

BUTTERFLIES AND DRAGONFLIES

The insect world is a place to discover and observe thousands of interesting new creatures. It is these small creatures that create the beginning to a complex food chain. Without them, many other forms of wildlife would not exist. From newly hatched ducklings to frogs, toads and bats, insects are used by almost every living creature.

Butterflies, moths, dragonflies and damselflies are a group of insects that are particularly interesting, in large part, because they are brilliantly colored and more visible to the human eye. Because they are found in many habitats from wetlands and prairies to urban back yards, they are a good group of subjects for study and enjoyment.

This publication features only a small sample of common species found in North Dakota, and some of them you probably recognize. Other more comprehensive publications provide a more in depth identification process for those that are not so common.

Turning your own back yard into an attractive place for these insects is a project we hope you will consider. "Butterfly gardening" is a great activity that can involve the whole family. The flowers you plant will attract these creatures as well as add beauty to your neighborhood. Some butterflies and moths require specific plants, adding to the satisfaction of your research, planting and providing a habitat on your own property.

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NORTH DAKOTA GAME AND FISH DEPARTMENT



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BUTTERFLIES, MOTHS, DRAGONFLIES AND DAMSELFLIES



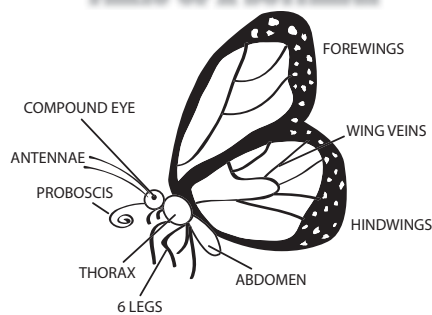
BUTTERFLIES

Butterflies belong to the order *Lepidoptera*, meaning "scale wings." It is estimated that up to 20,000 species exist in the world. About 150 species of butterflies have been identified in North Dakota.

Butterflies differ from moths:

BUTTERFLIES	MOTHS
Smooth, slender bodies	Plump, fuzzy bodies
Thin antennae with a knobbed end	Thicker, more feathery antennae
Rest with wings upright over the back	Rest with wings spread out
Most active during the day	Most active during the night
Usually brightly colored	More are dull colored

PARTS OF A BUTTERFLY



LIFE CYCLE

There are four distinct stages of a butterfly or moth's life:

- **Eggs** are laid singly or in clusters on host plants or sometimes on the ground.
- **Caterpillars** (or larvae) hatch from the eggs and consume the host plants. They mature through a series of stages (instars) where the skin is shed, allowing the caterpillar to grow more.
- **Pupa** (or "chrysalis" for butterflies and "cocoon" for moths), the caterpillar transforms into a butterfly within its pupa.
- An **adult** emerges from the pupae. Depending on the species, some adults may overwinter and live for up to a year; others may live only for a week or two.

Many species do not migrate and spend the ND winter in any of the forms above.

SKIPPERS

Small to medium (3/4-1.5 inch wingspan) butterflies that at first glance may appear to be a moth. Plump bodies, large eyes and rapid flights. Roughly 42 species in ND.

Spread-winged Skippers

These skippers are larger than grass skippers and most are brown or gray in color. Eleven species.

As its name implies the common checkered skipper is common in ND and is especially plentiful in the badlands.

Grass Skippers

Grass skippers are more colorful skippers, with orange and yellow hues. Caterpillar food is primarily grasses such as little bluestem. Thirty one species.

Dakota skipper populations have declined due to loss of native prairie and they have been proposed for listing as a threatened or endangered species.



Common Checkered Skipper



Dakota Skipper



Canadian Tiger Swallowtail



Black Swallowtail Caterpillar



Adult Black Swallowtail

SWALLOWTAILS

Large (2.5-4.5 inch wingspan) butterflies with one or more tails on each hindwing. Nine species in ND.

Caterpillars have an orange-red Y-shaped structure on the head. When threatened, the caterpillar releases a pungent odor from this structure. Overwinter as a chrysalis.

Yellow Swallowtails

The swallowtails, being more yellow, can be lumped into this group, though some might actually be a "black" swallowtail species. About five "yellow swallowtails" in ND.

Canadian tiger swallowtail caterpillars feed on leaves of poplars (e.g., cottonwood or aspen) and willow, occasionally ash and cherry.

Black Swallowtails

The swallowtails being more black can be lumped into this group. About four "black swallowtails" in ND.

Black swallowtail caterpillars feed on plants of the dill family, including garden dill and carrots.

WHITES AND SULPHURS

About 14 species in ND of these medium-sized (1.5-2 inch wingspan) white or yellow butterflies. While species identification is not too difficult, it's convenient to lump these active butterflies into either "whites" or "yellows."

Whites

These caterpillars feed on a variety of plants in the mustard or cabbage family, including broccoli and cabbage in your garden. Six "whites" in ND.

The cabbage butterfly is nonnative and can be a garden pest.

Yellows

Caterpillars may feed on plants in your garden, but are most often encountered in alfalfa and clover fields. Eight "yellows" in ND.

The clouded and alfalfa butterflies can be difficult to distinguish from each other.



"White Butterfly"



"Yellow Butterfly"

GOSSAMER WINGS

Small (less than 1.5 inch wingspan) butterflies, about 29 species in ND. They are further divided into four groups, of which three are described here. The fourth, one species of harvester, is quite rare in ND.

Coppers

Look for iridescent purple hues on the five species in ND. The bronze copper is found in wet meadows where curly dock and other dock species occur, its larval food.

Hairstreaks

Secretive and short flight periods may make many of the 10 hairstreaks difficult to find. Many have thin tails on the hindwing.

Look for striped hairstreaks along edges of woodlands where oak trees are present.

Blues

As the name of the group implies, males are blue but females more gray or brown. Up to 12 species of blues in ND.

Melissa blues are bivoltine, meaning they have two broods per year, the first in mid-June and another in mid-August.



Bronze Copper



Striped Hairstreak



Melissa Blue Female

METALMARK

Only one species in ND, the Mormon metalmark, and only found in the badlands. Adults feed on rabbit brush and caterpillar on wild buckwheat.



Mormon Metalmark

BRUSH-FOOTED BUTTERFLIES

These small to large (1-4 inch wingspan) butterflies are active and colorful. Brush-footed butterflies are named because the forelegs are shortened and covered in hairs, giving them a "brushy" appearance. Approximately 54 species may be found in ND. Brushfoots are further divided into the following seven groups:

Fritillaries

The 11 ND fritillaries are medium to large (2-4.0 inch wingspan). Sometimes difficult to identify, larger ones can be grouped into "greater fritillaries" and the smaller into "lesser fritillaries." Orange and black dorsal wings and silvery ventral wings.

The Aphrodite fritillary newly hatched caterpillars do not feed, but overwinter in this form, and do not eat until spring.

Crescents and Checkerspots

The eight butterfly species in this group are small, orange and dark brown/black on the back and orange and white on the underside.

Pearl crescent, as with all in this group, is associated with asters.

Anglewings and Tortoiseshells

The irregular wing pattern is obvious on the 10 species in this group. Overwinter as adults.

The mourning cloak is usually the first butterfly seen in the spring, sometimes when there is still snow on the ground.

The Eastern comma has a clear comma mark on the underwing.



Aphrodite Fritillary



Pearl Crescent



Mourning Cloak



Eastern Comma

Thistle Butterflies

The four species in this group migrate south in the fall as they cannot survive ND winters.

The painted lady is found on every continent except Antarctica.

Red admirals are in this group even though their name implies they should be in the next.

Admirals

Large (2.5-3.5 inch wingspan) colorful butterflies. Four species in ND.

The viceroy mimics, or is a look-alike, to the monarch.

The monarch is un-tasty to predators so the viceroy has evolved to look like the monarch, thus predators will think it is also un-tasty. A black line across the hind wing separates this species from the monarch.



Viceroy

Satyr or Wood Nymphs

Medium-sized (1-2.5 inch wingspan) brown butterflies with distinctive eye spots. Eleven species in ND.

The common wood nymph is found more often in grassland than in woodland, as its name implies.



Common Wood Nymph

Milkweed Butterflies

Large (3.5-4 inch wingspan) and well-known, the monarch completely depends on milkweed as a food source for its caterpillar.



Monarch



Monarch Caterpillar



Painted Lady

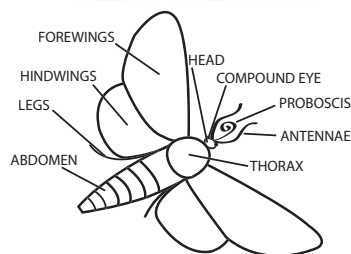


Red Admiral

MOTHS

Moths belong to the same order as butterflies, *Lepidoptera*. Worldwide about 160,000 moth species have been identified but it is thought many more exist. More than 1,000 species have been found in ND. Moths are often perceived as pests, but many are beneficial pollinators and some are quite beautiful.

PARTS OF A MOTH



Giant Silk Moths

The giant silk moths are a group of large (3-6 inch wingspan), typically more brightly colored moths that are often confused with butterflies. Four of the 11 species in ND are particularly striking.

With a 5-6 inch wingspan, the cecropia moth is the largest moth in North America.

The Glover's silkmoth, both caterpillars and adult, are similar to the cecropia moth. The Polyphemus moth is named for its large eye spots – a tribute to the Cyclops (or one-eyed giant) Polyphemus of Greek mythology.

Sphinx Moths

Narrow wings and a streamlined abdomen allow most of the 35 species in this group to have strong, rapid flights. Some actually hover like hummingbirds.

White-lined sphinx caterpillars burrow into the ground where they metamorphose into adults.



Cecropia Caterpillar



Glover's Silkmoth



Polyphemus Moth



White-lined Sphinx

Tiger Moths

This group of moths typically have "hairy" caterpillars.

The woolly bear is the larval form of the Isabella tiger moth. According to folklore, a wider brown middle section indicates the upcoming winter will be mild and a narrow brown section predicts a harsh winter.



Woolly Bear Caterpillar

Millers

Several species of moths found around the home, particularly around lights at night, are often called "millers."

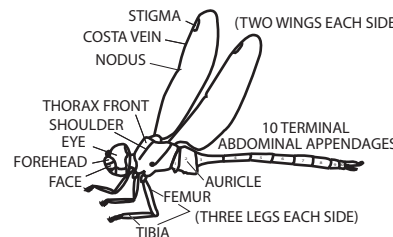
DRAGONFLIES AND DAMSELFLIES

Dragonflies and damselflies belong to the order *Odonata*, meaning "toothy ones." About 34 dragonflies and 25 damselflies have been found in ND.

Dragonflies differ from damselflies:

DRAGONFLIES	DAMSELFLIES
Eyes almost always touch at the top of the head	Eyes are always separate
Stout	Slight
Strong, sustained flight	Weak, fluttery flight
Most active during the day	Most active during the night
Hold wings flat when perched	Hold wings over their back (except spreadwings)

PARTS OF A DRAGONFLY/DAMSELFLY



LIFE CYCLE

There are three distinct stages of a dragonfly or damselfly life:

- **Eggs** are deposited into plant stems, wet soil or directly into water.
- **Larvae** (or nymph) hatch from the eggs and live underwater for 1-3 years. As they grow they molt several times. The nymphs are voracious aquatic predators.
- **Adult** – when mature, the nymph climbs out of the water, clings to a surface such as a tree trunk or plant stem, and the dragonfly/damselfly emerges from its larvae skin.

DARNERS

Darners are big (over 2.5 inches long), often perch vertically on vegetation, and are extraordinary predators. They prey on insects of all sizes, including other dragonflies and damselflies.

Blue Darners

Several species of darners have markings of blue, black and green, with females being more green/yellow. Examining the thoracic stripes will lead to species identification, but for simplicity our six species may be called "blue darners."

The variable darter has slender, O-tip-shaped yellow-blue thoracic stripes.

Common Green Darter

The other darter in ND is the common green darter, easily recognized by the solid green thorax and blue abdomens on males and red abdomens on females and juveniles. Some are migratory.



Lance-tipped Darter



Variable Darter



Common Green Darter



A newly emerged Clubtail



Spiny Baskettail



12-spotted Skimmer

CLUBTAILS

The only dragonflies with eyes that do not meet at the top of the head. Medium sized (2 inches long), three species in ND, yellow and black dragonflies, primarily ground perchers.

EMERALDS

Two species in ND. Medium-sized with bright green eyes. Secret and uncommon.

The spiny baskettail may emerge in masses.

COMMON SKIMMERS

The largest family of dragonfly species in the world. About 20 species in ND.

The widow skimmer, Four-spotted skimmer, twelve-spotted skimmer, and common whitetail are medium-sized, black and white dragonflies. White markings on the wings of the first three species make these skimmers quite showy.

Red Meadowhawks

About 10 skimmers are "meadowhawks." Most males are reddish and most females are yellowish-black. Identification can be difficult so individuals may be called "red meadowhawks."

Broad-winged Damselflies

Two species in ND. Large damselflies with metallic colors.

American rubyspots often cling to vegetation along streams and rivers.

The female river jewelwing climbs down a plant stem a foot or more underwater to lay her eggs, then swims to the surface and flies away.

Narrow-winged Damselflies

Roughly 18 species in ND. Most males are bluish or greenish with black markings. Most females gray or brown. The narrow-winged damselfly species are small and delicate. Most are species of "bluets" or blue damselflies.

Spreadwings

The spreadwings hold their wings out like a dragonfly, but their small size and eyes that do not touch indicate they are damselflies. Five species in ND.



Common Whitetail



Cherry-faced Meadowhawk



Female Cherry-faced Meadowhawk



American Rubyspot



River Jewelwing



"Bluet" Damselfly



Spreadwing Damselfly

REFERENCES AND RESOURCES

Books or Articles

Butterflies of North Dakota: an atlas and guide. By Ron Royer. Minot State University, Minot, ND. 2003.

Butterfly Gardening in North Dakota. By Janet J. Knodel, Gerald M. Fauske and Ronald C. Smith. NDSU Extension Service, North Dakota State University, Fargo, ND. October 2004. <http://www.ag.ndsu.edu/pubs/plantsci/landscap/e1266.pdf>

Butterflies through Binoculars, the West: A Field Guide to the Butterflies of Western North America. By Jeffrey Glassberg. Oxford University Press, New York. 2001.

Butterflies of North America. By Jeffrey Glassberg. Sterling Publishing, New York. 2004.

Butterflies of the North Woods. By Larry Weber. Kollath-Stensaas Publishing, Duluth, MN. 2002.

Caterpillars in the Field and Garden: A Field Guide to the Butterfly Caterpillars of North America. By Thomas J. Allen, Jim P. Brock and Jeffrey Glassberg. Oxford University Press, New York. 2005.

Dragonflies through Binoculars: A Field Guide to Dragonflies of North America. By Sidney W. Dunkle. Oxford University Press, New York. 2000.

Dragonflies of the North Woods. By Kurt Mead. Kollath-Stensaas Publishing, Duluth, MN. 2003.

Online

www.npwrc.usgs.gov/resource/insects/bflynd/index.htm Atlas of North Dakota Butterflies.

www.butterfliesandmoths.org A searchable database of butterfly and moth records in the United States and Mexico.

www.naba.org North American Butterfly Association.

www.butterflyrecovery.org The Butterfly Conservation Initiative.

<http://www.fs.fed.us/wildflowers/pollinators/monarchbutterfly> The Monarch Butterfly in North America.

www.bugguide.net A clearinghouse for information on all insects, spiders and other related creatures.

www.odonatacentral.org Maps, checklists, and photographs of dragonflies and damselflies.

www.xerces.org The Xerces Society for Invertebrate Conservation.

<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/plantsanimals/pollinate> Natural Resources Conservation Service Plants for Pollinators.

