VEGETATION CHARACTERISTICS OF RIPARIAN AREAS

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Abstract: As we increase our understanding of the different resources and resource users in riparian settings, we will be able to make better decisions on how to manage these important areas. This paper provides a better picture of the vegetation characteristics in these areas. Vegetation is a major component for stabilizing stream banks, reducing erosion and sedimentation, and providing forage, cover, and scenery. Individual plant species, community types, and clusters or mosaic array of these community types in a riparian setting, are important criteria for making many management decisions.

Over a period of 10 years, I have come to appreciate the riparian setting, especially its diversity of resources. Even though riparian areas make up less than 5% of most geographic areas (Winward 1984), they often govern activities on the other 95%. They are interesting areas, areas that are diverse vegetationally from acre to acre as well as vertically on any one site (Kauffman and Krueger 1984). It is their diversity that makes riparian areas so popular with wild birds and mammals, livestock, and people.

I would like to clarify a common misconception - the notion that riparian areas are fragile areas. This is not necessarily so as far as vegetation is concerned. The plant species in riparian areas withstand grazing impacts as well or better than surrounding upland species. A major reason for this is that riparian species do not have to tolerate the added stress of summer drought as do most non-riparian species. Riparian species are, in fact, remarkably resilient if grazing pressure is removed any time during the growing season. Other features such as compaction and bank breakage, however, are symptoms indicating fragility in soil properties in these areas.

Many things impact riparian areas - livestock, timber harvesting, recreational activities, and roads. Currently, most of the public concern deals with livestock impact. However, we must use caution when assigning cause to riparian degradation. Often the true cause of damage is not so easily identified. Roads, for example, can be major contributors to erosion and sedimentation. An average single-lane road along a riparian corridor has at least 50,000 square feet of barren surface per mile. These roads have been purposely designed to promote and concentrate runoff. How many miles of roads follow riparian corridors?

Nature also can be unkind to a riparian setting. It is common for runoff water generated from several thousand acres of watershed to rush down a narrow canyon bottom toward the lowlands. I have gradually come to understand how "natural" some of our perceived problems really are. We do have a lot to do to improve management strategies in these important areas, however. We can improve management by understanding the vegetation and the natural processes which take place in riparian areas.

VEGETATION AND VEGETATION UNITS

What do we know about the vegetation in riparian areas? In the past, riparian areas were not treated as distinct units worthy of treatment separate from surrounding uplands. Few persons have taken time, for example, to learn the different willow (*Salix*) or sedge (*Carex*) species so common in these areas. Managers have either lumped the riparian areas with upland types or, at best, classified them into broad range types, wet meadows, dry meadows, or browse shrub (USFS 1982).

There has recently been an effort to divide these areas into finer classification units to better understand and manage them. Current work by the Intermountain Region of the U.S. Forest Service has been at the community-type level (Youngblood et al., 1985a). By definition, the community type (CT) is represented by repeating stands (patches or islands) of similar vegetation. No reference is made to successional status of the stand. Types are named after one or two dominant plant species in the community. Examples would be: narrowleaf cottonwood/Kentucky bluegrass (*Populus angustifolia/Poa pratensis*) CT or the tufted hairgrass (*Deschampsia caespitosa*) CT Thus far, the classification includes 75 CTs, about two-thirds of those we expect to eventually define.

One of the most perplexing problems

encountered in classifying a riparian area to community types is the small size and mosaic pattern of types that are usually found. Individual stands may range from a few square feet to several acres. Any one section of a stream or meadow is usually composed of a mosaic of stands of 5 to 10 CTs. Specific types are usually under the control of on-site features such as ground water or special soil situations.

The kinds or proportions of CTS in a cluster may change considerably up or down stream in different geographical settings. Major factors producing change in the kinds of CTs present are elevation, stream gradient, stream size, and width of the valley bottom. These changes in different CTs and clusters become somewhat predictable, with experience, in any one geographic setting.

Some land managers become discouraged with the complexity of vegetation in the riparian setting, hence, the past lumping. The way to reduce confusion is to study riparian areas in a sequence of four logical steps.

(1) Become acquainted with major plant species in the riparian area. It is difficult to make logical management decisions about a resource if one does not know the resource! At least learn the species used to name the CTs.

(2) Identify the community types in the area. The CTS are the bricks which build and hold the riparian system together. Identify the types in one area and then expand your background to additional types in other areas.

(3) Observe the pattern of CT clusters in each geographical setting up and down stream. It is often the patterning of these CTs that sets the stage for how they are used by people and animals or how an area handles water.

(4) Select an appropriate classification level to meet your needs. Sometimes it is difficult to manage an area at the individual CT level. A management unit generally large enough to allow easy mapping on most resource photos is the CT cluster. If management intensity does not require the detail of either the CT or CT cluster approaches, the next broader unit would be the dry-meadow, wet-meadow, or browse-shrub types, or the very general separation of riparian versus upland types.

In all cases it remains important to know the particular CTs in the management or mapping unit. That is, know what you have lumped together for a particular management purpose!

Reports available provide keys for separating riparian CTs in the mountainous areas of Idaho, Western Wyoming, and Utah (Mutz and Graham 1982, Mutz and Queiroz 1983, Norton et al. 1981, Tuhy and Jensen 1982, Youngblood et al. 1985a, and Youngblood, et al. 1985b). The Intermountain Region's next efforts will be on National Forest lands in Nevada. Other agencies and universities are also working on riparian classifications.

The vegetation units in riparian classifications need to tie with other land and water classifications. Done correctly, a coordinated system should emerge.

SUCCESSION

We have a lot to learn about successional process in riparian settings. Nevertheless, several important facts are known. Unlike many surrounding upland situations, plant succession can be relatively rapid in riparian areas. Major changes can occur in 10 to 20 years. A particular area seldom remains unaltered long enough to form a stable or climax plant community. Instead, natural changes in the stream channel or in water levels bring about continual adjustments in the plant community. For example, beaver dams may become isolated from the main channel as a stream changes locations. As these dams fill with sediments, the CTs of ponded areas commonly change from beaked sedge (Carex rostrata) to water sedge (C. aquatilis) to a willow/grass or willow/sedge type. Such changes may occur within 40 to 60 years and then the sequence may reverse as the stream channel again meanders through the site or new dams are built.

Any one geographic area often is made up of several CTs which tend to change specific locations through time. This is in contrast to a common sequence of successional changes in surrounding upland vegetation where community changes may require hundreds or even thousands of years.

Riparian communities are dynamic and transient. They will change dramatically over time regardless of current land uses or management. It becomes very important, therefore, to understand which changes on riparian areas are natural and which are related to use activities. Managers may otherwise be trying to stop natural processes.

This history of rapid change has produced some interesting riparian species adaptations. Many of the cottonwood and willow species require, or at least regenerate much better, on disturbed or open ground. For example, Drummond willow (Salix drummondiana) and Booth willow (S.

Report. Ogden, UT. 188 pp.

TUHY, J.S., and S. JENSEN. 1982. Riparian classification for the Upper Salmon/Middle Fork Salmon Rivers, Idaho. U.S. Forest Service, Intermountain Regional Office Contract Report. Ogden, UT. 195 pp.

USFS. 1982. Range Analysis Handbook, FSH 2209.21. U.S. Forest Service, Intermountain Region, Ogden, UT.

WINWARD, A.H. 1984. An ecosystem classification for Intermountain riparian areas. Pages 1-5 in T.E. Bedell, ed. Range Watersheds, riparian zones and economics: Interrelationships in management use. Proc. Pacific Northwest Range Management Short Course. Oregon State University, Corvallis, OR. 98 pp.

YOUNGBLOOD, A.P., W.G. PADGETT, and A.H. WINWARD. 1985a. Riparian community type classification of Northern Utah and adjacent Idaho. U.S. Forest Service, Intermountain Regional Office Contract Report. Ogden, UT. Draft. 104 p.

_____, W.G. PADGETT, and A.H. WINWARD. 1985b. Riparian community type classification of eastern Idaho-western Wyoming. U.S. Forest Service, Intermountain Regional Office Contract Report. Ogden, UT. 78 pp.