UNIVERSITY OF MINNESOTA
EXTENSION

AFNR HORTICULTURAL SCIENCE

Native Grasses Benefit Butterflies and Moths

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NATIVE GRASSES AND LEPIDOPTERA

Native grasses are low maintenance, drought tolerant plants that provide benefits to the landscape, including minimizing soil erosion and increasing organic matter. Native grasses also provide food and shelter for numerous species of butterfly and moth larvae. These caterpillars use the grasses in a variety of ways. Some species feed on them by boring into the stem, mining the inside of a leaf, or building a shelter using grass leaves and silk.

Dakota skipper shelter in prairie dropseed plant

IMPORTANT OF NATIVE PLANTS

Native plant species support more native Lepidoptera species as host and food plants than exotic plant species. This is partially due to the host-specificity of many Lepidoptera that have evolved to feed on certain species, genus, or families of plants. This is true of most herbivorous insects. Less than 10% of herbivorous insects feed on more than three plant families (Bernays & Graham 1988).

Studies in agricultural and urban landscapes have shown that patches with greater richness of native species had higher richness and abundance of butterflies (Ries et al. 2001; Collinge et al. 2003) and butterfly and moth larvae (Burghardt et al. 2008).

IMPORTANCE OF LEPIDOPTERA

Lepidoptera are an important part of the ecosystem:

- They are an important food source for rodents, bats, birds (particularly young birds), spiders and other insects
- They are pollinators of wild ecosystems.

Terms:

Lepidoptera - Order of insects that includes moths and butterflies

literature review – a scholarly paper that summarizes the current knowledge of a particular topic.

graminoid – herbaceous plant with a grass-like morphology, includes grasses, sedges, and rushes

species richness - the number of different species represented in an ecological community, landscape or region.

oviposition – the act of a butterfly or moth laying eggs

Photo of arogos skipper by Bryan Reynolds

Although the benefits of ornamental flowers to Lepidoptera are well known, the benefits of native grasses to Lepidoptera are not typically known to many horticulturists and consumers.

GATHERING INFORMATION

To address the lack of public knowledge on this topic, a literature review was completed, compiling the information known to date about native grasses and their use as larval host and food plants for Lepidoptera native to Minnesota from guide books, journal articles, and federal and state publications.

Important Notes

- While many Lepidoptera oviposit directly on their host plant, some graminoid-feeding Lepidoptera oviposit indiscriminately. This can lead to confusion when determining the host plant.
- Many graminoid-feeding butterflies and moths eat more than one species, but may prefer only one or two species of grass for shelter-building. This means that there is a chance that some Lepidoptera species feed on more graminoid species than what is listed in the literature. Further research is needed.
- Scott (1986) was used to determine the majority of Lepidoptera ranges. The ranges of rarer species may be more restricted now.
- There were over 50 moth species in the Upper Midwest that were documented or suspected to feed on graminoids that could not be included because specific host species were not listed.

GRASS AND LEPIDOPTERA RELATIONSHIPS

The following tables are simplified results of the literature review. Further explanation of the results, citations, and context of host plant determinations can be found in the manuscript: Narem, D. M. and Meyer, M.H. Native Prairie Graminoid Host Plants of Minnesota and Associated Lepidoptera: A Literature Review. Journal of the Lepidopterists' Society. https://www.lepsoc.org. (In press)

The tables list the common and scientific name of the Lepidoptera that were found to eat each native grass.

Big Bluestem (*Andropogon gerardii*)

Common Name	Scientific Name
Delaware skipper	*Anatrytone logan*
arogos skipper	*Atrytone arogos*
dusted skipper	*Atrytonopsis hianna*
wheathead army worm	*Faronta diffusa*
Dakota skipper	*Hesperia dacotae*
cobweb skipper	*Hesperia metea*
Ottoe skipper	*Hesperia ottoe*
Indian skipper	*Hesperia sassacus*
Newman's borer	*Meropleon ambifusca*

Sideoats Grama (*Bouteloua curtipendula*)	
Common Name	**Scientific Name**
arogos skipper	*Atrytone arogos*
Assiniboia skipper	*Hesperia assiniboia*
Dakota skipper	*Hesperia dacotae*
Leonard's skipper	*Hesperia leonardus*
Ottoe skipper	*Hesperia ottoe*
Poweshiek skipperling	*Oarisma poweshiek*

Blue Grama (*Bouteloua gracilis*)	
Common Name	**Scientific Name**
Assiniboia skipper	*Hesperia assiniboia*
common branded skipper	*Hesperia comma*
Leonard's skipper	*Hesperia leonardus*
Ottoe skipper	*Hesperia ottoe*
Uncas skipper	*Hesperia uncas*
Garita skipperling	*Oarisma garita*

Hairy Grama (*Bouteloua hirsuta*)	
Common Name	**Scientific Name**
Uncas skipper	*Hesperia uncas*
Ottoe skipper	*Hesperia ottoe*
Leonard's skipper	*Hesperia leonardus*

Sun Sedge (*Carex inops ssp. heliophila)*	
Common Name	**Scientific Name**
Dakota skipper	*Hesperia dacotae*
Assiniboia skipper	*Hesperia assiniboia*
dun skipper	*Euphyes vestris*
Garita skipperling	*Oarisma garita*

Lake Sedge (*Carex lacustris*)	
Common Name	**Scientific Name**
Dion skipper	*Euphyes dion*
dun skipper	*Euphyes vestris*
eyed brown	*Lethe eurydice*
Appalachian brown	*Lethe appalachia*
broad-winged skipper	*Poanes viator*

Tussock Sedge (*Carex stricta*)	
Common Name	**Scientific Name**
bog lithicodia moth	*Deltote bellicula*
black dash	*Euphyes conspicua*
Appalachian brown	*Lethe appalachia*
Eyed Brown	*Lethe eurydice*
Mulberry wing	*Poanes masassoit*

Eastern bottlebrush (*Elymus hystrix*)	
Common Name	**Scientific Name**
Appalachian brown	*Enodia anthedon*

Needleanthread (*Hesperostipa comata)*	
Common Name	**Scientific Name**
Hesperia leonardus	*Hesperia comata*

Porcupine Grass (*Hesperostipa spartea*)	
Common Name	**Scientific Name**
Dakota skipper	*Hesperia dacotae*
common wood nymph	*Cercyonis pegala*

Prairie Junegrass (*Koeleria macrantha*)	
Common Name	**Scientific Name**
tawny-edged skipper	*Polites themistocles*
Assiniboia skipper	*Hesperia assiniboia*
Dakota skipper	*Hesperia dacotae*
Garita skipperling	*Oarisma garita*

Switchgrass (*Panicum virgatum*)	
Common Name	**Scientific Name**
Tortricidae moth	*Aethes spartinana*
Delaware skipper	*Anatrytone logan*
Blastobasidae moth	*Blastobasis repartella*
pink streak moth	*Faronta rubripennis*
Leonard's skipper	*Hesperia leonardus*
Texas mocis moth	*Mocis texana*
stalk borer moth	*Papaipema nebris*
tawny-edged skipper	*Polites themistocles*

Little Bluestem (*Schizachyrium scoparium*)	
Common Name	**Scientific Name**
Arogos skipper	*Atrytone arogos*
dusted skipper	*Atrytonopsis hianna*
common wood nymph	*Cercyonis pegala*
Assiniboia skipper	*Hesperia assiniboia*
Dakota skipper	*Hesperia dacotae*
Leonard's skipper	*Hesperia leonardus*
cobweb skipper	*Hesperia metea*
Ottoe skipper	*Hesperia ottoe*
Indian skipper	*Hesperia sassacus*
Poweshiek skipperling	*Oarisma poweshiek*
crossline skipper	*Polites origenes*

little bluestem (cultivar Blue Heaven®)

Indiangrass (*Sorghastrum nutans*)	
Common Name	**Scientific Name**
pepper and salt skipper	*Amblyscirtes hegon*
wheathead army worm	*Faronta diffusa*

Prairie Cord Grass (*Spartina pectinata*)	
Common Name	**Scientific Name**

Tortricidae moth	*Aethes spartinana*
four-lined borer moth	*"Resapamea" stipata*

Prairie Dropseed (*Sporobolus heterolepis*)	
Common Name	**Scientific Name**
Noctuidae moth	*Anicla tenuescens*
Dakota skipper	*Hesperia dacotae*
Leonard's skipper	*Hesperia leonardus*
Ottoe skipper	*Hesperia ottoe*
Poweshiek skipperling	*Oarisma poweshiek*

Garita skipperling Photo by Bryan Reynolds

MOTHS

It is important to emphasize that not all moths are pests. However, there are some moth species listed in the tables that have been recorded as occasional pests. This includes *Papaipema nebris*, an occasional pest of garden vegetables and agricultural crops, and *Papaipema cataphracta, Faronta diffusa,* and *"Resapamea" stipata*, occasional pests of agricultural crops.

OBSERVING BUTTERFLIES AND MOTHS IN NATIVE PLANTINGS

The landscape context of the native planting influences which species will find and use it. It is unlikely that you will see rare species in native plantings. Further research needs to be done to determine how individual species benefit from native plantings

Skippers have a unique flight pattern for which they are named. They have a short, thick body that allows them to fly in bursts that send them high into the air, which gives the appearance of skipping across a landscape. Skippers are notoriously hard to identify to species by their markings. The potential species can be narrowed down by flight times and site preference.

LEPIDOPTERA-FRIENDLY MANAGEMENT

Some skipper species have shown to be vulnerable to fire management. If you suspect you have skipper larvae inhabiting your native planting, consider using alternative management methods, such as cutting or mowing grasses. If the native planting is small, cut back tops of native grasses 6 inches from the ground in late winter. If burning is a must, burn small areas, leaving a portion of the planting as a refuge for any existing Lepidoptera larvae and use low intensity fires.

Citation style. Source info such as citations or references is treated in this style and is always preceded by a maroon rule.

For more information on the benefits of native grasses: http://grasses.cfans.umn.edu, https://grasstalk.wordpress.com,