Bees of Maryland:
A Field Guide

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North American Native Bee Collaborative

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PDF and original MS Word files can be downloaded from: http://bio2.elmira.edu/fieldbio/handybeemanual.html. Printed copies will come in the future

Contents

Acknowledgments

The following individuals helped with the creation of this field guide, they are listed in alphabetic order. Michael Arduser, Rick Borchelt, Jim Cane, Sam Droege, Heather Holm, Robert Jean, Laurence Packer, Gene Scarpulla, as well as the greater community of bee researchers and practitioners who we have learned from. Thanks to Dan Kjar for hosting the book on his website.

Preface

This is the first field guide to any group of North American bees. Because bees are small and the characters used to discriminate among them even smaller, we believe that using a close-focusing (butterfly) binocular is required to effectively identify bees in the wild. This first edition only separates bees to genus. Subsequent editions will take bees to species or species groups when field identification is impractical.

This book is purposefully designed to be reused. As such, you can download the original MS Word files and use them to re-create your own custom field guide or a field guide to a different part of the continent. Feel free to modify the text, add/replace pictures/graphics/formatting and add/delete sections as you see fit. While it would be nice to acknowledge our contributions, even that is not a requirement. It is completely public domain and you need not contact us for permission to use any of it. See the previous copyright page for the locations of the original files and the address of the corresponding member of the Collaborative. We encourage you to report all errors and suggest changes to improve this book.

Enjoy your time in the field.
The Collaborative

Introduction

This book is designed to be used in the field. It contains information on how to identify bee genera of Maryland using binoculars and will be widely useful in all states east of the Mississippi River as well as the eastern Canadian provinces given that the common bee genera of Maryland are relatively uniformly distributed throughout the East. Subsequent editions will take the bees of Maryland down to species and species groups.

The study of bees comes with built-in advantages over other groups. In some ways they are the most observable of our animal fauna. During the warm seasons, bees are usually numerous, foraging and resting primarily on flowers, either planted or wild, where they remain relatively undisturbed by an observer standing nearby. In contrast, birds are often sparsely distributed, shy, hidden by foliage, and generally much more difficult to find. Numerically bees are also more common and species rich than butterflies.

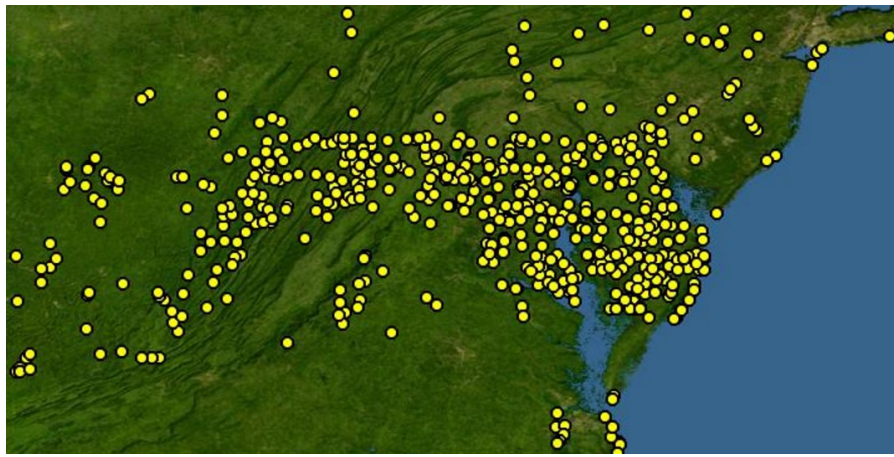
Finally, the impetus for this field guide is to attempt to lure naturalists into taking a serious interest in bee observation. Compared to both birds and butterflies, relatively little is known about bees. Much of their distribution, life history, habitat, and status remains for you to discover. Throughout the continent, new species are regularly described and there is much to learn and the world really needs your help with this.

Using this Guide

At the top of each genus page, a group name has been created for sets of similar genera. In square brackets the number of confirmed species in Maryland is provided along with the total number of records in the USGS database (as of April 2017). A file is available from Sam Droege (sdroege@usgs.gov) that lists all of the confirmed species for the state and documents the counties they can be found in.

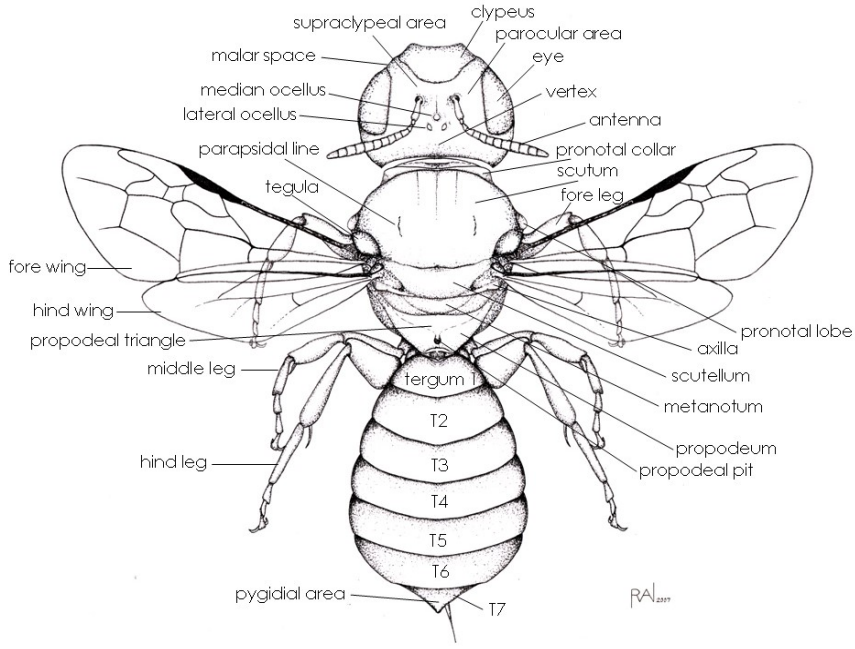
Genus Maps: A map is presented for each genus showing all records for the genus that are mapped by the Discover Life Global Mapper (http://www.discoverlife.org/mp/20m?act=make_map) as of April 2017. The Global Mapper contains species databases from

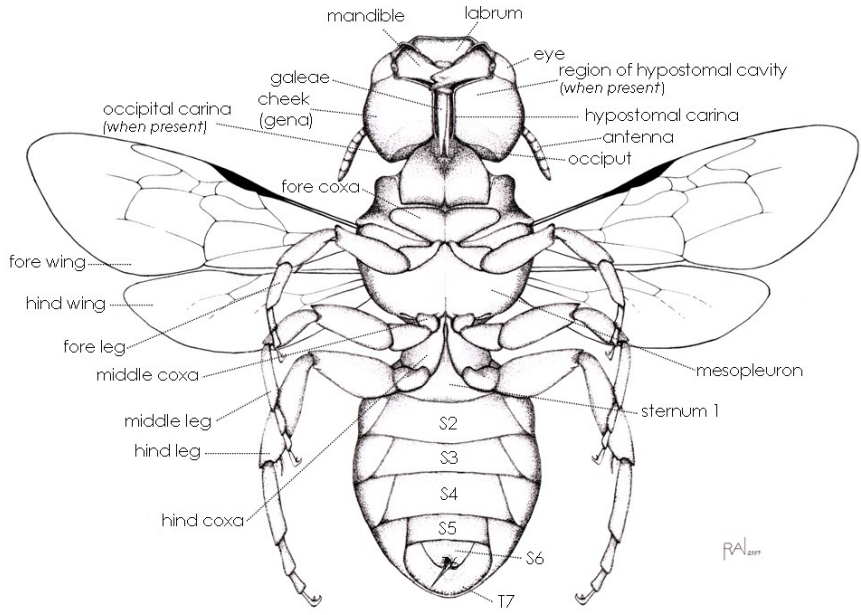
numerous institutions. Note that while coverage in Maryland is geographically extensive, there is a great deal more coverage of the Washington, D.C. suburbs than elsewhere, and coverage in the surrounding states is particularly spotty, with large areas having had no sampling whatsoever. The USGS database is the most extensive database in the system for this region and the sampling points covered are documented in the figure below. Approximately 200,000 individual bee species records have been collected since 2003.

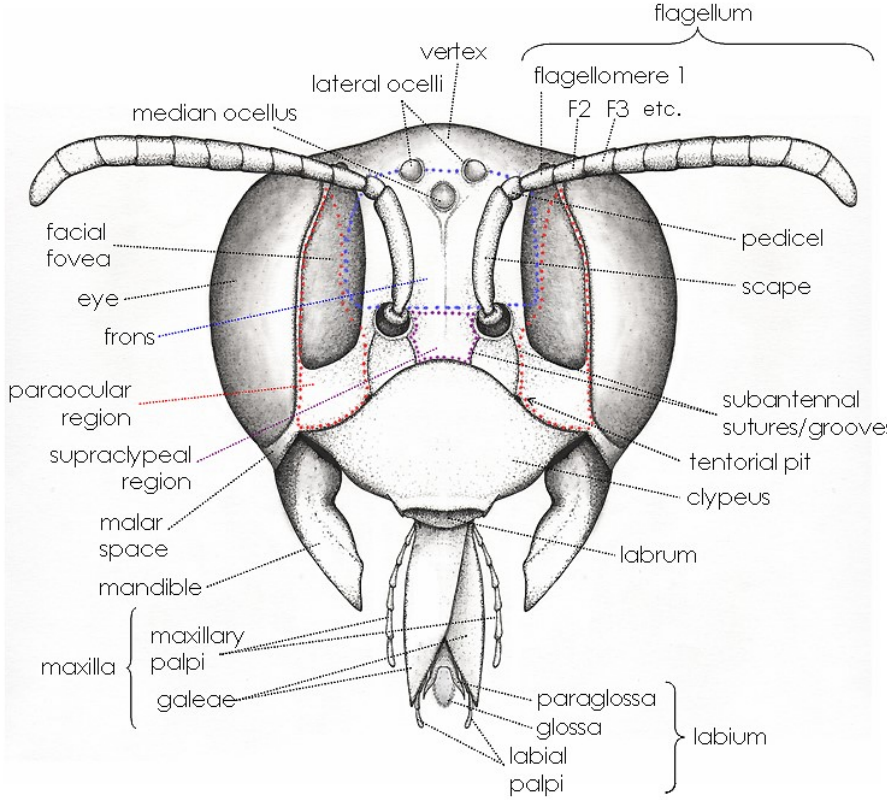


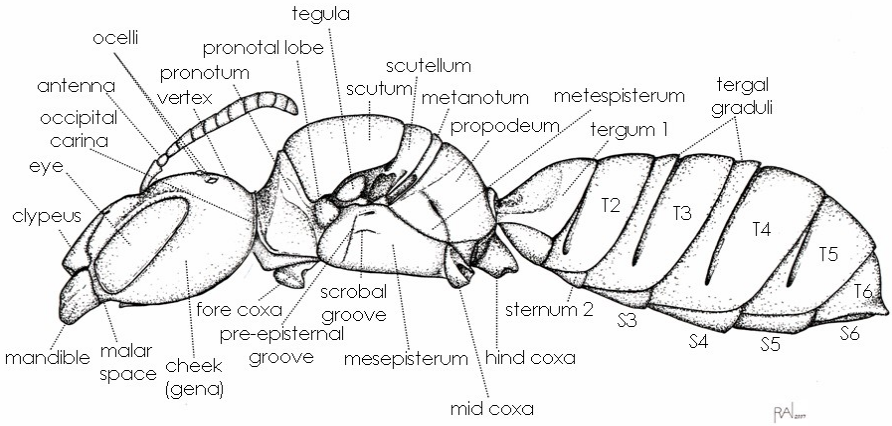
Phenological Graphs: Records are plotted by week. The number of records for each week is divided by the number of collection events during that week to even out collecting effort. Those records are plotted in blue with a smoothed line given in orange. Note that there are relatively few collection efforts at the beginning and ends of the seasons.

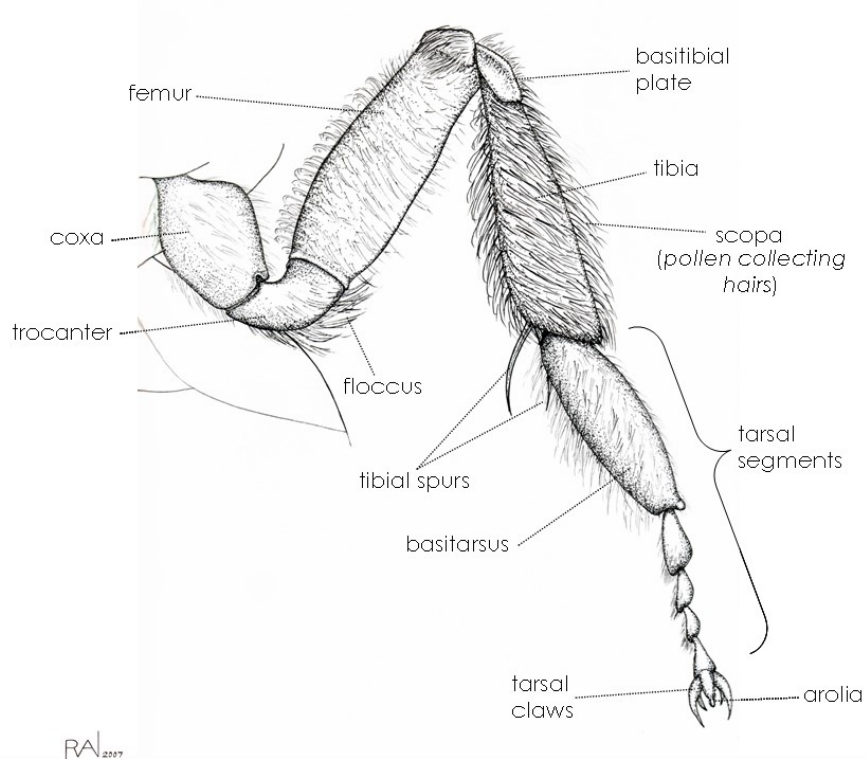
Bee Terminology: The format for this guide is relatively self-explanatory, however the architecture of bees requires some special terminology and line drawings are provided on the next few pages to guide you. As you can see from the photographs in this guide, bees come in many shapes, so realize that the line drawings are generic and expect shapes of these body parts to vary in interesting and informative ways across species. Figures were drawn by Rebecca Nelson with more detail than you need to use this book, but they are useful if you go further into bee study, as we suspect you will.

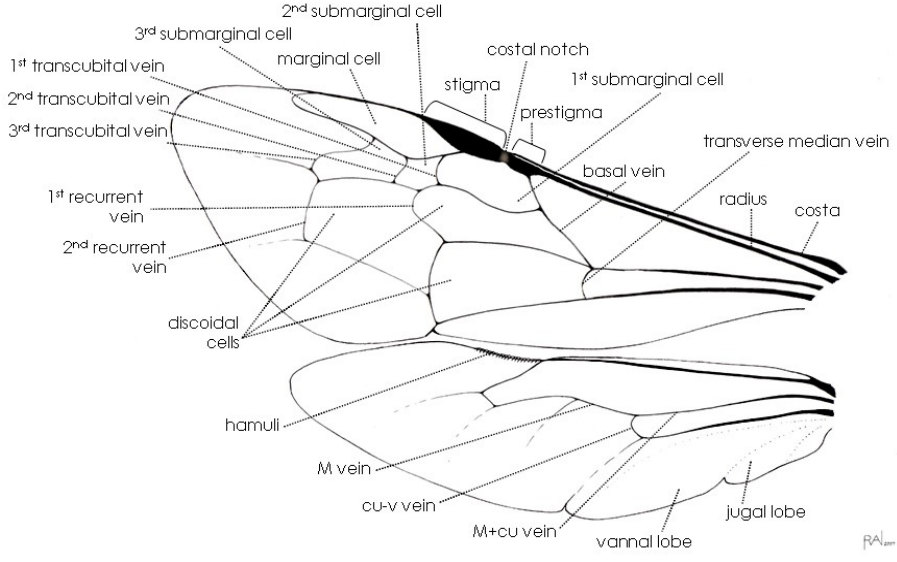

supraclypeal area
clypeus
paraocular area
malar space
eye
median ocellus
vertex
lateral ocellus
antenna
parapsidal line
pronotal collar
scutum
tegula
fore leg
fore wing
hind wing
propodeal triangle
pronotal lobe
axilla
middle leg
tergum 1
scutellum
T2
metanotum
propodeum
hind leg
T3
propodeal pit
T4
T5
T6
pygidial area
T7


mandible
labrum
eye
region of hypostomal cavity
(when present)
galeae
cheek
(gena)
occipital carina
(when present)
hypostomal carina
antenna
occiput
fore coxa
fore wing
hind wing
fore leg
middle coxa
mesopleuron
middle leg
sternum 1
hind leg
S2
S3
S4
hind coxa
S5
S6
T7


flagellum
vertex
lateral ocelli
flagellomere 1
F2 F3 etc.
median ocellus
facial fovea
pedicel
scape
eye
frons
paraocular region
subantennal sutures/grooves
supraclypeal region
tentorial pit
clypeus
malar space
labrum
mandible
maxilla
maxillary palpi
galeae
paraglossa
glossa
labial palpi
labium


tegula
ocelli
pronotal lobe
pronotum
antenna
vertex
scutellum
scutum
metanotum
metespisterum
tergal graduli
occipital carina
propodeum
tergum 1
eye
clypeus
T2
T3
T4
T5
T6
scrobal groove
fore coxa
sternum 2
S3
S4
S5
S6
pre-episternal groove
mandible
malar space
cheek (gena)
mesepisternum
hind coxa
mid coxa


femur
basitibial plate
tibia
coxa
scopa (pollen collecting hairs)
trocanter
floccus
tarsal segments
tibial spurs
basitarsus
tarsal claws
arolia


2nd submarginal cell
3rd submarginal cell
marginal cell
costal notch
1st transcubital vein
stigma
1st submarginal cell
2nd transcubital vein
prestigma
3rd transcubital vein
transverse median vein
basal vein
radius
costa
1st recurrent vein
2nd recurrent vein
discoidal cells
hamuli
M vein
cu-v vein
jugal lobe
M+cu vein
vannal lobe

References

Below are some possibly useful references and websites.

Anonymous. 2015. *The Very Handy Manual: How to Catch and Identify Bees and Manage a Collection*. https://www.pwrc.usgs.gov/nativebees/ or http://bio2.elmira.edu/fieldbio/handybeemanual.html. A general manual for the advanced study of bees. Contains handy things such as pronunciation guides to bee genera names, lists of introduced bees, capture techniques, and how to create a collection.

BugGuide.Net. Created by Iowa State University and contains thousands of pictures of bees along with snippets of life history information and references. You can submit your bee pictures here for identification.

Colla, S., L. Richardson, and P. Williams. 2011. *Bumble Bees of the Eastern United States*. https://www.fs.fed.us/wildflowers/pollinators/documents/BumbleBeeGuideEast2011.pdf.

Discover Life Global Mapper. http://www.discoverlife.org/mp/20m?act=make_map. Allows you to map individual species/groups of species/ zoom into localities, and clicking on the dots pulls up the record with all the details the record owner wished to provide.

Fowler, J., and S. Droege. 2016. Specialist Bees of the Mid-Atlantic and Northeastern United States. http://jarrodfowler.com/specialist_bees.html. Useful information regarding bee species that collect pollen from a restricted set of plants. Names of bees and plants are given and can help with locating certain species.

Holm, H.N. 2017. *Bees: An Identification and Native Plant Forage Guide*. Pollinator Press. Another book for the library. Loads of pictures, identification information, and information about foraging preference applicable from the Midwest to the Mid-Atlantic north.

Michener, C.D. 2007. *The Bees of the World* (Second Edition). The Johns Hopkins University Press. Michener's lifetime work. The very best technical guide to all the bees of the world. Useful if you are very serious about bees, but also filled with fascinating (but highly technical) information about the bees broken down by taxa to genus.

Wilson, J.S., and O.M. Carril. 2016. *The Bees in Your Backyard: A Guide to North America's Bees*. Princeton University Press. An excellent overview of the life history and identification of bees for North America.

Andrena (Mining Bee Group)

86 species, 18001 Specimens

Common and, at times, dominant bees, that occur in all habitats, but reach their peak abundance in the spring with a few species emerging in the fall and a very few species out in mid-summer.

Field Marks: ♀♂Thorax and abdomen integument entirely black, with varying degrees of white to ochre hair (usually dense and long on thorax). ♀Face, shallow depression (fovea) lined with minute hairs that reflect a white color (rarely chocolate brown) making the fovea relatively visible in the field; fovea roughly oval, though shapes vary, and runs from the top of the head between the ocelli and the eye down and usually narrows beyond the gap between the antennal socket and eye. Note that the foveae are usually surrounded by longer hairs. Note: 2 very rare summer/fall females have yellow patches on their lower faces all other species have black. ♂Face, with long pale hairs; hair usually particularly dense below antennae and overhanging, beard-like, the clypeus rim. Face, clypeus (and at times to the sides of clypeus) in with bright yellow marks in some species. Body and head relatively wide compared to similar genera. A few species with reddish/orangish lower legs.

Flight Season: Abundant in the spring, nearly absent in summer, regular in the fall

Size Relative to Honey Bee: 0.5 - 1.5X

Position of Wings Feeding on Flowers: Held slightly to sides or completely overlapping on back though the less common fall species regularly hold their wings out to the side.

Location of Pollen Carrying Hairs: Hind femur, trochanter, tibia, back sides of thorax (propodeal corbicula), the joint between legs and thorax, in particular.

Similar Genera: Large hair-filled foveae are unique to *Andrena*. *Halictus* - Abdomen, segments, rim with crisp, thin, narrow bands of small, prone, white, hairs along the rim of the abdominal segments; *Andrena* species can also have hair bands, but they are *usually* fluffier, often missing in the middle of the segment, and not on every segment. ♂Head longer than wide, yellow in patches on legs. *Melitta* - (very rare group) ♀Face, without foveae. Legs, carries pollen on tibia and basitarsus only, does NOT carry pollen on side of thorax or on femur. ♂Approximately Honey Bee-sized and may not be separable from *Andrena* in the field. *Colletes* - Face, distance between inner edges of eyes strongly decreases from top of head to mandible.

Nest: Ground, often in open bare soil, but can be underneath leaves/leaf litter.

Flowers: Almost any flower. Many species are specialists on individual plant genera.

***A. arabis* - Male**

***A. banksi* - Male**

***A. carlini* - Female**

***A. fenningeri* – Female**

***A. hilaris* – Female**

***A. hirticincta* – Female**

***A. nida* – Female**

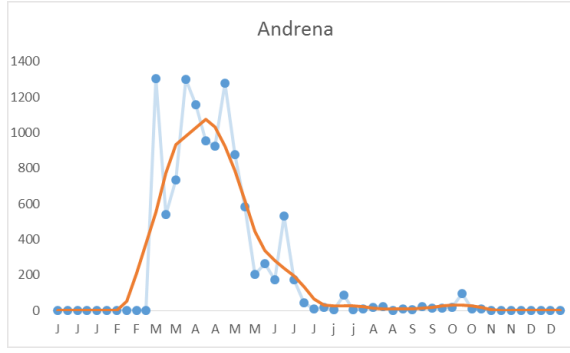
***A. nivalis* – Male**

***A. nubecula* – Female**

***A. nuda* – Female**

***A. robertsonii* – Female**

***A. ziziaformis* – Male**



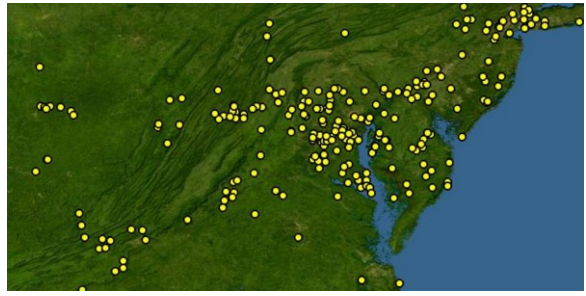
Calliopsis andreniformis (Little Black Bee Group)

1 species, 2140 specimens

Commonly found in urban and other heavily used landscapes. Attracted to the hard-packed open soil of playing fields, road edges, construction sites, lake margins, and borrow pits. Common and usually forages close to the ground, where it collects pollen and nectar from weedy legumes and vervains.

Field Marks: ♀♂Face, clearly wider than long, clypeus jutting/mounded outward, particularly noticeable in profile. Abdomen, edge of segments (tergites) with narrow band of pale hair. Eyes unusually light colored. ♀Face, below the level of the antennae, has 3 sets of parallel and linear white markings (looks like 3 white-stripes); two stripes along the inside of the compound eyes and one down the center. ♂Face (From about one-third of the way down) and legs entirely *bright* fluorescent yellow.

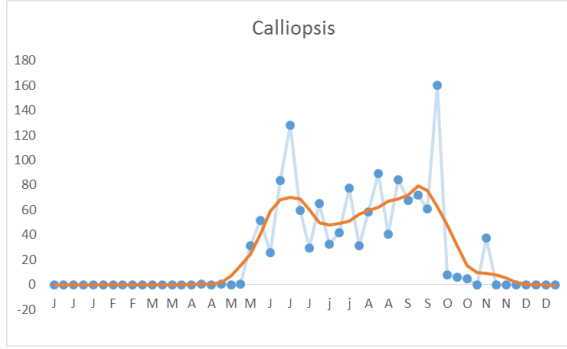
Flight Season: Active from about May to October.
Size Relative to Honey Bee: 0.5X
Position of Wings Feeding on Flowers: Completely overlapping
Location of Pollen Carrying Hairs: Tibia
Similar Genera: No similar genera, markings and shape of face are unique.
Nest: Ground, open bare soil, fond of piles of construction dirt.
Flowers: Mostly clover, sweetclover, verbena.



***C. andreniformis* – Female**

C. andreniformis – Female

***C. andreniformis* - Female**



Panurginus (Little Black Bee Group)

3 species, 55 specimens

Small, overlooked, and rarely detected spring species; but likely more commonly detected if people looked for nest sites and observed bees at each species' favorite food plants.

Field Marks: ♀♂Small size. Hair, largely absent. Face, wider than long. Wings, while often difficult to see, these species have only 2 submarginal cells. Abdomen, no pale hair bands/patches or pale markings of any kind. ♀Integument, including face, entirely black. Note: **f**ace has narrow slits (foveae) above antennae parallel to compound eye, but these are difficult to see without a microscope or high-res photograph. ♂Clypeus bright yellow or mostly bright yellow, remainder of bee all black, with the exception of the ends of the legs (tarsal segments) and portions of front tibia with pale markings.

Flight Season: Spring

Size Relative to Honey Bee: 0.5X

Position of Wings Feeding on Flowers: Completely overlapping

Location of Pollen Carrying Hairs: Hind tibia and basitarsus

Similar Genera: *Hylaeus* - ♀Face, yellow/white markings between eye and clypeus. Carries no external pollen. ♂Face, entire lower face often yellow/pale-white. *Calliopsis* - Markings quite different. *Pseudopanurgus* and *Perdita* - Flight periods do not overlap, both out only in the fall. *Most of the Other Genera that are Small Black Bees* - Have 3 submarginal cells and noticeable, though possibly restricted, patches/bands of pale hairs.

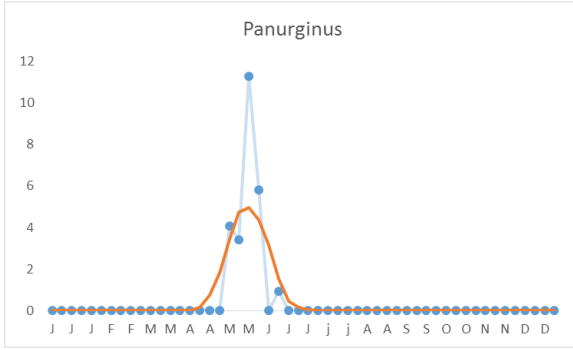
Nest: Ground, flat, open bare soil. *P. polytrichus* and *P. potentillae* are known to aggregate their nests.

Flowers: Forbs and low shrubs

P. potentilla **– Male**

P. potentilla **– Male**

P. potentilla **– Male**



Perdita (Little Black Bee Group)

7 species, 181 specimens

Tiny and uncommon. However in the right sandy habitats, with the right native composites; particularly dune areas, sand mines, or other sparse areas of deep sand, some sand *Perdita* species can occur in high numbers.

Field Marks: ♀♂Tiny size, body hairs very sparse (except for *P. bequaerti,* which is only moderately hairy). Hairs never forming bands or dense enough to be noticeable in the field. Wings, 2 submarginal cells. Face, usually, wider than long (one rare exception). Wing, marginal cell super short (its length along the edge of the wing is equal to or less than the length of the adjacent dark stigma) with the end clearly squared off rather than pointed. ♀Integument black to slightly metallic blue or green, almost always with some light-colored markings on face. Abdomen markings vary from none to stripes, often forming small blotches on the sides. Markings tending to be white to light yellow not bright yellow. Clypeus, scape (large antennal segment next to head), and area to sides of clypeus almost always with light-colored markings dissected by dark areas. Hind legs, pollen carrying hairs, all species except *P. bequaerti*, sparse and hardly noticeable thus the females often appear male-like. ♂Face below antennae, all or primarily white to light yellow in most species. Face noticeably wider-than-long and squarish. Antennae short, not noticeably longer than female.

Flight Season: Late summer/fall for sandy soil species

Size Relative to Honey Bee: 0.3 - 0.5X

Position of Wings Feeding on Flowers: Completely overlapping

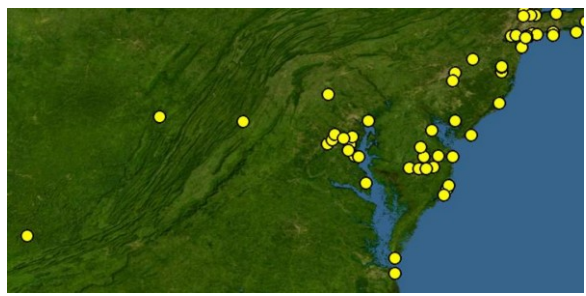
Location of Pollen Carrying Hairs: Hind tibia and basitarsus

Similar Genera: *Hylaeus* - ♀Has yellow/white markings on face only between eye and clypeus, carries no external pollen. ♂Entire lower face often yellow/pale-white, but body dark black and legs with some yellow/white markings on them. *Calliopsis* - Face, markings quite different, has pale hair bands on abdomen. *Panurginus* - Flight periods do not overlap, spring species. *Pseudopanurgus* - ♂Clypeus bright yellow. Body black. Legs with yellow markings. Head less wide, less square. ♀Entirely dark black. *Most of the Other Genera that are Small Black Bees* - 3 submarginal cells. Hair, patches/bands of pale hair. ♂Longer antennae

Nest: Ground, open bare sandy soil

Flowers: Sand species are found on fall composites, two rare species are found on Maleberry (*Lyonia ligustrina*) and False Foxglove (*Agalinus* spp.).

Notes: Two very rare species (*P. gerardiae* and *P. novaeangliae*) are not associated with deep sand.



P. bequaerti **– Female**

P. bishoppi **– Female**

P. bishoppi **– Female**

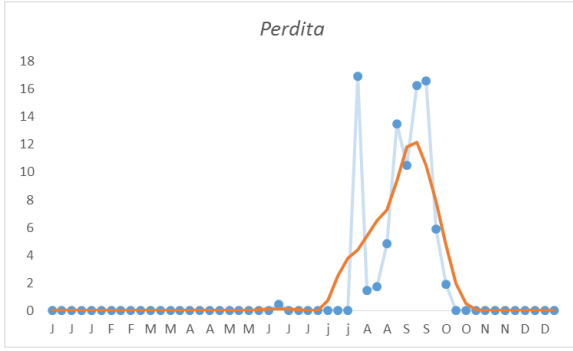
P. bishoppi **- Female**

P. octomaculata **- Female**

P. octomaculata **- Female**

P. octomaculata **– Female**

P. octomaculata **-Female**



Pseudopanurgus (Little Black Bee Group)

6 species, 26 specimens

Small, overlooked, and rarely detected primarily fall species.

Field Marks: ♀♂Tiny size, without noticeable body hair. Face, wider than long. Wings, 2 submarginal cells. Abdomen with no noticeable pale hair bands/patches or pale markings of any kind. ♀Body, including face, entirely black. ♂Clypeus bright yellow or mostly bright yellow, remainder of bee all black with the exceptions a dot of yellow on the pronotal lobe on the thorax near the head and yellow on the ends of legs, which often extends to parts of the tibia.

Flight Season: Fall

Size Relative to Honey Bee: 0.5X

Position of Wings Feeding on Flowers: Completely overlapping

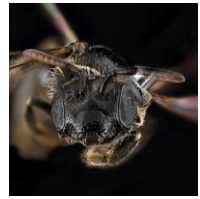
Location of Pollen Carrying Hairs: Hind tibia and basitarsus

Similar Genera: *Hylaeus* - ♀Has yellow/white markings on face between eye and clypeus; carries no external pollen. ♂Entire lower face often yellow/off-white. *Calliopsis* - Markings quite different. *Perdita* - Most common species are restricted to sandy locations and contain light-colored marks on the abdomen. *Panurginus* - Spring species, flight period does not overlap. *Most of the Other Genera that are Small Black Bees* - Have 3 submarginal cells and noticeable, though possibly restricted, patches/bands of pale hairs.

Nest: Ground, flat, open bare soil

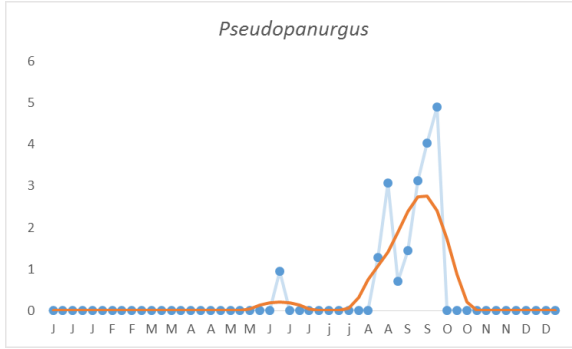
Flowers: Most species are composite specialists

***P. labrosiformis* – Female**



***P. labrosiformis* – Female**

***P. labrosiformis* - Female**

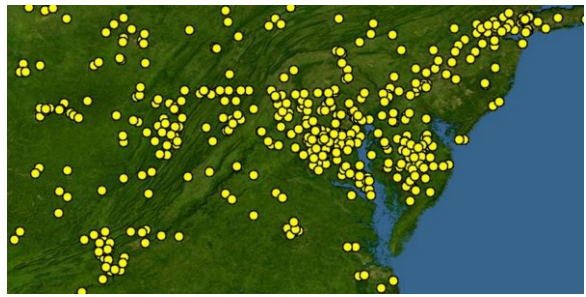


Apis mellifera (Honey Bee)

1 species, 1901 specimens

A radically different bee from our native species. No close relatives inhabit the Western Hemisphere. Lifestyle unique and not mirrored by any native species. Morphology equally unique.

Field Marks: ♀♂Long hairs emerging from eyes, Abdomen has variable transverse bands of amber and dark brown integument and pale hair. Abdomen, amber bands primarily on first two segments transitioning to all dark segments at tip (note, it is not uncommon to find bees with NO amber in abdomen). Abdomen, pale hair bands largely on segments 3–5, note hairs bands located on base of segments not rims like most other bees. Wings held above back, edges touching but rarely overlapping. ♀Hind legs broadened, tibia and basitarsus flat and very wide, tibia with no hairs in the shiny central portion. ♂Almost never seen, feeds only in hive on honey, does not visit flowers, leaves only to mate and immediately perish. Only Maryland bee where eyes meet atop its head.
Flight Season: Throughout.
Size Relative to Honey Bee: 1X.
Position of Wings Feeding on Flowers: Held parallel to one another over back, often touching but overlapping little.
Location of Pollen Carrying Hairs: Carries pollen as a mix of pollen and nectar in a ball on outside of hind tibia
Similar Genera: *Colletes* - The Spring Group of *Colletes* are about the same size as Honey Bees, similarly visit blooming trees and shrubs, and are roughly the same tan/brown coloration of darker Honey Bees. Lacks the hairy eyes, wide bare hind tibia/basitarsus, and lap their wings over their back. Face with long hair, abdomen often with bands of pale hair on rim.
Nest: Hives in hollow trees, building cavities, and hives.
Flowers: Visits a wide variety of flowers.



***A. mellifera* – Male**

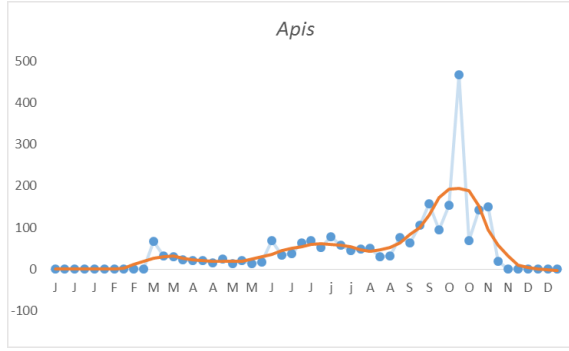
Apis mellifera

***Apis mellifera* – Female**

***Apis mellifera* – Female**

***Apis mellifera* – Male**

***Apis mellifera* - Female**



Anthophora (Digger Bee Group)

5 species, 138 specimens

Mostly uncommon bees, except for the recently introduced *A. villosula* which can be quite common in DC and surrounding suburbs in early spring and is expected to become increasingly common.

Field Marks: ♀♂Robust, Bumble Bee-shaped, often seen hovering in one place in front of flowers. Some species hair patterns match Bumble Bees, others with more extensive pale hairs. Wings, clear, not darkened. Head, top of head, more or less flattened. ♀Pollen carrying hairs on tibia and basitarsus of moderate length. Hairs longer on the hind tibia than the basitarsus. ♂Face, below the level of the antennae, extensive yellow/white/pale integument, including areas to either side of the clypeus and adjacent to the eyes. Most species with pale mark on first antennal segment (scape). Antennae short, not extending much past the base of wings if held backwards.

Flight Season: Spring to fall, primarily summer.

Size Relative to Honey Bee: 1.5 – 2X.

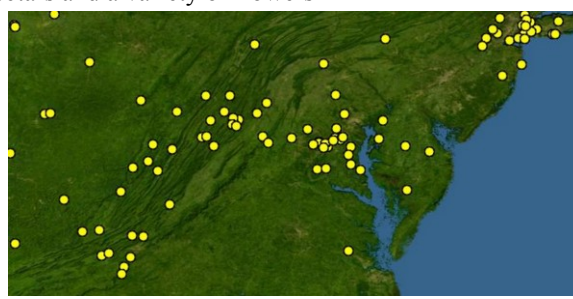
Position of Wings Feeding on Flowers: Slightly to the sides or overlapped.

Location of Pollen Carrying Hairs: Hind **t**ibia and basitarsus.

Similar Genera: *Bombus* - ♀Hind tibia, wide, shiny, and bare in center, often carry large, noticeable mixed masses of pollen/nectar (rare species are parasitic and look like males); does not hover. *Anthophora* never have large moist masses of pollen on their legs, pollen usually hidden between hairs and carried dry. ♂Face entirely black though may have yellow hairs. *Habropoda* - *A. abrupta* and *H. laboriosa* are very similar looking. *A. abrupta* is out later (late May to June) vs. mostly April to early May. ♀Mostly on blueberry (*Vaccinium* spp.) and Eastern Redbud (*Cercis canadensis*) ♂Face, white marks between clypeus and eye only a very narrow vertical line, *A. abrupta* with most of that region filled by white. Face, antenna, first antennal segment black. In *A. abrupta*, first segment of antenna with prominent white mark on outside face. *Ptilothrix* - Legs much longer in both sexes. Wings held across back. Overall narrower. Mostly feeds on rosemallow (*Hibiscus* spp.). Hair on thorax dense, pale and short. ♂No white on face. *Xylocopa* - Larger, wings smoky to dark brown, held out at 45° angle. *Eucerini* (*Long-horned Bee Group*) - ♀Hind tibia and basitarsus have overall longer and more copious hair; hair of two segments equally long with no apparent break between the two. ♂Clypeus yellow (rarely white); no pale markings between clypeus and eye; no pale mark on scape. Antennae long, extending well past base of wings when pulled back.

Nest: Usually clay soil, often aggregating together uses upturned tree roots, cliff faces, chinking in old log cabins, under decks.

Flowers: Nectars and a variety of flowers



***A. abrupta* – Male**

***A. abrupta* – Female**

***A. abrupta* – Female**

***A. bomboides* – Male**

***A. bomboides* – Male**

***A. villosula* - Female**

***A. villosula* – Male**

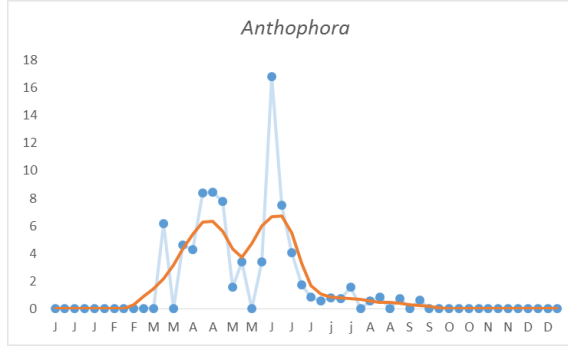
***A. villosula* – Male**

***A. terminalis* - Male**

***A. terminalis* – Male**

***A. terminalis* – Male**

***A. ursina* – Male**



Habropoda laboriosa (Digger Bee Group)

1 species, 145 specimens

Can be locally common in open wooded areas with abundant blueberry (*Vaccinium* spp.) bushes, shows up sparingly elsewhere in early spring.

Field Marks: ♀♂Robust, Bumble Bee-like in shape and color. Clypeus inflated, from side, it is as wide as eyes. Wings clear, not darkened. Head, top, flattened between compound eyes. Abdomen, long hair sparse and shiny black integument visible. ♀Hind tibia and basitarsus with pollen carrying of moderate length. Hairs longer on the hind tibia than the basitarsus and jet black. Forages mostly on blueberry and Eastern Redbud (*Cercis canadensis*). ♂Antennae short, not extending much past the base of the wings if held backwards. Antennae all black. Clypeus bright white. Area between clypeus and eye with white marks, but the marks hug the edge of eye and appears as an uneven, narrow, vertical line.

Flight Season: Early spring.

Size Relative to Honey Bee: 1.5X.

Position of Wings Feeding on Flowers Holds parallel to abdomen with flat side facing upwards, wings do not overlap.

Location of Pollen Carrying Hairs: Hind tibia and basitarsus.

Similar Genera: *Bombus* - During flight season, only queens are flying and these are much larger than *Habropoda.* ♀Hind tibia, flattened, wide and bare in center; carry large, noticeable mixed balls of pollen/nectar (rare species are parasitic and look like males). *Habropoda* never have large moist masses of pollen on their legs, pollen often hidden between hairs and carried dry. ♂Face entirely black though may have yellow hairs. *Ptilothrix* - No overlap in flight seasons. *Xylocopa* - Larger, wings smoky to dark brown, held out at 45° angle. *Anthophora* - ♂Head, area between clypeus and eye with more extensive yellow/white/pale integument. Antennae, first antennal segment (scape), most species with pale mark on outer face. *A. abrupta* and *H. laboriosa* are very similar looking. *A. abrupta* is out later (late May to June) vs. (mostly April to early May). *Eucerini* (*Long-horned Bee Group*) - ♀♂Only *Eucera* overlaps in flight season. Hind tibia and basitarsus have longer hair and hair of two segments equally long with no apparent break between the two. ♂Clypeus pale yellow to white with no pale markings between clypeus and eye. Antennal scape with no pale mark. Antennae very long extending well past base of hind wings when pulled back.

Nest: Ground.

Flowers: Blueberry (primarily) and sometime Eastern Redbud (unclear if this sustains Western Maryland populations).

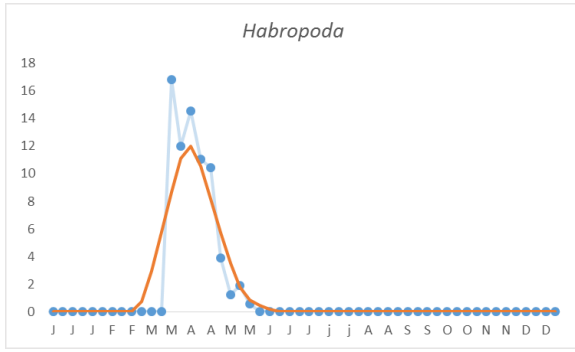
***H. laboriosa* - Female**

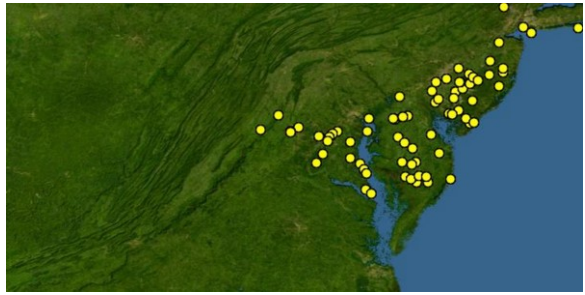
***H. laboriosa* – Female**

***H. laboriosa* – Female**

***H. laboriosa* – Male**

H. laboriosa



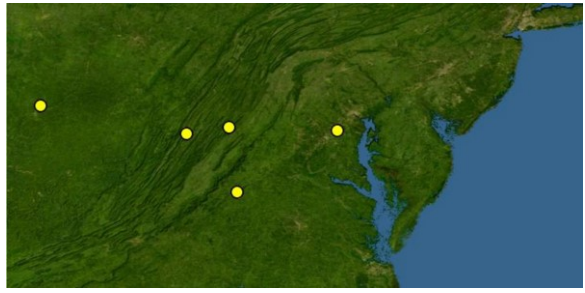


Melecta pacifica (Digger Bee Group)

1 species, 1 specimen

Very rare, with only one record for the state.

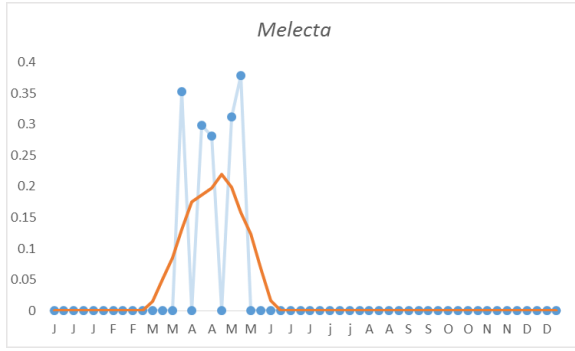
Field Marks: ♀♂Humpbacked appearance. Head appears slightly smaller than and lower on thorax. Thorax, top with dense pale white to orangish moderately long hairs. Head, top, sometimes with some light hairs. Abdomen, first segment usually with light hairs present. Remainder of bee with black hairs and integument. Abdomen pointed, tapers to end more rapidly than other species.
Flight Season: May/June.
Size Relative to Honey Bee: 1X.
Position of Wings Feeding on Flowers: Appears to mostly hold wings crossed on back.
Location of Pollen Carrying Hairs: None, nest parasite.
Similar Genera. *Anthophora* and *Habropoda* - ♀♂*A. abrupta* and *H. laboriosa* very close in hair color, other species quite different. ♂Lower face with extensive yellow/white integument. ♀Hind legs with long stiff pollen carrying hairs. *Eucerine Genera* - Most come out later in the season, the few that are close in hair pattern have the same characteristics listed for *Anthophora/Habropoda* and the males have much longer antennae. *Bombus* - Larger. Abdomen does not taper as greatly. Abdomen completely haired; integument usually completely obscured. Female parasitic *B. citrinus* and male *B. impatiens* are close in hair color; other *Bombus* species have at least some yellow hair on abdominal segments 2–5. ♀Hind tibia of pollen carrying species with expanded/bare outer face.
Nest: Nest parasite of *Anthophora*.
Flowers: Nectars on a variety of flowers.



***M. pacifica* – Female**

***M. pacifica* – Female**

***M. pacifica* – Female**



Bombus (Bumble Bee Group)

14 species, 2703 specimens

Most people recognize Bumble Bees (our only obligate native colonial bee), but few realize that there are 14 species in Maryland and that there are many species that look similar.

Field Marks: ♀♂Integument completely black. Hair, combinations of dense yellow/off-white and black hair completely covering thorax and abdomen. Thorax always with extensive yellow/pale hairs. Only one uncommon species with all black-haired abdomen. Wings can be nearly black or clear. Flight slow and methodical almost never quick. ♀Hind leg, tibia flattened with outer face bare except for fringe around edges, often filled with a dense ball of pollen and nectar; rare parasitic females without this character. Clypeus bare of hair and shiny. ♂Face, mustached, with long hair on clypeus hanging over mandibles. Hind legs without bare area, antennae relatively short, not reaching the base of wings when extended to the back.

Flight Season: Spring to fall, populations build up in summer.

Size Relative to Honey Bee: 1(rarely)–2x.

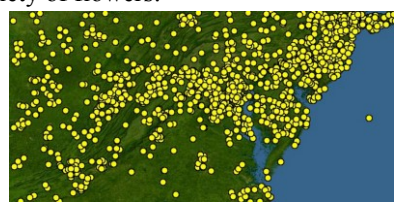
Position of Wings Feeding on Flowers: Held to side of abdomen or overlapping.

Location of Pollen Carrying Hairs: Hind tibia (none in three rare nest parasites).

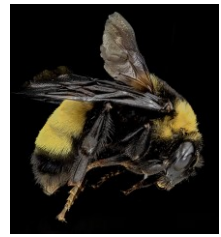
Similar Genera: *Ptilothrix* - Hair pattern similar. Legs much longer/thinner. Wings held across back. Body overall narrower. Forages mostly on rosemallow (*Hibiscus* spp.). Face rounder. Head, top, particularly round. Abdomen almost completely black; may have noticeable ochre/pale hairs on first abdominal segment. ♀Without bare, expanded hind tibia. *Xylocopa* - All are the size of a queen Bumble Bee. Wings darkened and held out at 45° angle. Hair on abdomen dark except for pale hairs on first abdominal segment. Abdomen hairs thin compared to *Bombus;* slightly metallic integument almost always visible beneath sparse hairs. *Habropoda* and *Anthophora* - Out only in April/May, mostly on blueberry (*Vaccinium* spp.) and Eastern Redbud (*Cercis canadensis*). ♂Integument below antennae mostly white. *Eucerini* (*Long-horned Bee Group*) - ♀Hind legs with very long dense hair and no bare patches. Hair patterns variable, but abdomen usually with narrow bands of white hair; ochre, reddish, brown, hairs often present; no species that closely mimics any of the Bumble Bees. ♂Always with at least some pale integument below antennae. Long antennae extends past base of wings.

Nest: Colonial nester, queen overwinters, uses rodent (rarely chickadee) nest to make nest and colony of workers created over several months. Queens and males produced in late summer/fall, they nectar briefly, mate, the males die off, and the potential queens then overwinter underground.

Flowers: Wide variety of flowers.



B. affinis **– Female**



B. auricomus **– Female**

B. auricomus **- Female**

B. bimaculatus **– Female**

F. bimaculatus **– Male**

B. citrinus **– Female**

B. fervidus **– Female**

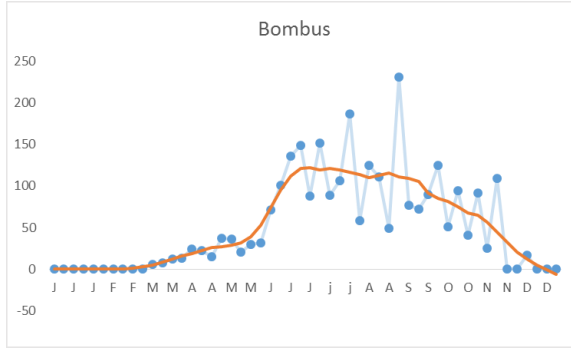
B. fervidus **- Female**

B. griseocollis **– Male**

B. griseocollis **– Female**

B. impatiens **– Female**

B. impatiens **– Female**



*Cemolobus ipomoeae (*Squash Bee Group*)*

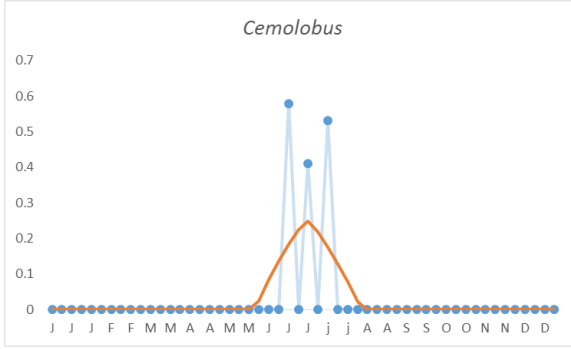
1 species, 1 specimen

Very rare large bee specialist on the large flowered Man-of-the-Earth (aka Bigroot Morningglory) (*Ipomoea pandurata*). Flies only at dawn and perhaps at dusk and unlikely to ever be seen away from the blooms of this plant.

Field Marks: ♀♂Clypeus, rim, shape distinct to this species; rim with wide central rectangular projecting lobe and one large triangular tooth to either side. Abdomen with broad frosted bands of short silvery/white hairs transecting the segments with some brown/tan hairs towards the basal segments; black integument visible between the bands. Restricted to foraging early in the morning/evening on Man-of-the-Earth, but be aware that *Peponapis* and *Bombus* also forage on these plants at those times. ♀Hind tibia, pollen carrying hairs, dark and relatively sparse and short compared to similar genera. ♂Antennae relatively short, not extending to base of wings when swept backwards. Clypeus, yellow restricted to lower half.
Flight Season: Summer.
Size Relative to Honey Bee: 1.5X.
Position of Wings Feeding on Flowers: Probably held across back.
Location of Pollen Carrying Hairs: Hind tibia and basitarsus.
Similar Genera: *Peponapis* **-** Common, **s**lightly smaller, but very similar in general coloration and aspect, also out early in the morning, but mostly on squash/pumpkin, but does visit Man-of-the-Earth too. Clypeus, rim, normal, straight no lobes/teeth. ♀Hind leg pollen hairs orange/tan. ♂Clypeus, yellow restricted to a central, smudgy roughly circular area. *Xenoglossa* - Rare, only a few records. Looks similar to *Peponapis*. Visits squash relatives. Has noticeable yellow marks on the base of the mandible. ♂Clypeus, all yellow except for a short section of black near the top of the segment.
Nest: Likely in the ground.
Flowers: Native *Ipomoea*.

C. ipomoeae* - *Male

***C. ipomoeae* - Male**



Peponapis pruinosa (Squash Bee Group)

1 species, 153 specimens

Common wherever pumpkins and squash (*Cucurbita* spp.) grow. Flies when the sky first lightens until the squash flowers close mid-morning.

Field Marks: ♀♂Flies only early in the morning when squash/pumpkins are blooming. Males and females zip quickly from blossom to blossom. Clypeus projects outward; from the side, its height is approximately equal to the width of the eye. Thorax, top, hairs usually slightly dark orange. ♀Hind leg pollen hairs orange/tan, long, but a bit sparser than other Eucerines. ♂Clypeus, yellow restricted to a central, smudgy roughly circular area.

Flight Season: Summer.

Size Relative to Honey Bee: 1–1.2X.

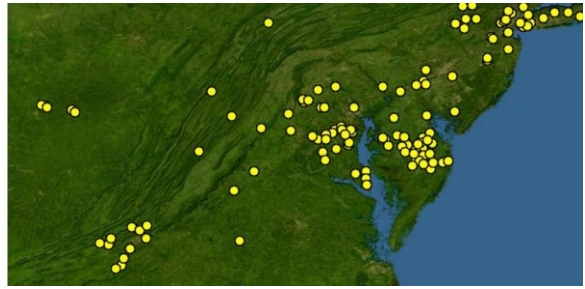
Position of Wings Feeding on Flowers: Crossed over back.

Location of Pollen Carrying Hairs: Hind tibia and basitarsus.

Similar Genera: *Apis* - Superficially looks similar and does occur in squash/pumpkin plants. Long hairs coming out of eyes. ♀Hind tibia, widened with bare central area. *Xenoglossa* - Rare, only a few records. Also visits squash relatives. Mandible with noticeable yellow marks on the base. ♀usually with a smudge of yellow on end of clypeus. ♂Mandible, base with more extensive yellow than female. Clypeus, yellow with short section of the upper part black. *Cemolobus* - Clypeus, rim distinct to this species, with a wide central rectangular projecting lobe, and two more triangular teeth to either side. Restricted to foraging early in the morning on Man-of-the-Earth (aka Bigroot Morningglory) (*Ipomoea pandurata*). ♀Hind tibia, pollen carrying hairs dark and relatively sparse and short compared to similar genera. ♂Antennae relatively short not extending to base of wings when swept backwards. Clypeus, yellow restricted to lower half.

Nest: Ground.

Flowers: Planted squash and pumpkins.

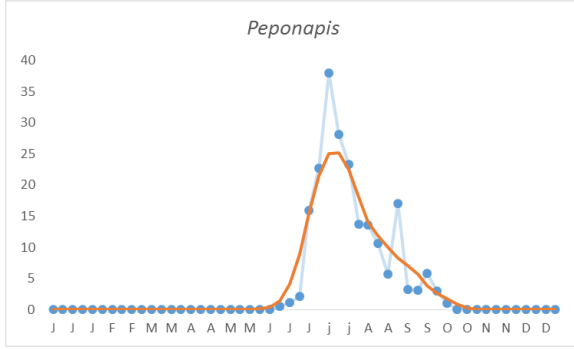


P. pruinosa **- Female**

P. pruinosa **- Female**

P. pruinosa **- Female**

P. pruinosa - Male



Xenoglossa strenua (Squash Bee Group)

1 species, 1 specimen

Rare, only a handful of records. Like the common *Peponapis pruinosa* this species only visits agricultural squash and pumpkins (*Cucurbita* spp.).

Field Marks: ♀♂Flies only early in the morning when squash/pumpkins are blooming. Mandibles, have noticeable bright yellow marks at the base. Clypeus projects outward and when viewing from the side, the clypeus height is approximately equal to the width of the eye. Thorax, top, hairs usually slightly dark orange. ♀Hind leg pollen hairs orange/tan, long, but a bit sparser than most Eucerines. ♀Usually with a smudge of yellow on end of clypeus. ♂Has more extensive yellow on mandible than female. Clypeus, yellow, with a short section of the upper part of the clypeus black.

Flight Season: Summer.

Size Relative to Honey Bee: 1–1.2X.

Position of Wings Feeding on Flowers: Crossed over back.

Location of Pollen Carrying Hairs: Hind tibia and basitarsus.

Similar Genera: *Peponapis* **-** Super similar, but much more common. Mandibles all black in both sexes. ♂Clypeus, yellow restricted to a central, smudgy roughly circular area. *Apis* - Superficially looks similar and does forage on squash/pumpkin plants. Hairy eyes. ♀Hind tibia, widened with bare central area. *Cemolobus* - Equally rare, rim of clypeus distinct to this species, with a wide central rectangular projecting lobe and two triangular teeth to either side. Restricted to foraging early in the morning on Man-of-the-Earth (aka Bigroot Morningglory) (*Ipomoea pandurata*). ♀Hind tibia, pollen carrying hairs dark, sparser and short. ♂Antennae relatively short not extending to base of wings when swept backwards. Clypeus, yellow restricted to lower half.

Nest: Ground.

Flowers: Planted squash and pumpkins.

X. strenua **- Female**

X. strenua - Female

Xylocopa virginica (Carpenter Bee Group)

1 species, 534 specimens

Familiar to many people for their habit of nesting in the soft woods of houses, benches, decks, and outbuildings, but often confused with Bumble Bees.

Field Marks: ♀♂Uniformly large, Bumble Bee-like. Face with only dark hairs. Thorax covered in dense off-white hairs. Abdomen, first segment with narrow fringe of pale hairs at the base, rest with sparse, short dark hairs. Abdomen shiny because dark hairs are generally sparse enough that glossy, weakly bluish, integument shows beneath. Face round, equally wide or wider than length. Unique, but difficult to see in the field, the marginal cell is 7X long as wide. Wings dark, but not opaque. ♀Face, between the antennae, has a small, but sometimes noticeable, projecting semicircular mound like the edge of a buried Frisbee. ♂Face, below antennae almost entirely creamy white. Eyes large compared to those of female and most bee species, nearly meeting together at top of head.

Flight Season: Throughout.

Size Relative to Honey Bee: 1.5X.

Position of Wings Feeding on Flowers: Held at 45° to body.

Location of Pollen Carrying Hairs: Hind femur, tibia, basitarsus.

Similar Genera: *Bombus* - Holds wings to it sides or across its back. Abdomen, hairs, except in old individuals, dense, hiding surface, many species; many species have extensive yellow/pale hair beyond the first segments. Face long, longer than wide. Workers smaller than *Xylocopa.* ♀Hind tibia, wide and bare in center, carry large, noticeable mixed masses of pollen/nectar (rare species are parasitic and look like males), *Xylocopa* never have large masses of pollen on their legs, pollen usually hidden among hairs. ♂Face entirely black though may have yellow hairs. *B. griseocollis*/*B. auricomus* has round face/ large eyes similar to *Xylocopa* but no white on face. *Ptilothrix* - Legs much longer. Wings held across back. Overall narrower. Feeds mostly on rosemallow (*Hibiscus* spp.). Hair on thorax lacks central bare spot of *Xylocopa.* ♂ No white on face. *Anthophora* - Smaller. Uncommon. Abdomen often with extensive pale hair. Wings held folded over back. ♀Head, top, flattened, evenly rounded in *Xylocopa.* ♂Eyes not larger than females and do not nearly meet at top of head. Abdomen, pale hairs more extensive.

Nest: Excavates short tunnels in soft wood, often in man-made structures.

Flowers: Uses a variety of large, tall forbs and woody plants.

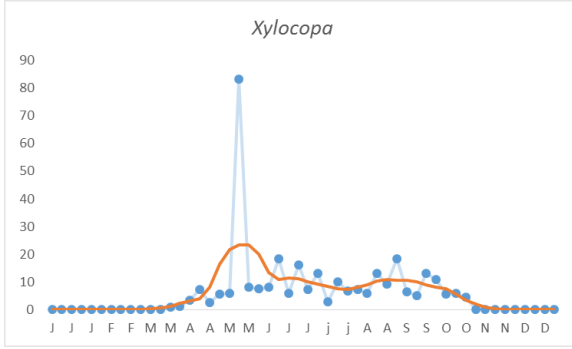
***X. virginica* – Female**

***X. virginica* - Male**

X. virginica – Female

***X. virginica* - Female**

***X. virginica* - Female**



Ceratina (Carpenter Bee Group)

5 species, 12,781 specimens

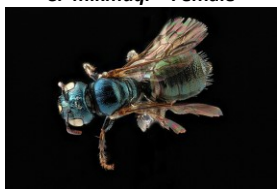
Despite being in the Carpenter Bee Group, these are very small bees, only half the size of a Honey Bee. However, they are far more abundant than *Xylocopa* carpenter bees; but unlike the huge *Xylocopa*, they cannot chew into wood and do not inhabit wooden structures, although they do inhabit pithy stems. Consequently, they are much less visible to the average person, but if you look closely, you will find them on many flowers.

Field Marks: ♀♂Dull metallic blue or greenish-blue with pale marks on the clypeus (rarely absent in female *C. calcarata*). No hairs on body obvious to the naked eye. Abdomen with no pale markings or hair bands. Abdomen, sides, somewhat parallel and ridged like bottled water bottle; back end bluntly comes to and end with a tiny projecting point or flange. ♀Clypeus with longitudinal white stripe or dot (rarely absent). Hind legs, sparse pollen hairs. Abdomen end comes to a blunt end and contains a short obtuse spike/projection. ♂Clypeus with inverted white T-shaped mark covering rim with stem of "T" running up the center. Abdomen comes to a blunt end with a wide to narrow projecting flange/plate at the very end.
Flight Season: Throughout.
Size Relative to Honey Bee: 0.5X.
Position of Wings Feeding on Flowers: Held over the back.
Location of Pollen Carrying Hairs: Hind tibia primarily.
Similar Genera: Nothing is similar.
Nest: Pith of cut/browsed stems of shrubs, brambles, and forbs.
Flowers: Nectars on a variety of flowers.

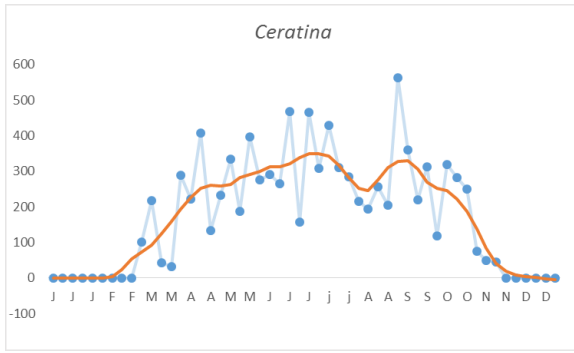
***C. mikmaqi* – Female**

***C. mikmaqi* – Female**

***C. mikmaqi* – Female**



***C. strenua* - Female**



Triepeolus (Variegated Cuckoo Bee Group)

12 species, 43 specimens

Nest parasite of primarily Eucerine bees. Densely arrayed in short flattened and prone hairs creating bold patterns of black and white bands and islands.

Field Marks: ♀♂Lacks long hair. Integument black except the legs are often red or reddish, rarely with red on antennae, head, and thorax. Visible hair all short, flattened, and prone. Abdomen with striking bands of black and white hairs, particularly noticeable on first abdominal segment. Thorax, upper surface, sides of rear edge with two small triangular projections (axillae). Thorax, upper side, pattern of hair often, but not always, appears like the classic "smiley face." ♀Hind legs with same short hair length as other legs. ♂With small, narrow, parallel-sided, bare plate (pygidial plate) with a rounded end at the very tip of its abdomen, often difficult to see in the field.

Flight Season: Summer and fall.

Size Relative to Honey Bee: 0.5–0.75X.

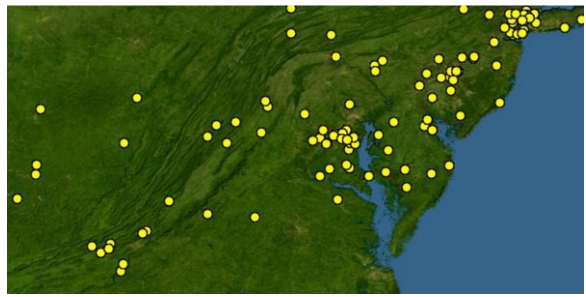
Position of Wings Feeding on Flowers: Most of the time up and out at about 45° to the body.

Location of Pollen Carrying Hairs: None; does not gather pollen.

Similar Genera: *Epeolus* - On average, smaller, but lots of overlap between the two genera and almost impossible to tell apart in the field. However, within the two groups, a few have species-specific unique characters that can be used for identification, and those will be covered in a separate publication at the species level. Thorax, upper side, can also have a "smiley face."

Nest: Nest parasite of Eucerines.

Flowers: Nectars at a variety of flowers.



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T. concavus

T. concavus

T. concavus

T. distinctus

T. distinctus .

T. donates - Female

T. donatus

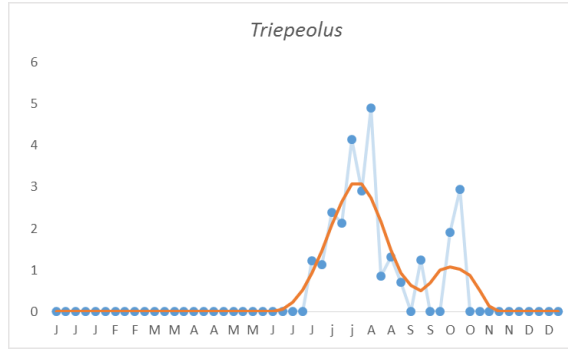
T. lunatus

T. lunatus

T. lunatus

T. lunatus - Female

T. pectoralis - Female



Epeolus (Variegated Cuckoo Bee Group)

8 species, 37 specimens

Uncommon nest parasite of summer and fall *Colletes* bees. Generally smallish and densely arrayed in short flattened and prone hairs creating bold patterns of black and white bands and islands.

Field Marks: ♀♂Lacks long hair. Integument black except legs often red or reddish, rarely with red on base of antennae, head, and thorax (Most noticeable in *E. bifasciatus*). All visible hair short, flattened, and prone. Abdomen with striking bands of black and white hairs, particularly noticeable on first abdominal segment. Thorax, upper surface, sides of rear edge with two small triangular projections (axillae). Thorax, upper side, pattern of hair often, but not always appears like the classic "smiley face." ♀Hind legs with same short hair length as other legs. ♂With small, narrow, parallel-sided, bare plate (pygidial plate) with a rounded end at the very tip of its abdomen.

Flight Season: Summer and fall.

Size Relative to Honey Bee: 0.5–0.75X.

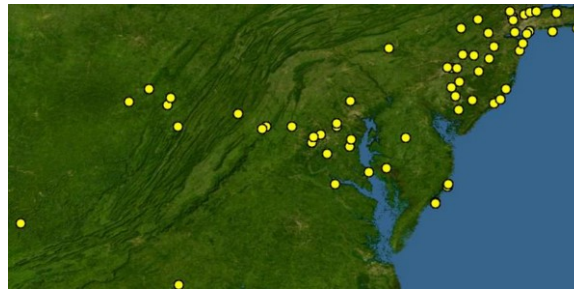
Position of Wings Feeding on Flowers: Most of the time up and out at about 45° to the body; appearing narrow-winged as hind and fore wings overlap, somethings closes wings across back if staying in one place for a time.

Location of Pollen Carrying Hairs: None, nest parasite.

Similar Genera: *Triepeolus* - On average, larger, more common, but lots of overlap between the two genera and almost impossible to tell apart in the field. However, within the two groups a few have species-specific unique characters that can be used for separation, and will be covered in greater detail in a publication at the species level.

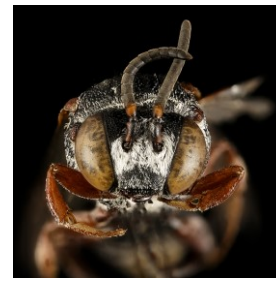
Nest: Nest parasite of *Colletes*.

Flowers: Nectars at a variety of flowers.



E. bifasciatus

E. bifasciatus

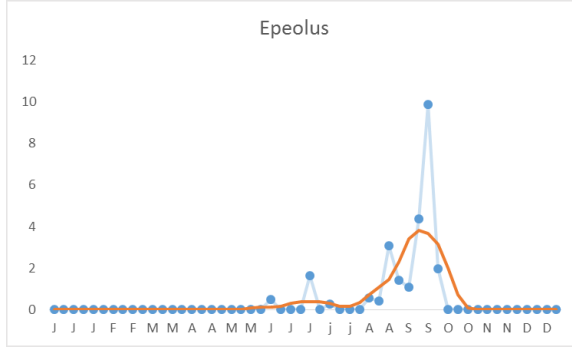


E.lectoides

E. lectoides

E. lectoides

E. scutellaris



Epeoloides pilosulus (Oil Cuckoo Bee Group)

1 species, 0 specimens

This extremely rare nest parasite of *Macropis* has not been recorded in the state for almost 100 years!

Field Marks: ♀♂Humpbacked appearance; top of thorax is unusually raised above level of head. Sparse hair. Shiny black-brown integument. Long legs. Abdomen end more pointed (rather than blunt) than most other genera. Head, top, clearly and evenly rounded. ♀Hind legs, hair as sparse as other legs. ♂Middle and hind legs, femur, unusually expanded/wide. Eyes, distance between inner edges narrows towards top of head.
Flight Season: Summer.
Size Relative to Honey Bee: 0.66X.
Position of Wings Feeding on Flowers: Unknown.
Location of Pollen Carrying Hairs: None, nest parasite of other species.
Similar Genera: None.
Nest: Nest parasite of *Macropis*.
Flowers: Nectars on a variety of flowers.

E. pillosula **- Female**

E. pillosula - Male

Eucera (Long-horned Bee Group)

4 species, 185 specimens

Large, regularly occurring, but uncommon spring bees. Usually found in higher quality field/meadow environments.

Field Marks: ♀♂Clypeus protruding like a great mound from the face, viewed from side it protrudes the same distance as the width of the eye. Moderate sized, flat, bare, triangular or oblong plate (pygidial plate) on the very last abdominal segment (often hard to see or retracted). ♀Hind legs with long, bushy pollen carrying hairs. ♂Clypeus entirely yellow/off-white. Antennae extremely long, arcing well past the base of the wings. Flight, very fast, zipping blurrily between flowers, looking for females, where they hesitate slightly before going to the next flower.

Flight Season: Spring through June.

Size Relative to Honey Bee: 1–1.5X.

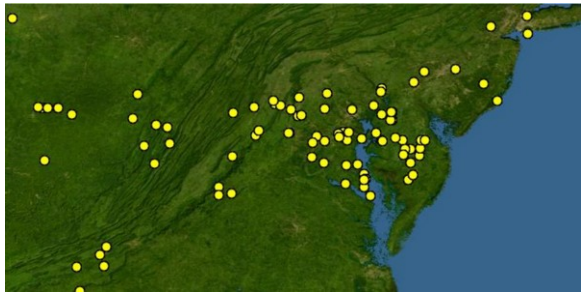
Position of Wings Feeding on Flowers: Along sides or crossed on back.

Location of Pollen Carrying Hairs: Hind tibia and basitarsus

Similar Genera: *Habropoda* and *Anthophora* - Clypeus also protruding. ♀Chubbier, more *Bombus*-like. Hind legs, hair on basitarsus clearly shorter than on tibia. ♂Face, area between clypeus and eye with at least some white/yellow integument (all black in *Eucera*). *Other Eucerini* - Clypeus flatter (*Long-horned Bee Group*) and/or out later in the year, with minor overlap with other Long-horned Bees in the month of June.

Nest: Ground nester.

Flowers: Nectars from a variety of flowers.



E. dubitata **– Male**

E. dubitata **– Male**

E. dubitata **– Male**

E. dubitata **- Female**

E. dubitata **- Female**

E. dubitata **- Female**

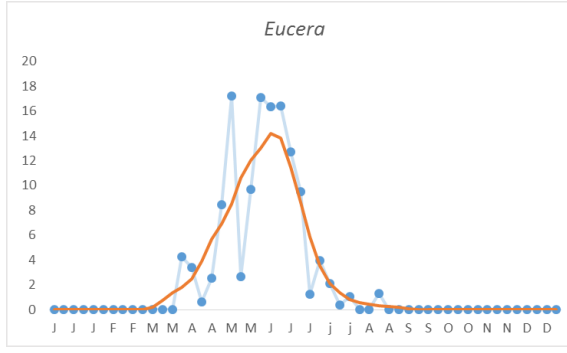
E. dubitata **- Female**

E. rosae **- Female**

E. rosae **- Female**

E. rosae **- Female**

E. rosae **- Female**



Florilegus condignus (Long-horned Bee Group)

1 species, 32 specimens

An uncommon bee overall, but where it occurs in Pickerelweed (*Pontederia cordata*) beds (its sole source of pollen for its babies), it can be quite common. Distributions centered on fresh tidal portions of Coastal Plain rivers.

Field Marks: ♀♂Almost exclusively found on Pickerelweed. Abdominal hair pattern distinctive. Abdomen with thin bands of bright white hair on the base of the 2nd and 3rd segments; 4th and 5th segments with large patches/bands of white hair separated in the middle by black hairs or no hairs. ♀Hind leg hairs off-white. ♂Clypeus all yellow. Antennae long and when pulled back surpass the base of the wings. Males extremely fast flying and usually only seen as a blur until they hesitate at a Pickerelweed blossom for the tiniest moment. Females are more deliberate as they forage for pollen and nectar.

Flight Season: Summer.

Size Relative to Honey Bee: 1X.

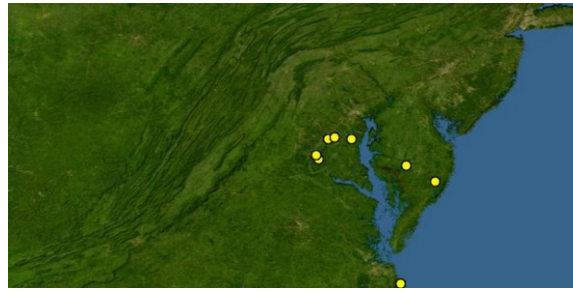
Position of Wings Feeding on Flowers: Unknown but probably on sides or crossed on back.

Location of Pollen Carrying Hairs: Hind tarsus and basitarsus, hair not quite as long as other Eucerines.

Similar Genera: No other genus has the distinct abdominal hair pattern with broad white hair bands on the 4th and 5th segment separated by black, this can be seen from quite a distance. Be aware that several *Melissodes* species visit Pickerelweed and will behave similarly, but don't have the unique hair pattern on the abdomen.

Nest: Ground nester.

Flowers: Nectars on a variety of flowers.



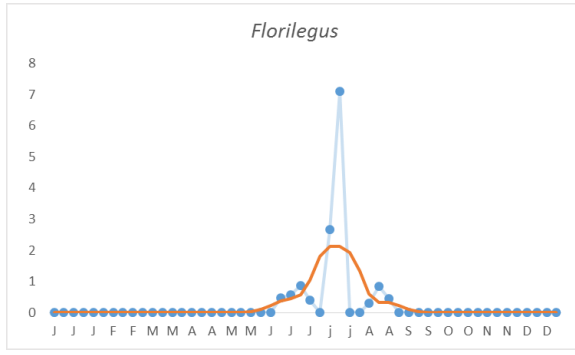
F. condignus **- Male**

F. condignus **- Male**

F. condignus **- Male**

F. condignus **- Female**

F. condignus **- Female**



Melissodes (Long-horned Bee Group)

14 species, 1949 specimens

Common in the summer, particularly on tall groups of composites, where they move blindingly quickly among the flowers, particularly the males.

Field Marks: ♀♂Light colored hairs on head and thorax (all black on *M. bimaculata*). Abdomen, most species with thin, transverse bands of white hairs, often set back from the rim. Tibia, hairs (at least outward facing side), tan to white. ♂Clypeus all yellow. Antennae long and when pulled back surpass the base of the wings and extend to rear of thorax. Males extremely fast flying and usually only seen as a blur until they hesitate at a blossom for the tiniest moment but more easily found late in the afternoon and early evening when they are stationary on the flowers for the night. Females also fast but spend more time foraging on flowers for pollen.

Flight Season: Summer and fall.

Size Relative to Honey Bee: 1–1.5X.

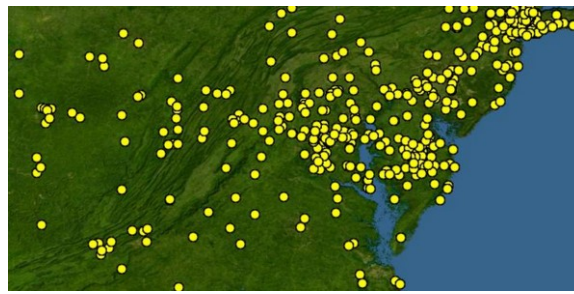
Position of Wings Feeding on Flowers: Crossed on back.

Location of Pollen Carrying Hairs: Hind tarsus and basitarsus.

Similar Genera: *Eucera* - Has a primarily spring flight season with some overlap in June. Clypeus, strongly projecting, viewed from side clypeus is as tall, or taller, than the eye is wide, only moderately so in *Melissodes*. *Florilegus* - Abdomen, with broad white hair bands on the 4th and 5th segment separated by black, this pattern can be seen from quite a distance. *Svastra* - Larger (approaching Carpenter Bees in size, most *Melissodes* approach Honey Bees in size), comparatively flatter clypeus, less common. ♀One species has all black hairs on hind tibia (*S. atripes*), one species with extensive black hair on body (*S. obliqua*) with hind tibia hairs orange to burnt orange and basitarsus hairs black to brown, remaining species (*S. compta*), rare, likely to only be seen on evening primrose (*Oenothera* spp.) early in the morning or in the evening but otherwise indistinguishable other than by size. ♂Antennae not quite as long, reaching to only about the base of the wings. *Other Eucerines* (*Squash Bee Group)* - On the larger end of the range of *Melissodes* species. All are specialists, restrict their foraging almost entirely to squash (*Cucurbita* spp.) or morning-glories (*Ipomoea* spp.), and forage only very early morning, males with restricted yellow on clypeus and antennae that only reach wing bases.

Nest: Ground.

Flowers: Almost entirely composites with specialists on sunflower (*Helianthus* spp.), thistle (*Helianthus* spp.), ironweed (*Vernonia* spp.) and one rare Pickerelweed (*Pontederia cordata*) specialist.



M. dentriventris **- Male**

M. apicata **- Female**

M. bimaculata **- Male**

M. bimaculata **- Male**

M. comptoides **- Male**

M. denticulate **- Female**

M. denticulata **- Female**

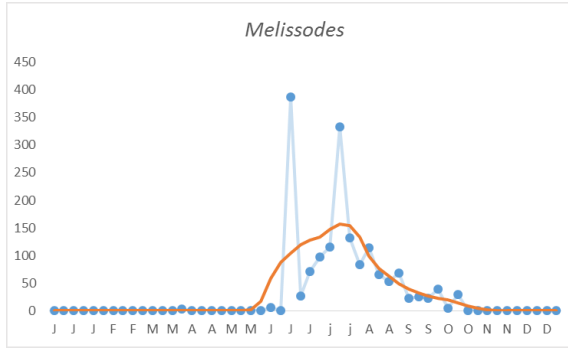
M. dentiventris **- Female**

M. desponsa **- Female**

M. desponsa **- Female**

M. subillata **- Female**

M. subillata **- Female**



Svastra (Long-horned Bee Group)

3 species, 63 specimens

A late summer group of bees associated with high quality natural meadows with diverse native flowering plants, planted or wild.

Field Marks: ♀♂Large, approaching Carpenter Bees in size, comparatively flatter clypeus and less common than other Eucerines. ♀One species with all black hairs on hind tibia (*S. atripes*), the most common species has extensive black hair on body (*S. obliqua*) with hind tibia hairs orange to burnt orange and hind basitarsus hairs at least partially black to brown. Remaining species (*S. compta*), rare, likely to only be seen on evening primrose (*Oenothera* spp.) early in the morning or in the evening but otherwise indistinguishable with the naked eye from *Melissodes* other than by size. ♂Antennae not quite as long as other Eucerines, reaching to only about the base of the hind wings perhaps a bit more.

Flight Season: Summer and fall.

Size Relative to Honey Bee: 1.5X.

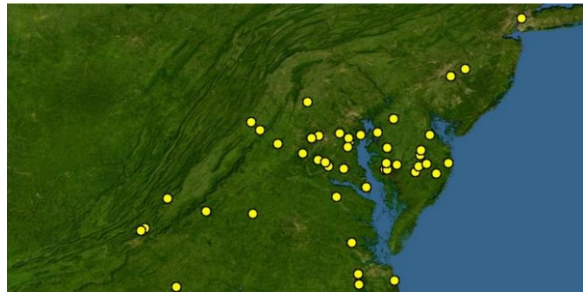
Position of Wings Feeding on Flowers: Crossed on back.

Location of Pollen Carrying Hairs: Hind tarsus and basitarsus.

Similar Genera: *Melissodes* - Smaller, +/- Honey Bee size. Clypeus more protruding. Abdomen, most species with thin, transverse bands of white hairs. Hairs on tibia (at least outward-facing side) tan to white. ♂Antennae long and when pulled back surpass the base of the wings and extend to rear of thorax. *Eucera* - Spring flight season, not overlapping. *Florilegus* - Abdomen, with distinct broad white hair bands on the 4th and 5th segment separated by black, this pattern can be seen from quite a distance. Primarily found on Pickerelweed (*Pontederia cordata*). *Squash Bee Group* - Smaller. All are specialists, restrict their foraging almost entirely to squash (*Cucurbita* spp.) or morning-glories (*Ipomoea* spp.), and forage only very early morning. ♂Clypeus with restricted yellow and antennae that also only reach wing bases.

Nest: Ground, may aggregate nests in one location.

Flowers: Composites and *S. compta* is an evening primrose (*Oenothera* spp.) specialist.



S. atripes **- Female**

S. atripes **- Female**

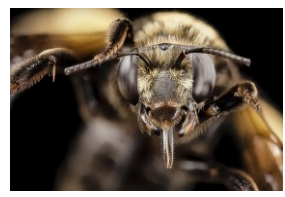
S. atripes **- Female**

S. atripes **- Female**

S. obliqua **- Male**

S. obliqua

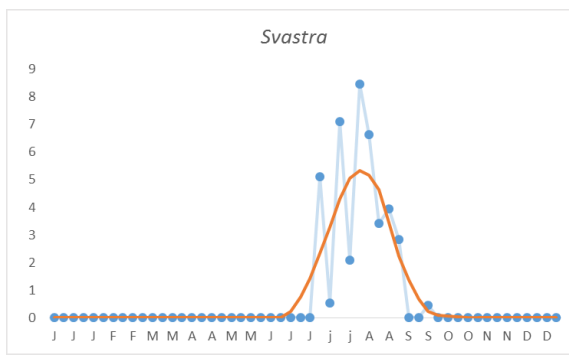
S. obliqua **- Female**



S. obliqua **- Female**

S. obliqua **- Male**

S. obliqua **- Female**



Nomada (Colorful Cuckoo Bee Group)

33 species, 4397 specimens

Common in the spring, these waspish bees, usually arrayed in yellow and red, are often found flying low over the ground looking for bee nests to lay their eggs in. There are two main groups. *Spring Group* (March–June) - Primarily parasitize the nests of *Andrena*. *Late Group* (July–October) - Mostly parasitize *Agapostemon* and likely some summer/fall *Andrena.*

Field Marks: ♀♂Wasp-like. Hair present but sparse, white, and often overlooked. Abdomen color very variable, but integument base color either red or black, a few females are entirely red (including head/thorax) with no yellow/black markings whatsoever, but most species have extensive yellow stripes/dots on the abdomen and very commonly on the face/thorax. Wings for most species with a dusky, partially opaque band bordering the tips. Abdomen held rigidly straight back or tilted slightly upward. Abdomen long, strongly tapered towards tip; look very similar to crabronid wasps. Thorax, viewed from side, rear face with a slope angle approximately 45° to the surface of thorax, other genera closer to 90°. *Late Group* has red restricted primarily to legs, black integument elsewhere with yellow markings. Holds their wings out and up when resting. *Spring Group* is more variable in color, many females have a basal red-colored integument, with yellow markings, but others, particularly the larger ones are extensively yellow with a black background. ♀Abdomen with a short silver/white latitudinal hair patch at the end of last visible segment. ♂Abdomen with a usually prominent (sometimes retracted) thin plate (pygidial plate) at the end, with end of plate notched or rounded over.

Flight Season: Throughout.

Size Relative to Honey Bee: 0.5–1X.

Position of Wings Feeding on Flowers: *Spring Group* almost always cross wings over their back. *Late Group* (uncommonly found) primarily hold their wings up and out at a 45°angle.

Location of Pollen Carrying Hairs: None, nest parasite.

Similar Genera: No other genera/species in our area have similar patterns of colors and form.

Nest: Nest parasite on *Andrena* and *Agapostemon*, and rarely, *Eucera*.

Flowers: Nectars on a variety of flowers.

***N. affabilis* - Male**

***N. annulata* - Male**

***N. annulata* - Male**

***N. australis* - Female**

***N. australis* - Male**

N. bidentate group

***N. denticulata* - Male**

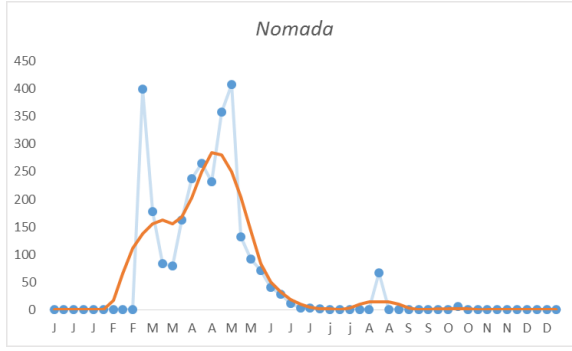
***N. luteola* – Male**

***N. maculata* - Male**

***N. rubicunda* - Female**

***N. superba* - Male**

***N. tiftonensis* - Female**



Holcopasites (Colorful Cuckoo Bee Group)

3 species, 23 specimens

An uncommon, tiny wasp-like nest parasite of *Calliopsis*.

Field Marks: ♀♂Very tiny. Antennae short and set low on the face. Wasp-like, seemingly hairless (similar to crabronid wasps). Integument color a unique combination of black on the head and thorax with the abdomen bright red with central black bands on the segments with dots or short lines of bright white, prone, short, hairs. The only species most people will detect is *H. andreniformis* which has a very obvious paired set of white dots composed of flattened hairs marking each abdominal segment. Unique in holding its wings under its abdomen at rest. Sometimes found resting parallel on a blade of grass with mandibles grasping the blade.

Flight Season: Summer to fall.

Size Relative to Honey Bee: 0.3X.

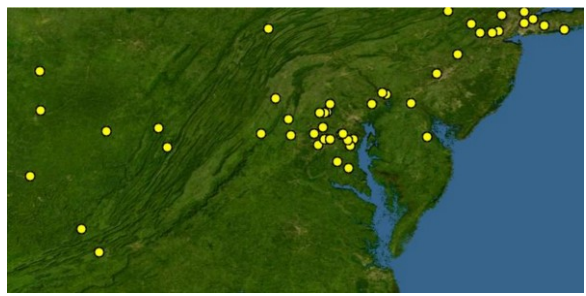
Position of Wings Feeding on Flowers: Unique…tuck their wings UNDER their abdomen to the inside of their hind legs. May at times hold them tight to the sides rather than completely under.

Location of Pollen Carrying Hairs: None, nest parasite.

Similar Genera: None.

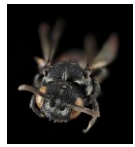
Nest: Nest cleptoparasite of *Calliopsis*.

Flowers: Nectars on a variety of flowers.



H. calliopsidis **- Male**

H. calliopsidis **- Male**

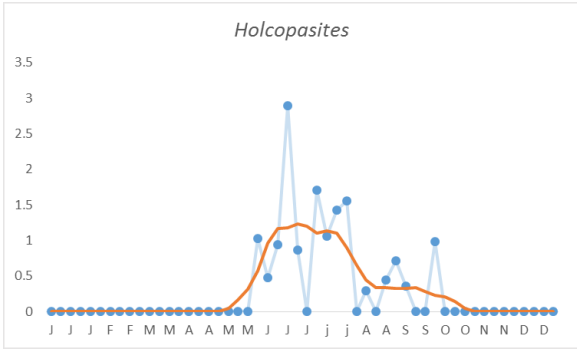


H. calliopsidis **- Male**

H. heliopsis **- Female**

H. heliopsis **- Female**

H. heliopsis **- Female**



Melitoma taurea (Round-headed Bee Group)

1 species, 170 specimens

Forages for pollen primarily on both native and introduced morning-glories in the genus *Ipomoea* and occurs throughout both rural and urban areas.

Field Marks: ♀♂Thorax, top, uniquely divided longitudinally by 1–3 white bands of hair lines (one always splitting the center) separated by black hairs. Pale hairs often taking on a gray aspect. Head, crown, uniformly rounded. Tongue extremely long; folded up under head it extends to the abdomen. Abdomen, segment rims, completely lined with a band of prone, short, white hairs. Claws, long, curved. Flies unbelievably quickly between flowers. ♀Hind legs with long but sparse, loosely plumose black pollen collecting hairs.

Flight Season: Summer.

Size Relative to Honey Bee: 1X.

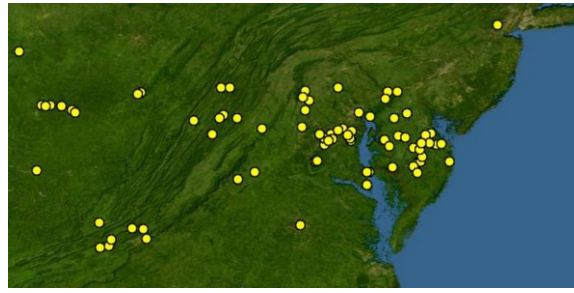
Position of Wings Feeding on Flowers: Crossed over back.

Location of Pollen Carrying Hairs: Hind tibia and basitarsus.

Similar Genera: Hair pattern on thorax is unique in our area as is the extremely long tongue, if visible. Note that *Melissodes* and other Eucerines along with *Bombus*/*Ptilothrix* will also commonly feed on morning-glories.

Nest: In the ground, usually in open clay banks along roads, ditches, streams, and overturned root masses. Usually protected by a projecting turret made of dried balls of earth.

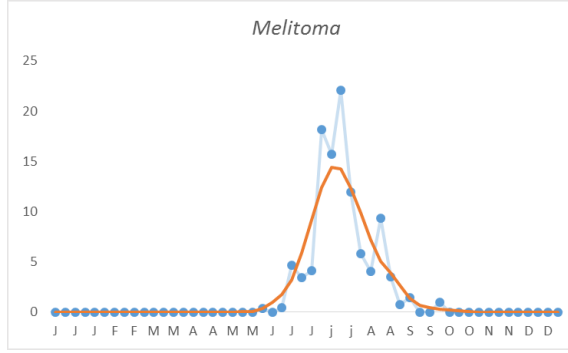
Flowers: A specialist on morning-glories, but can be found nectaring on other species.



M. taurea **- Male**

M. taurea **- Male**

M. taurea **- Male**

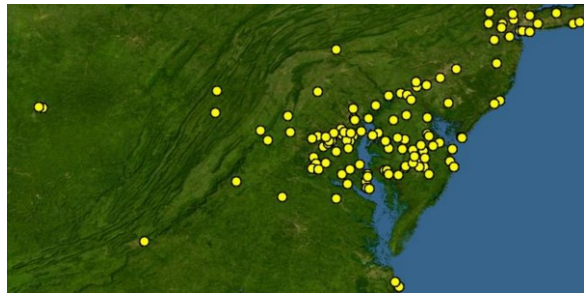


Ptilothrix bombiformis (Round-headed Bee Group)

1 species, 1122 specimens

Bumble Bee-like, forages for pollen (often with Bumble Bees!) primarily on native and introduced plants in the Mallow Family, particularly native Hibiscus. Occurs commonly on the edge of wetlands and on plantings in urban areas.

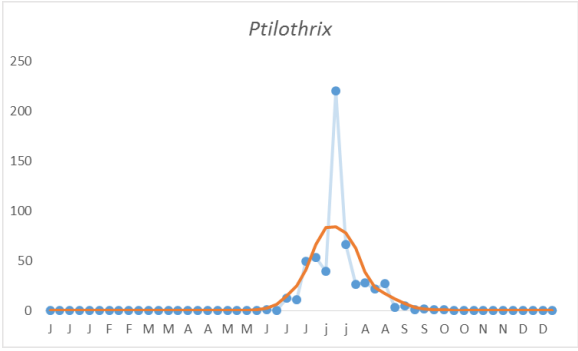
Field Marks: ♀♂Bumble Bee in general coloration (*B. impatiens* and *B. citrinus* specifically). Head, top, evenly rounded over. Thorax, top, sides, hairs dense, tan to off-white, never yellow, no central dark spot or black hairs present. Abdomen hairs black except for some light pale/ochre hairs at the very base. Legs long, last segment and claws particularly long and curved. ♀Hind legs, pollen hairs, black, sparse, much longer on basistarsus than tarsus.
Flight Season: Summer.
Size Relative to Honey Bee: 1.2–1.5X.
Position of Wings Feeding on Flowers: Crossed over back.
Location of Pollen Carrying Hairs: Hind tibia and basitarsus.
Similar Genera: *Bombus* - Light hairs mostly with a yellow caste to them. Thorax, top, hairs usually not completely pale, some black hairs in center. Abdomen of most species with more extensive pale/yellow hairs throughout. Face longer. Head, top, flattened. Legs generally shorter and body generally wider. ♀Rear legs, tibia in *B. impatiens* flattened and bare in center. Will also forage on rosemallow (*Hibiscus* spp.) with *Ptilothrix*. *Eucerines* (*Long-horned Group*) - ♀Hind legs, almost all have at least some pale hairs. ♂Antennae much longer, projecting at least to the base of the wings when pushed backwards. Head, clypeus, always at least partially yellow.
Nest: In the ground, usually in compacted open clay with no vegetation. Will make short turrets of clay around nest hole. Often found in paths and dirt access roads.
Flowers: A specialist on mallow family (Malvaceae) plants, in particular native *Hibiscus* plants near wetlands, but can be found nectaring on other species.



P. bombiformis **- Male**

P. bombiformis **- Male**

P. bombiformis **- Male**



Colletes (Cellophane Bee Group)

14 species, 805 specimens

There are two main groups of *Colletes*. The Spring Group often nests in huge aggregations in open soils or cliff faces, noticeable because of the males swarming over the aggregations waiting for emerging females. Remaining Fall Group members are primarily specialists (using pollen from only a small number of plants), smaller, uncommon, and summer to fall species.

Field Marks: ♀♂Eyes, distance between two inner borders, decreases travelling from top of head towards mandibles, making the bee look "cute," giving the head a heart-shaped look. Most common species hairy, with thick pale hair throughout the thorax and head, and an unbroken thick band of short, prone, pale hair along the rims of the abdominal segments. ♀Head, covered with hair throughout except clypeus (most species). Abdomen, cone-shaped, tapering uniformly to the end. ♂Head, completely covered in hairs, including clypeus. Note: Wings provide definitive character, but usually difficult/impossible to see in the field; one of outer veins of the wing (right side, dorsal view) is s-shaped rather than straight or uniformly curved (second recurrent vein); this is sometimes clear when photographs are taken.

Flight Season: spring to fall

Size Relative to Honey Bee: 0.75 - 1X

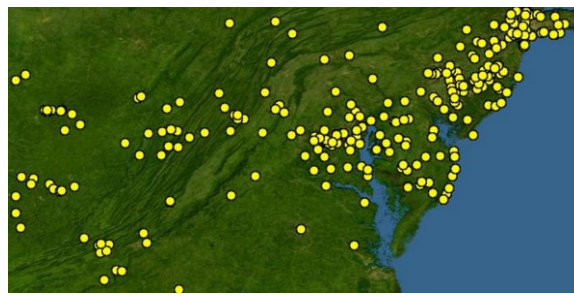
Position of Wings Feeding on Flowers: Overlapping

Location of Pollen Carrying Hairs: Hind femur and tibia, but can also include side of thorax and underside of abdomen

Similar Genera: *Nomia* - (very rare group) has a similar "cute" face. Abdomen rims bare with glowing band of pearlescent white color. *Halictus* - Eyes, inner edges do not converge. Thorax and head with only sparse covering of short upright hairs; integument clearly visible throughout. ♀Abdomen, apex, with noticeable longitudinal trough-like slit down the center. *Andrena* - Eyes, inner edges do not converge. Face can be hairy but top of thorax only rarely with thick long hair. ♀Face, shiny areas of white or slightly brown hairs along inner border of eyes. *Apis* - Eyes, hairy. Female, hind tibia, broad, flattened and bare in center.

Nest: Ground (Spring Group in aggregations)

Flowers: Spring Group forage primarily on trees and shrubs. Members of the Fall Group each primarily gather pollen from a single genus of plant, most of which are perennial forbs.



***C.brevicornis* - Male**

***C. brevicornis* - Male**

***C. compactus* - Male**

***C. inaequalis* - Female**

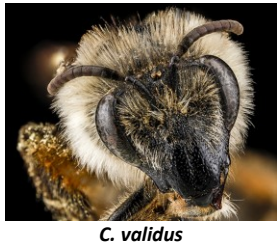
***C. inaequalis* - Female**

***C. inaequalis* - Female**

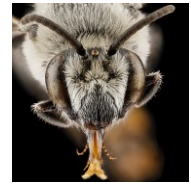
***C. latitarsis* - Male**

***C. nudus* - Female**

***C. validus* - Male**

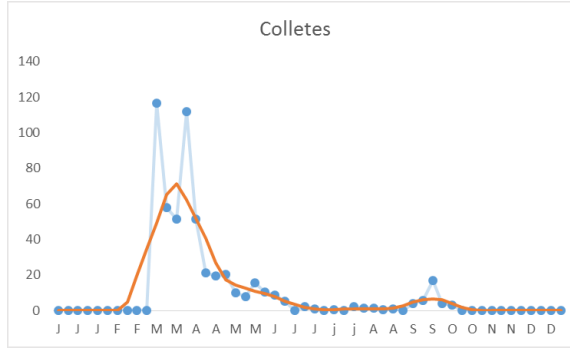


C. validus



***C. willistoni* - Male**

***C. willistoni* - Male**



Hylaeus (Masked Bee Group)

13 species, 1927 specimens

The new observer will mistake these for wasps as they are small, thin, black, nearly hairless, and carry pollen internally. Look for them on flat-topped flowers like Queen Anne's Lace and daisy-like flowers with easy access to pollen and nectar.

Field Marks: ♀♂Thin, wasp-like, nearly hairless. All black integument except for light markings on face and thorax collar, and usually 0.5 or more of tibia (Two uncommon wetland species with dark red on first sections of abdomen). Distance between inner edges of eyes strongly narrowing/converging towards mandibles. ♀With narrow triangular to linear pale markings centered on each side in the small area between the eye, antennae, and clypeus. ♂Similar to female except that pale markings usually completely to nearly completely cover face below antennae, markings in some species extend as short peninsulas above the antennae.

Flight Season: Late spring to fall, primarily summer

Size Relative to Honey Bee: 0.5X

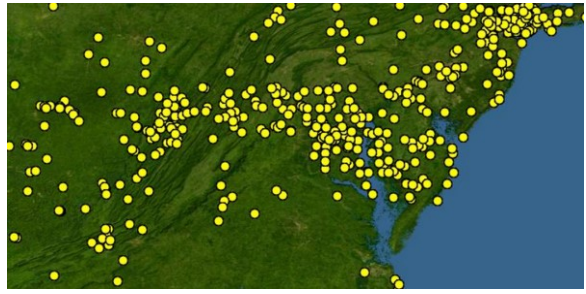
Position of Wings Feeding on Flowers: Overlapping

Location of Pollen Carrying Hairs: None, pollen carried internally

Similar Genera: Most likely to be identified as a wasp in the field (Search "tiphiid wasps" on BugGuide.net). Little Black Bee group is similar in that they are dark and small, but are not as elongate, tend to have wider faces and the inner edges of their eyes are parallel or nearly so, not/little converging towards mandibles. ♀Lack any light markings on body. Have noticeable pollen carrying hair on their hind legs. ♂Face, pale markings, generally less extensive, except for some *Pseudopanurgus.*

Nest: Pith in the cut ends of forbs as well as small beetle galleries in wood.

Flowers: *Hylaeus* have very short tongues and forage on Queen Anne's Lace, daisy-like flowers and other open access blooms, often in the company of wasps.



H. georgicus **- Male**

H. georgicus **- Male**

H. georgicus **- Male**

H. georgicus **- Male**

H. leptocephalus **- Male**

H. leptocephalus **- Male**

H. modestus **- Male**

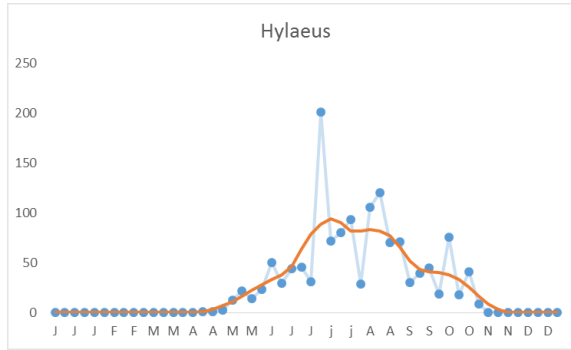
H. ornatus **- Male**

H. ornatus **- Male**

H. ornatus **- Male**

H. ornatus **- Male**

H. schwarzii **- Female**



Agapostemon (Green Bee Group)

4 species, 5227 specimens

Of the 4 bright metallic green bee genera, *Agapostemon* species are the largest in size. Common and sometimes abundant, they are mostly field species that can be seen from spring to fall.

Field Marks: ♀♂Thorax and head shiny, metallic, race-car green. Thorax, rear face is completely encircled around its outer edge with a clearly elevated ridge/line, though this can be difficult to see in the field. Larger than other green species. ♀Entirely green, including abdomen, except for the unique and common *A. virescens* which has a black abdomen with white bands of short hair. ♂Abdomen, banded yellow and black. Legs mostly bright yellow. Hind femur very wide/expanded/inflated. (Note: ♀*A. splendens* and to lesser extent *A. sericeus* can show some hints of metallic blue/purple in their abdomen)

Flight Season: Throughout the flight season

Size Relative to Honey Bee: 0.75X

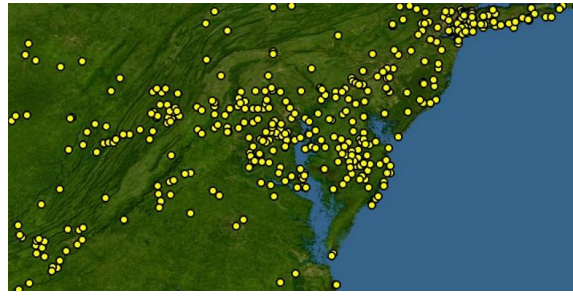
Position of Wings Feeding on Flowers: Overlapping

Location of Pollen Carrying Hairs: Hind femur and tibia

Similar Genera: There are 3 other bright green genera of bees. All are smaller and have no raised line on the thorax. All are completely green, including the abdomen. ♂Little to no yellow on femur and tibia, though tarsal segments usually with yellow; legs, hind femur thin, not expanded. *Augochloropsis* -♀♂Tegula with metallic green/blue not all brown as in *Agapostemon* and other green bees.

Nest: Open to sparsely vegetated ground. Entrance usually surrounded by a low mound/turret of excavated soil.

Flowers: Generalist



A. sericeus **- Male**

A. sericeus **- Male**

A. sericeus **- Female**

A. splendens **- Female**

A. splendens **- Female**

A. splendens **- Female**

A. virescens **- Male**

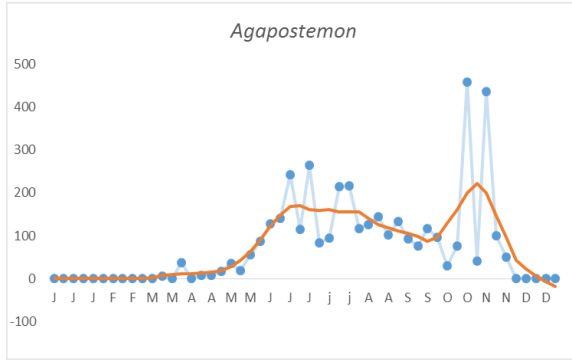
A. virescens **- Male**

A. virescens **- Female**

A. virescens **- Female**

A. virescens **- Female**

A. virescens **- Female**



Augochlorella (Green Bee Group)

2 species, 6141 specimens

The most commonly captured native bee in the state is *A. aurata*; perhaps even more common than the Honey Bee. One of the 4 bright race car green bee genera members of this species are often found in abundance in fields and gardens.

Field Marks: ♀♂Entire body shiny, metallic race-car green, often with gold highlights, no noticeable hair bands or hairiness other than on the legs. Thorax, rear face is smooth and does not have a ridge/line encircling its face like *Agapostemon*. ♀Scutum (top of thorax) with a subtle but noticeable gradient in surface texture from smooth near the rear to slightly roughened towards the front. ♂Almost impossible to tell in the field from *Augochlora* males, though a good picture can reveal subtle wing and facial differences.

Flight Season: Throughout the flight season

Size Relative to Honey Bee: 0.66X

Position of Wings Feeding on Flowers: Overlapping

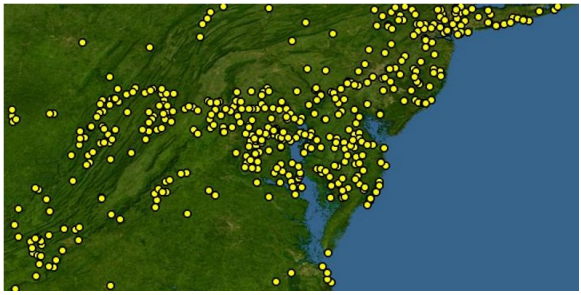
Location of Pollen Carrying Hairs: Hind femur and tibia

Similar Genera: *Agapostemon* - ♀♂Larger, has raised line/ridge encircling rear face of propodeum. ♂Abdomen boldly yellow and black striped. Hind femur bright yellow and expanded. *Augochlora* - ♀Scutum uniformly smooth reflecting light in the same way throughout. ♂Not separable in field. *Augochloropsis* - ♀♂Tegula (small shield like plate covering the base of the wing) strongly flattened to slightly concave along its inside edge. Some species with noticeable comb-like border of parallel, thickened, uniformly spaced white/tan hairs on the rim of at least the second abdominal segment. Some individuals with strong metallic blue reflections along with the usual metallic green base color.

Nest: Ground

Flowers: Generalist

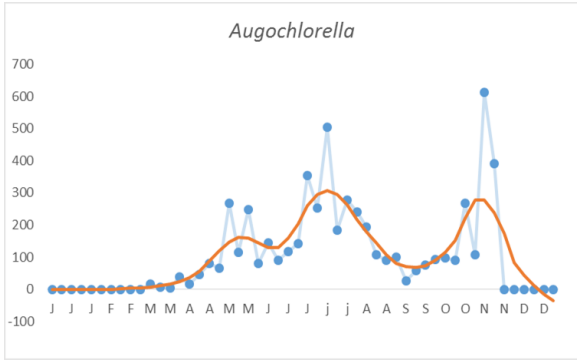
Note: There are a few cases in coastal Maryland where the bodies' reflections are metallic blue/green rather than the more usual metallic green/gold.



A. aurata **- Female**

A. aurata **- Female**

A. aurata **- Female**

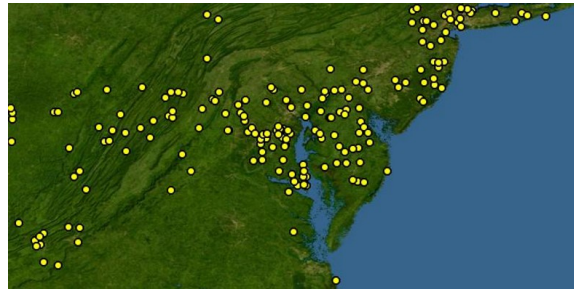


Augochloropsis (Green Bee Group)

3 species, 245 specimens

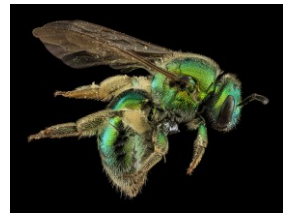
The least common of the 4 bright metallic green bee genera in Maryland, but still regularly occurring and to be expected in small numbers in almost any open garden/field habitats.

Field Marks: ♀♂Entirely bright metallic green, with many individuals with strong metallic blue highlights, mixed in. Tegula (small shield like cover to the base of the wings), interior edge, straight to slightly concave NOT oval like other species and tegula mostly metallic green/blue not brown like other species.
Flight Season: Throughout
Size Relative to Honey Bee: 0.66X
Position of Wings Feeding on Flowers: Overlapping
Location of Pollen Carrying Hairs: Hind femur and tibia
Similar Genera: All the other bright green genera of bees have oval tegula similar to the majority of all bee species. Visually, *Augochlora* and *Augochlorella* look almost exactly the same as *Augochloropsis*. In addition to having an oval tegula *Agapostemon* is larger and has a raised line/ridge encircling rear face of propodeum. ♂Abdomen, boldly yellow and black striped abdomen.
Nest: Ground.
Flowers: Generalist



A. metallica **- Female**

A. metallica **- Female**

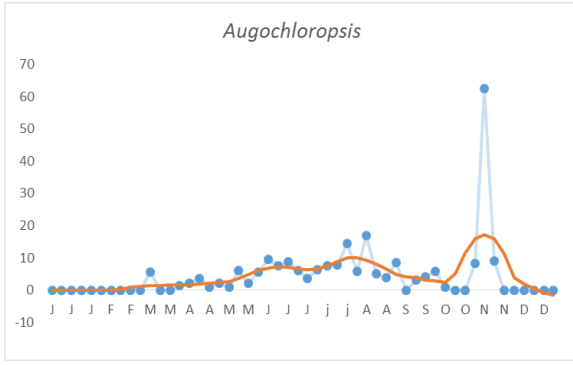


A. metallica **- Female**

A. sumptuosa **- Female**

A. sumptuosa **- Female**

A. sumptuosa **- Female**

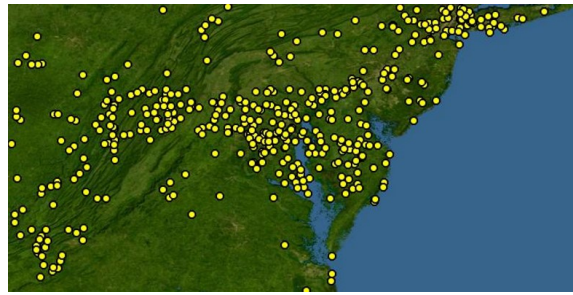


Augochlora pura (Green Bee Group)

1 species, 1735 specimens

Only one species present in Maryland (*A. pura*) and strongly associated with woodland habitats/landscapes, though commonly found in open fields near to woodlands.

Field Marks: ♀♂Thorax and head shiny, metallic race-car green often with gold overtones, but never with blue overtones, no noticeable hair bands or hairiness other than on the hind legs. Thorax, rear face is smooth and does not have a ridge/line encircling its face like *Agapostemon*. ♀Scutum (top of thorax) with a NO noticeable gradient in surface texture from back to front, relatively smooth and heavily pitted. ♂Almost impossible to tell in the field from *Augochlorella* males.
Flight Season: Throughout
Size Relative to Honey Bee: 0.66X
Position of Wings Feeding on Flowers: Overlapping
Location of Pollen Carrying Hairs: Hind femur and tibia
Similar Genera: *Agapostemon* - ♀♂Larger, has raised line/ridge encircling rear face of propodeum. ♂Has boldly yellow and black striped abdomen. *Augochlorella* - ♀Scutum subtly changes in surface texture and reflectivity, trending towards slightly rougher near the head. ♂Not separable in field. *Augochloropsis* - ♀♂With tegula (small shield-like plate covering the base of the wing) metallic green or blue and strongly flattened to slightly concave along its inside edge. Some species with noticeable border of comb-like white hairs on the rim of at least the second abdominal segment. Some species with relatively strong metallic blue reflections along with the usual metallic green.
Nest: Under loose bark of rotting logs
Flowers: Generalist

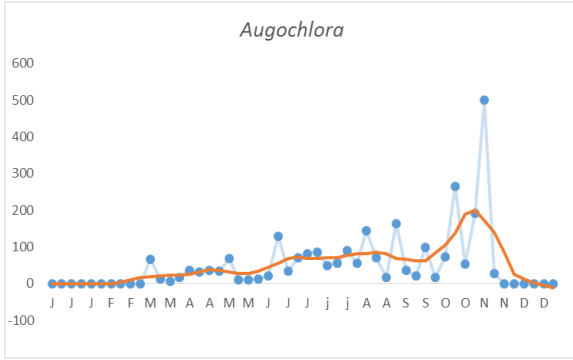


***A. pura* - Male**

***A. pura* - Male**

***A. pura* - Male**

***A. pura* - Female**



Halictus (Sweat Bee Group)

6 species, 6954 specimens

Common to abundant in fields and gardens, these are generalists with often multiple generations a year, individuals are primarily eusocial nesters.

Field Marks: ♀♂Body uniformly dark brown or a dark/dull metallic green (*H. confusus* and *H. tectus*). Abdomen, segments, rim with a complete but thin band of tiny prone white hairs, otherwise bees without much hair. ♂Antennae relatively long compared to males of the Panurgines; underside in all but one species (*H. rubicundus*) noticeably yellowish. Clypeus, lower third parallel to rim a bar of smudgy yellow. Legs noticeably yellow with a distinct elongate brown mark centered on the outside face of the hind tibia.

Flight Season: Throughout

Size Relative to Honey Bee: 0.5-1X

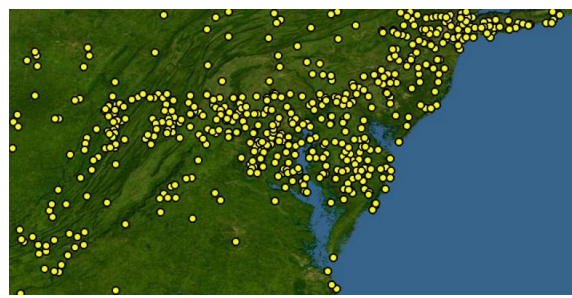
Position of Wings Feeding on Flowers: Overlapping

Location of Pollen Carrying Hairs: Hind femur and tibia

Similar Genera: *Lasioglossum* - ♀♂Variable in size, but many are smaller than any *Halictus* species. Abdomen, segments with no pale hair bands on rims of abdominal segments, some species with white hair band at the BASE of the abdominal segment, patches/bands of short pale white tiny abdominal hair may be absent to completely covering the abdomen. Color varies from slightly metallic to black. ♂There are exceptions to all of the following but: antennae usually all dark; legs usually dark or yellow restricted to ends of legs; black species can have white/off-white but not yellow smudges on clypeus; some common small dull metallic species have yellow on clypeus, but the bulk do not.

Nest: Ground

Flowers: Generalist



***H. confusus* - Female**

***H.confusus* - Female**

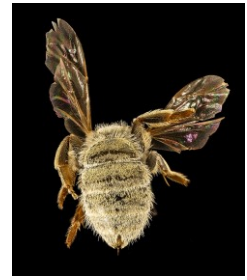
***H. confusus* - Female**

***H. ligatus* - Female**

***H. poeyi* - Female**

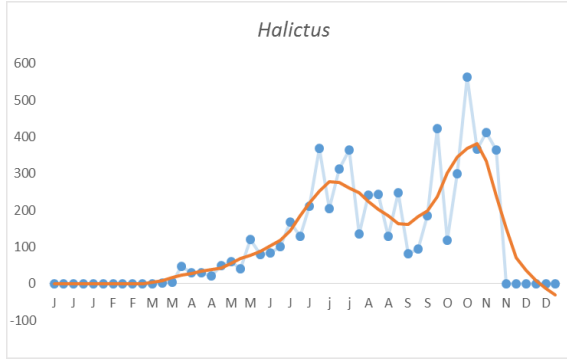
***H. poeyi* - Female**

***H. poeyi* - Female**



***H. tectus* - Female**

***H. tectus* - Female**



Lasioglossum (Sweat Bee Group)

78 species, 28,047 specimens

A species rich group of moderate to extremely small species. In total numbers they dominate many environments, particularly in summer and fall, but their small size and habit of staying near the ground make them less observed than other species who are larger and use taller flowers.

Field Marks: ♀♂Both all black and dull/dark metallic green/blue species exist, with a few having orangish on the abdomen. 3 submarginal cells; 2 rare species with 2. No long hair but some have noticeable patches/bands of pale, short, matted, hairs on the abdomen. Matted pale hair bands/patches on abdomen vary from none to almost completely covered. ♂Antennae long (goes to middle of thorax) compared to the female; usually all black. Legs, black in most species or yellowish restricted to ends of legs only (tarsal segments and end of tibia). Clypeus of black species usually with pale white/off-white smudges in the center towards the rim. Clypeus on most of the smaller dark metallic green/blue species without light patches, but there are several exceptions. Note: Several rarely seen species are parasitic and have no pollen carrying hairs on legs. 3 uncommon to very rare dune/deep sand specialists exist that have reddish abdomens and 2 very rare species have only 2 submarginal cells. Head of male of some large black species and female parasitic species noticeably broad, with wide cheeks, and mandibles saber-like, extra-long, thin, pointed, without an extra tooth at the end.

Flight Season: Throughout

Size Relative to Honey Bee: 0.3-0.75X

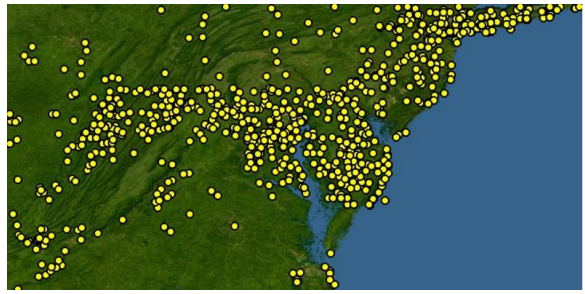
Position of Wings Feeding on Flowers: Overlapping

Location of Pollen Carrying Hairs: Hind femur and tibia

Similar Genera: *Halictus* - ♀♂Usually larger, abdomen segments with thin, crisp, dense bands of small white hairs along rim. ♂Antennae of most species with bright to dull yellow undersides, outside face of hind legs largely yellow tibia with large, long, oval brown section in the middle.

Nest: Ground, with a few in rotting wood, including wood mulch

Flowers: Generalist



L. floridanum **- Female**

L. forbesii **- Female**

L. foxii **- Male**

L. georgeickworti **- Female**

L. gotham **- Female**

L. lineatulum **- Female**

L. lineatulum **- Female**

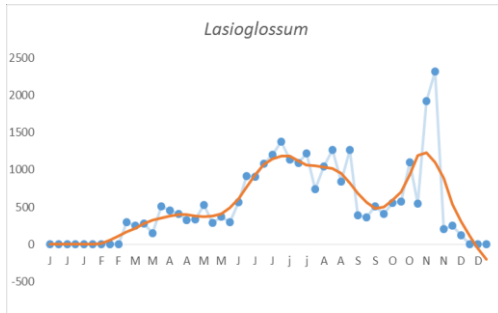
L. marinum **- Female**

L. quebecense **- Female**

L. rozeni **- Female**

L. truncatum **- Male**

L. truncatum **- Male**



Sphecodes (Sweat Bee Group)

16 species, 240 specimens

A group of nest parasites, regionally their hosts primarily come from other members of the Family Halictidae. Regularly occurring but sparsely distributed at any individual location, they can be found nectaring at flowers or cruising low over, or walking upon, bare areas looking for host nests.

Field Marks: ♀♂Head and thorax jet black, no long hair, and shorter hair generally sparser than in most bees, sides of thorax on most species not smooth, rough, like textured drywall. ♀Abdomen, all red. Hind legs with no pollen carrying hairs. Body size/shape narrow, closer to that of males than pollen carrying species. ♂Abdomen usually all red, but commonly with extensive black at either end of abdomen, rarely all black. Antennae all black, longer than female, some species with strong concave areas on the underside of segments.

Flight Season: Throughout

Size Relative to Honey Bee: 0.5-0.75X

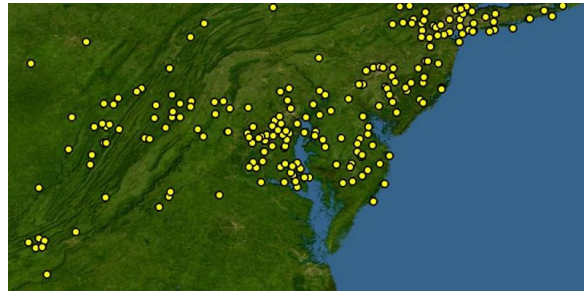
Position of Wings Feeding on Flowers: Overlapping

Location of Pollen Carrying Hairs: Does not carry pollen

Similar Genera: Bright red abdomen is unique to *Sphecodes* and female *Nomada* with a few small exceptions. *Nomada* - ♀Can have all red abdomen, but in most cases there are yellow dots/markings at least on the sides of the abdomen, and, in all cases if the abdomen is plain red, the thorax is either marked with yellow or is also all red. *Lasioglossum* – A few sand specialists (coastal plain/dunes only) have a reddish/orangish abdomen that is not as brightly colored as *Sphecodes* and dark head/thorax, but body is not as roughened as *Sphecodes*. *Hylaeus – H. ornatus* has red restricted to the very base of its abdomen, but has clear yellow markings on the face and thorax.

Nest: Parasitizes ground nesting bees, primarily from Halictidae, but other groups of bees are possible hosts, more observations needed.

Flowers: Nectars on many plants



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Dieunomia (Thick-legged Group)

2 species, 68 specimens

Two very rare species currently found only in old sand mines in a few square miles adjacent to the Patuxent River in Anne Arundel and Prince George's counties. Composite specialists, particularly yellow ones, they distinctly waggle their large abdomens up and down as they parse the flower disks gathering pollen.

Field Marks: (Note: refers largely to *D. heteropoda*)♀♂Large. Wings skinny, long, dark, ends black, remainder dark smoky brown; when foraging wings held out and up at 45° with fore and hind wing overlapping making the wing base appear particularly narrow. Integument all black. Thorax, hair, dense, fur-like, black to gold-brown, often heavily dusted with light colored pollen. Abdomen, has indistinct latitudinal bands resulting from dark brown hair and segment rims contrasting with underlying dark black integument. Wing base covers (tegulae) not oval but asymmetrical, elongated, with a projecting lobe along the rear interior edge. ♀Abdomen wide, sometimes with enough pollen on the underside to appear like *Megachile*. Hind femur, tibia, basitarsis covered in long dense, black, multi-branched pollen carrying hairs. Abdomen, underside often also carrying pollen. ♂Wasp-like, legs very long, thin but on hind and mid tibia with huge triangular flattened flanges projecting outward. Last segment of the antennae expanded to about 2x wider than the other segments.

Flight Season: Late summer to early fall

Size Relative to Honey Bee: 1.5X

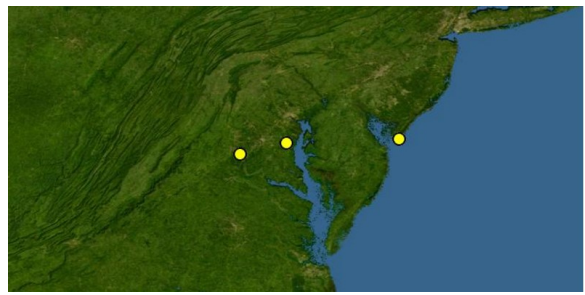
Position of Wings Feeding on Flowers: When foraging wings held 45° away and up from body, hind and front wings completely lapping rather than slightly fanned, as in most other genera, making wings appear "skinny."

Location of Pollen Carrying Hairs: Hind femur, tibia, basitarsis as well as under the abdomen

Similar Genera: *All Other bees* - ♂Antenna ends not inflated, legs lack flanges (Except *Nomia*). *Long-horned bees* - ♀♂Faster fliers, *Dieunomia* fly more slowly, like bumblebees; long-horned bees, particularly the males, fly so fast that they are only a blur. Tegula not obviously elongate or deformed from an oval. Hairs, at least some light-colored, though some primarily black with only small amounts of pale hairs. Wings primarily held overlapping across the back. Other Bumble Bee *sized bees* – All have pale hairs on their thorax, and usually the first abdominal segment.

Nest: Ground, often in aggregations

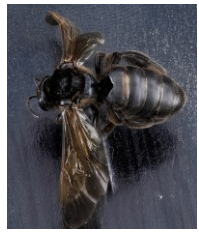
Flowers: Composites, particularly yellow, daisy-like ones



D. heteropoda **- Female**

D. heteropoda **- Female**

D. heteropoda **- Male**



D. heteropoda **- Female**

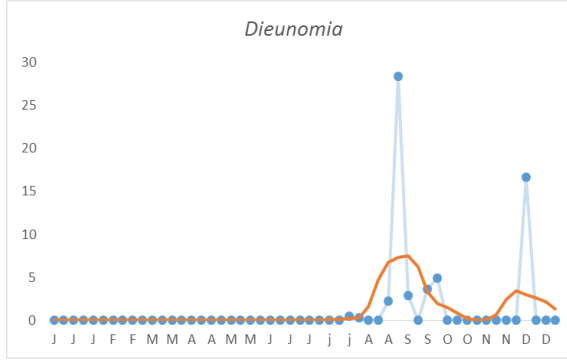
D. heteropoda **- Male**

D. heteropoda **- Female**

D. nevadensis **- Male**

D. nevadensis **- Male**

D. nevadensis **- Male**

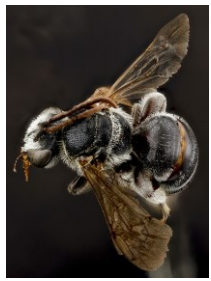


Nomia (Thick-legged Group)

2 species, 0 specimens

Two very rare species, *N. nortoni* likely just an accidental visitor (Cumberland) while *N. maneei* very sparsely occurring on the lower Eastern Shore in deep sand areas.

Field Marks: (Refers primarily to *N. maneei*)♀♂Abdomen with highly visible pale pearlescent bands along rims of segments, unique among all Maryland bees. Eyes, interior distance between two inner borders narrows from top of head towards mandibles, making bee look "cute."♂Hind femur and tibia greatly inflated, thicker and wider than most other species.
Flight Season: Late summer to fall
Size Relative to Honey Bee: 1X (1.5X in *N. nortoni*)
Position of Wings Feeding on Flowers: Overlapping
Location of Pollen Carrying Hairs: Hind femur and tibia
Similar Genera: No other group has the pearlescent bands on the abdomen. *Colletes* can have a similar "cute" face look from their also converging eyes.
Nest: Ground (possibly in aggregations)
Flowers: Noted on a variety of forbs, but may favor things in the pea family.



N. maneei **- Male**

N. maneei **- Male**

N. maneei **- Male**

N. maneei **- Male**

Anthidium (Yellow Block Group)

2 species, 325 specimens

Two common, but non-native, *Anthidiums* occur in Maryland. Note that the Southeastern native *Anthidium, A. maculifrons,* is recorded for VA and WV and could be present in southern Maryland. The colorful introduced species are associated with gardens and weedy fields but largely absent from the coastal plain.

Field Marks: ♀♂Stout, wide, short body, rounded end to abdomen. Integument black, marked with bright yellow stripes and markings throughout body and legs. Head, top, back, edge with yellow markings that vary from simple dots above the eyes to teardrop shaped oblongs; marks never meet in the middle of the top of the head. Abdomen with bold yellow marks starting with 1 or 2 dots or oblongs on the sides of the basal segments and progress to a nearly complete stripe on segments near the abdomen end; stripes never connect in the middle. ♀Mandibles primarily yellow with multiple small teeth (though these are often hard to see). ♂With dramatic projecting anchor or trident shaped structures at the very end of the abdomen and are usually larger than females in *A. manicatum.*

Flight Season: Late spring to fall, primarily summer

Size Relative to Honey Bee: 0.5 - 0.75X

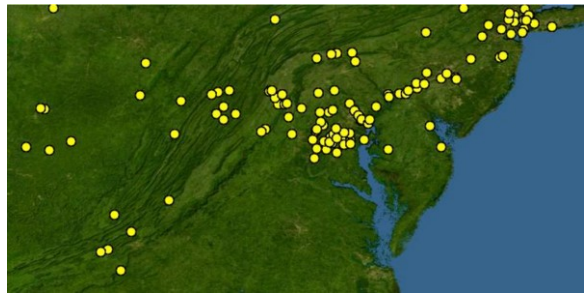
Position of Wings Feeding on Flowers: Held at 45° to body

Location of Pollen Carrying Hairs: Underside of abdomen

Similar Genera: Note: *A. manicatum* males are larger than all other Anthidiine species. *Paranthidium* - Has strap-like yellow markings that follow the inner edge of the eyes extending to the top of the eye and a broken yellow line borders most of the top of the thorax near the head. *Other Yellow Block Genera* - Have different patterns to the yellow markings of the face and abdomen or the markings are white not yellow.

Nest: Nests in holes in wood and other cavities with partitions/swaddling made of minute plant hairs that can completely enclose the cocoons, at least in *A. manicatum*. Nest can be closed with other materials including wood pulp.

Flowers: Commonly found on mints and plants in the pea family, but will visit many plant species.



***A. manicatum* - Female**

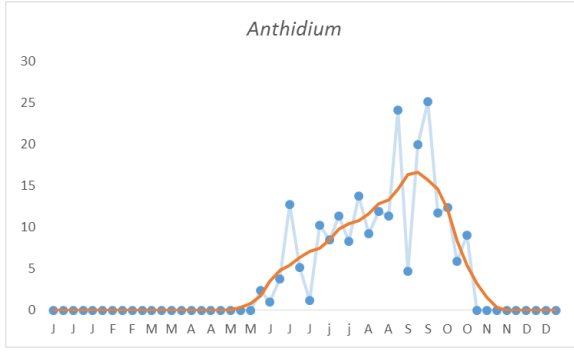
***A. manicatum* – Female**

***A. manicatum* - Male**

***A. manicatum* - Male**

***A. manicatum* - Male**

***A. manicatum* – Male**



Anthidiellum notatum (Yellow Block Group)

1 species, 41 specimens

Small, speedy, uncommonly detected in gardens and only rarely found elsewhere. Where found it often can be seen zipping around from flower to flower.

Field Marks: ♀♂Robust but small and compact. Wings nearly black. Body black with bold bright yellow markings throughout. Head, top, back edge with a yellow stripe/line running uniformly along the edge starting behind the eyes. Abdomen, first segment with large round/oblong/blockish yellow mark on the far sides; second segment with two yellow stripes that cross the segment but don't quite meet in the middle; 3rd-5th segments with two large roughly square/rectangular marks to either side of the centerline, creating a set of 6 dots/squares that are easy to see in the field. Abdomen, top, rear edge, **c**lose inspection will show that the top of the thorax projects rearward creating a thin overhanging shelf, unique among all the genera.

Flight Season: Late spring to fall, primarily summer

Size Relative to Honey Bee: 0.5X

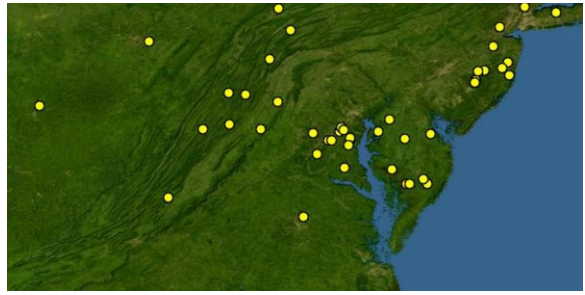
Position of Wings Feeding on Flowers: Held at 45° to body

Location of Pollen Carrying Hairs: Underside of abdomen

Similar Genera: *Other Yellow Block Genera* - Do not have the same pattern of distinct abdominal markings *A. notatum* has.

Nest: Glued externally to plant stems using resin and often incorporating small pebbles.

Flowers: Very fond of plants in the pea and mint families.



A. notatum **- Male**

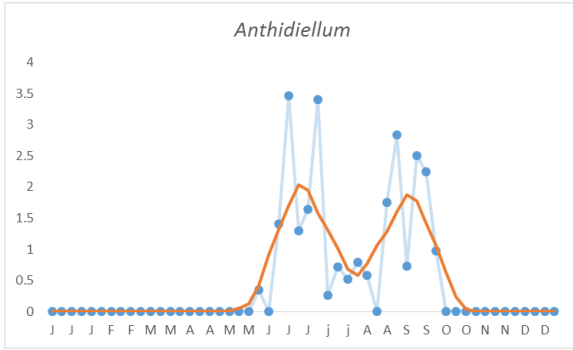
A. notatum **- Female**

A. notatum **- Female**

A. notatum **- Male**

A. notatum **- Male**

A. notatum **- Male**



Pseudoanthidium nanum (Yellow Block Group)

1 species, 7 specimens

Only recently discovered in the state. A non-native, currently associated with highly disturbed, weedy vacant lot environments, primarily urban. Detected in Hagerstown and Baltimore and expected to spread.

Field Marks: ♀♂Stout, tiny, compact body. Integument black with strong white/pale yellow markings throughout the body. Top, back, edge of head with pale yellow/white markings that vary from simple dots above the eyes to teardrop shaped oblongs; marks never meet to form a continuous stripe. Thorax, top rearmost plate (metanotum) with two prominent, white, slanted, eye-shaped marks. Abdomen, segments with pale yellow/white marks that start as 1 or 2 dots or oblongs on the far sides and progress to a nearly complete stripe on segments near the abdomen end; stripes never meet in the middle. Wings overlap over back rather than held at 45° angle to body like other Anthidiines.

Flight Season: Very late spring through summer

Size Relative to Honey Bee: 0.5X

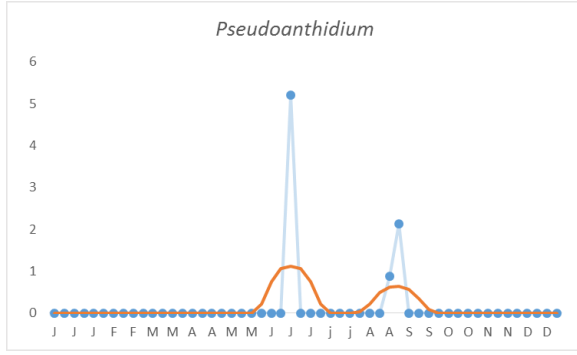
Position of Wings Feeding on Flowers: Completely overlapping (unlike others Anthidiine genera)

Location of Pollen Carrying Hairs: Underside of abdomen

Similar Genera: Tiny size, color pattern on the abdomen, wings held over the back, and white rather than bright yellow markings separates out this species from other Anthidiines.

Nest: Unclear, but likely in the pith of cut/browsed stems

Flowers: Prefers composites, probably favoring introduced knapweeds.


Pseudoanthidium
6
5
4
3
2
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J J J F F M M A A M M J J J j j A A S S O O N N D D

Paranthidium jugatorium (Yellow Block Group)

1 species, 1 specimen

There is only one record of this Woodland Sunflower specialist (Alleghany County). With more collecting in the region at the right time of year it may be found to be more regular in occurrence.

Field Marks: ♀♂Stout, black integument with bold, bright yellow markings throughout body and legs. Head, top, back edge varies from no yellow markings to the presence of some obscure linear ones in the center and some oblong ones on the far side. Abdominal segments with large transverse yellow stripes/marks which are widely separated in the center of the segment on basal segments, but the gap between the stripes narrowing on segments towards the abdomen tip often with a complete stripe on the last two segments. Face with linear, strap-like, yellow markings that run up the inside of the eyes to about the top of the eyes.

Flight Season: Summer

Size Relative to Honey Bee: 0.75X

Position of Wings Feeding on Flowers: Held at 45° to body

Location of Pollen Carrying Hairs: Underside of abdomen

Similar Genera: *Anthidium* - Thorax may or may not have some small yellow oblong markings towards the rear, but thorax generally lacks the clear thin band of yellow that surrounds much of the top of the top of the thorax on *Paranthidium. Other Anthidiini* - Abdomen with quite different pattern of markings, either a series of widely separated dots (*Anthidiellum, Pseudoanthidium*) or complete linear stripes (*Stelis, Yellow Group*)

Nest: Nests in the ground, has been known to use the old/unused holes of other ground nesting species such as *Melitoma*.

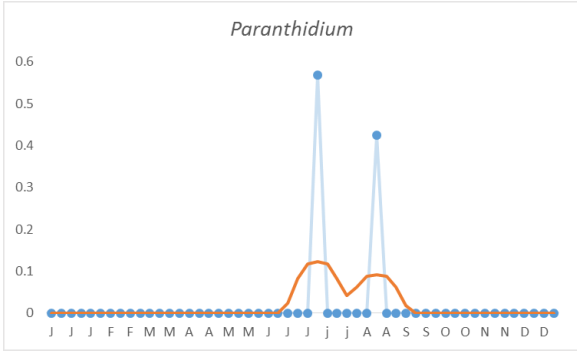
Flowers: Specialist on Woodland Sunflowers

P. jugatorium **- Male**

P. jugatorium **- Male**

P. jugatorium **- Male**

P. jugatorium **- Male**



Stelis (Yellow Block Group)

3 species, 33 specimens

Uncommon nest parasites of *Hoplitis*, *Osmia* ,and *Megachile*. There are two distinct groups. Yellow Group has markings similar to the other Anthidiine groups (S. *louisae*), White Group has no markings on the head/thorax and markings on abdomen are clearly white.

Field Marks: ♀♂Robust, black integument. Yellow Group with bright yellow markings throughout body and legs. Head, top, back edge with no yellow markings or a single yellow mark in the center. Abdomen with completely traversing, thin, variable in width, yellow or yellowish stripes on at least segments 1,3,4 and with large oblong/circular markings on the sides of 2. Face with linear, strap-like, yellow markings that run up the inside of the eyes to about the top of the eyes. White Group with no markings at all on head/thorax. Abdomen with traversing white stripes in the super rare *S. nitida*. The more regularly occurring, very small species, *S. lateralis* may have white circular to widely separate linear markings on segments 1-3 and a series of up to 6 white dots or more extensive transverse lines on the 4th and 5th segments. ♀Abdomen, underside, lacks pollen carrying hairs

Flight Season: Late spring to fall, primarily summer

Size Relative to Honey Bee: ¾ - 0.5X

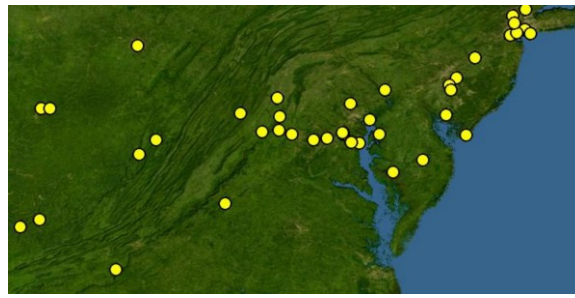
Position of Wings Feeding on Flowers: Held at 45° to body

Location of Pollen Carrying Hairs: None, nest parasite of other species

Similar Genera: Yellow Group can be told from other Anthidiini by the linear rather than broken transverse yellow stripes on abdominal segments 1,3,4. White Group - Shape similar to *Osmia, Hoplitis* and *Megachile* but neither of those genera have any white markings on the abdomen. Note that shape of the tip of the abdomen is flattened more than similar genera.

Nest: Nest cleptoparasite. Yellow Group - Resin using *Megachile*. White Group - *Hoplitis* and *Osmia*

Flowers: Nectars on a variety of flowers



***S. lateralis* - Female**

***S. lateralis* - Female**

***S. lateralis* - Female**

S. louisae

S. louisae

S. louisae

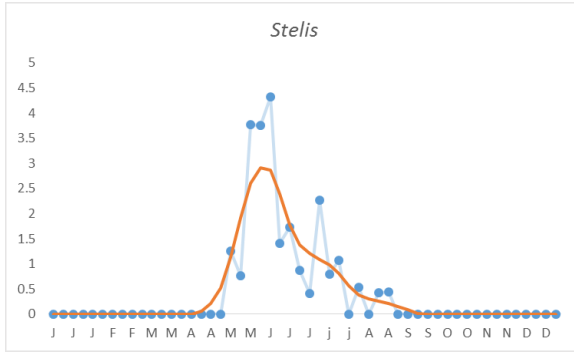
S. louisae

S. nitida

S. nitida

S. nitida

S. nitida

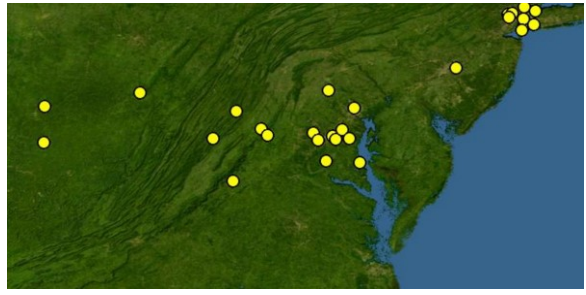


Chelostoma philadelphi (Thin Group)

1 species, 7 specimens

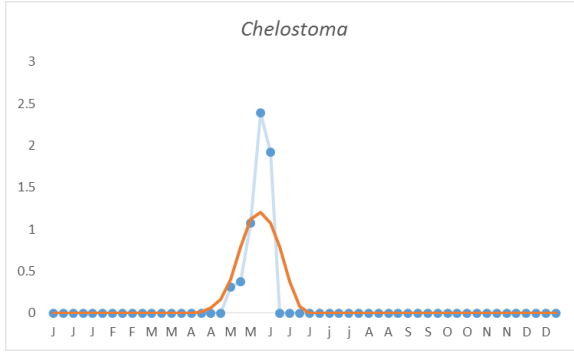
The extremely thin *Chelostoma* is predesigned to fit into narrow wood boring beetle holes. If you have a Mock Orange bush in your yard you very well may have this species. Appears to be uncommon to possibly absent in much of the Coastal Plain.

Field Marks: ♀♂Completely black. Size of a grain of rice; body long and narrow; head, thorax, abdomen all about the same width. Face unusually long. Mandibles long, robust. Eyes long and inner edges parallel to one another.
Flight Season: May
Size Relative to Honey Bee: 0.5X
Position of Wings Feeding on Flowers: Overlapping
Location of Pollen Carrying Hairs: Underside of abdomen
Similar Genera: *Hylaeus* - About the same shape. Face and legs, and usually the thorax with yellow/white markings. Face shorter and inner edges of eyes strongly narrow towards mandible. ♀Carries pollen internally. *Heriades* and small *Hoplitis* - Comparatively stouter and shorter, but not by much, have clear, but narrow, bands of prone, small, bright white hairs on the rims of the abdominal segments. *Heriades* flight primarily after May
Nest: Small beetle holes
Flowers: Strongly associated with Mock Orange, have unknown wild pollen sources.



C. philadelphi

C. philadelphi



Heriades (Thin Group)

4 species, 97 specimens

Small cavity nesting bees that superficially look like small *Hoplitis*.

Field Marks: ♀♂Completely black integument. Body relatively narrow, slightly elongate but roughly cylindrical in shape. Abdomen straight-sided; tapering to its end abruptly; with narrow bands of prone, bright white, short hairs along rims of abdominal segments. Thorax and abdomen, pits throughout large, deep, and obvious. Thorax, top, rear where segment falls off vertically towards joint with abdomen, close inspection will show a series of large, squarish pits along that border. ♂Antennae unmodified.

Flight Season: Late spring to fall, primarily summer

Size Relative to Honey Bee: 0.5X

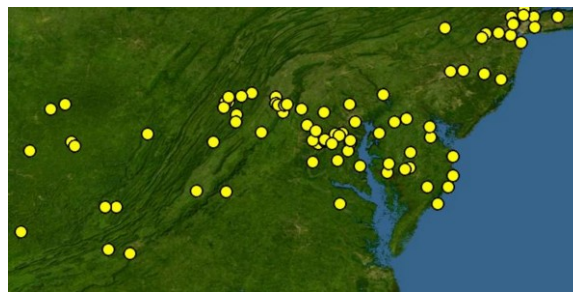
Position of Wings Feeding on Flowers: Overlapping

Location of Pollen Carrying Hairs: Underside of abdomen

Similar Genera: All the following lack the row of large squarish pits at the top rear of the thorax, but this character can be hard to see in the field. *Hoplitis* - Spring bee, flight times of small species overlap with *Heriades* only in June (except for the introduced, uncommon, and larger *H. anthocopoides* which is out in July). Thorax, abdomen, pits noticeably smaller and less prominent everywhere. Body shape subtly wider and less cylindrical; abdomen tapers over a slightly longer interval towards the tip. *Megachile* - Far wider and all species at least a little bit larger. Wings usually carried to the sides when on flowers. *Chelostoma* - Much narrower. Abdomen lacks hair bands. Out only in May there are only a few *Heriades* records from late May.

Nest: Beetle holes in wood, pithy stems like Sumac

Flowers: Can be found on a wide variety of flowers.



H. carinata **- Female**

H. carinata **- Female**

H. carinata **- Female**

H. carinata **- Female**

H. leavitti **- Male**

H. leavitti **- Male**

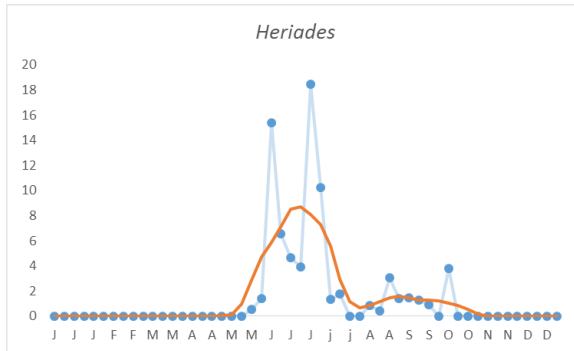
H. leavitti **- Male**

H. leavitti **- Male**

H. leavitti/variolosa **- Male**

H. leavitti/variolosa - Male

H. leavitti **- Male**



Coelioxys (Leaf-Cutting Group)

11 species, 194 specimens

Nest Parasites of *Megachile*. Females are easy to recognize with their long pointed abdomen and a close look at the multiple spikes at the hind end of the males also makes them similarly easy to identify.

Field Marks: ♀♂Completely black integument except some species' legs reddish/orangish all or in part. Abdomen with thin transverse band of prone, small, bright white hairs along the abdominal rims. Thorax, top, rear edge, to either side are two small triangular pointed segments (axillae) that project slightly outward and are noticeable on close inspection. Body gradually tapers from Thorax to end of abdomen in width. ♀Abdomen is unusually extended and comes to a distinct triangular point. ♂Abdomen not as extended as female, but still tapers sharply and last segment is arrayed with 4 - 8 distinctive, rearward projecting points.

Flight Season: Late spring to fall

Size Relative to Honey Bee: 0.5X

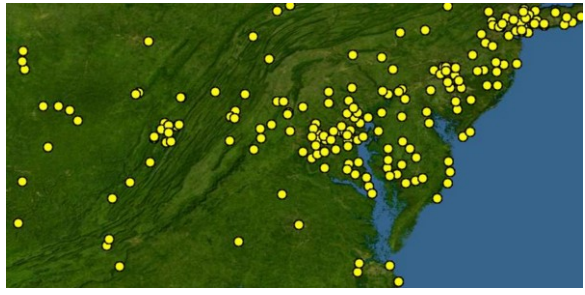
Position of Wings Feeding on Flowers: Can be out 45° from the body when just landed or overlapping on the back.

Location of Pollen Carrying Hairs: None, nest parasite

Similar Genera: *Megachile* - Visually the closest but lack the tapered body, triangular axillae, pointed end of the female or multiple spines at the end of the male.

Nest: Parasitizes the nests of *Megachile*

Flowers: Visits a wide variety of plants for nectar, often seen on mints and composites.



C. alternate **- Male**

C. alternata **- Female**

C. coturnix **- Female**

C. coturnix **- Female**

C. dolichos **- Female**

C. dolichos **- Female**

C. germana **- Male**

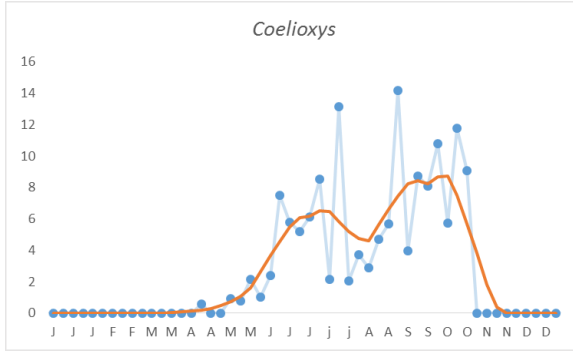
C. modesta **- Male**

C. octodentata **- Male**

C. porterae **- Male**

C. sayi **- Female**

C. sayi **- Female**



Megachile (Leaf Cutting Group)

23 species, 1785 specimens

A complicated group. Primarily flight season Summer and Fall, range from small to very large, colors, habits, morphological features equally diverse. Technical characters such as lack of toe pads or presence of cutting edges of mandibles are nearly impossible to see in the field. From a field perspective *Megachile* can be divided into a Wide-Bodied Group and a Narrow-bodied Group. The Narrow-bodied group overlaps greatly with the characteristics of *Hoplitis* but separation is possible most of the time.

Field Marks: ♀♂Completely black integument (except in some males which can have pale front tarsi and tarsal segments, these usually immensely expanded in width). Hairs can be white, brown, tan, black, orangish, but most commonly off-white. Compared to other black members of Megachilidae on average larger, hairier, wider, mid- and hind-legs stouter, out later in the year, and much more common. Abdomens held rigidly straight behind them, does not sag downward; female, in particular, will often arch/curl their abdomens up/backwards exposing pollen or pollen carrying hairs. ♀Mandibles wide, stout, shear-like. ♂Mandibles less massive than female but still prominent, some have greatly expanded pale front tarsal segments.

Flight Season: Spring to fall, primarily summer

Size Relative to Honey Bee: 0.5 - 1.5X

Position of Wings Feeding on Flowers: 45° angle to body in Wide-Bodied Group but often overlapping in Narrow-Bodied Group

Location of Pollen Carrying Hairs: Carried on underside of abdomen

Similar Genera: *Hoplitis* - All but the rare western Maryland species, *H. anthocopoides,* are strictly spring flying species and not out after mid-June. Hairs always white. Most common species are smaller than almost all the *Megachile* species. Thorax and abdomen narrower than Wide-Bodied Group. ♂Some males have antennae with hooked tips or antennae with middle segments wider than surrounding segments. Abdomen with pointed or shovel-shaped flange-like tips to abdomen; these are often difficult to see in the field. Abdomen, base of segments, never with a band of dense white hairs, but the Narrow-Bodied Group *Megachile* males do. *Osmia* - All of the *Osmia* species have metallic blue-green glints to their integument to some extent, however some of the large species can appear essentially black in certain lights. Only in May and early June is there some overlap with dark *Osmia*. These dark *Osmia* are usually rusty to light tan in hair color (*O. taurus*, *O cornifrons*) but their remains the large, dark *O. bucephala* which has thick white hair on the head and thorax and white hair on only the first part of the top of the abdomen. Only 2 *Megachile* have a pattern similar to *O. bucephala* (*M. gemula*, *M. mucida*) the males of which have distinct huge expanded front tarsal segments that are absent in all *Osmia.* Female *O. bucephala,* upon very close inspection, have a distinct thickened rim of the clypeus and less massive mandibles.

Nest: Nests in holes in wood or in the ground. Nest partitions made of leaves, petals, mud, or resin

Flowers: Wide range, numerous plant specialists

M. brevis **- Female**

M. campanulae **- Male**

M. exilis **- Male**

M. latimanus **- Male**

M. mendica **- Female**

M. mendica **- Female**

M. petulans **- Female**

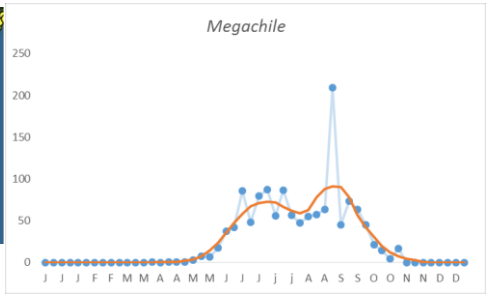
M. pugnata **- Female**

M. pugnata **- Female**

M. rotundata **- Male**

M. sculpturalis **- Female**

M. xylocopoides **- Female**



Hoplitis (Mason Bee Group)

6 species, 673 specimens

A relatively common but overlooked spring bee. A bit boring.

Field Marks: ♀♂Completely black integument. Abdomen with thin transverse bands of prone, short, white hairs along the rims. No standout features. ♂Have modified flange-like last segments of abdomen that can vary from pointed to shovel like, but often difficult to see in the field.

Flight Season: Spring to early summer (*H. anthocopoides* is found in mid-summer on Viper's Bugloss but is rare western MD bee)

Size Relative to Honey Bee: 0.5 – 0.75X

Position of Wings Feeding on Flowers: Completely overlapping

Location of Pollen Carrying Hairs: Underside of abdomen

Similar Genera: *Heriades* - Narrower; more cylindrical body. Abdomen straight-sided coming to a more abrupt point. Thorax and Abdomen pit size greater. Smaller than many *Hoplitis*. Flight season primarily after *Hoplitis* is finished. *Megachile* - ♀Wide-bodied Group, relatively wider, with a more compact body. Wings held out to sides at 45° angle. Abdomen of most species tapers uniformly and gradually toward the tip. Narrow-bodied Group, very similar in size, shape, and aspect to *Hoplitis* in the field. Summer species, flight season overlaps only in May/early June. ♂Tricky, can both hold their wings at a 45° or over their backs. Even the Wide-body group males are relatively narrow in body shape. Some males have greatly expanded pale front tarsi, brown/tan hairs or dense long hair on the top of thorax, none of which occur in Hoplitis. All species have relatively truncated abdomen ends, blunt in shape, never pointed.

Nest: In the soft pith of broken plant stems or in beetle holes in wood

Flowers: A wide range of herbaceous plants

H. pilosifrons **- Female**

H. simplex **- Female**

H. simplex **- Male**

H. simplex **- Male**

H. simplex

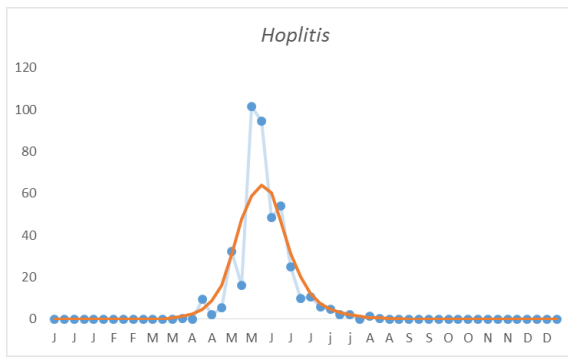
H. spoliata **- Male**

H. spoliata **- Male**

H. truncata **- Female**

H. truncata **- Female**

H. truncate **- Female**



Osmia (Mason Bee Group)

19 species, 7125 specimens

Common spring bees, found in woodlands to fields, and are regular visitors of gardens, and particularly noticeable on blooming trees and shrubs. There are two morpho-groups: Large Dark species and Metallic Blue species.

Field Marks: ♀♂Short, relatively wide. Metallic Blue group has clear dark metallic blue to blue-green reflections (sometimes with bronze/green overtones) and have no or only vague bands of white hair on the abdomen. Large Dark group has metallic reflections too, but these reflections are subtle and often difficult to see leaving the basic integument looking black. Head/thorax hair either rusty to tan (*O. taurus*, *O cornifrons*) or thick and white (*O. bucephala*, which also has white on first part of abdomen).

Flight Season: Spring to early summer (two rare, large, native thistle species *O. texana* and *O. chalybea* emerge in summer)

Size Relative to Honey Bee: 0.5 - 0.75X

Position of Wings Feeding on Flowers: Completely overlapping, though members of the Lark Dark Group can have wings slightly to their sides

Location of Pollen Carrying Hairs: Underside of abdomen

Similar Genera: *Hoplitis* - All black integument. Hairs always white. Abdomen, at least a narrow, complete to incomplete, transverse white bands of hair across the rims of the abdomen. Most common species are smaller than Large Dark Group of *Osmia*. ♂Some males with have antennae with hooked tips or antennae with middle segments wider than surrounding segments. All males have pointed or shovel-shaped flange-like tip to abdomen, though these are often difficult to see in the field. *Megachile* - Abdomen of most with prominent narrow, white, transverse, incomplete to complete, bands of hairs across the abdomen. These are summer species and only in May and early June is there a little overlap outside of the two rare thistle Osmia species. *O. bucephala* has thick white hair on the head and thorax, white hair only the first part of the abdomen, only 2 *Megachile* have that pattern (*M. gemula*, *M. mucida*) and will be hard to tell apart but the *Megachile* will tend to hold their wings out and up at 45° and the *Osmia* will have longer antennae and possibly show some blue metallic reflections.

Flowers: varies, some specialists, some generalists

Nests: in cavities

O. atriventris **- Female**

O. atriventris **- Female**

O. conjuncta **- Male**

O. conjuncta **- Female**

O. conjuncta **- Female**

O. cornifrons **- Female**

O. georgica **- Female**

O. georgica **- Female**

O. lignaria **- Male**

O. pumila **- Female**

O. pumila **- Female**

O. texana **- Female**