

**Oregon Coast Coho Conservation Plan for the  
State of Oregon  
Appendix 4**

Description of Research Topics  
Identified in the 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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**Research on the mechanisms  
that cause poor ocean survival of coho  
and methods to predict ocean survival conditions.**

The ocean conditions that determine coho marine survival have been identified as one of two significant risks facing the Oregon Coast coho ESU. One theory suggests that poor survival is likely caused by a lack of food sources for coho when coho smolts enter the ocean in the spring. The mechanisms that lead to these poor survival conditions are not fully understood. There currently are no methods to predict when such poor ocean conditions will manifest from year to year. Understanding the causes for such ocean conditions may help to develop predictors for the level of survival to expect. Predicting the severity of ocean conditions for a given year will allow for management decisions that might minimize the long-term impact of those conditions on the status of the Oregon Coast coho ESU.

The state will support research that seeks to answer questions related to coho ocean survival. Relevant research has been, and will likely continue to be, conducted by the National Oceanic and Atmospheric Administration and academic institutions such as Oregon State University. It is not anticipated that any state natural resource agency will undertake research on this topic.

**Research the relative importance  
of potential limiting factors throughout the entire freshwater  
and estuarine residence of coho**

Addressing limiting factors is a key recovery action for any conservation plan. Past research on the factors limiting Oregon coastal coho populations focused on the seasonal capacity of wadeable streams to rear juvenile coho and has led to the current paradigm that complex instream and off-channel winter habitat is the major limiting factor for coho during their freshwater residency. One potential shortcoming of past research is not considering the impact of summer rearing conditions on the *condition* of juvenile coho entering the winter. Recent research has shown that juvenile coho summer rearing in warm stream reaches may have higher disease loads and lower condition factors than those rearing in cool stream reaches (Joe Ebersole - EPA, personal communication). This research suggests that the *condition* of juvenile coho entering the winter, as determined by the quality of *summer* habitat, may be as important as the *number* of juvenile coho surviving the summer *or* the quality winter habitat.

Another shortcoming of past studies on coastal coho limiting factors is a lack of information on the fate of juvenile coho that migrate downstream from wadeable stream reaches. Although some studies have documented juvenile coho in some mainstem and tidal areas, there is very little information on the relative importance of these areas to coho compared to upstream tributaries, especially at the population unit scale.

In order to assure that recovery actions are directed at the appropriate limiting factors for each Oregon coastal coho population, new research is needed on the relative impact that summer habitat conditions have on juvenile coho later in their life cycle and on the relative seasonal use of potential mainstem and tidal rearing areas.

**Evaluate the contribution that habitat protection,  
management, and restoration programs have  
toward achieving desired status goals**

To achieve the desired status goals of this Conservation Plan, habitat protection, management, and restoration programs must be effective at protecting, restoring, and enhancing the habitat needed by coastal coho. Ultimately, the habitat status and trend monitoring that ODFW and ODEQ are conducting in coastal streams will provide an assessment of the overall impact of all habitat protection, management, and restoration actions. However, this status and trend monitoring will not provide specific information on relative program effectiveness or on changes needed to improve program performance. While a number of programs, such as ODFW's Habitat Restoration Monitoring Program (<http://oregonstate.edu/Dept/ODFW/freshwater/inventory/restoratn.htm>) and the multi-partner Watershed Research Cooperative (<http://watershedsresearch.org/Organization/Organization.html>), may provide useful insights, there is a need for a comprehensive strategy for evaluating the success and shortcomings of habitat protection, management, and restoration programs, particularly as related to achieving desired status goals.

At the time of this writing, OWEB is working with IMST to develop a strategy for monitoring and evaluating habitat restoration projects. In the interim, it is recommended that the State of Washington's "Monitoring and Evaluation Strategy for Habitat Restoration and Acquisition Projects" be used as the template for evaluating the restoration actions of this recovery plan. More information about the Washington plan is available at: [http://www.iac.wa.gov/Documents/SRFB/Monitoring/SRFB\\_Monitoring\\_Strategy.pdf](http://www.iac.wa.gov/Documents/SRFB/Monitoring/SRFB_Monitoring_Strategy.pdf)

The strategy that OWEB and IMST are developing for the evaluation of habitat restoration programs will not address the need for a comprehensive strategy to evaluate habitat protection and management programs. It is recommended that IMST, in conjunction with the appropriate state and federal agencies, convene a workshop to address this strategic need.

**Validate and refine  
the Coho Winter High Intrinsic Potential Model**

Recovery actions outlined in this plan rely heavily on the Coho Winter High Intrinsic Potential (CWHIP) model developed by the Coastal Landscape Analysis and Modeling Study ([http://www.fsl.orst.edu/clams/download/posters/ip\\_poster3.pdf](http://www.fsl.orst.edu/clams/download/posters/ip_poster3.pdf)). Research is needed to better quantify the relationship between intrinsic potential and habitat quality. In addition, field

surveys are needed to ground verify the predictions of the model, determine the model's spatial resolution, and to identify stream reaches with high intrinsic potential that are the best candidates for protection and restoration (i.e. prioritization).

**Evaluate methods to maintain, enhance, or promote beaver dams  
in areas where they can create or maintain high quality coho rearing habitat.**

Beaver are a keystone species in stream/riparian environments due to their ability to modify the structure and dynamics of their surroundings. Their creation of dams in certain stream sections can create ideal coho rearing habitat. Beaver can also be destructive to public and private property. To maximize the positive benefits of beaver dams to coho rearing while minimizing the destruction of property, there is much that needs to be learned. The following are items for further research:

1. Determine presence/absence of beaver habitat within stream reaches where coho rear.
2. Determine the potential of a specific stream reach where coho rear for beaver to establish and maintain dams.
3. Identify limiting factors affecting beaver dam placement in areas with high coho rearing potential.
4. Develop and test techniques that encourage beaver to establish and maintain dams in high coho rearing potential areas.

The results of this research will be the development of a site evaluation model for beavers that can aid in identifying prime areas for beaver habitat enhancement leading to the persistence of beaver dams.

**Evaluate causes and impact of marine mammal,  
avian and exotic fish predation on Oregon Coastal Coho**

Generally, the public perception is that predation by marine mammals, various avian and exotic fish species has devastating impacts on salmonid populations. Whereas the scientific evidence to support this perception is not strong, the perception is strong and may even have grown stronger in recent years. Oregon has reviewed the available science and anecdotal observations related to predation (including a review of predation by the IMST) and concluded that evidence regarding impact of predation on the effort to achieve desired status for the Coast coho ESU is not decisive one way or another. Predation may or may not pose a serious impediment to achieving desired status for this ESU. Therefore, research on the causes and effects of predation is needed from both a science and public policy perspective.

**Evaluate re-establishment of  
a self-sustaining population of coho in Salmon River**

The question of how to reestablish a viable, self-sustaining fish population to an area adversely impacted by a hatchery program has broad applicability the Pacific Northwest. The cessation of the coho hatchery coho at Salmon River presents an opportunity to provide science perspective to this question. Research should first be determine if a viable, self-sustaining coho population can be re-established without hatchery intervention. If not, research should be conducted to identify effectiveness of various approaches for conducting hatchery intervention to re-establish a self sustaining, naturally produced population.

**Develop tools to identify and prioritize  
restoration projects at local watershed and stream-reach scales.**

For this Conservation Plan to succeed, habitat restoration plans must be tailored to the specific needs of each coastal coho population. Although restoration actions should ultimately address the factors limiting coho at the population scale, the reality is that most restoration actions are conducted at the local watershed or stream-reach scale. Currently, a variety of entities employ a variety of tools to identify and prioritize restoration projects. There is a need for an evaluation of existing tools and the development of a standardized set of tools that will provide local and state entities the ability to formulate restoration plans that insure the most effective use of habitat restoration resources to maximize the benefits to each coastal coho population.