

In Praise of Grazing

by Andrew H. Williams

An inventory of
a rare plant in
Wisconsin reveals the
importance of
livestock grazing in
conservation.

Marbleseed (*Onosmodium molle*) is a rare prairie and savanna plant in Wisconsin, listed by the Wisconsin Department of Natural Resources (WDNR) as a species of Special Concern. I studied *O. molle* in Wisconsin to better understand its habitat requirements and to make land-use recommendations to further its conservation (Williams, 1996). Through this research, I've come to see that we are missing the greatest remaining opportunity to effect prairie conservation.

Our failure to include grazing mammals in our concept of prairie, our failure to adequately inventory our landscape for prairie taxa, and our failure to include mammalian grazing in our management of remnant prairies and prairie restorations, result in fewer prairies being conserved than might be. These failings also result in the loss of opportunities to protect significantly larger sites than are protected today, in the loss of populations of rare prairie taxa living on sites where they benefit from the grazing we mistakenly deplore, and in simplification of prairie ecosystems through excessive dependence on fire as a management tool. While cows have certainly destroyed many prairies, it is not the cows themselves that cause this destruction; rather it is the grazing regime imposed on the land by farmers that is to blame. That it is easy to destroy prairie with cattle has led to the faulty conclusion that cattle invariably destroy prairie. By confusing grazing *per se* with grazing regime, we have been throwing the baby out with the bath water.

Although I identified 494 plant taxa growing on the 59 sites where current, natural populations of *O. molle* are known to exist in Wisconsin, I found just 71 species on more than half of these sites. These are species, including many alien plants, that grow in dry prairie pastures, and this is the

most appropriate description of *O. molle* habitat in Wisconsin.

A number of rare plants grew with *O. molle*, including several listed as Endangered, Threatened, or of Special Concern by WDNR, and also a number of rare prairie animals such as grassland birds and the regal fritillary butterfly (*Speyeria idalia*). Rare plants on these sites include prairie bushclover (*Lespedeza leptostachya*) (Endangered, on 7 percent of *O. molle* sites), woolly milkweed (*Asclepias lanuginosa*) (Threatened, 3 percent), tuberous Indian plantain (*Cacalia plantaginea*) (Threatened, 22 percent), Hill's thistle (*Cirsium hillii*) (Threatened, 19 percent), pale purple coneflower (*Echinacea pallida*) (Threatened, 3 percent), wild quinine (*Parthenium integrifolium*) (Threatened, 5 percent), Richardson's sedge (*Carex richardsonii*) (Special Concern, 8 percent), and pomme-de-prairie (*Pediomelum esculentum*) (19 percent). Grassland birds present in these prairie pastures include loggerhead shrike (*Lanius ludovicianus*, Endangered), Bell's vireo (*Vireo bellii*, Threatened), upland sandpiper (*Bartramia longicauda*), northern bobwhite (*Colinus virginianus*), horned lark (*Eremophila alpestris*), eastern kingbird (*Tyrannus tyrannus*), brown thrasher (*Toxostoma rufum*), eastern (*Sturnella magna*) and western (*S. neglecta*) meadowlarks, dickcissel (*Spiza americana*), bobolink (*Dolichonyx oryzivorus*), and field (*Spizella pusilla*), clay-colored (*S. passerina*), vesper (*Poocetes gramineus*), savannah (*Passerculus sandwichensis*), and grasshopper (*Ammodramus savannarum*) sparrows. Grassland insects include many species we don't yet know much about, but the endangered regal fritillary is present in several *O. molle* pastures. This grazed prairie habitat is, almost without exception, the only habitat in which regal fritillary is now found in Wisconsin.



Prairie remnant in Iowa County in southeastern Wisconsin typifies dry prairies that still exist in the area and are sometimes used for pasture. Research on prairies of this kind has led the author to believe that restorationists have placed too much emphasis on burning such systems, and that grazing, in combination with fire, has a key role to play in their restoration and management.

Photos by R. Christoffel

Expressed as percentages in this way, the frequencies of occurrence of these rare taxa may not seem as significant as they actually are. For example, prairie bush-clover is currently known from about 16 sites in Wisconsin, four of which are sites where *O. molle* also occurs. This means that 25 percent of the current prairie bush-clover sites also support *O. molle*. Another example is woolly milkweed, which is currently known from about eight sites in Wisconsin, two of which are sites where *O. molle* also occurs. This means that 25 percent of the existing woolly milkweed sites also support *O. molle*. This shows that *O. molle* serves as an indicator of habitat suitable for these even rarer taxa.

Furthermore, rare species were also found in pastures where *O. molle* was sought but not found—sites not reflected in the percentages above. The point is that many prairie pastures that don't support *O. molle* are also of tremendous conservation value. This is true of animals as well as plants.

Bell's vireo, for example, is listed as Threatened in Wisconsin, yet I often encountered it in these brushy, dry-prairie

pastures. If WDNR looked at these pastures, Bell's vireo might not be deemed sufficiently rare to warrant Threatened status. The presence of cows has apparently caused conservationists to look elsewhere for prairie taxa.

These dry pastures are generally large, old pastures that have not been tilled because they are rocky. They are not mowed, or are mowed only partially and occasionally, are never burned and are not treated with herbicides, except for occasional spot applications. This clearly has important implications, especially for conservation of prairie insects on these sites.

In the past, management of Wisconsin prairies depended heavily on fire, and we are now beginning to realize this could be devastating to prairie insect diversity. Though we have saved some plants by using fire to manage remnant prairies, we may have irreparably simplified these communities by eliminating many species of insects from these small habitat islands.

I am not the first to discover that numbers of rare taxa in a vanishing midwestern ecosystem owe their continued presence on some sites to grazing. Bronny (1989)

found that some grazed oak savannas in Illinois harbored populations of rare species which, in some cases, became apparent only upon the experimental cessation of grazing. Bronny's view is that grazing controlled invasive brush, allowing the rare savanna herbs to survive. He suggested that continued grazing at some level might be important to the survival of these populations and to the health of the community as a whole, but he proposed, instead, to stop the grazing entirely and to apply fire frequently. Bronny's approach is typical here in the Midwest where cattle are taboo and fire is king. While I advocate the moderate use of fire, I cannot understand why midwestern conservationists ignore grazing. Surely both fire and grazing were formative influences in the development of prairies and oak savannas over time. How can it make sense to exclude grazing from these ecosystems today?

One social benefit of employing grazing in our conservation efforts is that it would allow us to grow beyond the preserve mentality that limits our progress by alienating us from our neighbors. The appropriate use of grazing offers an opportunity to reenter the economic system that pervades our culture and dominates the thinking of most of our neighbors, many of whom see conservationists as radicals who hate people and love animals and plants. Such a cooperative effort between restorationists and farmers would benefit both the prairie ecosystems that we love and the cause of conservation generally by increasing the constituency for the prairies. This in turn would allow us to manage larger expanses of these grasslands than are economically and culturally possible to maintain as pristine preserves.

My study shows that *O. molle* persists and can be successful in dry, rocky pastures that contain moderate numbers of cattle and/or horses throughout the growing season or that experience intermittent grazing. With respect to prairie biodiversity, my perception is that light-to-moderate, intermittent grazing is generally preferable, that the timing of grazing as well as the numbers and species of livestock used should be varied from year to year, and that there can be no single, best grazing regime. We can define a best regime to maximize profits—this is what corporate farmers and

agronomists do. But we know so little about grasslands, especially about their faunas, and our goals in prairie management are so numerous, varied and interrelated that the notion of a best-grazing regime in the context of prairie conservation is ludicrous. To maximize biodiversity we can succeed only by diversifying our management regimes as a hedge against our ignorance. Light-to-moderate, intermittent grazing increases the microhabitat diversity on any given site. The floras in many of these pastures change as one walks farther from the farm buildings; cattle graze slopes less than they do flat terrain, and the floras of many pastures reflect this; trails develop in some spots and not in others; horses tend to concentrate their dung in certain areas whereas cattle distribute theirs with abandon, and so forth. And we can apply this powerful tool to different sites in a variety of ways, always being attentive to the way the system is responding.

The effect of grazing on *O. molle* had been suspected, but its importance to other rare prairie species was a surprise that forces the reconsideration of how we define, and how we defend, our vanishing dry prairies. These pastures offer a new and spacious, fire-free, species-rich arena in which to practice a less fire-dependent form of prairie conservation. For conservationists to continue to ignore pastures because they imagine cattle have destroyed the native flora and fauna is to miss the single largest opportunity both to conserve *O. molle* and to affect prairie conservation in Wisconsin today, or, given the current rate of development, ever again.

In light of my research and of Bronny's (1989) report of rare plants persisting in some grazed oak savannas and the close



Marbleseed. Indicator for a suite of imperiled species?

ecological and geographical relationships between prairies and oak savannas in the Midwest, it is logical to incorporate grazing by domestic livestock into our management of savannas and prairies. Given the evolutionary relationship between these ecosystems and large grazing mammals, it seems necessary that we do so.

For years, prairie conservationists and, more recently, savanna conservationists have held the conviction that if we want prairies and savannas we must use fire, as these ecosystems evolved with fire. I believe this, though I advocate for its more moderate application. To this I propose a corollary tenet: since these ecosystems also evolved with large grazing mammals, if we

want prairies and savannas we must use mammalian grazing to manage these ecosystems.

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