

Key to bee genera in the Tall Grass Prairie region and greater Midwest

DRAFT 18 (8th draft of male key)

(includes groups recognized as genera in Mitchell and in 1979 catalog)

M. Arduser - edited March 4, 2020

Shortcuts:

FEMALES:

all cleptoparasitic taxa: couplet 3

couplet 89

all pollen-collecting Megachilidae: couplet 19
143

all pollen-collecting Anthidiini: couplet 20

all pollen-collecting Halictinae: couplet 31

all Andrenidae: couplet 43

all Panurginae: couplet 44

all Eucerini: couplet 66

all traditional pollen-collecting "Anthophoridae" (of Mitchell and 1979 Catalog): couplet 59

MALES:

all Megachilidae:

all Eucerini: couplet

A cautionary note: a number of couplets in the key contain secondary couplets within them, which are labelled "a" and "b".

1. Females: sting present (but often retracted); six tergites; 12 total antennal segments

.....
.....2

Males: sting absent, genital capsule present but usually retracted; seven tergites; 13 total antennal segments, except 12 in *Holcopasites*.....80

2. Scopa absent (the scopa is an arrangement of hairs specifically for holding, transporting, and sometimes collecting pollen); includes *Hylaeus* and all parasitic taxa; **Note** that a few species of parasitic *Lasioglossum* (*Dialictus*, a.k.a. "Paralictus") have what appears to be weak scopa on the hind tibiae and femora: however, these species lack the pseudopygidial area on T5 which is present in all pollen-collecting *Lasioglossum* (and other halictines), and also have a shovel-shaped labrum without an apical process, and no penicillus on the hind basitarsi.....3

Scopa present, but in the absence of a pollen load, may appear sparse in some groups, e.g., *Perdita*; scopa typically present on hind tibia, but may also be on hind femur, coxa, trochanter, and basitarsi as well as on sides of propodeum and abdominal sterna (restricted to abdominal sterna in Megachilidae). *If uncertain, compare hairs of hind leg to hairs of mid leg, and shape/size of hind leg to midleg; in most pollen-collecting species the hind*

leg hairs and hind leg morphology are notably different from the midleg, but are similar in cleptoparasitic species.

.....
.....16

3(2). Large to very large (14-20 mm or greater) and bumblebee-like, without appressed white hair patches; S6 lateral margin with a ridge or swelling (oblong to narrow); T6 without any long hairs, contrasting with the long hairs on T1-T5parasitic **Bombus** ("*Psithyrus*")

Usually smaller and not bumblebee-like; ST6 usually without lateral ridges or swellings, but if so, then bee without long hairs and adorned with a pattern of white appressed hair patches; T6 variable .

.....
.....4

4(3). Glossa short (glossa length only 2-3 times its width), and either weakly bi-lobed, blunt, or like a small pointed paintbrush; abdomen without integumental color bands or maculae, largely bare, with sparse erect hair and little to no appressed pubescence (abdomen color black or dark brown, red, or orangeish).....

.....5

Glossa long, narrow, somewhat threadlike (glossa length at least 8 times its width); abdomen frequently with appressed pale pubescence (often in a distinct pattern), or with integumental color bands (yellow, red, white, black).....7

5(4). Mostly black bees with yellow/ivory maculations on face, legs, and usually pronotum; pygidial plate absent; two submarginal cells; glossa very short, weakly bilobed or blunt, never pointed or acute; size 4-10mm.....**Hylaeus**

Bee without yellow or ivory maculations; pygidial plate present but usually small or even tiny, often concealed by T5; usually 3 submarginal cells, rarely 2; glossa short but pointed, triangular, like a fine paint brush; size variable.....6

6(5). Head and thorax dull green or blue; abdomen usually dark brown to blackish, occasionally reddish-brown, but never red or orange; mandible usually lacking preapical tooth; 8mm or less

.....**Lasioglossum**

(Dialictus), in part ("*Paralictus*")

Head and thorax black, never dull metallic green or blue; abdomen almost always red to orange, at least in part; mandible variable, with preapical tooth or simple; size variable, 3-

14mm.....
.....**Sphecodes**

7(4). Mandible apex 3-toothed; pygidial plate absent; labrum as long as broad or a little longer; 2 submarginal cells (parasitic megachilids)

.....8

Mandible apex usually simple, sometimes with a small pre-apical tooth; pygidial plate usually present; labrum variable but often short (i.e., wider than long); usually 3 submarginal cells, occasionally 2 and very rarely one.....9

8(7). Eyes hairy (under magnification hairs are short, erect, dense); apex of abdomen (T6 and S6) conspicuously pointed, general appearance of abdomen like an isosceles triangle; abdomen usually dark with partial bands or patches of white, appressed pubescence.....**Coelioxys**

Eyes completely bare, without any hairs; apex of abdomen rounded, not pointed, and abdomen more fusiform, not shaped like an isosceles triangle; abdomen without hair bands or any pattern of white appressed pubescence, but often with yellow, ivory or rarely reddish maculae (in some cases these are inconspicuous "dots"), occasionally all dark.....**Stelis**

9(7). Small, 6mm or less, and labrum longer than broad, as much as twice as long as broad or a bit longer; two submarginal cells; abdomen reddish, reddish-orange, or blackish, and flecked with a pattern of white to pale yellowish appressed pubescence, rarely dark flecked with gold hairs; pygidial plate broad, rounded apically; T5 medially usually with a narrow, raised impunctate zone

.....**Holcopa sites**

Any of the following: bee larger; labrum shorter; no pale appressed pubescence on abdomen; abdomen with colored integumental bands; or three (rarely one) submarginal

cells10

10(9). Very small bee (4mm or less), largely covered with pale yellowish appressed pubescence and with only one submarginal cell; marginal cell minute, shorter than the single submarginal cell; very rare, in sandy habitats**Neolarra**

Usually larger, and almost always with three submarginal cells (rarely two, and never one); marginal cell much longer than any single submarginal cell; appressed pubescence often absent on abdomen, if present then it forms a distinct pattern, not a uniform covering.....11

11(10). Abdomen without appressed pale pubescence, either largely bare and maculated with red, yellow, black or white (bee rarely all black), **or** abdomen extensively hairy with erect to suberect blackish hairs.....12

Abdomen with bands, partial bands, or other patterns of appressed pale pubescence, integumental maculations absent, dark erect hairs absent.....13

12(11). Bee integument (especially abdomen) colored with some combination of red, yellow, white, black, rarely all red or all black; bee integument easily seen, not obscured by hair:

a) or b) below:

a): S6 apex truncate, subtruncate or very weakly emarginate; maxillary palps more than half as long as blade of galea; usually maculated on head, thorax or abdomen with red or yellow; size variable, 3-15mm; common bees through TGP.....

.....**Nomada**

b): S6 apex elongate, bifurcate; maxillary palps less than half as long as blade of galea; small bees, thorax and head all black, abdomen red; 6mm or less; rare bees, central and southern TGP.....

.....**Brachynomada**

Bee integument all blackish and quite hairy, hairs obscuring integument in part; S5 without unique hair fringe, hair pattern on S5 similar to that on other sterna; labrum as long as broad or slightly longer; mandible simple apically, but with a single tooth/angle located on inner surface midway between base and apex of mandible; scutellum with pair of small spinose tubercles, one on either side of midline, usually hidden by dense pubescence; rare bee; 10-12 mm

.....**M
electa pacifica**

13(11). T5 with a pseudopygidial area (this is a small to large “patch” of short, dense, light-colored, highly reflective setae on surface of tergite); axillae acute and often produced beyond posterior margin of metanotum as an angle or tooth; mandible simple; common bees.....14

T5 surface uniform, without a pseudopygidial area; mandible variable; axillae not angularly or acutely produced; uncommon to very rare bees.....15

14(13). S6 composed of a pair of narrowly separated long slender rods that are multispinose apically; T5 pseudopygidial area extensive.....**Triepeolus**

S6 composed of a pair of shorter, more widely separated processes that are finely denticulate at their apex; T5 pseudopygidial area reduced.....**Epeolus**

15(13). Bee (10-14 mm) decorated with black-and-white spots, partial bands of tomentum, or appressed hairs, especially on the abdomen; mandible simple apically:

a) or b) below:

a): *Xeromelecta*: scutellum with two broad teeth separated by a shallow

groove; inner margin of mandible medially with two small teeth; mid-tibial spur simple; widespread species

b): *Ericrocis*: scutellum without teeth or projections; inner margin of mandible without distinct teeth or angles; mid-tibial spur bifid or forked apically; central and southern TGP

Bee smaller (7-9 mm), without black-and-white spotted appearance; scutellum simple; mandible with a small preapical tooth; labrum slightly broader than long; very rare parasite of

Macropis.....

.....***Epeoloides lectoides***

16(2). Hind tibia with corbicula (i.e., hind tibia outer surface bare, more-or-less flattened, and fringed with curved hairs along margins); includes only *Bombus* and *Apis*).....17

Note: at least two species of *Euglossa* have been found in south Florida and south-central Texas, and may eventually be found in the coastal prairie areas of Louisiana and Texas. Any *Euglossa* would come to this couplet (i.e., corbicula present); all are strikingly blue/purple/green with a white labrum.

Hind tibia without a corbicula as defined above, hind tibiae outer surface uniformly hairy, either with long pollen-carrying hairs or very short appressed hairs, but never bare with margins fringed.....

.....18

17(16). Largely covered with black and yellow pubescence, occasionally abdomen or thorax with some red, orange or brownish pubescence; eyes bare; marginal cell 3-4 times as long as broad; usually large (12mm or more), but occasionally smaller.....***Bombus*, in part**

Pubescence pale; eyes hairy; marginal cell long and narrow, about 8 times as long as broad; 12mm or less.....***Apis***

mellifera

18(16). Hind leg without scopal hairs, scopa present only on sternites; 3 or more mandibular teeth but teeth sometimes worn and obscure; hind

basitibial plate absent; pygidial plate usually absent (present only in *Lithurgus/Lithurgopsis*); pollen-collecting Megachilidae.....19
 Scopa present on some part of hind leg (tibia, femur, etc.), though scopal hairs may occur on sternites as well; mandible usually with single preapical tooth or simple, rarely with three or more teeth (only in *Anthophora terminalis* and *Centris*); hind basitibial plate and pygidial plate often present.....30

19(18). Integument of abdomen (and usually thorax and head) maculated with whitish, yellowish or occasionally reddish markings (*Anthidiini*).....20
 Integument of abdomen, thorax and head without maculae, instead all dark, occasionally metallic green or blue (apical pubescent fasciae, hair bands or hair patches often present on abdomen and thorax, and these may be mistaken for maculae at a glance).....24

20(19). Mandible with 6 or more teeth of various sizes, some quite small; anterior face of mesopleura confluent with lateral face, not separated by a carina or sharp edge; pronotal lobe variable, either rounded, with a weak carina, or lamellate.....**Anthidium**
Note: the introduced *Pseudoanthidium nanum* has recently been found in several areas in the upper Midwest (all urban areas thus far); females have 5 mandibular teeth, a strongly carinate (almost lamellate) pronotal lobe, front femur baso-ventrally sharply angulate, and are quite small (6mm).
 Mandible with no more than four teeth; front femur baso-ventrally rounded, not produced as a sharp angle; other characters variable.....21

21(20). Anterior face of mesopleura separated from lateral face by a sharp edge or carina, at least in upper half; **if** carina weak (only in *Dianthidium texanum*, rare species) **then** interantennal area with a pair of disc-like swellings.....22
 Anterior face of mesopleura confluent with lateral face, not separated by a sharp edge or carina anywhere along its length; uncommon species.....23

22(21). Pronotal lobe with broad lamella; scutum anterior margin sharply truncate above pronotum; mandible longer than broad, and broadened apically.....**Dianthidium**
 Pronotal lobe with small carina, not lamellate; scutum anterior margin evenly confluent with pronotum; mandible short, only slightly longer than broad, and not broadened apically

.....
.....**Anthidiellum**

23(21). Mandible broadened apically, with four teeth:
a) or **b)** below:

a): head and thorax with yellow maculations (including much of clypeus, inner margins of eyes, vertex, lateral margins of scutum, scutellum and axillae); pronotal lobe lamellate; ocelli very small, their diameter smaller than antennal sockets, and separated from eye margin by nearly 10 times their diameter; widespread.....**Paranthidium jugatorium**

b): head and thorax dark, without yellow maculations; pronotal lobe rounded, not lamellate; ocelli larger, their diameter equal to or slightly greater than antennal sockets, and separated from eye margin by only 2-3 times their diameter; restricted to extreme southern TGP.....**Trachusa**

(*Legnanthidium*) **ridingsii**

Mandible broadened apically but without distinct teeth, instead usually with a narrow submedian notch or two; body abundantly maculated with yellow; pronotal lobe without lamella; bee large, 14 mm or larger; usually associated with sandy areas

Trachusa (*Heteranthidium*) **zebratum**

24(19). Entire body dull blue or dull green, rarely brilliant green/purplish; parapsidal lines very small and round, with the appearance of small “dots”, elliptical at most.....**Osmia**

Note: several species of *Osmia* with black integument occur in the boreal regions of eastern North America but not in the TGP or Midwest region.

Integument dark, not blueish or greenish, never with metallic sheen; parapsidal lines variable, usually linear, never round or “dot-like”25

25(24). T6 apically with a very small pygidial plate, which looks like a small spine, easily overlooked; outer surface of hind tibia roughened with coarse, short spicules; *Opuntia* specialists

.....
.....**Lithurgopsis**

Note: *Lithurgus chrysurus* is an introduced species not known in the US outside of the northeast; it resembles our native *Lithurgopsis* species, but is smaller, and an oligolege of *Centaurea*, not *Opuntia*; it may show up in the Midwest or TGP region because of the abundance of the introduced *Centaurea maculosa* in those regions. It flies in mid-late summer, while our native species fly in the late spring/early summer.

T6 lacking a pygidial plate or a spine apically, apical margin more-or-less rounded; outer surface of hind tibia not roughened or coarsely spiculate26

26(25). T1 anterior surface separated from T1 dorsal surface by a weak line or rim, transitioning abruptly to the T1 dorsal surface; T1 anterior surface concave (dish-shaped) to flattened.....

.....27

T1 anterior surface not separated from T1 dorsal surface by a weak line or rim, transitioning gradually to the dorsal surface; T1 anterior surface usually convex, or rarely slightly flattened or dish-shaped, **if** the latter **then** mandible long and narrow, about 3 times as long as its basal width.....

.....29

27(26). Omalus carinate; mandible with three distinct teeth and no “cutting margins” between the teeth; head very large, as large as, or slightly larger than thorax, vertex greatly expanded above eyes and ocelli in facial view; 10-12mm**Ashmeadiella buconis**

Omalus rounded; mandible variable, but often with four or five teeth, and/or cutting margins present between some of the teeth; head variable, **if** large and vertex greatly expanded **then** bee larger than 12mm.....

.....28

28(26). Propodeum with dorsal component reticulate or pitted, very narrow and on same plane as dorsum of thorax; small (8mm or less), strongly punctate, bullet-shaped bees....**Heriades**

Propodeum without a dorsal component, and more-or-less perpendicular to, or sharply angled towards, dorsal surface of thorax, and never pitted/reticulate; size variable, usually larger than 8mm, rarely smaller.....

.....**Megachile**

29(26). Narrow, elongate bees with long narrow mandibles (maximum length of mandible about 3 times as long as basal width or longer); apical margin of clypeus punctate or denticulate, not narrowly smooth and shiny.....**Chelostoma**

More robust, chunky bees, the mandibles more quadrate, maximum length of mandible usually about twice as long as basal width, never 3 times as long as basal width; clypeus usually with very narrow, flattened, shiny apical margin, very rarely denticulate

.....**Hoplitis**

30(18). T5 surface medio-apically with a narrow, ostensibly hairless zone, T4 without this zone; glossa short, acute; pygidial plate present but small,

frequently concealed by T5; frequently dull to bright metallic green or blueish, integument without maculations; pollen-collecting Halictinae

.....
..31

T5 surface without a smoothish, narrow zone medio-apically, surface similar to surface of T4; glossa variable, often long and narrow, but occasionally short and bilobed; pygidial plate variable, sometimes absent, sometimes large; integument usually dark but occasionally blue or greenish (e.g., *Ceratina*, *Perdita*), occasionally with maculations

.....40

31(30). Head and thorax bright metallic green.....32

Head and thorax **not** bright metallic green, but instead blackish, dull blue or dull green

.....35

32(31). Propodeum with posterior surface encircled by a strong raised rim (carina); basal half or so of mandible usually yellow (but usually dark in *Ag. splendens*).....**Agapostemon**

Posterior surface of propodeum not encircled by a carina, though carinae may be present laterally in part; mandible all dark, not partially yellow.....33

33(32). Tegula oval in outline, symmetric.....34

Tegula asymmetric, its inner posterior margin hooked or angled.....

Augochloropsis

34(33). Apex of mandible with a small preapical tooth; sternum 1 flat, without a central keel.....

.....**Augochlorella**

Apex of mandible with two distinct and similarly-sized teeth (bidentate); sternum 1 with a strong central

keel.....**Augochlora**

pura

35(31). Tergites with pale to white apical pubescent fasciae, basal fascia often present as well; distal veins of forewing (2nd and 3rd transverse cubitals and 2nd recurrent) strong, similar in diameter to other veins

.....**Halictus**

Tergites without apical fasciae, but basal or basolateral fasciae often present; forewing with 2nd and/or 3rd transverse cubital veins and 2nd recurrent vein weakened, more faint than 1st transverse cubital

(*Lasioglossum s.l.*)

.....36

36(35). Head and thorax greenish or blueish, sometimes with “brassy” overtones; abdomen color variable, usually dark but occasionally greenish, blueish, or orange-red; bee usually less than 8mm in length..... ***Lasioglossum***

(*Dialictus*), in part

Head and thorax dark, not blue or green; abdomen usually dark but rarely reddish-orange; bee often greater than 8mm in length.....37

37(36). Forewing with only 3rd transverse cubital vein weakened, 1st and 2nd stronger, thicker than 3rd; T2-T3 usually with strong *basal* fascia ***Lasioglossum s.s.***

Forewing with transverse cubital vein(s) other than the 1st weakened (weakened equally if there are two), fainter than 1st transverse cubital vein; T2-T3 with or without basal fascia.....38

38(37). Two submarginal cells, *and* anterior face of T1 with diffuse appressed or subappressed hair patch on either side of midline..... ***Lasioglossum (Hemihalictus) lustrans***

Three submarginal cells, usually no appressed or subappressed hair patch on anterior face of T1, although erect hairs may be present.....39

39(38). Hind femoral scopa plumose (“feathery”)

..... ***Lasioglossum (Evylaeus, s.l.; includes non-metallic Dialictus)***

Hind femoral scopa simple, sparse, comprised of a single row of hamate hairs or bristles, these reduced in size approaching apex of femur; Onagraceae specialists

..... ***Lasioglossum (Sphecodogastra, s.s.)***

40(30). Glossa bilobed and short, but rarely (southern 1/2 or 1/3 of TGP) deeply bifid with two long threadlike segments; 2nd recurrent vein usually “S”-shaped, rarely straight (again, only in southern portion of TGP)....

.....41

Glossa variable, short and acute to very long and threadlike, but never bilobed; 2nd recurrent vein never “S”-shaped, straight

.....42

41(40). Glossa short and bi-lobed; pygidial plate and basitibial plate absent; ocelli normal; 2nd recurrent vein "S"-shaped; size variable; common bees throughout the TGP/midwest region

.....**Colletes**

Glossa longer and narrower, deeply bifid with two long threadlike sections; pygidial plate and basitibial plate present; ocelli large; 2nd recurrent vein straight; large bees (15mm), rare in southern portion of TGP and extreme southern US.....**Caupolicana**

42(40). Facial foveae present, varying from large, elliptical, velvety or fuzzy shallow depressions that parallel the inner eye margin, to small, hairless, triangular to roundish depressions adjacent to inner upper eye margin, these sometimes obscure and dot-like; two subantennal sutures always present but usually not obvious (Andrenidae)

.....43

Facial foveae absent or apparently so (look carefully); usually only one subantennal suture (usually not obvious), rarely two (*Mesoxaea*)

.....52

43(42). Facial foveae filled with short, velvet-like dense hairs (with longer hairs sometimes intermixed), paralleling inner eye margins, usually broadly to narrowly oblong, sometimes narrowed below; marginal cell narrowed and more or less pointed apically; hind femoral scopa (and usually trochanteral and lateral propodeal scopa) always present; usually 3 submarginal cells, occasionally 2; glossa usually short and pointed (long and thread-like only in *A. violae*)

.....**Andrena**

Facial foveae without hairs, often narrowly oblong, sometimes reduced to a small depression near margin of upper eye, sometimes obscure and dot-like; marginal cell apically truncate, often obliquely so; scopa restricted to hind tibia/basitarsi; usually 2 submarginal cells (3 sm cells in *Protandrena*, below); glossa variable but often long and narrow (*Panurginae*)

.....44

44(43). Forewing with three submarginal cells; 10mm or larger; face (clypeus at least) marked with yellow or ivory; mid-tibial spurs long (as long as mid-basitarsus) and finely serrate (closely serrate in upper portion, serrations more separated below).....**Protandrena, in part**

Forewing with two submarginal cells; usually less than 10 mm; facial markings present or absent; mid-tibial spurs variable.....45

45(44). Forewing with marginal cell very short, not much longer than stigma; head and thorax usually dull greenish or blueish, often with yellow or whitish maculations, rarely bee entirely pale (yellowish or whitish) or entirely dark; abdomen usually with yellow/ivory maculations, sometimes limited to a few small dots, sometimes abdomen all dark or reddish.....

Perdita

Marginal cell of forewing much longer than stigma; abdomen without maculations

(but maculations may be present elsewhere on body); bee integument never greenish or blueish, never entirely pale yellow or white.....

.....46

46(45). Forewing with stigma very small or very narrow or both, not much larger than prestigma (if at all); tergites with pale apical fasciae; face (clypeus at least) with yellow or ivory maculations.....

.....***Calliopsis, in part***

Stigma of forewing much larger than prestigma; tergites without apical fasciae; face with yellow or not.....

.....47

47(46). Face with much yellow (clypeus, supraclypeal area in part, subantennal areas); abdomen at least, and frequently parts of head and thorax, mostly reddish-orange; T2 lateral margin with large dark oval to circular "dot" (fovea); mid-tibial spurs long, as long as midbasitarsus, very finely serrate in apical third, simple below; scopa weak, hairs simple, sparse; *Monarda* specialist.....***Protandrena***

abdominalis

Face usually without yellow maculae, **if** yellow (or whitish) present on face **then** restricted to clypeus and/or supraclypeal area; abdomen dark; T2 lateral margin with foveae small, often obscure or absent; mid-tibial spurs variable but not as above; scopa variable

.....
.....48

48(47). Forecoxae each with a hairy spinous process; mid-tibial spurs appearing simple, about as long as midbasitarsus (@ 40X spurs very finely serrate); scutum usually coarsely, densely punctate, and pleura pitted-reticulate; dorsal surface of propodeum usually pitted/reticulate; lateral surface of propodeum usually completely hairless.....

.....***Pseudopanurgus s.s.***

Forecoxae without hairy spinous processes; **if** mid-tibial spurs as long as mid-basitarsi **then** spurs with 4-6 very fine, bristle-like, well-separated teeth in apical ½ or so; scutum and pleura more finely punctate; dorsal surface of propodeum variable, usually finely sculptured at least in part; lateral surface

of propodeum usually with at least some obvious (often short) whitish hairs.....49

49(48). Mid-tibial spurs long, as long as mid-basitarsus, very thin, with 4-6 very fine, bristle-like, well-separated teeth in apical 1/2 or so; scopa often plumose (i.e., hairs with branches, sometimes quite short, @40x)

....***Pseudopanurgus* (“*Pterosarus*” and “*Heterosarus*” groups)**

Mid-tibial spurs shorter than mid-basitarsi, simple, without any teeth; scopa thin, hairs entirely simple, without barbs or branches (@40x)50

50(49). Mid- basitarsi short and broad (2-2.5 times as long as wide); scutum bare; clypeus rugoso-punctate; oligolege of *Passiflora lutea*.....

Pseudopanurgus (Anthemurgus) passiflorae

Mid-basitarsi long and narrow, at least 3 times longer than wide; scutum with long hairs; clypeus punctate with shiny interspaces.....
.....***Panurginus***

51(50). Purposefully left blank.

52(42). Two submarginal cells; uncommon to rare bees.....53

Three submarginal cells.....56

53(52). Apex of marginal cell removed from wing margin, either obliquely truncate or rounded; stigma very narrow, only 2-3 times longer than pre-stigma***Calliopsis, in part***

Apex of marginal cell pointed, on wing margin or very nearly so.....54

54(53). Antenna inserted below midline of face; glossa long and thread-like, more or less as long as head; dorsal surface of propodeum hemispheric in shape, well-defined by a posterior margin, finely sculptured, not shiny, about as long or longer than scutellum

.....
.....
...***Dufourea***

Antenna inserted at midline of face; glossa shorter, not long and thread-like; dorsal surface of propodeum merging with posterior face, not defined by a posterior margin, shiny

.....55

55(54). T1-T5 with complete whitish apical fascia, terga mostly dull; hind basitarsus slender and nearly as long as hind tibia; Asteraceae specialists.....***Hesperapis carinata***

Only T3-T4 with white apical fascia, and the fascia incomplete; tergal surfaces mostly very shiny; hind basitarsus short and broad, almost square; *Lysimachia* specialists....***Macropis***

56(52). Propodeum with dorsal (horizontal) component very narrow, much narrower than scutellum; tegula asymmetric, posteriorly angulate; femoral scopa present.....57

Propodeum without dorsal component, entire propodeum vertical or nearly so; tegulae variable, usually symmetric, round to oblong; femoral scopa usually absent; **if** portion of propodeum approaching horizontal aspect **then** bee dull blue or green and small (<10mm, *Ceratina*), without femoral scopae.....58

57(56). Apical margins of tergites with colored integumental “mother-of-pearl” bands

.....***Nomia***

Apical margins of tergites dark or with white fasciae, never with colored integumental bands.....

.....***Dieunomia***

58(56). Dull blue or greenish, 10 mm or less in length; T6 apiculate (with a minute point), without a pygidial plate; clypeus usually with a whitish or yellowish macula, occasionally dark

.....***Ceratina***

Integument usually dark; size variable, but usually > than 10 mm; T6 rounded apically, not drawn to a fine point ; pygidial plate present, its shape varying from extremely narrow to very broad; clypeus rarely maculated.....59

59(58). Large, 16-20 mm or more; marginal cell very long and narrow, its length 8x or more its width; clypeus very flat; pygidial plate extremely narrow, almost linear.....***Xylocopa***

a): *X. virginica*: widespread in TGP/EUS, dark integument, interantennal area with rounded projection

b): *X. micans*: southern, blue integument, interantennal area flat

Size variable but rarely 20mm or more; marginal cell variable, occasionally narrow but never 8x as long as broad; clypeus variable but usually at least weakly convex, if flat then bee small (< 8mm); pygidial plate broader, narrowly to broadly triangular.....60

60(59). Apex of marginal cell on wing margin, not bent away from wing margin; mandible with small preapical tooth; T1 anterior surface and dorsal surface evenly confluent, not separated by a weak carina or raised line; vernal species, superficially resembling a small bumblebee

.....
....*Habropoda laboriosa*

Apex of marginal cell "free", obliquely bent away from wing margin; mandible variable but usually without a preapical tooth (may be simple or with multiple teeth, preapical tooth present only in *Melitoma*); T1 anterior surface and dorsal surface often separated by a weak carina or raised line; occasionally vernal, occasionally bumblebee-like.....61

61(60). Vertex rounded (i.e., weakly convex), not flattened; penicillus absent (penicillus is a paintbrush-like tuft of hairs at the apex of the hind basitarsus, also called the basitarsal brush)

.....62

Vertex flattened; penicillus usually present.....64

62(61). Glossa very long, half as long as body length or longer; T2-T4 with narrow, entire white apical fascia; medio-apical margin of T5 usually with a small tubercle-like "tuft" of blackish hairs; *Ipomoea* specialist.....***Melitoma***

taurea

Glossa shorter, much shorter than body length; T2-T4 white apical fascia present or absent; T5 without a medioapical "tuft".....63

63(62). Superficially resembling a small bumblebee; scopal hairs all black; tergal fasciae completely absent, abdomen pubescence largely black (but T1-T2 can be pale or yellowish in part); arolia absent; mandible often with very small preapical tooth; *Hibiscus* specialist, characteristic of wetlands but also occasionally found at Rose-of-Sharon plantings and okra plantings.....

Ptilothrix bombiformis

Not resembling a small bumblebee; scopa pale (blonde to light gray); abdominal pubescence largely pale, never black; arolia present; T2-T4 usually with pale apical fasciae but fasciae often broad or somewhat diffuse, not confined to apical margins, often worn away in part; specialists of Asteraceae, *Callirhoe* or *Opuntia*..... **Diadasia**

64(61). Pygidial plate narrowly triangular, about 2x as long as broad or longer; T1 anterior surface and dorsal surface evenly confluent, not separated by a weak carina or raised line:

a) or b) below:

a): *Centris* - mandible with four teeth; arolia absent; rare, mostly extralimital

b): *Anthophora* - mandible either simple, or with a pre-apical tooth, or with tridentate apex; arolia present; common throughout TGP/Midwest region

Pygidial plate broadly triangular, usually about as broad as long; T1 anterior surface and dorsal surface usually separated by a weak carina or raised line, this sometimes faint and obscured by hairs.....

.....65

65(64). F1 very short, much shorter than scape; clypeus usually flattened; pencillus present but quite small; paraocular carina absent; small robust bees, < 8mm:

a) or b) below:

a): *Exomalopsis*: hind basitibial plate very large, almost the size of tegulae

b): *Anthophorula*: hind basitibial plate small, much smaller than tegulae

F1 long, at least ½ as long as scape or longer; clypeus convex, but sometimes weakly so; pencillus larger; paraocular carina present; bees usually 10mm or more in length (*Eucerini*)

.....66

[includes: *Anthedonia*, *Cemolobus*, *Eucera*, *Florilegus*, *Melissodes*, *Peponapis*, *Svastra*, *Xenoglossa*, *Tetraloniella*; note that Dorchin et. al. (2018) revised the classification of a large portion of eucerine bees, and included *Cemolobus*, *Peponapis*, *Xenoglossa*, *Synhalonia* (= N. Am. *Eucera* sensu Michener 2007) and *Xenoglossodes* (= *Tetraloniella*) as subgenera of *Eucera*.]

66(65). Tegulae assymmetric, its posterior portion rounded but anterior portion narrowed, weakly concave or incurved along the narrowed margin, like a teardrop; usually hidden by pubescence; common bees..... **Melissodes**, in part

Tegulae symmetric, more-or-less rounded throughout, anterior portion similar in shape to posterior portion, not narrowed anteriorly.....67

67(66). Mouthparts (especially the prementum ventrally) with dense hamate hairs (light or dark in color); hind basitibial plate partially bare, not covered with a velvety sheen of dense, appressed hairs; hind basitarsus long and narrow, 4:1; pleura with a central patch of white hairs bordered by blackish hairs; T1-T3 uniformly punctate except for their narrow impunctate apical margins; in flight mid-late summer, usually associated with wetlands.....

Florilegus condignus

Mouthparts with scattered simple hairs, occasionally a few hamate hairs may be present; hind basitibial plate covered with a velvety sheen of dense appressed hairs; hind basitarsus rarely so long and narrow; hairs of pleura variable, usually not black and white; punctures of T1-T3 variable; flight period and habitat variable.....68

68(67). Scopal hairs plumose, hairs with abundant branches, outline of tibia and basitarsus not clearly visible because of dense hairs.....69

Scopal hairs simple, without branches or barbs @40x, or with few branches, outline of tibia and basitarsus clearly visible.....72

69(68). Tibial scopa weak, thin; T1 with sparse, scattered punctures even on basal portion; sternal scopa weak, thin, hairs erect; rare bee, oligolectic on *Callirhoe*.....***Melissodes intorta***

Tibial scopa robust, dense; T1 punctures basally dense, uniform; sternal scopa variable, usually dense, but never thin, weak and erect.....70

70(69). At least T2-T3 with pale or white apical fasciae; scutum and scutellum without blackish hairs.....71

T2-T3 without distinct apical fasciae (sometimes present sub-apically), occasionally with tomentum or pubescence elsewhere on T2-T3, but this tomentum never concentrated apically; scutum and scutellum with at least some black hairs, often largely so; sternal scopal hairs dense and short

.....***Svastra***, in part

71(70). T2-T4 with basal area hairs pale and extremely minute; sternal scopa thick, long, *Megachile*-like; *Helianthus* specialist.....

.....***Tetraloniella spissa***

T2-T4 with basal area hairs dark brown; sternal scopa reduced

.....***Svastra***
(*Brachymelissodes*) *cressonii*

72(68). Clypeus with apical margin weakly trilobate; scopal hairs dark, with weak, short, sparse branches; tergites extremely finely, densely punctate throughout, uniformly so all the way to tergal margins, at least T2-T3 largely covered with extremely fine, short appressed hairs; outer margin of mandible medially angulate; *Ipomoea* specialist, uncommon...***Cemolobus ipomoeae***

Clypeal margin entire, margin not lobed or sinuate; T1 usually with a line or weak carina separating dorsal and anterior surfaces; other characters variable.....73

73(72). Large bee, 16mm or more; T2-T3 with more-or-less complete and very discrete medial fascia, pubescence basal to fasciae blackish, short and dense; tergal punctation extremely fine and dense, impunctate apical margins extremely narrow; blade of galea slightly shorter than head, very narrow and pointed; hind basitarsus as long as tibia; tibial/basitibial scopa light brown, hairs relatively sparse; rare *Oenothera* specialist.....***Svastra***

(*Anthedonia*) *compta*

Usually smaller bees, T2-T3 lacking discrete medial fasciae, though apical or subapical fasciae may be present; pubescence basal to fasciae never blackish; *if* approaching large size, then blade of galea as long or longer than head.....74

74(73). Scopal hairs relatively sparse (integument of hind femur and basitarsi readily visible beneath scopa), weakly plumose at most (hairs with scattered long branches); scape relatively short and broad, urn-shaped, less than 4x as long as broad; oligolectic on Cucurbitaceae....75

Scopal hairs more dense, integument sometimes visible beneath scopa; scape longer and narrower, not broadened distally, not urn-shaped, about 4x as long as broad or longer

.....
.....76

75(74). T2 with subapical and/or basal fascia (whitish), this usually complete or nearly so; inner margin of mandible simple, evenly curved,

without tooth or angle near base; hind basitarsus short and broad; apex of mandible often weakly notched.....**Peponapis**

T2 without subapical fascia (scattered tomentum may be present, but this not forming a defined band); *inner* margin of mandible near base with a small tooth or angle (mandibles must be opened to see this); hind basitarsus longer and narrower; apex of mandible simple

.....**Xenoglossa**

76(74). T1-T3 with wide, impunctate apical areas, without extensive tomentum that obscures most of surface; blade of galea as long or longer than head; flight period spring-early summer

.....

.....**Eucera**

T1-T3 closely, very finely punctate to, or nearly to apical margins, *or* tergites largely covered with whitish tomentum, obscuring surface; blade of galea no longer than head; flight period mid-summer to

fall.....77

77(76). T2-T3 largely covered with pale whitish tomentum (but often worn away in part), not forming discrete fascia; sternal hairs very short, uniform; Fabaceae (primarily *Dalea*) oligolege

.....

.....**Tetraloniella albata**

*Note: *T. paenalbata*, a recently described central Great Plains species, has been found in NW Missouri on loess hill prairies at *Dalea eneandra*; it is very similar to *T. albata* but with a more extensive sternal scopa including some weakly hamate hairs on S3-S5, and larger, more separated punctures on T1, with a more extensive apical impunctate area.

T2-T3 with discrete apical pale fasciae; hairs on apical margins of S3-S4 longer than other hairs on sternites, the apico-medial hairs on S3-S4 thicker, stronger, and somewhat hamate; oligolectic on

Salvia.....**Tetraloniella cressoniana**

78. purposefully left blank

79. purposefully left blank

80(1). Two submarginal cells.....

....81

Three (very rarely one) submarginal cells.....111

81(80). Black and yellow bees (rarely all black), 8mm or less, usually sparsely-hairy compared to most bees; glossa very short, blunt or weakly bilobed, not pointed; face usually mostly yellow, scape often marked with yellow, but abdomen entirely unmaculated; marginal cell apically pointed on wing margin.....

Hylaeus

Usually obviously hairy bees, but hairs occasionally sparse; glossa longer, pointed to almost threadlike, never blunt or bilobed; **if** face partly or mostly yellowish, **then** the marginal cell is either apically truncate or rounded, and/or the abdomen is maculated in part82

82(81). Marginal cell apically truncate, sometimes obliquely so, rarely (some *Calliopsis*) almost rounded; face usually with some yellow/ivory maculae, sometimes extensive, occasionally maculations present on thorax and abdomen as well; facial foveae often present but small, linear to oblong to dot-like, often obscure, and without pubescence (*Panurginae*).....83

Marginal cell apically pointed to rounded, not truncate; maculations sometimes present on face and elsewhere; facial foveae absent.....
.....88

83(82). Forewing with marginal cell very short, not much longer than stigma; small bees, 8mm or less; head and thorax usually dull greenish or blueish, often with yellow or whitish maculations, sometimes extensive, rarely bee entirely pale (yellowish or whitish) or entirely dark; abdomen usually with yellow/ivory maculations, sometimes limited to a few small dots, sometimes abdomen all dark or reddish.....***Perdita***

Marginal cell of forewing much longer than stigma; abdomen without maculations (but maculations may be present elsewhere on body); bee head and thorax usually dark (except for any maculations), never greenish or blueish, never entirely pale yellow or white.....84

84(83). Abdomen mostly orangeish; face all yellow below level of antenna; legs largely yellow
.....

***Protandrena*, in part**

Abdomen dark; yellow on face and legs variable.....84a.

84a(84). Clypeus and parocular areas yellow, at least in part (maculations may occasionally be small)
.....
.....85

Clypeus yellow, but parocular areas and rest of face dark.....***Panurginus***

85(84a). All tibia dark, unmaculated; hind tibial margin in profile coarsely serrate

.....**Anthemurgus**

Tibia usually maculated with yellow at least in part, or at least ferruginous; hind tibial margin entire, not coarsely serrate.....86

86(85). Very coarsely punctate bees throughout; wings very dark.....

Pseudopanurgus s.s.

More finely punctate bees; wings lighter

.....87

87(86). Stigma length along wing margin at most only ½ the length of marginal cell along wing margin.....

...***Calliopsis***

Stigma length along wing margin nearly as long as length of marginal cell along wing margin.....***Pseudopanurgus in part*** (“*Pterosarus*” and “*Heterosarus*”)

88(82). Mandible apically broadened from base (variously bidentate, or with three or more teeth, or with a baso-ventral toothlike or angular process)

.....89

Mandible narrowed from base, either simple and pointed apically, or with a small preapical tooth set back from apex.....103

89(88). Maculations (white to yellow or reddish) present on head, thorax or abdomen (or all three), usually very obvious but in a few cases present only as a series of small dots on tergites

.....90

Integument lacking any maculations, although whitish or yellowish bands or patches of hair maybe present.....

.....96

90(89). Pygidial plate present; clypeus and usually parocular areas yellow, at least in part, rest of body all dark.....

Macropis, in part

Pygidial plate absent; thorax and/or abdomen usually with maculations.....91

91(90). Omaulus carinate, at least in dorsal (upper) portion.....
.....92

Omaulus not carinate, but rounded
instead.....93

92(91). Scutellum posterior margin carinate and overhanging the posterior
face of the propodeum; pronotal tubercles weakly carinate but not winged
.....**Anthidiellum**

Scutellum posterior margin not carinate or overhanging the posterior
face of the propodeum; pronotal tubercles usually strongly winged
(lamellate).....**Dianthidium, in part**

93(91). Arolia
absent.....**A**
anthidium

Note: males of the introduced *Pseudoanthidium nanum* lack arolia, and have been found
recently in the upper Midwest; they can be separated from all *Anthidium* species by the
presence of the baso-ventrally angulate front femur (lacking in *Anthidium* species), and their
small size (6mm).

Arolia
present.....
.....94

94(93). Either mandibles and/or clypeus black, without maculae; propodeum
usually with dorsal
component.....
.....**Stelis**

Mandibles and/or clypeus maculated, at least in part; propodeum
entirely vertical.....95

95(94). Ocelli large, their diameter slightly greater than the diameter of an
antennal socket; large bees, 12mm or
greater.....**Trachus**
a

Ocelli quite small, their diameter smaller than diameter of an antennal
socket; smaller bees, 12mm or less: **a)** or **b)** below:

a) gonostyli very narrow, twig-like.....**Dianthidium**
texanum

b) gonostyli elaborate.....
Paranthidium jugatorium

96(89). Eyes densely hairy; axillae produced as triangular, pointed or
almost spinous processes; T6 usually with a “cluster” (6-8) of spinelike
projections.....**Coelioxys**

Eyes essentially bare, not densely hairy; axillae not produced as triangular, often spinous, processes; T6 without a "cluster" (6-8) of projections but may have a carina, carina may be denticulate or bidentate.....97

97(96). Pygidial plate present.....**Lithurgopsis** and **Lithurgus**

a) arolia absent.....**Lithurgus**

b) arolia present.....**Lithurgopsis**

Pygidial plate absent.....

98

98(97). Arolia

absent.....

Megachile

Arolia

present.....

.....99

99(98). Metallic dull blue or dull green bees, rarely all dark; parapsidal lines dot-like (punctiform), hardly longer than broad and sometimes difficult to see.....**Osmia**

Integument dark, without metallic color; parapsidal lines linear, short to long.....100

100(99). T1 anterior surface transitioning abruptly to T1 dorsal surface, the anterior surface broadly concave (dish-shaped) to flattened, and separated from dorsal surface by a weak line or rim.....

.....101

T1 anterior surface transitioning gradually to the dorsal surface, convex or only slightly flattened, T1 anterior surface not separated from dorsal surface by a weak line or rim.....102

101(100). Omaulus carinate, anterior face of mesopleura smooth and shiny, in contrast to the punctate lateral face.....

Ashmeadiella

Omaulus not carinate, anterior face of mesopleura similar in sculpture to the lateral face; T1 with a raised rim separating anterior and dorsal surfaces; strongly punctate, bullet-shaped bees.....

.....**Heriades**

102(100). Lateral margin of T6 with a small to very small tooth, spine or angle; propodeum without dorsal component; head lacking preoccipital carina; flagellar segments often modified, often not moniliform.....

.....**Hoplitis**

Lateral margin of T6 simple, without a small tooth, spine or angle; propodeum either with a narrow, reticulate dorsal component, **or** head with a preoccipital carina; flagellar segments always moniliform.....

.....**Chelostoma**

103(88). Clypeus all or mostly yellow, **and** paraocular areas yellow at least in part; rest of face and head dark; thorax and abdomen dark

.....104

Clypeus and parocular areas variable, usually without yellow, but **if** yellow in part, **then** thorax and/or abdomen and/or other parts of head reddish or yellowish in part.....105

104(103). Hind basitarsis long and narrow, 8-10 times as long as broad, almost as long as tibia; mandibles long and sickle-like.....

.....**Andrena (Parandrena)**

Hind basitarsi short, 2-3 times as long as broad, much shorter than tibia; mandibles short, approaching bidentate condition.....

.....**Macropis, in part**

105(103). Basal vein arched, sometimes weakly so; propodeum with distinct dorsal (horizontal) component.....

.....106

Basal vein straight; propodeum vertical or nearly so, without a dorsal component

.....109

106(105). Head and thorax dull metallic green or blue (occasionally with pale yellow or dull orange maculae on clypeus and/or pronotal lobes and basitarsi)....

.....**Lasioglossum (Dialictus)**

Head and thorax with dark integument, not dully metallic; abdomen sometimes reddish/orangeish; clypeus and basitarsi occasionally maculate

.....107

107(106). Mandibles as long as eye, sickle-like, without preapical tooth

.....**Lasioglossum (Hemihalictus)**

Mandible shorter than eye, sometimes with preapical tooth.....108

108(107). Most or all of clypeus extending below suborbital line; F2 2-3 times as long as broad; antenna situated slightly below midline of face.....**Dufourea**

Clypeus extending below suborbital line no more than half its length; F2 usually no longer than broad; antenna situated at midline of face.....**Sphecodes, in part**

109(105). Terga with complete whitish apical fasciae; body without any maculae or patches of appressed pubescence (other than tergal fasciae); pygidial plate finely pointed at apex

.....**Hesperapis**

Tergites without apical fasciae; head, thorax or abdomen with yellow or red maculae, or patches of appressed tomentum; pygidial plate not finely pointed at apex.....110

110(109). Labrum short, rectangular, about twice as broad as long, never longer than broad; head, thorax and abdomen usually maculated to some degree with yellowish or reddish colors, occasionally bee all red with some black; size variable, but often greater than 6mm; antennae (including scape and pedicel) with 13 segments; common bees.....**Nomada**

Labrum long, at least twice as long as broad, tapering towards apex; head, thorax and/or abdomen decorated with patches of pale tomentum, abdomen often reddish; 6mm or less; antennae (including scape and pedicel) with 12 segments; uncommon bees.....**Holcopasites**

111(80). Head and thorax (and sometimes abdomen) bright green.....112

Head, thorax and abdomen never bright green, usually dark, occasionally dull metallic green or blue.....

.....115

112(111). Posterior face of propodeum encircled by a strong carina; abdomen with black and yellow bands.....

.....**Agapostemon**

Posterior face of propodeum not encircled by a carina, at most carinae present only laterally; abdomen all greenish, without yellow or black bands.....113

113(112). Posterior face of propodeum bordered by a carina on each side that terminates before reaching dorsal surface; hind tibia all green.....**Augochloropsis**

Posterior face of propodeum without lateral carinae (except occasionally at extreme base); hind tibia yellowish or reddish-brown in part, not all green.....114

114(113). Posterior and lateral faces of propodeum closely, distinctly punctate; S4 apical margin entire.....

.....***Augochlora pura***

Posterior and lateral faces of propodeum rugose to rugoso-punctate, punctures obscure; S4 apical margin weakly to strongly concave (compare to S3, which is entire)....***Augochlorella***

115(111). Tergites (at least T2-T4) with iridescent (“mother-of-pearl”) apical bands, otherwise dark.....

.....***Nomia***

Tergites without iridescent bands, but may have hair bands or hair patches.....116

116(115). Propodeum with a dorsal, horizontal component, clearly visible in dorsal view, though occasionally this may be very narrow; ***if*** propodeum nearing vertical without a distinct horizontal component, ***then*** marginal cell apically truncate, ***or*** lower half of face yellow

.....117

Propodeum entirely vertical or approaching vertical, without a distinct horizontal component; marginal cell pointed or rounded, never truncate; yellow on face, if present, usually restricted to clypeus, occasionally more extensive.....128

117(116). Tegula asymmetric, not entirely circular or oval, but with a posterior process or angle; propodeum with horizontal component very narrow, much narrower than scutellum; medium to large bees, 8-16mm.....***Dieunomia***

Tegulae usually symmetric (circular to oval), usually without a posterior process or angle; propodeum with horizontal component broader, usually about as broad as scutellum; size variable, but often less than 8mm.....118

118(117). Basal vein arched; pygidial plate usually absent.....119

Basal vein straight; pygidial plate present or absent.....125

119(118). Tergites with pale apical fasciae; hind tibia usually yellow medially, in part; apical portion of clypeus yellow.....**Halictus**

Tergites without pale apical fasciae, though basal fasciae may be present; hind tibia usually without yellow except at extreme base and apex; apical portion of clypeus variable in color.....
.....120

120(119). Head and thorax dull green or blue, occasionally with pale yellow or dull orange markings on clypeus apically and/or on tarsi.....**Lasioglossum (Dialictus)**

Head and thorax dark, blackish, not dull metallic; occasionally with yellow maculae on clypeus and/or legs
.....
121

121(120). Apical portion of clypeus and/or basitarsi yellow or dull orange, at least in part...122

Clypeus all dark; basitarsi occasionally weakly pale but not yellow.....124

122(121). Ocelli greatly enlarged, almost as large as tegulae, abdomen orange-ish

Lasioglossum (Sphecodogastra), in part

Ocelli much smaller; abdomen variable in color, but usually dark.....123

123(122). At least some sternites (usually T2-T4) with dense, whitish appressed hair patches that obscure or cover the integument

.....**Lasioglossum s.s.** and
Lasioglossum (Evylaeus s.l.), in part

Sternites lacking dense white hair patches, but various other erect or suberect hairs may be present, however these never obscure or cover the integument

.....
Lasioglossum (Evylaeus s.l.), in part

124(121). Sternites with sparse, usually very short scattered simple hairs; clypeus not extending more than half its length beyond suborbital line; abdomen variable, from reddish-orange all or in part, to all black.....

.....**Sphecodes in part**

Sternites (at least T2-T4) with long erect hairs, often curly or weakly plumose, usually in some sort of pattern; clypeus usually extending half its length or more beyond suborbital line; abdomen usually

dark.....**Lasioglossum (Evylaeus s.l., in part)**

125(118). Second recurrent vein weakly "S"- shaped; glossa very short and bilobed; pygidial plate absent; inner margins of eyes usually converging below**Colletes**

Second recurrent vein straight; glossa simple, short or long, very rarely deeply bifid into two threadlike segments; pygidial plate sometimes present; eyes with inner margins parallel, not converging below.....
.....126

126(125). Ocelli greatly enlarged; F1 long, as long as F2+3+4+5; glossa deeply divided into two narrow, long filaments; large hairy bees, 16mm or more; rare..... **Caupolicana**

Ocelli normal; F1 shorter, usually about equal to F2+3, sometimes a bit longer; glossa simple, short, like a small pointed paintbrush (one exception); usually smaller than 16mm
.....
.....127

127(126). Marginal cell apically truncate; lower half of face all yellow

.....**Protandrena s.s. in part**

Marginal cell apically pointed or very narrowly rounded; face usually all dark, sometimes clypeus and parocular areas yellow, occasionally lower half of face yellow...**Andrena, in part**

128(116). Very small bee (4mm or less), with only one submarginal cell; marginal cell minute, shorter than the single submarginal cell; often covered with pale yellowish appressed pubescence; very rare, in sandy habitats**Neolarra**

Usually larger, with three submarginal cells; marginal cell longer than any single submarginal cell; appressed pubescence often absent on abdomen, if present then it forms a distinct pattern, not a uniform covering.....129

129(128). Abdomen relatively hairless and maculated with red, and/or yellow, and/or black, rarely abdomen all red; **or** abdomen all dark and extensively hairy with erect to suberect blackish hairs and scutellum with a pair of spinose tubercles.....130

Abdomen usually without integumental maculations, but *if* tergites have ivory-colored apical integumental bands, *then* thorax very hairy and face extensively maculated with yellow or ivory (*Anthophora*, couplet 140)
.....131

130(129). Bee integument (especially abdomen) colored with some combination of red, yellow, white, black, rarely all red or all black; bees often relatively hairless, integument easily seen, not obscured by hair.....**Nomada** and

Brachynomada

a): head *and/or* thorax *and/or* abdomen usually maculated with yellow, red or white; size variable, 4-15mm; hind femur ventrally simple; maxillary palps more than half as long as blade of galea; common bees throughout

TGP/Midwest.....**Nomada**

b): head and thorax black, abdomen red, bee 6mm or less; hind femur ventrally with thornlike projection; maxillary palps less than half as long as blade of galea; rare bees, central and southern TGP.....

Brachynomada

Bee integument all blackish and quite hairy, hairs obscuring integument in part; mandible simple apically, but with a single tooth/angle located on inner surface midway between base and apex of mandible; scutellum with pair of small spinose tubercles, one on either side of midline, usually hidden by dense pubescence; rare bee; 10-12 mm

.....**Melecta pacifica**

131(129). Bees with few or no long hairs, instead with bands, partial bands, or other patterns of appressed pale pubescence (especially on abdomen), and clypeus without yellow.....132

Bees usually with abundant long hairs over most of the body, without bands, partial bands, or other patterns of appressed pale pubescence except for apical fasciae, **or** bee integument dull metallic blue or greenish; clypeus often yellowish at least in part.....136

132(131). Pygidial plate present, apex rounded.....133

Pygidial plate absent, instead T7 apicomediaally bidentate, shallowly or deeply so.....135

133(132). Eyes strongly convergent above, lateral ocelli less than one ocellar diameter from inner eye margin; mandible with preapical tooth;

posterior face of propodeum without punctures or macrosculpture, very shiny.....**Epeoloides**

Eyes not or little convergent above, lateral ocelli more than one ocellar diameter from inner eye margin; mandible simple apically, without preapical tooth; posterior face of propodeum with some amount of sculpturing, shiny only in part if at all.....134

134(133). Maxillary palps two-segmented, very inconspicuous; inner margin of mandible medially often with an angle or tooth; usually less than 10mm.....**Epeolus**

Maxillary palps three-segmented, conspicuous, easily seen; inner margin of mandible medially without an angle or tooth; usually greater than 10mm.....**Triepeolus**

135(132). Mid-tibial spur bifid or forked apically; scutellum without teeth or projections; inner margin of mandible at most with one small tooth or angle; rare, central and southern TGP

.....**Ericrocis**

Mid-tibial spur simple; scutellum dorsally with two broad teeth separated by a shallow groove; inner margin of mandible medially with two small teeth; widespread species

.....**Xeromelecta**

136(131). Marginal cell very long and narrow, its length 8x or more its width; large bees, 15mm or more.....

....**Xylocopa**

Marginal cell shorter; **if** 8x or more in length, **then** eyes very hairy and tibial spurs absent (*Apis*).....

.....137

137(136). Dull metallic blue or greenish bees, relatively hairless, less than 10mm....**Ceratina**

Integument dark, not blueish or greenish; mostly very hairy bees; size variable....138

138(137). Paraocular areas yellow or ivory, at least in part; scape often marked with yellow or ivory.....

.....139

Paraocular areas all dark, scape unmarked.....141

139(138). Mandible with three teeth; marginal cell short, shorter than distance from its apex to apex of wing; 2nd submarginal cell longer than the other two; stigma minute.....**Centris**

Mandible simple or with a single preapical tooth; marginal cell short but not as short as in *Centris*; 2nd submarginal cell more-or-less equal in length to the others; stigma slightly larger.....
.....140

140(139). S6 flat, not reflexed downward apically; labrum and mandible yellow or mostly so, **or** hind basitarsi angulate or toothed

.....**Anthophora**
S6 medio-apically reflexed downward; labrum and mandible variable; hind basitarsi parallel-sided, not angulate or toothed..... **Habropoda**

141(138). Eyes very hairy; hind tibial spurs absent

.....**Apis**
Eyes without hairs, or with extremely minute hairs; hind tibial spurs present.....142

142(141). Mandible ventral margin with fringe of long, usually curly hairs; scape at least as long as length of F1-F3 combined; bumblebees.....**Bombus**

Mandible ventral margin without fringe of long, usually curly hairs; scape much shorter, never as long as F1-F3 combined.....143
[includes: *Anthedonia*, *Cemolobus*, *Eucera*, *Florilegus*, *Melissodes*, *Peponapis*, *Svastra*, *Xenoglossa*, *Tetraloniella*; note that Dorchin et. al. (2018) revised the classification of a large portion of eucerine bees, and included *Cemolobus*, *Peponapis*, *Xenoglossa*, *Synhalonia* (= N. Am. *Eucera* sensu Michener 2007) and *Xenoglossodes* (= *Tetraloniella*) as subgenera of *Eucera*.]

143(142). Clypeal margin trilobed; F1 and F2 of equal length or very nearly so; rare

.....**Cemolobus**
Clypeal margin entire; F1 usually shorter than F2.....
.....144

144(143). T7 laterally with an angulate, tooth-like projection, often partly concealed by hairs

.....
.....145

T7 laterally without an angulate flange or tooth (do not mistake T6 for T7; T6 often has a lateral tooth-like projection)147

145 (144). Tegula teardrop-shaped, narrowing apically, broadened posteriorly, sometimes weakly concave on apical half, apical half usually partly concealed by pubescence
.....**Melissodes** in part
Tegula rounded to oblong, not tapering anteriorly146

146(145) F1 much shorter than F2; abdomen with much dark pubescence
Florilegus condignus
F1, F2 and F3 all of equal length; abdomen with all pale pubescence

Melissodes intorta

147(144). Vertex convex (i.e., weakly or gently rounded, in facial view)148
Vertex weakly concave or flattened.....150

148(147). Arolia absent; pubescence black and yellow, superficially resembling a small bumblebee.....**Ptilothrix bombiformis**
Arolia present; pubescence otherwise, not superficially resembling a small bumblebee
.....149

149(148). Glossa very long, about half as long as body or longer; F1 length equal to scape length.....
.....**Melitoma**
Glossa much shorter, little longer than head at most; F1 only 1/3 length of scape
.....**Diadasia**

150(147). Marginal cell obliquely truncate; small bees (6mm or so)151
Marginal cell apically either pointed or rounded; larger bees, 10mm or larger.....152

151(150). Clypeus yellow.....**Anthophora**
rula

Clypeus all dark.....

Exomalopsis

152(150). Hind basitibial plate absent or very obscurely developed (no records from Midwest or TGP region); glossa short and pointed.....**Melitta**

Hind basitibial plate present, well-developed; glossa much longer, threadlike.....153

153(152). F1 equal in length to scape or slightly longer, and longer than F2; *inner* margin of mandible with tooth or sharp angle; T6 laterally with conspicuous angulate projection

.....**Xenoglossa**

F1 shorter than scape and either shorter than, or rarely equal, to F2; inner margin of mandible simple; T6 lateral projection usually inconspicuous, or absent.....154

154(153). F1 and F2 equal in length or very nearly so; apical flagellar segment (F11) attenuate and curved; rare bees.....

.....**Svastra (Anthedonia) compta**

F1 shorter than F2; F11 straight, rounded apically.....155

155(154). Clypeus yellow apico-medially, otherwise dark, labrum mostly dark; T2 with white fasciae subapical and/or basal; T6 laterally carinate, but carina not developed into a tooth or strong angle (except very rarely); antennae length only about half of body length...**Peponapis**

Clypeus and labrum all or nearly all yellowish; T2 fasciae variable, but often absent or strictly apical; T6 with a lateral tooth or projecting angle; antennae often longer than one-half body length.....
.....156

156(155). Clypeal margin essentially touching eye margin, separated from eye margin only by an extremely thin inconspicuous carina; eyes enlarged, maximum width of eye in facial view equals distance between eyes or nearly so.....**Svastra in part**

Clypeal margin not quite touching eye margin, separated from eye by a narrow but measurable space; eyes not so enlarged, maximum width of eye in facial view notably less than distance between eyes.....
.....157

157(156). Gonostylus very narrow, apically bent, hooked, curved or angulate, apex not enlarged or thickened; pubescence entirely pale; mid to late summer bees.....**Tetraloniella**

Gonostylus straight, with apex thickened or enlarged (knob-like), never hooked or bent; pubescence variable but usually with considerable dark pubescence on abdomen (rarely orange); spring to early summer bees.....**Eucera**

The end 3/4/20