

Moths

Unlike butterflies, very little fieldwork has been completed to determine species composition and distribution of moths in northeast South Dakota. This is partly due to the fact moths are harder to capture and study because most adults are nocturnal, and identification to species is difficult in the field. Many adults can only be differentiated by studying specimens in the hand with a good understanding of moth taxonomy.

Although behavior and several physiological characteristics separate moths from butterflies including flight periods (moths are mainly nocturnal (night) and butterflies diurnal (day)); the shapes of antennae and wings; each have similar life histories. Both moths and butterflies complete a series of changes from egg to adult called metamorphosis. The only difference being adult moths develop in cocoons and most butterflies in chrysalises. Like butterflies, the host plants that moth larvae feed upon are important. These food sources will determine when and where you will find larvae and adults.

Adult moths are most often found on warm summer nights lying on the ground below bright outside lights. It is believed moths are attracted to these nighttime lights, and upon reaching the source become trapped and disorientated. The moth circles the light trying to escape and may end up falling helplessly to the ground where they are vulnerable to predators. Some scientists believe the proliferation of nighttime lighting, deemed light pollution, may be one reason for declining populations of this and many other nocturnal insects.

A good book for beginners is Himmelman's (2002) book "Discovering Moths". Winter (2000) describes several methods for capturing and observing moths including the use of light traps and sugar baits. There are a few other essential books listed in the suggested references section located on pages 6 & 7. Many moth identification guides can now be found on the internet, the North Dakota and Iowa sites are the most useful for our area.

Listed below are just a few of the species that probably occur in northeast South Dakota. The list is compiled from the author's personnel collection, and specimens collected by Gary Marrone or listed in Opler (2006). Common and scientific names follow Moths of North Dakota (2007) or Opler (2006).

Moths Observed in Day, Grant, Marshall, and Roberts Counties, South Dakota.

Leaf Rollers and Bell Moths



Linden leafroller moth (specimen by Dennis Skadsen)

Linden leafroller moth (*Pantographa limata*)

Geometrids/Inchworm Moths



Crocus geometer (specimen by Dennis Skadsen)

- Scallop moth** (*Cepphis armataria*)
- Maple spanworm** (*Ennomis magnaria*)
- The beggar** (*Eubaphe mendica*)
- Johnson's euchaena** (*Euchlaena johnsonaria*)
- Saw-wing** (*Euchlaena serrata*)
- Mottled euchaena** (*Euchlaena tigrinaria*)
- Snowy geometer** (*Eugonobapta nivosaria*)
- Confused eusarca** (*Eusarca confusaria*)
- Chickweed geometer (*Haematopsis grataria*)
- Pale metanema** (*Metanema inatomaria*)
- Honest pero** (*Pero honestaria*)
- Large maple spanworm moth** (*Prochoerodes transversata*)
- Sharp lined yellow** (*Sicya macularia*)
- White slant-line** (*Tetracis cachexiata*)
- Crocus geometer** (*Xanthotype sospeta*)

Giant Silk Moths



Cecropia moth (photo by Dennis Skadsen)

The largest moths found in this area, with wingspans up to six inches, are the Cecropia and Polyphemus moths. Both species are found in or near hardwood forests and occasionally urban areas.

- Polyphemus moth** (*Antheraea polyphemus*)
- Cecropia moth** (*Hyalophora cecropia*)



Polyphemus moth (photo by Dennis Skadsen)

Sphinx Moths



White-lined sphinx moth (photo by Dennis Skadsen)

The sphingidae are one of the better known and identifiable moth families. Several sphinx moths fly during the daytime. The White-lined sphinx (shown above) is sometimes mistaken for a hummingbird when observed feeding on petunias and other flowers. The Bumblebee or Snowberry clearwing (shown on page 4) mimics a bumblebee to gain protection from predators. Several other diurnal moths mimic wasps. The larvae of sphinx moths feed on a variety of trees; therefore adults are most often encountered in woodlands and urban areas. One species, the Willow-herb day-sphinx may be a prairie-specialist dependant on remnant tallgrass prairie plants for survival.

Waved sphinx (*Ceratonia undulosa*)
Hog sphinx, Virginia-creeper sphinx
(*Darapsa myron*)
Lettered sphinx (*Deidamia inscriptum*)



Hog sphinx (specimen by Dennis Skadsen)



Achemon sphinx (specimen by Dennis Skadsen)

Achemon sphinx (*Eumorpha achemon*)
Pandora sphinx (*Eumorpha pandoris*)



Pandora sphinx (specimen by Dennis Skadsen)



Clearwing (photo by Doug Backlund)



Bumblebee clearwing caterpillar (photo by Dennis Skadsen)

- Bumblebee clearwing/Snowberry clearwing** (*Hemaris diffinis*)
- Bedstraw sphinx** (*Hyles gallii*)
- White-lined sphinx** (*Hyles lineate*)
- Five-spotted hawk moth** (*Manduca quinquemaculatus*)
- Big poplar sphinx** (*Pachysphinx modesta*)
- Blinded sphinx** (*Paonis excaecatus*)
- Small-eyed sphinx** (*Paonis myops*)
- Willow-herb day-sphinx** (*Proserpinus juanita*)
- Twin-spotted sphinx** (*Smerinthus jamaicensis*)

- Great ash sphinx** (*Sphinx chersis*)
- Laurel sphinx** (*Sphinx kalmiae*)
- Vashti sphinx** (*Sphinx vashti*)



Twin-spotted sphinx caterpillar (photo by Dennis Skadsen)

Prominents

- Yellow necked caterpillar moth** (*Datana ministra*)
- Gray furcula** (*Furcula cinera*)
- Common gluphisia** (*Gluphisia septentrionis*)
- Variable oakleaf caterpillar** (*Lochmaeus manteo*)
- White-dotted prominent** (*Nadata gibbosa*)
- Elegant prominent** (*Odontosia elegans*)
- Black-rimmed prominent** (*Pheosia rimosa*)
- Orange-humped mapleworm** (*Symmerista leucitys*)

Owlet Moths

- Short-lined chocolate** (*Argyrostitis anilis*)
- Canadian owlet** (*Calyptra canadensis*)
- Hitched arches** (*Melanchra adjuncta*)
- Owl moth** (*Thysania zenobia*)



Sweetheart underwing (specimen by Dennis Skadsen)



Underwing moth at rest (photo by Dennis Skadsen)

Underwing Moths

Aptly named due to their colorful underwings, this group of moths is easily attracted to sugar baits. A slightly fermented mixture of stale beer and brown sugar painted on a tree will attract feeding adults at night. By approaching the bait slowly with a flashlight you can easily observe and capture these medium sized moths. Most adult underwings emerge in August and are found in woodlands. The Three-staffed and Whitney's underwings are associated with prairie habitats. McDaniel and Fauske (1981) published a taxonomic key to twenty-eight species of *Catocala* collected in eastern South Dakota that is useful for identifying underwings in this area.

Sweetheart underwing (*Catocala amatrix*)

Three-staffed underwing (*Catocala amestris*)

Darling underwing (*Catocala cara*)

Sleepy underwing (*Catocala concumbens*)

Woody underwing (*Catocala grynea*)

Mother underwing (*Catocala parta*)

Ultronia underwing (*Catocala ultronia*)

Whitney's underwing (*Catocala whitneyi*)

Fruit Piercers



Herald moth (specimen by Dennis Skadsen)

The Herald (*Scoliopteryx labatrix*)

Foresters



Beautiful wood-nymph (specimen by Dennis Skadsen)

Beautiful wood-nymph (*Eudryas grata*)

Pearly wood-nymph (*Eudryas unio*)

Flower Moths

Orange phlox moth (*Heliothis acesias*)

Prairie-sage flower moth (*Schinia cumatilis*)

Hulst flower moth (*Schinia hulstia*)

Leadplant flower moth (*Schinia lucens*)

Lichen Moths

Painted lichen moth (*Hypoprepia fucosa*)

Scarlet winged lichen moth (*Hypoprepia miniata*)

Tiger Moths

Lesser milkweed tiger moth/Unexpected cynthia (*Cycnia inopinatus*)

Dogbane tiger moth/Delicate cynthia (*Cycnia tenera*)

Acrea moth/Saltmarsh caterpillar (*Estigmene acrea*)

Parthenice Tiger Moth (*Grammia parthenice*)

Virgin tiger moth (*Grammia virgo*)



Virgin tiger moth (specimen by Dennis Skadsen)

Banded tussock moth (*Halysidota tessellaris*)

Confusing haploa (*Haploa confusa*)

LeConte's haploa (*Haploa lecontei*)

Ruby tiger moth (*Phragmatobia fuliginosa*)

Lined ruby tiger moth (*Phragmatobia lineata*)

Woolly bear/Isabella tiger moth (*Pyrrharctia Isabella*)

Virginia tiger moth (*Spilosoma virginica*)

Rusty virbia (*Virbia ferruginosa*)

Immaculate holomelina (*Virbia immaculate*)

❖ Suggested References

A Field Guide to Moths of Eastern North America,
Charles V. Covell, Jr.
2005. Special Publication No. 12, Virginia Museum of Natural History.

Basic Techniques for Observing and Studying Moths and Butterflies,
William D. Winter, Jr.

2000. Memoirs of the Lepidopterists' Society No. 5, Los Angeles, CA.

Caterpillars of Eastern North America, a Guide to Identification and Natural History.
David L. Wagner
2005. Princeton University Press Field Guides, Princeton.

Discovering Moths: Nighttime Jewels in Your Own Backyard
John Himmelman
2002. Down East Books.

Moths and Caterpillars of the North Woods (North Wood Naturalists Series)
Jim Sogaard
2009. Kollath-Stensaas Publishing

Moths of Western North America
Jerry A. Powell and Paul A. Opler
2009. University of California Press, Berkeley.

The Hawk Moths of North America, a Natural History Study of the Sphingidae of the United States and Canada
James P. Tuttle
2007. Wedge Entomological Research Foundation.

Butterfly Gardening & Conservation

Pollinator Conservation Handbook,
Matthew Shepherd et al.
2003, Xerces Society, Portland, OR.

Websites

Butterflies and Moths of North America
<http://www.butterfliesandmoths.org/>

Insects of Iowa
http://www.insectsofiowa.com/Moths/moths_of_iowa.htm

Moths of North Dakota
<https://www.ndsu.edu/pubweb/~gefause/ndmoths/home.htm>

❖ Literature Cited

McDaniel, B. and Gerald Fauske. 1981. The Genus *Catocala* Schrank Collected From Four Eastern South Dakota Counties (Noctuidae: Catocalinae). Journal of Lepidopterist's Society 35:2 94-100.

Opler, Paul A., Harry Pavulaan, Ray E. Stanford, Michael Pogue, coordinators. 2006. Butterflies and Moths of North America. Bozeman, MT: Big Sky Institute.
<http://www.butterfliesandmoths.org/>

Winter, William D., Jr. 2000. Basic Techniques for Observing and Studying Moths and Butterflies. Memoirs of the Lepidopterists' Society No. 5, Los Angeles, CA. 444 pp.