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About the BEGINNER'S MOTHS OF THE MIDWEST GUIDES

Most photos were taken in west-central and central Illinois; a few are from eastern Iowa and north-central Wisconsin. Nearly all were posted to identification websites: BugGuide.net and iNaturalist.org. Identification help was provided by Aaron Hunt, Steve Nanz, John and Jane Balaban, Chris Grinter, Frank Hitchell, Jason Dombroskie, William H. Taft, Jim Wiker, and Terry Harrison as well as others contributing to the websites. Attempts were made to obtain expert verifications for all photos to the field identification level, however, there will be errors. Please contact the author with all corrections. Additional assistance was provided by longtime Lepidoptera survey partner, Susan Hargrove.

The intention of these guides is to provide the means to compare photographs of living specimens of related moths from the Midwest to aid the citizen scientists with identification in the field for Bio Blitz, Moth-ers Day, and other night lighting events. A taxonomic list to all the species featured is provided at the end along with some field identification tips.

WEBSITES PROVIDING IDENTIFICATION INFORMATION

BugGuide.net iNaturalist.org Mothphotographersgroup.msstate.edu Insectsofiowa.org centralillinoisinsects.org/weblog/resources/

WHICH MOTH GUIDE TO USE

The moths were split into 6 groups for the purposes of creating smaller guides focusing on similar features of 1 or more superfamilies. The guides are split up thusly:

1) **Macromoths** – large showy moths generally ranging in size of 5-18cm; Superfamilies: Bombycoidea (royal, silkmoths, and sphinx moths), Cossoides (carpenterworm), Lasiocampoidea (lappet moths)



Antheraea polyphemus Polyphemus moth



Prionoxystus robiniae Carpenterworm moth



Darapsa myron Virginia Creeper Sphinx

2) Micromoths – tiny moths with wingspans generally <2cm the exception being the clearwing borers (Sesioidae) which average between 1-3cm; Other Superfamilies: Adeloidea (fairy moths), Choreutidae (metalmarks), Epermenioides (fringe-tufted moths), Gelechioidea (curve-horned moths – has greatest number of species), Gracillarioidea (tube moths), Micropterigoidea (mandibulate archaic moths), Schreckensteiniodea (bristle-legged moths), Tineoidea (clothes, carpenter, and bagworm moths), Yponomatoidea (ermine moths)</p>



Dichomeris inversella Inverse Dichomeris



Caloptilia blandella Walnut Caloptilia



Synanthedon acerni Maple Callus Borer



Atteva aurea Alianthus webworm

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WHICH MOTH GUIDE TO USE (Cont.)

3) Geometer Moths (Geometroidea) – medium sized with wingspan 3-5 cm, most have angular sharp-pointed wings held open like butterflies; most larvae are "inchworms"





Macaria multilineata Many-lined Angle

Pleuroprucha insulsaria Tan Wave



Haematopis grataria Chickweed Geometer

4) Noctuoids/Owlets (Noctuiodea) – most species of any moth superfamily, medium sized with wingspan generally 2-5cm, triangular shape with stout bodies; most are nocturnal but includes some daytime pollinators: lichen, tiger, fungus, underwing, forage looper, litter, bird-dropping, dagger, wood nymph, groundling, dark owlet, earworm, flower, borer, cutworm, dart, quaker, wainscot, sallow, looper, and prominent moths



Catocala nuptialis Married Underwing



Acronicta vinnula Delightful Dagger



Hypena abalienalis White-lined Hypena

5) **Pyralids and Crambid Moths** (Pyraloidea) snout moths – large group of small moths with wingspan of 1- 4 cm, head bears long upturned labial palpi or snout; Guide also includes the Superfamilies: Drepanoidea (hooktip moths), Pterophoroidea (plume moths), Thryidoidea (thyris moths)



Herptogramma aeglaelis Serpentine Webworm



Chrysoteuchia topiaria Cranberry Girdler



Geina sp. Plume Moth



Dysodia oculatana Eyed Dysodia

6) Tortricid Moths (Tortricoidae) – tortrix and leafroller moths – large group of small moths (often grouped with micromoths) with wingspan 1-3 cm. Most are drab with mottled and marbled brown coloration. Some (Olethreutinae) have larvae which bore into plant stems, roots, buds, or seeds; Tortricinae larvae construct leaf rolls; Guide also includes the Superfamily: Zygaenoidea (slug, hag, skiff, skeletonizer moths)



Epiblema abruptana Abrupt Epiblema



Choristoneura roseaceana Oblique-banded Leafroller



Apoda y-inversum Yellow-collared Slug Moth

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MOTH MIMICRY AND THE AVOIDANCE OF PREDATORS

A lot of moths resemble other moths, other types of insects, birds, or their surroundings. This is typically a defensive adaptation to avoid predation. With true mimicry one species gains an advantage in resembling another. This can take various forms: 1) Acoustic or Mullerian Mimicry where the one species mimics the sounds produced by another to fool predators; 2) Predatory Mimicry in which a prey species mimics a predator to avoid looking like food; and 3) Visual or Batesian Mimicry where the palatable species mimics the appearance of one which is nonpalatable.

Acoustic (Mullerian) Mimicry: Some moths mimic the sounds of other moths which are unpalatable to avoid being prey for bats. Several pyralids (Pyraloidea/Pyralid Moths), from the genus Galleria (greater wax moth - no photo available) are known to mimic the sounds of the delicate cycnia (Noctuiodea/Owlet) which is distasteful and avoided by insectivorous bats.



Cvcnia tenera Delicate Cycnia

Predatory Mimicry: Moths such as members of the Metalmark Subfamily, Choreutinae (Micromoths), are known to mimic the movements of jumping spiders. In this is case the resemblance is vague and its primarily the movement that is similar. Several species of the clearwing borer family Sessidae (Micromoths) such as this Riley's clearing resemble predatory wasps. Some of the large showy silkmoths like the Io moth (Saturniidae/Macromoths), have huge eye spots on their hindwings giving the appearance of an owl or other large predator.



Peacock Brenthia

Brenthia pavonacella

Paraphidippus aurantius Jumping Spider



Svnanthedon rilevana Riley's Clearwing



Vespula squamosa Southern Yellowjacket



Automeris io Io Moth

Visual (Batesian) Mimicry: Moths are known to mimic the appearance or movement of other less attractive prey species as another means of avoiding predation. Examples of visual mimicry in moths include the sphinx moths (Bombycoidea/Macomoths), snowberry clearwing with resembles the feeding behavior and movement of the eastern carpenter bee and the white-lined sphinx which mimics the vibration and feeding behavior of a ruby-throated hummingbird.



Hemaris diffinis Snowberry Clearwing Hummingbird



Xylocopa virginica Eastern Carpenter Bee



Hyles lineata White-lined Sphinx



Archilochus colubris Ruby-throated Hummingbird

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MOTH MIMICRY AND THE AVOIDANCE OF PREDATORS (Cont.)

Two other moths; the black and yellow lichen moth (Noctuiodea/Owlets) and orange-patched smoky moth (Zygaenoidea/ Flannel, Slug, and Leaf Skeletonizer), mimic the net-winged beetle which is toxic.



Black & Yellow Lichen Moth Lycomorpha pholus



Net-winged Beetle Calopteron terminale



Orange-patched Smoky Moth Pyromorpha dimidiata

Convergent Resemblance: When one species coevolved independently to resemble another without a known ecological advantage it is called convergent resemblance. The purple carrot moth (Gelechioidea/Micromoths) – native to Europe – is a close match for a pale headed leafhopper. Plume moths (Pterophoroidea/Pyralid Moth Guide) resemble crane flies with their behavior of dangling by their long thin legs off the undersides of flowers or plant leaves.



Purple Carrot Seed Moth (non-native) Depressaria depressana



Pale-headed Leafhopper Paraphlepsius collitus



Plume Moth *Geina* sp.



Crane Fly *Tipula* sp.

Camouflage: While many moths are camouflaged to blend in with the environment a wide variety of moths from different Superfamilies and Families resemble bird dropping to evade predators. Here are a few examples: *Tarache aprica*, exposed bird-dropping moth (Noctuiodea/Owlets); Epiblema scudderiana, goldenrod gall moth (Tortricoidea/Tortricids), and Eudryas grata, beautiful wood nymph (Geometroidea/Geometers).



Exposed Bird-dropping Moth Tarache aprica



Goldenrod Gall Moth Epiblema scudderiana

Beautiful Wood Nymph Eudryas grata

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Midwest Region, USA Beginner's Guide to Moths of the Midwest - Micromoths Angella Moorehouse & Illinois Nature Preserve Commission Photos: Angella Moorehouse (angella.moorehouse@illinois.gov). Produced by: Angella Moorehouse with the assistance of Alicia Diaz, Field Museum. Identification assistance provided by: multiple sources (inaturalist.org; bugguide.net) © Sield Museum (2021) CC BY-NC 4.0. Licensed works are free to use/share/remix with attribution, but commercial use of the original work is not permitted. [fieldguides.fieldmuseum.org] [1326] version 1 Elachista sp. 1 ELACHISTIDAE 21 Depressaria depressana 22 Antaeotricha schlaegeri 23 24 Elachista sp. 2 ELACHISTÍDAE DEPRESSARIIDAE DEPRESSARIIDAE Purple Carrot-seed Moth Fruitworm Moth Grass Miner Moth Grass Miner Moth Anacampsis levipedella 25 26 Aristotelia roseosuffusella 27 Monochroa gilvolinella 28 Stereomita andropogonis GELECHIIDAE GELECHIIDAE GELECHIIDAE GELECHIIDAE Silver-dashed Anacampsis Twirler Moth Pink-washed Aristetelia Twirler Moth Dichomeris flavocostella Dichomeris inversella Dichomeris juncidella 29 30 31 32 Dichomeris ligulella

GELECHIIDAE Cream-bordered Dichomeris



GELECHIIDAE Little Devil Moth 34

38



Chionodes discoocellella GELECHIIDAE Eye-ringed Chionodes Moth



Chionodes Moth

Dichomeris ochripalpella

GELECHIIDAE

GELECHIIDAE

Inverse Dichomeris

Chionodes fondella GELECHIIDAE Dichomeris punctipennella GELECHIIDAE Many-spotted Dichomeris

35

39

GELECHIIDAE

Dichomeris Moth



Chionodes mediofuscella GELECHIIDAE Black-smudged Chionodes



36

40

GELECHIIDAE

Palmerworm Moth

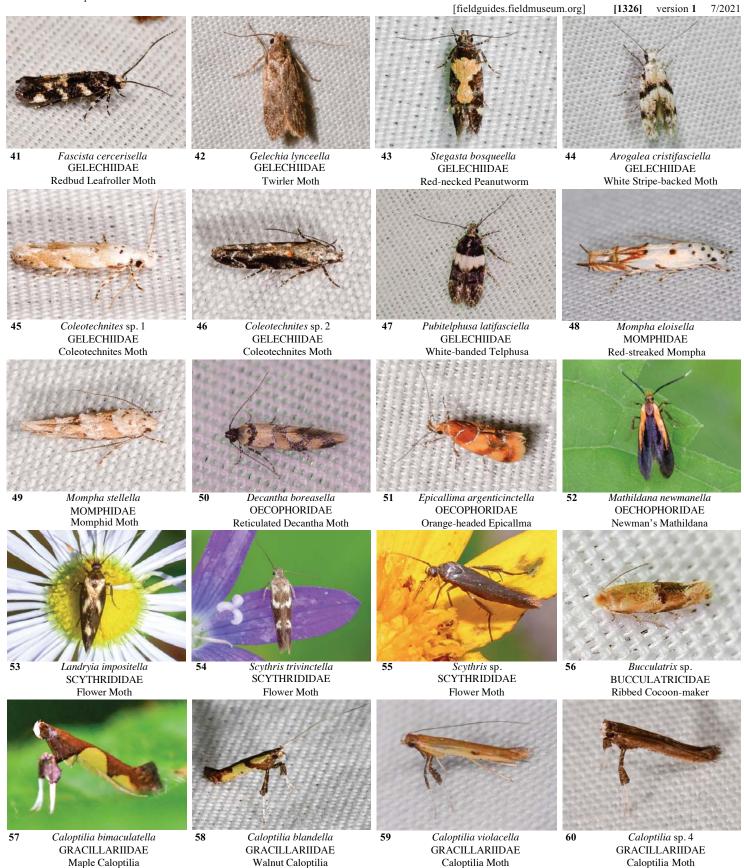
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Chionodes sp. 4 GELECHIIDAE Chionodes Moth

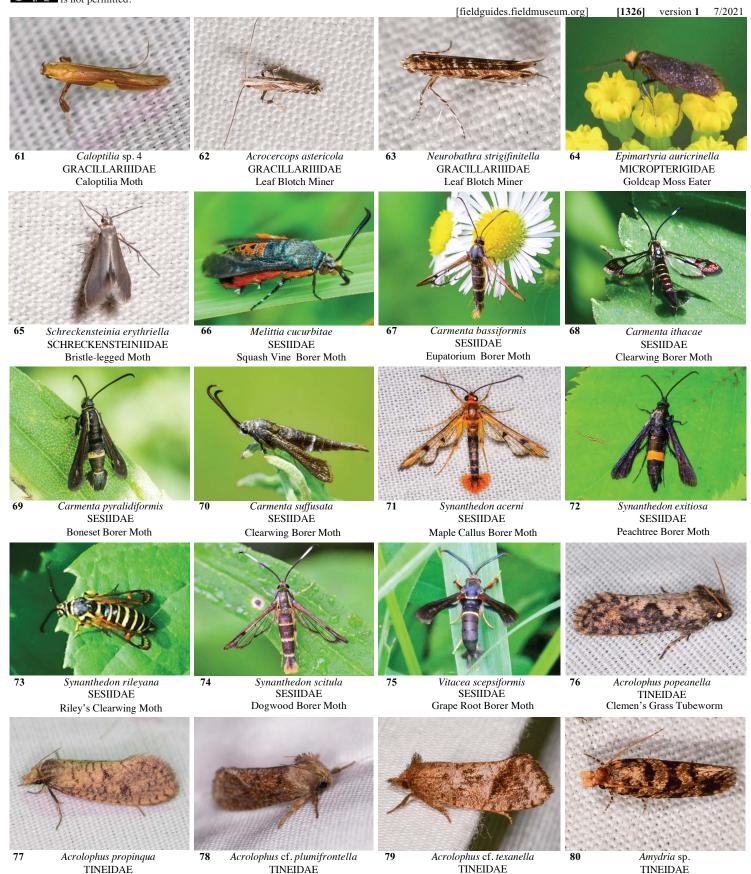
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Eastern Grass Tubeworm

Texas grass tubeworm

Burrowing Webworm Moth

Walsingham's Grass Tubeworm

Angena Moorenouse & Innois Nature Preserve Commission

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TAXONOMIC LIST OF MICROMOTHS INCLUDED IN FIELD GUIDE

This list attempts to depict the organization of the photos by taxonomic grouping. While all moths in the photos have assigned superfamilies and families not all of those are classified to subfamily, tribe or subtribe. Where these classifications are available, they were used to organize the photos. Taxonomic classification was obtained from iNaturalist and BugGuide.

MICROMOTHS are an artificial grouping of moth families comprised of mostly tiny moths whose features are best viewed with a microscope.

SUPERFAMILY: Adeloidea fairy moths - extensible ovipositor used to pierce plants for egg laying; most are metallic day fliers

FAMILY: Hellozelidae

1 Antispila sp. Shield-bearer moth: have opposing white forewing spots

SUPERFAMILY: Choreutidae **metalmarks** – often with metallic scales; jerky flight; at rest fluff wings at odd angles FAMILY: Choreutidae

SUBFAMILY: Choreutinae

2 *Brenthia pavonacella* <u>Peacock Brenthia</u>: said to mimic jumping spiders; underwings held outward lifting up the forewings in a fluffed up posture

3 *Prochoreutis inflatella* <u>Skullcap Skeletonizer:</u> associated with wetland skullcaps; brownish with white speckled sheen on wings, outer wing edges orange or reddish

4 *Tebenna gnaphaliella* Everlasting Tebenna Moth: warm tan-orange wings with light gray to white speckling; most associated with weedy grassland fields

SUPERFAMILY: Epermenioides fringe-tufted moths – projecting scale tufts on inner margins of hindwings; narrow wings with whorls of bristles on legs

FAMILY: Epermeniides

5 *Epermenia pimpinella* <u>Fringe-tufted Moth</u>: drab brown coloration with black spotting; larvae feed on members of the carrot family (golden alexanders, honewort, yellow pimpernel)

SUPERFAMILY: Gelechioidea **curved-horn moths -** horn-like structures which curve over the top of the head between the antennae; largest group of micromoths

FAMILY: Autostichidae autostichids - difficult to characterize; family members with varied features

SUBFAMILY: Symmocinae

6 Gerdana caritella Gerdana Moth: light tan-yellow forewings

7 Taygete atributella Triangle-marked Twirler: pale grayish with dark brown head and markings

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28 Stereomita andropogonis Twirler Moth: found near host plant little bluestem

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TAXONOMIC LIST OF MICROMOTHS INCLUDED IN FIELD GUIDE(Cont.)

SUBFAMILY: Dichomeridinae

- 29 Dichomeris flavocostella Cream-bordered Dichomeris: black with wide pale cream scalloped edges
- 30 Dichomeris inversella Inverse Dichomeris: brown and white speckling
- 31 Dichomeris juncidella Dichomeris Moth: dull dark brown to black with tiny white spots on central forewing
- 32 Dichomeris ligulella Palmerworm Moth
- 33 Dichomeris nonstrigella Little Devil Moth: shiny black with orange "horns"
- 34 Dichomeris ochripalpella Shining Dichomeris: shiny metallic blue and black
- 35 Dichomeris punctipennella Many-spotted Dichomeris
- 36 Dichomeris sp. 8 Dichomeris Moth
- SUBFAMILY: Gelechiinae
 - **TRIBE:** Gelechiini
 - 37 Chionodes discoocellella Eye-ringed Chionodes
 - 38 Chionodes fondella Chionodes Moth: creamy white with 4 distinct marks on wing edges
 - 39 Chionodes mediofuscella Black-smudged Chionodes: warm orange-brown with black shoulder marks
 - 40 Chionodes sp. 4 Chionodes Moth
 - 41 Fascista cercerisella Redbud Leafroller: dark brown/black with prominent white spotting
 - 42 Gelechia lyncella Twirler Moth
 - 43 Stegasta bosqueella Red-necked Peanutworm: dark brown with peach hourglass
 - TRIBE: LITINI 44 Arogalea cristifasciella White Stripe-backed Moth: white with dark brown/black lateral stripes
 - 45 Coleotechnites sp. 1 Coleotechnites Moth
 - 46 Coleotechnites sp. 2 Coleotechnites Moth
 - 47 Pubitelphusa latifasciella White-banded Telphusa
- FAMILY: Momphidae momphids wings held over body at rest; projecting scale tufts
 - SUBFAMILY: Momphiinae
 - 48 Mompha eloisella Red-streaked Mompha: narrow wings; white with orange-rust terminal markings
 - 49 Mompha stellella Mompha Moth
- FAMILY: Oecophoridae concealer moths diverse group
 - SUBFAMILY: Oecophorinae
 - TRIBE: Oecophorini
 - 50 Decantha boreasella Reticulated Decantha Moth: dark brown with large peach patches
 - 51 Epicallima argenticinctella Orange-headed Epicallima: brightly colored with dark and pale orange
 - 52 Mathildana newmanella Newman's Mathildana: shiny black with orange head and forward sides
- FAMILY: Scythrididae flower moths frequently visit flowers; generally shiny brown, some with white markings
 - Schinia spp. (Noctuidea/Owlets) are also called flower moths these are much bigger with banded underwings
 - 53 Landryia impositella Flower Moth: metallic brown with white x markings
 - 54 Scythris trivinctella Flower Moth
 - 55 Scythris sp. 2 Flower Moth
- SUPERFAMILY: Gracillarioides tube moths plant leaf miners
 - FAMILY: Bucculatricidae ribbed-coccoon makers very small with narrow wings wrapped around body
 - 56 Bucculatrix sp. Ribbed Coccoon-maker
 - FAMILY: Gracillariidae leaf-blotch miners usual upright resting posture; "push-up moths"
 - SUBFAMILY: Gracillariinae
 - 57 Caloptilia bimaculatella Maple Caloptilia
 - 58 Caloptilia blandella Walnut Caloptilia
 - 59 Caloptilia violacella Caloptilia Moth
 - 60 Caloptilia sp. 4 Caloptilia Moth
 - 61 Caloptilia sp. 5 Caloptilia Moth
 - TRIBE: Acrocercopinae
 - 62 Acrocercops astericola Leaf Blotch Miner
 - TRIBE: Ornixolinae
 - 63 Neurobathra strigifintella Leaf Blotch Miner

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