

Grasslands, Ecosystems, Habitats and the Future

By Paul D. Ohlenbusch

The grasslands of the United States and the world are disappearing at a rapid rate. Estimates of the loss of agricultural land in the United States between 1997 and 2001 averaged 2.2 million acres per year (USDA-NRCS, 2003).

This loss includes all grasslands such as native prairies and tame pasture. The land becomes transportation, housing developments, green space, malls and parking lots. Also, the trend to "ranchettes," small acreages with a house and maybe some outbuildings and a horse or other farm animal, are increasing. The current term for this is fragmentation. Previously, it was urban sprawl. The prairies' disappearance, unless attitudes change, is unavoidable.

WHAT ARE GRASSLANDS?

Prairies: The term prairie is unique to the North American continent. The term is attributed to the French word for a meadow grazed by cattle. Prairies are a part of the grasslands

of the world, which include pampa (South America), veldt (Africa) and steppe (Asia). Regardless of their name or location, grasslands are "open fields and meadows carpeted by deep-rooted grasses" (National Geographic, 2007).

The prairies of North America were vast before European settlement. The prairies of central North America stretched from central Mexico into northern Canada and from the Rocky Mountain chain to the Appalachian Mountain chain. In addition, the various savannas, prairies and tundra of the north provided habitat for many species.

Large herds of ungulates, such as bison and pronghorn antelope, grazed the prairies. Recurring fires maintained "a habitat where the dominant plant community consisted of grasses and non-woody flowering plants called forbs" (Great Plains Nature Center, 2007).

CONTINUED ON PAGE 58



PAUL OHLENBUSCH PHOTOS

Open or green space within developments will undergo changes in plant and wildlife species over time as new habitats develop.

FROM PAGE 56

Settlement of the central United States was slow since many considered it the "Great American Desert." Then, settlers found the rich prairie soils grew crops such as corn and wheat. Over time, prairies were plowed, trails became roads, barbed-wire-fenced the land, towns developed and then cities. Add to this the European concept of ecology and the degradation of the prairies began.

The European ecological concepts that influenced this change were that fire destroyed the prairie and trees brought rain. As a result, trees were planted and fires were suppressed as much as possible. Today, we recognize that trees have nothing to do with where it rains and prairies are the result of fire as a disturbance.

Fire, properly applied, suppresses woody plants and enhances many of the native grasses and forbs. In the absence of recurring fires, the prairies become woodlands or forests, often with less desirable species.

Tame Pastures: The use of introduced grasses and legumes has been common for well over a century. Most tame pastures

are used for domestic livestock or hay production. Tame pastures require intensive management to be highly productive. Fertilizer, herbicides and mowing are common practices.

Some of the introduced species have become problems such as Johnsongrass, KR bluestem and sericea lespedsa. Once established, these species will stay with us. If tame pastures are not managed at a reasonable level, the vegetation may change to problem species and even have woody plants increase.

Grazed Forestland: The use of forestlands for grazing is common in more humid areas. These areas can be a native vegetation or introduced species under the forest canopy. Both grazing and the harvest of the trees can be income-producing enterprises. Recreation, including hunting, can be another income-producing enterprise.

Other Uses: A trend that also is raising questions is the purchase of land primarily for recreation. A popular management strategy for these lands is to "let nature take its course." The result may be similar to those described above.

An urban trend that is of concern is the "green belt" or "open area" concept. Many are created in developments without any

management plans to maintain the vegetation type. An example is the live oak savanna of the Texas Hill Country. When left with no grazing and/or fire, juniper will increase. Eventually, the juniper will dominate, replacing the grasses and forbs. Changes in runoff and wildlife follow.

THE FUTURE

There are many changes occurring as the grasslands disappear. Some of the changes are increased runoff, less carbon sequestration and changes in wildlife populations.

Increased runoff results from rooftops, concrete and pavement, and increased woody plants. The prairie vegetation of grasses is nature's way of reducing runoff through the root mass in the soil and the vegetative barrier above ground. Woody plants often reduce or eliminate herbaceous vegetation. Unless an adequate leaf or other mulch layer is present, bare soil results in increased runoff, less recharge to aquifers and increased sedimentation.

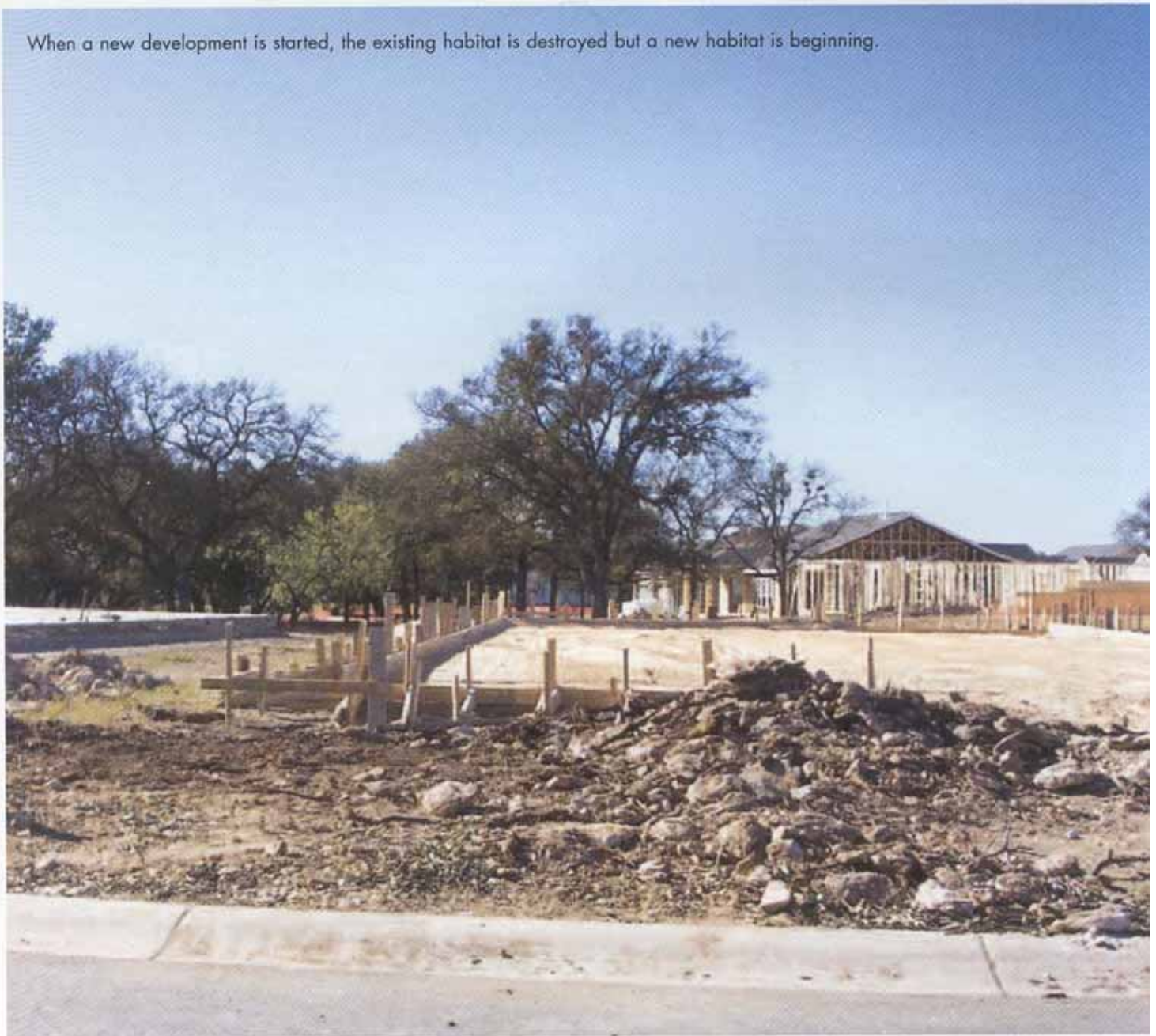
Carbon sequestration is a major process that removes carbon from the atmosphere. Grasslands, including the prairies, have the highest sequestration rate of all vegetation types. They sequester the carbon in the soil where it remains indefinitely. This also includes introduced grasses and grass crops such as corn and sorghum.

Derner and Schuman (2007) state: "Management of rangelands can aid in the mitigation of rising atmospheric carbon dioxide concentrations via carbon storage in biomass and soil organic matter, a process termed carbon sequestration."

Post, et al (2004), state that if changes to use carbon sequestration to reduce carbon are to be accepted, they will "be suitable for adoption only if they are technically feasible over large areas, economically competitive with alternative measures to offset greenhouse gas emissions and environmentally beneficial."

CONTINUED ON PAGE 60

When a new development is started, the existing habitat is destroyed but a new habitat is beginning.



MANAGEMENT TIPS



Fall is moving into winter and the need to be prepared for winter weather should be the focus.

Continue to evaluate rainfall history and current soil moisture status. If soil moisture has been short, late-season plant growth was limited. No soil moisture can mean little plant growth and replacement of food reserves for next year's growth.

If plant growth was excellent, avoid the urge to add animals to harvest the forage. Instead, let the plants have the opportunity to store food for next year, stockpile forage for winter and look to and plan for the future.

Consider how best to use stockpiled forage for winter use.

Monitor water sources for needed levels and quality. Develop options if sources are less than optimal, including for spring use.

Review and adjust grazing and economic management plans and adjust for current and past weather conditions, as well as changing economic factors.

Start planning for 2008. It's never too late to consider a five-year management plan.

The author was formerly an Extension Grazingland Management Specialist, Kansas State University, but now a grazingland and vegetation management consultant (www.grassbydesign.com).



FROM PAGE 59

Changes in wildlife populations result from changes in vegetation type, land use and land management. If a prairie gradually becomes a woody vegetation, many of the prairie species will be replaced by woodland species. When the prairie is replaced by urban uses, only those species that can adapt to the urban environment will remain. If the prairie type is maintained but not harvested, grazed, hayed or burned, a buildup of mulch will displace ground nesting birds in favor of rodents and their predators.

CAN THE TRENDS BE CHANGED?

What does the future hold for the grasslands? Probably a continual loss of acreage, both from changes in vegetation type and land use and management. The potential changes that could change what appears to be the inevitable would be to change the attitude toward land values and the use of restrictions on future land use.

The first would require a political change that probably wouldn't happen. The latter would be at the discretion of the current landowner and their heirs. Conservation easements and similar deed restrictions are being used for this purpose.

The only way to change the continual degradation of all native vegetation is to

have a change in attitude toward land. Unless land is valued as a non-renewable natural resource for aquifer recharge, sediment control, wildlife habitat and carbon sequestration, it will continue to disappear.

REFERENCES

(FOR LINKS TO THE REFERENCES, GO TO WWW.GRASSBYDESIGN.COM)

Derner, J.D. and Schuman, G.E. 2007. Carbon sequestration and rangelands: a synthesis of land management and precipitation effects. *Journal of Soil and Water Conservation* 62:77-85.

Great Plains Nature Center, 2007. Prairies of the world. Web site: <http://www.gpnc.org/prairies.htm>

National Geographic. 2007. Habitats. Web site: <http://www.nationalgeographic.com/geographyaction/habitats/prairies.html>

Post, W. M., R. C. Izaurralde, J. D. Jastrow, B. A. McCarl, James E. Amonette, V. L. Bailey, P. M. Jardine, T. O. West and J. Zhou. 2004. Enhancement of Carbon Sequestration in U.S. Soils. *Bioscience* Vol. 54 No. 10. pp. 895-908

USDA-NRCS. 2003. National Resources Inventory. 2001. Annual NRI Urbanization and Development of Rural Land. 4 pp. 