

# **Native Plant Materials**

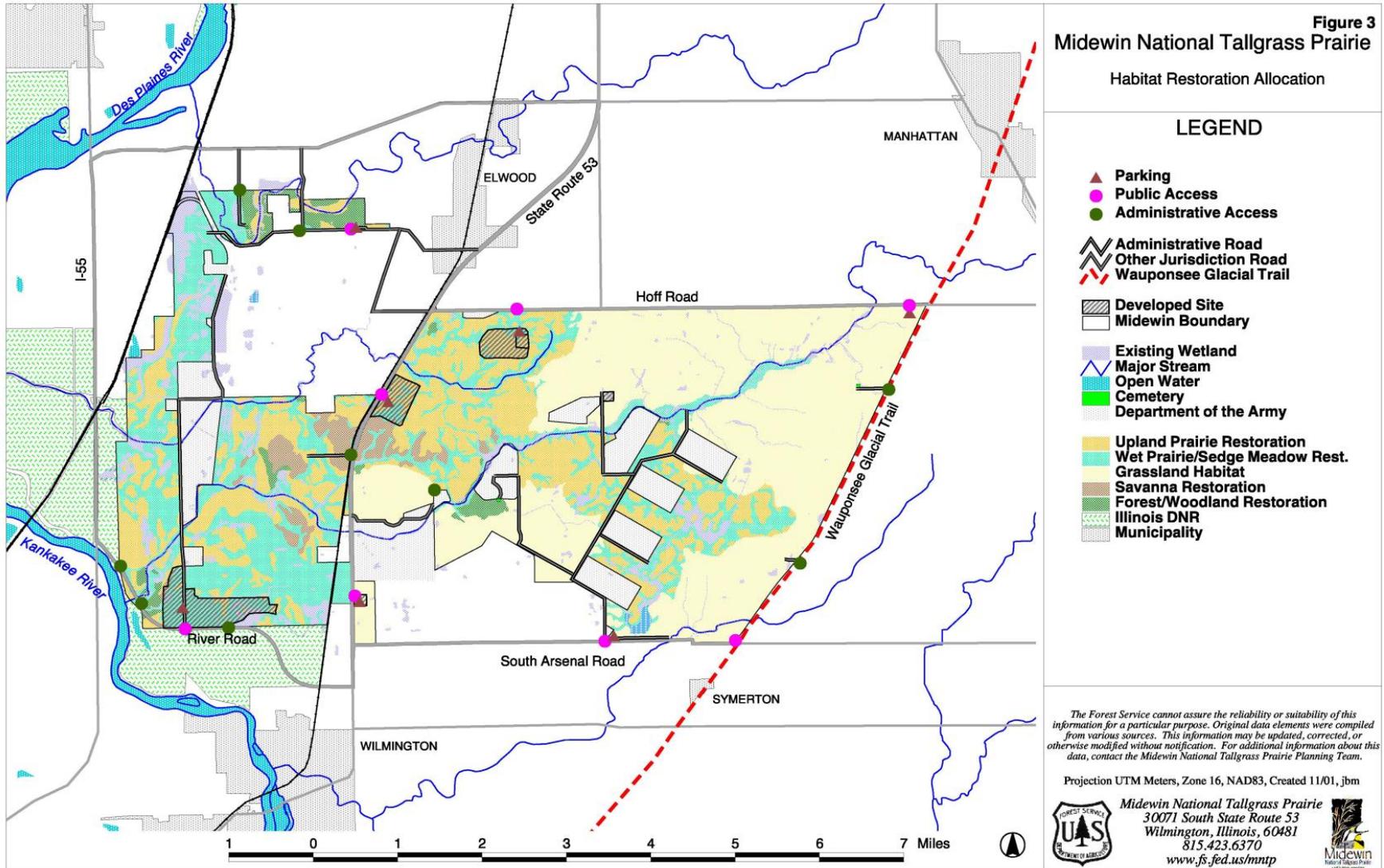
## Production, Purchase and Propagation

An essential program at  
Midewin National Tallgrass Prairie

# Illinois Land Conservation Act of 1996

- 1) To manage the land and water resources in a manner that will conserve and enhance the native populations and habitats of fish, wildlife, and plants.
- 2) To provide opportunities for scientific, environmental, and land use education and research.
- 3) To allow continuation of agricultural uses of lands where consistent with other purposes.
- 4) To provide a variety of recreation opportunities that are not inconsistent with the preceding purposes.

# The need for seed..... and other plant materials



# Most of Midewin does not consist of native prairie or other natural vegetation



- A survey conducted in the early 1990s mapped less than 5% of Midewin as remnants of native vegetation; more recent surveys have increased that amount, but most of this consists of degraded woodlands or wetlands. Less than 200 acres is native prairie vegetation, but includes the globally rare dolomite prairie community.

## **Most of Midewin's natural vegetation was converted to agricultural use in the 1800s; agricultural uses continued under the Army.**

In addition to row crop agriculture, significant portions of Midewin are managed as pasture, with livestock grazing on pasture grasses. These pastures are managed to provide habitat for a diversity of grassland birds, including loggerhead shrike, upland sandpiper, bobolink, Henslow's sparrow, eastern meadowlark, grasshopper sparrow, and dickcissel.

Direct conversion of row crops to native prairie and wetland restoration is proving to be the best method, rather than a gradual restoration process that would convert pastures to prairie through several years of overseeding.

Over 2,400 acres of Midewin is under restoration, with approximately 1,000 acres converted directly from row crops.





# Seed Bed Production

- Started in 1996 and 1997 with dormant rootstock and plants provided by Illinois Department of Natural Resources
- Expanded with external funding of Conservation 2000 (IDNR), Corlands and other partners, plus internal funding (including NFN3).
- Start with seed collecting from wild populations, produce plant plugs for outplanting at seedbeds, then harvest seed once plants are established – many prairie grasses and forbs are long-lived perennials; some species have been in production for over 14 years!

# Seed Production

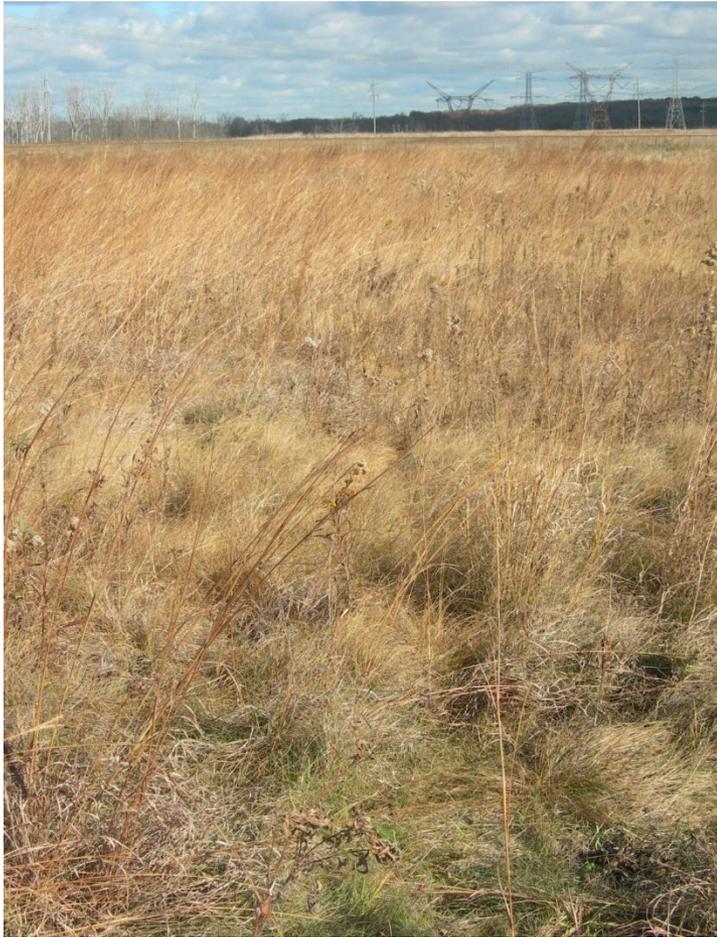
- Native seed produced from established beds and fields is used for habitat restoration plantings - not to produce more beds. This avoids selection for garden-adapted strains.
- Wild collected seed not used in starting production stock is planted out in restoration projects.



# Native Seed Production

- Currently produce over 1000 lbs native seed annually, dependent on weather (which effects both seed production and harvest). More than half is this, by weight, is grasses.
- Over 130 species of grasses, sedges, forbs, and shrubs in production. Another 20-30 species are supplemented through collection from large wild populations (through agreements with Illinois Department of Natural Resources).

# Purchased seed and plants



**Meets 40-80% of our needs, annually;**

Internal sources for purchasing plant materials include Midewin Restoration Fund (PIPI) and Native Plant Materials (NPN3). Much of this goes directly into habitat restoration, but has also allowed to contract grow species for seed production.

External sources:

- The Wetlands Initiative (TWI) a partner that raises funding for large habitat restoration projects, has purchased seed and plants for projects since 2002.
- Corlands, which administers grants from Army Corps of Engineers, has funded seed and plant purchase for three large restoration projects.

## Where do our plant materials come from?

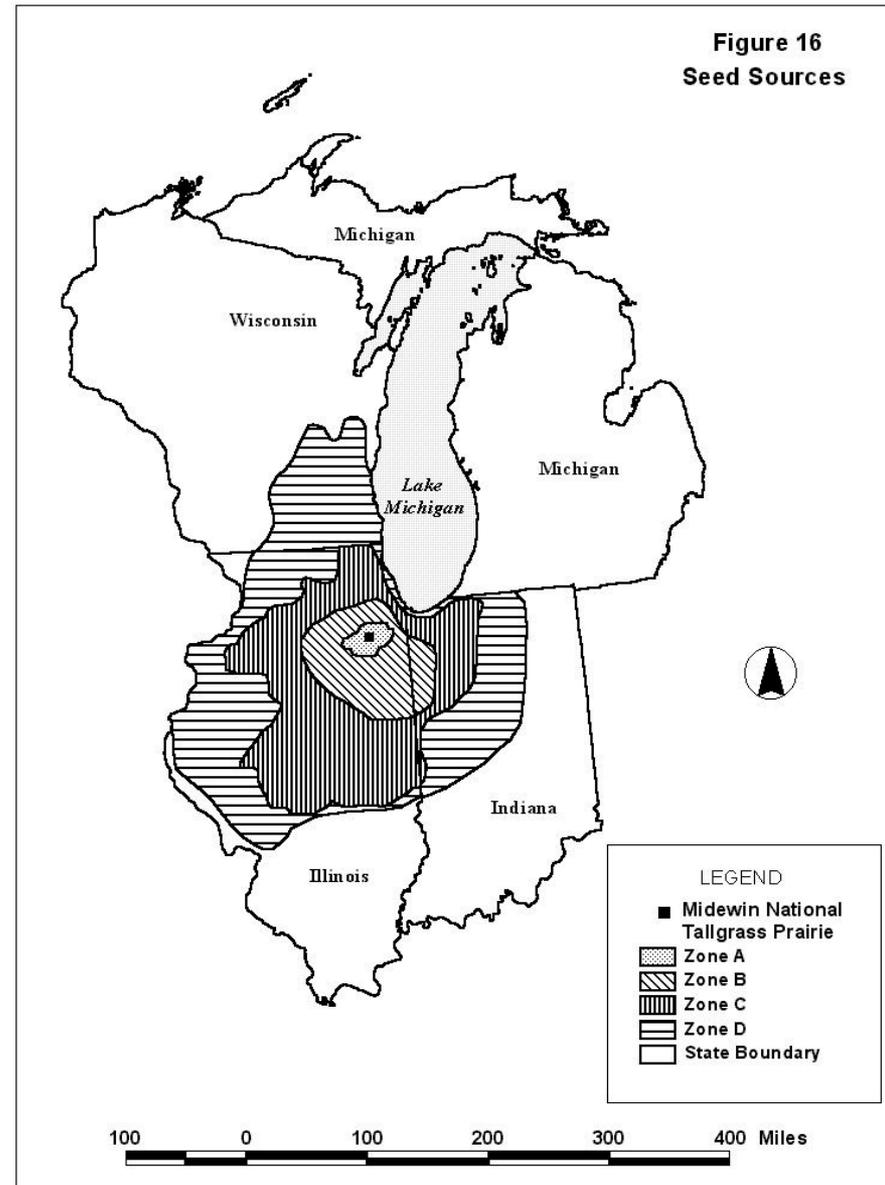
Provenance priorities are determined by similarity in climate, soils, and vegetation, and in a few cases, by published research (available for a very few species).

**Zone A** includes the region associated with the junction of Kankakee and Des Plaines rivers – natural vegetation developed on outwash plains, glacial lake beds, and over dolomite bedrock.

**Zone B** includes the northern margins of the Grand Prairie Natural Divisions of Illinois and Indiana; a region of relatively level and extensive poorly-drained prairies, but also sand prairies and other habitats.

**Zone C** includes the entire Grand Prairie Natural Division of Illinois and Indiana.

**Zone D** is our limit for wind-pollinated species (grasses, sedges) based on similar soils and climatic factors.



# Seed Harvesting

Native grasses are harvested from seed fields and seed beds with mechanical flail-type harvesters, either front-mounted on a tractor or off-set type pulled by a UTV. We also collect some wild grass seed in this manner. The majority of prairie dropseed, little bluestem, big bluestem, Indian grass, Canada wild rye, and switchgrass seed is collected with this equipment.



Forb, sedge and shrub seed is mostly collected with hand held clippers by volunteers, staff, and participants in stewardship programs (Mighty Acorns pictured above). We've used mechanical seed-strippers with mixed success. Most of our low-stature, cool-season native grasses (panic grasses, vanilla grass, porcupine grass, June grass) are collected by hand. Seed harvest begins in late April and ends in early November.

# Seed cleaning

Processing or cleaning seed allows us to accurately determine the quality and quantity of the seed we produce and harvest. Although we start processing when the first seeds are collected in late spring, the bulk of the processing occurs during late fall and winter, usually finishing in February. Much of the equipment we use wouldn't have been available without the Midwin Restoration Fund and partners.



# Seed mixing

Once all the seed is purchased and cleaned, we begin to assemble our seed mixtures. They are usually tailored for specific habitats (typic prairie, dolomite prairie, sedge meadow) or for specific moisture levels (wet, mesic, dry). For each habitat, there are mixtures based on seed characteristics, such as size and 'fluffiness'. Seed can then be planted with seed spreaders ('seed slingers'), fertilizer spreaders or a seed drill.



# Greenhouse – not just for growing plants!

During late summer and fall, the greenhouse is used for drying harvested seed.



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# Shadehouses

Shadehouses are relatively inexpensive and easy to build. They ameliorate local conditions, reducing wind and watering needs. Until the recent completion of our greenhouse, the shadehouses allowed us a place to germinate seeds and grow on seedlings. They also provide a place to gradually harden off greenhouse-grown plant materials.



# Plug production

Produce over 50,000 plugs/ year.  
Planters include volunteers, staff, and participants in environmental education/ stewardship programs.  
Direct seeding in plug tray cells works best, in terms of handling, but hard-to-grow species are usually seeded in flats, then hand-transplanted to plug trays.



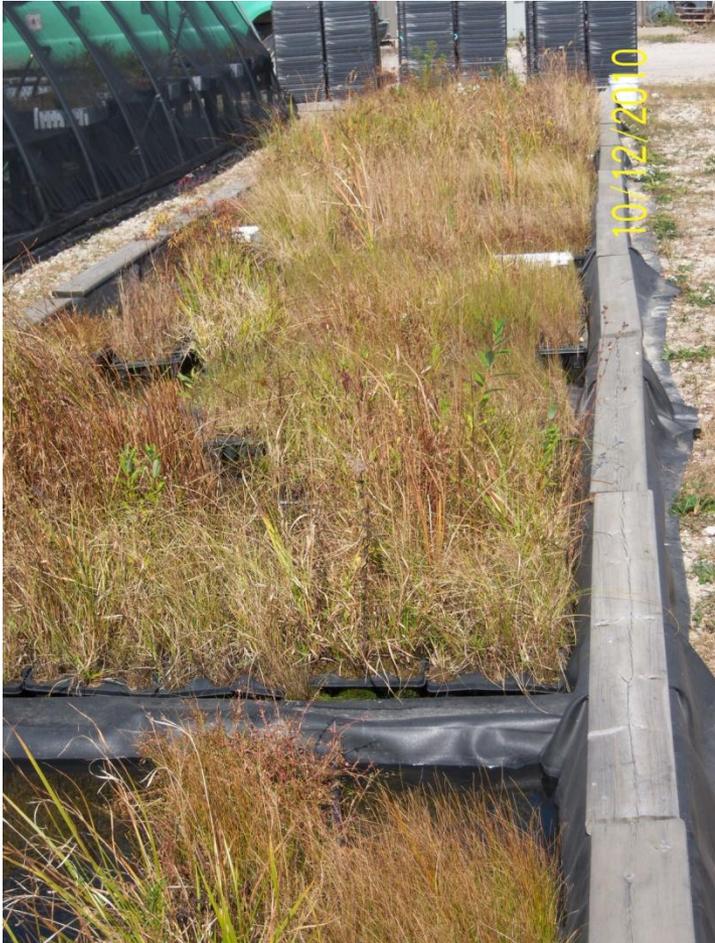
# Ecological authenticity of our restorations is important – so our propagation focuses on difficult-to-grow native species.

Why Important? These species form an important component of natural vegetation, supporting a diversity of insects (including pollinators) and other wildlife, and also contribute to structural diversity of restored habitats.



Many difficult-to-grow native species are not available commercially – they require special timing for seed collection or specialized handling of the seedlings.

# Wetland plants



Wetland seed production began with a grant of \$125,000 in 2001. This was used to establish a wetland seed production facility, complete with an irrigation system. Over twenty species are now in production, including wild blue iris, prairie cordgrass, nodding bur-marigold, great blue lobelia, red bulrush, and twelve species of sedges (*Carex* spp.).

Shown here are the holding pans for wetland plants; the plants are growing in plug trays and are destined for planting in seed production beds or wetland restorations. The pans are lined with pond-liner; this holds water and saves time needed for watering. We also winter the plants in these pans.

# Propagation of Rare and Endangered Plants

**Leafy Prairie-clover (*Dalea foliosa*)**

Federal Endangered



**American Burnet (*Sanguisorba canadensis*)**

Illinois Endangered

We use prescribed burning to manage seed beds and fields; helps control invasive plants and other weeds, and fire stimulates flowering and seed production.

Note the deer exclusion fence in the background – before we enclosed our seed production beds, there were many species with reduced or no seed production because of deer browse. Species heavily impacted by deer browse include asters, alumroot, lilies, and tick-trefoil.



## Native Plant Materials - Production Challenges

### **Weedy Prairie Plants?**

Not all prairie plants are conservative species – some spread by seed throughout the beds. Efficient seed harvest methods are important to keep the more aggressive natives from taking over.

Below – Indian grass invading beds planted with low sedges and forbs.



# Companion plantings – experiments in progress

Some native forbs are not very competitive – beds planted with certain species quickly become infested with thistles, non-native grasses or other weeds. Planting less competitive native species (legumes or spring-flowering forbs) with native bunch grasses (especially little bluestem and prairie dropseed) seems to be the best way to maintain long-term production of non-competitive native species.

Below left – cream wild indigo with prairie dropseed  
Below right – shooting-star with prairie dropseed



# Planting seedbeds



<<< Seasonal staff planting a companion planting – the grass (tufted hair grass) was planted using a grid. The bed was then interplanted with compatible forbs – in this situation, prairie Indian-plantain and marsh phlox.

Volunteers plant a seed bed with prairie dropseed plugs – the grid ensures even spacing, which makes the bed easy to weed and allows effective interplanting. >>>



## More Challenges: Hemiparasitic Plants

Evidence suggests that these plants may be important in controlling community structure in tallgrass prairie communities; they are difficult to propagate and establish in restored habitats.

Wood-betony  
(*Pedicularis canadensis*)



False-toadflax  
(*Comandra richardsiana*)



# Pollinators

Midewin's restorations are important habitat for native pollinators, providing a diversity of food plants and nectar sources. The abundance of food plants (over eight native milkweed species) and nectar sources make tallgrass prairie a 'monarch factory'.



# Pollinator Gardens

Through Midewin's Public Services Team, environmental education and stewardship programs establish pollinator gardens at administrative sites and trailheads. NFN3 funding has been a major source of plant materials for these projects since 2006.



El Valor, a community-based organization, holds regular Science and Technology camps with the assistance of Midewin staff; one of their projects is the expansion of pollinator gardens at public access sites.

# Native plants in landscapes at the Midwin SO



# Acknowledgements

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