Short narratives on common flora of Coulee Region goat prairies

Written and illustrated by Jim Rogala; edited by Don Nelson

Like most of Wisconsin’s driftless area, the Coulee Region features a rugged landscape untouched by the last glaciers that scoured the Midwest. Goat prairies sitting on southwest facing slopes are one of features of the Coulee Region’s diverse landscape. Also called hill prairies or bluffland prairies, they are typically the driest portions of the oak savannas that once dominated the driftless area. Little of the original prairie is left today, as most succumbed to the lack of fire, the plow, intense grazing, and/or development. Fortunately, a relatively large portion of the hill prairies in the Coulee Region have endured in comparison to other types of prairies, thus leaving us an opportunity to restore the pieces that remain.

The following is a compilation of twenty six short narratives entitled “Taxonomy 101 for Plants of the Coulee Goat Prairies” that were originally published in each of The Prairie Enthusiasts - Coulee Region Chapter newsletters between 2004 and 2013. The purpose of these articles was to introduce members to some hill prairie plant species likely to be in bloom around the time they received the chapter newsletter. The intent was to narrow the focus from several hundred species present on all types of prairies to a more limited number of plants likely to be found on hill prairies in the region. A total of sixty eight species are covered to some extent in these writings. These narratives do not always include taxonomic details on how to identify these plants, but may point a reader in the right direction. There are several excellent field guides and taxonomic texts for those interested in a more complete description of the species discussed here.
<table>
<thead>
<tr>
<th>Year</th>
<th>Season</th>
<th>Article Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>Spring</td>
<td>The Puccoons</td>
</tr>
<tr>
<td>2004</td>
<td>Fall</td>
<td>The Late-blooming Blue Asters</td>
</tr>
<tr>
<td>2004</td>
<td>Winter</td>
<td>White Aster or White Goldenrod?</td>
</tr>
<tr>
<td>2005</td>
<td>Spring</td>
<td>The Earliest Bloomers</td>
</tr>
<tr>
<td>2005</td>
<td>Summer</td>
<td>The Maligned Goldenrods</td>
</tr>
<tr>
<td>2005</td>
<td>Fall</td>
<td>Prairie Shrubs</td>
</tr>
<tr>
<td>2006</td>
<td>Spring</td>
<td>The Violets</td>
</tr>
<tr>
<td>2006</td>
<td>Fall</td>
<td>The Foundation of Prairies</td>
</tr>
<tr>
<td>2007</td>
<td>Spring</td>
<td>The Grass That’s an Iris</td>
</tr>
<tr>
<td>2007</td>
<td>Summer</td>
<td>The Thimbleweeds</td>
</tr>
<tr>
<td>2007</td>
<td>Fall</td>
<td>Goat Prairie Milkweeds</td>
</tr>
<tr>
<td>2008</td>
<td>Spring</td>
<td>Violet Wood-sorrel</td>
</tr>
<tr>
<td>2008</td>
<td>Summer</td>
<td>Common Species</td>
</tr>
<tr>
<td>2008</td>
<td>Late Summer</td>
<td>Purple False Foxgloves</td>
</tr>
<tr>
<td>2008</td>
<td>Fall</td>
<td>Yellow False Foxgloves</td>
</tr>
<tr>
<td>2009</td>
<td>Late Winter</td>
<td>A Plant to Look for in Winter</td>
</tr>
<tr>
<td>2009</td>
<td>Summer</td>
<td>Tick Trefoils</td>
</tr>
<tr>
<td>2009</td>
<td>Fall</td>
<td>Blazing-stars</td>
</tr>
<tr>
<td>2010</td>
<td>Winter</td>
<td>Harebell</td>
</tr>
<tr>
<td>2010</td>
<td>Summer</td>
<td>False Boneset</td>
</tr>
<tr>
<td>2011</td>
<td>Winter</td>
<td>Downy Yellow Painted-cup</td>
</tr>
<tr>
<td>2011</td>
<td>Spring</td>
<td>Lyre-leaved Rockcress</td>
</tr>
<tr>
<td>2011</td>
<td>Fall</td>
<td>Rockrose</td>
</tr>
<tr>
<td>2012</td>
<td>Spring</td>
<td>Bastard toadflax</td>
</tr>
<tr>
<td>2012</td>
<td>Fall</td>
<td>More Flowers on the Edge</td>
</tr>
<tr>
<td>2013</td>
<td>Spring</td>
<td>Cliff Bakes</td>
</tr>
</tbody>
</table>
Spring 04 - The Puccoons

One of the earliest blooming yellow flowers you may find on a goat prairie is likely to be one of Wisconsin’s three puccoons. I’m fortunate enough to have all three on my property, which aids in identification. These all have a similar general appearance. They reach a height of up to two feet, have branched stems with alternate one to two inch sessile leaves, and feature showy terminal clusters of narrow tubular yellow flowers with lobes. The earliest bloomer (flowered at my place at the end of April last year) is the hoary puccoon (*Lithospermum canescens*). This puccoon has a bright yellow, often yellow orange, flower. Next to flower (mid-May last year) would be the fringed puccoon (*Lithospermum incisum*). When in flower, there is little chance of misidentifying the lemon yellow fringed-lobed flowers of the fringed puccoon. Last to bloom (in mid-June last year) is the hairy puccoon (*Lithospermum caroliniense*), which is somewhat difficult to distinguish from the hoary puccoon. Typically, differences in blooming time will help distinguish hoary puccoon (tailing off in early-June) from the hairy puccoon (often blooming through June and beyond). Some other things to consider during the time of potential flowering overlap would be size (the hairy is taller) and flower color (the hairy is a lighter yellow). The common names suggest that hoary puccoon is whitish and that the hairy puccoon is, of course, hairy. Unfortunately, that’s not very useful information because the white appearance of the hoary puccoon is also associated with hairs, though not as distinct as the hairs on the hairy puccoon. The location of these three puccoons on goat prairies is not very limited, as I’ve discovered them on both highly exposed locations and highly degraded shaded locations. One thing for sure, if the puccoons are in bloom, you won’t miss these yellow flowers of spring.
Of the many blue asters of the prairies, there are two asters commonly found sprawling across the dry soils of goat prairies. While there are some similarities among the two, the silky aster (*Aster sericeus*) and aromatic aster (*Aster oblongifolius*) can be distinguished quite easily. Let’s start with the similarities. As mentioned, the stems are sprawling rather than upright. Both are late bloomers, with the aromatic aster a bit later, often still blooming up until frost. Size and color of the flowers, though somewhat different, are also similar enough to require us to look elsewhere for distinguishing features. So, that leaves us with the leaves. Typically, novices prefer to identify plants using flowers, however with these two asters, it’s the leaves that are very distinctive. The silkiness of the silky aster leaves is quite apparent, even from some distance away. The silky appearance is due to whitish hairs on the leaves of this aster. These hairs are absent or sparse on aromatic aster leaves.

Other blue asters that may appear on goat prairies in fall are more upright, typically lacking the “sprawling” nature of the silky and aromatic asters. These other asters include the smooth aster with clasping leaves, and the sky blue aster with large heart-shaped basal leaves. Other blue asters, such as New England aster and arrow-leaved aster, are rarely found in the harsh dry conditions of our Coulee region’s goat prairies.
Winter 04 - White Aster or White Goldenrod?

In the last Taxonomy 101 snippet, we brushed over some of the blue asters. There are also several white asters to be found on goat prairies. Before I review those, I’d like to first introduce you to a single species that recently jumped ship to another genus. Of course this plant didn’t change in any way, but sometimes taxonomists may decide to regroup species. This is what has happened to the upland white aster. When I first discovered this plant on my prairie, I found it in a field guide to be *Aster ptarmicoides*. This made sense to me. It looked like an aster, and it was named upland white “aster”. However, soon I found the species showing up in other sources as a goldenrod (*Solidago ptarmicoides*). What’s up with that? As it turns out, the detail in the flowering structure of the upland white aster is more similar to the goldenrods than the asters, and as a result, the taxonomy gurus now place it in the goldenrod genus. So, is it an upland white aster, upland white goldenrod, or upland white aster goldenrod? Whatever you call it, it can be distinguished from the white asters by its rather small size and sparseness of the leaves, which are somewhat liatris (blazing-star)-like linear shaped leaves.

Of the white asters that might be found on goat prairies, the heath aster (*Aster ericoides*) is the only one found abundantly on high quality goat prairies. It has many small leaves and a dense set of small flowers that can put on quite a show. On more mesic sites, there are three similarly looking weedy white asters you may encounter. The hairy or frost aster (*Aster pilosus*) and calico aster (*Aster lateriflorus*) both have variations of flowers arranged along side-branches. The panicle aster (*Aster lanceolatus*) is somewhat different looking, lacking the distinct arrangement along side branches. These common white asters are not always easy to identify. To complicate matters, these white asters may also hybridize to produce plants with intermediate characteristic. Perhaps someday I’ll master identification of these other white asters, but to be quite honest, I find little motivation to spend time on these weedier species!
Spring 05 - The Earliest Bloomer

After a long Wisconsin winter, we look forward to spring’s early bloomers of the goat prairies. These early flowering plants lack the stature of those prairie plants that flower in the late summer and fall. The strategy of those late bloomers is to spend all of their stored resources to produce stems necessary to lift their leaves above competing plants. This strategy helps them gain the energy required to produce flowering structures later in the year. The early bloomers do not have such a luxury, and the earliest bloomer illustrates this very well. In its haste to begin production of seeds to insure a new generation, the pasque flower (Anemone patens) is typically the first plant to bloom on the goat prairie. It’s in such a hurry to produce its seeds that the flower opens before the leaves emerge. The key to identifying this plant in bloom is not so much in what the flower looks like, but rather being out on a prairie early enough to catch one in bloom. I often see them during the first turkey hunting period (mid-April), although I have occasionally seen them appear by late March. The whitish to pale lavender sepals (there are no real petals on these flowers) with a yellowish disk can sometimes even be seen poking through a layer of snow in some years. If you miss them in bloom, the plants put on another show when they seed out in June. The seed heads resemble that of prairie smoke, with long feathery attachments to the seed for efficient dispersal. Pasque flowers are long-time favorite among wildflower lovers and prairie enthusiasts. If you haven’t seen it, then it is time for an early season hike to a nearby goat prairie to witness the coming of another growing season.
Summer 05 - The Maligned Goldenrods

In a previous article, I wrote about white asters and mentioned that the upland white aster has been realigned taxonomically with the goldenrods. While the asters are held in high regard among the general public, their close cousins, the goldenrods, are considered allergenic weeds. Though several goldenrod species are quite “weedy”, the only real crime this poor genus has committed is that it flowers at the time the ragweed pollen (the true common allergenic) is abundant.

With the exception of the upland white aster (*Solidago ptarmiodes*), it is easy to recognize a goldenrod down to genus. Fortunately, those goldenrods that we consider prairie plants are actually fairly easy to identify down to the species. Probably the most common goldenrod on goat prairies is the grey goldenrod (*Solidago nemoralis*). The arching one-directional plumes are quite apparent on most plants. In contrast, the stiff goldenrod (*Solidago rigida*) has a large flat-topped cluster of flowers, although the large basal leaves are a better trait that can not be mistaken for any other goldenrod. Another flower head form is found in a third species, the showy goldenrod (*Solidago speciosa*). This species has a “showy” plume and has smooth margins on the leaves. The smoothness of the showy goldenrod is rivaled only by the Missouri goldenrod (*Solidago missouriensis*). Along with the lack of hairs on the stems and leaves, the reddish stems help distinguish the Missouri goldenrod from the grey goldenrod. This species is common on river terraces, but can also be found on other dry to mesic prairies. Other goldenrods grow on goat prairies, but those are less restricted to prairies and represent some of the more weedy species in this genus. Why not try your hand at identifying the goldenrods during the yellow show put on by this genus this fall!
Those involved in prairie restoration often find themselves doing battle with invading shrubs. However, not all shrubs are the fire-intolerant plants we struggle to control. There are a few native shrubs that thrive primarily on prairies. Leadplant (*Amorpha canescens*) is the most common prairie shrub, and is considered an indicator species for dry and mesic prairies. Reaching only a height of up to three feet and having colorful purple spikes of flowers, one might think this plant is a forb. Upon closer examination in late spring, you’ll see the whitish leaf buds emerging from the woody stems. The buds emerge into a dozen or more pairs of leaflets. The deep root (up to 15 feet deep) likely enables leadplant to strive in a fire-driven plant community. Inland New Jersey tea (*Ceanothus herbaceous*) and New Jersey tea (*Ceanothus americanus*) are also low-growing, spreading shrubs found on prairies. The whitish flowers are in clusters, and bloom in late June through July. Leaf size distinguishes the two Ceanothus species, with the New Jersey tea having the wider leaves. Other forb-like shrubs found on prairies include the roses (*Rosa* spp.) and meadowsweet (*Spiraea alba*), though meadowsweet is more often found in wetter prairies. There are several short tree-like shrubs that call prairies their home. The sand cherry (*Prunus pumila*) is one that is common on goat prairies and often forms large clumps. The dark cherries are more seed than fruit. The other tree-like shrub seems quite out of place on goat prairies. While we mostly associate willows with wetlands, one species, appropriately named the prairie willow (*Salix humilis*), thrives solely on prairies. There are many woodland shrubs that somehow overcome the harsh conditions of our goat prairies. Some of these woodland species can be aggressive and threaten the “openness” of our prairies and savannas. We’ll leave the topic of the invasive species, and methods for controlling them, for a future discussion.
Spring 06 - The Violets

When I began these write-ups back in the spring of 2004, my intent was to distribute some non-technical information on the species we encounter on the goat prairies of the Coulee Region. I’ve written on the puccoons, blue asters, white asters, goldenrods, the pasque flower, and prairie shrubs. I hope it was a review for most of you, and didn’t conflict with your own knowledge of those species. In general, we learned that color, size, shape and arrangement of flowers, along with the timing of flowering, are the easiest methods of identification. Unfortunately, we don’t always see the flower in bloom. In those cases, we must rely on leaf and stem structure to identify the species we encounter. Many times, identification in non-blooming periods can be difficult (which is why many field guides use flowers for identification).

As an example of identification strategies, let’s use the violets of the goat prairies. There are two violets that are typically associated with prairies, the bird’s-foot violet (*Viola pedata*) and the prairie violet (*Viola pedatifida*). These differ from the woodland violets by having deeply cut leaves, forming three distinct segments radiating out from the stem. So, the leaf structure can be used quite easily to narrow all the possible violet species down to these two. The leaf structure differs between the two prairie species, at least that’s what the taxonomic texts say, but these differences are not very evident.

Personally, I need the flowers to separate one of these species from the other. The flowers, although both being predominantly blue, have subtle differences upon closer examination. In the center of the flower of the bird’s-foot violet a prominent beaklike orange protrusion (the stamen) can be found, whereas the prairie violet’s stamen is nearly hidden. I use the connection between beak and bird, as in bird’s-foot, to keep these straight. If that isn’t enough to positively identify the violet, then the presence of hairs near the center on the lower three petals of the prairie violet can be used in contrast to the hairless petals of the bird’s-foot violet. The key to using differences in the flowers of these two violets for identification is to remember that they bloom early in the year. Starting at the end of April, see if you can identify these two species on a goat prairie in the Coulee Region.
In the past, I’ve written about the showier species that seem popular with most prairie enthusiasts. The prairie grasses provide competition for prairie invaders and, for some forbs, a physical support for their delicate stems. They also provide the fuel for carrying burns that are needed by these fire-dependent plant communities. There are far fewer species of native grasses than native forbs found on prairies, but the grasses typically are more prevalent. Most prairie grasses are bunch grasses (as opposed to sods), and being such provides space for forbs to take root.

We find shorter grasses on goat prairies even though they are located within the tall grass prairie region. The two most common are little bluestem (Schizachyrium scoparium) and side-oats grama (Bouteloua curtipendula). Little bluestem can be identified by its bluish color even without the presence of flower or seed structures. When seeds are present, they are distinctive enough that positive identification of both little bluestem and side-oats grama is quite easy. Little bluestem has very fluffy, bearded seeds that often persist into the winter. Side-oats is appropriately named, as the oat-like seed are arranged on the side of the seed stalk. Another of the grama grasses is commonly found on goat prairies, but it takes a little looking to find. Hairy grama (Bouteloua hirsuta) is a petite grass with the seeds arranged tightly in a single row on a slightly angled end of the seed stalk. This arrangement leads to the use of another common name, “mustache grass”. Prairie dropseed (Sporobolus heterolepis) is another short grass that also can be common on goat prairies. It is perhaps the ultimate bunch grass, as its densely bunched fine leaves fall over the adjacent soil. The last of the short grasses I’ll mention here is prairie satin-grass (Muhlenbergia cuspidata). This grass is less upright than most other grasses, and often its indistinct features go unnoticed on goat prairies.

Other grasses on a goat prairie include some of the panic grasses (Panicum spp.) and some tall grasses such as big bluestem (Andropogon gerardii), porcupine grass (Stipa spartea), and indian grass (Sorghastrum nutans), but typically the tall grasses are less dominant on goat prairies. The dominance of shorter grasses is a very important feature that favors the many shade-intolerant forbs that we find on goat prairies. Look beyond the goat prairie flowers on your next hike and see the many species that give prairies the title of grassland.
Spring 07 - The Grass that’s an Iris

My last write-up presented a brief introduction to grasses of goat prairies. To further complicate the grass identification issue, there are several forbs that have grass-like leaves. One such diminutive forb is the blue-eyed grass (*Sisyrinchium* spp.). Despite the common name, it is not a grass at all, but rather in the Iris family. Prior to flowering, it would be difficult to find among the true grasses. While in flower during late spring to early summer, the small flowers can readily be found if looking close enough to the ground. Though the petals can be a striking blue, they are more often pale blue to whitish. At first glance it appears to have six petals, but in reality there are three pairs of petals and sepals that are attached to each other at the base. The center is yellow. There is usually a small umbel of flowers, with one or more flowers blooming at one time. Upon maturing, the seeds are distinctive enough that you still may see the capsules if you really search.

You might have noticed above that I did not list a particular species of blue-eyed grass. There are several that may be found on goat prairies, but they are difficult to distinguish from one another. The most common is the prairie blue-eyed grass (*Sisyrinchium campestre*). Even trained taxonomists have difficulties distinguishing the different species, so we’ll just call them blue-eyed grass for our purposes. Try finding these little irises during your next hike on your favorite goat prairie.
Summer 07 - The Thimbleweeds

Most of us focus on the flowers of prairie forbs, but we shouldn’t neglect the many prairie species that have interesting seeding structures. The thimbleweeds, like the well-known prairie smoke, are named for their distinct seed heads. Prior to the formation of these seed heads, the thimbleweeds display somewhat non-showy flowers on stalks up to three feet tall. The most common thimbleweed of the goat prairies is the thimbleweed (*Anemone cylindrica*). Thimbleweeds are in the Buttercup family, and, as with many members of this family, they lack petals. The small greenish-white sepals of the Thimbleweed, which sometimes don’t even open completely, are often overlooked. Its fruiting structure elongates from the center of the flower into a thimble-shaped seed head that are not easily overlooked. The thimbleweed has a long seed head with a length of up to an inch and a half. These structures eventually develop a group of cottony covered seeds. The fact that *anemone* means “wind” gives you a clue as to the dispersal mechanism for these cottony seeds. The tall thimbleweed (*Anemone virginiana*) is the other thimbleweed that is more or less restricted to prairies. The “thimble” of this species is more round than elongated.

I will not bother describing the stem and leaf characteristics of the thimbleweeds, as these are seldom needed for identification. Once the thimble of cottony seeds forms, it will often persist over the winter and even into the next spring. In fact, it is nearly June as I write, and I saw the remains of the thimbles on several specimens today. Given that these unique seed heads are present over such a long time period, you should have no trouble finding them on your hikes on goat prairies in the Coulee Region.
Fall 07 - Goat Prairie Milkweeds

Typically, I write about plants that should be in bloom at the time you receive the article in the Coulee Region TPE newsletter. However, as my last write-up about thimbleweeds illustrated, the seeds of many species are as distinctive as their flowers. That is certainly the case for my topic this time, the milkweeds. All of us are familiar with milkweeds, often through learning about the monarch butterfly’s metamorphosis from caterpillar to adult. We almost always observed monarch caterpillars on the common milkweed (Asclepias syriaca), which, as its name implies, is the most ubiquitous of the milkweeds. Although the common milkweed can be found on almost any sunny spot, several other milkweed species are more restricted to prairies.

There are three milkweed species that are somewhat common on goat prairies, but not found in many other plant communities. The most common of the three is the whorled milkweed (Asclepias verticillata). Its commonness is a function of its aggressive behavior, as it spreads readily by rhizomes. With its thin leaves and small white flowers, it looks nothing like a milkweed at first glance. However, a closer look reveals the classic milkweed flower structure, and damaged plants will ooze the “milk” for which this genus was named for. The short green milkweed (Asclepias viridiflora) is another milkweed of the goat prairies. It is much more conservative than the whorled milkweed and is much more restricted to drier prairies. The flowers of this species are not showy at all, being greenish white and the flowers seem to never open completely. The last goat prairie milkweed I’ll introduce you to here probably needs no elaboration. It is one of the few orange flowered plants native to Wisconsin, and is so showy that it has been propagated as an ornamental flower. It would be difficult to misidentify the butterfly weed (Asclepias tuberosa) when it is in bloom.

There are several other milkweeds that may make their way on to a goat prairie, but they are not common enough to mention here. Look for the milkweed pods of the four species mentioned above as they mature, or, wait until the seeds emerge. All of the milkweeds become quite showy when their pods open and the silky-haired seeds expose themselves to the wind for dispersal.
Early Spring 08 - A spring flower on the edge

After four years of writing about spring goat prairie flowers, I find myself running out of the most common showy flowers to write about. I can think of one showy spring flower I haven’t written about, but it’s less associated with goat prairies. The violet wood-sorrel (Oxalis violacea) is more often found in mesic prairies, but it is also found on goat prairies, especially on the wooded edges.

The common name of this species is quite informative. The small, half-inch, five petal flowers are a gorgeous violet. The petals are only open under daylight conditions and, as a result, the beauty is not always displayed during the flowering period from late spring to early summer. The flowers are on stem-like peduncles rising up from the ground. The leaves are arranged in whorls of three, giving a clover-like appearance, and these are on separate stalks from the flowers. At most times, the leaves are a grayish green, but can appear purplish on the underside under some conditions. The violet wood-sorrel is a smallish plant (usually less than six inches on goat prairies), but it certainly warrants a closer examination.

The wood sorrel is one of many species that may be associated with the edges of goat prairies. Other mesic species I have seen on the edges of my goat prairies include prairie phlox, alum-root, white camas, wood betony, and yellow star-grass. In this way, these plants illustrate how goat prairies provide many habitats that can account for the rich diversity in such a harsh environment. I’ll cover a few more of these edges species in future write-ups, and you can add them to your list of goat prairie species that you can identify.
Summer 08 - A few common summer bloomers

After several years of writing about the plants of the goat prairies, there are still many common species that I have yet to cover. Let’s review some of those species that should be familiar to those of us who have visited at least one goat prairie.

I can’t think of a single goat prairie that I have visited where I haven’t seen the purple prairie clover (Dalea purpurea). The conical shaped purple flower heads make for certain identification. When not in bloom, the narrow five leaflets on the compound leaves are distinct enough that you will know it is this species or its less-common relative, the white prairie clover (Dalea candida). Other than the obvious difference in the color of the flower, the white prairie clover has leaflets that are a bit wider. Both of these species reach heights up to two feet, and typically have multiple stems per plant. These are two of the many late summer blooming legumes found on goat prairies.

Another very common species on goat prairies is the flowering spurge (Euphorbia corollata). Don’t let the name spurge bring fear into your minds, as this species is not an aggressive non-native plant like the leafy spurge. The commonness of this species stems more from the ability to efficiently seed itself, rather than the rhizomatous nature of the leafy spurge. As with all spurges, it has milky stems. The flowering spurge reaches a height of up to three feet, with branching stems near the flowering parts. The flowers are white bracts that appear to be petals, and tend to be loosely clustered on the branching stems. The seeds form inside capsules that explode, thus sending the seeds some distance from the parent plant. This trait makes seed collection challenging!

The last common species I’ll mention here is the prairie tickseed (Coreopsis palmata). This plant has distinctive three-lobed leaves (thus the “palmata”) running up the single un-branched stem. It attains a height of two feet or so, and is usually found in patches. The one and a half inch wide flowers are a bold yellow, having usually eight petals that are notched at the end. The seeds often persist on the head through the winter, thus making seed collection easy!

Now that we have these common species out of the way, I’ll provide more challenging species in the next Taxonomy 101 write-up. Until then, look for these common species on your goat-like hikes in the Coulee Region.
Late Summer 08 - The false foxgloves

After describing some common species found on goat prairies in my last writing, I promised to provide some more challenging species in the next couple newsletters. I’ve selected the false foxgloves for this newsletter. Hopefully, some of you immediately asked yourselves whether the subject is the genus *Agalinis*, or the genus *Aureolaria*. I’ll write of the purple false foxgloves (*Agalinis*) here, and cover the yellow false foxgloves (*Aureolaria*) in the next write-up.

There are six *Agalinis* species in Wisconsin. All have pinkish to purplish tubular flowers, and have rather inconspicuous stems and leaves on a plant that reaches no more than two feet in height. Three of the six species prefer dry conditions and might inhabit goat prairies. The rough false foxglove (*A. aspera*) is by far the more common species, and has distinctly rough stems. The other two species are uncommon, and so one might assume that any *Agalinis* on a goat prairie is the *A. aspera*. The two rare species, both listed in Wisconsin, are the pale false foxglove (*A. skinneriana*) and the round-stemmed false foxglove (*A. gattingeri*). Distinguishing these two is beyond “Taxonomy 101”, so reference taxonomic keys if you think you have encountered one of these two species.

It’s worth noting that all *Agalinis* species are annuals, thus, as is common with many annuals, seem to vary greatly in abundance from one year to the next. It took me many years to find the rough false foxglove on my goat prairie due to this annual variation in abundance. This year it appears that I should have a good showing of these delicate flowers. Look for it blooming in Late August and into September on the goat prairies you visit.
Fall 08 - The yellow false foxgloves

I wrote about the purple false foxgloves (*Agalinis*) in the last newsletter, and now I’ll briefly cover the two yellow false foxgloves of the *Aureolaria* genus. These two species are additional examples of plants associated with prairie edges or woodland openings rather than found exclusively in prairies. The fact that they are partially parasitic on oaks provides some evidence of this fact.

I’ll start with the clammy false foxglove (*Aureolaria pedicularia*), as that is the one that I’ve just recently found on my property. *A. pedicularia* is a fairly large plant of over three feet tall with large showy yellow large flowers over an inch long. The flowers have the typical foxglove tubular shape, and so are easily identified as a member of the *Aureolaria* genus. The leaves are fern-like, as suggested by the other common name for this species, the fern-leaved yellow false foxglove. Even before flowering, the plant’s size with the distinct leaf shape provides enough for identification. These are annual plants, which, as I’ve mentioned in my previous article, can vary greatly in density year to year. Perhaps that is why this plant evaded my detection for so many years.

I’m not very familiar with the other species in this genus. The large-flowered yellow false foxglove (*Aureolaria grandiflora*) is similar to the clammy false foxglove, but lacks the fern-shaped leaves. This one can even be larger in size (up to five feet), and can have larger flowers. From the species range within Wisconsin as determined by herbarium records, this species would more likely be found on southern Wisconsin goat prairie and less likely to be found as far north as the prairies within the Coulee Region Chapter’s boundaries.

Take a poke around in oak openings during August to look for the yellow flowers and delicate fern-shaped leaves of the clammy false foxglove. If they are there, they’ll provide a worthwhile show.
Late Winter 09 - A plant to look for in winter

Late March and early April are as early as you’ll find blooming flora on Wisconsin’s goat prairies. However, there are still plants to see on our prairies even before that first pasque flower appears. Many stems and seed heads persist through the winter and offer an opportunity to identify species even as snow covers the ground. Probably the most distinctive of these leftovers from the previous year’s show is the round-headed bush-clover (*Lepedeza cupitata*). Its large terminal seed heads can been seen displayed on stems up to five feet tall into the following spring and summer.

The late summer flowers of the round-headed bush-clover are quite inconspicuous despite the plant’s showiness during the winter. The bush-clover’s tiny white flowers are well harbored within its clustered bracts. An observer can see further details in the flowering structure upon close inspection, but the structure of the seed heads is all that is needed for identification. The mostly unbranched stems holding the seed heads are seldom found as singletons, as the rhizomatous roots send up stems in clusters.

The round-headed bush-clover is one of the many legumes of the prairie, as is suggested by their leaves made up of three leaflets. The seeds are singly contained within many pods on the seed heads. The bush-clover’s seeds are favored by birds, with the sturdy stalks providing a perfect roost for the winged seed eaters. Although this species is more common on mesic prairies, the round-headed bush-clover is often found among goat prairie species. Perhaps you will see a bird feasting on bush-clover seeds next fall or winter on your favorite goat prairie.
Summer 09 - The prairie tick-trefoils

Many of us are familiar with the tick-trefoils, and have discovered the seeds attached to our clothing (or dogs) after a hike in woodlands or prairies. As with many closely related plants in a single genus, the various tick-trefoil (*Desmodium sp.*) species have somewhat distinct association with different plant communities. All are legumes, with hard seeds contained in pods and leaves with three leaflets. They have typical pea style flowers, being pinkish to purplish in color.

First, let’s talk of the two prairie Desmodiums. These two species differ from the more woodland species in that they have smaller leaves and narrow multi-lobed seedpods. The most common on dry sites such as our hill prairies is the Illinois tick-trefoil (*Desmodium illinoense*). This species has lance-like leaves that are one inch wide and three inches long. It tends to be more upright and slightly taller (sometimes taller than five feet) than most tick-trefoils. The inch long flowers are terminal on the stalks, although some branching may occur. This species has many flowers over the course of mid- to late-summer, but not all are open at any one time. The seedpods holding up to six seeds are indented on both sides of the pod. The second prairie Desmodium is the showy tick trefoil (*D. canadense*). As the name implies, the flowers are showier in this species, with most flowers blooming at the same time on many branches containing flowers. The leaves are a little smaller, and more pointed toward the ends. The seedpods are flattened on one side, and slightly curved. This species is more commonly associated with slightly more mesic prairies, but may be found on some hill prairies.

The common woodland species include the pointed (*D. glutinosum*) and naked tick-trefoil (*D. nudiflorum*). These species have fewer, larger leaves and larger flatter seedpods containing two to four seeds. The naked tick-trefoil gets its name from the flowering leafless stalk that originates from the base of the plant and is separate from the vegetative stalk. Although most likely to be found in the plant communities I’ve listed them with, don’t be surprised to find the woodland species on the edges of prairies, and certainly they are no stranger to savannas.

Look for tick-trefoil flowers in July and August on hill prairies and adjacent woods. The seedpods persist into late fall, and can be used to find and identify these species while out on a hike. You may even be able to identify the presence of tick-trefoils without actually seeing the plant, as the sticky seedpods may be discovered long after your hike is done!
Fall 09 - The blazing-stars

It’s hard to believe that after seventeen of these short narratives, I have not yet mentioned the *Liatris* genus. The blazing-stars are some of the more recognizable prairies flowers. Two of the six *Liatris* species in Wisconsin are common on hill prairies. One of those two hill prairies species is the rough blazing-star (*Liatris aspera*), which is found in a wider range of plant communities. These have erect stems up to four feet tall that terminate in the showy cluster of pinkish flowers. The cluster is made up of many heads with multiple flowers in each head. The detail of the flowers is somewhat lost in the showy cluster, but closer inspection reveals the long delicate styles protruding out of each flower. The heads bloom from top of the stalk to the bottom starting in August.

For us hill prairie denizens, encountering a cylindrical blazing-star (*Liatris cylindracea*) is as common as seeing a rough blazing-star. This species could be considered an indicator species for hill prairies. The cylindrical blazing-star is not as erect as the rough blazing-star, with shorter stalks that tend to be prostrate like many of the dry community forbs. As a result, another common name for this species is the dwarf blazing-star. The leaves are more linear and sparser than those of the rough blazing-star. The buds are not as numerous, nor as close together as the rough blazing-star. The scientific name comes from the plant’s cylindrical involucres (bud coverings). This species blooms a bit earlier than the rough blazing-star, and starts to flower in July.

The blooms of the blazing-stars tend to last over a rather elongated period, so it would be hard to miss its presence on the hill prairies visited in August and September. Even during a visit later in fall, their showy seed heads will make the blazing-stars easy to find. Take a hike yet this fall to look for the hill prairie blazing-stars.
The harebell (*Campanula rotundifolia*) is commonly found on hill prairies in our region. Its obvious bell-shaped blue flowers leave little doubt that it has the right to belong in the bellflower family. The delicate flowers are less than one inch long and are supported on thin stems that have narrow leaves with a length up to two inches. After seeing the linear leaves of a flowering specimen, you might question the scientific name for this species. *Rotundifolia* means round leaf, which is certainly not what I described. As it turns out, the round leaves are the basal leaves, which may have already died back by the time the plant is flowering.

Harebell is in bloom for a long period over most of the summer. The long blooming period provides ample opportunity to locate a highly visible flowering specimen on a summer hike. After the flowering period, this delicate plant is a bit difficult to find. The light brown seed capsules may catch your eye in fall, but certainly not like the bright blue flowers of summer. Add harebell to the list of species to look for next summer on a hill prairie in the Coulee Region.
Summer 10 - False Boneset

After a short break, I’m back writing about hill prairie species. The species for this writing may look like a boneset, but as the name implies, it is not a boneset at all. The false boneset (*Kuhnia eupatorioideae*) has the delicate non-showy flowers typified by the boneset genus (*Eupatorium*). Though the individual flowers are small, when clustered together they are quite showy. The flowers are most often a lovely cream color (in contrast, species in the boneset genus have white flowers). The clusters of flowers are on multiple stems up to four feet tall. The alternate toothed leaves are packed along the length of the stems.

This false boneset is another one of those hill species that is worth noticing even after its seeds are set. The bright white hair on the black seeds is quite distinctive. These often persist on the plant through fall and into the winter, leaving white clusters that are hard to miss. As you explore goat prairies at this time of year, look for the false boneset’s flowers. Then look for the plant’s seed heads later in the fall and winter.
Winter 11 - The “Other” Paintbrush

I’ve been doing some late season seed collection this January on my hill prairie remnants (there’s a long story behind this) for use in an old-field planting. In among the species that I was looking for, I found one that I hadn’t considered collecting. The species that I’m referring to is the downy yellow painted-cup or downy paintbrush (*Castilleja sessiliflora*). It is lesser known than its showy scarlet relative, the Indian paintbrush, and is commonly found on hill prairies. The reason for not collecting was not related to the amount of seed I was finding, but rather the plant’s narrow range of suitable habitat. It is one of many western species that is adapted to the dry harsh conditions found on our hill prairies. In fact, it would be rare to see this species in Wisconsin other than on a hill prairie.

The downy yellow painted-cup is one of those forbs that display colorful bracts. These bracts look similar to the three-lobed leaves, but tend to be yellowish. The one-to-two inch long petals are also yellow, and protrude out past the bracts. Perhaps the most distinguishing trait of this species is the arrangement of leaves, bracts, and flowers in a “paintbrush” shape. The stems are typically less than a foot tall and clustered. Each paintbrush stem is unbranched, with leaves, bracts and flowers along most of the stem. The plant is hairy, thus the common name “downy.” The flowers develop rather prominent seed capsules in late summer that persist on the plant through the winter. This latter characteristic provides plenty of opportunity to find this “other” paintbrush throughout the year, even in the snows of January.
Spring 2011 - Where are the lyre-shaped leaves?

Sometimes the name of a plant doesn’t seem to match the plant itself. In a past article, I mentioned that the harebell’s scientific name, *Campanula rotundifolia* (*rotundifolia* meaning “round leaves”), actually derives from the plant’s indistinct, sometimes absent, basal leaves. The same is true of the common and species name of the lyre-leaved rock cress (*Arabis lyrata*). This spindly and short (less than 12 inch tall) plant often requires one to look closely at the small basal rosette of leaves to see the intricate “lyre” design. As with the harebell, the rock cress’ basal leaves may also be absent.

Despite its rather indistinct leaves, thin stems and short stature, this species is actually quite easy to find. The four-petaled bright white flowers are rather small (less than a third of an inch), but they tend to be clustered and so are rather conspicuous. More importantly for identification purposes, this species begins flowering in April when few other plants are blooming. Even though it’s a spring bloomer, rock cress can be found still flowering into July.

Lyre-leaved rock cress is a member of the mustard family. Seedpods of mustards can be of two general forms: thin long pods (siliques) or flattened short pods (silicles). The rock cress has siliques. Many mustard species with deeply lobed leaves have the longer seedpods. Common mustards with siliques include non-native weedy species like garlic mustard and yellow-rocket. The native tower mustard also produces siliques. Mustards with shorter seedpods (silicles) include non-natives like field pennycress, shepherd’s-purse, and hoary-alyssum. Keep your eyes open for the lyre-leaved rock cress on Coulee region goat prairies you visit, and compare it to other mustards you may encounter on your hike.
Fall 2011 - Rockroses

There are two species of the Helianthemum (rockrose) genus that can be found on our hill prairies. Another common name for these two is frostweed, which is perhaps a better name considering the dissimilarity of this genus to roses. The name frostweed comes from the trait of morning moisture releases that exude out of the stem giving an appearance of frost. Another interesting trait of these two is that they have both self-pollinating and cross-pollinating “flowers”. The cross-pollinating flowers are yellow with five petals that develop in June or July. The flowers are about an inch in diameter. The many small self-pollinating capsules are found along the leaf axils. The plant, as with many dry prairie species, tends to be prostrate and, therefore, seldom attains a height equal to its many branches that may be up to 24 inches long.

The flowering structure itself differs slightly in these two species. The sepals are all the same size in long-branch frostweed (H. canadense) and two of the sepals are shorter in hoary frostweed (H. bicknelli). An easier method of identification is to look at the arrangement of flowers. H. canadense has solitary flowers with lateral branches extending beyond the flower, while H. bicknelli has a terminal cluster of up to ten flowers. The H. canadense flowers two to three weeks earlier than H. bicknelli, but the showy little petals don’t last long on either species. Therefore, more likely than not, you’ll identify this plant by the many clusters of seed capsules that line the stems. Look for these capsules yet this fall and into the winter on the hill prairies you visit.
Spring 2012 - The Parasitic Bastard Toadflax

Here’s another common hill prairie denizen that somehow I haven’t yet written about. This species was still on my mind from a Rich Henderson talk on managing cool weather grasses given at the TPE conference. Bastard toadflax (*Comandra umbellate*) is also called false toadflax (when children are present!). Regardless of what common name is used, this is an intriguing plant. Perhaps its most interesting feature is not readily apparent to the casual observer…more on that later.

Bastard toadflax seldom reaches a foot in height, particularly on our dry hill prairies. The stems, which are sometimes branched, have alternate oblong leaves that are less than two inches in length. Both the stems and leaves are smooth. The white flowers that begin appearing in May are small and often are not fully open. However, there are usually enough flowers in the terminal clusters that the plant can be easily found. Bastard toadflax forms clones and so there are often many stems in a given area giving the appearance of many separate plants. These clones are produced from an extensive root system, and it’s this root system that brings us to the topic of parasitism.

Plants can exhibit a variety of strategies that enable them to endure the harsh, dry conditions of hill prairies. The bastard toadflax uses its rhizomatous roots to extract water and nutrients from the roots of other plants. It’s this characteristic that Rich Henderson noted in his talk, as he suggested *Comandra* could be planted as a means of weakening cool weather grasses. While bastard toadflax is capable of photosynthesis on its own, its ability as a grass control makes it a natural prairie management tool.

So, look for this rather inconspicuous plant on your hill prairie walks this May. And if you find it, take the time to imagine what might be going on within the hill prairie soil and how this humble plant can have impacts on neighboring prairie plants.
Fall 2012 - More prairie flowers on the edge

Back in 2008, I wrote about the violet wood-sorrel being a more mesic species that is sometimes only found on the edges of really dry hill prairies. At that time, I promised to provide information about other prairie species that are similarly found at the wetter edges of hill prairies.

One of the species I previously mentioned was prairie phlox (*Phlox pilosa*). These are easy to identify, as few species display such a brilliant pinkish purple flower. This five-parted flower has a long tube that attaches to the branched cluster of terminal flowers that are about an inch in diameter. The leaves are opposite, and linear in form with lengths up to three inches. The plant is usually less than a foot tall on the dry hill prairie soils.

Another species I grouped in this class was prairie alumroot (*Heuchera richardsonii*). The plant is very shade tolerant, thus can be found well beyond the woody prairie edge and is considered a savanna species indicator. This plant is on the opposite spectrum of the prairie phlox with regard to flower showiness, as alumroot has only small greenish flowers. The flowers are on the end of a leafless stem that may be as tall as three feet. This plant is most commonly found by finding the rosette of leaves at the base of the plant, which are up to five inches wide. The combination of the basal rosette and tall stem with terminal small flowers is usually enough to identify this plant.

The last species I’ll mention as an edge species is white camas (*Zigadenus elegans*). As described by Cochrane and Iltis in *Atlas of the Wisconsin Prairie and Savanna Flora*, this species is found “on north-facing slopes in the open prairie habitats”. I find that description very true for our hill prairies, as one can find good populations of this somewhat uncommon species just over the open hill tops. This lily is fairly distinctive when in flower, as the nearly foot tall flower stalks rise above a clump of grass-like leaves. Multiple light yellowish flowers are displayed on branches of the one or more stalks, often quite densely packed onto the stalk. The flower itself has six parts, with a dark marking toward the center of each part. Another common name for this plant is death camas, derived from the poisonous characteristic of this species.

These edge species contribute to the overall diversity of our hill prairies. Therefore, you might wish to stray from the wide-open prairie to the woody edges to add these species to those you’ll encounter on the hill prairies in the Coulee Region.
Many of the hill prairies in the Coulee Region have outcroppings that provide a unique microhabitat for plants. In my last writing, I covered some of the plants that use the more mesic edges on hill prairies. The outcroppings are on the other end of the spectrum – the driest conditions a plant could endure. As I’ve mentioned before, prairie plants often have unique features that permit them to thrive in the harsh conditions on prairies. There are a few species, such as the smooth cliff brake (*Pellaea glabella*), that somehow make the hill prairie outcroppings their home.

Cliff brakes are ferns. Ferns are not often thought of as denizens of dry habitats, but there are several common to dry prairies. Perhaps a little review of fern anatomy is worth our time. The part of the fern we see above ground is the frond. The fronds have a blade (leaf) at the end of a stipe (stalk). The blade has a rachis (mid-rib) that the pinnae (leaflets) are attached to. The pinnae have costae (midribs). Ferns can have many divisions of the frond, these being termed pinnate (first division), bi-pinnate (a second division) or tri-pinnate (a third division).

With that introduction, let’s talk about the smooth cliff brake. Little description is actually necessary to identify this fern to the genus level. First off, there aren’t many other plants that will be found growing directly on rock outcroppings. Secondly, this fern is quite distinctive. It has small (< eight inches) fronds with blades bi-pinnate at the base and pinnate above, terminal pinna sessile and oblong- to lance-shaped, and a smooth stipe and rachis. Did you get all that? In this case, the accompanying picture is truly worth a thousand words.

You can probably assume the cliff brake you find on the hill prairie outcroppings is the smooth cliff brake, as the only other *Pellaea* species in Wisconsin is the rarer purple cliff brake (*Pellaea atropurpurea*). The common names of these two species describe the major differences, with the smooth cliff brake having hairless stalks and the purple cliff brake having a deep purplish rachis. This plant persists throughout the year, so look for them on outcroppings during your next hill prairie hike.