

SEEDS OF DIVERSITY



Iowa DNR Prairie Resource Center

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Coreopsis: The Ocean of Yellow in the Prairie

Coreopsis (*Coreopsis palmata*) is a member of the Asteraceae family. It is a prairie plant found throughout Iowa. The small, yellow flower blooms in June and July. This drought tolerant species is often found in mesic or dry sites on a prairie. The fine, birds-foot shaped leaves are an indicator of a dry species. Fine leaves reduce water loss on warm, sunny days. Coreopsis gets its name from the Greek word *koris*, "a bug," and *-opsis*, looks similar to, therefore meaning bug-like, referring to the achenes (dried fruits) which look like ticks. You can find it in colonial patches in a prairie or reconstruction because it spreads by both seed and rhizomes. Historically, European settlers referred to it as an ocean of yellow as they ventured across the Iowa prairie.

Germination of the seed is easy because there is no need for stratification making this is a good species to include in late spring-planted reconstructed prairies. Coreopsis transforms quickly to a flowering plant often blossoming in the second year after planting.

Create your own ocean of yellow and include *Coreopsis palmata* seed in your reconstruction.



Coreopsis Photo by Susan

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MANAGING FOR GRASSLAND BIRDS

By Bruce Ehresman
Iowa DNR Wildlife Diversity Program Biologist



Historically, Iowa's grassland birds evolved to make use of the many niches that existed on the prairie landscape. Prairie plant communities covered at least 70% of the state and were diverse, with over 250 plant species at a site, typically about 60% grasses, 35% forbs, and 5% shrubs. Prairie areas recently burned or recently grazed by bison would have provided appropriate habitat for Upland Sandpipers and mating grounds (leks) for Greater Prairie-Chickens. Lightly to moderately grazed areas would have served as nesting areas for Bobolinks, meadowlarks, Grasshopper Sparrows, Dickcissels, and prairie-chickens. Prairie areas with more rank vegetation and lack of disturbance would have provided nest sites for Short-eared Owls, Northern Harriers, Henslow's Sparrows, and Sedge Wrens. Of course Iowa's vast prairie landscape was quickly changed after Euro-American settlement, and today virtually 99.9% of Iowa's original prairie grassland has been converted to agricultural uses. Most grasslands that remain are highly fragmented.

Chiefly because of this grassland loss and fragmentation, grassland birds of the Midwest have declined more extensively than birds associated with other habitats of the region. Species including Henslow's and Grasshopper sparrows, Bobolink, and Loggerhead Shrike are among those that have declined most. With less than 1% of Midwest native prairie remaining, and with the Midwest

Tallgrass Prairie Ecosystem considered critically endangered, there is reason for concern for the future of these habitats and the birds and other wildlife that inhabit them.

But, rather than give up in despair, there are ways to improve conditions for our declining grassland nesters. Certainly, the addition of the Iowa DNR Prairie Resource Unit offers improved opportunities to re-create some of the diverse prairie landscape that we once lost. Plus - we know that the most important keys to improving grassland bird habitat include protecting and establishing large contiguous grassland blocks, providing structurally diverse habitats, eliminating major disturbance (like mowing, burning, or pesticide spraying) during the nesting season, reducing edge, controlling woody encroachment, and eliminating and controlling invasive species.

Grassland Bird Management Guidelines

Avoid further fragmentation or destruction of remaining grassland habitat - Preserving and maintaining Iowa's remaining grassland habitat, especially the largest tracts, should be a high priority. This is an effective method to provide habitat for populations of area-sensitive species like Greater-Prairie Chicken, Short-eared

Owl, Northern Harrier, and Henslow's Sparrow. These species prefer to nest in grassland tracts 250 acres or larger.

Another benefit of managing for a large grassland landscape is that other habitats, such as upland shrub and savanna, can be accommodated, thereby providing habitat for a more diverse community of birds. The 67,000 acre Kellerton Grassland Bird Conservation Area in southwestern Iowa is a good example of how this kind of large-scale grassland management can benefit many bird species that have declining populations trends.

Manage for larger, non-linear blocks of habitat - A worthy goal for grassland bird managers is to provide as large a block of contiguous grassland as possible. Removing woody growth in fence lines or roadways between grassland blocks is one way to achieve this goal. Another method is to use native prairie reconstruction plantings or cool season grasses/legumes plantings to increase the size of the grassland habitat. To achieve appropriate habitat for species that are most sensitive to grassland fragmentation, manage for grassland areas that are at least 125 acres and preferably over 250 acres. For species that are the least area sensitive, grassland tracts of less than 40 acres can still be of benefit. When considering the shape of a parcel, an important objective is to minimize the amount of linear edge of an area. A round shape is best, square shape is better than rectangular, and irregular borders should be avoided when possible.

Consolidate and connect blocks of grassland habitat - Surrounding land use impacts the suitability of an area for nesting birds. For example, birds might not nest in a small grassland area that is bordered by woodland, hedgerows, or a farmstead, but that same grassy field surrounded by pasture, small grain fields, and row crops can be suitable nesting habitat. When management for blocks of at least 50 acres is not possible, try to clump smaller tracts or fields of grassland habitats as close to one another as possible. Also try to assure that



Mallard Nest in Brushy Creek Prairie Reconstruction

these small grassland habitats are connected with grassy corridors: waterways, fence lines, and even roadway or railroad right-of-ways to make these clumped small grasslands adequate nesting areas for birds. Adding grassland plantings to enlarge such areas also is helpful.

Manage to reduce depredation of nesting birds and their young and eggs - Nest predation can be a serious problem for grassland bird species, as can predation on adults or their recently fledged young. Potential nest predators include foxes, raccoons, skunks, opossums, feral cats, crows, and Blue Jays. Many of these species travel along or otherwise frequent woody edges of grassland habitats. Great Horned Owls and Red-tailed Hawks are known to prey upon adult and juvenile prairie-chickens and Northern Bobwhites, and these

raptors hunt from high perches in trees within and at the edges of grasslands.

To reduce predation by both mammals and birds, it is suggested that managers create grassland tracts as large as possible and that potential perch trees (used by raptors and corvids) and woody vegetation corridors be removed. It should be noted that not all woody vegetation is harmful, and some shrubs in the grassland landscape is beneficial to several declining species, including Bell's Vireo, Loggerhead Shrike, and Northern Mockingbird.

Manage to reduce cowbird nest parasitism - Brown-headed Cowbirds pose a threat to many grassland bird species when they lay their eggs in these species' nests. The result is decreased nest success for the host species. Female cowbirds find other birds' nests to parasitize by watching from nearby perches in trees or shrubs. To decrease Brown-headed Cowbird nest parasitism, tall woody vegetation (perch sites) within and on the edges of grasslands should be removed.

Manage to eliminate or reduce invasive species - Most of Iowa's grasslands are comprised of non-native species, many of which are invasive. Non-native species such as the European cultivar of reed canary grass (*Phalaris arundinacea*), fescue (*Festuca spp.*), smooth brome (*Bromus inermis*), crown vetch (*Coronilla*

varia), sericia lespedeza (*Lespedeza cuneata*) and leafy spurge (*Euphorbia esula*) are invasive species that compete with and displace native plants. They also have a tendency to reduce diversity and create a monocultural (single species) environment that is not beneficial to most breeding birds. Prairie enthusiasts believe that none of these invasive species should be planted or propagated in Iowa, and efforts should be made to eliminate or at least control the spread of these species.



Grassland Management Practices

Because grasslands are disturbance-adapted systems, management involving some disturbance regime is essential. Without disturbance or specific management, upland grasslands in Iowa will be invaded and eventually replaced by woody growth, excluding many grassland bird species from using the habitat. The three main management treatments that land managers typically use are **prescribed burning, grazing, and mowing**. While each of these management techniques can be used to attain specific objectives, it is good to rotate the use of these treatments in any specific area to maintain or increase species diversity. Timing of treatments also is important. In order to avoid destruction of nests, whenever possible, conduct management treatments before birds begin nesting in the spring (before early April) or after the young have fledged (after 15 September).

In summary, each grassland bird species inhabits a particular type and area of habitat. Typically, managing a grassland area of 250 acres or larger, divided into 50 acre blocks of particular structure habitats, will accommodate the largest number of grassland bird species. These species evolved with the tallgrass prairie ecosystem, and the closer we, as land managers, can come to approximating that diverse habitat, the better chance we have of providing our feathered counterparts the nesting areas they need into the future.

Providing For Iowa's Tall Grass Prairie

by Eliot LaFollette



Iowa was once a vast frontier of over 35 million acres. Situated between two of America's grandest rivers, the Mississippi and the Missouri, it is home to one of the world's most biologically diverse landscapes, the Tall Grass Prairie! The Iowa prairie was approximately 25 million acres of grasses, forbs, and shrubs; interspersed with an additional seven million acres of timbered stream and river corridors, and in the north-west quarter, dotted with approximately three million acres of prairie potholes, marshes, and lakes; remnants of the Des Moines lobe of the Wisconsin glacier.

Today, only about one tenth of one percent, or about 25,000 acres of this tall grass prairie remain, scattered in small fragments all over Iowa. These fragments are slowly being consumed by nonnative encroachment and the invasion of trees and shrubs. However, the total demise of the prairie can be altered. Through education, research, proper management, and cooperation of individuals and organizations both, public and private, we can begin to bring back a good representation of this treasure that we have nearly lost.

Prairie ecology and prairie reconstruction have gained a great deal of notoriety and interest over the past generation, especially over the past decade. Enactment of the 1985 Farm Bill opened many doors for local, state, and federal resource agencies to communicate on how to best serve this program and their respective interests. Private industry has taken note of this and new opportunities have developed in agriculture (native seed industry) and land management (private consulting and technical guidance companies). Neal Smith National Wildlife Refuge, Iowa's largest prairie reconstruction, was established near Prairie City by the U.S. Fish and Wildlife Service along with the Prairie Learning Center. Universities, as well as public and private schools, are including prairie in their curriculums and providing outdoor classrooms with a prairie theme. Recently, the University of Northern Iowa (UNI) celebrated the dedication of the Tall Grass Prairie Center, home of the Iowa Ecotype Project. This is a cooperative effort between UNI and the Iowa Department of Transportation to return Iowa prairie to Iowa's roadsides. In 2000, the Iowa Department of Natural Resources established the Seed Harvest Team. In 2006, the Seed Harvest Team moved into its

permanent home, the Prairie Resource Center and evolved into the Prairie Resource Unit. The primary objective of the Prairie Resource Unit is to provide high-quality, diverse seed to the twenty wildlife management units around the state. These wildlife units provide high-quality wildlife habitat, land management, and excellent facilities for public enjoyment of these services, on IDNR- managed lands. A great opportunity has developed through this relationship. The value of seed planted by the IDNR on acres enrolled in certain federal programs can be used to match federal dollars provided for management of these respective projects. To date, the Prairie Resource Unit has provided high quality diverse seed for 18,840 acres for an eight-year average of 2,355 acres/year planted.

How has this been accomplished? First of all, for seed integrity purposes, the state of Iowa is divided into three ecotype zones: north, central, and south. Kalsow Prairie lies in the north zone. I would like to take you on a seed's journey from Kalsow Prairie State Preserve to a seed drill rolling across a field somewhere in northern Iowa. Then, I would like to share some other benefits and opportunities that are paving the way to provide for Iowa's tall grass prairie.

Each summer, a small amount of time is allotted to pick seed from state preserves and prairie remnants. Kalsow prairie is close to the Prairie Resource Center and makes a convenient example. Seeds from various species are collected based on our needs for adding species to the program or replenishing established species. These seeds are stored for a while, and then prepared for cold stratification, the process that imitates winter. To stratify, seed is mixed with moist silica sand and stored in a refrigerator for a specific amount of time. This process weakens the seed coat for germination. Legumes need to be physically damaged through the process of scarification and are sometimes cold stratified as well. Now the seed is taken to a greenhouse at North Central Correctional Facility (NCCF) near Rockwell City. We grow our north zone plants there. South zone plants are grown near Montrose, and central zone plants are grown at Oakdale and Fort Dodge.

Currently, we manage the prairie portion of five greenhouses and are working on a sixth. We have agreements with the Department of Corrections which provides us with inmate labor. We supply these greenhouses with high-quality seed that has been prepared for germination (scarified, cold stratified, or both). Germination trays are prepared with moist soil. A light layer of stratified seed is sprinkled over the top, then lightly covered (1/2 the diameter of the seed) with soil. The smallest seed is not covered at all. Instead, it is lightly pressed into the soil to provide good seed-to-soil contact. Planting seed too deep will prevent germination. Trays are watered and then covered with a clear plastic dome. When seed begins to germinate, domes are removed. Although, seeds of different species germi-



nate at different times, so do seeds of the same species, even within the same germination tray. This process can take several weeks.

After germination, these tiny plants grow a set of leaves followed by a second set of leaves known as true leaves. When true leaves develop they are ready to be transplanted into plug trays where they will grow into nice seedlings. Plug trays are filled with moist soil. Using the pencil, a hole is poked in the soil, and the tiny plants are plucked from the germination tray, and planted in the plug tray. The filled plug tray is then watered, labeled, and placed with others of the same species. These seedlings will be cared for and observed (watered, fertilized, sprayed for fungus and insects) until they reach four-to-six inches in height and then are ready for transplant to outdoor garden plots.

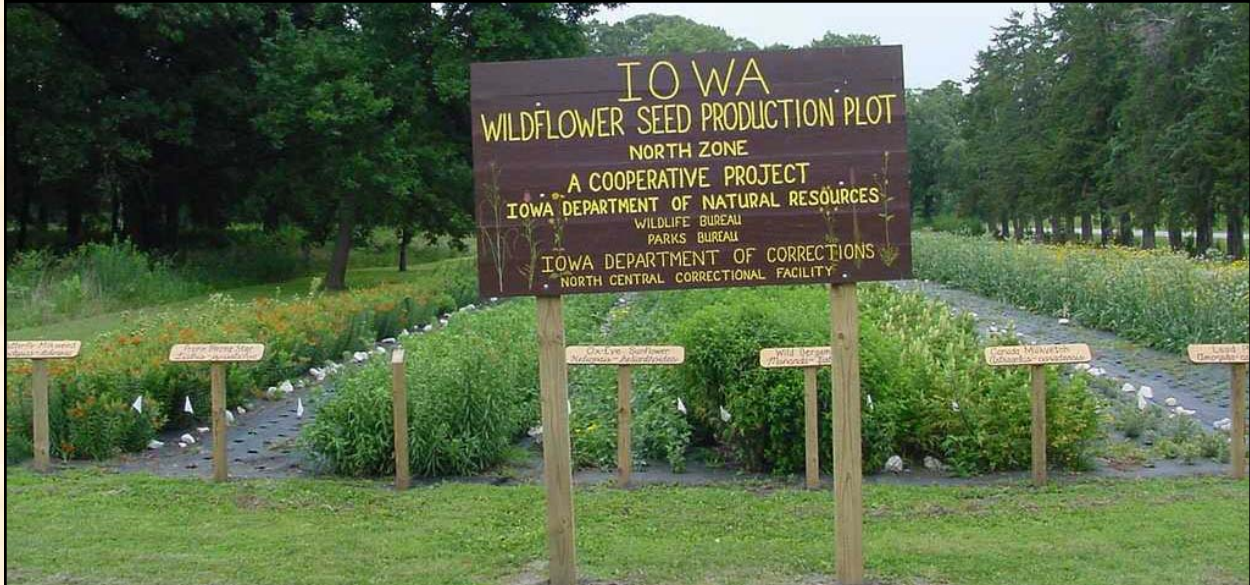
We have approximately 15 acres of garden plot containing over 70 species for Iowa's three eco-type zones. Seedlings grown from Kalsow Prairie will be planted in plots at NCCF, or at our north zone plot at Brushy Creek State Recreation Area. Each year for the past eight years we have planted, watered, and weeded 80,000 to 100,000 new plants, and maintained existing established plants. Dead plants formerly established are replaced, and some short-lived species are replanted entirely every couple of years. These plots are maintained through the planting and growing season right up to harvest.

Harvest time will depend on whether a plant is an early bloomer (cool season plant) or a late bloomer (warm season plant). Harvest of cool season plants can start in late May and go to the middle of July, and harvest of warm season plants can start in August and go until November. Some plants will bloom and produce seed the first year while other species may take three years to bloom and produce. Most garden plot harvest is done by hand; however, a small plot combine is used to harvest some species.

Seeds are then prepared for distribu-



NJ Tea and Lead Plant at Brushy Creek Reconstruction



tion. First, they are dried in a drying chamber. Next, the seed is hammer-milled, which is the process of separating seed from chaff. Now the seed is run through an air screen cleaner (fanning mill) until the desired product is ready. Lastly, the seed is weighed, bagged, and labeled for distribution. In 2006, 1,187 pounds of pure live seed, from over 70 species in three zones was distributed between each wildlife unit that placed an order. Seed from Kalsow grew to a mature plant, produced seed which was collected, processed and distributed to a seed drill rolling across a field somewhere in northern Iowa.

This seed collected from garden plots is distributed with native grass seed collected by our combine harvest. The combine harvest consists of fields that have been established for five species of grass for each ecotype zone. Fields of mixed grasses and forbs have also been established for each zone enhancing our ability to deliver larger quantities of diverse seed. These fields total just over 500 acres. They are micro-managed to insure good seed production, to control invasive species and noxious weeds, and to provide quality cover for wildlife that uses them. Burning is our primary management tool. Mowing and spraying are used when establishing new fields or noxious weed problems develop. Field establishment occurs in spring, and usually a newly established field will not be harvested until the second or third year. Two Case-IH 1660 combines are used for this harvest. Once again the seed collected is dried, debarbed (similar to hammer-mill), run through an air screen cleaner, bagged, labeled, and distributed according to seed orders.

The Prairie Resource Unit has provided technical guidance to anyone in need of assistance for prairie establishment, maintenance, harvest, long-term management, and even its value in terms of wildlife. We try to stay abreast of new management ideas, such as patch-burn-grazing. We have sponsored volunteer work events related to prairie from the Decorah State Trout Hatchery to the booming grounds of the Greater Prairie Chicken near Kellerton, Iowa. We also conduct our own local event each year. These events have reached out to troubled kids, school groups, college students, gardeners, prairie enthusiasts, hunters, and passersby, just to name a few. This has allowed us the opportunity to spread the message of the Tall Grass Prairie, and to help develop an interest in the outdoors for some people that may have never taken the opportunity.