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 (Deschampslca 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
geo graphic 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
1982, Youngblood et al. 1983a, 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.

SUCCES SION

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.
aquatill)! 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.


