

# Midwest Region, USA Beginner's Guide to Moths of the Midwest - Geometers

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)

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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), *Schreckensteinioidae* (bristle-legged moths), *Tineoidea* (clothes, carpenter, and bagworm moths), *Yponomatoidea* (ermine moths)



*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



*Haematopsis grataria*  
Chickweed Geometer

- 4) **Noctuids/Owlets (Noctuoidea)** – 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, sawfly, looper, and prominent moths



*Catocala nuptialis*  
Married Underwing



*Acrionicta 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

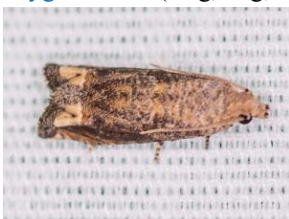


*Geina* sp.  
Plume Moth



*Dysodia ocellatana*  
Eyed Dysodia

- 6) **Tortricid Moths (Tortricidae)** – 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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### NIGHT LIGHTING

While some of the featured moths are day fliers and can be found on flowers and other vegetation, the vast majority are nocturnal and are best found by night lighting. This involves shining a bright light on a white or pale surface, often a white bed sheet to attract the moths which come to the light due to their instinct to follow the moon. It is often best to night light on nights with a new moon or overcast skies. Windless conditions are preferred as wind can impact flight and the ability to keep the sheet steady, unless secured. Any bright light can attract moths but mercury vapor lights and black lights may attract additional species. An LED shop light or even a porch light will also work. My typical set up is a reptile heat lamp attached to a LED light on one side with a mercury vapor light on the other side. I will set up a black light on a separate sheet. I have a small portable generator for use in the back country. One can also attract moths with natural fiber rope drenched in red wine or various moth baits, generally a mix of fermenting fruit, sugar, and alcohol. As night lighting is disruptive to moth behavior, and I am not interested in photographing the same individuals, I generally set up no more than once a week at a site. I typical turn off the lights after 2 hours but one can get more species if they continue into the early morning hours.



Photos taken by Dan Moorehouse

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1 *Probole amicaria*  
 GEOMETRIDAE  
 Friendly Probole Moth



2 *Xanthotype* sp.  
 GEOMETRIDAE  
 Yellow Crocus Moth



3 *Pero* sp.  
 GEOMETRIDAE  
 Pero Moth



4 *Lomographa vestaliata*  
 GEOMETRIDAE  
 White Spring Moth



5 *Biston betularia* spp. *Cognataria*  
 GEOMETRIDAE  
 Pepper and Salt Geometer



6 *Hypagyrtis unipunctata*  
 GEOMETRIDAE  
 One-spotted Variant



7 *Anavitrinella pampinaria*  
 GEOMETRIDAE  
 Common Gray Moth



8 *Ectropis crepuscularia*  
 GEOMETRIDAE  
 Small Engrailed Moth



9 *Glenoides texanaria*  
 GEOMETRIDAE  
 Texas Gray Moth



10 *Protoarmia porcelaria*  
 GEOMETRIDAE  
 Porcelain Gray Moth



11 *Campaea perlata*  
 GEOMETRIDAE  
 Pale Beauty



12 *Nematocampa resistaria*  
 GEOMETRIDAE  
 Horned Spanworm



13 *Protitame viginalis*  
 GEOMETRIDAE  
 Virgin Moth



14 *Digrammia continuata*  
 GEOMETRIDAE  
 Curved-line Angle



15 *Digrammia gnophosaria*  
 GEOMETRIDAE  
 Hollow-spotted Angle



16 *Digrammia ocellinata*  
 GEOMETRIDAE  
 Faint-spotted Angle



17 *Heliomata cycladata*  
 GEOMETRIDAE  
 Common Spring Moth



18 *Isturgia dislocaria*  
 GEOMETRIDAE  
 Pale-veined Isturgia



19 *Macaria* cf. *aemulataria*  
 GEOMETRIDAE  
 Common Angle Moth



20 *Macaria coortaria*  
 GEOMETRIDAE  
 Four-spotted Speranza

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21 *Macaria multilineata*  
GEOMETRIDAE  
Many-lined Angle



22 *Macaria pustularia*  
GEOMETRIDAE  
Lesser Maple Spanworm



23 *Macaria* sp. 5  
GEOMETRIDAE  
Angle Moth



24 *Macaria* sp. 6  
GEOMETRIDAE  
Angle Moth



25 *Mellilla xanthometata*  
GEOMETRIDAE  
Orange-wing



26 *Melanolophia canadaria*  
GEOMETRIDAE  
Canadian Melanolophia



27 *Phaeoura quernaria*  
GEOMETRIDAE  
Oak Beauty



28 *Besma endropiaria*  
GEOMETRIDAE  
Straw Besma Moth



29 *Eugonabapta nivosaria*  
GEOMETRIDAE  
Snowy Geometer



30 *Eusarca confusaria*  
GEOMETRIDAE  
Confused Eusarca



31 *Lambdina* sp.  
GEOMETRIDAE  
Curve-lined Looper



32 *Patalene olyzonaria*  
GEOMETRIDAE  
Juniper Geometer



33 *Prochoerodes lineola*  
GEOMETRIDAE  
Large Maple Spanworm



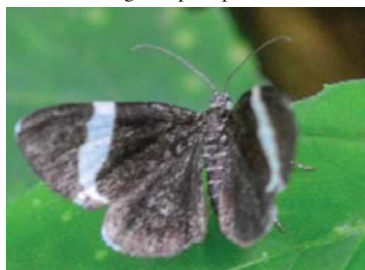
34 *Chlorochlamys chloroleucaria*  
GEOMETRIDAE  
Blackberry Looper



35 *Nemoria bistrifaria*  
GEOMETRIDAE  
Red-fringed Emerald



36 *Synchlora aerata*  
GEOMETRIDAE  
Wavy-lined Emerald



37 *Trichodezia albovittata*  
GEOMETRIDAE  
White-stripe Black Moth



38 *Eulithis diversilineata* complex  
GEOMETRIDAE  
Grapevine Looper



39 *Eubaphe mendica*  
GEOMETRIDAE  
The Beggar Moth



40 *Eupithecia miserulata*  
GEOMETRIDAE  
Common Pug Moth

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41 *Heterophleps triguttaria*  
GEOMETRIDAE  
Three-spotted Fillip



42 *Costaconvexa centrostrigaria*  
GEOMETRIDAE  
Bent-line Carpet Moth



43 *Orthonama obstipata*  
GEOMETRIDAE  
The Gem



44 *Xanthorhoe lacustrata*  
GEOMETRIDAE  
Toothed Brown Carpet



45 *Cyclophora nanaria*  
GEOMETRIDAE  
Dwarf Tawny Wave



46 *Pleuroprucha insulsaria*  
GEOMETRIDAE  
Tan Wave Moth



47 *Scopula limboundata*  
GEOMETRIDAE  
Large Lace Border



48 *Idaea demissaria*  
GEOMETRIDAE  
Red-bordered Wave



49 *Lobocleta ossularia*  
GEOMETRIDAE  
Drab Brown Wave



50 *Haematopis grataria*  
GRACILLARIIDEA  
Chickweed Geometer



51 *Timandra amaturaria*  
GRACILLARIIDEA  
Cross-lined Wave



52 *Callizzia amorata*  
GRACILLARIIDEA  
Gray Scallop-Wing

## TAXONOMIC LIST OF GEOMETER MOTHS 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.

SUPERFAMILY: Geometroidea

FAMILY: Geometridae

SUBFAMILY: Ennominae

TRIBE: Anagogini

1 *Probole amicarica* Friendly Probole: warm tan or gray with thick bold reddish border at base of wings

TRIBE: Angeronini

2 *Xanthotype* sp. Yellow Crocus Moth: bright yellow with rusty rose markings

TRIBE: Azelini

3 *Pero* sp. Pero Moth: warm brown-tan with edges of wings folded

TRIBE: Baptini

4 *Lomographa vestaliata* White Spring Moth: pure white with white legs, hind wings not pointed

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### TAXONOMIC LIST OF GEOMETER MOTHS INCLUDED IN FIELD GUIDE (Cont.)

#### TRIBE: Bistonini

5 *Biston betularia* spp. cognataria Pepper and Salt Geometer: large gray body with elongated tapered wings mottled with black

6 *Hypagyrtis unipunctata* One-spotted Variant: orange-brown shading with pale outer spot on forewings

#### TRIBE: Boarmiini

7 *Anavitrinella pampinaria* Common Gray Moth: gray body with dark mottling on wings

8 *Ectropis crepuscularia* Small Engrailed Moth: small gray moth with fine dark mottling

9 *Glenoides texanaria* Texas Gray Moth: thick body; wings have warm brown shading

10 *Protoboarmia porcelaria* Porcelain Gray Moth: gray speckled angular wings

#### TRIBE: Campaeini

11 *Campaea perlata* Pale Beauty Geometer: fine scalloped wing edges; pale white to green

#### TRIBE: Cassymini

12 *Nematocampa resistaria* Horned Spanworm: buffy yellow with rose colored border and net-like markings

13 *Protitame virginalis* Virgin Moth: pale white, soft rounded wings, some with brown marks

#### TRIBE: Macariini

14 *Digrammia continuata* Curve-lined Angle: tan with bold dark horizontal lines

15 *Digrammia gnophosaria* Hollow-spotted Angle: warm brown with dark spots on wing edges

16 *Digrammia ocellinata* Faint-spotted Angle: pale tan to brown, faint pale mottling

17 *Helio mata cycladata* Common Spring Moth: white with thick dark brown borders

18 *Isturgia dislocaria* Pale-veined Isturgia: warm tan with distinct yellow veins

19 *Macaria aemulataria* Common Angle: strongly angular wings; light gray with black spots on tip of forewings

20 *Macaria coortaria* Four-spotted Speranza: buffy yellow with 4 dark spots on leading edge of forewing

21 *Macaria multilineata* Many-lined Angle: warm brown, prominently striped with multiple straight and parallel lines

22 *Macaria pustularia* Lesser Maple Spanworm: white with faint brown horizontal stripes

23 *Macaria* sp. 5 Angle Moth

24 *Macaria* sp. 6 Angle Moth

25 *Mellilla xanthometata* Orange-wing: bright orange underwings

#### TRIBE: Melanolophiini

26 *Melanolophia canadaria* Canadian melnolophia: warm brown with dark mottled

wings

#### TRIBE: Nacophorini

27 *Phaeoura quernaria* Oak Beauty Geometer: dark brown-black with white mottling

#### TRIBE: Ourpterygini

28 *Besma endropiaria* Straw Besma Moth: pale straw yellow with slightly translucent wings

29 *Eugonobapta nivosaria* Snowy Geometer: all white with angular wings

30 *Eusarca confusaria* Confused Eusarca: tan with distinct brown horizontal lines across center of wings

31 *Lambdina* sp. Curve-lined Looper: pale tan with dark brown horizontal stripe across both wings; 2<sup>nd</sup> strip across upper forewing

32 *Patalene olyzonaria* Juniper-twig Geometer: large orange-tan with slight hook to wing edge

33 *Prochoerodes lineola* Large Maple-leaf Spanworm: large yellow-brown with black shading

#### SUBFAMILY: Geometrinae

#### TRIBE: Hemitheini

34 *Chloroclamys chloroleucaria* Blackberry Looper: blueish-green with cream horizontal stripes and wing margins

#### TRIBE: Nemoriini

35 *Nemoria bistriaria* Red-fringed Emerald: bright green with red markings on wing border and

body

#### TRIBE: Synchronini

36 *Synchlora aerata* Wavy-lined Emerald: (camouflaged looper – caterpillar uses bits of flowers to hide); adults bright green with white wavy lines


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SUBFAMILY: Larentiinae

TRIBE: Asthenini

37 *Trichodezia albovittata* White-striped Black Moth: black moth with bold white stripes

TRIBE: Cidariini

38 *Eulithis diversilineata* complex Grapevine Looper: orange-tan with dark wave markings, papery wings, abdomen often upturned

TRIBE: Eudulini

39 *Eubaphe mendica* The Beggar Moth: pale yellow with large purplish spots

TRIBE: Eupithecini

40 *Eupithecia miserulata* Common Pug Moth: small gray moth with thinner wings, occasionally with greenish cast; often with red mites on body

TRIBE: Lobophorini

41 *Heterophleps triguttaria* Three-spotted Fillip: pale warm tan with 3 sets of dark chocolate marks on leading edge of wing

TRIBE: Xanthorhoini

42 *Costaconvexa centrostrigaria* Bent-line Carpet Moth: horizontally streaked brown, gray, cooper, black

43 *Orthonama obstipata* The Gem Moth: dark rust with fine white speckling

44 *Xanthorhoe lacustrata* Toothed Brown Carpet: pinkish tan with bold dark brown band across wings

SUBFAMILY: Sterrhinae

TRIBE: Cosymbiini

45 *Cyclophora nanaria* Dwarf Tawny Wave: pale buffy tan with fine speckling

46 *Pleuroprucha insulsaria* Tan Wave Moth: warm yellow-tan with many fine speckled wavy lines

TRIBE: Scopulini

47 *Scopula limboundata* Large Lace-border Moth: pale yellow with dark wavy wing borders

TRIBE: Sterrhini

48 *Idaea demissaria* Red-bordered Wave: shaggy dark rose with yellow bands

49 *Lobocleta ossularia* Drab brown Wave: grayish brown with black speckling and 4 dark wavy brown lines

TRIBE: Timandrini

50 *Haematopis grataria* Chickweed Geometer: pale yellow with hot pink horizontal stripes

51 *Timandra amaturaria* Cross-lined Wave: pale buffy yellow with rose colored speckling and distinct horizontal cross stripe

FAMILY: Uraniidae

SUBFAMILY: Epipleminae

52 *Callizzia amorata* Gray Scallop-wing: pale brown-gray; hold wings with large gap between forewing and hindwing