

Ecology 101 for Hill Country Landowners

The lead article in this month's Texas Wildlife magazine is "Ecology and the Land Steward" by Steve Nelle. Steve is a retired NRCS agent and a friend of mine and someone I consider one of the most knowledgeable when it comes to managing native habitats.

Nelle begins the article by writing, "All landowners are practicing ecologists, whether they realize it or not.", and that "Ecology is a science—not an emotional endeavor." He goes on to write that, "Ecology...involves the understanding and application of ecological principles, ecological processes and ecological practices."

Principles.

The principles explain how nature works. The first is "Everything is Connected," and by everything is meant the soil, the rocks, the water, the plants, the animals, including humans. For example, a change in the number of species or amount of plants affects the nature and composition of the soil, which also affects the ability to capture and hold water as well as which species, and how many, animals it can support. Aldo Leopold used to say, "In nature everything is connected to everything else."

Another principle is that there are side effects (or even unintended consequences), to every action a land manager takes, largely because of the interconnectedness discussed above.

A really important principle of ecology is that diversity is good and it makes for a more stable or sustainable habit. Different species respond to disturbances such as overgrazing, drought, flood, fire, or erosion differently, so some species will survive each kind of disturbance so the resulting habitat will not be completely changed by the disturbance.

Another principle is to beware of simple solutions to complex problems. Because of the interconnectedness of everything as discussed above and the prevalence of side effects, it is very easy to assume a simple solution exists to whatever problem you want to tackle and to proceed without thinking it through.

Processes.

The four most important processes in ecology are the energy cycle, the water cycle, the mineral cycle, and plant succession.

Energy of course comes from the sun, but only green plants can capture that energy and convert it into chemical energy stored in the chemical compounds produced directly by photosynthesis or in secondary processes. All other life on earth (with the exception of some extremely minor forms) depends on the energy obtained by consuming the green plants or consuming animals that consumed the plants.

The part of the water cycle most directly affected by landowners is the capture and use of rainwater, which in turn depends on the condition of the soil and the vegetation growing on it.

The mineral cycle has to do with returning the essential nutrients from dead plant and animal material back to the soil so new plants can use these materials. How animals are managed affects how well this process works.

Every ecosystem has its own particular plant succession process by which one group of plants takes over from a previous group of plants, usually after some alteration in the current condition of the habitat. When man alters the plant community by his management, he may be taking the natural plant succession backwards, and only after a change in the management practices will natural plant succession return, but it may be very slow.

Practices.

Landowners have many management tools with which to practice land stewardship. The most important practice is to work to keep the ground covered with beneficial native vegetation. Or, as Nelle put it, "Nature hates nakedness."

The next most important practice is to work to increase native plant diversity and to eliminate exotic plants. The more species of plants, the more species of soil organisms, of insects, of small animals, of birds, or other native animal species, and the more sustainable the habitat will be.

Like the physician's oath, "First do no harm." This generally comes down to not overgrazing or overbrowsing, or conducting too much mechanical or chemical brush control.

A lot of all of the above comes down to knowing what you have, what needs to be done and how best to do it. Or as Leopold said, "The urge to comprehend must precede the urge to reform." Many new landowner mistakes happen because they didn't follow Leopold's advice—or the carpenter's rule, "measure twice, cut once."

Until next time...

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