

The East Kitsap Peninsula Lead Entity

Salmon Recovery Strategy

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1. INTRODUCTION

Mission

The mission of the East Kitsap Lead Entity is to ensure local salmon habitat is preserved and restored to support salmon populations and human communities.

Goal

The goal of this strategy is to restore healthy, self-sustaining wild populations of the salmon species native to the streams and shorelines of Kitsap Peninsula. Healthy populations depend on the condition of local habitat, the level of harvest, hatchery practices and oceanic conditions. This strategy addresses local habitat conditions and is therefore an integral part of the larger regional salmon recovery effort. As our knowledge increases and as habitat conditions change, this strategy will be updated.

Objectives

- **Increase population levels:** Population numbers in many streams are depressed due, in part, to years of habitat degradation that has resulted in lower quality habitat, loss of spawning and rearing habitat and the survival of fewer smolts per spawner.
- **Maintain geographically diverse populations:** Salmon are native to most streams on the Peninsula and maintaining widely distributed populations is critical to genetic diversity and to ensuring that rare, catastrophic events don't eliminate the population. Individual stream populations may be devastated by occasional natural or human-caused events but recolonization from nearby streams will occur if healthy populations are encouraged in all historic salmon streams.
- **Promote the preservation and restoration of healthy, functioning ecosystems:** Salmon depend on healthy ecosystems and healthy ecosystems depend on salmon. Salmon are "indicator" species because they depend on a healthy watershed, not just an intact streambed. Likewise, salmon contribute to the overall health of watersheds and estuaries by providing ocean-derived nutrients to plants and animals.
- **Increase public understanding and support for salmon recovery:** Salmon are a vital part of the natural and cultural history of this region. Restoring salmon will require the support of the citizens who live here, and their

support depends on an understanding of the importance of watershed and nearshore health to salmon.

Local Conditions

The Kitsap Peninsula provides a uniquely diverse geography for salmon. Between the backbone of the peninsula and the shoreline, a narrow strip of land results in many short streams rather than a single large river system. The size of the peninsula, and the many small estuaries also provides an extensive and very diverse shoreline.

The quantity of fresh water draining the east side of the peninsula and the number of salmon utilizing the habitat are roughly the same as is found in a major river draining a similar sized territory. However, rather than flowing into a single large river, the water runs through many independent, short streams, directly into the Puget Sound. Salmon spawn and rear in 125 of these streams. Though small, the streams are highly productive for salmon because of their low gradient and extensive associated wetlands. Our geography results in spatially diverse salmon populations, widely distributed in many small streams throughout the region. Spatial diversity is a key component of healthy salmon populations and will be critical to regional salmon recovery.

The numerous streams in East WRIA 15 primarily support chum and coho salmon, steelhead, and cutthroat trout. In addition, low numbers of spawning adult chinook are observed on a regular basis in larger East WRIA 15 streams. These streams are not considered “primary spawning habitat”, but are still utilized at certain times by wild chinook. In many of these instances, the origin of the naturally spawning chinook currently present is most likely due to strays from nearby



hatchery production. It is unknown whether, or to what extent, adult chinook returns are the result of natural spawning. Pink salmon are occasionally found as strays in East Kitsap streams. East WRIA 15 known stocks of salmon, steelhead and cutthroat distribution is identified in the Salmonid Habitat Limiting Factors (Haring 2000) and the 2003 Kitsap Salmonid Refugia Report (May 2003).

At least as or more important as the 240 miles of freshwater salmon habitat in this area is the 360 miles of marine shoreline on the east side of the Kitsap Peninsula. This nearshore habitat plays a critical role in the productivity of salmon stocks throughout Puget Sound. All salmon species, but particularly chinook and chum, spend many months as juveniles feeding in the highly productive nearshore waters in preparation for their ocean migration. Although the importance of estuaries and other nearshore habitats to salmon have been largely underestimated in the past, we are now discovering that these marine environments are every bit as important to salmon productivity as the freshwater streams where they are born.

The east side of the Kitsap Peninsula constitutes almost half of the nearshore habitat in central and south Puget Sound. The many estuaries and other marine habitats in this stretch of shoreline are used not only by the salmon produced in our own streams but also by juveniles from major rivers throughout Puget Sound as they migrate towards the open ocean. The Kitsap shoreline provides the safest migration route for small fish and use of this migration pathway by juveniles from east Sound rivers is well documented. The Kitsap shoreline is probably even more important today than in historic times due to the highly urbanized and loss of habitat in the east shoreline of Puget Sound. One result of the large number of streams that drain into the Kitsap Peninsula marine shoreline is an unusually diverse nearshore habitat with many small and medium sized estuaries, spaced relatively closely along the coast. This distributed network of estuaries provides a rich and relatively easy migration path for young salmon.

Challenges of a Diverse Geography: While a diverse geography may be beneficial for salmon, it creates some challenges for habitat restoration and management. Working within a single, large drainage basin results in closer ecological connections and a greater ability to extrapolate trends from sampling efforts. It also facilitates closely coordinated restoration projects and the leveraging of individual efforts. Having many small, independent drainages creates greater challenges for restoration efforts. Sharing a drainage basin provides a unifying theme around which local citizens and entities can organize. When an area the size of the Kitsap Peninsula contains dozens of small independent basins rather than a single large one, coordination among local entities requires a special effort and commitment.

Salmon recovery efforts have historically been organized around watershed groups that focus on freshwater habitat. If these efforts address nearshore issues at all, they do so only to the extent of the river estuary. The prominent role played by nearshore salmonid habitat on the Kitsap Peninsula provides the challenge of identifying a new model for organizing recovery efforts that specifically targets nearshore habitat as a priority. Taken together, these attributes indicate the critical importance of a coordinated effort to salmon recovery and the need to be innovative and energetic in our response.

2. PRIORITIES FOR RECOVERY ACTIONS

Salmon recovery will require the actions of many people and must occur throughout the historic range of salmon. The decline of salmon came about, in part, due to the gradual degradation of habitat in nearly all the watersheds that historically supported salmon. Salmon recovery will require the gradual restoration and preservation of habitat at the same geographic scale. However, the need to restore salmon populations quickly and to use salmon recovery dollars efficiently requires us to give priority first to those actions that have the greatest effect on increasing population numbers and diversity of salmon. To prioritize actions, the following factors were considered:

- **Benefit to Salmon**
 - **Geographic Location**
 - **Watershed Prioritization**
 - **Nearshore Prioritization**
 - **Project Type Priorities**
 - **Priorities within Watersheds**
 - **Education, Outreach and Partnerships**
-
- **Benefit to Salmon**

The most important factors to consider in prioritizing actions are the number of fish and diversity of species that will be affected. Actions that benefit large numbers of salmon and multiple species are the highest priority. While ESA-listed species are highlighted, the basis for this strategy is a multi-species, ecosystem approach and all salmonids are treated equally.

- **Geographic Location**

Watersheds and nearshore habitats that support the greatest number and diversity of salmon receive the highest priority for action. Likewise, habitats that support state or federally listed declining species, such as Puget Sound chinook, will receive priority.

- **Watershed Prioritization**

The 125 salmon bearing streams on the east Kitsap Peninsula differ from each other in the number of salmon stocks they sustain and the number of fish they are capable of producing. Resources available for salmon recovery activities are finite and should therefore be distributed strategically in those places where it will have the greatest impact on preserving and restoring the diversity and productive capacity of our watersheds. To achieve this objective, the east Kitsap Peninsula strategy places the greatest priority on streams that have been

identified as important salmon refugia, harboring the greatest diversity, productive capacity and quality habitat.

These priority watersheds were identified using information from a number of sources including the *Kitsap Peninsula Salmonid Refugia Study* (Kitsap 2003), the *Salmonid Habitat Limiting Factors for WRIA 15 East* (Haring 2000) and the *Watershed Analysis for the Development of Salmonid Conservation and Recovery Plans Within Pierce County* (Pierce County 2001).

Habitat for Puget Sound chinook, listed as threatened under the Endangered Species Act (ESA), receives the highest priority for preservation and restoration. Chinook utilize the largest streams on the Peninsula. These streams also support the highest diversity of salmonids and the greatest productive capacity for all species.

Watersheds are prioritized in recovery tiers based on their salmonid diversity, habitat quality and watershed size (See Appendix A). A flow chart that describes how watersheds were assigned to tiers is provided in Figure 1 in Appendix A. The ranking scheme reflects the best available data we have at this time and it will be updated as better information becomes available.

<i>Tier</i>	<i>Watersheds</i>
1	Coulter, Rocky, Chico, Gorst, Minter, Nearshore
2	Blackjack, Burley, Crescent, Curley, Dogfish, Grovers, Ollala
3	Anderson, Barker, Big Scandia, Clear, Eglon/Silver, Steele, Carpenter, Illahee
4	Artondale, Beaver, Dutcher, Fletcher, Fragaria, Goodnough, Johnson, Klaebel, Lackey, Mark Dickson, McCormick, Mosher, Mosquito Bay, Murden Cove, North (Donkey), Olney, Purdy, Ross, Sam Snyder, Silver, Strawberry, Sullivan Gulch, Wilson (Southworth), Wollochet
5	all other salmonid streams

Refer to Appendix B for the Watershed Integrity Index Calculations and flow chart

Table 1. Watershed Prioritization

➤ **Nearshore Habitat Prioritization**

Nearshore habitat is critical to juvenile rearing and migration for all species of salmonids. In this document the nearshore includes both estuaries and marine shoreline areas, upland and backshore areas that directly influence conditions along the shoreline, and from the upper extent of the tidal influence to the lower boundary of the photic zone. Different nearshore habitats are used by salmonids for different purposes including feeding, shelter, travel corridors and physiological adjustment to salt water. Some habitats are more critical than others are, such as estuaries, salt marshes, eelgrass beds and forage fish spawning and holding grounds.

In addition to local salmonids, juvenile salmonids from throughout Puget Sound are known to utilize the shore of Kitsap Peninsula as a nursery and migration route as they travel to the open ocean. The marine shoreline of this area therefore plays a critical role in the recovery of salmon populations in Puget Sound. For this reason, the nearshore is a high priority area for protection and restoration.

To help guide the development and selection of recovery actions within this high priority area the following elements will be used to develop a comprehensive nearshore strategic plan¹:

1. Identify and prioritize habitat types and attributes needing protection and conservation. Completing an inventory of habitat types is the first step in an effort to protect existing important habitats.

In general, protecting portions of ecosystems with functioning natural processes has a high chance of success. Simply protecting habitats without protecting the underlying processes have a low chance of contributing to ecosystem recovery. Areas targeted for protection will be based upon a thorough analysis of critical and vulnerable natural areas. Those areas that are in imminent risk of being converted to an alternate use should have priority for protection.

¹ Element numbers 1-5 are cumulative. Currently, a nearshore assessment has been completed for Key Peninsula, Gig Harbor, and Islands (KGI) Watershed in Pierce County and Bainbridge Island is finalizing a nearshore assessment. A gap exists for the remaining East WRIA 15, which includes the East portion of Kitsap County. In the meantime, the Lead Entity has used the nearshore assessments that have been completed along with the Limiting Factors Analysis to identify and prioritize specific actions in the nearshore (Appendix B). This is only intended as a starting place to help guide protection and restoration actions. When an assessment is complete for the entire area, the list will be replaced with a list based on the findings and results of all three assessments.

2. Identify what ecosystem processes are impaired and where they are impaired. This would include:
 - a. An analysis of historic and current conditions to identify the changes in habitat that have occurred. The historic condition of the nearshore ecosystem may provide the best template for restoration planning because it indicates where habitats formerly occurred, their natural, size, shape, community composition, and connections to other elements of the ecosystem. Critical questions to be addressed is how much of various types of ecosystems were present, where were they located, and how were they organized/arranged?
 - b. An assessment of current conditions to obtain data that can be used to compare historic conditions and assess change in the ecosystem condition.
 - c. Comparison of historic and current conditions to document changes that have occurred (Understanding that there are constraints that now exist).
3. Measure spatial and temporal utilization of the nearshore habitats by salmonids and compare habitat conditions and salmonid use among different habitat types.
4. Identify specific actions needed. The following actions are listed in order of certainty with which they can contribute to ecosystem recovery (most certain to contribute to the least certain):
 - Protection²
 - Restoration
 - Rehabilitation
 - Substitution/Creation
5. Develop appropriate criteria and prioritize habitat types to be protected and restored.

The LE has identified and prioritized a preliminary list of nearshore actions that can be found in Appendix B. The list of action recommendations are to be used as a guide for the LE and should be considered “interim” until more and better data is developed to prioritize habitat types in East Kitsap.

6. Monitor the effectiveness of habitat protection and restoration projects.

² Protection should include policy, regulatory and non-regulatory measures.

- **Project Type Priorities**

Preserving and protecting existing high quality habitat is critical to future recovery. Restoring degraded habitat is a relatively long and expensive process, making preservation of existing habitat and restoring access to blocked habitat the highest priority.

However, the extent of habitat degradation is such that salmon will not recover unless significant restoration occurs. Restoration of ecosystem processes will result in long-term benefits to salmon with a higher certainty of success than projects that simply replace habitat components or rely on engineered solutions. As a result, priority is given to restoration projects that address or take into account ecosystem processes. This is not to say that replacing habitat components is unimportant. Restoring ecosystem processes such as large woody debris (LWD) recruitment may require a century or more. Therefore temporary or engineered solutions may be necessary, such as installing LWD while a young riparian forest is maturing.

When prioritizing projects, the relative impact of the project on salmon should always be foremost in consideration. For example, a preservation project that protects relatively few salmon may be less important than a restoration project that improves habitat conditions for thousands of fish.

- **Priorities within Watersheds**

Within each watershed, the known limiting factors for salmonids have been prioritized in the report *Salmonid Habitat Limiting Factors in WRIA 15* (Haring 2000). Projects will be prioritized based on these lists. Project proponents are encouraged to strategically select projects that address the most important limiting factors. Additional studies have been or will be conducted to further refine the list of known limiting factors and these additional studies should be used to update the prioritized project lists.

- **Education, Public Outreach and Partnerships**

Healthy salmon populations require an informed and involved public, with communities dedicated to stewardship of their own watersheds. Greater awareness will lead to stronger protection and recovery of salmon. There is also a much-needed connection and partnering among different agencies and public interests. Therefore, projects that are beneficial to salmon populations increase education and improve coordination among government agencies and interests will receive increased consideration when the projects are prioritized. These actions are seen as paramount for fostering public stewardship and protecting and restoring salmon populations. Much of the human population is concentrated in smaller watersheds

(lower geographic priority), but the positive impact on salmon recovery of building public support makes projects in these watersheds vital to future recovery efforts.

The following are examples of Education, Public Outreach and Partnerships that could be used to foster public stewardship:

- **Community Support:** People in the community support the project mission. If there is not backing for the project how will you arrive to get community support?
- **Education:** There is a continual need to connect ourselves as individual, corporate, and community citizens to salmon recovery. Greater awareness will lead to stronger protection of salmon habitat. Examples of education include involving children and adults in hands-on workshops, open houses, or developing educational materials such as kiosks and newsletters about the project and salmon recovery.
- **Volunteers:** Volunteer opportunities provide information and education, fosters stewardship and can help reduce the level of financial support needed. Examples of existing volunteer opportunities include stream teams, school projects or salmon enhancement groups.
- **Public Access:** There should be places where, with minimal damage or degradation, citizens can view evidence of salmon recover projects to encourage good stewardship. While public access is important, we must ensure that increased access does not further degrade water quality or habitat. Projects will not be penalized if access is not appropriate or possible, yet the benefits to salmon are high.
- **Citizen Groups:** Citizen groups mostly comprised of citizens within a particular watershed that support and encourage natural resource protection efforts. They could be a formalized, not-for-profit organization for a stream, a grass-roots neighborhood group, watershed stewardship group, a sub-area planning committee and the like. The importance and impact of these existing groups should be recognized and leveraged into broader public support for salmon recovery goals.
- **Native American Culture:** The region's Native American tribes have fished for salmon in the waters of East Kitsap for thousands of years and view salmon recovery as essential. Examples could include sites or projects of special significance to the local Native American tribes.
- **Partnerships:** Partnerships encourage cooperation and coordination between multiple agencies and public interests. Projects should encourage partnerships between multiple agencies, non-government and school groups.



Volunteers planting trees at the Gorst Creek restoration site

3. MONITORING

Progress in salmon recovery requires monitoring to determine the success of past efforts and to allow us to adapt our methods with the lessons learned. Every recovery action should be considered an experiment with an explicit objective being to learn how to do things better the next time. Monitoring allows you to manage adaptively. All recovery projects undertaken in this region should include a monitoring component and the results should be shared with other groups and community members to celebrate successes and to share the knowledge gained when projects do not function as planned.



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