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A Special Prairie Issue



# Iowa CONSERVATIONIST

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**FRONT COVER:** *Cayler Prairie, an example of Iowa's natural beauty. — Photo by Doug Harr*

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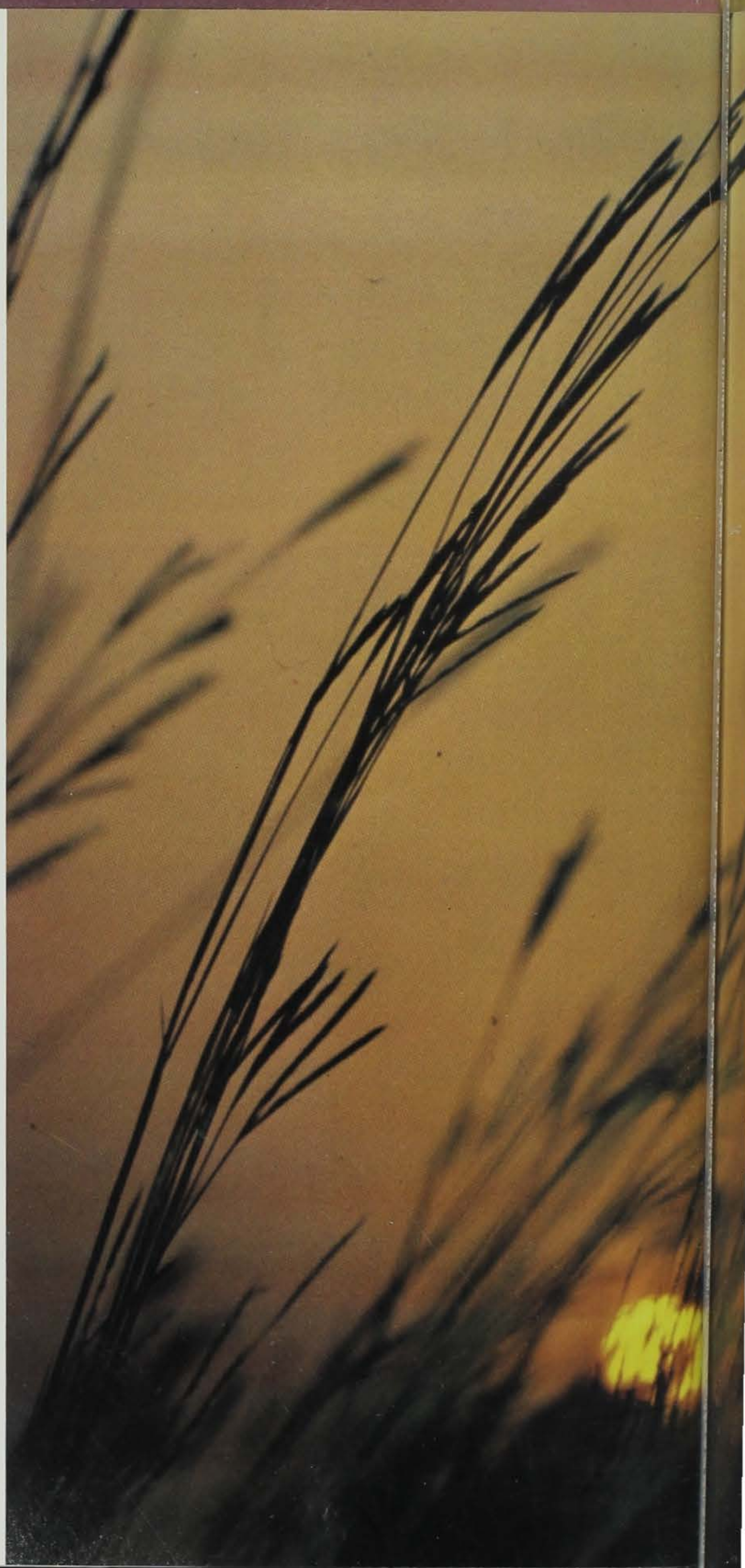
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# IOWA PRAIRIE

## A State of Mind

By Daryl D. Smith

The scene was breathtakingly beautiful as the group piled out of the car to view this remnant of native Iowa Sprairie. The area had been burned in late April and on this July morning was a picturesque prairie garden with splashes of color ranging from the brilliant deep oranges of the wood and Turk's cap lilies to the purples of the prairie clover and prairie gay feather.

We had visited other prairie remnants so the plants were familiar to us, but the sheer number of prairie flowers on this mesic lowland portion of Hayden Prairie was awesome. Everywhere you looked were examples of plants that had become rare as tallgrass prairie was converted to cornfields.

As we absorbed the meadow scene, a low rumbling to the northwest reminded us that this idyllic spot could soon be the site of a thunderstorm. The heavy air went unnoticed as we walked across the prairie stopping to examine and photograph the plants of an ecosystem that has virtually vanished. The floral roll of representatives of once common species increased as we added to the list wild quinine, white indigo, butterfly and marsh milkweed, compass plant, oxeye daisy, leadplant and others. A feeling of reverence descended on the group as we located a late blooming, white fringed prairie orchid. Once a common flower of prairie swales, it is now found in only ten locations throughout the state. There was an urge to fix this scene permanently in our minds since a camera couldn't capture the essence of this prairie morning. As we moved across the prairie once again, the air quickened as a breeze began to blow from the oncoming storm. There was electricity in the air.

Suddenly I was alone. It became one of those moments when one is suspend-

ed in time and space. The onrushing storm brought a freshness to the air and a feeling of being in touch with the elements swept through my body. I was transported back to another time when prairies such as this stretched to the horizon and beyond, to a time when bison and prairie chickens were a common sight. The wind was stronger in my face, my spirit soared, and I had merged with the world around me. The electricity of the air became concentrated in bolts exploding across the sky. I was filled with exhilaration comparable to little else I had experienced.

The second round of raindrops (I hadn't felt the first) brought me back to reality. As the rainfall increased, I beat a hasty retreat to the shelter of my Detroit-produced chariot. The spell was broken, I was back in the 20th century, but the memory and the feeling linger. Somehow I want to relive that moment and times such as that aren't often consciously recreated. Since they aren't awarding study fellowships into the past and time travel hasn't been perfected, I will have to recreate my moments of prairie revelry in my mind.

Most of us are too young to remember the tallgrass prairie. It was gone or almost gone before we could know and experience it. Iowa, more than any other, could claim the title of the Tallgrass Prairie State. Prior to settlement the state was 85% prairie, 29 million acres of grassland that produced some of the richest farmland in the world. All that remains of that vast, tallgrass ecosystem are a few scattered relic patches in old-settler cemeteries, roadsides and railroad right-of-ways.

The tallgrass prairie may be gone, but it is not forgotten because whenever people discuss prairies an undercurrent of excitement seems to flow through the group. What is it about an ecosystem of



the past that generates such interest? Few people have actually spent time on the prairie so it is unlikely they are stimulated by direct experience. Perhaps much of the interest stems from a yearning to grasp something of the past, a simpler time.

John Madson in *The Running Country* (Audubon, 1972) equates his feelings for tallgrass prairie with that of a modern man who has fallen in love with the face in a faded tintype. "Only the frame is real; the rest is illusion and dream. So it is with original prairie. The beautiful face had faded before I was born, before I had a chance to touch and feel it, and all that I have known of the prairie is the setting and the mood — a broad sky of pure and intense light, with a sort of lightness to the days, and the young prairie-born winds running past-me from open horizons."

Much of the feeling for prairie is a state of mind. As I have read from diaries, journals and recollections of early settlers and travelers it is apparent that the prairie had a psychological effect on observers. Emotional responses to the prairie varied considerably. Some loved it and spoke of it in glowing terms while there were those who hated the prairie and spoke of it as "fearful place."

Favorable aspects of the prairie included beautiful and delicate flowers, freedom of wide horizons, moving grass, park-like appearance, productive soil and promise for the future. People avoided the prairie because of fires, wind (cold and dessicating), barrenness (lack of trees and soil fertility), illness (later determined to be malaria carried by mosquitos) and oppressiveness of open space. It is apparent that opinions of the prairie could be based on different interpretations of the same thing and as a consequence result in vastly different attitudes.

Herbert Quick illustrates the conflicting emotions well in *Vandemark's Folly* as he stops "Cow" Vandemark a few miles west of Dubuque to view the panorama of the prairie:

"It was like a great green sea. The old growth had been burned the fall before, and the spring grass scarcely concealed the brown sod on the uplands, but all the swales were coated thick with an emerald growth fullbite high, and in the deeper, wetter hollows grew cowslips, already showing their glossy golden flowers. The hillsides were thick with the woolly possblummies (pasque flowers) in their furry spring coats protect-

ing them against the frost and chill, showing purple-violet on the outside of a cup filled with golden stamens, the first fruits of the prairie flowers; on the warmer southern slopes a few of the splendid bird's-a-foot violets of the prairie were showing the azure color which would soon make some of the hillsides as blue as the sky; and standing higher than the peering grass rose the rough-leaved stalks of green which would soon show the yellow puccoons and sweet-williams and scarlet lilies and shooting stars, and later the yellow rosin-weeds, Indian eye flower and golden rod. The keen northwest wind swept before it a flock of white clouds...The wild-fowl were clamoring north for the summer's campaign of nesting...It was sublime! Bird, flower, grass, cloud, wind, and the immense expanse of sunny prairie, swelling up into undulations like a woman's breast turgid with milk for a hungry race."

In another excerpt, a youth cried in his happiness at seeing the newest, strangest, most delightful, sternest, most wonderful thing in the world — Iowa prairie. At this, the lady on the wagon beside him burst out, "I don't wonder that you cry. Gosh! It scares me to death."

In these two characters Quick has captured the contrast in emotions generated by the prairie — delight and fear, anticipation and apprehension, promise and threat.

Today the awesome and fearsome aspects of prairie are diminished as the prairie has been virtually reduced to small living museums. A few aspects that remain to bother some people are chiggers, they can be quite annoying if precautions aren't taken, and an appearance that some interpret as "weedy." The annoyances of the prairie today are far outweighed by the positive effects on our state of mind.

We need prairie because it is part of our past. Nature in our daily lives may well be an inherent biological necessity, not a luxury. Millions of years of inheritance and culture have programmed us to a natural habitat of open space and a varied wild landscape undisturbed by civilization. Not only is the physical aspect of the prairie important, but our psychological well-being may rest upon capturing the essence of the tallgrass prairie.

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*Daryl D. Smith is the head of the biology department at the University of Northern Iowa. He holds a Ph.D. from the University of Iowa.*

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*Anderson Prairie, a 200-acre state preserve, is located in Emmet County.*





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*Baltimore butterfly.*

It was the hottest day of the year. The air was still and humid, and the sky was cloudless. I stopped the car at my destination, a 10-acre native prairie remnant in north-central Iowa. Friends had shown me this site almost two years ago. I was very impressed. Since then I had made a point to drive by whenever I was in the area, but I'd never really explored this prairie during its mid-summer prime.

This time I was after skippers. Skippers are small, thick-bodied butterflies that are especially fond of North American grasslands. Like most butterflies, they have developed a close relationship with specific types of plants. Females lay eggs on selected host plants, where the developing caterpillars are specialized to feed. Many skippers in our area feed on grasses; others feed on sedges.

The disappearance of Iowa's native prairies has eliminated some animals and has forced others into small, precarious refuges. Prairie skippers are good examples of the latter. At least one species, the Dakota skipper, has been reduced in Iowa to only a single site. Fewer than 50 local populations (probably closer to 20) exist in the entire world. Three species of Iowa's prairie butterflies are being considered by the

U.S. Fish and Wildlife Service for official endangered or threatened status.

My purpose was to help determine the current status of these rare prairie butterflies. We know that a few of Iowa's prairies support diverse butterfly faunas, but many of our remnants are virtually unexplored. The distribution of most species is based largely on records from the early 1900's. Even the general life histories of some species are unknown.

Today, the prairie was alive with butterflies (just as it was alive with mosquitos). My first catch was the best find of my visit, a Poweshiek skipper! Named in Iowa's county of the same name, this small butterfly had been known recently from only 3-4 other places in our state. Although it can be abundant where it occurs, the Poweshiek skipper occupies a restricted range, encompassing parts of the Dakotas, Minnesota, and Nebraska, east to Michigan and Illinois. Authorities consider it to be rare. Caterpillars feed on Indian grass and big bluestem, which explains why the species is restricted to native prairie remnants.

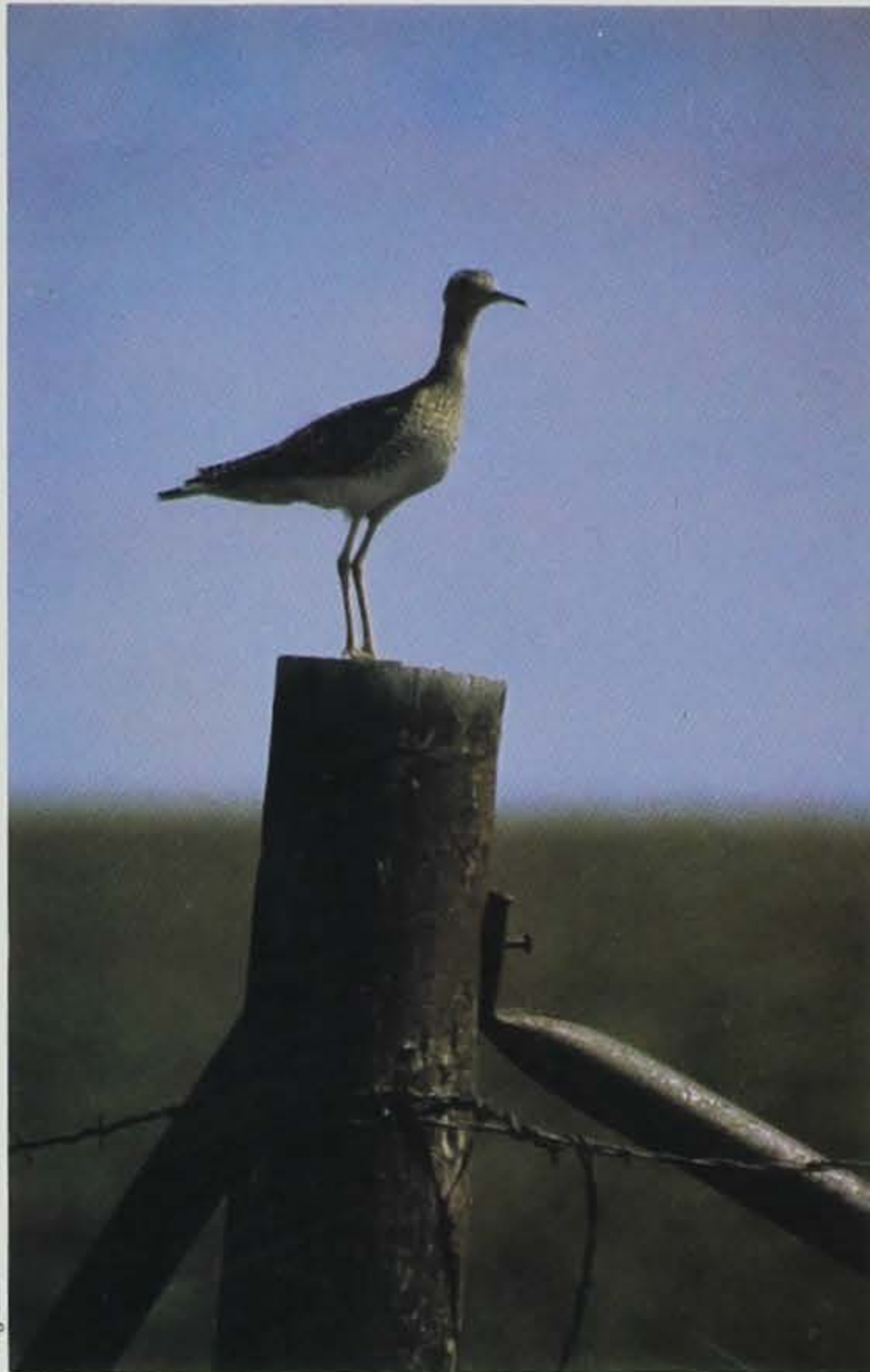
I soon learned why the Poweshiek skipper is sometimes considered "abundant where found." Here was one of

## *Wings Over the Prairie*

*By Robert W. Howe*



*Many wildlife species depend on prairie. The upland sandpiper (right), although endangered in Iowa, still rests in Iowa prairie remnants. Larger species, like the American bison (below), disappeared as the vast prairie withdrew.*



Doug Harr

North America's rare butterflies — a species restricted to native prairie remnants — yet individuals were flying almost everywhere I looked. I was thoroughly delighted.

Later that week Wayne Schennum, ecologist for the Iowa Natural Areas Inventory, and I were to discover three additional sites, all in high-quality prairie remnants. In fact, all known Iowa localities for the Poweshiek skipper are among the least disturbed tallgrass prairie patches in Iowa.

My luck was not yet finished. As I approached the wetter parts of the prairie a larger, lighter-colored skipper flashed in front of me. It was too fast for my net. Later I succeeded in capturing a specimen, another of Iowa's rare butterflies, the broad-winged skipper.

Moist swales of this north-central Iowa prairie harbored yet another uncommon skipper, the long dash. In the uplands I also found the Arogos skipper, a prairie obligate species that tolerates little habitat disturbance. In addition to rare skippers the prairie also supported the smokey-eyed brown, Acadian hair-streak, common wood nymph, and other characteristic prairie butterflies.

I was walking amongst ghosts of another era. Bison, elk, and pronghorn



Tom Neel



are gone from our prairies. So, too, are the prairie chicken and whooping crane. But here and in a few other precious tracts of undisturbed land, persist inconspicuous but bona fide members of our native prairie fauna. Their ancestors danced around the bison and shared cover with the prairie chickens. Their descendents will need to fight a profound struggle for survival.

Elsewhere in Iowa, native prairie remnants support other special butterflies. The brilliant regal fritillary occurs in nearly every sizeable prairie remnant in northwestern Iowa and in the Loess Hills. Unlike the grass-loving skippers, caterpillars of the regal fritillary and its relatives feed on violets. A 1984 publication about eastern U.S. butterflies states that the regal fritillary has "declined precipitously." Its presence, along with other rare butterflies, sug-

gests that Iowa's prairie remnants, indeed, are treasures worth preserving.

Butterflies are relatively new to me; I am a bird-watcher by trade. But both birds and butterflies animate their surroundings. They help illustrate the life that exists in nature. Perhaps that is why they are so attractive.

Have the birds of Iowa's prairies experienced a similar fate as its butterflies? In fact, the recent histories of these groups are quite different. Birds are larger than butterflies. Butterflies feed on plants while birds generally feed on insects or special plant products (fruits or seeds). Consequently, birds require considerably more space in which to live and reproduce. Given the almost wholesale elimination of our original prairie vegetation, prairie birds have been forced to follow one of two courses: 1) extinction from the state, or

2) adaptation to non-native habitats.

Birds that have followed the first route are generally large species: the greater prairie chicken, merlin, sandhill crane, whooping crane, long-billed curlew, and marbled godwit. The king rail, marsh hawk, and short-eared owl are nearly gone. Most of these species are associated with prairie wetlands.

Our other prairie birds are familiar to most Iowa nature lovers. Bobolinks, eastern and western meadowlarks, dickcissels, American goldfinches, and grasshopper sparrows, compose the "core" of our prairie avifauna. Savannah sparrows are added in the central and northeastern portions of Iowa. Lark sparrows and Henslow's sparrows occur locally. Unlike most prairie butterflies, these species do not avoid alfalfa fields, brome pastures, or other disturbed grasslands. Even the stately upland sandpiper is holding its own in large Iowa pastures. Signs warn us of recent declines in these adaptable prairie species, but today they still can be enjoyed by even the casual naturalist.

As with prairie butterflies, subtle variations in moisture or vegetation correspond to recognizable changes in the avifauna. Sedge wrens, red-winged blackbirds, swamp sparrows, and common yellowthroats are typical of wet prairies or sedge meadows. Mourning doves, field sparrows, song sparrows, vesper sparrows, eastern kingbirds, and other species can be expected where shrubs or trees mix with grasslands. Barn swallows and rough-winged swallows can be seen flying above these habitats, even though they are not exclusively grassland species.

Butterflies and birds, two of our most spectacular animal groups, are not the only "wings above the prairie." Moths, bees, grasshoppers, night-flying bats and others join them in giving our prairies an atmosphere of activity. Many of these animals, and their roles in the prairie ecosystem, are poorly known at best. Perhaps someday we will learn lessons from them. Perhaps someday they will help us improve our own lives. Our chances for protecting an intact prairie fauna have been lost, but we still have opportunities to save these leftovers; remnants that may be more significant than they seem.

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*Bob Howe serves as biologist and coordinator for the commission's Natural Areas Inventory. He earned his Ph.D. from the University of Wisconsin working with birds in small woodlots of southern Wisconsin and Australia.*

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## LEPRECHAUNS and LEPIDOPTERA

*By Dennis Schlicht*

Here in Iowa we have some mysterious creatures flitting around our prairies and meadows. They are very small, about one-inch long and are also very fast. In fact you'll have to be quick to see one, let alone catch it. These creatures are late to rise, yet early to retire and in bad weather can't be found at all.

What are they? Leprechauns maybe? No but there are some similarities. They are tiny, seclusive, fast and, like leprechauns, are believed to reveal the hiding place of treasure if caught.

The treasure is prairie — the creature is a skipper. Skippers are butterflies, that is lepidopterans, not leprechauns. The skippers in our prairies have names like Poweshiek, Dacotae, and Delaware after Native American tribes. There are also names like ottoe, origenes and mystic. Of the 93 or so butterflies found in Iowa, 32 are skippers, yet many people have never seen one.

Skippers are brownish in color and usually are seen nectaring on flowers. Each species has its own flight period which might be as short as ten days. During this time they find mates, lay eggs and drink nectar, with a little sunbathing in between. Mate finding involves claiming a roost then chasing nearly everything that flies over to identify the possibilities. Sometimes they are even seen chasing birds.

Eggs are laid on the grass, food plant of the caterpillar, or on plants like purple coneflower that grow amongst



*Poweshiek skipper*

the grass. When the eggs hatch, the caterpillars eat their way to adulthood on each species' specific grass.

In Iowa we have skippers that exist only on prairie of exceptional quality. If these skippers are found on a piece of prairie, its quality is assured. If they are absent, the history of that prairie probably includes heavy grazing or some early attempt at crops.

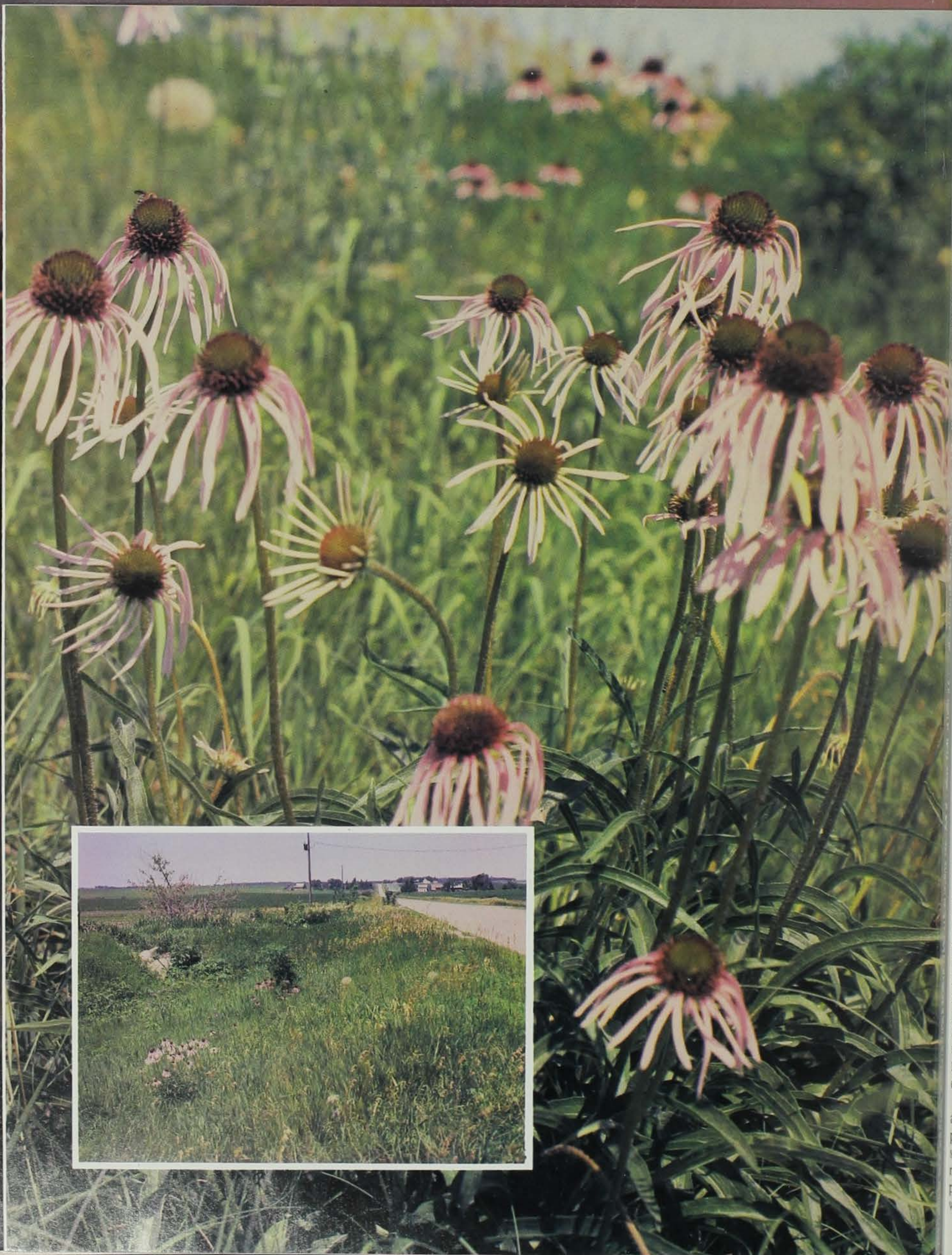
Many small, native prairies still exist in Iowa, each with its unique plants and animals. Some of these are being destroyed each year. The skippers, their grass food plants, and the purple coneflowers they roost on can't go somewhere else, but are lost forever. Most of us won't miss them, but those who have known the skippers will feel the loss.

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*Dennis Schlicht is a biology instructor at Central City. He holds a B.S. degree from the University of Northern Iowa.*

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# ROADSIDE PRAIRIES

By Wendy Van Gundy

*Wendy Van Gundy is an information specialist for the Iowa Conservation Commission. She has a B.S. degree in fisheries and wildlife biology from Iowa State University and has been employed in the conservation field for nine years.*

As the early pioneers first crossed Iowa in the 1800's, they moved through a vast sea of grass. These early settlers struggled through grasses which grew to heights of seven or eight feet. Originally 85 percent of the state was covered by prairie grasses and forbs but today very little of this resource exists in its natural state.

Today travelers through parts of Iowa may also experience the prairie surroundings. Rural roads in southern and western Iowa still harbor native species — remnants of the vast Iowa prairie that greeted our early settlers.

Tiny leftovers of prairie may still be seen in old cemeteries, along railroad right-of-ways and in roadside ditches. Look for the striking russet glow of the prairie grasses this fall or a sprinkling of coneflowers, compass plant or blazing star in bloom. All remnants are important as a native seed bank, wildlife habitat and as a significant link to our heritage.

Dr. Roger Landers, a nationally known prairie botanist, says, "All together some 250 kinds of plants fought in silent competition for survival in almost every section of prairie land in the state. Only the best won the privilege to spread their seed and perpetuate their species. These grasses and forbs could outcompete the so-called weeds if left undisturbed." But mowing and spraying of our roadside ditches has diminished our species diversity. So one may ask, where did the weedy species come from which greatly affect roadside management today? Weeds such as pigweed and ragweed have always been in Iowa but others were brought into the state by pioneering settlers and soon found their niche which often displaced desirable species.

Early mowing also reduced the vigor and prevented the spread of prairie plants by seed production or root extension. The combination of spraying and mowing has doomed all but the hardiest plants. Once these species disappear, it will never be known whether they could

have played an important role in our future. Many prairie plants were once used medicinally by the Native Americans and their secrets were not revealed to the white settlers. Our plant seed bank needs to be perpetuated in order to preserve part of our heritage.

Wildlife habitat is also provided by our roadside prairies. Proper management is necessary if wildlife habitat is a priority. Minnesota's roadside-wildlife biologist estimates that 25 to 50 percent of all pheasant nests occur in roadside ditches if recommended mowing and seeding is done. Illinois and North Dakota have both seen dramatic increases in wildlife production of unmowed ditches. Pheasants have also shown a 20 percent increased preference to switchgrass as opposed to orchard grass — alfalfa hayfields in Iowa. Rabbits, gray partridge, quail and numerous songbirds also utilize these areas as nesting sites.

In Iowa, the loss of winter cover is even more crucial than good nesting habitat. Some of the prairie species act as insulators throughout the winter and will remain standing even after heavy snowstorms or sleet. Wildlife can then seek out these areas for cover.

More insect species are found in the prairie than any other ecosystem including marshes and woodlands. Some young birds eat insects which are a high source of protein. Mice, voles, turkeys and quail also feed on plant parts and seeds.

Since many states are now attempting to manage ditches for wildlife, won't

there also be an increase in road killed wildlife? North Dakota and Minnesota have shown that increased nesting does not increase the number of wildlife killed by vehicles.

Other questions must also be considered now that there exists an increased awareness of other roadside benefits. The two most common questions concern snow accumulation and heavy rain drainage. Dr. Roger Landers states, "Prairie species are no more of a snow accumulation hazard than other roadside cover. Little information is available by way of comparison, but it is feasible that in very wide right-of-ways, the tall grass may act much like a snow fence, an advantage instead of a disadvantage. With a downpour, it is more often the loose material, stalks and mowed plants, not the standing plants, that create drainage problems by blocking fences, culverts, and drains."

Roadside management in Iowa is on the increase and many county conservation boards are involved in educating the public as well as reconstructing roadside prairies. According to a 1984 survey, 43 areas for a total of 566 acres have been planted to prairie grasses and forbs.

The next time you drive to work or go to school, notice what is in your ditches. A pheasant or partridge may explode from the shelter of the tall waving prairie grasses which are now reaching their peak. Or, why not also take a wildflower survey of those prairie flowers now in bloom? The ditches are alive with activity.



Photos by author



# Prairie Chicken Update

By Jim Wooley

The restoration of species native to Iowa, but extirpated by the activities of man, has been a continuing goal of the Iowa Conservation Commission. The restoration of white-tailed deer, eastern wild turkeys and giant Canada geese to Iowa, and their current status as game species that provide millions of hours of recreational enjoyment, attests to the success that some of these efforts have had. Since 1980, Commission biologists have attempted to restore ruffed grouse populations in southern Iowa and reestablish greater prairie chickens in the Loess Hills of western Iowa. The major difference with prairie chickens is that, even if attempts are eventually successful, the bird will never be hunted.

Prairie chickens were once found throughout the state where suitable prairie habitat existed. The activities of settlers at first benefited the birds. Increased diversity and additional food sources resulted in population increases through the late 1800's. The tide shifted quickly, however, as more prairie turned black beneath the plow and uncontrolled hunting took a toll. By 1900, chickens were on the decline and, even though hunting was closed in 1916, continuing losses of habitat caused its eventual elimination as a nesting species by the early 1950's. While occasional stragglers from surrounding states were occasionally reported along our borders after that time, the greater prairie chicken was effectively gone from the state.

In 1980, the Commission struck a deal with the Kansas Fish and Game Department to trade 52 eastern wild turkeys for 100 greater prairie chickens from the Flint Hills of Kansas. The first 53 of these birds were released in February 1980 in the Loess Hills east of Onawa, Iowa — an area chosen because of the expanses of grassland scattered through the hills, a primary habitat requirement of chickens.

Results from the first release were mixed. While a large number of chickens were observed in the release area the following day, sightings thereafter were sporadic and often at some distance from the release area. During 1980, reliable sightings were reported both near the study site and up to 19

miles away. Similarly, in 1981 observations of single birds occurred near the release area and groups of birds were reported 20 and 60 miles from the release site. However, most of the distant observations were unconfirmed. Two years following the release, prairie chicken remains were found at a fox den and one was found killed by an automobile near the release site. However, no spring booming grounds were located in the two years following the release and no reproduction was reported.

Perhaps the most unfortunate part of the 1980 release, was that we were unable to secure additional birds for stocking until 1982. Mild winter weather in Kansas precluded winter bait-trapping — the traditional means of capturing chickens. Winter releases such as the one made in 1980 are generally not advisable because of the tendency for chickens to be quite mobile at that time of year. This creates a problem with stocking efforts since chickens are most readily trapped in large numbers in winter. However, it is possible that by augmenting the remaining birds in late winter or early spring 1981, a viable population might have been established at that time. Following another mild winter in 1982, Kansas Fish and Game personnel decided to attempt a different trapping approach. Chickens were rocket-netted on booming grounds in April as they displayed. To everyone's delight, the method was successful. A total of 48 chickens were transported to Iowa for release at the same area in the Loess Hills.

The fact that this was spring the release gave us some additional hope for success. First, the birds were in breeding condition and, if stimulated to begin booming activities, might be less likely to disperse from the area. Second, Kansas Fish and Game personnel indicated that it was quite likely that some of the hens had already been bred prior to capture and should be interested in looking for a nest site immediately.

Release conditions were different for the Kansas chickens that reached Iowa in mid-April of 1982. Rather than simply turning the birds loose from transport crates, as had been done on the first release, the birds were banded and put

in a large holding pen with separate cells for each sex. The objective was to give the chickens a chance to settle down after transport and to acclimate to the new area. Males were held overnight and released the next morning. Females were then released 24 hours later. We hoped that by holding the females a day longer, males would be stimulated to remain in the general vicinity of the pen — perhaps even establish a booming ground. Additionally, some of the birds were equipped with radio transmitters so that movements and mortality could be monitored.

About 45 minutes prior to releasing males on April 17, taped booming ground calls were played through speakers located near the pen, attempting to induce chickens to establish a booming ground in the area. The gentle release was made by slowly raising the pen door from a distant location. Most males simply walked out of the pen, moved randomly about for a few yards and then wandered near the females' side of the pen, remaining for 15-45 minutes before walking or flying off. There was no booming activity in response to the taped calls, although one male did raise his pinnae (the long neck feathers for which "pinnated grouse" such as the greater prairie chicken are named). Calls were played again in the evening, and 5 males were noted in the vicinity of the pen.

Females were held one more day and released under similar circumstances on the following morning. Most walked from the pen and flew short distances to taller grass cover. Several males responded to the taped calls, showing up at the pen shortly after the tape began. Two days later, at least one male boomed at the pen site in response to the taped calls. Two other prairie chickens also vocalized at the pen, but did not boom. Playing of taped calls in both morning and evening on subsequent days did not stimulate further booming activity.

One positive result of playing the calls was the discovery of two booming males that were heard prior to the release of males on April 17. Both were at separate locations within a mile of the pen and were apparently responding to the calls. I had an opportunity to observe one of the males two days later as he boomed and displayed in response to the calls. These males were either remnants of the 1980 winter release or represented production resulting from that release.



Information from radio-equipped birds gave us a fairly good indication of movement and mortality problems that we were experiencing with the release. From a sample of 11 radioed chickens, four were predated at distances ranging from 1/2 to 2 miles from the release site. Both avian and mammalian predators were responsible. Radio contact was lost on six other chickens, three of those within six days of release, at distances ranging from 1/2 to 6 1/2 miles away. While we feel that some of this may have been due to radio failure, most were probably predated. Antenna-equipped vehicles and aircraft were used to track the birds during their movements. Because we were able to track the movements of the eleventh chicken, a male that moved 40 miles to the northeast, it's probably unlikely that many of the lost birds moved far enough away to escape our detection. The "40-mile male" survived about two months, then was killed by an avian predator. The radio information indicated several trends. First, predation on chickens was relatively heavy and swift. Second, dispersal from the release area also occurred in this spring release — with some quite dramatic movements. Third, movement patterns and sightings indicated that chickens preferred the bottomlands.

Since the 1982 release there have been some indications of very limited success. Reports of two prairie chicken broods were received in 1982, both unconfirmed. Sightings of from 1-6 prairie chickens at a time were also received from the Missouri River bottoms area. Finally, in May 1983 a small booming ground was located on the Missouri River floodplain seven miles northwest of the release site. Four chickens were observed, at least two of which were displaying males. The area they used for booming was a drowned hayfield, later plowed and planted to beans. This same booming ground was used again in 1984 but only by a single male. Another booming ground with three displaying males was also discovered in 1984. This booming ground was located about two miles from the original release site again in a bean stubble field located in the Missouri River bottoms. Since spring 1983, there have been sporadic sightings of chickens in several areas, but no confirmed reports of reproduction.

What, then, are the prospects for eventual restoration? Based on our knowledge gained from the previous two releases, there are several points

that must be addressed. First, substantial movements of at least a portion of chickens will reduce the number available for populating the general release area. Second, predators (primarily avian) will also exert an influence on the number of chickens that survive to produce young. If sufficient birds needed to provide a viable breeding population do not remain in the area, considering the pressures of predation and dispersal, then success is unlikely. Further, the ring-necked pheasant is likely to provide additional problems in establishing prairie chickens. In Illinois for example, where small remnant prairie chicken populations are intensely managed, cock pheasants often aggressively harass chickens on the booming grounds. Often, the only solution is to remove the offending pheasant. Additionally, hen pheasants are known to parasitize the nests of prairie chickens. While the simple act of a hen pheasant laying one to several eggs in a chicken's nest may be enough to cause the chicken to abandon, often the clutch is incubated to hatching. Unfortunately, the incubation period for pheasant eggs is 1-2 days less than for chicken eggs, leading to a situation where a hen prairie chicken may leave its nest accompanied by pheasant chicks, while as her own are abandoned near the hatching stage. That is an ominous threat in a state with as many pheasants as Iowa.

The fact that the chickens so readily abandoned the hills for the more open bottomland areas might also lead one to conclude that perhaps the habitat in the Loess Hills is less than desirable from a prairie chicken's point of view. Chickens are birds of open grasslands with little or no tree and brush cover. However, many of the areas in the Loess Hills are moving toward these later stages of plant succession, and hence, may not be attractive to prairie chickens. Fire was once the primary force keeping the Loess Hills in a grassland stage. However, human activities have largely eliminated the grassland fires that retarded the invasion of trees and brush.

Is it possible that prairie chickens might still be reestablished in Iowa? Probably, but not without significantly larger expenditures of effort and finances. The attempts so far have been relatively inexpensive, but are unlikely to achieve restoration. Chicken habitat requirements, movement problems and predation considerations are such that just dumping chickens out in habitat that might be suitable is a method that probably won't suffice.

An alternative is to begin preparing an area specifically for release of chickens. Recommendations for such a management area in Wisconsin include a 2.5 x 2.5 mile, essentially treeless area, with no less than 1,000 acres of undisturbed grassland in at least 160 acre blocks. Duplicating that in Iowa would be a tall order. Creation of such an area might combine a Commission Wildlife Management Area with surrounding private land leased specifically for chicken establishment. Another consideration might be the active removal of pheasants from such an area; a difficult task because grassland management beneficial to chickens will also be attractive to pheasants. Managing the area to discourage predators (i.e., the elimination of perch trees, etc.) may also be necessary.

A final consideration may be changing the methodology of trapping and transporting the chickens. Some biologists from other states feel that cannon-netting on the booming grounds is the best method for capture. However, birds would then be radio-equipped, released, and recaptured by nightlighting later in the summer during the molting period when cocks, and hens with entire broods could be relocated. Movement of chickens is lowest at that time of year, as are problems from predation. The primary advantage gained would be the ability to move discrete groups of birds that would be more likely to remain within a given area.

For now, we intend to continue monitoring results from the previous two releases. Attempts will be made to document the establishment of booming grounds over the next few years near the Onawa release area. Meanwhile, we will continue to search for more suitable areas which, with proper management, could support a small, self-sustaining population of greater prairie chickens.

Future efforts will require significant funding, drawn from a limited financial pool responsible for many other projects and resource problems that must be addressed. At the very least success appears to be a few years down the road. Someday though, Iowans may again be able to claim greater prairie chickens as a stable, resident nesting species.

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*Jim Wooley is a wildlife biologist located at the wildlife research unit in Chariton. He holds a B.S. degree from Central Michigan University and a M.S. degree from the University of Maine. He has been with the commission since 1977.*

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Artwork by Arlan Thorson



# Prairie Restoration and Management

By Steve Lekwa

The last few years have seen a dramatic increase in interest in all things connected to Iowa's prairie heritage. One area of interest that has really grown is the reconstruction of prairie on lands where prairie may not have existed for decades. This is being done for wildlife habitat, scientific, and aesthetic reasons.

Techniques for successful prairie reconstructions are still being researched, but the following advice is pretty much "state of the art" as far as Iowa experience is concerned.

## Seed Acquisition

One of the first items you'll need to think about is a seed source. For smaller plots, you may be able to harvest enough grass and flower seed by hand from local prairie remnants or even road ditches. Be sure to ask owners first!

You'll need to dry the seed thoroughly before storing it for the winter.

Special stratification (cold storage) treatments may improve germination of some species. Information on how to stratify seed is contained in publications such as the *Prairie Propagation Handbook*, Boerner Botanical Gardens, Whitnall Park, Milwaukee County Park System. It is also available from the Missouri Prairie Foundation, P.O. Box 200, Columbia, Missouri 65201. Mini-

mum stratification would be holding the seed over winter at no higher than 34°F. Try to keep it cool until seeding.

An alternative to hand collection and home processing is ordering seed from some of the special prairie seed dealers. (See Appendix 1.) This may be especially necessary for larger plantings of several acres. Plan to order seed of the genetic variety best suited to your climate and site conditions. Also remember that many of the prairie seeds are very bulky and contain large amounts of chaffy material. You will buy the seed in terms of pounds of pure live seed (PLS). Expect to pay around \$100 per acre for a good grass-forb seed mixture. The dealer can generally help you select the right varieties. (See Appendix 2.)

## Site Preparation and Seeding

Seedbed preparation is very important. Small plots can be rototilled and kept weed free for a season prior to planting. Larger plots may need to be fall plowed and disked several times prior to planting. Your site may need to be rolled to assure that the ultimate seedbed is weed free and firm. Prairie species do not like fluffy soil! Fertilizer is generally not needed, but some sites benefit from adding up to 60 pounds of phosphorus and 40 pounds of potassium per acre. Avoid adding nitrogen since it

encourages weeds more than prairie. Add lime if testing indicates it is needed.

No-till chemical seedbed preparation is possible now as well. You may need to burn the site off in early spring if the old growth is especially tall or dense. Roundup herbicide is then applied at recommended rates to the new green growth when it is six to eight inches high. The seeds are then sown directly into the standing dead stubble. (Give the spray at least a few days to work before seeding.) The stubble can be mowed right after seeding and will serve as a light mulch.

The smaller plots can be effectively hand seeded, raked in, and rolled, but the larger ones benefit from the use of a native grass drill such as the Truax. At least 25 of these units are in use around Iowa now. (See Appendix 3.)

Hand seeding rates may need to be slightly heavier, but in any case you should be striving to obtain around 40 to 60 seeds per square-foot density.

Prime seeding time is from mid-May to mid-June, but seedings can be successful as late as mid-July especially on small sites that can be hand watered.

You'll doubtlessly see weeds popping up before you see your new prairie seedlings. Prairie seeds are notoriously slow to germinate and even slower to

## APPENDIX 1

### 1984 PRAIRIE SEED DEALERS

This list is provided by the Iowa Conservation Commission as a service to Iowa landowners. No endorsement of any particular company is intended, and any omissions are unintended.

Albert Lea Seed  
P.O. Box 127  
Albert Lea, Minnesota 56007  
Phone: 507/373-3161

Arrow Seed Company, Inc.  
(forbs also)  
Box 722  
Broken Bow, Nebraska 68822  
Bluestem Seed Company  
Highway 46 East  
Grant City, Missouri 64456  
Phone: 816/786-2401

Jim Burdette  
Rural Route #2  
Diagonal, Iowa 50845  
Phone: 515/734-5793

Howard Christensen  
Rural Route #1, Box 20  
Wioia, Iowa 50274  
Phone: 712/783-4230

Earl May Seed and Nursery Company  
Box 500  
Shenandoah, Iowa 51602

Henry Field Seed and Nursery Co.  
(forbs also)  
407 Sycamore  
Shenandoah, Iowa 51602

Lafayette Home Nursery, Inc.  
(forbs also)  
P.O. Box 1A  
Lafayette, Illinois 61449

Lee Fats  
Rural Route #1, Box 75  
Mount Ayr, Iowa 50854  
Phone: 515/464-3671

Farmers' CO-OP  
300 Osage Street  
Creston, Iowa 50801  
Phone: 515/782-6411

Horizon Seed Company (forbs also)  
1600 Cornhusker Highway  
P.O. Box 81823  
Lincoln, Nebraska 68501

Phone: 402/475-1232  
Lynnville Seed Company  
Lynnville, Iowa 50153  
Phone: 515/527-2220

Ed F. Managelsdorg Seed Co.  
(forbs also)  
4500 Swan Avenue, Box 327  
St. Louis, Missouri 63166  
Phone: 314/535-6700

Keith McGinnis  
309 East Florence  
Glenwood, Iowa 51534  
Phone: 712/527-4308  
712/527-4875

Duane Ortiges  
905 Birch Street  
Atlantic, Iowa 50022  
Phone: 712/243-3814  
John Osenbaugh  
Rural Route #1, Box 106  
Lucas, Iowa 50151  
Phone: 515/766-6792



# Fury on the Prairie



By Dean M. Roosa

The fury of prairie fires was known to the earliest prairie inhabitants, the pioneers, and to every prairie animal. One of the most common remarks in pioneer journals related to the prairie fire — the fear engendered, the danger of carelessness, the methods of surviving and the renewal afterward. Native Americans intentionally started them to provide lush growth early to attract game. Fires swept across the interior of North America, across Iowa, frequently. Only the leeward side of lakes and streams escaped. In portions of Iowa, especially where wetlands prevented regular occurrence of prairie fires, burr oaks were able to withstand the fires. This left a community of scattered oaks with native grasses beneath — this community is called a savanna and is still visible across the state, but the native grasses have been replaced by bluegrass.

The prairie fire was instrumental in keeping the prairies treeless, particularly in recent times. Now that prairie fires are no longer a natural force, prairie managers must use controlled fires each spring in an attempt to duplicate the native conditions. Fires are used to prevent woody species from invading prairies, to induce flowering of certain species, and to recycle nutrients faster. Dogwoods and sumac are major invaders in the Loess Hills of western Iowa; quaking aspen and Siberian elm are rapid invaders in northeastern Iowa;

junipers (red cedar) are becoming a nuisance in many parts of the state.

Each spring management biologists burn a portion of most state-owned prairies. Usually no more than one-fourth of a prairie is burned at one time to assure small mammals, birds, and insects will not be eliminated. Burning is ordinarily done in late March and April, before the first prairie birds nest.

Conditions must be just right, with a light breeze and the prairie dry enough to support a fire. Many April mornings in Iowa are windy, causing a postponement. If an unusually wet spring occurs, few or no prairies get burned.

Participating in a prairie burn can be exciting. It can permit one to relive the fear and awe felt by the pioneers. It can also be dangerous, should the wind suddenly change. If this happens, there is a frantic effort to contain the fire lest it engulf the entire prairie and escape to nearby fields. Occasionally twisters or "whirlwinds" develop, creating the "roar of the prairie fire" so commonly mentioned in prairie lore.

The prairies and their resident plants and animals evolved with prairie fires. Plants have a sizeable portion of their biomass below ground and begin rapid growth after a fire and some require a fire to bloom and set seed. So, as drastic as prairie fires seem, they are an essential management tool. When you see a controlled prairie fire, reflect on the history and biology wrapped up in the flames as they leap skyward.

grow. The little seedlings will need lots of sun when they germinate so it is important to either remove the weeds by hand or at least keep your plot mowed to about six inches. Virtually all prairie plants are perennials and spend their first season growing root systems rather than leaves. A mature prairie has more living material below ground than above.

The primary competitors against prairie seedlings are cool-season grasses and annual weeds. Many of them start growing sooner in the spring and grow faster before the warm-season prairie natives start their growth. You may want to mow once or twice in May or early June of the second year, but then it is hands off unless there are particularly bad weed problems to deal with. Your new prairie should start to show some strength by the fall of the second year. Do not be surprised, however, if it takes as many as four to six years for some of the flowering plants to bloom.

Any discussion of prairie management would be incomplete without mentioning fire. It is the primary management tool used to maintain a prairie. Mowing and removal of the cuttings is a substitute in areas where burning is not possible.

Burn management (or mowing) usually takes place in spring or fall when

Ottolie Seed Farms  
Rural Route #1, Hwy. 14 N.  
Marshalltown, Iowa 50158  
Phone: 515/753-5561  
800/542-7894 (Toll Free)

Prairie Restorations, Inc. (forbs also)  
P.O. Box 327  
Princeton, Minnesota 55371

Prairie Seed Source (forbs also)  
P.O. Box 1131  
Des Moines, Iowa 50311

Richard Routh  
406 West Washington  
Mount. Ayr, Iowa 50854  
Phone: 515/464-2240

Sharp Brothers Seed Company  
(forbs also)  
P.O. Box 140  
Healy, Kansas 67850  
Phone: 316/398-2231

Stock Seed Farms (forbs also)  
Rural Route #1, Box 112  
Murdock, Nebraska 68407  
Phone: 402/867-3771

The Sexauer Company  
444 SW 5th  
Des Moines, Iowa 50309  
Phone: 515/288-0238

Wayne Vassar A-G Grain and Seed  
Rural Route #4  
Clinton, Missouri 64735  
Phone: 816/885-8521



*Truax prairie seed drill. A number of these are available through county conservation boards and the Iowa Conservation Commission.*

there is enough dry fuel to support the fire, and when most prairie plants are dormant. It can be beneficial anytime after the first year and should be considered at least every four years. The fire releases nutrients back to the soil, allows quicker warming of the soil in spring, and retards woody growth that might otherwise shade out a prairie.

Burning can safely be conducted as long as you have a source of water (garden hose, backpack sprayer, etc.) and not too much wind on smaller plots. Larger plots require some special techniques, but are also manageable when properly equipped. Mowed fire-check strips, rakes, fire swatters, and sprayers are almost a must. Your local conservation authorities can advise you of special techniques and precautions.

This discussion on prairie establishment is admittedly simplified. It does cover the main points, however. Much more information is available from literature and nearby local authorities such as county conservation boards, SCS personnel, and Conservation Commission biologists.

Begin planning early, at least the fall before planting. Be patient, prairies take time. Add all the forb seed you can afford to buy or collect. Remember that prairies are North America's most diverse plant communities. Learn all you can before you start. A word of warning is in order, however; prairie study can be habit forming. Once hooked, you will become one of a growing number of prairie freaks all over the midwest.

*Steve Lekwa is a ranger/naturalist for Story County. He holds a B.S. degree in fish and wildlife biology from Iowa State University and has been with the Story County Conservation Board for 12 years.*



## APPENDIX 2

### Typical Iowa grass varieties and rates

Grass & Variety	Pure Stand	Mixed Seeding Rate in Pounds/Acre				
		Shallow Soils	Deep Uplands	Overflow Soils (dikes, levees)	Erosion Areas	Wildlife Use Only
Big bluestem (Kaw, Pawnee)	8.0	1.0	2.0	2.0	2.0	1.5
Indian grass (Cheyenne, Osage, Nebraska 54)	8.0	1.0	2.0	2.0	2.0	1.5
Switchgrass (Blackwell)	6.0	0.5	1.0	1.0	1.0	1.0
Switchgrass (Cave-In-Rock, Kanlow)	6.0		1.0	2.0		0.5
Little bluestem (Aldous)	6.0	2.0	1.0		1.0	1.0
Side-oats gramma (Trailway)	8.0	1.5	0.5		1.0	1.0
Sand lovegrass		.25		0.5	.75	.25
TOTAL		6.25	7.5	7.5	7.75	6.75

## APPENDIX 3

The following County Conservation Boards have seed drills for loan or rent. Some are not special prairie type drills but may work.

Also check with your local Iowa Conservation Commission District Wildlife Biologist — or — your local county SCS office.

Osceola	Hamilton	Jasper
Kossuth	Grundy	Poweshiek
Winnebago	Black Hawk	Scott
Worth	Monona	Muscatine
Mitchell	Carroll	Madison
Palo Alto	Story	Jefferson
Plymouth	Marshall	Des Moines
Cherokee	Shelby	Van Buren
Woodbury	Guthrie	Lee





An Editorial

**THE PRAIRIE**

its formation, demise, and rebirth

Iowa was blessed with something unique in the world. It was the only state whose borders lay within the boundaries of the tallgrass prairie biome. Approximately 85 percent of Iowa, nearly 30 million acres, was once tallgrass prairie. It formed during a warm, dry period called the "xerothermic" or "hyp-sithermal" period which lasted from about 9000 years ago until about 3000 years ago. Think of it — century after century of grasses growing, dying, being incorporated into the soil. No wonder it gave rise to the blackest, richest soil imaginable.

At first pioneers considered the prairie soil worthless. "If it can't grow trees, it sure can't grow corn," was a commonly quoted phrase. At first too tough to break by the wooden breaking plow, the John Deere invention of the mold-board plow suddenly made the turning of the sod possible. Our prairies were essentially gone by the turn of the century. Our agricultural economy is entirely built on the soil created by centuries of prairie grasses. Those who live off the "breadbasket of the world" should be thankful for the black soil of the Midwest — a direct result of areas once dominated by tallgrasses — a direct result of a warm period in our distant past. Thank goodness for the xerothermic!

Unfortunately, when we turned the sod, we did so with a vengeance. Today we have perhaps 10 thousand acres of prairie left — a pitiful vestige of a once-magnificent biome. It would have been so easy once to set aside a township in Iowa to forever be prairie — as a benchmark for soils studies, as a genetic reservoir, as a living museum, as a

history lesson. Today we spend much time locating tiny and tinier remnants and we get truly excited if we find a 20-acre treasure previously unknown. Much of our prairie vegetation exists along railroads, but these are becoming a thing of the past nearly as fast as the prairie. The diversity of a prairie remnant is incredible, with the vascular plants, the mosses, lichens, soil nematodes, small mammals, bacteria, insects, spiders and fungi.

It is my opinion that we cannot afford to let another prairie remnant be destroyed. Our society can well afford to protect them. We owe all school-age children the chance to become acquainted with a native prairie — to see what their ancestors had to contend with, to see what Iowa looked like before it was a state.

In the past 20 years, there has sprung up a movement of prairie enthusiasts. These are scientists, artists, flower fanciers, landscape architects, photographers, historians, teachers, legislators and farmers. Prairie reconstruction projects are common. Events like the North American Prairie Conference, Prairie Heritage Week, prairie walks, Prairie Day and the Loess Hills Prairie Seminar have led the way by acquainting many people with the special nature of our prairies. Some counties have ceased their blanket roadside spraying campaigns and prairie vegetation has begun to make a comeback.

Perhaps you have a native prairie patch on your property; if so, I urge you to respect it for its history, beauty and complexity. It is Iowa. It is only fitting that it has an honored place.

Dean Roosa

**GOVERNOR PROCLAIMS SEPT. 2-8 PRAIRIE HERITAGE WEEK**

Governor Terry Branstad recently proclaimed Sept. 2-8, 1984, as the second annual Prairie Heritage Week in Iowa.

The proclamation urged the state's resource managers, educational leaders and concerned individuals to develop programs aimed at increasing people's awareness of Iowa's prairie heritage and protecting these ecosystems.

As a part of Prairie Heritage Week, Marietta Sand Prairie, a 15-acre tract in Marshall County, was dedicated as a state preserve on Sept. 6. Governor Terry Branstad was present for the dedication ceremony.

"Iowa's agricultural success is based directly on the rich topsoil these prairies created," says Dean Roosa, State Ecologist. "Iowans

need to be made aware of the living museums they have in our prairie remnants. They provide not only beauty, but wildlife habitat, erosion control and invaluable natural classrooms." The Iowa Conservation Commission is inventorying key elements of Iowa's natural heritage. Persons knowing of rare plants, animals, special geological features or remnant tracts of native vegetation such as prairies are encouraged to contact the Commission's Natural Areas Inventory, Wallace State Office Building, Des Moines, Iowa 50319. Persons interested in more information on prairies should contact the Iowa Conservation Commission (at the above address) or their local county conservation board.

**DEDICATION — CEDAR VALLEY NATURE TRAIL**

Everyone is invited to attend and participate in the dedication ceremonies on Saturday, October 13, 1984 for the Cedar Valley Nature Trail. This 52-mile trail is an abandoned railroad that has been converted for walking, jogging, bicycling, cross-country skiing, and outdoor education. The phrase "Trail of Two Cities" has been coined as its motto since it connects Waterloo and Cedar Rapids.

Many activities are being planned for the day including relay races, photo contests, scavenger hunts, plant identification competitions, and marching band parades. Formal dedications will be held at the Gilbertville Depot at 2:30 P.M., midpoint bridge at

12:30 P.M. and Center Point Depot at 11:00 A.M. The depots have been restored and are now beautiful reminders of Iowa's past. Governor Terry Branstad has been invited to attend these ceremonies.

The Cedar Valley Nature Trail has been developed through hard work by a mixture of private and public organizations, including the Linn County Conservation Board, Iowa Natural Heritage Foundation, Iowa Rails to Trails, and Old Interurban. For more information on the trail and the October 13th dedication, contact the Linn County Conservation Board, 1890 County Home Road, Marion, Iowa 52302, Phone: (319) 398-3505.





## Book Review

*Where the Sky Began:  
Land of the Tallgrass Prairie.*  
John Madson. Houghton  
Mifflin Co. 1982. \$13.95

John Madson has long been one of my favorite storytellers, whether listening to him in person or reading what he has written. This book only enhances that feeling. Madson is an Ames native and draws many of his examples and illustrations from Iowa prairies.

He sets the stage in the first chapter, "Beyond the Wooded Country," by following the first settlers from the east coast to where trees became sparse, discussing the formation of prairies in a geological sense — the reasons why prairies are treeless and how the passing of the "red buffalo" was a contributing factor in the demise of the prairie. This discussion he entitled "Fire Ice and Mountain." The "red buffalo" was not a buffalo, but a...well, I'll let you read the book to learn its identity.

In subsequent chapters, "Lawns of God" and "The Far Gardens," he discusses many plants that define a prairie and almost all such plants are Iowa natives. He goes on to write of the prairie soils and prairie animals, discussing them from the first-hand knowledge acquired over a lifetime of poking into corners of the Midwest. The result is a book-long field trip that the reader shares with the writer. He closes out part I, "The Place," with a vivid portrayal of the awful winters, the boiling summers and the impressive tornadoes.

In part II, "The People," Madson weaves the story of the early settlers — their personalities, origins, peculiarities, and how they changed the prairie and how the prairie changed them. It was a land of "beginning again"



for those wishing to put down roots in rich soils of their own choosing.

Madson describes what the prairieland was like after the plow — the wistful thoughts of present-day prairie farmers who realize what we have lost and the subculture which has sprung from the tallgrass prairie soil. In the final chapter, "People Pastures," he writes of those special people he knows who share a common love of prairies. A number of those mentioned are Iowans. He tells of the renewed interest in prairies, in the number of propagation projects being started, and the trials and tribulations of starting one's own prairie. He even has one such prairie in his backyard. He ends the chapter with a fine plea for the establishment of a prairie national park. He includes as an appendix the location, name, size and county of 180 prairies in 12 states.

The book has added depth due to the black and white

drawings by Dycie Madson. These capture the feelings — the loneliness, the beauty, the despair and the hope of the prairie.

How far-fetched is the establishment of a tallgrass prairie national park? Read this book and you may decide that we cannot afford to let the opportunity pass.

"It would be a special place, with an essence not found in mountains, desert, or any other openlands. There is a mysterious something about the native grasses — a power, a spirit that both stirs the soul and quiets it. Whatever that mysterious essence, it lives only on true prairie under a broad vault of pure and intense light — where the young prairie-born winds comb tallgrasses, carrying larksong and scent of ancient gardens, running unchecked from pasque flower ridges down to sloughgrass meadows where the blue flag and wild orchid grow."

By Dean Roosa

## SEMINAR PLANNED

An autumn seminar will be held at the Mines of Spain area south of Dubuque Oct. 12-14.

The Mines of Spain Autumn Seminar is a weekend field school that offers a diverse program of cultural and natural resource studies taught by distinguished researchers, educators and naturalists. The focus of the seminar will be on the Mines of Spain, an ecologically and culturally rich 1,300-acre conservation area located along the forested bluffs of the Mississippi River south of Dubuque, Iowa. The theme for this year's seminar will be "Endangered Species."

Interpretors from Minnesota, Wisconsin, Illinois and Iowa will lead sessions on topics that include aquatic studies and resources, mycology, raptors, prairies, management habitat types, archeology, geology, bats, photography and wildlife ecology. The keynote speaker Friday evening will be James Engel, endangered species specialist for Region 3 of the U.S. Fish and Wildlife Service.

The seminar is cosponsored by the Iowa Conservation Commission and the Iowa Preserves Advisory Board in cooperation with the Iowa Natural Heritage Foundation and the Friends of E.B. Lyons Nature Center.

Advance registration is required. The program cost is \$15 per person. The Saturday hog roast is \$5 which includes folk music and campfire storytelling.

For further information regarding the seminar contact Mike Abel, E.B. Lyons Nature Center, R.R.#2, Old Bellevue Rd., Dubuque, Iowa 52001; 319/556-0620.



# DONATIONS

The following artists responded to the Commission's request to help in completing the only public collection of all Iowa art stamp prints:

Artist	Year	Stamp Design
John Bald, Davenport	1977	Trout
Paul Bridgford, Altoona	1980	Waterfowl
	1980	Trout
Patrick Costello, Maquoketa	1979	Habitat
Nick Klepinger, Reasoner	1976	Waterfowl
	1978	Waterfowl
	1981	Trout
Jim Landenberger, Cedar Rapids	1974	Waterfowl
	1975	Trout
	1979	Trout
Thomas Murphy, Brooklyn	1973	Waterfowl
Andrew Peters, Council Bluffs (now Omaha)	1979	Waterfowl
	1980	Habitat
Ken Prestley, Bettendorf	1976	Trout
Brad Reece, Des Moines	1981	Waterfowl
Mark Reece, Des Moines	1975	Waterfowl
Maynard Reece, Des Moines	1977	Waterfowl
	1981	Habitat
	1982	Trout
Craig Ritland, Waterloo	1974	Trout
Tom Walker, Council Bluffs	1982	Waterfowl
	1982	Habitat

The collection currently consists of 13 Iowa waterfowl stamp prints, 11 Iowa trout stamp prints, and 6 Iowa habitat stamp prints. The waterfowl stamp art contest program was initiated in 1972 and was followed by stamp art contests for trout and habitat programs in 1974 and 1979.

All prints in the collection are currently being rematted and reframed for permanent display at the Wallace State Office Building. The collection will also be available for public touring exhibition upon request.

## OTHER DONATIONS

Dietz Corner Antique Study Club Des Moines	\$100 for restoration of dwelling at Plum Grove
Mr. and Mrs. Rick Chase, Solon	\$50 for water connection hook-up at George Wyth State Park
Alice Ocheltree, Mason City	\$50 for wildlife
Black's Tire Company and Horsman Tire Service, Ottumwa	Truck rims for Lake Wapello State Park, \$725 value
William C. Brown Publishers, Dubuque	Books for E.B. Lyons Nature Center, \$101.50 value
Mr. and Mrs. Don Lakin, Dubuque	Observation beehive for E.B. Lyons Nature Center, \$100 value

Cedar Rapids Bass Masters	Pipe to anchor a boat dock at Pleasant Creek State Park, \$189 value
Mrs. George Preston, Anamosa	Indian artifact collection for Wapsipinicon State Park, \$350 value
Mr. Frank Deutmeyer, Stone City Quarries, Anamosa	Truck rims for Wapsipinicon State Park, \$250 value
Mr. Roger D. Perkins, Anamosa	Two electrical junction boxes for Wapsipinicon State Park, \$179 value
Mr. Bert Katz, Katz Salvage and Auto Parts, Inc., Marion	Reinforcing rods for Wapsipinicon State Park, \$200 value
Jim Smith, Spirit Lake	.9-acre donation to be an addition to East Okoboji Slough
Wilfred Bohr, Winneshiek County	Public access to Cardinal Marsh
Dr. Harry Liventals, Indianola	5,880 pounds of sunflower seeds, \$1,400 value
Paul Hursh	30-acre tract of land in Iowa County
Edward and Grace Anderson, Woodward	2½-acre tract of land in Woodward
Cedar Rapids Bass Masters	\$2,500 contribution for purchase of a new boat dock at Pleasant Creek Recreation Area
Omaha Audubon Society	Cedar plywood for kestrel boxes, \$55 value
Crossman Arms Company	200 pairs of shooting glasses for the Big Creek Shooting Range, \$500 value
Nevada Community School District	\$50 contribution to replace U.S. and Iowa flags at the Conservation Education Center
Lions Club, Algona	15 squares of shingles and labor to reshingle lodge at A.A. Call State Park, \$855 value
CRST, Inc., Cedar Rapids	100 truck rims for Pleasant Creek Recreation Area, \$2,500 value
Mr. Ed White, Monticello Wreckers, Monticello	100 truck rims for Wapsipinicon State Park, \$2,500 value
Mr. Bill Halpin, Halpin Tire Service, Prairie du Chien, Wisconsin	30 truck rims for Pikes Peak State Park, \$90 value
Mr. and Mrs. Paul Sagers, Maquoketa	Stone for restorative work at Maquoketa Caves State Park, \$500 value



## FORT ATKINSON RENDEZVOUS SEPTEMBER 29-30

Demonstrations of frontier crafts, cooking and lifestyles will again bring the partially restored Fort Atkinson State Preserve back to life during the Seventh Annual Fort Atkinson Rendezvous, Sept. 29-30. The event is sponsored by the Iowa Conservation Commission and the community of Fort Atkinson with the approval of the Iowa Preserves Board.

Fort Atkinson, located 14 miles southwest of Decorah on Highway 24, has been the

site of the rendezvous for the past six years, delighting thousands with its recreation of 1840's frontier life. Over 150 "buckskinners" complete with tepees, trade blankets and period garb will present tomahawk throwing contests, black power shooting demonstrations, cannon firing by an 1840 military unit, and demonstrations of period crafts such as rope making, canoe construction, candle making and weaving.

## FOREST CRAFT FESTIVAL to be Held Oct. 13 and 14

The variety of uses for wood will be the theme for the fourth annual Forest Craft Festival to be held Saturday and Sunday, Oct. 13 and 14, at Lacey-Keosauqua State Park, south of Keosauqua in Van Buren County.

The festival will feature ways to use wood for crafts and building, using wood as fuel and ways to use the forest for maximum wildlife benefit. The festival is sponsored by the Iowa Conservation Commission and the people of Van Buren County.

Craftsmen from Iowa and surrounding states will be demonstrating various ways to work with wood and will have some of their creations for sale. Some of the demonstrations will include a wood powered car, log home construction, sculpting and carving, antique furniture restoration, chainsaw carving and yardstick and broom making.

The Iowa Conservation Commission will demonstrate cannot netting, a harmless method of live-trapping wild birds and animals. The commission will also demonstrate how a woodland can be managed to provide enjoy-

ment to visitors without disturbing the ecological balance.

Other demonstrations will include ways to use food as fuel, which woods burn best, as well as how to properly manage a woodlot.

Participants will have a chance to try their skill with a cross cut saw or buck saw. Festival goers can also learn to identify trees, see a sawmill in operation, learn how timber is cut and how to produce top-grade lumber.

The Forest Craft Festival is free and open to the public. The exhibits and demonstration will be open from 10 a.m. until 6 p.m., both days. Free bus transportation from downtown Keosauqua will be provided from 10 a.m. until 5:30 p.m. Lacey-Keosauqua State Park is located in Van Buren County in southeast Iowa, 38 miles southeast of Ottumwa on Highway 1.

Van Buren County will be holding its Fall Festival of Colors the same weekend. Activities will include an Autumn Arts and Craft Festival, tours of Bentonsport homes, a quilt show, antique and flea markets and hot air balloons.

## CONSERVATION BOARDS PRESERVE AND RECONSTRUCT PRAIRIE

By Steve Lekwa and Steve Dermand



Most of the state was settled between 1840 and 1860 and the past 130 years have been hard on prairie in Iowa. Only 3,000 acres of the original 29 million acres of prairie are protected today and county conservation boards manage nearly 2,000 of these acres.

Recent research conducted by Iowa's Natural Areas Inventory have identified nearly 25,000 additional acres of prairie remnant still in private or public hands, but unprotected. County conservation boards played an important role in this research. Professional county conservation board employees were able to identify and document local prairie remnants. Many boards are now striving to protect these remnant areas in a number of ways, including acquisition, education, and through Iowa's recently passed property tax exemption program, commonly called the "Slough Bill."

Conservation boards acquire and manage prairies in a number of ways. Nearly half of the 1,945 acres counties manage has been purchased outright with funds from the boards' own internal budgets. Some 250 acres in 16 areas have been donated to county conservation boards. Over 150 acres in 19 areas were acquired from other agencies and private

individuals through management agreements. Another nine areas encompassing 143 acres are managed through leases and easements. Cost-sharing funds such as Iowa's Wildlife Habitat Stamp program have helped fund an additional 19 areas containing 439 acres.

The prairie remnants managed by county conservation boards include five major types and a number of unique smaller areas such as sand prairies and floodplain prairies. The major types include: pothole prairies of northwest and north-central Iowa, hill prairies of northeastern Iowa, the famous Loess Hills along the Missouri River, the southern rolling clay prairies, and the black soil mesic prairies of the central and western portions of the state.

Native prairie remnants are only a part of the county conservation board's prairie program, however. Many boards have active prairie reconstruction programs as well. This effort is barely ten years old, and already more than 2,800 acres of new prairie has been established. Twenty-five seed drills have been acquired by county conservation boards during this time, primarily for prairie reconstruction efforts. The statewide distribution of this



# Leaders in Conservation

equipment and the cooperative spirit which county conservation boards share with other agencies and individuals ensures that all Iowans have access to the special equipment and expert advice necessary for successful prairie establishment.

County conservation boards have made special efforts to utilize local seed sources in several cases. Seed has been harvested mechanically and by hand from native remnants. Excess seed has been shared with other agencies and individuals for use in their reconstruction programs as well.

The county conservation boards have long recognized that the key to wise use of our resources lies not only in legislation but in education. Conservation boards in 45 counties now have full-time professional naturalists on staff, and more than 75 percent of the boards offer conservation education as part of their overall program. Some 160 programs on prairies were given by county conservation boards during the past year to schools, civic groups, technical workshop groups and others. Boards are also involved in large workshops attracting hundreds of people and lasting several days such as Cerro Gordo County's Prairie Marsh Rendezvous, Pocahontas County's Tallgrass Heritage Gathering and the well-known Loess Hills Prairie Seminar which the Monona County Conservation Board helps sponsor each year.

Iowa is the only state which falls entirely within the tallgrass prairie community. Iowa has also lost more of its native plant cover than most, if not all, other states. County conservation boards are playing an important role in reminding people of their natural heritage and seeing to it that significant elements of that heritage are preserved for future generations to enjoy.

*This column usually describes the work and interests of a contemporary conservationist. Although the two individuals included here are no longer living, their dedication to the preservation of prairie in Iowa must be presented in this special issue.*

## ADA HAYDEN

Dr. Ada Hayden was the first woman to earn her Ph.D. from Iowa State University. She was a student of the Iowa flora and curator of the university herbarium. Although she studied all plant communities, her special interest was the rapidly vanishing prairie.

Her concern culminated in a survey of prairies under a grant awarded by the Iowa Academy of Science wherein she located and described native prairie tracts and urged their preservation. Working without sophisticated serial photographs or maps, she was able to track down and describe in detail 32 prairies and give the location of 89 others. All this came from a \$100 grant! Often her description was accompanied by a black and white photograph of the prairie. This work, completed in 1945 and published in 1946, provided the emphasis for the purchase of three prairie gems — now all state preserves. One prairie, located in Howard County and purchased by the State of Iowa prior to her survey, now bears her name. Another, described in her original report and located in Emmet County, was purchased with open space funds in 1978. Her reports continue to be of value.

Hayden was a forward-thinking conservationist, ahead of her time. She provided the rationale for prairie protection, nearly ignored during her lifetime, but now

in vogue. It was Hayden and other pioneer spirits that helped provide the diversity our state contains today.

## BOHUMIL SHIMEK

It is true our prairies, after ruling Iowa for several thousand years, vanished in the blink of an eye. Their passing, nearly unremarked, was a tragedy but would have been even more so without the writings of Dr. Bohumil Shimek. His observations, began around 1875 and continued until his death in 1937, provided a glimpse of Iowa when it was a young state. Shimek was first a geologist, second a botanist and malacologist. He wrote extensively on Iowa prairies and was one of the first to sound the alarm over their disappearance. He collected and entered the specimens into various herbaria. Because his specimens were unnumbered, we have no way of knowing how many vouchers he contributed, but it is common to see his name on a herbarium sheet whenever a case is opened.

Shimek was instrumental in forging Iowa's early conservation plan and even proposed an extensive prairie protection plan. Unfortunately, it was not implemented.

His tireless collecting and ambitious writing have provided us a wealth of information on the original prairie. His efforts still bear fruit — a few weeks ago, two of us were investigating the status of a plant Shimek had collected in 1901 and had not been reported in the state since. We went to the site, guided by the information on the herbarium sheet label. There it was — a small clump persisting in the same location after 80 years. I followed his footsteps and found his spirit still living on the native prairie.

## THE NATURE CONSERVANCY

The Nature Conservancy is a national, nonprofit, member-governed conservation organization. Its main concern is the preservation of ecological diversity through the protection of natural areas. Over 1,500,000 acres throughout the United States have been preserved through the efforts of the Conservancy.

The Iowa Chapter of the Nature Conservancy was organized in 1963 as an outgrowth of interest in conservation and land preservation by a number of private citizens and professional conservationists. Today, members range from layperson to scientist, from casual birder to professional archaeologist. All share a single goal — the preservation of natural environments for future generations.

The Iowa chapter has acquired a number of areas the largest of which is the Loess Hills Nature Preserve. This 790-acre tract of picturesque hills is located 12 miles north of Sioux City. Ridgetop prairies overlooking deep, wooded ravines are a fine example of this unique landform.

The conservancy has also been instrumental in the establishment of the Iowa natural areas inventory, a system for gathering and making available information on critical habitats and other features of ecological importance. The Iowa registry of natural areas, another state chapter program, encourages the preservation of important natural lands in private ownership.

For further information on this organization of dedicated conservationists contact: The Nature Conservancy Iowa Field Office, 424 10th Street, Suite 304, Des Moines, Iowa 50309. Phone (515) 244-5044.







# Prairie Hayfields

By Wayne Schennum

A major factor leading to the persistence of prairie remnants in northern Iowa is the tradition of harvesting native or "wild" hay. All of the large prairie remnants in this region of rich agricultural soils, both privately owned and those now in public ownership, were used to harvest prairie hay, including the state's largest blacksoil prairie, Hayden Prairie, in Howard County. A number of other smaller remnants are or were also used as native hayfields. Many of these prairies are in the pothole region of northwest and north-central Iowa so that a small number of remnants of the original vast expanse of this prairie-marsh complex have been preserved by the haying tradition.

Consultation with some of the Iowa farmers who continue to harvest prairie hay indicates why this tradition persists. In contrast to Old World grasses and legumes adapted to the cool temperate climate of northern Europe, prairie grasses and flowers are better adapted to the cycles of drought and heavy rain and violent temperature fluctuations of the Midwest, as well as to its soils. They are thus more nutritious and most useful in improving the health of sick cattle. One could infer that maintaining cattle on prairie hay would then keep them healthier, also.

Many prairie hayfields in Iowa have been "enriched" with Old World hay plants such as timothy and red clover, by discing in the seed of these plants. This has been done again because of tradition, based on greater familiarity with Old World plants. This practice disturbs the native prairie sod during discing, and in the years following, presents the prairie plants with severe competition, especially when the time of haying is considered. Iowa farmers generally hay their prairies in mid-

August. By this time, the Old World plants have passed their prime season of growth (May to June), while the prairie grasses are in the midst of theirs. Continued haying in mid-August, or even earlier, thus selects against the prairie grasses and favors the Old World species. Many of the prairie forbs which reach peak growth in August gradually decrease in size as their food reserves are depleted by the early harvest. Again, farmers indicate that August (or earlier) haying is done to complete the work before the fall grain harvest and to leave more time for the hay to dry. Fortunately, the early harvest has little impact on many prairie wildlife species. Prairie birds nest and fledge young earlier and nearly all obligate prairie butterflies complete their life cycle by the end of July.

Until the push for monocultures of soybeans and corn, prairie hayfields and large prairie pastures were more common in Iowa. Now very few remain. Tradition and an appreciation for the aesthetic and nutritional values of prairies by their owners are in every case responsible for the persistence of these few known remnants. These Iowans who manage these areas properly are preserving a piece of their heritage and, at the same time, learning about the prairie and its pragmatic value to their farming operation. They are solely responsible for the protection of our only remaining large Iowa blacksoil prairies, large enough to support the prairie and much of its animal life, as the state's first settlers saw them.

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*Wayne Schennum serves as ecologist for the commission's Natural Areas Inventory. He received a Ph.D. in biology from the University of Illinois in 1975.*

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## Nature Tale for Kids

Taxie —

### The Good-Natured Badger

By Dean M. Roosa

Badgers are among the most nonsense animals on the prairie. They can dig like machines, fight like demons and generally take a pretty somber view of life. Built in the most compact manner with long, sharp claws, they have caused many dogs to wish they had shown better judgment before challenging a fight. Badgers may reach a weight of over 20 pounds as adults, with an overall length of 30 inches. They are built low to the ground and appear almost flat as they rush through the vegetation. It is only the lucky prairie visitor that catches a glimpse of one. Probably every native prairie had a pair in presettlement days, and many prairie relicts have a pair today. But they have learned to live in farm fields and woodland edges, so Iowa still has a goodly number.

Because of their serious approach to life, it was truly remarkable when a family settled on the ridge of a prairie in what is now northern Iowa. You see, they...but wait, I'm getting ahead of myself. Let me start at the beginning.

Before there was a place called Iowa, there was a seemingly never-ending grassy wilderness in the upper Midwest. This, the tallgrass prairie, was interspersed with potholes, dry gravelly ridges and the greatest array of wildlife imaginable. The prairie was magnificent; badgers and bison loved it, cranes and cerlews cherished it, and the new trickle of pioneers both hated it and were awed by it. Occasionally, a schooner would be seen slowly travel-



ling across the land. The dry ridges were treasured places for animals — they provided a good view, were composed of material that was easy to dig, and here grew the shorter grasses that permitted smaller animals a favorable view. These dry ridges often contained a badger den and a family that claimed a large tract as their own. On a certain ridge in this presettlement land a pair of very ordinary badgers met, courted and settled into a den. The prairie abounded with tasty morsels, the prairie was lush, life was good.

The following spring these two very ordinary badgers gave birth to three very ordinary kits and one which inherited all the proper badger traits — except the somber outlook. This one, named Taxie, was enthralled with life — today we might call him happy-go-lucky. While the other three were snoozing, Taxie was busy exploring — first the dark corners of the den, then that wonderful breezy area just outside the den. His mother, being a serious badger, took a dim view of these wanderings. She would occasionally find him high on the ridge, chasing butterflies; she would explain as only a mother badger can that being so far from the den is dangerous and such frivolity was... well, not badger-like. While the mother was teaching her new family to dig and hunt, fight and utilize their camouflage, Taxie just might be stretched out in the sun, enjoying the gentle breeze that is always present on the prairie. The serious business of hunting was the farthest thing from his mind, and digging...that was pure drudgery.

Later that summer, Taxie was on his own. He eventually learned to hunt and dig, stealthily capture small mammals when he got hungry and fight under only the most dire circumstances. But, he would much rather bedevil the harrier that nested in the nearby swale — he enjoyed the swoops and dives, alarm calls and near-misses when he got close to the nest. He would sneak to the nearby ridge where a pair of burrowing owls had taken up residence in an old badger den. He enjoyed their funny calls when alarmed. His most pleasure came from sneaking up on a grazing bison and delivering a cuff to the animal's nose. The surprised snort and occasional stampede were pure fun to Taxie.

The rather sudden intrusion of settlers into the prairie caused many animals to



Illustration by Rex Heer

leave. Not so for Taxie. He would sneak into their camps at night, dig in the trampled grass, hassle their dog, should they have one, and leave before anyone got up in the morning. Once, however, he was captured by a pioneer that was well acquainted with badgers in Indiana and northern Illinois. The settler put Taxie in a makeshift cage and put the cage in the back of the schooner for others to see. This would have been a terrible shock to any badger except Taxie — this was a new experience and he even slightly enjoyed it. But, after two days he tired of it and used his powerful muscles and sharp claws to wreck the cage and escape.

And so Taxie grew to adulthood — he became a beautiful badger with distinctive black and white facial pattern and glossy coat. The true extrovert, he was the last to hibernate, the first to

emerge in the spring. He lived life to the extreme and was not at all well understood by other badgers with whom he attempted to play. "What nonsense!" they seemed to say.

He lived for 11 fun-filled years on the ridges in the tallgrass prairie, this unique land that was to become Iowa. His brothers and sisters dispersed to other ridges in the prairie, grew up and raised families. Taxie never mated or raised a family; partly because he was too busy enjoying life, but also because of a law of nature that decrees that those members of a species which are different from the norm seldom mate. Thus, Taxie's good-natured genes were not passed on to the race — leaving badgers to be serious animals, generally without humor who can dig like machines, fight like demons and generally take a pretty somber view of life.





## WARDEN'S DIARY

### The Love of Fall

By Jerry Hoilien

The weather's changing now. Leaves are beginning to turn as the air cleans itself of its sticky moisture and takes on a new crispness. Deep blue skies frame the pure white billowy clouds as they drift across your world. It all puts a bounce in your step as you take a deep breath and ready yourself for the best time of the year — the fall. I look forward to it each year. I guess I look forward to all of the seasons, but especially the fall. It's harvest time — the apples are bright red on the trees and it's a busy time — getting ready for winter, cutting and stacking the firewood, putting up the onions and potatoes, getting the canning done.

Don't you feel sorry for those who are too busy doing other things to get involved in the finer things of life? Gathering nuts, cracking them and picking out the meats to make those delicious cookies and pies later on this winter — it should be a requirement, no, I guess that wouldn't work at all. You can't mandate, require or legislate things of that nature. They have to be part of your life, part of something you love or at least appreciate. Love will come with time, if you have time.

Take the time to do those things now. Don't just dream about those things you did when you were young. Your folks did them with you, remember? They probably didn't explain that part to you. That part was for you to learn as you matured. They've hopefully invested in you the experiences of the "Good Life." The hunting and fishing, picking berries, gathering nuts, walking in the woods with homemade bread baking in the oven luring you homeward, watching a

hawk circle in the sky and the haunting cry of the wild goose moving south in the fall

I had a friend, not too long ago, who was always going to do this or that *one day!* We were always going to take time and go fishing or hunting or something. But things always kept getting in the way. Too many things *had* to be done. I helped carry him to his grave recently. He never made it to retirement and for the life of me I can't recall all of those things he was so busy with. I'm sad for all the times we missed. I miss him and wish that we could go back in time and redo what we should have taken the time to do.

Take time today and tomorrow to fill your soul with the richness of the outdoors and rekindle that spirit and warmth your folks started in you so long ago. That warm glow and good feeling you'll have when you appreciate and feel as one with mother nature will grow and grow. And after you've grown to that new level you'll find still another miracle. You'll want to share with a friend or a son or daughter that special feeling. But remember you can't force it. Expose them to it, let them see and feel that special feeling, that warm rich glow you've learned to love — "THE GOOD LIFE." You'll have to be patient and wait. They'll be busy for a long time. Some take longer than others, but be patient, they'll come to realize someday just what you were trying to do for them. They'll get there, if you've planted the right seeds. They'll mature and know what you and I know. And with love they'll pass it on to others.

Have a good fall!

# Iowa's

The state preserves law allows the Governor to designate areas as state preserves. After such designation, these tracts are given the highest form of protection available. To date, 21 tracts of native prairie have been so designated. Many are owned by the State of Iowa, some are owned by The Nature Conservancy, one each is owned by Linn, Webster, and Warren County Conservation Boards, one is privately owned, and one is owned by the University of Northern Iowa. These prairies serve as living museums of native Iowa and as outdoor laboratories for scientific studies.

### Anderson Prairie

The Anderson Prairie, located three miles northwest of Estherville in Emmet County, consists of 200 acres. Its inclusion in the state preserves system ensures protection for at least two plants and one bird listed on the state endangered species list.

Situated on the West Fork of the Des Moines River, the Anderson Prairie is typical of the knob and kettle topography left by the retreat of Iowa's most recent glacier. The rolling terrain rises from native prairie to an oak-hickory savanna draining to the river. The unique prairie landscape includes high gravelly hills and small potholes. Among the rare flora are kittentails and prairie bush clover. Other native species found here are pale purple coneflower, Michigan lily, butterfly weed, rattlesnake master, and leadplant.

The rare upland sandpiper has successfully nested on the prairie. Its high-pitched whistle can be heard on quiet mornings and evenings in May. Redtails and marsh hawks hunt the area; songbirds such as bobolinks, vesper sparrows, and meadowlarks are heard in spring and summer. Goldfinches nest after the thistles bloom in late summer.

Due to the disappearance of natural prairie fires and grazing bison, prescribed burns are part of the preserve's maintenance.

### Cayler Prairie

Cayler Prairie was purchased in 1960. This 160-acre tract is located in



# v's Prairie Preserves

By Dean M. Roosa

Dickinson County, three miles east and three miles south of Lake Park. About 75 acres are upland prairie and the remainder mesic to lowland prairie. It is located at the edge of a moraine, which accounts for its gently rolling topography and diverse plant life of which 265 species of 53 plant families have been recorded. Some of the more abundant plants from this prairie are lead plant, blazing star, prairie rose, goldenrod, prairie clover, scouring rush, pasque flower, wild pea, yellow coneflower, ground cherry, and prairie violet as well as some very rare species.

Cayler Prairie was designated as a national natural landmark in 1966 and dedicated as a state preserve in 1971.

## Clay Prairie

The Clay Prairie is a 2.64-acre tract in Butler County, three miles south and one mile east of the junction of Highways 3 and 14 at Allison. It was purchased in 1961 by the University of Northern Iowa and named for John B. Clay, who was instrumental in preserving the prairie. Although small, the prairie is known to support at least 98 species of plants. In May, hundreds of shooting stars can be seen; this is followed by purple avens, Indian paintbrush, downy gentian, and rattlesnake master. The prairie was dedicated as a state preserve in 1976.

## Crossman Prairie

Glenn Crossman of Riceville donated this 10-acre prairie remnant to the Iowa Chapter of The Nature Conservancy for perpetual protection as a preserve. It is an example of a wet tallgrass prairie, once common in this part of the state. It is located in Howard County, three miles northwest of Riceville. The prairie provides suitable habitat for many species of prairie plants, some very rare. For example, the swamp birch is currently known from only a few locations in Iowa. Other notable members of the prairie flora include several species of orchids, the wood lily, marsh marigold, and a grove of quaking aspen. Dominant grasses are big bluestem, bluejoint and sloughgrass.

## Dinesan Prairie

Consisting of 20 acres three miles northeast of Harlan, this gently rolling prairie was maintained in its native condition by the owner, Derald Dinesen, who realized the Iowa prairie was nearly a thing of the past.

A diverse mesic prairie flora is present, with an unusual amount of false indigo, porcupine grass and prairie horsetail. Other species noted on a May visit include: round-headed bush clover, rattlesnake master, golden alexander, pale-spiked lobelia, larkspur, prairie turnip, June grass, butterfly milkweed, puccoon, tickseed, toadflax, native milkweed, compass plant, Canada anemone, leadplant, birdfoot violet, false goat's beard, and tick-trefoil.

The prairie serves as excellent habitat for birds such as bobolink, dickcissel, western and eastern meadowlark, vesper sparrow, ring-necked pheasant and upland sandpiper.

The following small mammals are known to inhabit the prairie: prairie vole, meadow vole, white-tailed jackrabbit, thirteen-lined ground squirrel, and cottontail.

## Doolittle Prairie — Plover Tract

Several active prairie potholes dot the 25-acre Doolittle Prairie Preserve, evidence of the Pleistocene glaciers that influenced this part of Iowa. It is located two miles south of Story City in Story County. Its unique, poorly drained landscape and deep black soil make it a type of prairie that is very rare in the state today. The preservation of this prairie will ensure the protection of this area's virgin soil profile.

Doolittle Prairie represents a mesic-to-hydric prairie type and is a good example of the tallgrass prairie. It holds an excellent diversity of native grasses and forbs, some of which are rare. Notable among these are ladies' tresses, blue flag iris and closed gentian. A recent plant survey identified 135 species, nearly all natives of the tallgrass biome. Important wildlife nesting and winter cover is provided by this patch of native Iowa.

Previous owners of the prairie were aware of its importance. Hay has been

removed annually, but there is no record of tillage in the prairie's history.

## Freda Haffner Preserve

In 1972 a gift from Freda Haffner allowed the Iowa Chapter of The Nature Conservancy to purchase this 110-acre tract. The outstanding feature is the largest kettlehole in the state and one of the largest known. The tract is located approximately four and one-half miles northwest of Milford.

The area around the kettlehole, though formerly pastured, supports a prairie flora of over 250 species of plants. Approximately 40 acres of prairie remain; 60 acres of ground formerly farmed will eventually be planted to prairie species and restored to prairie.

## Gitchie Manitou

This 91-acre tract is located nine miles northwest of Larchwood, in the very northwest corner of Iowa. The name "Gitchie Manitou" is derived from Sioux Indian for "Great Spirit." The unusual rocks that outcrop in this preserve belong to the oldest rock formation exposed in Iowa, the Sioux Quartzite. This Precambrian outcrop, dated at 1.2 billion years old, is pink colored and extremely durable; the rounded quartz sand grains which originally composed the rock are still visible to the eye, but they are not compactly cemented by silica, giving the rock a glassy appearance. The edges of rock blocks long exposed to the wind have been smoothed and polished to a high gloss.

This preserve has been a favorite area for Iowa botanists since the last century. Many rare plants, some of which represent the only Iowa occurrence, are found here. Examples are prickly pear, buffalo grass, spikemoss, Oregon woodsia fern, sand cherry, and a number of species of xeric mosses and lichens. The north portion is native prairie, and fire is now being used to inhibit woody invasion; the south successional area will eventually be planted to prairie.

## Hayden Prairie

Named for Dr. Ada Hayden, professor of botany at Iowa State University and life-long prairie enthusiast, this 240-acre prairie was purchased in 1945. It was the first prairie preserve acquisition. About 140 acres are upland prairie, the remainder is mesic or wet prairie. It is located four miles west and five miles north of the junction of Highways 63 and 9 near Cresco.



This prairie was in the ownership of one family for 78 years and was cut for hay and occasionally pastured. It is the largest unbroken native prairie remaining in Iowa.

From a distance the blue-gray pasque flower, earliest of the prairie flowers, was mistaken by pioneers for prairie smoke. Other flowers visitors may encounter are shooting star, white and purple prairie clover, meadow rue, lead plant, wild strawberry, oxeye, loosestrife, wild indigo and prairie rose. About 150 species of plants have been found on this prairie.

Designated as a registered national natural landmark in 1966, it was dedicated as a state preserve by the Preserves Advisory Board and the Conservation Commission in 1968.

### **Kalsow Prairie**

This 160-acre tract, located in Pocahontas County, one mile west, five miles north of Manson, was purchased in 1949. Since then it has been the subject of studies on its soil, vegetation, fungi, vertebrates, and management. A complex of 14 shallow potholes and their drainage ways are spread across the prairie.

The diverse tract, with over 240 species of plants, begins the flowering season with prairie violets, shooting stars, prairie phlox, and hoary puccoon; next come anemone, black-eyed Susan, butterfly weed, compass plant, purple coneflower, blue flag and wood lily. Later in the year, oxeye, purple prairie clover, and rattlesnake master appear. The final color is added by closed and downy gentian, silky aster, and the tall grasses. Some of the vertebrates which may be found are masked shrew, harvest mouse, deer mouse, upland sandpiper, killdeer, bobolinks, pheasants, northern prairie skunk, and smooth green snake.

This tract was dedicated into the state preserves system in 1968.

### **Kish-Ke-Kosh Prairie**

The Kish-Ke-Kosh Prairie Preserve is located in Jasper County just south of Reasnor.

The Kish-Ke-Kosh Prairie, named after an Indian chief who lived in a several-county area along the Skunk River, is characteristic of tallgrass prairies once found along the Skunk River hills. Topographically, the preserve consists of rolling hills with a predominant knob-like hilltop, interspersed with several wet swales.

Notable on the prairie is blazing star which blooms from August through October. A few spikes of white blazing star have been seen among the purple. The wet areas host horsetail and great lobelia. In addition to liatris, the mesic areas of the preserve support hairy puccoon, tail cinquefoil, false indigo, whorled milkweed, wild trailing bean, pale purple coneflower, big and little bluestem, Indian grass, paspalum grass, and side-oats gramma, to name a few.

### **Liska-Stanek Prairie**

This 20-acre native prairie is owned and managed by the Webster County Conservation Board. It is located five miles southwest of the junction of Highways 169 and 20 at Fort Dodge. It was purchased in 1972 and designated as a state preserve in 1976. It is mainly a mesic prairie with two shallow potholes. Some of the characteristic vegetation one may find is compass plant, blazing star, needle grass, purple coneflower and prairie sunflower. Birds include the bobolink, meadowlark, swamp sparrow, blue-winged teal, dickcissel, and redwinged blackbird.

### **Marietta Sand Prairie**

The Marshall County Conservation Board purchased this 17-acre prairie in 1983, to protect an example of one of Iowa's most unusual prairie type — the sand prairie. The prairie is located on an upland of the Southern Iowa Drift Plain, and was formed from wind deposited material. To make the area more unusual yet, a permanently wet *Carex* swale and aspen wetland is located on the lower slope.

Among the more unusual plants are sand reed, purple lovegrass, marsh fern, sensitive fern, bead grass, and spotted horsemint.

### **Nestor Stiles Prairie**

The Nestor Stiles Prairie, consisting of 10 acres, was donated into the preserves system by Margarite Whiting in honor of her father, its namesake. Mr. Stiles was a Cherokee County banker and conservationist who purchased and protected several natural areas in the county. The preserve is a lowland tallgrass prairie, a typical element of the original rolling prairie landscape of northwestern Iowa. It is located in Cherokee County one-half mile southwest of Aurelia.

Habitat for the rare as well as the usual species of prairie plants is provided at the preserve. Notable forbs include swamp milkweed, Jerusalem

artichoke, tall coneflower, compass plant, wild indigo, New Jersey tea, and fringed loosestrife. Among the grasses are big bluestem, porcupine grass, and prairie dropseed. The tallgrass environment also provides needed cover for wildlife.

### **Rock Island Botanical Preserve**

This 17-acre area was given to the Linn County Conservation Board by the Rock Island Railroad to be set aside as a botanical preserve. The tract consists of an upland dry sand prairie and a lowland marshy area, and hosts a wide array of flora and fauna. The preserve is within the city limits of Cedar Rapids.

The low area had been used as a source of fill for railroad construction, and soil had been removed to an impervious layer. The series of temporary pools caused by this disturbance has created an interesting habitat which support several uncommon wetland plant species. Among these is sphagnum moss.

August visitors may find bulrush, manna grass, ricecut grass, hybrid cattail, Michigan lily, duck potato, woolgrass, and water plantain. Lower vascular plants include crested wood fern, interrupted fern, sensitive fern, and water horsetail. Among the dicots were river birch, sand milkweed, purple coneflower, hog peanut, wood betony, New Jersey tea, fringed gentian, yellow puccoon, and Indian paintbrush.

The wet areas provide suitable habitat for ducks, woodcocks, crayfish, several species of amphibians and a species of snail not found in other local habitats. The sandy prairie is home for the hog-nosed snake, and a variety of songbirds have been sighted at the preserve.

### **Rolling Thunder Preserve**

This 123-acre rolling prairie was purchased in 1980 by the Warren County Conservation Board, using habitat stamp funds as partial payment. It typifies the topography of the Southern Iowa Drift Plain, with a wooded ravine and rolling loess-capped uplands. It is located four miles east, one-half mile north of New Virginia.

Because of the variety of habitats, from dry uplands to mesic hillsides to an intermittent stream, this prairie has a high diversity of plant life including blazing star, dropseed, compass plant, lead plant, and the major prairie grasses.

### **Sheeder Prairie**

Sheeder Prairie, purchased in 1961 from Oscar Sheeder, son of the original



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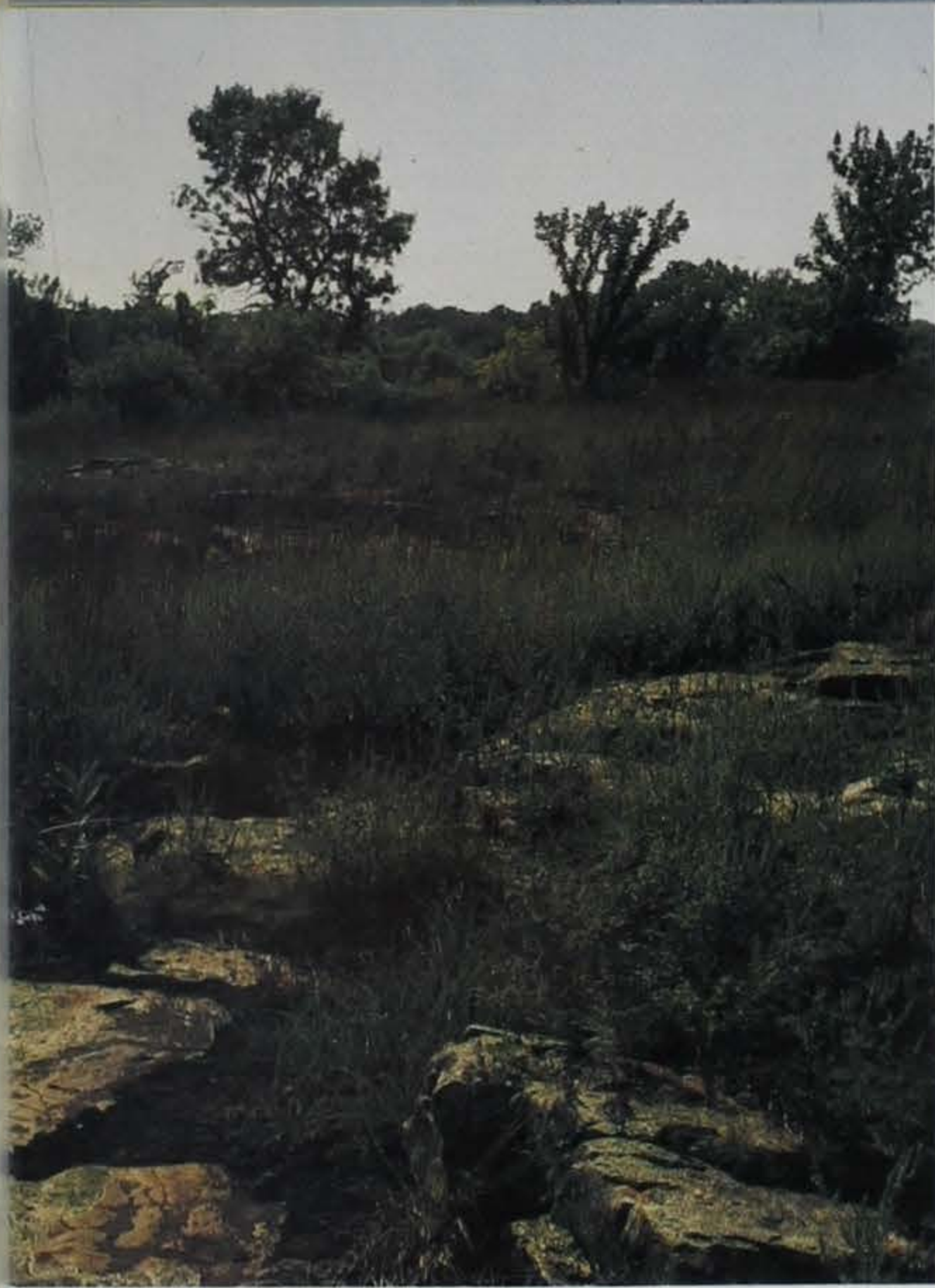
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*Gitchie Manitou State Preserve is located in the northwest corner of the state (left). This sea of blazing star (below) is part of Caylee Prairie located in Dickinson County. The outstanding feature of the Freda Haffner Preserve is the state's largest kettlehole (bottom).*



Doug Harr





homesteader, is located four miles west and one mile north of Guthrie Center. It is of rolling topography, reflecting the rolling, loess-mantled Kansan glacial surface upon which it is located. Although only 25 acres, 54 plant families of over 180 species contribute to its flora. This diversity is due to its varied topography of dry prairie, mesic prairie and drainageways.

Some of the commonly encountered early flowering plants are star grass, hoary puccoon, prairie false dandelion, prairie phlox, prairie violet and common lousewort. Later, one may find purple coneflower, white snakeroot, compass plant, cup plant, goat's beard, ground plum, and prairie turnip. The flowering year closes out with prairie sunflower, gentian, big and little bluestem, rigid goldenrods and silky aster.

This prairie was dedicated into the state's preserve system in 1968.

#### Stinson Prairie

Stinson Prairie, owned and managed by the Kossuth County Conservation Board, was purchased in 1969 and designated as a state preserve in 1971. This 32-acre prairie is perched on the edge of the Algona moraine and is located four miles west and one mile south of Algona.

There are four basic vegetation types: dry, mesic, swales, and potholes. For its size, it is very rich, with at least 175 species of plants known to occur. Some of the more common species are lead-plant, pasque flower, purple coneflower, many-flower aster, blazing star, toothed sunflower, mountain mint, butterfly weed and an array of tallgrasses.

#### Turin Loess Hills Preserve

Located two miles north of Turin in Monona County, this 220-acre preserve was dedicated in 1978.

On the tops of the loess hills exist plants characteristic of the Great Plains, some of which are found nowhere else in the state. Some of these are: soapweed, skeleton weed, Locoweed, and sumpweed.

Other species reported on this preserve include side-oats gramma, prairie turnip, large-flowered penstemon, red-root, gray dogwood, prairie larkspur, purple coneflower, big bluestem, and little bluestem.

Many loess hill habitats, including this one, are subject to invasion of woody species, so fire is a necessary management component.

Some rare mammals are found in this preserve, or on areas much like it

nearby. The plains pocket mouse, the grasshopper mouse, and the southern bog lemming are examples. More common small mammals are the prairie vole, western harvest mouse, short-tailed shrew and white-footed mouse.

#### Williams Prairie

The Williams Prairie is located in Johnson County, two and one-half miles northwest of Oxford. It is a shallow, bowl-shaped prairie with only a small portion of dry upland. This 30-acre tract was purchased by the Iowa Chapter of the Nature Conservancy and dedicated as a state preserve in 1976. It is located 16 miles from the University of Iowa, making it easily available to classes as an outdoor laboratory.

Some of the more unusual vegetation include bunchflower, Turk's cap lily, blazing star, and bottle gentian. The

short-billed marsh wren, grasshopper sparrow, song sparrow, and meadowlark are known to nest here.

Centuries to form, perhaps two decades to destroy, of the thirty million acres of original prairie, now less than 10,000 acres remain. So tough yet so fragile, so complex yet so easily destroyed, the people changed the prairie and the prairie changed them. It continues to change people, as witnessed by the new wave of prairie enthusiasts, by the many restoration projects, by prairie conferences, by the publication of books about prairies and by legislative attempts to save these cornerstones of our past.

*Dean M. Roosa has worked for the State Preserves Board and as state ecologist for the conservation commission since 1975. He has a Ph.D. in botany from Iowa State University.*

## Profile of an Endangered Species



Dean Roosa

**Bogbean**  
(*Menyanthes trifoliata*)



Dean Roosa

By Dean M. Roosa and Bill Pusateri

In the early days of Iowa, this plant was probably a fairly common wetland plant. Bogbean or bog buck bean (*Menyanthes trifoliata*) is a northern species, fairly common in northern Minnesota, Wisconsin, and circumpolar in northern parts of other countries. It is now one of Iowa's rarest plants, presently known from only three sites, one each in Wright, Dickinson, and Muscatine Counties.

It prefers shallow permanent prairie potholes, marshes and bogs, where it blooms in late May and early June. Most botanists put it in its own family,

the Menyanthaceae, but others place it in the Gentianaceae family. The leaf is three-parted and the flower is white with fringed petals. The root is fleshy and the plant spreads vegetatively as well as by seeds. It often makes extensive stands on the shallow margins of marshes and bogs, often existing as a monodominant population. Although a boreal species, the two most southern populations are the Muscatine County, Iowa and Reynolds County, Missouri sites.

Notification of new populations should be sent to botanists in the State Conservation Commission.



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# SPECIAL PLANTS OF IOWA'S PRAIRIES

By Bill Pusateri

One of the fortunate circumstances of growing up in Iowa is that of being raised in the center of the greatest prairie area in the world. But like so many people, we do not always take an interest in what we have in our own backyard. Iowa's remnant prairies offer an invitation to understand and appreciate the richness and beauty of our native plant life. These are the special plants of Iowa's prairies. Enjoy what you have been missing and appreciate your prairie heritage.

## PRAIRIE GRASS

The major components of the prairie are the prairie grasses. They are not as showy as the colorful forbs, but yet the prairie would not be the unique habitat that it is without them. In low-lying areas you will most likely find prairie cord grass (*Spartina pectinata*), one of the easiest to recognize. All you need to do is feel the edge of the leaf blade. The leaf

margin has small sharp teeth which can cut skin quite quickly. Early settlers soon learned to call it "rip-gut"! Because of its dense root system, the early "sod busters" used it to construct their sod homes. They also burned it for fuel and used it for hay, forage and livestock bedding.

Several prairie grasses were used both by Indians and early pioneer settlers as native forage hay. These species include switchgrass (*Panicum virgatum*), Canada wild rye (*Elymus canadensis*), and big and little bluestem (*Andropogon gerardi* and *Andropogon scoparius*).

Big bluestem is often called turkey foot grass, so named for the three-part flower and seed arrangements. In late summer, the stem takes on a golden-bluish-purple coloration which is aesthetically pleasing during the fall months.

Little bluestem is the shorter of the two species, lacking the typical "turkey foot" inflorescences. Instead the

fruits develop into cottony plumes along the main axis of the stem. In autumn, little bluestem comes alive with golden hues of red and orange.

Another dominant species is Indian grass (*Sorghastrum nutans*). It grows just as tall as turkey foot, but can readily be identified by looking for the rounded stem rather than the flatter stems of the bluestem. It also adds its dash of golden splendor to the fall-colored grasslands.

Other grasses of the biome include prairie dropseed, June grass, porcupine grass, and sideoats grama; all excellent forage plants which both the buffalo and Indians took advantage of.

## PRAIRIE FORBS

Prairie forbs are plants other than grasses which do not become woody. They are either annuals or perennials which may die back to the ground each winter, but grow again the

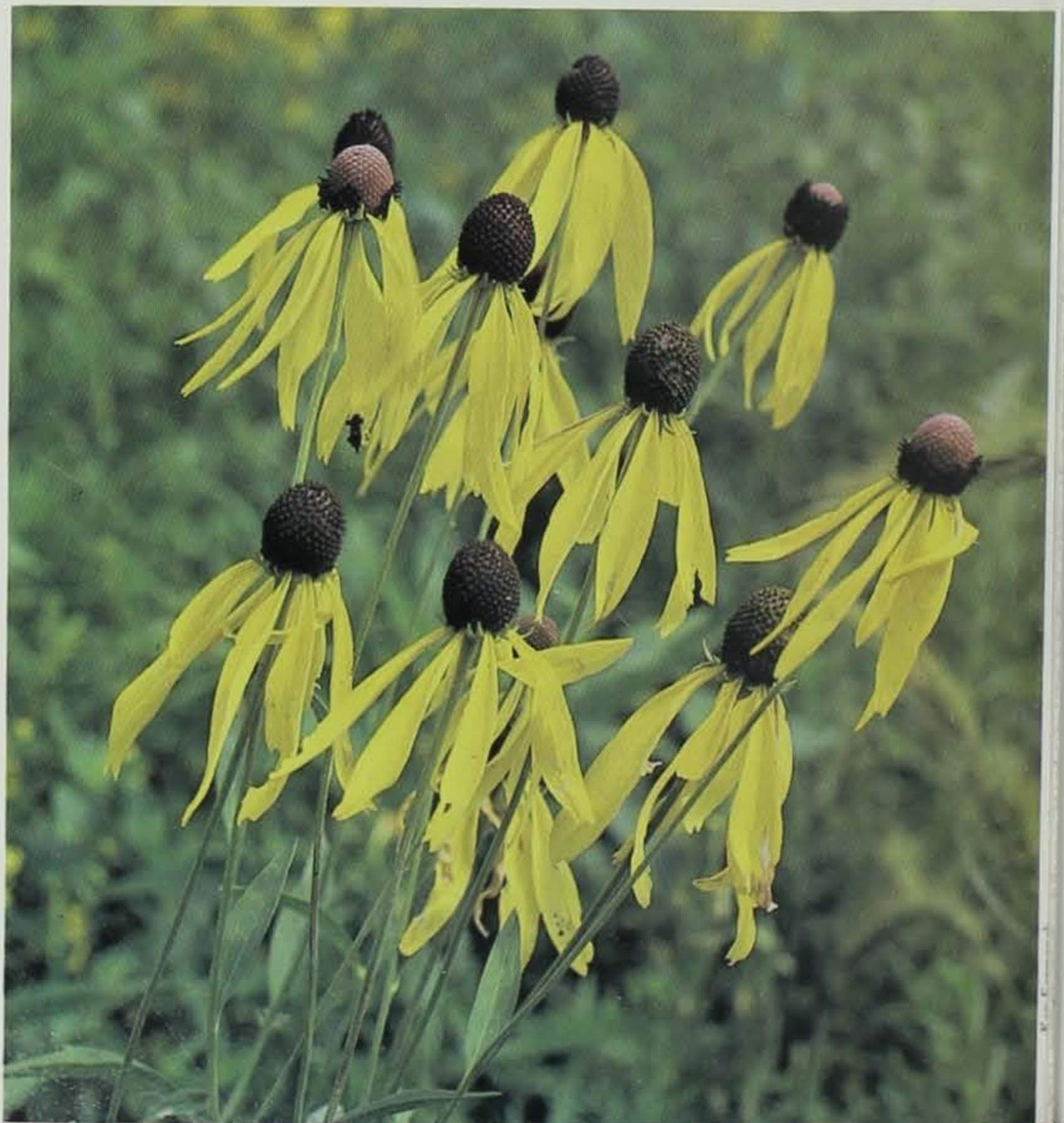
Photo by Dean Rousa





Bill Pusateri

*Milkvetch* (top), *silver-leaved scurf pea* (above) *yellow coneflower* (right) and *switchgrass* (page 27).





following spring from an underground shoot system. One of the most spectacular forbs of the Iowa prairie is the compass plant (*Shilphium laciniatum*). As the name implies, the large, highly dissected leaf blades have a tendency to face the sun during daylight hours. Hence, Indians and early settlers were able to use this knowledge for directional purposes — the living compass of the prairie. You cannot miss the compass plant. Rising five to ten feet in height, it towers over all of the other prairie forbs. Being a member of the aster family it bears the characteristic sunflower-like flower heads of golden yellow ray flowers. Red-winged blackbirds are often found perched on these blossoms affording them a wide vista for their displays of territorial defense. Even though it is a deep-rooted species (taproots are known to grow down to almost 15 feet), the compass plant does not withstand intense grazing pressure. In fact, the leaves are so nutritious and tasty that it is one of the first species to be sought by foraging animals. Therefore, it is one of the first native species to disappear when a prairie area is transferred to pasture. Hence, compass plant is a good indicator of prairie quality.

There are other prairie indicators as well. Some of these are the purple and yellow coneflower, mentioned in Wildflower of the Month. Also, rattlesnake-master (*Eryngium yuccifolium*), as its scientific name implies, has leaves like the yucca. This member of the carrot family may also grow up to five feet in height. The flowers are white and rather inconspicuous, but are formed into several round, globular spheres or "buttons." Indians and early settlers believed that a concoction of the root would cure snakebite.

*Yucca* (*Yucca glauca*) is a deep rooted perennial which grows as lonely sentinels on steep, dry eroded bluffs and hilltops of the Loess Hills. Sometimes it grows where the native prairie grasses are no longer able to retain a foothold. In this way it is a valuable first line of defense against soil erosion and acts as a pioneer species around which the prairie grasses may become reestablished.

Even though it may not bloom annually, yucca is well worth waiting for. A tall majestic flowering stalk bearing many large, creamy white flowers arises from the center of a basal leaf cluster. Both the flowers and fruits are known to be edible. The fleshy, succulent flowers were sliced and added to salads or cooked alone as a vegetable.

The mature fruits which are reminiscent of small stout bananas have a pulpy consistency similar to dates. A red-colored fermented liquor has also been made by boiling the young flower stalks. This concoction was said to make an individual courageous. Continued boiling produces a syrup to be rubbed on rheumatic joints.

*Yucca* is also known as soapweed, for it contains a chemical called saponin which when agitated in water produces a soapy, detergent with great sudsing potential. This detergent quality is not harsh so it has been used medicinally for the cleansing of wounds and skin disorders, as well as a popular shampoo.

The other large family of plants which is well represented in the Loess Hills is the pea, bean or legume family, what plant taxonomists traditionally called the leguminosae or more recently renamed the fabaceae. There are several species of milkvetch species of significance because of their relatively small distributions. Bent milkvetch (*Astragalus distortus*), Missouri milkvetch (*Astragalus missouriensis*) and low milkvetch (*Astragalus lotiflorus*) are examples of a few of these. The milkvetches are low-growing perennials with tiny compound leaves. Flowers are usually pinkish in color and resemble the typical pea or bean flower in shape. When in fruit, they have been called rabbitbrush for the crescent-shaped hairy fruit has the appearance of a rabbit's foot.

One of the most common species is the groundplum (*Astragalus crassicarpus*). This milkvetch is larger than the others. The long, compound leaves can have as many as 23 leaflets. The flowers are a light purple in color. The fruit or legume is a plump, succulent, reddish-green pod approximately an inch in diameter at maturity. It is these plum-like fruits which gives this plant its name. Caution should be used when considering eating groundplums since they are a relative of the poisonous locoweeds. Deer and other animals apparently find them quite palatable and probably are responsible for spreading the seeds far and wide throughout the prairie.

The genus *Psoralea* (with a silent "p") is also a well-represented legume group. *Psoralea argophylla* and *Psoralea tenuifolia* are the silver-leaved scurf-pea and the many-flowered scurf-pea. The former is easily distinguished by the whitish coloration of the whole plant which is due to the presence of

small white appressed hairs. The flowers are small, being only about one-third of an inch long, but they are one of the deepest blue-colored flowers to be found in the Loess Hills prairie community. The latter species is found rather infrequently in Iowa.

*Psoralea esculenta* is known as Indian breadroot. It is a handsome plant growing to about two feet in height and about two feet wide. The leaves are palmate with five leaflets like the previously mentioned *Psoralea* species. The flowers are much larger, paler in color and covered by long hairs which apparently grow from inside of the sepals. An enlarged ball-shaped food storage organ is developed below ground. It is this food storage organ which gives this plant the name of Indian turnip, for this starch-filled structure was eaten like a potato by Indians and early pioneers. It is good that this practice has been discontinued, otherwise this species may have become extremely rare.

Sensitive brier (*Schrankia nuttallii*) is another legume species with a very limited range in Iowa. It is presently known only from old historical records and is now considered to be presumed extirpated. The stem displays curved spines which gives it an additional common name of catclaw. The leaves are like those of a sensitive plant, many tiny leaflets which fold up when touched. Sensitive brier might well be called bashful brier by the shy of heart. The flowers are like a purple or lavender powderpuff, for the flowers lack petals and are composed primarily of a ball-shaped arrangement of colored stamens projecting from the center of the flower. We would certainly like to relocate this species in Iowa.

Locoweed or Lamberts crazyweed (*Oxytropis lambertii*) is related to milkvetch and scurf-peas and have a similar growth habit. The flowers are more striking, being borne in long purple to bluish-purple clusters. On a few occasions yellow or pure white forms can be found. Locoweed is an increaser, and cattle soon learn to recognize it for its distasteful qualities and leave it alone. With a lack of grazing competition, the seed production increases and the species becomes more plentiful. If consumed, it causes a type of poisoning known as the blind staggers — general disorientation followed by a loss of muscle control and resulting in death.

Skeletonweed (*Lygodesmia juncea*) is probably one of the most prolific increasers of the loess. It is a member of the sunflower family and grows upright



and is a highly branched perennial growing up to two feet in height. The leaves are reduced to tiny inconspicuous adaptations to extreme xeric environments; thus, the remaining green skeleton-like stem and branches carry on the photosynthetic capacity of the plant. The stems are commonly found having bladderlike insect galls. It has been reported that children have made chewing gum from the milky sap which turns yellow after coagulation. Supposedly, the "yellow gum" turns a bright blue upon chewing. Indians have been said to have used plant extracts of skeletonweed as an eyewash. Cattle ranches in other states have ascribed poisonous properties to this species.

Another member of the pea family which must be mentioned as a true prairie indicator is leadplant (*Amorpha canescens*). Its gray-lead-green tiny compound leaves and a false belief that this species was an indicator of lead ore gives leadplant its name. These leaves are a real contrast to the spikes of beautiful purple flowers bearing golden yellow stamens. Unfortunately, leadplant disappears with consistent, yearly mowing. As a more woody species, it needs to continue its life cycle and produce stout roots and seeds periodically. Without this occasional reprieve, it will soon be extirpated from an annually mowed meadow.

Other shrub-like prairie indicator species include both the prairie rose and New Jersey tea. The prairie rose (*Rosa*), the state flower of Iowa, is another one of the deep-rooted species. Botanists have recorded root depths up to 25 feet. There are many species of native and nonnative roses. All have very lovely flowers and provide protection, food and shelter for a variety of animal species.

Like many of the preceding species, the New Jersey tea has been known to create major problems for the early farmers who first plowed the grasslands. So much so that New Jersey tea was nicknamed pest of the plowman, redroot, and even the very descriptive, rupture root! The heavy burls of New Jersey tea were known to stop and dull many an early plow. As its name implies, a tea was made from the dry leaves and used as a general blood tonic. There are two species of New Jersey tea in Iowa. One, an eastern species of the prairie of eastern Iowa (*Ceanothus americanus*) and one more

commonly found in the dryer prairies of western Iowa (*Ceanothus ovatus*). If you ever find them growing in the same prairie area, I would be interested in knowing about it.

There are a multitude of additional prairie species which should be mentioned; like the early spring blooming pasqueflowers, pussytoes, prairiesmoke and purple avens, butterfly milkweed, the spring violets, Indian paint brush, blue-eyed grass, and yellow star-grass. Midsummer species like lousewort, spiderwort, hoary puccoon, wild strawberries, larkspur, bergamont mint, Michigan lily and wood lily.

Late fall species include a plethora of asters and goldenrods and the lovely

prairie gentians; downy, stiff, bottle, and fringed gentians; and the beautiful golden hues of the diverse prairie grasses.

We are in the business of documenting and preserving Iowa's native grasslands. We need your help. Please let us know about prairie remnants you have found. We are especially interested in knowing about the true prairie indicators and rare prairie species.

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*Bill Pusateri, serves as a botanist for the commission's Natural Areas Inventory. After receiving a B.S. degree from Coe College in 1973, he earned an M.S. in botany from Southern Illinois University.*



Cathy Meddin-Robinson

*Iowa's state flower, the prairie rose.*



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# Wildflowers of the Month

## Coneflowers

By Dean M. Roosa and Bill Pusateri

While grasses define and dominate the tallgrass prairie, it is the wildflowers which add the color and diversity. Coneflowers are such wildflowers. Iowa has five coneflowers: the yellow coneflower (*Ratibida pinnata*), gray-headed coneflower (*Ratibida columnifera*), and three purple coneflowers (*Echinacea pallida*, *Echinacea angustifolia*, and *Echinacea purpurea*). All belong to the daisy family, Asteraceae.

The yellow coneflower is common throughout Iowa, occurring on most prairie remnants and along railroads and roadsides. It is easily grown from seed in prairie restoration projects. It reaches a height of over three feet and occurs in clumps which may have 50 blossoms.

The gray-headed coneflower is much alike in appearance to the yellow coneflower, but with a long column-like seed head. It is an infrequent adventive from farther west, rare across the state, frequent only in northwestern Iowa.

The purple coneflowers, more showy members of the prairie flora, are less frequent in distribution, but occur on most prairie remnants, along railroads, and occasionally along roadsides. The generic name, *Echinacea*, is a Greek word meaning "rough"; for as the seed head matures, it takes on a very rough

texture resulting from the long, stiff chaff associated with the central disk flowers.

*Echinacea angustifolia*, the western purple coneflower, is fairly common in western Iowa, rare in the remainder of the state. It can be separated from the others by the short ray petals which are four centimeters or less in length. The pale coneflower, *Echinacea pallida*, is much like the purple coneflower, *Echinacea purpurea*, but has much shorter leaf blades and a rhizome, while the other has a taproot.

The purple coneflowers have a variety of medicinal uses — from treatment for snakebite, bee stings, and headaches to mumps and hydrophobia. It has the effect of numbing portions of the body. This was put to good use by medicine men who participated in ritualistic feats where enduring extreme heat was demanded.

The coneflowers provide interest and diversity to Iowa prairies. Surely you can find one of these species blooming on a native grassland in your county.

*Pictured here is the E. angustifolia species of purple coneflower. See yellow coneflower on page 28 and the E. pallida species of purple coneflower on page 8.*

Photo by Dean Roosa





THE BEGINNING...

It was overpowering  
this thing called prairie;  
The breeze, the smells,  
the heat, the beauty.  
It wanted nothing — except to be left alone  
to grow, to mature, to evolve;  
It asked so little, yet gave so much  
with dignity acquired in ageless time.

THE DECLINE...

It was overpowered  
by the nimble mind of man.  
It succumbed with only a gentle sigh  
to be lost forever,  
Changed from grassland to grainfield,  
eroded, washed, overcome.

THE RESURGENCE...

Tiny remnants, nearly overpowering  
with gentle breeze, fragrance, and beauty;  
They give us an eternal hope,  
a glimpse into the past;  
They ask so little — give so much  
They are lonely places; they are lovely places;  
They are prairie.

*Dean M. Roosa*