

Coos Bay Lowland Assessment and Restoration Plan

Chapter 3: Restoration Strategy

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Restoration strategy

The goal of this restoration strategy is to capitalize on project opportunities that improve the function of ecological processes while preserving or enhancing economic utility of the land and the overall livability of these sub-basins for the community. The goal of restoration, in this case, is to rehabilitate watershed conditions that allow for habitat connectivity, and sustained anadromous fish populations, as well as other ecological functions such as water quality, and natural sediment transport. Our intention is to combine landowner interests and concerns with a strictly biological ranking to determine which restoration actions have the most synergistic potential.

Potential Restoration Actions

Below are short discussions of various action types considered in this restoration strategy, followed by a description of the scoring and ranking system used to prioritize the actions within regions of each sub-basin. Actions were scored for a series of biological criteria and socio-economic criteria for the region(s) appropriate for that action (see Appendix A – Prioritization Methods and Prioritization Scoring Tables).

Add secondary and off-channel features would involve excavation of pools or ponds adjacent to the stream to create winter rearing habitat for coho salmon. The ponds must be constructed with freshwater flow that will keep the outlet of the pool open and connected to the main stream. The freshwater flow must be from a clean source that does not produce significant amounts of sediment that would cause the pool to fill.

Beaver encouragement would involve providing construction materials for beaver dams, especially willows, and potentially releasing beaver from areas that they are unwanted.

Culvert replacements would involve removing existing culverts and replacing them with culverts or bridges that are able to pass the anticipated 100-year flood event and which are at least as wide as the bank full width of the stream. New culverts would be embedded to create a stream-simulation to ensure full fish passage.

Landslide area protection would involve retaining additional conifers in steep, landslide prone tributary draws.

Levee removal would involve end-hauling or spreading existing levees thinly to allow the stream to flood pasture areas. This project may

involve building levees to protect houses or other infrastructure. The project would cause land to flood more often, but may allow land to drain more quickly as flood waters subside. Also, sediment would be deposited on floodplains which would reduce channel sediment deposition and build up potentially productive land, countering the subsidence processes.

Levee setback would involve moving levees away from stream banks to allow for improved stream function including meandering, localized flooding and development of natural streamside vegetation.

Reshape stream channel would involve reconstructing stream channels by creating a natural, meandering channel pattern in places in which channels have been ditched or banks hardened. This would usually only be done in cases in which riparian planting and fencing was going to occur at the same time.

Riparian forestry would involve leaving a wider no-harvest riparian buffer and retaining more conifers in the riparian areas than are required under the Oregon Forest Practices Act.

Riparian planting and fencing would involve excluding livestock from the stream with appropriate fencing designs. Fences would usually be set 15 to 35 feet off the stream and buffers would be planted with a diverse mix of conifers, hardwoods, and shrubs. Planting prescriptions would be designed to meet both landowner and biological objectives.

Roads upgrades typically would involve upgrading or adding additional cross-drain culverts or upgrading stream crossing culverts in order to help prevent ditch water from discharging into streams and help prevent road fills from becoming saturated and failing.

Tide gate relocation would involve removing the tide gate from its existing stream crossing and moving it, usually upstream in order to maximize the tidal exchange. This action would involve construction of levees to protect infrastructure and pasture.

Tide gate removal would involve removing tide gates from stream crossing bridges or culverts to allow tidal water to flow upstream. The project may involve raising levees to protect upstream landowners and replacing the stream crossing structure to increase the flow capacity for tidal fluctuation.

Tide gate replacement would involve replacing the existing, top-hinged gates with improved, fish-friendlier designs including side-hinged gates or gates with a mitigator device that holds the gate open

longer. Replacement gates would be expected to maximize the amount of time that the gate remains open, allow fish passage during the entire open time, and allow a saltwater mixing zone upstream of the tide gate.

Wetland restoration would involve restoring hydrological processes to allow an area that was historically inundated at least seasonally by removing tide gates and levees. Supplemental restoration activities may include planting native vegetation, constructing drainage networks or pools, and placing large wood.

Various project types considered in our restoration strategy may raise questions within adjacent communities as to the implications and impacts of these projects. Their function in terms of ecological processes, as well as how the project may affect landowners, is discussed below. At this point, these are conceptual project actions only and only in a few cases have specific projects been proposed.

Tide Gates

Tide gates have a major influence on Lowland streams. The main stem tide gates significantly change the movement of water, sediment, and fish into and out of the stream systems. Smaller tributary tide gates also cause potentially valuable salmon rearing areas to be inaccessible to these fish. While technology in 'fish-friendlier' tide gates is advancing, the ability of newer designs to significantly improve fish passage and to address problems with sediment movement and water temperature have not been proven.

Although relocating or removing of the main tide gate is considered from strictly biological perspective, the CoosWA is not making any assertions about the viability of that project. Such large scale changes would require a significant engineering and design study and does not match well with most landowner concerns. Removal of some of the smaller culvert tide gates, especially in association with culvert improvement, does seem to have the potential to improve conditions. Even with these smaller projects, care would need to be taken in design to protect adjacent landowners.

Wetlands

Land historically drained for agricultural cultivation is often difficult to maintain for its current purpose and many bottom land owners are in constant battle against field drainage issues. In these conditions, wetland plants threaten to reestablish dominance over preferred crops – often rendering pastures marginal or economically unproductive.

CoosWA sees the potential for mutual benefits to landowners and to watershed function with strategic wetland restoration. Many contem-

porary land managers are finding that taking advantage of natural systems helps increase productivity of their operation. Properly managed, wetlands have the ability to reduce flooding in other areas of the sub-basin by allowing large volumes of water to be stored during peak flow events. Wetlands can also provide natural sediment deposition areas—reducing the need for dredging. Wetlands are prime off-channel and over-wintering fish habitat, which in many sub-basins is the limiting factor to coho populations. Essentially, well-planned wetland restoration could make currently unproductive land ecologically useful while improving conditions on more economically productive areas.

Wetland restoration, although not feasible for the entirety of wetland area shown, would help alleviate some of the top landowner concerns if strategically placed and managed. As discussed in Chapter 1, wetlands function to attenuate flood water, especially when located in the mid reaches of a stream system, thereby reducing flood inundation downstream. Wetlands could potentially be designed specifically for the purpose of storing water during high flow periods while allowing other pasture areas to drain more efficiently. The use of strategic dikes around the wetland could be employed to protect nearby areas from wetland flooding.

Wetlands also function as natural sediment catchments and could function for this purpose in the Lowlands area, which suffers from chronic sediment issues. Dense vegetation can filter sediment from runoff entering the wetland from adjacent land uses. Wetlands can reduce sediment coming downstream by slowing the rate of flow and catching the sediment that falls out of the water column.

Prioritization Process

Restoration prioritization was determined by CoosWA through a process of scoring and ranking of each potential action for two sets of criteria. One set of criteria was used to evaluate actions for biological efficacy towards habitat restoration based on assessment data and limiting factors analysis, and the other set of criteria addressed socio-economic feasibility questions. Appendix A contains detailed information about the methods of prioritization, score definitions and the scoring tables for each sub-basin.

The prioritization scoring process results in two sets of combined weighted scores for each action using higher scores to indicate the likelihood of successful results. The six biological criteria include the actions estimated ability to restore watershed processes, restore connectivity, address (Reeves, 1989) Limiting Factors, longevity of the project

type, preservation of a unique habitat type, and the extent that the action type has been proven effective. The socio-economic feasibility criteria, used as a filter to the identified biological priorities, include the action's estimated likelihood of success, educational benefit, ability to address local landowner concerns, measurability of effects, implementation feasibility, fundability, and cost range.

Contrasting of the aggregate scores, based on the two sets of criteria for each action, was done using a threshold of two, and particular criteria acting as 'deal killers' if receiving a score of zero. The score threshold system was used to determine levels of priority and inform the nature of CoosWA's involvement with project development. The levels of priority and CoosWA approach are indicated in the sub-basin restoration plan maps using the colors shown in Table 4-1. The levels are shown in Table 4-1 in descending order from green / high priority to red / low priority.

A potential action that scores above a two in both categories (biological and socio-economic), falls into the green priority level. These projects are more likely to be easily implemented and data analysis shows that such projects will have high biological returns. Actions receiving a yellow priority level were scored above a two in the biological category and below a two in the socio-economic category. CoosWA will seek opportunities to build partnerships and provide educational materials to interested landowners to increase project support. Actions within the blue priority level were scored below two for biological returns and above two for socio-economics. In this case CoosWA may assist with project design but would not take a lead role in funding development due to the lower biological benefits. Actions in the red priority level are those that scored low in both categories, or received a zero for particular criteria. Red priority actions are not included on the restoration maps. See Appendix A for more information about prioritization methods and scores.

**Table 4-1
Priority
levels and
implications**

Priority	Implications and CoosWA Approach
	Implementation would be easier and project would have a high biological return. CoosWA would support the project and seek funding.
	Implementation would be harder, but project would have a high biological return. CoosWA would seek to build partnerships and educational demonstration opportunities.
	Implementation would be easier, but project would have a lower biological return. CoosWA may assist with project design, but would not be a lead in funding development.
	These projects either have low scores for biological returns and socio-economic feasibility, or received a zero score in a particular criteria. Implementation is considered unlikely.