

AN
HISTORICAL
PRAIRIE
REMNANT



IN

Virginia

Peter Heus |

ABSTRACT

Unique wet prairie/prairie fen remnants contain an assemblage of species seldom seen in Virginia and neighboring states, making it of great importance to the biodiversity of the Mid-Atlantic region of the US. These habitats contain species found in mesic prairies of the Midwest and include several rare species. These habitats were historically burned and periodically grazed by bison, now long absent in Virginia. An example of a wet prairie/prairie fen is described. Such habitats are now rare and in need of protection and restoration by periodic burning and short duration grazing.

KEY WORDS

wet prairie, prairie fen

NOMENCLATURE

ITIS (2002)

Opposite: Scarlet Indian paintbrush (*Castilleja coccinea* (L.) Spreng. [Scrophulariaceae]).

Inset following page: Short duration grazing may promote reestablishment of cardinal flower (*Lobelia cardinalis* L. [Campanulaceae]).

Photos by Thomas G Barnes

This spring-fed wet prairie was typical Shenandoah Valley habitat before European settlers arrived, but it is now one of the last such wetlands remaining in Virginia. It appears to be little changed from the days when elk and bison grazed its short grasses and were hunted by indigenous people at the mineral spring that feeds the meadow. The area probably contains most of the species that were present 300 y ago. The wet prairie lies in a region of parallel mountain ridges separated by valleys varying from less than 1.6 to 8 km (1 to 5 mi) in width and are rolling to flat in topography. Such herbaceous wetlands are found within large river or stream floodplains constantly saturated by perched groundwater or seepage from adjacent slopes. Numerous springs and licks characterized the region, which is surrounded by mountains harboring the largest concentration of shale barrens in the eastern US. Wet prairie/prairie fen soils have a relatively large amount of organic matter and calcium influence, a characteristic shared with other wetlands of this type in Virginia. The substrate is fissile shale, calcareous shale, or limestone. Soil types within the wettest portion of the meadow consist of calcareous blackish clay-rich organic matter overlying dense clay and sand at depths of 30 to 40 cm (12 to 16 in) (DCR-DNH 2001).

The prairie is a 12 ha (30 ac) triangular fragment that was probably several thousand acres in size in the past. To stand in the middle of meadow in mid June is to be transported back in time. You would swear that you were in a prairie in the Midwest. And that solicits this question: is this a true prairie, in the mountains of Virginia? The names of natural features in the area offer clues to what existed here prior to European settlement. To the west snakes the Cow Pasture River and meandering from the south is Lick Run, which flows past Bubbling Springs, a large calcareous spring from limestone gravel. To the east is Calf Pasture River. To the north is a narrow notch in the mountains called Buffalo Gap which opens out into the Shenandoah Valley, an area known to have had large herds of bison. The calf and cow names of the 2 rivers refer to buffalo, while the pasture names indicate large prairies.

Historically, American Indians periodically burned such meadows to rejuvenate the vegetation and to attract wildlife back into the area. Later, early European farmers continued burning. Today this remnant survives in a nearly pristine condition due to disturbances that closely mimicked the same events that occurred before settlement; grazing by cattle and sheep and mowing. What sets it apart today from the rest of the surrounding valley is that it was never plowed or amended with fertilizers, or seeded with alien grasses or forbs, and heavy grazing has been absent for many years. Today, the meadow is mowed annually. According to the owner, who is in her seventies, it was never plowed in her lifetime and was always vibrant with wildflowers.

These small, isolated remnants are rare examples of wet prairie/prairie fen habitat and are home to several rare species in the state of Virginia. The prairie fen vegetation is dominated by sedges (Cyperaceae) such as interior sedge (*Carex interior* Bailey), Buxbaum's sedge (*C. buxbaumii* Wahlenb.), prairie sedge (*C. prairea* Dewey ex Wood), and especially hairyfruit sedge (*C. trichocarpa* Muhl. ex Willd.). Other graminoids in the fen portion of the meadow include Baltic rush (*Juncus balticus* Willd. [Juncaceae]) and switch grass (*Panicum virgatum* L. [Poaceae]).

The meadow graduates into a wet prairie and is comprised of big bluestem (*Andropogon gerardii* Vitman [Poaceae]) and little bluestem (*Schizachyrium scoparium* (Michx.) Nash [Poaceae]) that are growing on a silt loam mollisol, typical of tall grass prairies of the Midwest (Couling 2002; Fleming 2002). Many noteworthy species are found growing in the meadow including queen of the prairie (*Filipendula rubra* (Hill) B.L. Robins [Rosaceae]), purple fringeless prairie orchid (*Platanthera peramoena* (Gray) Gray [Orchidaceae]), rough avens (*Geum laciniatum* var. *trichocarpum* Fern [Rosaceae]), and Epling's hedgenettle (*Stachys eplingii* J. Nelson [Lamiaceae]). The first 3 rare species are primarily known from the Midwest and are of very sporadic occurrence on the eastern

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edge of their natural range in Virginia. All 4 species require saturated soils with elevated calcium levels as well as the near absence of woody plants.

During summer and early fall, on display are other more common species such as scarlet Indian paintbrush (*Castilleja coccinea* (L.) Spreng. [Scrophulariaceae]) and dense blazing star (*Liatris spicata* (L.) Willd. [Asteraceae]). Other showy species include beardtongue (*Penstemon digitalis* (Nutt. ex Sims) [Scrophulariaceae]), whorled rosinweed (*Silphium trifoliatum* L. [Asteraceae]), wild sweetwilliam (*Phlox maculatum* L. [Polemoniaceae]), closed bottle gentian (*Gentiana andrewsii* Griseb. [Gentianaceae]), and Canada lily (*Lilium canadense* L. [Liliaceae]). All of these species are easily propagated and I especially enjoy growing Canada lily (Heus 2003). Whorled rosin weed and queen of the prairie are indicator species of prairie typically found in the Midwest. At this site, many of the forbs respond to an early mowing with profuse flowering.

Historically, fires likely kept this area free of trees and shrubs, but the primary factor keeping this area open today is ground water influence and cutting the vegetation for hay. It has not been burned for decades, consequently, a thick thatch has formed and many of the forbs have not flowered for years. The increasing abundance and range of hairy fruited sedge in this meadow and others like it may be due to lack of periodic burning. When I first visited the meadow 20 y ago, it was ablaze with scarlet indian paintbrush but today this species is literally winking out. Most of the other species that make this meadow notable are in slow decline due to the dense thatch that

mowing alone cannot relieve. Canada lily and queen of the prairie, while abundant, only managed to produce a handful of flowers each year. Many other species lay in a state of near dormancy.

In order to preserve the full complement of species here, the meadow needs to be managed with repeated burning over time to release the meadow of the thick thatch and bring it back to a vibrant condition. Controlled burning during late fall and early winter to other wet prairie/prairie fen systems in Virginia has been done in recent years and state ecologists are monitoring the fire effects. Short duration grazing would mimic the effects of bison and would likely promote reestablishment of plants such as cardinal flower (*Lobelia cardinalis* L. [Campanulaceae]) which has not been seen in several years. These techniques would release the seed bank and allow for the appearance of species not presently evident.

Although wet prairie was once more common in the east, this rare habitat type has been reduced over the years by development. Several rare species are found in this meadow and although they are more common in the Midwest, they occur at only a few sites in the state of Virginia. Such habitats offer a window into what once was in Virginia and serve as a refuge for both rare and unusual disjunct populations of native flowers.