Lower Coast Fork Willamette River
Oregon
Watershed Assessment

Chapter 5 Riparian Zone Conditions

5.1 What is a riparian zone?

Early explorers to the Willamette Valley frequently described the landscape in their journals. During his visit to the Valley in 1841, George Emmons wrote: "…at an altitude of about 1000 feet – had a grand panorama view…prairie to the south as far as the view extends – the streams being easily traced by a border of trees that grew up on either bank (quoted in Boyd 1986)". When these borders of trees were explored further they heard birds calling, insects humming, tree frogs singing, all thriving amid the rich vegetation, oxbow ponds and cool canopy of the riparian forests. Although not all riparian zones resemble the closed canopy "gallery" forests of the Willamette River, they all share some common features. First and foremost, they are defined by the stream or lake they border. Some riparian zones are broad and marshy, a result of seasonal floodwaters lingering during the winter. Other riparian zones consist of a small fringe along a steeply sided, fast moving mountain stream. Each kind of riparian zone has a characteristic assemblage of plants, which share a common ability to tolerate waterlogged roots for a period of time. Common riparian zone plants include Oregon ash, big leaf maple, willows, dogwood, vine maple, sedges, rushes and grasses. Other plants, like Douglas fir and western hemlock, are fairly intolerant of submerged roots and are found above the seasonal high water mark.

Riparian zones can provide a variety of benefits or "ecological functions". They are an important place for rearing fish, amphibians and birds because they have an abundance and diversity of food sources. Forested riparian zones provide shade, which prevents streams from heating due to direct sunlight. Trees and branches that fall into the water contribute large woody debris (LWD), which creates cover for fish and helps form pools and trap gravel important for spawning habitat. Leaf litter, seeds, fruit and insects that drop into the water from the riparian zone form the basis of the food chain for many streams. Vegetation in riparian zones also help to filter out sediment and pollutants during certain times of the year, which prevents them from entering waterways. The root structure of riparian vegetation contributes to stream bank stabilization and help to prevent erosion. (Watershed Network Professionals 1999, Mitsch & Gosselink 1993, Horne & Goldman 1994)

5.2 What did historic riparian zones look like in the Watershed?

The topography and soil types within the Lower Coast Fork Watershed, as well as fire and flooding, led to a variety of historic vegetation types along streams and rivers. **Table 5-1** lists the historic vegetation types in the watershed based on 1850 Government

Land Office surveys (Christy et al. 1998). This table also lists the key species associated with each historic vegetation type and the ecological functions they provide.

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Table 5-1 Historic Vegetation in the Coast Fork Watershed

*Historic Vegetation	Associated Plant Species	Ecological Functions
Closed Forest Upland	Dense stands of Douglas fir, chinquapin, western hemlock, bigleaf maple, grand fir, red cedar, yew, ash, red alder, dogwood (understory: vine maple, hazel, red huckleberry, Oregon grape). Riparian zone trees were contiguous with upland forests.	** Large woody debris (LWD) ** Shade ** Habitat for animals, birds, amphibians, insects and other invertebrates adapted to closed canopy forests. ** Bank stability
Closed Forest Bottomland	Dense ash swamps and swales, red & white alder, willow, bigleaf maple, white oak, black cottonwood. Trees sometimes extended for hundreds of feet away from the stream edge.	** Same as for closed forest upland ** Predominance of Hardwoods is important habitat for some species
Woodland	Widely spaced Douglas fir, white oak, black oak (very brushy understory: vine maple, hazel, briars, bracken fern). Riparian zone trees were contiguous with woodland and upland forests.	**Some LWD and shade ** Habitat for animals, birds, amphibians, insects and other invertebrates adapted to woodlands ** Bank stability
Shrubland	Vine maple, red alder, willow, hazel, salmonberry.	** Shade for small streams ** Bank stability ** Habitat for birds, animals and other wildlife
Prairie	Wet and dry prairie containing many species of native grasses and wild flowers, scattered ash in wet prairie, vernal pools.	** Same as for shrubland ** Some plants and animals were particularly dependent on prairie habitat
Savanna	Widely spaced trees, either ash, Douglas fir, white oak, black oak, Ponderosa pine or some combination (understory: grasses and wildflowers).	** Same as for prairie ** Some plants and animals were particularly dependent on savanna habitat

Emergent Wetland	Pond lily, skunk cabbage, wapato & other marsh species.	** Habitat for wetland animals, birds, amphibians, insects and other invertebrates ** Filters sediment from water

*From :Christy et al. 1998

The Pre-Settlement Vegetation map of the Lower Coast Fork Watershed (**map figure 20**) illustrates the distribution of historic vegetation in the watershed. Riparian zones in the steep, headwater areas had closed canopy forests of conifers and hardwoods. Streamside vegetation in the foothills was either closed forest upland or woodland. Occasional fires thinned the understory but probably left many of the large trees standing in these areas. Along the valley floor, riparian vegetation was closed forest bottomland, savanna, shrubland, emergent wetland or prairie. Seasonal fires kept trees and shrubs sparse in many parts of the valley and encouraged the growth of prairie and savanna species. In places where fire had been absent for several years shrubs grew up. In areas with low relief, floodwaters created wide riparian zones consisting of plants tolerant of saturated roots (e.g. native prairie species, emergent wetland plants, ash, bigleaf maple, willow, dogwood, scattered oaks).

Over the past 150 years there have been significant changes to the physical structure and vegetation of riparian zones in the watershed. Stream channelization allows water from winter storms to move downstream more quickly and consequently has decreased floodplain width in some areas, resulting in a narrower strip of land that supports riparian and wetland vegetation. In some places riparian vegetation was removed in the process of rerouting channels. Past logging sometimes changed the size and type of trees in riparian zones from large conifers to smaller hardwoods. Roads, houses, lawns, urban development and livestock grazing have also changed riparian zones. The cumulative impact of all these activities has reduced the riparian zone's ability to provide habitat, shade, and woody material to the streams.

5.3 Conclusions

Information presented in this chapter is a tool to help understand which ecological functions have been compromised due to changes in riparian vegetation. The watershed council may wish to use this information to prioritize restoration activities and individual landowners may use it to assess conditions on their own property. In some instances, changing the vegetation back to what it was historically would be difficult or impractical. In other cases restoration or enhancement could be accomplished through passive restoration or minor enhancement. Understanding the most significant impairments to riparian zone functioning and sharing that information is the first step towards improving riparian conditions.

Other considerations the council may wish to include regarding riparian restoration and enhancement are:

- Prioritize restoration that requires the least effort/money but has significant return.
- Savanna and prairie habitat have been altered compared to historical information. Removing shrubs in former prairie or savanna, removing noxious weeds and preventing them from taking over in areas not already heavily invaded are important considerations.
- Tree planting is a long-term restoration activity that is needed in this watershed.