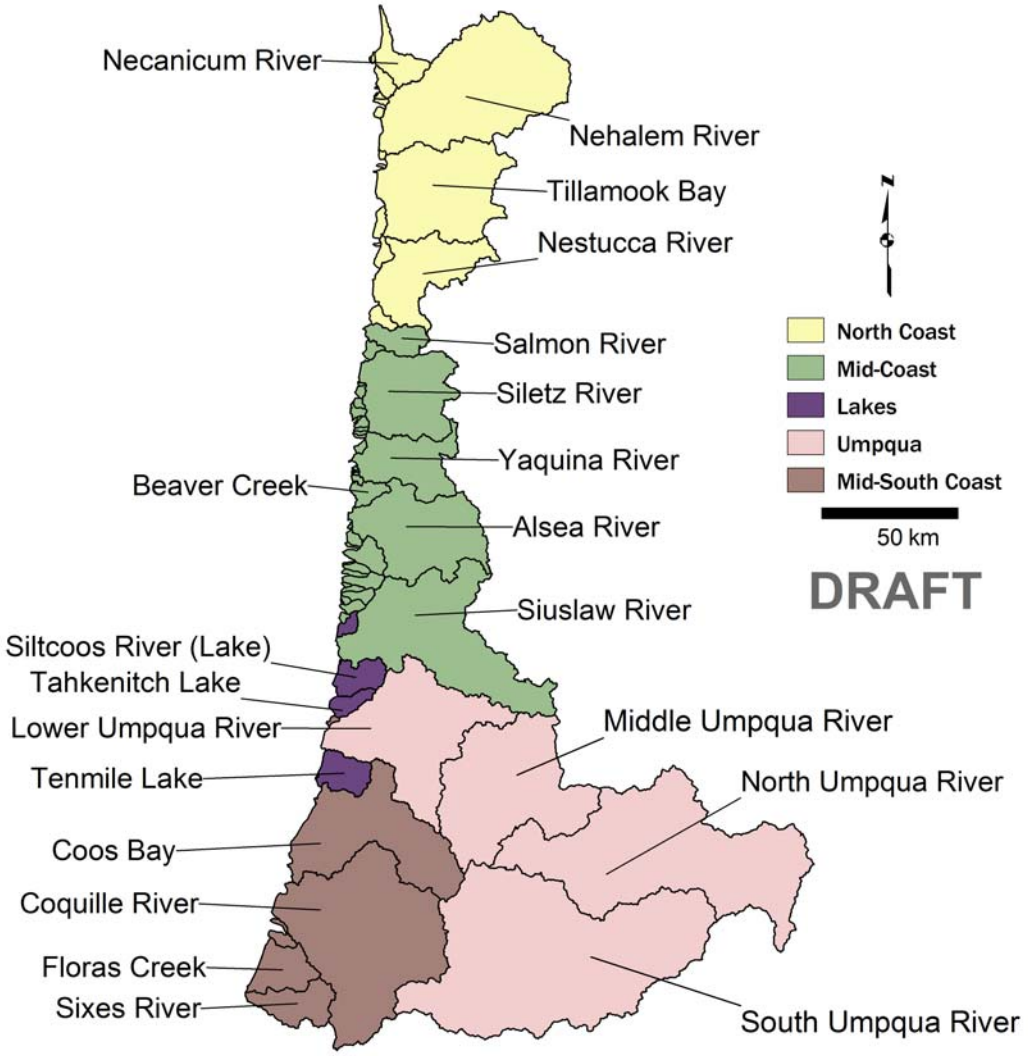
Table 1. Geographic strata and independent populations that comprise the Oregon Coast coho ESU.

Geographic Stratum	Populations
Northern	Necanicum Nehalem Tillamook Nestucca
North-Central	Salmon Siletz Yaquina Beaver Alsea Siuslaw
Umpqua	Lower Umpqua Mid Umpqua North Umpqua South Umpqua
Lakes	Siltcoos Tahkenitch Tenmile
South-Central	Coos Coquille Floras Sixes

Future analysis may support a revised ESU population structure, perhaps changing the classification of some dependent populations to independent status. The 21 independent

populations are grouped into five strata. The vast majority (~ 95%) of the coho historically produced in this ESU probably originated from these independent populations (Lawson et al. 2004). The remaining 36 dependent populations, in concept, are thought to be largely sustained by periodic reproductive contribution of strays from adjacent larger populations in order to naturally persist for periods longer than 100 years. Populations are the basic elements of the ESU and population strata are used to represent clusters of populations that share ecological or geographic similarities.

Figure 1. Independent populations and geographic strata of the Oregon Coast coho ESU.



2. Current ESU Status

Conceptual Classification of ESU Status

A conceptual partitioning of various levels of species performance into progressive classifications – *from very poor to very good* – permits development of specific criteria for status assessment. A conceptual classification of various levels of ESU status (performance) used in this Conservation Plan is illustrated in Table 2. Currently, the Oregon Coast coho ESU is classified as viable. The goal of this Conservation Plan is to improve the productivity of the fish and their supporting habitat to a level where desired status classification is achieved.

Table 2. Conceptual steps of biological status for a species from pristine to extinct and associated definitions.

Classification	Definition
Pristine	All historical populations within the ESU are healthy and adverse impacts from human activities are insignificant at the population and ESU scale.
Desired status (*aka*: broad-sense recovery/Oregon Plan goal)	Populations of naturally produced fish comprising the ESU are sufficiently abundant, productive, and diverse (in terms of life histories and geographic distribution) that the ESU as a whole will: a) be self-sustaining, and b) provide environmental, cultural, and economic benefits.
Viable	Populations of naturally produced fish comprising the ESU are sufficiently abundant, productive, and diverse (in terms of life histories and geographic distribution) that the ESU as a whole is sustainable into the foreseeable future.
Threatened	The ESU is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
Endangered	The ESU is likely to become extinct within the foreseeable future throughout all or significant portion of its range.
Extinct	Means an ESU contains so few members that there is no chance their evolutionary legacy will ever re-establish itself within its native range.

Conservation Plan Considers the ESU as Viable

Based on Oregon's assessment of the status of coastal coho relative to viability criteria presented in the 2005 OCCA, the ESU is viable (Table 3). Specifically, coho populations generally demonstrate sufficient abundance, productivity, distribution and diversity to be sustained under the current and foreseeable range of environmental conditions. In fact, the ESU retains sufficient productivity and is supported by sufficient habitat to be sustainable through a future period of adverse ocean, drought and flood conditions similar to or somewhat more adverse than the most recent period of poor survival conditions (late 1980s and 1990s).

Table 3. Conclusions from the 2005 OCCA viability analysis for Oregon Coast coho at the population, strata and ESU level.

ESU criteria conclusion	Geographic stratum	Stratum criteria conclusion	Population	Population criteria conclusion
Pass	**Northern**	***Pass***	Necanicum	Pass
			Nehalem	**Fail**
			Tillamook	**Fail**
			Nestucca	Pass
	North-Central	***Pass***	Salmon	**Fail**
			Siletz	**Fail**
			Yaquina	Pass
			Beaver	Pass
			Alsea	**Fail**
			Siuslaw	Pass
	Umpqua	***Pass***	Lower Umpqua	Pass
			Mid Umpqua	Pass
			North Umpqua	**Fail**
			South Umpqua	Pass
	Lakes	***Pass***	Siltcoos	Pass
			Tahkenitch	Pass
			Tenmile	Pass
	South-Central	***Pass***	Coos	Pass
			Coquille	Pass
			Floras	Pass
			Sixes	**Fail**

NOAA Concludes that the ESU does not Warrant Listing

NOAA was recently required to consider ESA listing status of 27 ESUs across the Pacific Northwest. NOAA's conclusion regarding the Oregon Coast coho ESU (NOAA Fisheries 2006) contained the following statement. *After considering the best available scientific and commercial information available, we have concluded that the ESU is not in danger of extinction throughout all or a significant portion of its range, nor is it likely to become so within the foreseeable future.*

Uncertainty Regarding ESU Viability

Although Oregon concluded that the ESU is viable and sustainable; and NOAA concluded that the Coast coho ESU does not warrant listing under federal ESA, the NOAA TRT provided the following cautionary perspective regarding the status of the ESU (letter to Robert Lohn, August 19, 2005). *"We have preliminary indications for the recovery status of the Oregon Coast coho Salmon ESU. At this time our evaluation indicates, with a moderate degree of uncertainty, that the ESU is persistent (persistence is relevant to Endangered status). Our evaluation of biological sustainability (relevant to Threatened status) based on current and recent past conditions shows a high degree of uncertainty with respect to the statement that the ESU is sustainable. Again these are preliminary results and are subject to change upon further testing and review".*

Oregon recognizes the TRT's uncertainty regarding their preliminary assessment that the ESU is sustainable and also recognizes that litigation has been filed contesting NOAA's decision to not list the ESU under the federal ESA.

Relevance of Viability and Listing Status Uncertainty
Debate or uncertainty regarding the listing status of the ESU is not a lynch-pin of the Conservation Plan. *Why*? Simply stated, this Conservation Plan is designed to improve the status of the ESU and virtually all of its constituent populations and to improve the productive capacity of the coho and their habitat to levels significantly higher than a level where the ESU could be considered a potential candidate for listing under the federal ESA.

This Conservation Plan maintains effective management protections and initiates additional actions that are intended to produce a significant improvement in the productive capacity of the ESU – regardless of how the ESU's current viability and listing status under federal ESA is defined.

The most important aspect of the Conservation Plan is its commitment to ensure that the trajectory for the coho salmon ESU and the habitat that supports the fish is improving – that the productive capacity of the habitat and the fish will be substantially greater in the future than they are today.

3. ESU Desired Status: Vision, Goals, Measurable Criteria, and Gaps

Oregon's Vision for ESU Desired Status
General Description of Desired Status for the Coast Coho ESU***:*** Populations of naturally produced coho salmon are sufficiently abundant, productive, and diverse (in terms of life histories and geographic distribution) that the ESU as a whole 1) will be self-sustaining[3] into the foreseeable future, and 2) will provide significant ecological, cultural, and economic benefits.

Oregon's desired status goal for this ESU is ambitious. What will Oregon look like across this ESU if the desired status goal is achieved? Here are some characteristics of the ESU, the watersheds, the fish, and the communities that should be observable when this desired status goal is achieved.

- There will be, on average, abundant numbers of coho salmon in our coastal streams including adults in the fall and winter and juveniles throughout the year.
- During return years affected by extremely poor marine survival conditions (similar to the 1990s), roughly twice as many coho will return to the ESU, compared to the

[3] *Self-sustaining* (ORS 496.430) means having a sufficient proportion and distribution of constituent populations that: (a) are likely to survive prolonged periods of habitat, oceanic, climatic and environmental conditions that are detrimental to a population; and (b) have habitat of sufficient quality and quantity that is likely to provide survival rates adequate to maintain associated ecological, cultural and economic benefits.

numbers that were observed spawning in the 1990s; during return years affected by favorable marine survival there will be well over a half a million spawners returning to the ESU.

- Tributary, mainstem, estuarine, and wetland reaches of coastal rivers will provide sufficient high-quality habitats and water quality to support increased numbers of ocean-bound coho smolts.
- Some hatcheries in coastal basins (with program guidance provided in this Conservation Plan, NFCP, and Fish Hatchery Management Policies), will be producing hatchery coho to support consumptive fisheries that achieve societal and cultural needs not met by the natural production goals of this plan.
- Ample opportunity will exist for people to fish-for and keep naturally produced coho in the ocean and in many streams, again, consistent with population-based conservation goals.
- There will be on average, 2 to 4 times more coho carcasses in the spawning streams as there have been in the last 5 decades and these carcasses will provide ecological benefits to native fish and wildlife and the ecosystem.
- There will be a wide variety of traditional land use activities throughout the ESU, including forestry, agriculture, recreation, and industrial and housing development.
- Coho salmon will be a far more significant feature of the cultures of Native Americans across the ESU than has recently been possible.
- Coho salmon will be a far more significant factor in the cultures and employment in coastal communities across the ESU than has recently been possible. These biological, social, and economic benefits will be widely shared across the ESU. Societal values of coho salmon will include intrinsic values (based simply on the knowledge of the resource's existence) and bequest values (which confer value to the resource for the benefit of future generations).

Desired Status Goal

The description of the goal and the gap between current and desired status presented in this Chapter emphasizes abundance. Other physical and biological aspects of desired status (*see* list under Measurable Criteria for Independent Populations section) are described in Appendix 2.

Oregon's desired status for the Coast Coho ESU is a science-based, socially established goal. As previously noted, this goal represents a condition of the ESU that is significantly higher than a level where it could be considered a potential candidate for listing under federal ESA. The desired status goal targets a return of spawners to the ESU (at 1.1% survival from smolt-to-adult in the marine environment) that is roughly twice the number of coho spawners observed during 1993-1999 (i.e., about 100 thousand versus about 50 thousand). The desired status goal for this ESU is consistent with the mission of the Oregon Plan, namely, to create conditions in which coho across the ESU are sufficiently abundant, productive, and diverse that the ESU is self sustaining and provides substantial environmental, cultural, and economic benefits. Desired status represents a level of population performance that exceeds the level at which an ESU is considered viable and is a goal that is based on a combination of legislative mandates, social values, and non-regulatory contributions.

Measurable Criteria for Desired Status
The Native Fish Conservation Policy requires each conservation plan to include measurable criteria of species performance. Achievement of the desired status goal for the Coast coho ESU will be based on measurable criteria defined in Appendix 2. The desired status goal will be met under the following conditions: 1) all independent populations pass the six measurable criteria for independent populations and 2) the aggregate of dependent populations within a biogeographic stratum pass the two measurable criteria for dependent populations.

Measurable Criteria for Independent Populations.
Measurable criteria (Appendix 2) to evaluate achievement of the desired status for the Coast Coho ESU are presented for the following attributes of species performance:

1. Abundance – the number of naturally-produced spawners.
2. Persistence – the forecast likelihood that the population will persist in the future.
3. Productivity – the number of recruits (progeny) produced per spawner (parent).
4. Distribution – the distribution of spawners among habitats within a population's home range.
5. Diversity – indices of genetic variability related to a population's ability to adequately respond to unpredictable natural variations in the environment and retain those adaptive genetic characteristics that promote optimum survival in basin specific habitats.
6. Habitat – The amount of available high quality habitat across all freshwater and estuarine life stages.

Gap (Difference between Current and Desired Status)
Achieving the desired status goal for the overall ESU will result in having roughly one hundred thousand coho (on average) return to spawning streams in the ESU during an extended period of extremely poor ocean survival ($\leq$1.1%) like was observed during 1993-99 when the average return to these streams was about fifty thousand coho. During periods of high ocean survival (>15%), returns of spawning coho to the ESU would be expected to range around eight hundred thousand fish (*see* Appendix 2, Desired Status Measurable Criteria). The overall ESU gap does not necessarily relate directly to the gaps for individual independent populations. Some populations are currently well below half of their desired status goal for extremely poor ocean survival, whereas other populations have a much smaller relative gap (Appendix 2).

Achieving the desired status for the ESU will require a combination of improving productive capacity of the fish and the habitat that supports them in amounts that will lead to twice the number of spawning adults that were seen in the 1990's for the overall ESU. This Conservation Plan assumes that most of the improvement will require enhancing the productive capacity of the habitat, although significant improvement in the

productive capacity of the populations across the ESU will also accrue from recent changes to harvest and hatchery management programs.

4. Limiting Factors

Numerous factors contribute to the gap between current and desired status of populations comprising the Oregon Coast Coho ESU. Primary factors that currently constrain the ESU, or *limiting factors*, were identified in the 2005 OCCA (State of Oregon 2005). In general, ocean condition is the primary factor influencing coho abundance, and stream habitat complexity is the primary factor limiting achievement of desired status.

Ocean Conditions as a Limiting Factor

Although marine survival of coho associated with ocean conditions is the largest single factor regulating coho productivity and abundance, it is not considered a primary factor limiting the ESU's ability to reach desired status. This is because desired status criteria are scaled appropriately for variable marine survival and because management has little influence on marine survival.

Ocean conditions, or the availability of food sources for coho in the marine environment, determine the rate at which coho smolts will survive to become adults. These conditions are influenced by cyclic and periodic fluctuations in ocean currents and cannot currently be predicted or managed. For this reason, this Conservation Plan recognizes the importance of ocean conditions on coho survival and abundance, but focuses on those limiting factors that can be influenced by management actions. Understanding and predicting ocean conditions have been identified as a research need in this Conservation Plan.

Although Oregon cannot currently influence ocean conditions, the state will be able to determine whether improvements or declines in ESU status are attributable to the ocean or to the effectiveness (or lack thereof) of actions taken under this plan. The desired status criteria were developed to provide for measurable goals at varying ocean survival rates. This will allow status assessments to be put in the context of recent ocean conditions.

Stream Complexity Defined

Stream complexity is a term that refers to the ability of a stream to provide a variety of habitats. The type of habitat most limiting in the Coast coho ESU is high quality over-winter rearing habitat. In the context of factors most limiting coho in this ESU, *stream complexity* and *high quality over-winter rearing habitat* refer to the same thing: habitat of sufficient quality to produce over-winter survival at rates high enough to allow coho spawners to replace themselves at full-seeding during periods of poor ocean conditions (3% smolt to adult survival). Both terms refer to a variety of habitat conditions that create shelter for juvenile coho salmon during the over-winter rearing period. During this critical period, high stream flows can flush juvenile coho out of streams into saltwater where they perish. Based on several years of studying coho streams and determining how many smolts are produced out of each type of habitat (Nicholson et al. 1992a,

1992b), habitat capable of producing 2,800 coho smolts per mile is classified as high quality over-winter habitat.

High quality over-wintering habitat for juvenile coho is usually recognizable by one or more of the following features: large wood, a lot of wood, pools, connected off-channel alcoves, beaver ponds, lakes, connected floodplains and wetlands, and other conditions: therefore, more than one set of habitat conditions is capable of providing high over-winter survival. High quality over-wintering habitat is almost always present *only* in areas where the stream is fairly low gradient and there are broad valley areas alongside the stream.

Because high quality over-winter rearing habitat can take many forms, the term stream complexity is used to define this limiting factor.

Limiting Factors for Coast Coho Populations

Several limiting factors are identified for individual independent coho populations in this ESU (Table 4), including stream complexity (high quality habitat), water quality, water quantity, hatchery impacts, spawning gravel and exotic species. Stream complexity is the predominant limiting factor for populations in the Oregon Coast coho ESU.

It should be noted that factors that are listed as secondary, such as water quality, are important to address or maintain, and may become the most limiting as efforts are made to achieve the desired status goal. It is expected that many of the actions taken through this Conservation Plan to address the primary limiting factor stream complexity will support maintenance or improvement of water quality suitable to native aquatic species, including coho salmon.

Table 4. Primary and secondary limiting factors for independent populations in the Oregon Coast coho ESU. (*Source*: 2005 OCCA)

Population	Primary Limiting Factor	Secondary Limiting factor
Necanicum	Stream Complexity	--
Nehalem	Stream Complexity	Water Quality
Tillamook	Stream Complexity	Water Quality
Nestucca	Stream Complexity	--
Salmon	Hatchery Impacts	Stream Complexity
Siletz	Stream Complexity	--
Yaquina	Stream Complexity	Water Quality
Beaver	Spawning Gravel	Stream Complexity
Alsea	Stream Complexity	Water Quality
Siuslaw	Stream Complexity	Water Quality
Lower Umpqua	Stream Complexity	Water Quality
Middle Umpqua	Water Quantity	Stream Complexity Water Quality
North Umpqua	Hatchery Impacts	Stream Complexity
South Umpqua	Water Quantity	Stream Complexity Water Quality
Siltcoos	Exotic Fish Species	Stream Complexity Water Quality
Tahkenitch	Exotic Fish Species	Stream Complexity Water Quality
Tenmile	Exotic Fish Species	Stream Complexity Water Quality
Coos	Stream Complexity	Water Quality
Coquille	Stream Complexity	Water Quality
Floras	Stream Complexity	Water Quality
Sixes	Stream Complexity	Water Quality

The limiting factors identified above for each independent coho population were determined for the population as a whole. The state recognizes that analyses done at a smaller spatial scale than the population will likely determine limiting factors in some areas that are contrary to those found for the population. These smaller spatial scale analyses have not been conducted in all areas of the ESU and therefore did not allow this Conservation Plan to identify limiting factors at such scales. To achieve the desired status goal for the ESU as efficiently as possible, it is imperative that such smaller scale analyses occur. The state will support work by local groups to conduct such analyses. As an example, the Oregon Watershed Enhancement Board (OWEB) will soon issue a Request for Proposals for the compilation of limiting factors in the Oregon Coast Coho ESU. The compilation will be conducted at the 5th field spatial scale. The results will be used to review and prioritize restoration activities and guide future funding decisions.

Predation as a Limiting Factor

The state acknowledges that there is some uncertainty about how much of a threat predation poses to coastal coho populations, but Oregon's 2005 Assessment of the Coast Coho ESU, based on the best available scientific information, did not rank predation as a key limiting factor for any coastal coho populations. Scientific evaluations currently available do not confirm or refute the possibility that predation by marine mammals and/or birds is a significant limiting factor for coastal salmon populations. Better understanding of this issue has been identified as a research need in this plan.

The exception to this generalization is that coho populations in the Lakes basins (Tahkenitch, Siltcoos, and Tenmile) are primarily limited by interactions (including predation) with exotic (warmwater) fish species. Current ODFW fish management for these Lake basins recognizes 1) that coho populations are currently highly viable, 2) negative effects of warm water fish species on coho salmon, 3) ecological difficulties of removing warmwater species, and 3) various social and economic entities that support continuing fisheries associated with the warmwater species.

5. Conservation Strategy for the Coast Coho ESU

This Conservation Plan depends on a strategy of effective implementation by multiple entities, of complex programmatic and non-regulatory efforts at multiple spatial scales, including the following.

1. Continue statewide implementation of the Oregon Plan with emphasis on addressing potential limiting factors via management action across the entire freshwater, estuarine, and ocean life cycle of the species.
2. Maintain the productive capacity of the ESU and populations by conserving and increasing the amount of high quality habitat across the ESU and insuring adequate dispersal corridors between areas with high quality habitat.
3. Implement the Oregon Plan habitat strategy: (*see* abstracts of Agency Commitments in Chapter 7 and Appendix 3). The Oregon Plan habitat strategy will provide more and better technical and administrative support to local cooperative conservation work by SWCDs, watershed councils, STEP volunteers, private landowners and others.
4. Restore processes that create and sustain high quality habitat. Where necessary, implement both short term and long term habitat restoration projects. The goal of these activities is to significantly increase the productive capacity of coho salmon habitat across the ESU.
5. Provide guidance to support policy decisions regarding prioritization of conservation investments to achieve the desired status goal for the Coast coho ESU.
6. Implement ESU-wide evaluation of Coho Winter High Intrinsic Potential Habitat (CWHIP) models and mapping methodologies (*see* Research, Monitoring, and Evaluation chapter).
7. Support development – in consultation with community-based watershed entities – of long-term conservation strategies that address limiting factors at scales within populations.
8. Continue participation in regional conservation and monitoring strategies including various state and federal managers (NW Forest Plan, Pacific Northwest Aquatic Monitoring Partnership, various Oregon Conservation Strategies, etc.).

ESU Conservation Principles

Managing the potential adverse impacts of human activities (also called threats) across the life-cycle (e.g., fish harvest, hatchery, and habitat management) is an essential element of efforts to achieve the desired status goal for the ESU. Achieving Oregon's desired status goal will require a combination of efforts to integrate scientific principles

of conservation biology and ecosystem management with the practical economic, social, and political constraints of Oregon as it exists today and into the future.

In general, effective management actions have already been taken to minimize adverse impacts of harvest and hatcheries on the ESU, therefore, this Conservation Plan will primarily focus on 1) protecting the existing productive capacity of habitat to maintain viability of the ESU and 2) improving this productive capacity in order to achieve the desired status goal. In this context, the term protecting does not necessarily imply that all existing high quality habitats will be preserved in their current state and location, because watershed conditions naturally evolve over time. Protection of existing productive capacity of the ESU implies that no long-term loss of productive capacity of habitat will occur across the ESU. Oregon's diverse regulatory and non-regulatory efforts to conserve and restore watershed processes and functioning stream reaches are applicable from headwaters above the range of coho distribution downstream and including estuaries.

Conservation programs for salmon should recognize the dynamic nature of ecosystems. Ecosystems are not static. A variety of natural disturbances create a wide range of conditions over time in any given location and across diverse geographic areas at any point in time. Effective conservation strategies must account for these dynamics.

Spawning and rearing coho salmon are not evenly distributed throughout a watershed, because high quality spawning and rearing habitats are not uniformly distributed within watersheds. The spatial concentration of high quality spawning and/or rearing habitat is a characteristic referred to as patchiness and is also characteristic of dynamic, productive river basins that are unaltered by human activities. Effective habitat conservation strategies for salmon require 1) sufficient patches of high quality habitat to sustain population viability; and 2) suitable dispersal corridor habitat that allows coho to migrate from one area of high quality habitat to another. Conservation of the existing amount of high quality coho habitat and suitable dispersal habitats within populations and across the ESU is the essential first-step that will provide a basis for achieving Oregon's desired status goal. Increasing the amount of high-quality coho habitat via conservation is the essential next stage required to achieve the desired status goal.

The productive capacity of coho habitat is maintained (in a dynamic process over space and time) in watersheds unaffected by human development through a variety of natural ecological processes (wildfire, landslides, stream meandering, forest vegetation succession, etc.). Protecting those natural ecological processes, ensuring that they occur throughout a watershed, and adjusting land use management to restore natural ecological processes where they are absent, are all elements of conservation biology that support conservation of native fish and wildlife. This Conservation Plan recognizes these scientific principles and also recognizes values associated with conserving and restoring the vitality of coastal cultures, economies and communities. It is not feasible to conserve or restore natural ecological processes without regard to the existing social and economic infrastructures throughout the ESU. This Conservation Plan attempts to achieve a

balance between legitimate efforts to achieve the desired status goal for the Coast coho ESU consistent with social and economic values of Oregon citizens and communities.

Oregon's Regulatory Programs

The framework of regulatory programs to manage the impacts from hatchery, harvest and land-use management is a key element of the conservation strategy for this Conservation Plan. Changes to regulatory programs implemented from the 1950s through 2004 were noted in the 2005 OCCA (harvest, hatchery, and habitat management laws). These more conservative management regulations undoubtedly served to support the Coast coho ESU's viability through the poor marine survival conditions observed during the mid-to-late 1990's. The agencies that are mandated to implement, monitor compliance with and enforce these programs are committed to maintaining the effectiveness of their programs.

Current conditions across the Coast coho ESU have been influenced by historical management practices of one sort or another. Whereas past practices related to land-use and fish harvest management were extensive and broadly distributed across the ESU, the impact of historical practices related to hatchery management varied greatly by population. Changes were made in both harvest and hatchery practices in the 1990's that have reduced or eliminated significant impacts of these practices on the Coast coho ESU. Harvest and hatchery regulation will continue under the current framework provided by the Pacific Fisheries Management Council's Fishery Management Plan (an international agreement on allocating fishery impacts between California, Oregon, Washington, British Columbia and Alaska), Oregon's Native Fish Conservation and Hatchery Management policies, and guidance provided in this plan.

Land-use regulations in Oregon have been strengthened in the last few decades and have reduced the effect of land-use practices on coho habitat, especially estuarine habitat and watershed riparian habitat. The regulatory regime and management practices that cause habitat alterations that are unfavorable to coho salmon were very different historically than the regulatory programs and management practices that have evolved since the 1950s, and most significantly since the 1970s (*see* 2005 OCCA). The positive effects of these laws and practices are expected to continue to accrue and land-use regulations in Oregon have been further strengthened in the last few decades[4]. Oregon's contemporary land use regulatory regime and management practices have clearly established a different habitat management climate than was in effect for over a century and have reduced the impact that land-use practices have on coho habitat. These regulatory changes did not completely remediate conditions created by historical practices, but have reduced the threat of future impacts. Regulatory programs by their very nature are limited to preventing future habitat alteration; they do not address legacy conditions resulting from more than 12 decades of relatively unregulated land altering activities.

Oregon concluded that the existing conservation framework of regulatory programs and non-regulatory elements is sufficient to sustain and slightly improve the current viability of the ESU (*see* 2005 OCCA). The existing regulatory structure was not designed to support achievement of the desired status goal for this ESU and no changes to that

[4] The impact of Measure 37 on this trend is unknown at this time.

regulatory structure are being proposed here. The significant improvements in the productive capacity of coho and their habitat needed to achieve the desired status goal will be pursued through non-regulatory, cooperative, conservation actions.

Strategy Elements

Starting from the baseline of current management and regulatory programs, Oregon's intent is to integrate conservation principles with site-specific habitat improvement across the ESU –noting many implementation challenges; for example:

- the existing infrastructure (cities, roads, land-use, industry, and so on) including the location of these infrastructures within watershed areas that are most important to coho salmon,
- considerable variation in the current condition of coho and habitat conditions at local spatial scales across the ESU (some populations and habitats are in better condition than others)
- the existing patchwork of public and private land ownerships, with differing management goals, practices, and decision-making capacity;
- a strong traditional and socially supported practice of natural resource utilization for economic benefit of private citizens, and
- widely diverse values among Oregonians regarding the relative importance of salmon conservation in relation to other social and economic issues.

The practical feasibility, given the challenges stated above, of conserving and restoring ecosystem processes that support strong coho salmon populations may be highest on federal lands, followed, respectively, by state forestlands, private industrial forestlands, non-industrial forest lands, and non forestlands (including agricultural and urban lands). Whereas coho salmon depend on habitat conditions across entire basins from headwaters to the estuary at some point in their life, a high proportion of habitat most suitable to over-wintering coho juveniles is located on private lands in lowland areas where historical alterations have been significant. Since this type of habitat has been identified as the predominant limiting factor across the ESU, these lowland areas on private lands will be one area of focus for habitat protection and restoration.

Improving the quality and quantity of over-winter rearing habitat for coho in these areas will not be achieved by toughening land-use laws. The state has determined that the best strategy for protection and restoration of high quality over-winter rearing habitat in these privately-owned, lowland areas that have potential (Coho Winter High Intrinsic Potential, or CWHIP) is to seek the voluntary participation of the landowners in activities under the Oregon Plan. A greater quantity of effective protection and restoration projects will be implemented on the ground through willing landowners than could be achieved through enforcement of laws. Incentives to participate in Oregon Plan projects need to be expanded in order to recruit more landowners (*see* Oregon Plan habitat strategy in Chapter 7 and Appendix 3). Greater participation from landowners will be needed to substantially increase the productive capacity of coho and their habitat. Thus, the effectiveness of non-regulatory and incentive-based cooperative conservation efforts on private lands is extremely important to achieving Oregon's desired status goal.

Using Hatchery Fish as a Conservation Strategy

Utilizing hatchery fish from a conservation hatchery program was considered and rejected as a primary strategy to achieve the desired status goal for the ESU. The objective of such a strategy would be to plant hatchery or wild adults, juveniles or eggs into streams with limited natural production to increase the number of naturally produced fish quickly. Stocking additional coho into streams is unlikely to address or compensate for the primary factors currently limiting coho numbers. These population "bottlenecks" generally occur during the over-winter stage of development prior to ocean entry of juveniles in the spring. Stocking adult or juvenile hatchery or wild coho into coastal streams without addressing the quality and quantity of over-winter rearing habitat is unlikely to produce the sustained increase in natural production needed to achieve Oregon's Desired Status goal for the ESU. The use of the hatchery tool as a conservation "safety net" to avoid extinction is also inappropriate because the ESU is currently viable and not currently at risk of extinction.

Salmon River is the one exception to this generalization, and is the one location where use of a conservation hatchery approach may be appropriate to restore natural production in the basin. Oregon has identified research to evaluate restoration of a viable coho population at Salmon River as a high priority research topic; conservation hatchery technologies and the role of the Oregon Hatchery Research Center in such an evaluation will be explored. The State's current approach to recovering the Salmon River population is to focus efforts on the primary and secondary limiting factors that currently constrain natural production. This will be accomplished by re-programming the hatchery production to Youngs Bay and restoring stream complexity. If after 3-4 generations, natural production has not improved and the number of spawners or juveniles is limiting re-building, the use of a conservation hatchery program will be considered. Recent experience with lower Columbia coho and coastal coho has demonstrated that when limiting factors are eased, these populations are quite capable of rebounding to some degree on their own.

Prioritizing Conservation Investment

Prioritized conservation action is more likely to produce timely and beneficial results than the alternative – *not prioritizing.* Priority setting is also an extremely sensitive matter that may be informed by science, but ultimately requires policy choices. Imposition of a single, rigid prioritization system is likely to impair the overall effectiveness of this or any conservation plan because it could not adequately integrate all of the diverse science and policy aspects of decision making. Prioritizing conservation efforts and investments is extremely complicated. No single system is currently or ever will be available to propose priorities for conservation investments for all species, ecological processes, spatial scale, and policy strategies across this or any other ESU. Thus, funding entities will be required to consider a variety of complex information when making investment decisions.

Prioritizing conservation investment is not new or limited to this ESU Conservation Plan. OWEB has been developing restoration priority guidance across Oregon based on local assessments of limiting factors at the 5th field HUC scale. The prioritization guidance in

this Conservation Plan provides additional information for consideration relative to Oregon's commitments to achieve a desired status goal for the coast coho ESU. Conservation action that supports the desired status for coho is expected also to benefit other native fish and wildlife species and improve watershed and ecological processes. For example, efforts to increase stream complexity for juvenile coho are likely to improve water quality and benefit associated native species.

Prioritizing Conservation Investments in the Coast coho ESU

Many factors merit consideration in prioritizing conservation investments related to this Conservation Plan and achieving the desired status goal for the ESU. There is no single method to assign value to each of these factors and objectively derive a relative investment merit score. None-the-less, the following factors would tend to indicate conservation investments that particularly merit funding, relative to achieving the desired status goal for this coho ESU.

- Work that will improve viability status of a coho population from fail to pass (*see* 2005 OCCA and ESU Status Chapter, Table 3)
- Work that supports remediation of population-scale limiting factors identified for coho populations in the 2005 OCCA (Table 4).
- Work that is based on watershed assessments and limiting factor analysis conducted by local watershed conservation entities (or others) at scales finer than the population-scale limiting factors in the 2005 OCCA.
- Work that supports restoration of ecological processes rather than providing a short-term substitution for ecological processes.
- Work that supports conservation of multiple native fish and wildlife species.
- Work that supports maintenance or enhancement of life-history diversity in coho and other native fish and wildlife species.
- Work that supports conservation of unique or rare functioning habitats and habitat diversity.
- Work that supports conservation of unique or rare life histories and or genetic attributes of coho or other native fish and wildlife species.
- Work that capitalizes on time-sensitive opportunities (e.g., willing landowners, time-association with land-use action, etc.)
- Work that is likely to produce a large (rather than a small) increase in productive capacity of a coho population or is likely to produce a lot more (rather than a few more) coho salmon.
- Work that is likely to generate an increased level of participation by private landowners in non-regulatory cooperative conservation work.

Future Refinement of ESU Conservation Strategy

Oregon will support development – in consultation with community-based watershed entities – of long-term conservation strategies at scales within populations, including the following products and policy decisions.

1. Participation in an ESU-wide evaluation and ground-verification of coho CWHIP maps.
2. Mapping the best sites for reach-based conservation activities.
3. Time-sequenced priorities for addressing population and reach scale limiting factors.

Participation in Regional Conservation Strategies
Conservation efforts under the Oregon Plan, ODFW Basin Management Plans, this Plan, and future ESA recovery plans will be integrated with and supported by regional, state, and federal conservation policies and programs (e.g., NW Forest Plan, Pacific Northwest Aquatic Monitoring Partnership, the Oregon Conservation Strategy, etc.).

6. Population-Based Actions and Associated Cost Estimates

This Conservation Plan provides guidance to make priority decisions and implement an effective conservation strategy that supports achieving the desired status for the ESU. The Plan also encourages local conservation entities, with support from the Regional Management and Implementation Team (*see* Implementation and Oversight Chapter), to develop future refinements of conservation strategies. Much of this work is well underway in a wide variety of locations across the ESU. Conservation strategies developed at spatial scales within populations will support refined priorities and time-sequenced action plans at appropriate ecological and spatial scales (*see* Future Refinement of ESU Conservation Strategy *in* the Conservation Strategy for the Coast Coho ESU Chapter). This effort represents a significant undertaking, yet is a logical next-step and maturation of work already being conducted by local conservation entities across the ESU and throughout Oregon. Oregon's specific commitments regarding this next step are listed following.

Population-Based Habitat Restoration: Interim Goals and Funding Needs
Achievement of the desired status goal for this ESU will require significant improvement in the amount and quality of habitat available to support juvenile coho. Individual populations are naturally characterized by different capacities to provide high quality habitat and in the amount of high quality habitat currently available. Therefore, goals for the amount of high quality habitat needed to achieve desired status goals should be established for each population. Interim goals for creating high quality habitat, by population, may be used as a basis to estimate costs associated with habitat improvement work; these cost estimates may be considered by policy makers to guide conservation investments across the ESU.

Methodologies for estimating needed miles of high quality habitat to achieve desired status goals in each population are described under *Criteria 6 – Habitat Conditions* in Appendix 2: Desired Status Measurable Criteria.

Three time-frame and cost scenarios for conducting habitat improvement work to achieve the desired status goal are presented in Table 5. As currently implemented, habitat monitoring will be capable of detecting only a change of $\geq$30% in the availability of high quality habitat. This means that changes in the amount of high quality habitat (thus progress towards achieving desired status) will only be detectable when there has been a 30% or greater change (increase or decrease). The three alternate scenarios presented in

Table 5 assume that there would be a 30% increase in the availability of high quality habitat in 5 years (scenario 1), 10 years (scenario 2), and 15 years (scenario 3). These three scenarios are based on the monitoring program design (five-year rotating panel) that requires a five-year period to evaluate habitat status in each population or the ESU. Under the assumptions in each of these scenarios, desired status would be achieved in 17 years under scenario 1, 33 years under scenario 2 and 50 years under scenario 3.

Key assumptions used to estimate the miles of high quality habitat and funds needed to achieve the desired habitat conditions include:

- Smolts during poor ocean conditions are only produced from high quality habitat.
- High quality habitat is defined as habitat that can produce 2,800 smolts-per-mile.
- Only instream habitat restoration work is needed to achieve high quality habitat. In other words, no benefits will accrue to the populations from recent and future modifications to harvest and hatchery management programs.
- Instream habitat complexity is the only factor limiting smolt production.
- All instream habitat restoration projects create high quality habitat.
- Habitat converted to high quality habitat is sustained for 50 years.
- From 1997 – 2003, approximately $13.2 million dollars was invested on instream habitat restoration in 524 miles of stream: a cost/mile of approximately $25,000. This cost is applicable to future habitat improvement work.

The assumptions required to calculate the values in Table 5 are tenuous and merit revision based on future research and monitoring. Consequently, the habitat goals and associated funding presented here are provided as interim goals that will be revised as better information is available in the future.

Table 5. Three time-frame and cost scenarios under which habitat improvement work may be conducted across the ESU, by population, to achieve the desired status goal for the ESU. Under the assumptions in each of these scenarios, desired status would be achieved in 17 years under scenario 1, 33 years under scenario 2 and 50 years under scenario 3.

Population	New Miles HQH Needed	Scenario 1		Scenario 2		Scenario 3		Total Cost
		Miles/ year	Cost per Bienium	Miles/ year	Cost per Biennium	Miles/ year	Cost per Bienium	
Necanicum	41	2.4	$120,179	1.2	$61,910	0.8	$40,861	$1,021,518
Nehalem	311	18.3	$915,880	9.4	$471,817	6.2	$311,399	$7,784,982
Tilllamook	126	7.4	$371,276	3.8	$191,263	2.5	$126,234	$3,155,844
Nestucca	45	2.6	$131,510	1.4	$67,748	0.9	$44,714	$1,117,838
Salmon	16	0.9	$46,821	0.5	$24,120	0.3	$15,919	$397,982
Siletz	79	4.6	$231,714	2.4	$119,368	1.6	$78,783	$1,969,570
Yaquina	136	8.0	$400,122	4.1	$206,123	2.7	$136,042	$3,401,038
Beaver	11	0.7	$33,647	0.3	$17,333	0.2	$11,440	$286,001
Alsea	129	7.6	$378,881	3.9	$195,181	2.6	$128,820	$3,220,493
Siuslaw	381	22.4	$1,120,602	11.5	$577,280	7.6	$381,005	$9,525,115
Lower Umpqua	195	11.5	$574,484	5.9	$295,946	3.9	$195,325	$4,883,117
Middle Umpqua	301	17.7	$886,116	9.1	$456,484	6.0	$301,280	$7,531,990
North Umpqua	51	3.0	$150,635	1.6	$77,600	1.0	$51,216	$1,280,399
South Umpqua	349	20.5	$1,025,551	10.6	$528,314	7.0	$348,687	$8,717,182
Coos	58	3.4	$169,318	1.7	$87,224	1.2	$57,568	$1,439,203
Coquille	213	12.5	$626,301	6.5	$322,640	4.3	$212,942	$5,323,561
Floras	42	2.5	$123,481	1.3	$63,612	0.8	$41,984	$1,049,593
Sixes	16	1.0	$48,387	0.5	$24,926	0.3	$16,451	$411,287
Total	2,501	147.1	$7,354,907	75.8	$3,788,892	50.0	$2,500,668	$62,516,711

7. Agency Actions to Support the Conservation Plan

Abstracts of Oregon and Federal Agency Contributions to the Conservation Plan
This section provides a summary of key commitments by state and federal agencies to support the Oregon plan and this Conservation Plan. Each agency has identified commitments that will support achievement of the desired status goal for the Coast coho ESU. A detailed description of these commitments is provided in Appendix 3; a description of current agency programs is reported in the 2005 OCCA.

The following state and federal agencies have made commitments that support this Conservation Plan and achievement of the desired status for the Coast coho ESU.

- Oregon Department of Fish and Wildlife
- Oregon Watershed Enhancement Board
- Oregon Department of Forestry
- Oregon Department of Agriculture
- Oregon Water Resources Department
- Oregon Department of Environmental Quality
- Oregon Department of State Lands

- Oregon Department of Land Conservation and Development
- Oregon Department of Geology and Mineral Industries
- Oregon Department of Transportation
- Oregon Parks and Recreation Department
- U. S. Environmental Protection Agency
- U. S. Forest Service and Bureau of Land Management

Several state agencies have identified proposals in their abstracts below that would add staff positions to existing programs, or create new programs, that could support implementation of the Conservation Plan. All of these proposals were developed prior to the development of the Conservation Plan and were intended to help agencies fulfill their statutory missions statewide. During Conservation Plan development, the agencies recognized that these proposed staff positions would have benefits in the Oregon Coast ESU, as well as other areas of the state.

To help implement the Oregon Plan Habitat Strategy in the Oregon Coast ESU, the Oregon Department of Agriculture has dedicated an existing position and the Oregon Watershed Enhancement Board has created a limited duration position. These temporary dedications of positions are the only commitment by state agencies to adjust staffing solely to implement the Conservation Plan.

Abstract: Oregon Plan Habitat Strategy

The Oregon Plan engages the voluntary participation of citizens, organizations with an interest in salmon restoration, landowners, and industry in a cooperative effort to assure sustainable salmon populations and local economies. The Oregon Plan habitat strategy for this Conservation Plan is to continue to implement the Oregon Plan and this section provides detail regarding one aspect of Oregon's overall conservation strategy (see Chapter 4). The strategy is to provide more effective financial and technical support to private landowners to maintain and increase participation in cooperative conservation actions. Under the Oregon Plan and this Conservation Plan, Oregon will improve the level and effectiveness of support to cooperative conservation through a multi-agency effort to address key habitat factors that limit Coastal coho populations, including the following actions.

- Support for voluntary actions includes, education and outreach, coordinated delivery of state agency services, funding, monitoring of coho populations and habitats, and adaptive evaluation of restoration efforts.
- Provide a better understanding regarding the ecological needs of coho salmon and where those needs may best be provided. This will involve focusing restoration across coastal watersheds in areas that have the highest potential for developing high quality winter coho habitat.
- Maintaining support for the local conservation groups and private landowners (e.g., Soil and Water Conservation Districts, watershed councils, industrial forestland owners, STEP volunteers, and other individuals and groups) that have demonstrated an impressive record of planning, prioritizing, and implementing habitat improvement projects.

- Continuing support from the Oregon Forest Industries Council (OFIC) and the Oregon Forest Resources Institute (OFRI) to conduct habitat improvement activities on industrial forestland and educational work as part of their commitment to the Oregon Plan.
- Providing funding for enhanced levels of technical and administrative support for community-based conservation efforts.
- Support for voluntary habitat restoration work on private lands is based on confidence in Oregon's scientific assessment of the ESU. There is a common desire to implement effective measures that support fish conservation and maintain oversight within Oregon rather than under the federal Endangered Species Act.
- Participation in non-regulatory habitat improvement work on private lands in the Coast coho ESU will be strengthened with ongoing support by Oregonian's for Food and Shelter (OFS) and the Oregon Farm Bureau (OFB). These organizations will lead efforts to establish partnerships with farmers and other rural landowners to conduct voluntary habitat improvement projects.
- Oregon Department of Agriculture and Oregon Watershed Enhancement Board each have dedicated a position to help implement this strategy.
- The Oregon Plan Core Team will coordinate this strategy among participating entities.

Abstract: State of Oregon – Data sharing and collaborative interagency analyses.
The State of Oregon commits to improve collaborative data analyses (between ODFW, ODF, OWEB, ODA, ODEQ, OWRD and/or ODSL) through the following actions:

- Lead Entity: OWEB: Oregon Plan Monitoring Team (OPMT).
- Ensure that all data collection on fish (abundance, distribution, densities) and habitat (stream, riparian, water quality and quantity) utilizes consistent and compatible protocols.
- Improve the state agency capability to store, retrieve, and share data collected by all parties – especially including private landowners, watershed councils, watershed associations, STEP, and SWCDs.
- Convene annual meetings with representatives of these agencies to establish guidelines, protocols, and implementation procedures for gathering and sharing data, as well as providing a forum to discuss information needs

Interagency Mapping and Assessment Project (IMAP) is another interagency cooperative which will be used to build mid-to broad-scale planning and assessment models with 'wall-to-wall' existing vegetation data and associated data.

- Lead Entity: ODF: Project collaborators include the Oregon Department of Forestry, Bureau of Land Management, and Pacific Northwest Research Station, and include a Policy Oversight Group and a Technical Team.
- The IMAP project will produce consistent, landscape-wide vegetation mapping across Oregon and Washington. This project improves upon previous efforts such as the Coastal Landscape Analysis and Modeling Study (CLAMS) discussed and used to help with land use analyses in the earlier Coho Assessments. The land use data, for the first time, will be collected in polygons as well as point samples. Overall, the results are the same, but using real polygons rather than computer generated Thiesen

polygons (A polygon bounding the region closer to a point than to any adjacent point) has real advantages in being able to look at land use at a much finer scale.
- The project will also produce a series of land use and other needed maps, and land use, vegetation, wildlife, and socioeconomic models that can be used to assess current conditions and trends and implications of alternative policies and management actions.
- A Central Oregon Landscape Analysis (COLA) will be used as the research and development laboratory area for IMAP. COLA will be used to develop and test new science that fits directly into IMAP.

Abstract: Oregon Department of Fish and Wildlife

Hatchery Management

ODFW commits to implementing the following actions related to hatchery management:
- Discontinue hatchery coho smolt releases in the Salmon and North Umpqua rivers while minimizing the impacts to the ocean selective sport coho fishery. (These changes are described in Appendix 3 and represent a reduction of less than one half of one percent of the total hatchery coho that contribute to the ocean fishery.)
- Adhere to the clear guidance provided in this Conservation Plan regarding conduct of future hatchery programs.
- Maintain releases of hatchery coho in the Coast coho ESU in numbers and locations as outlined in this plan – these production levels represent an incremental reduction from about 520 thousand to 260 thousand coho smolts (200,000 of this reduction will be released into the lower Columbia River).
- Apply research results from the Oregon Hatchery Research Center to future management of hatchery programs.

Hatchery Management – limiting factors and achievement of desired status
- Discontinuation of hatchery coho releases in the North Umpqua and Salmon address the primary limiting factor for the two populations and are essential first-steps to achieving viability for the populations.
- Shifting most (200,000) of the discontinued hatchery coho releases (262,500 total) proposed in this plan to Youngs Bay will have little or no impact on the ocean selective sport coho fishery, which maintains one of the expected outcomes of desired status (ocean fishery opportunities) and increases another expected outcome of desired status (commercial fishery opportunities).
- Guidance for future hatchery coho programs within this ESU will ensure hatchery coho programs will not become a limiting factor in other populations.
- Maintaining the proposed levels of coho salmon releases (these are historically low numbers for coastal rivers since the 1980s) is expected to yield productivity improvements in several populations (e.g., Nehalem, Tillamook, Siletz, Alsea) that recently failed Oregon's viability criteria. The viability of these populations will be re-assessed in the next 6 to 12 years.
- Future application of research conducted at the Oregon Hatchery Research Center in addition to relevant research throughout the Pacific Northwest will be incorporated in future revisions of this Conservation Plan, future hatchery release levels, and attainment of the desired status goal for this ESU

Harvest Management

ODFW commits to implementing the following actions related to harvest management:

- Continue to implement the revised harvest management matrix in PFMC Amendment 13: this management structure regulates impact rates of fisheries on Oregon Coast naturally produced coho.
- Implement, as feasible, future terminal-area fisheries on healthy populations of naturally produced coho, consistent with Amendment 13 and building to desired status for the populations and ESU.
- Reallocate the 200,000 coho smolts produced at Salmon River Hatchery to be released in Youngs Bay (Columbia River stock reared at Salmon River) to maintain the level of hatchery coho available in the ocean selective sport coho fishery and to provide more hatchery fish for commercial coho fisheries.

Harvest Management – limiting factors and achievement of desired status

- Fishery harvest is not currently a key limiting factor for any populations in the ESU. However, continued application of conservative harvest rates under Amendment 13 is essential to ensure that rebuilding of the ESU is not significantly constrained in the future.
- Amendment 13 allows coho to escape fisheries and return to spawning streams at a wide range of ocean survival rates: these escapements will support building towards desired status and will provide greater contribution of ocean derived nutrients (from salmon carcasses) than has been experienced during at least the past 5 decades.
- Minimizing the reduction in hatchery coho smolt releases allows for the maintenance of the ocean selective sport coho fishery and increases the hatchery fish available to commercial coho fisheries. Both types of fisheries are expected outcomes of achieving the desired status goal in this plan. (Proposed reductions in hatchery coho releases in this plan (62,500 smolts) represent less than one half of one percent of the hatchery smolts (14 million) that migrate off of the Oregon Coast and provide for the ocean selective sport coho fishery, while the addition of 200,000 hatchery smolts into Youngs Bay represents a 16 percent increase in the number of coho released there for commercial and sport coho fisheries.)

Western Oregon Stream Restoration Program (WOSRP)

ODFW commits to implementing the following actions related to the WOSRP:

- Continue to provide technical support to watershed councils, Soil and Water Conservation Districts, STEP, and private landowners.
- Place a high priority on developing and implementing restoration projects that address one or more of the key limiting factors to Oregon Coast coho.
- Partner with related efforts under the Oregon Plan habitat strategy and ODF technical assistance programs.

WOSRP – limiting factors and achievement of desired status

- Habitat restoration projects implemented by the WOSRP are designed to increase availability of complex instream and off-channel habitat that are essential to

overwintering coho juveniles; this was the key or secondary limiting factor in all 21 independent populations within the ESU.

Habitat Protection

ODFW commits to implementing the following actions related to habitat protection:

- Continue to work collaboratively with state and federal permitting agencies to provide comments and alternatives to permitted habitat altering activities (fill and removals, water rights, forest operations) that minimize or eliminate the loss of fish habitat.
- Continue to train Fish and Wildlife Biologists on methods to minimize and avoid losses of habitat and current permitting processes.

Habitat Protection – limiting factors and achievement of desired status

Habitat protection addresses key limiting factors by preventing the deterioration of existing good quality habitat, which will be essential to achieving the desired status. Additionally habitat protection can create additional good quality habitat by protecting habitat that has high potential and enabling it, through succession, to develop into good quality habitat.

Beaver (*Castor canadensis*)

ODFW commits to implementing the following actions related to beaver:

- Expand Oregon Plan non-regulatory commitments that generally involve outreach and education, informal conversations with trappers, landowners, and land managers and informal exploration of alternative damage control methods for private landowners; the intended outcome of these activities is to achieve an increase in beaver dams to create high quality coho rearing habitat.
- Develop tools (e.g.: maps, incentives) to identify key areas for beaver dams and to help landowners address beaver damage.

How do these actions address limiting factors and support achievement of desired status for the Oregon coast coho ESU?

- Increasing the number of beaver dams in areas where dams are limited that create high quality rearing habitat will create stream complexity and increase the coho smolt capacity of populations and the ESU, which will help the populations and ESU build towards desired status.

Research, Monitoring and Evaluation (RME)

ODFW commits to the following actions related to RME:

- Beginning in 2006, ODFW and ODEQ will begin implementing a modified monitoring program designed to provide population scale, statistically rigorous data on the status and trend of: 1) abundance and distribution of naturally produced and hatchery coho; 2) physical habitat; 3) riparian conditions; and 4) water quality.
- Collaborate with appropriate entities regarding the development of research and monitoring proposals described in the RME Section of this plan

RME – limiting factors and achievement of desired status

- RME provides the basis for adaptive management based on future assessments of the ESU; its supporting habitat; and the management and regulatory programs that are intended to achieve desired status.
- Future assessments of the ESU and habitat will determine if progress is being made toward achieving the desired status goal.

Conservation Plan Outreach

ODFW commits to implementing the following actions related to outreach for this Conservation Plan:

- Two FTEs are currently funded and assigned principally to Oregon Plan outreach.
- Place a high priority on outreach regarding this Conservation Plan and the non-regulatory actions that Oregonians take to implement the Plan.

Conservation Plan Outreach – limiting factors and achievement of desired status

- Maintaining and increasing public support for this Conservation Plan are an essential element to improve availability of complex instream and off-channel habitats on private lands.

Abstract: Oregon Watershed Enhancement Board

OWEB Responses to Coastal Coho Recovery Needs

1. Dedication of approximately $2,000,000 to put displaced fishers to work to address high priority limiting factors in coastal watersheds. These are new funds for the 2005-2007 biennium, are targeted to coastal basins and high intrinsic potential habitat or other limiting factors. Funds are identified to hire fishers to conduct restoration work, develop projects and conduct field data gathering to provide for better focusing of future restoration. The funding was approved by the Legislative Emergency Board on June 23, 2006.
2. Dedication to work with ODFW, Dept. of Agriculture and others to develop a coastal lowlands strategy that directly addresses high intrinsic potential habitats on non-forested lands. The effort could include an addition to the incentives provided for the Conservation Reserve Enhancement Program (CREP) or other strategies to be developed and implemented late in this biennium and next biennium.
3. Funding of displaced fishers to provide outreach for the Conservation Plan and the Oregon Plan habitat strategy.
4. Commitment to work with local conservation entities to develop restoration priorities that address watershed limiting factors to be used in the grant process.
5. There is an increasing amount of Measure 66 Lottery funds available for restoration by the increase use and expansion of the state lottery games. The projected lottery revenues will likely increase next biennium providing an increased amount of funds available to the coastal coho ESU.
6. OWEB and ODA are collaborating to request policy option packages requesting an increase in funding for watershed councils and soil and water conservation districts for the 2007-2009 biennium. The request will be for a significant increase in funding

for capacity statewide. This will provide additional resources to both councils and districts in the coastal coho ESU. These groups are critical for developing relationships in local communities that will allow projects to be implemented on private lands.

Abstract: Oregon Department of Forestry

ODF will continue implementing existing strategies to protect, maintain, and improve riparian area function. The following agency actions and needs apply statewide and benefit coho conservation as well as other species. All actions and needs identified here are new or significant modifications as of May, 2005.

Agency Actions

Private Forest Regulatory Actions: At the direction of the Board of Forestry, ODF is developing implementation guidance for two new rules which 1) provide for protection as if a stream already had fish but is currently above an artificial barrier and 2) provide for leaving trees along debris torrent prone streams. A new rule to make FPA authority over certain types of large wood placement was also adopted to streamline the efforts of forest landowners to place large wood. Implementation guidance and a variety of educational materials are planned to let landowners know of this new opportunity to place large wood during forest operations governed by the FPA without additional permits. Rule concepts to address riparian function for fish bearing and non-fishbearing streams (Rule Concepts 8 and 11) are planned to be addressed.

Private Forest Voluntary Measures: Non-regulatory actions are being developed to complement and add to the foundation provided by the Forest Practices Act to improve incentives for the active placement of large wood and include an array of strategies to manage riparian stands to accelerate the growth of large wood.

State Forest Actions: Apply FMP-based management standards to all management activities for aquatic and riparian areas, landslide hazards, transportation planning, and road construction. Continue with watersheds level riparian and aquatic strategies that contribute to Oregon Plan objectives including watershed analysis.

Legislative Concepts and Policy Option Packages

The Oregon Department of Forestry (ODF) proposed Legislative Concepts and Policy Option Packages directly relate to the Governor's 2007-09 Biennial Budget principles- "We Value a Balance between Growth, Infrastructure Development and Environmental Protection." The proposals support the Oregon Board of Forestry's 2003 Forestry Program for Oregon strategies and actions that include protection, maintenance and enhancement of soil and water resources of Oregon's forests and health of Oregon's forest ecosystems.

The (ODF) packages address two essential program service level needs; 1) restoration of permanent positions to meet workload demands and statutory obligations. Past budget reductions have reduced the current workforce necessary to maintain essential service levels and 2) creation of new positions to address the existing staffing constraints to meet

the needs of serving the residents of Oregon as identified in the Forestry Program For Oregon 2003 document. These proposals were developed to fulfill agency missions, no specific positions were dedicated to the Conservation Plan, but the agency recognizes that these proposed positions would have benefits to the Conservation Plan. Specific POPs include:

POP 152 Add capacity to the Private Forests Program to increase monitoring and field staff to achieve the Board of Forestry's strategies and actions as articulated in the Forestry Program for Oregon including strategies to support the Oregon Plan. Funding proposal: $1,607,497 60% General Fund/40 Harvest Tax. 12 FTE positions

Legislative Concept 629-14, POP 154A – Reinvigorate the Forest Resource Trust to provide voluntary cost share programs which will improve forest environment including projects that benefit coho habitat. Funding proposal: $1,500,000 lottery funds. 4.58 FTE positions

POP 154B - Create a non-regulatory incentive program that would support additional investments in resource protection, carbon sequestration and timber management. Funding proposal: $2,845,912 lottery funds. 8 FTE positions

POP 156 Fund field-based research, education, and outreach activities on the cumulative impacts from contemporary forest practices on water quality, fish and other aquatic biota including funds for the Hinkle Creek Research and Demonstration Area Project and the South Fork Trask River paired watershed study. Funding proposal: $1,500,000 General Fund 0 FTE positions

Legislative Concept 140. Create the Department of Forestry's, Community and Cooperative Forestry Program to help local governments, community organizations, and small forest landowners improve the stewardship of forest resources within urban growth boundaries and rural residential zones. Funding proposal: $400,000 Federal funds, $1,400,000 Other Funds. 7 FTE positions.

Monitoring, Research & Evaluation

Research and monitor high aquatic potential (HAP) streams to help prioritize stream protection and enhancement opportunities.

Effectiveness of Riparian Strategies (Riparian Function and Stream Temperature) project addresses the adequacy of riparian rules and strategies to maintain water quality and large wood recruitment to streams; measures trends in riparian condition; and evaluates the relationship between riparian and instream characteristics.

State Forest Program implementation monitoring of riparian strategies to determine whether timber operations are conducted consistently with the riparian management standards in the Forest Management Plan.

The Watersheds Research Cooperative (WRC) was chartered in 2002 as a research and demonstration program to fill gaps in scientific knowledge identified through the Oregon Plan for Salmon and Watersheds. It is a cooperative and collaborative public-private program of research and outreach that has been initiated through local support. The long-term vision is to establish three major paired watershed study installations across Oregon, as well as to help facilitate other smaller projects. Each major study will evaluate the environmental effects of contemporary forestry practices on water quality, native fish, amphibians, and aquatic insects. Federal funds are being sought to enhance local support and achieve the full scientific potential for this effort.

Located near Sutherlin, Oregon, the Hinkle Creek Paired Watershed Study has been a visible and successful initial effort by the Cooperative. Established in 2002, the study area is a 5,000-acre watershed owned and managed by Roseburg Forest Products. A multi-disciplinary team of scientists is studying the linkages between management activities and effects on soil and water quality, fish, amphibians, and aquatic insects. Initial harvest treatments were conducted in fall 2005 and winter 2006.

Data collection technology provides for continuous measurement of water quality and fish behavior and enables an unprecedented ability to study the immediate and continuous response of native fish to management activities as they affect water quality. The site is also serves as a demonstration area for the public to learn about the effects of modern intensive forest management on watershed health. Many policy makers, government officials, natural resource scientists, and Douglas County school children have benefited from tours.

Two additional installations were established in FY2007. A second major study is in the Trask River watershed west of McMinnville on land managed by the Oregon Department of Forestry and Weyerhaeuser Company. The Trask River Watershed Study seeks to understand a variety of stream ecosystem responses to forest harvest impacts, including impacts on salmonid fishes (salmon and trout). This project will be on a scale and scope similar to Hinkle Creek. The third site is a reactivation of the historic Alsea Watershed study near Newport in the central Oregon Coast Range. It was originally conducted more than 30 years ago, before the Oregon Forest Practices Act was in place. While smaller in scale, re-grown forests are ready for a second harvest using modern management approaches and will provide an unprecedented comparison of the environmental impacts of current practices against those in the mid-1900s. Peer review of WRC study plans highlighted the need for multiple study sites across diverse environmental conditions for broadest application of the data.

Abstract: Oregon Department of Agriculture

In addition to ongoing efforts in the following programs: 1.) Agriculture Water Quality Management; 2.) Confined Animal Feeding Operations; 3.) Weeds and Invasive Species; and 4.) Pesticides, ODA and OWEB are collaborating to request policy option packages requesting an increase in funding for watershed councils and soil and water conservation districts for the 2007-2009 biennium. The request will be for a significant increase in funding for capacity statewide. This will provide additional resources to both councils

and districts in the coastal coho ESU. These groups are critical for developing relationships in local communities that will allow projects to be implemented on private lands. ODA also commits to devote an existing position to specialize in providing technical assistance coordinated with ODF and ODFW to support conservation and restoration in non-regulatory settings on private lands that are best suited to providing over-winter habitat for juvenile coho salmon. This strategy will provide considerably improved opportunities to enlist active participation by private landowners in areas of greatest potential to support juvenile coho salmon, the most significant limiting factor identified across the ESU.

Abstract: Oregon Water Resources Department

Oregon Water Resources Department (OWRD) – New Statewide Concepts

OWRD has a number of existing programs and agency actions that contribute to Coast Coho Conservation efforts. In addition to these ongoing actions, OWRD has identified new statewide concepts that will also support the Conservation Plan, increase our understanding of water quantity as a limiting factor and benefit instream flows. The majority of these new statewide concepts are dependent on securing additional funding through grants or policy option packages (POP) proposed in the 2007-2009 Agency Request Budget. These concepts are described below as they relate to existing agency actions.

Water Distribution and Regulation

- Support statewide monitoring and reporting of instream water rights and water use through a 2007-2009 POP to restore the Department's Water Measurement and Reporting Specialist (POP 401, 1 FTE, GF- $138,114)
- Add statewide capacity and modernize equipment for flow monitoring through a 2007-2009 POP request (POP 304, GF - $100,000)
- Enhance monitoring and distribution capacities via a 2007-2009 POP to fund a Field Water Right Technician position in each of 5 regions (POP 303, 5 FTE, GF - $686,965).
- Coordinate with OWEB to secure funding for volunteer streamflow monitoring and flow monitoring equipment.

Flow Restoration Programs

- Explore opportunities with OWEB to offset application costs for CREP participants that lease or transfer water rights associated with CREP enrolled lands.

Public Outreach and Education

- Assess opportunities to report regulation activities and other relevant data at the ESU or other scale in support of adaptive management under this and other Conservation Plans.
- Seek funding to add instream leasing, transfer, and allocation of conserved water data to the OWRD on-line data base. (National Fish and Wildlife Foundation Funding Awarded September 2006)

- Encourage responsible water management and conservation by irrigation districts and other agricultural water suppliers by developing a guidebook on preparing Agricultural Water Management and Conservation Plans and through outreach and workshops for irrigation district managers. (Bureau of Reclamation Funding Awarded July 2006)

Improvement of Resource Understanding

- Seek funding via a 2007-2009 POP and other sources to better understand long term statewide water supply needs (instream and out-of-stream), potential above and below ground storage opportunities, and conservation opportunities. ("Oregon Water Supply and Conservation Initiative," POP 403, 3 FTE, GF $891,025)

Abstract: Oregon Department of Environmental Quality

Summary

DEQ has several ongoing efforts to improve water quality within the Oregon Coast coho ESU:

1. Implementing Total Maximum Daily Loads (TMDLs): TMDLs for three basins within the ESU have been completed, and by the end of 2008 TMDLs for seven more basins are scheduled for completion.
2. Updating NPDES discharge permits: NPDES discharge permits are scheduled to be updated and reissued within eleven basins in the ESU by the end of 2007.
3. DEQ will continue to work in partnership with watershed councils, SWCDs, STEP, and city, state, and federal agencies throughout the ESU to provide technical assistance and grant money for restoration work to improve water quality.
4. DEQ will continue to work with the Oregon Plan Monitoring Team to find ways to collect needed water quality data and coordinate data with other state agencies.

Abstract: Oregon Department of State Lands

Addressing Limiting Factors or Threats to Oregon Coast Coho

DSL protects and conserves waterways and wetlands through administration of Oregon's Removal-Fill Law, Scenic Waterways Law, and the Wetland Conservation Program.

The 50 cubic yard exemption to the Removal-Fill Law does not apply in Essential Indigenous Anadromous Salmonid Habitat Areas (ESH). ESH streams contain fish species that have been listed as sensitive, threatened or endangered by a state or federal agency. Oregon Coast Coho streams have been designated ESH. Unless exempt, projects that involve work in waters of the state in the ESU will require an authorization from DSL. As part of the permit review process, natural resource agencies including ODFW have an opportunity to review and comment on the project design and/or to request that certain project-specific conditions be included in the authorization. These project-specific conditions, as well as the standard conditions, are designed to protect and conserve water resources. All permits issued by DSL include water quality permit conditions that require that sediment and erosion control measures are implemented and that turbidity monitoring is conducted in order to meet turbidity standards. These water quality conditions effectively address the key limiting factor of water quality, which has been identified as a primary limiting factor for many coho populations.

DSL conducts compliance monitoring and enforcement to ensure compliance with DSL permit conditions. In recognition of the importance of compliance monitoring, DSL has recently added a full-time position dedicated to compliance monitoring and salmon recovery planning (funded by the U.S. Environmental Protection Agency or EPA and OWEB). As part of a pilot program, this staff person will cross reference the Coho Winter High Intrinsic Potential Habitat maps with DSL's removal-fill permit data for those areas. Depending on the results of the pilot program, DSL may consider program changes to more effectively protect those areas.

All authorized permanent impacts to wetlands, and most impacts to waterways, are required to be offset with compensatory mitigation. In most cases, the result of compensatory mitigation is a net benefit to water resources.

In the past few years, DSL has undertaken efforts to streamline the Removal-Fill Permit Process. A current management priority at DSL is to further streamline the process, specifically for fish habitat enhancement and wetland restoration projects. A streamlined permit process for restoration projects will help to address the key limiting factor of stream complexity, which has been identified as a primary limiting factor for many coho populations.

DSL's Wetland Conservation Program seeks to maintain a stable base of wetlands and to encourage wetland restoration and creation, through programs including the wetland land-use notification program and public outreach. DSL has added two new EPA-funded positions for a new Voluntary Restoration Strategy to provide technical assistance for wetland restoration projects. As part of this Voluntary Restoration Strategy, DSL staff will participate in and provide technical support for the Oregon Plan habitat strategy. DSL staff will also be available to provide education and public outreach on wetland restoration. In addition, DSL may be able to provide funding for wetland restoration projects in the ESU through the Wetland Mitigation Bank Revolving Fund Account Program.

The research being conducted at the South Slough Research Reserve (SSNERR) on how coho utilize restored estuarine marshes and large woody debris complexes is a valuable asset in increasing our understanding of the ecology of the species, and how restoration can aid in recovery by addressing the key limiting factor of stream complexity. SSNERR staff is also conducting long-term water quality monitoring of the South Slough estuary. This water quality monitoring will be a key metric for determining whether the key limiting factor of water quality is being addressed effectively.

Abstract: Oregon Department of Land Conservation and Development
The Department of Land Conservation and Development will take several actions to address limiting factors or threats to Oregon coast coho. These include work with coastal local governments to review and update comprehensive land use plans and ordinances to incorporate policies and standards aimed at reducing impacts to salmon habitat from the

effects of development. The Department will work with local governments and other entities such as Oregon Sea Grant to promote salmon-friendly development practices by extending current work with local governments to adopt or improve stormwater management standards, identify and protect wetlands and riparian areas, and promote education of local staff, appointed and elected officials as to voluntary techniques or practices.

The Department, through the Coastal Management Program, will provide financial and technical assistance to local governments for a variety of improvements that result in improvements in protecting salmon habitat. These improvements include developing or improving GIS capacity to support local land use decisions, to conduct wetland and other inventories and assessments, and to carry out special planning projects that. The Coastal Management Program will also make available detailed aerial photo images of coastal estuaries via the Oregon Coastal Atlas
http://www.coastalatlas.net/learn/settings/estuary/index.asp

The Department, through the Coastal Management Program, will review and approve federal permits and actions that can affect coastal salmon habitat. The Department also provides a key coordination role to ensure that state and federal agency permits and approvals comply with the enforceable policies of the state's Coastal Management Plan, including protection of estuarine habitats.

Abstract: Oregon Department of Geology and Mineral Industries

Important Contributions

DOGAMI's main contribution to the Conservation Plan is to maintain the current strength of the regulatory compliance to avoid off-site impacts during mine-site reclamation and ensure reclamation of mine sites meets the secondary beneficial use established for the site.

Address Limiting Factors

None of the primary or secondary limiting factors identified for the Coast coho ESU were related to regulation of mining or energy minerals in Oregon. Sediment is the main potential impact associated with the regulation of mining and energy minerals. Sediment was not identified as a primary limiting factor for any population. DOGAMI has and will continue to explore floodplain mining activity for opportunities for habitat enhancement benefiting the at-risk populations.

Abstract: Oregon Department of Transportation

The Oregon Department of Transportation (ODOT) is responsible for providing and maintaining the safe and efficient state and federal transportation system in Oregon. In addition, ODOT is committed to the protection and conservation of all native migratory fish species in the state; and the recovery of those listed as threatened or endangered under state and federal statutes.

ODOT is a participant in Oregon Coast coho recovery domain planning efforts. The following items summarize actions that ODOT implements to conserve and enhance environmental limiting factors for coastal coho salmon as well as other species.

- ODOT implementation of Routine Roadside Maintenance Manual, Water Quality and Habitat Guide (ESA 4(d) Limit 10(i); *revised 2004 with NMFS and ODFW*)
- Statewide Fish Passage Program, $4.2 million/year to restore/improve fish passage
- Comprehensive Mitigation/Conservation Strategy (establishes Ecoprovince-level ecological priorities for the ODOT Bridge Delivery Program)
- Project specific coordination and consultation with state and federal regulatory agencies (implementation of section 7, Endangered Species Act and Magnuson-Stevens Fishery Conservation and Management Act compliance) to ensure natural resource avoidance, minimization, and mitigation
- Project/program specific permit monitoring and reporting to regulatory agencies
- ODOT Regulatory Agency Liaison Program – partnering with state and federal agencies for ODOT Environmental, Construction, Bridge, and Highway Maintenance Programs to partner and work collaboratively on ODOT projects and programs. ODOT funds 13 FTE liaisons with regulatory agencies ODFW, NMFS, USFWS, DSL, USCOE, DEQ, and APHIS Wildlife Services
- Use of state and federal regulatory programmatic permits that emphasize natural resource avoidance, minimization and mitigation procedures
- ODOT-Animal & Plant Health Inspection Service (APHIS) Liaison (adaptive management of beaver & road conflicts)
- Finalization of revisions to the ODOT Statewide Hydraulics Manual (that provides hydraulic design guidance and recommendations for hydraulic facilities (culverts and bridges) to promote natural stream processes (bed load and large woody material transport and fish passage).

Abstract: Oregon Parks and Recreation Department

The mission of the Oregon Parks and Recreation Department (OPRD) is to provide and protect outstanding natural, scenic, cultural, historic and recreational sites for the enjoyment and education of present and future generations. In addition to operating a statewide network of parks and natural areas, the department is also responsible for managing Oregon's's Recreation Trails, the Ocean Shores Recreation Area, Scenic Waterways and the Willamette River Greenway.

OPRD is a participating agency in the Oregon Plan for Salmon and Watersheds. The following items highlight some of the actions we will be taking to address the limiting factors for Oregon coastal coho salmon as well as other native salmon species in coastal watersheds.

OPRD Actions

- Fund fish habitat improvement projects in state parks within the range of Oregon coastal coho salmon using revenue from the sale of salmon license plates.

- As part of OPRD's *Investment* Strategy, seek opportunities, utilizing Measure 66 funding, to acquire land and conservation easements that will assist in the recovery of coastal coho salmon.
- Research locations at coastal parks where interpretive signing could be used to make citizens more aware of the value of preserving habitat for naturally spawning wild salmon.

Abstract: U.S. EPA Region 10 Support for Salmon Recovery in the Coastal Coho ESU

Limiting Factor - Water Quality

EPA will implement, provide oversight, or provide technical and/or financial support for the implementation of the following program activities which contribute to the recovery of Coho Salmon in the Coastal Coho ESU:

- Development and revision of State water quality standards;
- Development and implementation of Total Maximum Daily Loads (TMDLs);
- Implementation of non-point source projects through CWA Section 319 funding;
- Interaction with federal and state land management agencies to improve forest practices on state and federal lands;
- Water quality and aquatic habitat monitoring;
- Implementation of the NPDES point source pollution control program;
- Coastal Zone Management Program implementation;
- NEPA review of environmental impacts from federal actions;
- Wetlands Program and project implementation;
- Technical and financial assistance through grants and loan programs;
- Implementation of Pesticides Program Cooperative Agreement with Oregon Department of Agriculture; and
- Emergency Response Program support and implementation for oil and hazardous materials spills.

Abstract: USDI Bureau of Land Management and USDA Forest Service

The USDI Bureau of Land Management (BLM) and USDA Forest Service (FS) manage about 20 percent of the stream miles currently occupied by OC coho salmon. The majority of the BLM and FS land is in headwater areas, and includes land within Key Watersheds. Key Watersheds are a network of refugia receiving special management emphasis to maintain and restore good habitat conditions for salmon stocks at risk. Consequently, BLM and FS lands play a large role in helping to maintain downstream water quality and habitat conditions for coho-bearing streams in non-federal ownership.

The BLM and FS have worked closely with the State and many partners since the inception of the Oregon Plan. Land use plans, laws, regulations and policies guide BLM and FS activities. While the land use plans may vary by administrative unit, those within the OC Coho ESU currently incorporate common features of a planning framework known as the Northwest Forest Plan (NWFP). The NWFP has been implemented since 1994 and includes an Aquatic Conservation Strategy (ACS) specifically designed to protect salmon, steelhead and other aquatic habitat on federal lands managed by the BLM

and FS. The BLM is currently revising its land use plans in Western Oregon and a decision is expected in 2008. While the ACS may change, the new BLM plans will retain an emphasis on water quality and fish habitat.

Land administered by the BLM and FS is being managed to achieve nine ACS objectives designed to maintain and restore watershed, water quality, riparian, and habitat processes important to the conservation of OC coho salmon. There are four components of the ACS: (1) Riparian Reserves; (2) Key Watersheds; (3) Watershed Restoration; and (4) Watershed Analyses. The ACS also includes extensive standards and guidelines for project design and implementation within Riparian Reserves and Key Watersheds. All four of the ACS components are designed to operate together to maintain and restore the productivity and resiliency of watersheds and their riparian and aquatic ecosystems. Descriptions of the four components and recent accomplishments are found in Appendix 3.

In addition to implementing land use plans, the BLM and FS will continue to implement and coordinate the following activities with the State and our many partners in support of salmon recovery in the OC Coho Salmon ESU:

Watershed/Habitat Restoration. Continue comprehensive, whole watershed, conservation and restoration programs. These programs are community based and rely upon close working relationships with partners. When appropriate, the BLM and FS will utilize an authority to expend federal funds on private lands when the funded activity will benefit resources on the federal lands (Wyden amendment). An example is a culvert replacement that would allow fish passage upstream onto federal land.

Research. Work to improve coordination, integration, and information sharing on key research topics. This includes cooperative long-term studies for coastal watersheds, the development of localized habitat capability models, and validation of priority restoration treatments.

Monitoring and Evaluation. Continue to monitor the accomplishment of objectives under their management plans relating to aquatic and riparian health. Explore expanded coordination with the state and watershed councils on plan implementation and effectiveness monitoring.

Inventories. Collect riparian, aquatic habitat and resource data compatible with state efforts. This combined data has been used to describe aquatic and hydrological conditions across whole watersheds, regardless of land ownership. Continue to work with the State to ascertain the health of aquatic systems within priority watersheds and critical lands. Information will be shared and used as a basis for watershed analysis and other assessments.

Planning and Assessment. Continue to plan for the restoration and maintenance of riparian and aquatic health as part of all federal planning. In addition, seek to expand opportunities for State and watershed council involvement in watershed analyses and

continue to share the results of these analyses with all interested and involved parties. The agencies will also work with State and other federal agencies, Tribal governments, and watershed councils to establish the priorities for management and restoration treatments.

Technical Training. Continue to coordinate technical training of resource management personnel to ensure a high level of competency is available to define restoration and recovery treatments. This training includes modules in: stream inventory techniques; data interpretation; channel classification and fluvial dynamics; watershed restoration; monitoring and evaluation; and Proper Functioning Condition assessment for riparian areas.

Cooperative Funding. Continue to seek opportunities to cost-share resource assessments, restoration prescriptions and prioritization, treatments across whole watersheds, and monitoring, regardless of ownership.

Education/Interpretation/Outreach. Continue to work with the State and watershed councils to expand ongoing cooperative outreach and environmental education programs.

Coordination. Continue to work with other federal, State, and county agencies and Tribal governments to ensure coordination and sharing of information between the involved entities.
Continue to work with watershed councils to ensure a high degree of coordination for actions occurring on both public and private lands. The agencies will also continue to share technical expertise to help the councils effectively plan and implement priority watershed restoration projects.

Key Aquatic Habitat Acquisition. Continue to work within existing policies with willing sellers to acquire parcels with key aquatic and riparian habitat.

Hydropower Licensing and Relicensing Coordination. The BLM and FS have authority under Section 4(e) of the Federal Power Act to prescribe mandatory terms and conditions for Federal Energy Regulatory Commission-licensed projects. The terms and conditions can range from establishing minimum flows to other protective measures such as channel maintenance flows, habitat maintenance, and restoration.

Clean Water Act Section 303 Compliance. The BLM and FS develop Water Quality Restoration Plans (WQRPs) for streams placed on a 303(d) list for failure to meet state water quality standards. The federal WQRPs are incorporated into Water Quality Management Plans, which are written by the Oregon Department of Environmental Quality to implement Total Maximum Daily Loads.

8. Research, Monitoring, and Evaluation

Research, monitoring, and evaluation (RM&E) are essential to the adaptive management of this Conservation Plan. RM&E for this Conservation Plan should: 1) monitor the status and trend of coho populations and their habitat; 2) validate key assumptions and clarify critical uncertainties associated with the identification of primary limiting factors; and 3) evaluate the effectiveness of key habitat protection, management, and restoration actions.

Long-Term Monitoring Programs

Currently, Oregon funds five long-term programs that monitor the status and trend of coastal coho populations and their habitat. These programs are:

1. Spawner surveys (ODFW)*:* Spatially balanced, random surveys that provide annual estimates of the spatial distribution and abundance of natural and hatchery origin coho spawning in each independent population and in dependent populations combined by strata. These surveys provide data that are the basis for evaluating desired status criteria for independent populations and criterion 1 for dependent populations. More information on the specific details of these surveys may be obtained at: https://nrimp.dfw.state.or.us/crl/default.aspx?p=382
2. Habitat Surveys (ODFW): Spatially balanced, random surveys that provide estimates of a broad array of instream physical habitat and riparian conditions. The surveys are designed to annually assess the condition of coho habitat in wadeable streams at the ESU and strata scale as well as every five years for each independent population and for dependent populations combined by strata. These surveys provide data that is the basis for evaluating desired status for independent and dependent coho populations. More information on the specific details of these surveys may be obtained at: https://nrimp.dfw.state.or.us/crl/default.aspx?pn=AIProjOrPlnSalWtrshd
3. Juvenile Surveys (ODFW): Spatially balanced, random surveys that provide annual estimates of the summer distribution, density, and habitat occupancy rate of juvenile coho within four of the five strata in the ESU. These surveys supply data that may be used to expand desired status criteria in the future. More information on the specific details of these surveys may be obtained at: http://oregonstate.edu/dept/pacrim/index.htm
4. Life Cycle Monitoring (ODFW): Annual estimates of freshwater and marine survival of coho from seven coastal streams. This information is used to determine the marine survival category to which observed spawner abundances should be assigned. It is a critical component of evaluating independent population criterion 1. More information on specific details of this monitoring may be obtained at: https://nrimp.dfw.state.or.us/crl/default.aspx?p=369
5. Water Quality Monitoring (ODFW & ODEQ): Spatially balanced, random surveys designed to provide information on the spatial pattern of water temperature, fine sediment, and other water quality conditions in wadeable streams. Surveys are conducted every year at the same sites sampled for juvenile coho (#3 above). Every five years, these data will be analyzed to provide information on the status and trend of water quality in wadeable streams in each independent coho population. The

project is based on sampling macroinvertebrates and calibrating the observed assemblages to relationships developed with temperature, fine sediment, and other water quality parameters. These surveys provide data that are a component of desired status criteria. In addition to this program, ODEQ has established a series of long-term water quality monitoring stations as part of its TMDL program. Recently, this program was upgraded to insure that at least one water quality monitoring station is located in each independent population. More information about the TMDL program may be found at: http://www.deq.state.or.us/wq/tmdls/tmdls.htm

Restoration Action Effectiveness

Monitoring the implementation of habitat restoration projects and evaluating their subsequent effectiveness are other key elements of an RME program that will ensure the success of this Conservation Plan. OWEB conducts implementation monitoring of all restoration projects it funds. Implementation monitoring ensures that each project is completed in accordance with the grant agreement developed for the project. Effectiveness monitoring is conducted for a subset of OWEB restoration projects. OWEB also requires annual effectiveness reports from the Western Oregon Stream Restoration Program, which is funded with state lottery funds. Effectiveness monitoring ensures that a project's restoration objectives are met. OWEB tracks its projects via the Oregon Watershed Restoration Inventory database. OWEB also awards grants solely for the purpose of conducting monitoring work, at project and watershed scales. The Oregon Plan monitoring team coordinates among state natural resources agencies and other entities to identify monitoring needs and funding for monitoring, and to refine the Oregon Plan's monitoring strategy. OWEB recently began developing rigorous monitoring protocols for livestock exclusion, riparian planting, and tide gate projects that will help ensure that these types of projects are effective. OWEB has also begun working with Oregon state natural resources agencies (e.g., ODF) to identify large-scale, high level indicators of ecosystem function and determine how to track changes through time.

Collectively, the programs identified in this chapter provide comprehensive information on the status and trend of coastal coho populations, their habitat (primarily in wadeable streams), and the effectiveness of actions taken. Under the current paradigm that habitat conditions in these wadeable streams are the primary limitation to achieving recovery goals for most coastal coho populations, these programs provide information that is sufficient to address the measurable criteria for desired status and help ensure that effective actions are being taken. However, there are a number of research and evaluation needs currently unfunded or under-funded. These are needed in order to chart course corrections that should be undertaken if the core monitoring programs demonstrate inadequate progress towards reaching desired status goals.

Research and Evaluation needs

Eight topics for research and evaluation have been identified as having significant potential to contribute to efforts to achieve desired status for the Coast coho ESU (*see* Appendix 4). All of these research and evaluation needs merit funding. However, the reality is that these needs must be considered in context with the need to improve RM&E

for ESA listed species statewide. The eight high priority topics for research and evaluation related to coastal coho are listed following.

- Research on the mechanisms that cause poor ocean survival of coho and methods to predict ocean survival conditions.
- Research on the relative importance of potential limiting factors throughout the entire freshwater and estuarine residence of coho.
- Evaluate the contribution that habitat protection, management, and restoration programs have toward achieving desired status goals.
- Validate and refine of Coho Winter High Intrinsic Potential Model.
- Evaluate methods to maintain, enhance, or promote beaver dams in areas where they can create or maintain high quality coho rearing habitat.
- Evaluate cause and impact of marine mammal, avian and exotic fish predation on Coastal salmonids and coho in particular.
- Evaluate re-establishment of a self-sustaining population of coho in Salmon River.
- Develop tools to identify and prioritize restoration projects at local watershed and stream-reach scales.

Additional research and evaluation needs may be identified through the adaptive management process of this plan.

9. Application of Adaptive Management

Oregon's track-record demonstrates that the Oregon Plan has an effective adaptive management component. New data and information have been considered and management and regulatory programs have been changed to provide needed environmental protections (e.g., implementation and revision of fishery harvest management programs; implementation of revised hatchery management policies and programs; adoption of and periodic revision of forest practices rules; and implementation of the Agricultural Water Quality management Act (frequently referred to as Senate Bill 1010), to address agricultural impacts on water quality; adoption and modification of fill-and-removal laws, etc.). Oregon's adaptive management process may be characterized as follows.

1. Natural resources are managed under existing statute, rule, or policy guidance.
2. Monitoring provides data for future analysis.
3. Periodically, monitoring data are assessed.
4. Results of data analyses are considered by a responsible agency, board, or commission regarding the need or appropriateness of changes to statutes, rules, or management policies. Occasionally the deliberation may involve a broader Legislative and public policy discussion.

Adaptive Management of the Conservation Plan

Oregon commits to reassess the status of coastal coho populations and their supporting habitat on a periodic basis, providing information that may be considered in an adaptive management process as described below. These commitments include the following.

1. Six-year status report. Produce a succinct status report regarding implementation of commitments by agencies, restoration work accomplished, and summarizing coho and habitat data available by population, strata, and for the ESU. This status report may be produced in concert or incorporated in the OWEB Biennial Report.
2. Twelve-year ESU assessment. Produce a comprehensive assessment of ESU status including performance of the coho, trends in habitat, and implementation and effectiveness of restoration and management commitments. This assessment would be similar in scope to the 2005 OCCA. Depending on the outcome of this thorough 12-year assessment, the periodicity of future detailed assessments may be adjusted.
3. Annual status reports. The Regional Management and Implementation Team that is responsible for implementing this Conservation Plan will direct production of a very brief annual report that reviews the most recent data available for the ESU *(see example format Table 6*). This annual report will serve as an *early warning system* that will alert Oregon to unexpectedly adverse marine conditions; management conditions; biological characteristics of the coho populations; or the habitat that supports the ESU.

Table 6. Proposed content of annual status report (early warning system).

Oregon Coast Coho Conservation Plan Annual Report Card

Summary Regarding Overall Status of this ESU

Short paragraph regarding the overall status of the ESU – are there any alarming data or observations that would call Oregon's conservation assumptions or programs into question? Are there indications that the ESU is at greater risk than anticipated in the Conservation Plan? Is additional monitoring or scientific evaluation warranted? If so, how and when should the analysis be conducted?

Data Reviewed

- Coho adult counts – are data regarding adult distribution and abundance available? If so, are the values within previously observed and/or expected values and are they consistent with expectations based on marine survival?
- Coho juvenile monitoring data – are data regarding juvenile distribution and abundance available? If so, are the values within previously observed and/or expected values?
- Habitat data – is habitat trend data available? If so, what does the trend indicate?
- Coho harvest impact data – are harvest impacts consistent with conservation, progress towards desired status, and recovery guidelines?
- Coho hatchery survival data – is survival of hatchery fish within previously observed and/or expected values?
- Coho natural fish survival rates data – is survival of naturally produced fish within previously observed and/or expected values?
- Information from local entities and landowners – e.g. Rapid BioAssessments; restoration efforts; and results of effectiveness monitoring.
- Conservation project implementation data – are agencies meeting commitments in an effective and timely manner?

Recommendations regarding the ESU

Note key recommendations, if any, regarding new monitoring, implementation emphasis, management action, and or scientific analysis that should receive priority during the next year.

Date Conservation Plan adopted:
Date review:

The Oregon Coast Coho Conservation Plan is intended to describe key elements for immediate implementation and also provide a strategic means of improving management decisions in the future – in essence, to be a living document. This will be done through an adaptive management process that will allow for the continual assessment of the effectiveness of management strategies and actions to improve the status of coho in the ESU. Through the analysis of research, monitoring and evaluation (RM&E) data, the Oregon Plan Core Team will be able to determine if the premise of the plan - that the management strategy will be able to help the ESU achieve desired status – is accurate. If not, the adaptive management process will allow for the state to consider a different premise.

The adaptive management process will play out on different levels as the Conservation Plan is implemented. Annual research, monitoring and evaluation information collected will be reviewed to determine the effectiveness of site-specific actions (e.g., enhancing an area to promote the development of beaver dams). Those actions found to be ineffective will be discouraged. New actions based on the results of research may be proposed to more effectively implement a strategy. The state will make these responsive adjustments as more information is collected. Considering changes to strategies will be a more deliberative process.

Assessing the effectiveness of the Conservation Plan, including its strategies, will be conducted in 2019, and every 12 years thereafter. An assessment will also be considered if the ESU becomes ESA listed, or information suggests there has been a significant decline in the health of the ESU (the annual report will serve as an early warning system). Assessments of the Conservation Plan will be conducted by the Oregon Plan Core Team and will include public participation.

The adaptive management process can lead to changes in all aspects of the Conservation Plan besides strategies or actions. The review of information may suggest revision of one or more of the desired status measurable criteria, their metrics, or thresholds for passing. The population delineations in the Plan could also be revised in the future.

10. Implementation and Oversight

Effective implementation of this Conservation Plan requires leadership at the community level, by individuals with local knowledge and passion for salmon, watersheds, and their local communities. The desired status goal of this Conservation Plan will not be achieved under existing regulatory programs, but by a combination of these *plus* significant and effective non-regulatory cooperative conservation efforts. Successful implementation of this Conservation Plan depends on achieving a productive balance where state and federal government provides science analysis, policy guidance, and technical expertise that strengthens the existing community-based cooperative conservation work in non-regulatory settings.

Implementation of Conservation Plan Actions

This Conservation Plan does not provide lists of site-specific actions that are necessary to achieve the desired status goal. This is partially due to the scarcity of detailed watershed assessments at small spatial scales throughout the ESU that would be needed to identify actions at the site-specific level.

The lack of site-specific actions was also intentional. This Conservation Plan was intended to provide structure and guidance to local efforts to protect and restore coho and their habitat throughout the ESU while providing the flexibility for actions to be determined at the grassroots level.

Implementation of this Conservation Plan will focus on efforts to address key factors that limit the productivity of coho and will utilize the existing Oregon Plan infrastructure. Most of these efforts will start at the local level with landowners or the general public contacting watershed groups, or groups contacting landowners, to develop projects to protect or enhance coho habitat. Natural resource agencies may provide technical support to help develop a project proposal or provide matching funds to implement the project. These projects will then be brought to funding entities, such as OWEB, to fund. Once funded, the project will be implemented by the local group, the landowner or their agent.

While most actions under this plan will be implemented through this "bottom-up" approach, there will be situations where necessary actions cannot be effectively handled at the local level. In such cases (e.g.; where a regional or ESU-wide project is developed to help achieve the desired status goal), proposals will be brought by the public, landowners or watershed groups to the Oregon Plan Regional Management and Implementation Team for consideration and implementation.

Conservation Plan Accountability

The *Oregon Plan Core Team*, chaired by the Governor's Natural Resources Office and comprised of state and federal natural resource agency policy staff, holds ultimate accountability for implementation of conservation efforts statewide (i.e., the Oregon Plan), including this Conservation Plan for the Oregon Coast Coho ESU. An *Oregon Plan Regional Management and Implementation Team*, comprised of state, federal, and tribal management staff and local restoration organizations (e.g., watershed councils, Soil and Water Conservation Districts), will be responsible for coordinating and tracking implementation actions and preparing reports of progress described as part of Oregon's adaptive management commitment in this Plan. All Oregon Plan teams (Core Team, Monitoring Team, Outreach Team, and Regional Management and Implementation Team) are linked and unified in a common and collaborative effort to conserve, restore, and protect habitats and watersheds for salmon as part of the Oregon Plan.

Implementation Funding

Funding to support implementation of this Conservation Plan consists of base budget allocations to government agencies assigned tasks identified under this Plan and the Oregon Plan. Discretionary funding for infrastructure support (e.g., Soil and Water

Conservation Districts, watershed councils) are provided by OWEB via Oregon Lottery funds, federal Pacific Coast Salmon Recovery Funds, and private funding entities.

Funding available from Lottery revenue is expected to increase in 2007-2009, based on revenue predictions by the Oregon Department of Administrative Services. If true, the potential exists to increase funding available to support restoration grants within this ESU. OWEB has invested roughly 2 million dollars in restoration grants annually in this ESU since 1997. Recently approved funds related to the 2006 Ocean Fishery closure are also being directed towards activities that support watershed restoration in this ESU. OWEB and ODA are also planning to request an increase in statewide allocation for support of both SWCDs and watershed councils from 4 million to 6 million dollars per biennium.

Oregon has a reliable long-term source of Lottery Funds dedicated to restoration under Ballot Measure 66 and Oregon voters will have the opportunity to consider continuing Ballot Measure 66 after 2014. In the 2007-2009 biennium, Oregon expects to at least maintain or slightly increase funding for restoration infrastructures and on-the-ground work across the ESU.

Implementation Schedule

This Conservation Plan will be implemented in a general sequence of actions intended to support achievement of the desired status goal. The general sequence is described as follows.

Immediate and urgent implementation

- Support conservation action that will improve the status of all populations that failed viability criteria (2005 OCCA) so that they meet or exceed viability criteria.
- Implement consideration of limiting factor and other investment guidance in decisions to prioritize funding and conduct of conservation work.
- Implement effective on-the-ground cooperative conservation work.
- Enforce existing natural resources regulatory programs.
- Implement monitoring commitments.
- Monitor implementation of conservation commitments.
- Provide support to local conservation entities to implement demonstration projects on private lands in specified basins.
- Provide annual feedback to evaluate the efficacy of fishery harvest and hatchery management programs and consider whether modifications could accelerate achievement of desired status goal.

Near- and mid-term implementation

- Prepare annual (early warning system) reports.
- Support conservation action that will improve the productive capacity of virtually all coho populations.
- Increase participation by and effectiveness of cooperative conservation work on private lands in areas most suitable to support juvenile coho.
- Support development of local conservation strategies at scales within populations.

- Evaluate effectiveness of oversight and accountability system.

Long term implementation

- Conduct comprehensive assessment of the Coast coho ESU; populations; habitat status and trend; and rate of progress toward desired status (12 yrs from Plan adoption).
- Evaluate potential need for modified management or regulatory programs to conserve productive capacity of habitat.
- Provide data and analyses that will inform legislative consideration regarding long-term dedication of Lottery Funds to Watersheds and Salmon conservation.

11. Reaching Desired Status – Time Frame Expectations

The desired status goal for this ESU is ambitious. Significant changes to harvest management and hatchery programs have already been implemented and have significantly diminished harvest and hatchery management as limiting factors. Habitat remains the primary limiting factor for the majority of coho populations in the ESU that can be influenced by Oregon's management.

Two principle factors must be considered in the process of predicting the time-frame required to achieve Oregon's desired status goal for this ESU.

1. Ecological processes. Addressing habitat limiting factors (insufficient stream complexity, water quality, etc.) to achieve desired status for the ESU will require significantly increasing the productive capacity of coho and their habitat. Restoration of ecological processes that support high quality habitat requires time and is constrained by patchwork landownership patterns, different regulatory structures, and historical land use practices. Even given an expected increase in the level of non-regulatory participation in habitat improvement work, it will take time to 1) produce detectable improvements in habitat quality and 2) restore the biological and ecological processes across the ESU.
2. Scientific uncertainty. There currently are many uncertainties related to the effectiveness of restoration actions; the cause and impact of predators; the relative importance of all phases of juvenile rearing and habitats; the potential role of beaver dams to increase productive capacity of coho habitat; and the total amount of CWHIP actually available. These scientific uncertainties will require both funding and time to provide information that may be considered in future management programs.

Three time-frame and cost scenarios for habitat work required to achieve desired status (*see* Population-based Actions and Associated Cost Estimates Chapter) present general time-frame scenarios under which desired status might be achieved. Scenario 3 (a 50 year time-frame) is probably the most realistic, given likely levels of funding, the time required to resolve scientific uncertainty, and the time required to restore ecological processes.

Achieving the desired status goal will require an institutionalization of the conservation commitments embedded in the Oregon Plan and this Conservation Plan, sustained leadership, extensive non-regulatory participation by private landowners, funding, reassessment, and adaptive management. With the enhanced level of habitat monitoring proposed in this plan, Oregon will be able to determine the trajectory of habitat condition and the approximate time-frame that the observed trajectory would require to achieve the desired status goal.

12. Conclusion

The purpose of this Conservation Plan is to ensure the continued viability of the Oregon Coast Coho Evolutionary Significant Unit (ESU) and to achieve a desired status that provides substantial ecological and societal benefits. The Oregon Coast Coho ESU is viable (State of Oregon, May 6, 2005) and does not currently require protection under the federal ESA (NOAA Fisheries 2006). The current status of this ESU reflects a reduction in fishery harvest, improved hatchery management, and extensive habitat restoration work initiated or maintained under the Oregon Plan. This Conservation Plan maintains and enhances support of the Oregon Plan and meets the requirements of Oregon's Native Fish Conservation Policy (NFCP). This Conservation Plan does not propose new land-use regulations, maintains existing regulatory programs, and enhances support for non-regulatory cooperative conservation. A key element of this Plan is to provide a higher and more effective level of support to local conservation groups and private landowners (e.g., Soil and Water Conservation Districts, watershed councils, industrial forestland owners, Salmon and Trout Enhancement Program volunteers, and other individuals and groups). These community-based organizations have demonstrated an impressive record of planning, prioritizing, and implementing habitat improvement projects through their participation in the Oregon Plan.

Oregon concluded that the existing conservation framework of regulatory programs and non-regulatory actions is sufficient to sustain and slightly improve the current viability of the ESU (*see* 2005 OCCA). One key principle of the Oregon Plan is that Oregonians will strive to obey existing laws that protect water quality, watershed health, and salmon. This commitment was noted in Executive Order 99-01: "agencies with regulatory programs that are included in the Oregon Plan will determine levels of compliance with regulatory standards and identify and act on opportunities to improve compliance levels." Oregon agencies remain committed to evaluate compliance with environmental protection laws and seek constructive means of improving compliance with these laws as may be warranted.

Oregon's existing regulatory structure was not designed to support achieving the desired status goal for this ESU. Oregon's management philosophy regarding regulation and enforcement of laws on private lands is clear: that, given Oregon's extensive natural-resources regulatory programs, additional cooperative conservation stewardship action on private lands will be most effectively achieved by willing participation of private landowners in voluntary and non-regulatory settings. This management philosophy is a

conscious decision by executive leadership, based on the current realities of public values; state agency board and commission actions; legislative direction; and funding priorities. Thus, the primary strategy to achieve the desired status in this Conservation Plan is based on the following general premise: *Habitat management and improvement is the key to protecting and enhancing coastal coho; much of the most important coho habitat is on private land; habitat improvement on private land is most likely to occur through incentive-based cooperative partnerships with landowners; and the Oregon Plan provides the best vehicle for securing these partnerships and implementing habitat improvements*

Oregon is relying therefore on a combination of Oregon's current regulatory programs plus long-term participation in non-regulatory cooperative conservation work to achieve the desired status goal for the Coast coho ESU. The Oregon Plan habitat strategy is designed to support effective work by the existing conservation network across the ESU. This effort is expected to increase participation in non-regulatory cooperative conservation work by private landowners, especially landowners in areas with the greatest potential to create high quality coho habitat and support achievement of the desired status goal for the ESU. A partnership of private forest and agricultural landowners represents a powerful means of increasing the level of investment in effective voluntary habitat-improvement.

Oregon is generally optimistic that the elements of this Conservation Plan will achieve the desired status goal for the ESU, based on the following observations.

1. The ESU is currently viable and adaptive management has virtually eliminated significant adverse impacts of fishery harvest and hatchery programs on the ESU.
2. The ESU is comprised of many populations and many fish. This means that there is more diversity, more opportunity for the ESU to demonstrate resiliency during future adverse environmental conditions.
3. Habitat improvement work is currently supported by extensive and diverse community-based conservation networks. For decades, watershed councils, Soil and Water Conservation Districts, STEP volunteers, and other community groups and landowners have been actively engaged in restoring fish habitat and watershed health.
4. Private landowners, especially the timber industry, have demonstrated a significant and sustained commitment to participate in restoration in a non-regulatory setting, especially since implementation of the Oregon Plan in 1997 (approximately $32 million dollars invested in restoration work across the Coast coho ESU from 1997 to 2003 (2005 OCCA). This track-record suggests that private landowners will continue to support non-regulatory cooperative conservation and restoration work in this ESU and statewide. The Oregon Plan habitat strategy is expected to increase participation by private landowners in non-regulatory conservation measures across the ESU.
5. Significant upland reaches of stream systems in the ESU are in federal or state ownerships with levels of regulatory protection that are expected to provide improved water quality and stream complexity in upstream spawning areas and downstream rearing areas used by juvenile coho.
6. Information has been provided to guide prioritization of conservation investments to address limiting factors and focus conservation work in areas where it is most needed

and will be most effective. Development of more refined population-based conservation strategies for independent populations will improve the effectiveness of future conservation investments.

7. Increased levels of participation in non-regulatory cooperative conservation activity by private landowners that control the vast majority of the lowland, low gradient streams most important to overwintering juvenile coho are expected. This increased level of non-regulatory participation is expected also to ensure that this ESU does not become eligible for listing under federal ESA.

Achieving the desired status goal for this ESU will require roughly a doubling of the productive capacity of the coho and their supporting habitat. Monitoring and evaluation will reveal if Oregon's commitments and expectations will be sufficient to achieve this ambitious goal for the ESU. Modified management and regulatory programs will be considered, as may be appropriate, by Oregon and the various governing boards and commissions as future monitoring data are available to track trends and rates of improvement in coho and habitat conditions across the ESU.

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