

# Ecotype Zones for Minnesota and Iowa

## Prairie Lands

by Pauline Drobney



### Explanation of Subdivisions:

Subdivisions of ecotype zones are indicated by two shades of the same color. The subdivisions are based on latitudinal differences except for the Southern Iowa Drift Plain which has deeper loess soil deposition in the western part of the zone.

0 40 80 120 160 Miles



## **Development of Local Ecotype Zones for Minnesota and Iowa**

At the request of Nita Fuller, Assistant Regional Director, Pauline Drobney, Biologist at Neal Smith NWR began working on a map to devise local ecotype seed harvest zones for Iowa and Minnesota in 1999. Such zones could be used to guide development of local ecotype projects throughout these two states.

The interest in local ecotype seed for prairie reconstruction and restoration is based on the concept that in general, plant species tend to form unique associations based on specific environmental characteristics such as soil types, landform, daylength and climate of a geographic area. Through time, individuals genetically best adapted to survive both the physical characteristics of their environment, and association with plant and animal species that characterize a natural community, will tend to persist. As such, local gene pools as well as unique associations of species develop.

Interest in development of a map that incorporated these concepts and illustrated ecologically defensible zones coincided with development of a Northern Tallgrass Prairie Ecoteam priority. Our ecoteam agreed that all FWS facilities using prairie seed in this ecoregion would be independent of non-local ecotype seed within 5 years. Because additional funding was not initially available to facilitate this priority, it became especially important to identify appropriate areas where cooperative efforts in local ecotype seed production could occur. This need in turn elevated the priority for map development.

Local ecotype zones for Minnesota and Iowa were developed based on plant community, landform, and climate characteristics, as well as ecological characteristics associated with latitude. Botanists, Ecologists, and Land Managers from Iowa and Minnesota agreed to assist in concept development and critical review of draft maps and guidelines for map use throughout the development process. A Proposed Ecotype Zone for Minnesota and Iowa Prairie Lands<sup>1</sup> and later a draft map was presented during Headwaters Tallgrass Prairie Ecoteam meetings in early 1999. Further opportunity for comment was provided to all Ecoteam members. In cases where ecotype zone boundaries were in question, respective experts from either Minnesota or Iowa were consulted to consider the ecological validity of revision or retention of the original boundaries. Ultimately, the ecotype map was unanimously approved by both the Ecoteam Prairie Subcommittee, and by the Ecoteam.

In the final map, there are 9 distinctive ecotype zones, with a caveat that land immediately associated with major riverine systems such as the Missouri River, the Mississippi River, and the Minnesota River, be considered separate ecotype zones. Each of the major zones are divided into at least two subdivisions, because though there are broad ecological similarities within each of the zones, there are likely genetic differences due to the relatively broad geographic coverage. This is especially true in long zones oriented north and south because latitudinal differences are directly related to climatic differences. Climate including daylength, rainfall, and temperature, critically affects genetic characteristics of plants.

A document defining local ecotype and including common sense guidelines for use were

developed to explain intended application of this information on this map. A **local ecotype zone** is defined as a geographic area with generally similar environmental characteristics and plant and animal species associations, and within which genetic characteristics are likely to be similar.

The zones on the map are intended to only be a general guide, not a rigid rule. There are times when ecotype zones will be developed that are much more restrictive than this map indicates. In other cases, portions of multiple zones indicated on the map may be appropriate if a project is near an ecotype boundary, for example. For the purposes of prairie seed collection and ultimate planting, local ecotype zones are defined broadly enough to accommodate large or general projects, but narrowly enough to reflect local ecological uniqueness. Application of the ecotype zones is subject to decisions made on a case-by-case basis by Project Leaders and land managers within the area.

This map is currently being used by the FWS in the Northern Tallgrass Prairie Ecoregion to share resources and effort to develop specific ecotype zone seed production. Seed nurseries that will produce single species harvests and multi-species plantings that will produce somewhat diverse harvests are being planted in several areas from seed originating from local prairie remnants.

In addition, the Iowa DNR, noting the FWS leadership in this arena, also decided to adopt the goal of becoming independent of non-local seed within 5 years. Jim Munson spearheaded the cooperative effort between FWS and DNR and at a meeting he facilitated and that was held at the Neal Smith NWR, Iowa DNR staff present unanimously agreed to adopt the same ecotype zone map that the Northern Tallgrass Prairie Ecoteam had adopted. The DNR is now a strong partner with Iowa FWS team members in our ecoregion. Information is being shared intensively, as is equipment and seed. In some cases, different species are being grown in different localities to facilitate mutual seed needs.

Additional inquiries have been made from agencies and organizations outside Minnesota and Iowa, who have been interested in development of similar maps for their areas.

## **Appendix**

### **Professional Review**

Non-FWS Professional Review of the “Iowa and Minnesota Local Ecotype Zone” development was provided by:

#### Minnesota Reviewers

Peter Buessler

Prairie Biologist

Minnesota Department of Natural Resources

Robert Dana

Prairie Ecologist; Natural Heritage and Nongame Research Program

Minnesota Department of Natural Resources

Brian Winter

Director of Science

The Nature Conservancy; Northern Minnesota Field Office

Scott C. Zager

Plant Ecologist; Minnesota County Biological Survey

Minnesota Department of Natural Resources

#### Iowa Reviewers

Paul Christiansen

Plant Ecologist

Professor Emeritus; Cornell College, Iowa

Kirk Henderson; Director

Integrated Roadside Vegetation Management Program

University of Northern Iowa

John Pearson, Community Ecologist

Iowa Department of Natural Resources

Jerry Selby

Director of Science

The Nature Conservancy; Iowa Field Office

Daryl Smith

Prairie Restorationist and Professor

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