

Riparian Soils

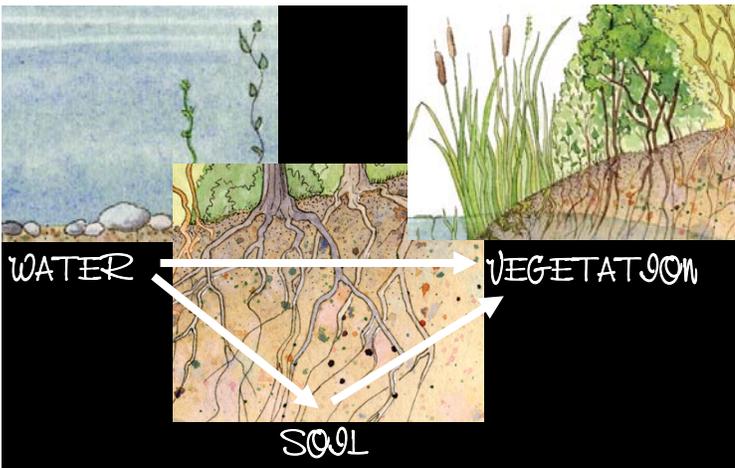


What is Soil?

- Soil is the unconsolidated material in which plants are rooted. Soil texture is determined by the amount of sand, silt and clay in the soil.

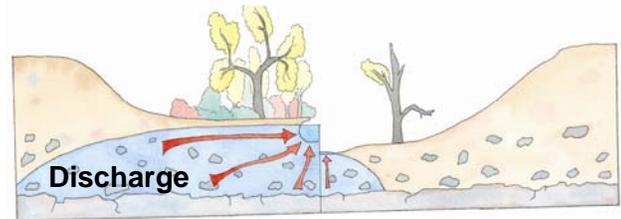
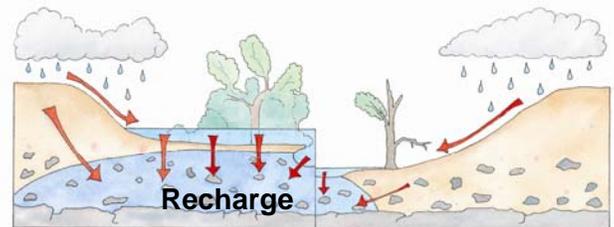
Importance to Management

- Understanding your soils can help you to better manage your rangelands and minimize soil disturbance. This will also help to reduce infestations of invasive and disturbance-caused plant species.



Understanding Soils and Hydrology

- Plant communities can indicate the kind of soils and hydrologic processes, such as subirrigation, beneath them and can give you clues on how to best manage your riparian areas.
- Riparian, including wetland, areas tend to be focus points for groundwater recharge and discharge.



Some things to consider in your riparian management:

- Poorly drained sites, those with **excess moisture**, should only be disturbed when frozen, as they are susceptible to compaction.
- Areas with a dry climate and high water table are prone to **salinization**, an accumulation of salts. Areas with existing salinity are particularly susceptible and site disturbance can increase the potential for soil to become saline.



- Riparian sites with coarse texture soils (lots of sand and gravel), are more prone to **drought**.
- **Water erosion from overland flow** occurs more in areas with fine textured soils, with high amounts of silt and clay. Erosion risk increases when plant cover is sparse.
- The risk for **contamination** of subsurface soil and/or groundwater is high where recharge is promoted by sparse plant cover and coarse textured soils. In these areas, contaminated water leaches down through the soil profile.

- The susceptibility of soil to **compaction**, including rutting and pugging, is a combination of moisture regime, soil drainage, topsoil characteristics and texture. Poorly drained, fine textured soils have a high risk of compaction.



Soil puddling

- Soils that are the most susceptible to **soil puddling**, crusting of the soil surface, and **frost heave** are usually imperfectly drained and have a high silt component.
- Riparian areas that are prone to drying out throughout the year and have low plant cover and low salinity are the most susceptible to infestations of **invasive plants**.



Pugging – a form of compaction

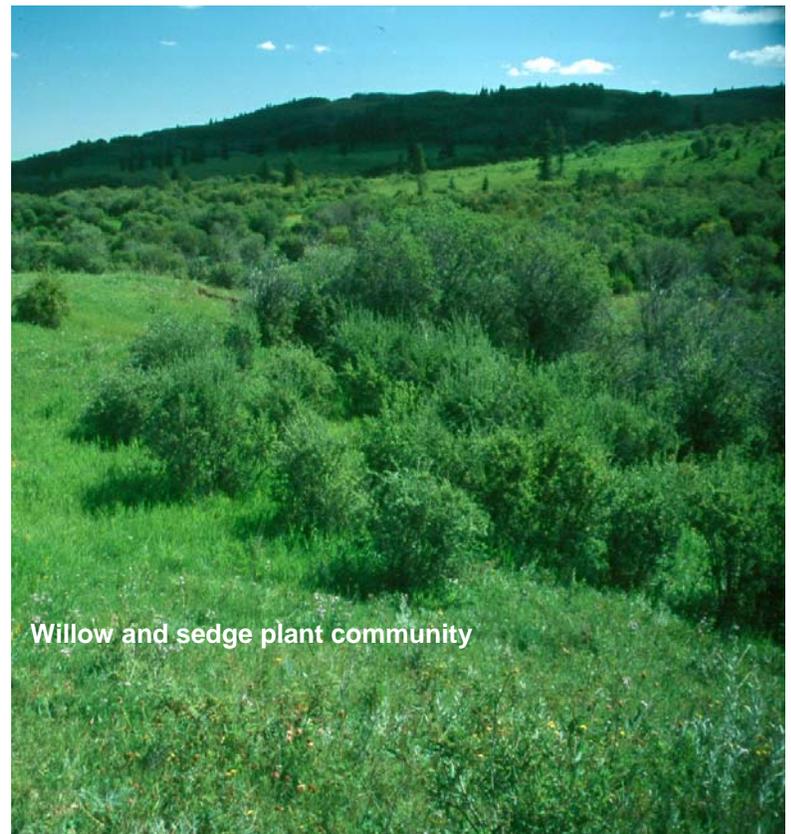


Infestation of common tansy

A Practical Management Example:

Willow and Sedge Plant Community:

- Often found in fine textured soils (eg. clay loam or clay), that are imperfectly to very poorly drained.
- As a result of poor drainage and frequently wet soils, they are highly susceptible to compaction.
- Generally, not suitable for winter feeding or for summer shade due to the risk of soil compaction and over-utilisation of willows and sedges.
- Development and disturbance should be avoided as these areas are sensitive to disturbance, are important wildlife habitat and are difficult to restore.
- Livestock use should be minimised to help reduce potential for nutrient loading and protect bank and shoreline habitats.
- Due to the sensitivities of willow and sedge plant communities, these areas may be best suited to short duration grazing in late summer or autumn.



Willow and sedge plant community

Grazing riparian plant communities at any time of year requires monitoring and adaptation of grazing management as needed.