

Know Your Plants to Protect Your Watershed

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Plants are the foundation of the range ecosystem. They are the primary foodstuffs for livestock and wildlife, and the key to a healthy watershed. A successful rangeland manager understands not only the soils and climatic conditions of his land, but also the plants that live there. There are thousands of plant species on the rangelands of Texas, including grasses, grass-like plants, forbs or herbaceous plants, shrubs, trees, succulents, vines, poisonous plants and others. The state's extreme variations in soils and climate account for some of its plant diversity. However, even properties that are close together may have very different plant communities because of differences in the way the lands have been managed. Each land owner or manager should be able to identify most of the plants growing on his or her land, understand their value to the ecosystem, and know how to use them to monitor the health of the land and the watershed.

The plant species found growing on a property can often indicate the success or failure of the land manager. Plants both respond to and affect natural ecological processes. They also respond to the human management imposed on the land. Plants influence the health of our watersheds and can be a sign of the health of the land. People may see plants as aesthetically pleasing or important to wildlife, but one of their most important roles is determining where rainfall goes.

Why Know the Names of Plants?

We name plants so that we can communicate with one another and share information about them. Researchers and other professionals use the scientific names of plants to identify them precisely. Most people learn the common names of plants. However, there are two problems in using common names:

- 1) Some common names are used incorrectly for more than one species. For example, many people talk about "grama grasses" as if they were similar types of grasses. Actually, "sideoats grama," "tall grama," "red grama," "hairy grama," "Texas grama" and others are quite different. They grow in different situations, respond differently to grazing and management, produce different amounts of forage, and may even represent different levels of land health.
- 2) Often one plant species has more than one common name. *Clematis drummondii*, for example, is called

"Drummond clematis," "Texas virgins-bower," "old man's beard," "love in the mist," "goat beard," "barbas de chivato," and other common names in different parts of Texas. Some native plants have dozens of common names.

When you use common names, be sure they are accurate. If you can accurately identify the plants on your land, you have access to a wealth of written information about those plants and can plan your management strategies accordingly.

Without that knowledge you may have to learn about plants through experience, and this could be costly. If, for example, there are toxic plants on your land, you may be unaware of it until livestock has been lost.



New plants are always arriving on a property. They arrive in the mud on tires, as weeds baled in hay purchased from another area, by wind from adjoining properties, and even in the fur of wildlife that cross property lines. A land manager should be able to spot new plants and know whether they are desirable for a healthy watershed or landscape. Some introduced or foreign plant species can be invasive and disrupt ecological processes because they have no "enemies" such as diseases and predators. Being able to identify these species early allows you to control them before control becomes too costly. The value of a plant is in the eye of the beholder; it depends on the goals of the manager and even on environmental concerns.

What Do Plants Tell You?

A plant grows where it is adapted. Because different plants have different requirements, the plants that are presently growing on your land can indicate the kind of environment that exists there. Over time, the plants in a landscape may change significantly. This is called plant succession. If you once had a tall-grass prairie (an example of high successional plants), and now you are growing low successional grasses such as hairy tridens or red grama (both are short-rooted, perennial, native grasses), your land may have been overgrazed or otherwise poorly managed in the past. These low successional plants do not provide adequate vegetative cover to slow water runoff or protect the soil surface from the impact of rain. High successional plants have deeper roots and add more litter to the soil, which improves soil aggregate stability. This, in turn, increases rainfall infiltration rates and decreases erosion. Deep-rooted perennial grasses create a more stable environment than do short-rooted grasses. Without good litter cover on the soil, the soil surface is exposed to full sunlight, higher temperatures, and higher soil water evaporation rates. Fewer plants can compete in such an environment. The result is an abundance of weeds or annual plants, and little else.

Weeds, or annual forbs, are mainly seasonal and, unlike perennial plants, cannot be counted on from year to year to give adequate cover for protecting or improving the watershed. Dense growths of annual forbs can rob perennial plants of needed soil moisture. If perennials cannot compete, weeds will take over. An abundance of weeds often indicates that there was too much bare ground at the time of weed seed germination. For example, broomweed species germinate in late fall, winter and early spring. If the pasture had been excessively grazed, or "droughted out," and there is lots of bare ground in the fall, then winter rains will bring excessive broomweed establishment the following spring. Using chemicals to control weeds does not solve the real problem of overgrazing and the presence of bare, uncovered soil. The invasion of some plant species into a watershed can ultimately create more bare ground. Prairie gerardia, a native warm season annual, is well known in South Texas. Where it is dense, this plant can suppress native and introduced grasses, leaving bare ground the following year. The same can be true for many woody species that invade a watershed. When juniper or Eastern red cedar invade a

grassland, management strategies must change so that the plants are controlled and prevented from becoming well established.

Knowing how plant species are changing on your land is an important tool for monitoring the health of your watershed. Plant species composition is the criterion used to determine range condition. Monitor the plant species on your land. Only by recognizing and accurately naming plant species can you interpret changes in plant succession, understand the impact on the environment and watershed, and know how your management might need to change.

Other publications in this series:

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For additional risk management information see: <http://trmep.tamu.edu>.

For a selective reference on plant identification see:

Hatch, S. L. and J. Pluhar. 1993. Texas Range Plants. Texas A&M University Press, College Station, Texas.

Gould, F. W. 1998. Common Grasses of Texas. Texas A&M University Press, College Station, Texas (Revised).

Hatch, S. L., J. L. Schuster and D. L. Drawe. 1999. Grasses of the Texas Gulf Prairies and Marshes. Texas A&M University Press, College Station, Texas.

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