Seeds of Diversity

GOLDFINCH ON WILD BERGAMOT PHOTO BY SUSAN CLARK

IOWA DNR PRAIRIE RESOURCE UNIT **SEPTEMBER 2006**

Prairie Restoration and Enhancement

The loss of native grasslands and wetlands has resulted in a concomitant decline in native wildlife. Several species, including Smooth Green Snake (*Opheodrys vernalis*), Plains Pocket Mouse (*Perognathus flavescens*), Dakota Skipper (*Hesperia dacotae*), and Northern Harrier (*Circus cyaneus*) (pictured at left) currently are listed as endangered or threatened species. Several others are recognized as declining by various national plans or by individual regional and local experts. These include such species as the Regal Fritillary (*Speyeria idalia*), Wilson's Phalarope (*Phalaropus tricolor*) and Franklin's Ground Squirrel (*Spermophilus franklinii*).

At the time of European settlement, 29 million acres, or 83% of Iowa's landscape, consisted of native prairie grasslands. Today, less than 1% of this historical cover type remains. It is estimated that 95% of the state's natural wetlands have been drained. Many of Iowa's remnant prairies and significant wetlands are situated on public lands, under management of the Iowa Department of Natural Resources (IDNR). Many of these areas required additional management to remain high quality habitat.

Therefore, during 2005 and 2006, sites were identi-

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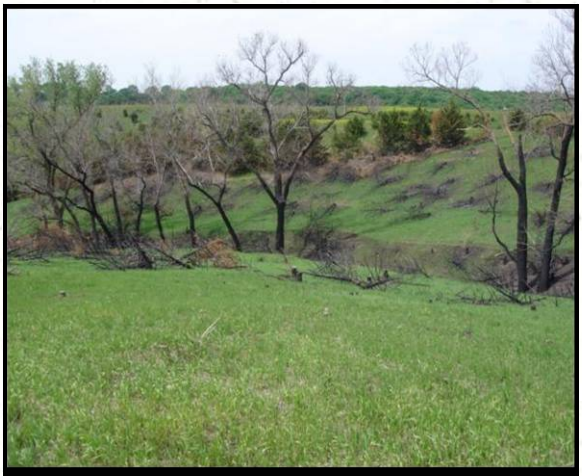
fied for prairie restoration, enhancement, and reconstruction on public lands in the Iowa Prairie Pothole Joint Venture (PPJV) area. Sites were selected that would best benefit suites of declining wildlife species, or individual threatened and endangered species with emphasis placed upon Bird Conservation Areas (BCA), Prairie Pothole Joint Venture priority areas, and other large public land complexes.

Assistance was provided to Iowa DNR wildlife management field staff by the Prairie Resource Unit and the IDNR PPJV Habitat Enhancement Biologist in planning prairie seeding sites, acquiring seed, establishing seeding, prescribing fires, and controlling invasive woody plants on grasslands. Funding for projects was provided by the State Wildlife Grant (SWG) and North American Wetland Conservation Act (NAWCA) with matching dollars from the IDNR.

All projects were tracked with Geographic Information System (GIS) mapping that included acres affected, seeding mixtures, application rates, all expenditures, value of IDNR-produced seed, dates of implementation and similar pertinent details. Projects in the Spring Run BCA were coordinated with IDNR Wildlife Research staff and Iowa State University to design prairie restoration and grassland manipulations, including replication treatments that will provide future research opportunities on species of conservation concern.

Union Hills Wildlife Management Area



Scorched trees and vegetation regrowth after a prescribed fire

A total of 1,241 acres were seeded to native prairie at 100 different fields on State-managed wildlife areas. Seed harvested by the Prairie Resource Unit was used on most seedings. To further increase the species diversity of the plantings, other seed sources were used to supplement the seed from the Prairie Resource Unit. Most projects were seeded to local ecotype, mixed-native prairie containing about 50 forb species and 7 grass species. Private contractors were hired to prepare fields and plant seed on 675 acres. Individual IDNR wildlife management units seeded 566 acres. All seedings were mowed as needed to control weed competition. Most frost seeding projects done in late winter (Feb. & Mar.) needed to be mowed 3 times while

the May or June seedings required mowing once or twice the first year. Only half the fields needed mowing the second year.

Plant inventory of a two year-old reconstruction with Gray-headed coneflower, Wild bergamot, and Canada wild rye

Prescribed fire is one of the best tools in controlling invasive woody plants on grasslands. (See article titled “Fire: Challenging but Beneficial” in June 2006 Seeds of Diversity issue.) Prescribed burning was done on State-managed wildlife areas in the Iowa PPJV area totaling 4,500 acres at 30 sites in 2005 and 6,113 acres at 41 sites in 2006.

Invading woody vegetation was cut and stump treated with triclopyr on 17 State-managed wildlife areas affecting 1,045 acres of grasslands. Some of this vegetation will resprout, even with stump chemical treatment and will be followed up with aggressive prescribed fire or foliar treatment with triclopyr a couple of years after cutting.

Triclopyr was, also, used to foliar treat invading woody vegetation on 16 State-managed wildlife areas affecting a total of 2,015 acres of grasslands. However, resprouting will occur in some species the next year after spraying. Light fuel in the form of grass/forbs will reestablish after the elimination of woody vegetation canopy cover. Again, with aggressive prescribed fire using light fuel, resprouting or invading woody vegetation can be controlled.

Declining, threatened, or endangered species on public wildlife areas are greatly benefited by the continued reconstruction of native prairie. Prairie seeding is the easy part of prairie restoration. Controlling invasive woody vegetation on grasslands in the Iowa Prairie Pothole Joint Venture Area will be a challenging task, and it will require a concerted effort of IDNR staff using all available resources to manage grasslands..

Featured Wildflower: Blue Flag Iris

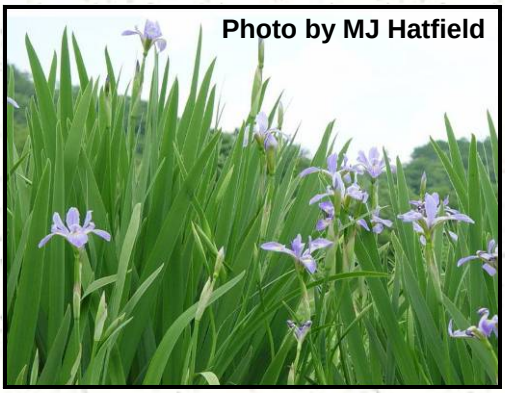
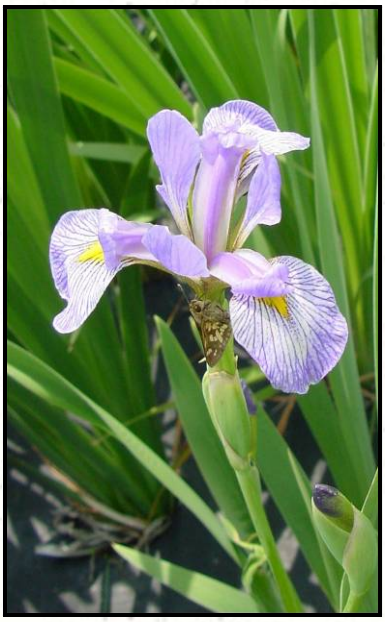


Photo by MJ Hatfield

A common plant on many moist native prairie remnants is Blue flag iris (*Iris versicolor*). This native perennial is 2 to 3 feet in height with a violet-blue flower that emerges in May to June. It is a member of the Iridaceae family. Blue-eyed grass is the only other iris species native to Iowa. Blue flag iris is often seen in large rhizomatous colonies along the edges of prairie wetlands and streams.



The large violet blue flowers have 3 sepals and 3 petals. The sepals are larger than the petals and spread out from the center of the flower. The sepals are divided into a lower and upper lip, with the lower lip acts as a landing pad for insects. A common visitor and an important pollinator of Blue flag iris is the Bumblebee. Other insects that utilize Blue flag iris are Skipper butterflies, Halictid bees, and a variety of beetles. Seed pods quickly form a 3 chambered capsule after flowering. The seed capsule ripens in early August when the top of the capsule splits, spewing seeds to the ground or water below. If seed drops into water, the seeds will float, and pioneer new locations around the wetland shore.

Blue flag iris is a new species in production that will soon be offered for reconstructions by the Prairie Resource Unit.

Insect Spotlight: Weevils

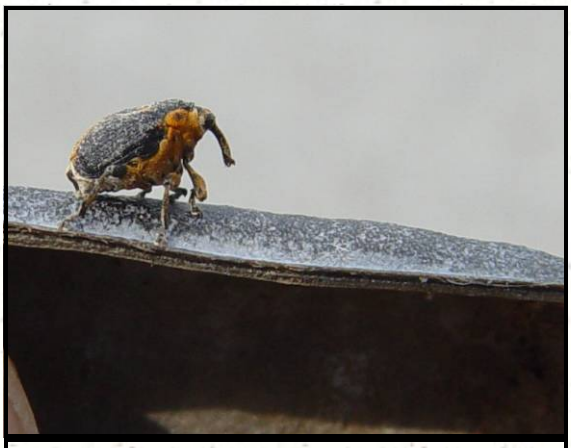
Although there are estimates of between 8 and 35 million species inhabiting Earth today, only two million have been described at present. Of the two million described species, nearly sixty percent (1.1 million) are insects, with beetles making up over four hundred thousand of these. Weevil experts estimate that half of the beetles, over two hundred thousand, are weevils or Curculionoidea. Therefore, one out of every 10 living things is a weevil. Several sources have differing species figures, but the proportion of weevils remains constant.

The Curculionidea (weevils) with an estimated sixty thousand described species, are probably the most highly evolved family of Coleoptera (beetles). Weevils are typically found on foliage or flowers as adults, but some species are ground dwellers, some burrow in sand dunes, and a few are aquatic or marine. They include many serious economic pests, such as the Alfalfa and Clover weevils, Cotton boll weevil, Rose weevil, Strawberry weevil and Plum curculio.

Baptisia weevil among White false indigo seed and pods

Several weevils affect native plants. Prairie folks are probably most familiar with the Baptisia weevil (Trichapion rostrum). White false indigo (Baptisia alba) and Cream indigo (Baptisia bracteata) have a weevil that is recognizable to anyone that has harvested the seed. Pop open the brown pod, out rolls the weevil and the seeds are destroyed or eaten. There are years where weevils wipe out production of indigo seed and years where there are very few weevils at a location. Variation of weevil population

can depend on both weather and fire. Baptisia weevils have a parallel association with indigo so their population is dependent on the Baptisia population. A population of weevils is Mother Nature's control of Baptisia species.



Photos on this page by MJ Hatfield

Another weevil that affects native plants is the Iris weevil, *Mononychus vulpeculus* (pictured at left). The adult female is sometimes called the iris snout beetle because of its long-nosed appearance. It pierces the ovary of the apogon (no beard or crest) iris flower and lays its egg within. It prefers to lay its eggs in Siberian irises and Iris versicolor, the large Blue flag iris (see Featured Wildflower story). Similar to other insects, the life cycle of the Iris weevil consists of four stages: egg, larva, pupa and adult with it producing a single generation each year. The egg hatches into a short, fat, legless larva that is slightly curved. The larva pupates within the seedpods and the adult emerges when the seedpod ripens and splits open. Adult weevils create holes through the flower blossoms as they feed. The adults, also, feed on seeds and tissue by pushing the snout into seedpods. This insect over winters in ground debris near iris plants as an adult. Like the Baptisia weevil, the Iris weevil does not eliminate the Blue flag iris, rather keeps it in check by limiting iris seed production.

Iris weevils and partially eaten Blue flag iris seedpods

Many introduced (non-native) plant species become invasive because they do not have a native, predatory species reducing their vigor or seed production. Thus, these invasive species become prolific, aggressive and out compete native vegetation. Weevils are pests when it comes to seed production, but they have a role in prairie ecosystems as one of the forces of nature that control Baptisia species and Blue flag iris.

Not So Sweet Clover

Two species of Sweet clover occur in Iowa: White (Melilotus alba) and Yellow (Melilotus officinalis). Sweet clover plants are either biennial or annual, with the annual plants only occurring periodically in southern Iowa. Sweet clover was widely used as a forage crop, ground cover and wildlife habitat in Iowa. Both are native to Europe, Asia, and North Africa, but now is distributed throughout the United States. Other uses for Sweet clover include a honey plant for bees, flavoring in Swiss cheese, food for upland

game birds, and a vanilla-like flavoring agent. Herbal medicine uses include the wound-healing properties for bruises and poor circulation which probably come from the Coumarin that is contained in the above-ground flowering portion of the plant.

What was once cultivated crop has now turned into a problem weed in many native prairies and reconstructions. Elimination of the Sweet clover can be difficult because of seed longevity and mobility. Strategies for sweet clover control include pulling or mowing the plant when in flower, herbicide application, and fire. Cutting or mowing is the most effective tool for Sweet clover removal. White Sweet clover, when cut at the flowering stage, will not try to re-flower, thus eliminating any seed production from the plant. However, yellow sweet clover will re-flower, but the amount of seed production will be severely reduced once it is mowed. Pulling is a strategy for small invasions of Yellow sweet clover, but it is too time consuming for larger infestations. Another strategy for control includes a late-spring burn, which kills newly developing seedlings and some second-year plants. Burning can, also, have a negative effect as it stimulates germination of Sweet clover seed (Sweet clover is a legume and fire scarifies seeds, thus triggering germination). A control strategy plan may be needed in a problem area the second year after a burn. There is a Sweet clover weevil that can destroy Sweet clover plants by tunneling in the crown. Adults eat half-moon shaped pieces out of the leaves. Larvae feed on roots and do the real damage. Control of Sweet clover in a reconstruction or native remnant with an herbicide application is not recommended because it is a one-year problem and very likely will pioneer into the site again.

Check out the Prairie Resource Center's website: