Coos Bay Lowland Assessment and Restoration Plan

Chapter 3:
Kentuck Sub-basin Restoration Opportunities

Coho spawning. Photo CoosWA, 2003.

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Discussion of Restoration Opportunities

This section discusses the need for restoration in particular reaches (aquatic habitat survey reaches) within the sub-basin based on survey data analysis, and then introduces restoration priorities within each of four larger regions based on the prioritization scoring system.

Our analysis indicated that habitat conditions in the Kentuck sub-basin generally decline as the mainstem flows from the upper reaches to the mouth, where habitat conditions are the worst. The Mettman and Franson tributary reaches, however, are in relatively better condition yet still not meeting many of the ODFW habitat benchmarks. As demonstrated by the limiting factors analysis, the primary habitat bottleneck is availability of summer rearing habitats, which are limited due to high temperatures. Landowner concerns in the Kentuck sub-basin are centered on restoration of fish and wildlife habitat and water quality and quantity, as well as drainage issues.

Temperature and Shade

While the sites upstream from the Tidal reach have temperatures that salmon could potentially survive, high temperatures over 70°F in the Tidal reach make that area unusable to juvenile salmonids. The upstream sites show temperatures over 64°F, however these encompass few enough days that fish can adjust by moving to thermal refugia during those times. Because the 7-day minimums at all sites, except the tide gate, are below 64 °F, the stream overall spent at least part of even the hottest days at levels safe for fish.

The Kentuck headwaters, in and above Trib 31, the Tidal, Mid and Lower Valley reaches, and an unsurveyed tributary entering the mainstem at the top of the Tidal reach are in need of riparian shade planting. All of these reaches, except for the tributary for which there is no aquatic habitat data, also have extremely high levels of unstable banks.

The unsurveyed tributary, mentioned above, should be surveyed for temperature to gain a better understanding of its effect on temperature in the Tidal reach.

Sediment

The Kentuck slope stability analysis shows that 5.6% of the area is in the high to extremely high risk range for naturally occurring landslides. The most unstable slopes are located in the steep areas of the Kentuck headwaters. Soil disturbing activities, such as logging, road building,

and excavation should make special precautions against erosion and interrupting proper drainage. Road and landing treatment recommendations (see Table K-11) are site-specific fixes that bring road drainage problems up to date with current, 2003, Oregon Department of Forestry Best Management Practices (BMP). Based on the road and landing surveys, the Kentuck sub-basin needs 132 new culverts and seven water bars to meet BMP and reduce road related sediment. Of the existing 99 stream crossing structures, 16 culverts need to be replaced, 15 are rusted out and eroding the fill, and the one culvert listed as a fish passage barrier is undersized for fish passage. Of the 140 existing ditch relief culverts, 17 are rusted out and need replacing, and five water bars should be cut to upgrade gullied road surface sites. Locations of treatment sites are shown in Figure K-18.

Site Type	New Structures Needed To Meet BMP	Replacement Structures Needed
Stream Crossing	57 Cross Drain Pipes	16 Culverts (15 Erosion) (1 Fish Passage)
Ditch Relief	36 Cross Drain Pipes	17 Cross Drain Pipes
Ditch Out	39 Cross Drain Pipes 2 Water Bars	
Potential Landslide		Excavate Unstable Fill
Ponding/ Gullied Road Surface	5 Water Bars	
Totals	139	33

Table K-11 Road & Landing Treatment Recommendations

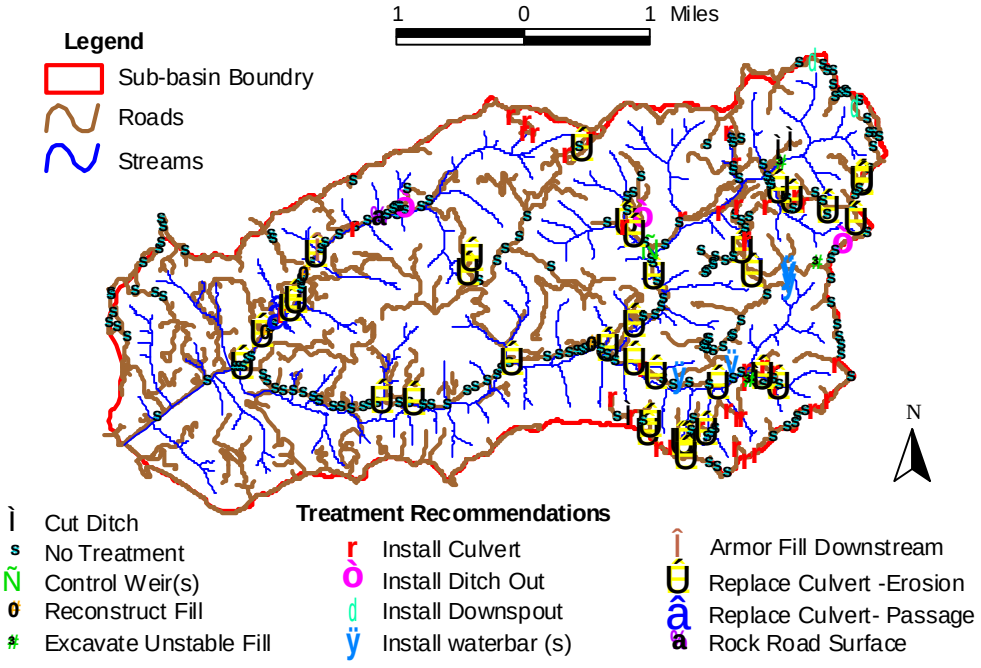


Figure K-18 Road & Landing Treatment Recommendation Locations

"New structures needed" are based on Oregon Department of Forestry, 2003, Best Management Practices addressing ditch lengths. "Replacement structures needed" address all road drainage features, and are based on the Pacific Watershed Associates Road and Landing Survey Protocol adapted by the Coos
WA.

At-risk stream crossing culvert sites in the Kentuck sub-basin contain 2849 yards^3 of fill in the high to very high risk range for failure during a 50-year rain event. This means that these culverts are able to drain less than half of their flow during such an event. Therefore, while habitat in Kentuck is already heavily compromised due to sediment levels, much more sediment is poised to enter the system if these risks are not addressed.

Many of the stream crossing structures surveyed were found to be too small to accommodate the drainage area above them. For example, one site drains an area of 0.5 mile^2 through a 30 inch culvert. The undersized culvert backs up 60 cfs of water during a 50-yr peak flow event. This site requires a 60 inch culvert to properly accommodate such an event. Another problem is a subsiding bridge crossing that drains 5.9 miles^2 located just below the confluence of Franson and Kentuck Creeks. During a peak event the flow becomes so restricted that 350-400 cfs will either back up or pour over the bridge causing it to settle even more. If the bridge collapses into the stream it may create a fish passage issue for both Kentuck and Franson Creeks. The bridge, which has light use, should be removed or replaced. If the bridge is replaced, the abutments should be raised up to allow for ample stream flow clearance.

The Kentuck sub-basin bank stability survey stands out from other sub-basins due to its very high amount of unstable, or actively eroding, stream banks, the majority of which are covered with Reed canarygrass. Extensive bank stabilization projects are needed on Kentuck creek. Stabilizing banks with native riparian trees, willows and shrubs which will reduce sediment introduction and increase shade to the stream. Riparian planting projects will need to consider ways to control Reed Canary grass until trees are of sufficient height. Exclusion of livestock is important to riparian success and will need to include off-stream watering facilities.

All reaches, except the Tidal reach, have extremely high levels of riffle gravel. However, all of these riffles also contain high amounts of fine sediment at or exceeding the undesirable benchmark. The most embedded reach is the Lower Valley, which has 20% more fine sediment than gravel. This same reach also has the highest percentage (38%) of unstable banks.

The only reaches that have desirable average residual pool depths are the Lower Valley, Mid Valley, Upper Valley, and Lower Forest reaches. The Upper Valley reach, which is more than 70% pools, has outstanding average pool depths. These features are likely influenced by dredging of the channel and should be studied more in the future.

Future dredging should be performed in a way that doesn't disturb riparian shade, compromise bank stability or leave dredge spoils where they can re-enter the channel. Dredge operations that include protection of habitat features may be more likely to be permitted and will help reduce the need for future dredging.

Large Wood

There is almost no large wood in the mainstem reaches of Kentuck Creek and only Franson Reach 2 approaches the desirable benchmarks. Adding large wood to the system will help create and enhance needed rearing habitat. Before large wood can be placed, however, banks should be stabilized. Riparian plantings will help stabilize banks, and provide shade, as well as produce future large wood for the stream system.

Conclusions

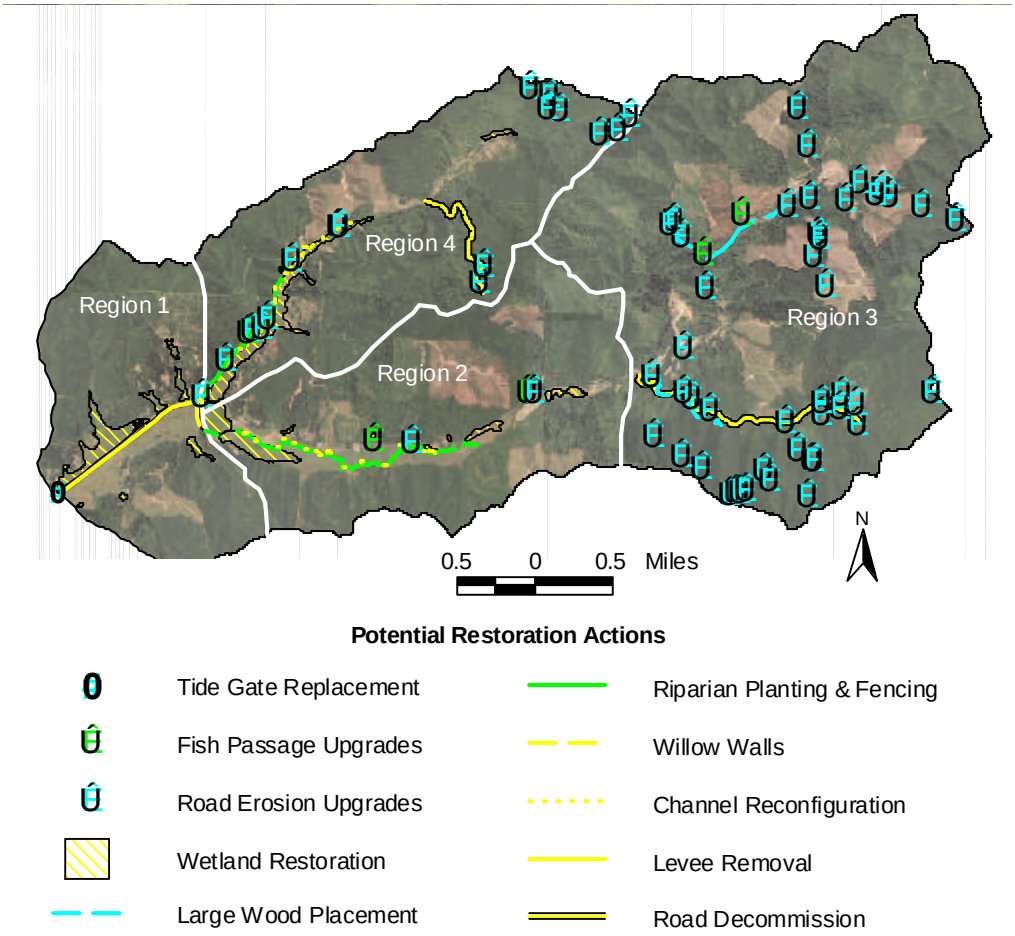
The Mettman tributary reach contains the best habitat of the reaches surveyed in the sub-basin, and has the highest number of spawners. Habitat in this reach should be protected. The Tidal reach has the most undesirable characteristics and should be a priority area for restoration.

The results of the watershed health analysis and the concerns expressed by landowners make it necessary to establish positive working relationships in order to develop and implement successful restoration strategies. In the Kentuck sub-basin, many of the landowner concerns will be addressed simultaneously as habitat is addressed. Effective habitat restoration efforts in this sub-basin will focus on reducing temperatures in the Kentuck headwaters and lower reaches, reducing sediment loading in all reaches using a variety of approaches throughout the sub-basin, and increasing stream complexity that fosters off-channel winter rearing habitat.

Prioritization of Potential Actions

Results of the prioritization process are mapped below in Figure K-19. The colors indicate how the action scored in relation to a threshold of two. Descriptions of the score categories and action types are provided in Chapter 3 – Restoration Strategy.

Figure K-19 Potential Restoration Opportunities



Potential actions within each region are listed in Tables K-11 and K-12. The color next to each action corresponds to the colors on the map in Figure K-19, and to the prioritization score categories.

Region 1

Potential actions within Region 1 are listed in Table K-11 and shown in Figure K-19. As the score-derived color coding indicates, Region 1 potential actions with highest priority include levee removal, reshaping the channel to its natural form and wetland restoration. The yellow priority level of these actions indicates high estimated biological returns, yet lower socio-economic favorability. The potential actions of tide gate replacements, ditch maintenance, culvert replacements for fish passage,

and implementing farm plans received lower scores for biological returns and higher scores for socio-economics. CoosWA would provide recommendations for these project types but not take a lead on funding development. Potential actions in Region 1 receiving the red priority level all scored low in both the biological and socio-economic criteria and are not included on the restoration potentials map.

Region		Potential Actions
1		Levee removal
		Reshape channel
		Wetlands restoration
		Tide gate replacements
		Ditch maintenance
		Culvert replacements (passage)
		Implement farm plans
		Riparian planting
		Large wood placement
		Tide gate removal
		Tide gate relocation
		Levee setback
		Water Conservation
2		Culvert replacements (passage)
		Riparian planting
		Wetlands restoration
		Willow wall
		Beaver encouragement
		Riparian fencing
		Ditch maintenance
		Culvert replacements (erosion)
		Implement farm plans
		Large wood placement
		Reshape channel
		Bank resloping (no plant)
		Off-channel features
		Water Conservation

Table K-11 Kentuck Regions 1 and 2 Potential Actions

Region 2

Potential actions within Region 2 are listed in Table K-11 and shown in Figure K-19. Top priority actions include culvert replacement for fish passage and riparian planting. These actions are considered easier to implement and should significantly benefit the watershed. Yellow priority level potential actions include wetlands restoration, willow wall construction, and beaver encouragement. The CoosWA would seek to develop partnerships and education or demonstration opportunities for these potential actions. Potential actions where the CoosWA may provide design assistance but not take a lead in funding development include riparian fencing, ditch maintenance, culvert replacements for erosion control, and implementation of farm plans. The red priority level actions all received low scores for both biological and socio-economic criteria and are highly unlikely to be implemented.

Region 3

Potential actions within Region 3 are listed in Table K-12 and shown in Figure K-19. Road decommissioning and culvert replacement for fish passage received the highest priority level in this region. These actions are assumed to have both high biological returns and socio-economic favorability and would be generally easier to implement in this region. The yellow priority level actions, beaver encouragement and landslide area protection, are cases in which the CoosWA may seek partnerships and funding development if interest from landowners is shown. Blue

priority level actions include large wood placement and road upgrades. These actions scored higher in the socio-economic criteria and lower for biological returns. CoosWA would not take a leading role in developing funding for these projects. The red priority level action in this case scored just below two in both categories.

Region 4

Potential actions within Region 4, Mettman Creek, are listed in Table K-12 and shown in Figure K-19. The highest level priority action in this region is riparian planting. Potential actions in which the CoosWA would seek funding and opportunities to build partnerships include road decommissioning, willow wall creation, reshaping of the channel, riparian forestry practices, wetland restoration, beaver encouragement and landslide area protection. These actions scored higher biologically and lower for socio-economics. Actions in which the CoosWA would not take a lead role, those that scored lower biologically and higher for socio-economics, include road upgrades, riparian fencing and or planting, ditch maintenance, culvert replacements for erosion control, and implementation of farm plans. The red priority level actions scored low in both categories and are highly unlikely to be implemented.

Region		Potential Action
3		Road decommission
		Culvert replacement (passage)
		Beaver encouragement
		Landslide area protection
		Large wood placement
		Road upgrades
		Riparian forestry practices
4		Riparian planting
		Road decommission
		Willow wall
		Reshape channel
		Riparian forestry practices
		Wetland restoration
		Beaver encouragement
		Landslide area protection
		Road upgrades
		Riparian fencing
		Ditch maintenance
		Culvert replacements (erosion)
		Implement farm plans
		Large wood placement
		Bank resloping (no plant)
		Off-channel creation
		Water conservation

Table K-12 Kentuck Regions 3 and 4 Potential Actions