

SEEDS OF DIVERSITY



Iowa DNR Prairie Resource Center

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What is so Valuable About Prairie?

Have you ever wondered what it would be like to be sitting on top of the highest point in any given location with the breeze in your face and the sun shining, gazing upon openness filled with waving grasses, blooming flowers, grazing buffalo and Burr Oak groves in the distance? What about the smells and tastes in the air or the grandeur of the night sky? What about internal peace? I've been fortunate to have hunted many different landscapes across the United States and during my haunts I have often wondered what this must have been like.

Recently, while drifting through the clouds on approach to McCarran International Airport in Las Vegas, I noticed something that had escaped my attention several times before. Maybe it's because my previous flights have always been in the evening or night, and this observation is not quite as noticeable from the ground, but it really struck me as odd: there was more green grass in the lawns of Las Vegas than in the lawns of Des Moines. The migration of people from the north and east to Phoenix and Las Vegas has been incredible over the past two decades, averaging 10,000 per month. Isn't it funny how no matter where people go or what their reason for going is, they have to take home and tradition with them? For some reason, this little observation got me thinking about Iowa and the prairie.

As a child, I remember thinking that I am from a prairie state and that all Iowans come from a prairie heritage. I have even spoke about this as an adult. After all, we have towns, streets, and schools named after the prairie and/or parts of it. I even grew up with movies, television and books about life on the prairie. Doesn't that give us a prairie heritage? It is just now beginning to dawn on me how wrong I've been.

Iowa truly is the prairie state; however, the only people here who can actually claim a prairie heritage are those with Native American ancestry. The rest of us are products of the cultures and traditions of Europe, Asia, Africa, and the rest of the world. Aspects of these cultures were brought in and completely replaced the existing cultures that had sustained themselves for centuries on the prairie. When our forefathers entered the prairie they saw the surface as a valueless wasteland waiting to be conquered.

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Pale purple coneflowers on a Brushy Creek hillside remnant prairie

Rather than learning to exist within the prairie culture, they condemned it because it was different from what they were used to. We have been conquering it ever since.

Today, our view of the prairie is strictly from an agricultural standpoint; the bluegrass pasture, the brome covered knobs that are too steep to farm or the Big Bluestem patch at the end of the old cemetery road. The actual prairie with all of its majesty is rarely even thought about; it was gone long before any of us came into existence, most of it in less than a human lifetime. The small, scattered fragments remaining

are such a tiny blip in the scope of modern existence that they seem of little importance. The plant life on these parcels is low in diversity and threatened by the encroachment of plants brought in from grasslands in other parts of the world. The fauna that once roamed, grazed, nested and fed on the prairie has been either extirpated or has adapted to a lesser sense of being. While observing prairie today, it is difficult to imagine this majestic organism, once covering millions of acres, as being a self-perpetuating, vast array of plant and animal life. Still, these parcels cling to existence. Could there be a story here, a reason these plants still hang on? What if there is more here than meets the eye?

First of all, to talk about the value of prairie, we need to know what a prairie really is. To learn this, I went to Webster's New Collegiate Dictionary (1977), in which prairie is defined as: "a tract of grassland; as a: a large area of level or rolling land in the Mississippi valley that in its natural uncultivated state usu. has deep fertile soil, a cover of tall coarse grasses, and a few trees b: one of the dry treeless plateaus into which the prairies proper merge on the west." Although this is only one definition it is not hard to understand why the majority of people have not grasped the value of prairie. After all, what's exciting about a tract of grassland, a cover of tall, coarse grasses and a few trees? The only exciting thing in this definition is "deep fertile soil" because it has monetary value, yet the only way to benefit from this is to destroy the very thing that created it; the Tallgrass Prairie. Nothing was mentioned about the diversity of life existing within the system; what makes a prairie a prairie. Although the Tallgrass Prairie is unique to this part of the world, grassland ecosystems play an important ecological role in many other regions of the world as well. Some examples are: the Steppe of Europe and Asia, the Savannahs of Africa, and the Pampas of South America. I know! It's hard for us to think about grassland ecosystems in other parts of the world when we are so familiar with the Tallgrass and Shortgrass Prairie regions of the Midwest; but prairies and grasslands are important in all regions of the world. We need to start asking ourselves, "With the tragic loss of prairie landscapes here what has happened elsewhere in the world?" "How has this affected the quality of human life, global warming, and climate change?" "Is it just smokestacks and engine exhaust that are presenting us with these global issues?"

Currently the value of prairie as potential biomass for local energy production, possibly as ethanol, is being debated; also, people are beginning to discuss the values of grass monocultures vs. diverse prairie, grass vs. corn, etc. Research is currently being conducted to find out if prairie is a viable energy option.



September prairie- diverse prairie reconstruction at Brushy Creek

Biomass is a key word in the value of prairie, however not necessarily just for this type of energy production. Photosynthetic Biomass is a key energy component to the life cycle of this planet and every living thing on it. Remember, photosynthesis is the process by which plants capture carbon dioxide and water from the atmosphere then, using electromagnetic radiation from the sun they split the water, releasing oxygen back into the atmosphere while fixing and storing the carbon molecules within themselves as sugars or carbohydrates. In other words, our atmosphere is cleansed and our bodies are nourished through this process. Is the rate of photosynthesis the same when you replace an established diverse prairie or entire ecosystem with monoculture row crop plants? What about when we replace millions of acres world wide to better suit our immediate needs? How long does it take to notice changes that affect everyone? And now we are doing the same thing with the rain forests in Central and South America!

On a local note, Tallgrass Prairie, or should I say a portion of it, is being used to seed row crop acres enrolled in federal farm programs. It is also being used by wildlife managers to re-establish habitat on land owned by the Iowa Department of Natural Resources (IDNR), by local County Conservation Boards, and on lands owned by the federal government, i.e. the US Fish and Wildlife Service (USFWS), and the Army Corps of Engineers. Additional research projects are looking at prairie as a suitable source of wildlife habitat and an appropriate tool for soil management.

I feel the use of prairie is a good choice for several reasons: first, Tallgrass prairie was the original cover type. Prairie is what developed the soil aggregate structure that has generated our lifestyles in Iowa over the past 150 years. When you go from prairie to row crop you lose the fungal dominated soil community which is critical to building and maintaining soil quality. This loss is the reason many agricultural inputs and specialized varieties of seed are now required to maintain production standards.

Secondly, prairie is one of the natural mechanisms that kept our water, both ground and surface, clean. The above ground biomass of the prairie cushioned the soil from rain and slowed its flow across the surface while the biomass below the ground slowed its percolation; simultaneously filtering and absorbing contaminants. Both helped to stabilize the soil and minimize horizontal movement, even along stream banks and on steep slopes. One interesting thing about the subsurface biomass of a diverse prairie-

rie; it is kind of like the base of an iceberg. Above the ground we see beauty, frailty, and diversity along with a sense of order and purpose. Below the ground exists this entangled web of root mass, incredibly dense, seemingly chaotic by design which, depending on species, can develop to extreme depths, aiding in the prevention of soil movement. Prairie potholes and marshes also store rain water, slowing its movement through the prairie system. Lastly, the surface biomass protects the soil from the wind. Erosion is a natural process so the purpose is not to eliminate it but instead minimize it to a natural level.



Find the species in this fall photo: Stiff goldenrod, Smooth blue aster, New England aster, Canada milkvetch and Azure aster.

Thirdly, I see native plant diversity as a way to minimize the impacts of invasive species. This is an expensive battle that we have been fighting for a long time and I'm not sure we are making much progress. The challenge is that it takes a long time to establish native plant diversity, especially when invasive plants grow so competitively; however, by taking small steps in this direction while continuing our current invasive species practices I believe we can gain some ground and bring this problem to a tolerable level.

Lastly, the prairie is home to hundreds of wildlife species: birds, mammals, reptiles, amphibians, plants, and fungi, as well as countless invertebrates and soil microbes. Many wildlife species frequenting Iowa during the spring, summer, and fall either migrate or go dormant during the winter. However, species like the Ring-necked Pheasant persist throughout the year. The Midwest is known for temperature extremes in the summer and winter as well as snow, ice, heavy rain, and occasional drought. A diverse Tallgrass prairie can provide all of the natural components for survival even in the harshest conditions for these grassland species. After all, grassland, no matter where it's located in the world is a relatively harsh environment.

The structure within a diverse prairie is as diverse as the prairie itself. There is structure within the landscape: swales, ridges, wetlands, streams, etc.; but there is also horizontal and vertical structure related to plant spacing and species richness. There is edge structure, which is created by changes in the landscape, soil type, and natural occurrences (such as fire and wildlife activity, i.e. grazing). Also, there is edge structure created by species patchiness. In early spring, the prairie forbs and cool season grasses begin to grow, forming a canopy of green over a spacious semi-dense under story which pro-



Eastern tiger swallowtail nectaring on a Prairie blazing star.

vides excellent ground nesting and brood rearing conditions. As the seasons progress, taller, stemmier plants provide supportive vertical structure for above ground nesting birds as well as support for adjacent grasses in the winter. Dominant species change from season to season and year to year depending on microclimate changes that occur. A smorgasbord of seeds, roots, and invertebrates provide a source of food throughout the year. Should there come a time when winter is extremely harsh, waste grain is not available, and food plots are filled in with snow, the prairie may be the only source of food and shelter available. Portions of the prairie fill in with snow as well, but there are pockets that do not and this is where you will find the survivors.

If you wish to increase survival, increase the amount of habitat that supports every aspect of survival. To do this, establish suitable

habitat by incorporating as many structural components of the landscape as possible, i.e. streams, potholes, ridges, and valleys. Create as much diversity as you can; plant it in relationship to high energy row crops or food plots and incorporate a pure, dense stand of winter cover, i.e. Switchgrass, even weedy Switchgrass, in an adjacent proximity. Yes, I still like Switchgrass!

Native diversity is difficult to establish but I do not believe we can achieve optimum survival and maximize the quality of our habitat without it. It takes patience and persistence, and is always a work in progress. It can be difficult to identify when you have reached success, but after all, satisfaction often lies in the journey, not the destination. The end is always changing! I do guarantee that what you put into it you will get back out!

To me, all these factors define the prairie as being far more than just a landscape. My passion for hunting and being outdoors, coupled with a love of wildlife has provoked a powerful interest in prairie. The original tall grass prairie is far too complex to ever mimic one hundred percent. Besides, several plant and animal species have been removed from the system, never to return, and land is only available on a very limited basis. The only way to make land more readily available is to educate private landowners about the value of diverse prairie and encourage them to incorporate prairie into their land management schemes. Actually agriculture was part of the true prairie heritage, just not on the scale that we see it today.

By returning a portion of prairie to the landscape, I believe we are doing the most we can do to maximize the quality of habitat available for most, if not all, wildlife species in Iowa. This would also go a long way towards cleaning up our water and providing a defensive mechanism against encroaching invasive plants. In this way the children of future generations would get a small view of a heritage and culture that has been all but lost. By returning a portion of prairie back to the landscape we are showing respect for all it has given us. Who knows, maybe we can breath easier too!!



Species Spotlight: Cup Plant

Cup plant, *Silphium perfoliatum*, belongs to the aster family and is as captivating as its smaller cousins. This prairie native thrives in moist soils, prefers full to partial sunlight and can reach heights of 8 to 10 feet. Cup plant generally blooms for 1 – 1 ½ months in early- to mid-summer; when in bloom, plants display several clusters of yellow flowers similar in appearance to sunflowers and other members of the *Silphium* genus, such as Compass plant or Rosinweed.

Cup plant attained its name from the large, rough leaves that grow in opposite pairs every 5 to 10 inches along the tall, four-sided stem. The junction of leaves and stem forms a cup that collects dew and rainwater. This makes the plant popular with birds, butterflies, skippers and long-tongued bees. Though goldfinches are the most conspicuous species, many birds also enjoy the seeds of this plant. During August and early September, flocks of brightly colored goldfinches rapidly gobble up the seed turning harvest time into a race against nature's desire for food! Besides birds, large herbivores such as cattle and Bison have also been known to consume the plant, preferring to chew the leaves of immature plants. In fact, in Russia Cup plant is used as a silage crop. In addition to being a source of nourishment, cup plant's sturdy vertical structure and deep root system make it an anchor in the prairie. It has a tendency to form dense colonies which provide structure for other plants and shelter for many wildlife species. Though it is a prairie plant, cup plant also favors borders along meadows, lakes, streams, fence rows, ditches, woodlands and thickets.

Why Cup plant? Seed and forage are valuable food sources, the structure is great cover, it has the ability to hold water between its stem and leaves, and many birds and insects utilize this. These are all important reasons to include Cup plant in your seed mix. The next time you are in the prairie on a warm summer day, look for the Cup plant, take advantage of the shade it provides, and enjoy the wildlife around you!

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