***Perdita*** of the TGP region and greater midwest - females

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**Females:**

**1.** Body (head, thorax and abdomen) predominantly yellow or whitish except for some black or greenish spots on face, and on a few other places on body…………………………………………………………….2

Body color variable, often with abundant yellow or white markings, but never predominantly yellow or whitish………………………………………………………………………………………………………………………………………..3

**2.** Glossa shorter than antennal flagellum, and pygidial plate rounded; *Dalea* oligolege……***perpallida***

[**Note**: dark morphs of *perpallid*a have been found in many parts of its range but there is usually enough yellowish or whitish on the specimens to recognize them as *perpallida*. *P. kiowa* Griswold, a mostly all-white/yellowish *Mentzeli*a oligolege, would key to *perpallida* and superficially looks just like it, but *kiowa* has the face entirely smooth with no microsculpture (face entirely tessellate in *perpallida*), usually toothed mandibles (mandible simple in *perpallida*) and the length and width of the head is equal (head noticeably broader than long in *perpallida*). *P. kiowa* occurs on the Great Plains and may eventually be found in western parts of the TGP.]

Glossa about equal to flagellum in length, and pygidial plate notched; *Monarda* oligolege (probably exclusively *M. punctata)*; eastern US west to northeastern Missouri……………………………………….***gerhardi***

*[***Note**: color variation in *P. gerhardi* can be fairly extreme, occasional females being more dark than yellow; usually the lower part of the face is more whitish-ivory and noticeably different from the coloration of the upper part of the face.  *P. variegata* Timberlake (also an oliglege of *Monarda punctata*) is a central and southern Great Plains species (western KS south to TX) very similar to *P. gerhardi* and easily mistaken for it, but the two are apparently allopatric except for TX populations, which are sympatric. While males of the two species are distinct, females may not always be readily separated.]

**3.** Mandible robust, its apical portion abruptly bent at a 45-90 degree angle; mid-femur evenly convex from base to apex, not angulate baso-ventrally; pygidial plate broad, large; bee usually around 10 mm; specialists on various Asteraceae flowers (subgenus *Cockerellia)*………………………………………………………4

Mandible straight or evenly curved, never abruptly bent or angled; mid-femur variable, sometimes angulate at base; pygidial plate variable; bees smaller, usually less than 8 mm; host plants variable ………………………………………………………………….………………………………………………………………………………………7

**4(3).** Glossa short, shorter than head length, no longer than antennal flagellum; not recorded east of Nebraska, Kansas, Oklahoma…………………………………………………………………………………………..….***lepachidis***

Glossa longer than head length, longer than flagellum………………………………………………………………5

**5(4).** Frons, at least centrally, shiny with little to no microsculpture, distinctly punctate even at low power (20X), frons punctures 1-3 puncture widths apart in general; not recorded east of Nebraska, Kansas, Oklahoma……………………………………………………………………………………………………………….***lingualis***

Frons dulled by microsculpture (tessellate), punctures if present minute and hardly perceptible at 20X…………………………………………………………………………………………………………………………….……………6

**6(5).** Clypeal punctures mostly separated by 3-5 puncture widths or more, and clypeus extending little more than half its length below the suborbital line; scopal hairs, sternal hairs and T5/T6 hairs usually dusky-gray………………………………………..……………………………………………***pallidipennis*** (formerly *bequaerti*)

Clypeal punctures mostly separated by 1-2 puncture widths, and clypeus extending at least two-thirds of its length below suborbital line; scopal hairs usually pale, but sometimes grayish.......…..…..***albipennis***

*[***Note***:* two other related species, *P. coreopsidis* Cockerell (a *Gaillardia* specialist) and  *P. perpulchra* Cockerell (apparently an Asteraceae generalist) are found on the Great Plains and may eventually be found in the western TGP region, and possibly mistaken for *P. bequaerti* or *P. albipennis.]*

**7(3).** Stigma cuneate, darkened in relation to wing veins, forming a distinct dark spot on wing margin; glossa short, shorter than length of eye; *Salix* oligolege………………….……………………………..***maculigera***

Stigma tapered at either end, not cuneate, and colored more-or-less like wing veins; glossa usually longer than eye; not at *Salix* flowers…….…………………………………………………………………………………………8

**8(7).** Small triangular cell (“intercalary cell”) present in forewing between first and second submarginal cells; clypeus mostly dark with little maculation, shiny with widely separated punctures; glossa long, slightly longer than the length of the head; *Diospyros* oligolege……………..……………..….……***obscurata***

[**Note:** the southeastern *P. bradleyi* Viereck is superficially similar to *obscurata* and would key to this couplet, but has an exceptionally short glossa. It may possibly occur up the Mississippi embayment to southeastern MO or southern IL.; its flower preference(s) are unclear.]

Intercalary cell absent in forewing between first and second submarginal cells; clypeus often mostly or wholly maculated (white or yellow)……………………………………..………………………………………………………..9

**9(8).** Terga largely dark, some tergites usually with small lateral yellow maculae, sometimes mere dots or absent; wing veins dark brown and wing membranes “smoky”, not clear; facial foveae relatively broad; oligoleges of *Physalis/Chamaesaracha*…………………………………………………………………………………….10

Most terga (T1-T4) with complete or nearly complete yellowish or whitish bands or large maculae, ***or*** tergites largely orangeish-reddish-yellowish; facial foveae usually narrow; wing veins often light-colored; Asteraceae oligoleges……………………………………………………………..……………………..….………………..………….11

**10(9).** Clypeus extending nearly all its length below sub-orbital line, surface dull; scutum dull; bee length 5mm or more; widespread species………………………………………………………..………………………….***halictoides***

Clypeus short and barely extending below sub-orbital line, surface shining; scutum brilliantly shining; bee smaller, length less than 5mm; southern Great Plains species east to the KS-MO border

……………………………………………………………………………………………………………………………………… ***sexmaculata***

**11(9).** Abdomen orange to reddish-brown, without any maculae; hind basitarsi brown to reddish-brown, unmaculated; frons shiny and finely punctate; pygidial plate apically truncate; wing veins light brown …...........................................................................................................................................***georgica***

[**Note**: *P. ainsliei* Crawford, known from one old record in northwestern IA (otherwise southwestern US), would come to this couplet because of its orangeish abdomen; females have a semblance of a hind basitibial plate (*georgica* does not), and pale wing veins (wing veins brown in *georgica*). Host plants of *P. ainsliei* are unclear. The southeastern *polygonellae* Timberlake would also come to this couplet because of the orangeish abdomen but is of unlikely occurrence in the Midwest; it is apparently an oligolege of *Polygonum polygama* (formerly *Polygonella*).]

Abdomen dark (piceous), usually with whitish-yellow bands or maculae but sometimes all dark; hind basitarsi variable but often yellowish or whitish; frons, pygidial plate and wing veins variable……………12

**12(11).** Fore tibia entirely dark, un-maculated …………………………………………………………………………………….13

[*bishopii, foveata, nubila, pratti, tridentata* in part]

Fore tibia yellow or ivory in large part………………………………………………………………………………………………18

[*boltoniae, bruneri, dolichocephala, fallax, ignota, laticincta, octomaculata, swenki*, *tridentata* in part,  *xanthisma*]

**13(12).** Facial foveae broad, their length x width about 3:1, much broader than distance between eye margin and fovea; wing veins mostly pale yellow; glossa about as long as head……………………..***foveata***

Facial foveae much narrower, length x width about 5:1; glossa variable………………………………………….14

**14(12).** Inner eye margins converging below; glossa no longer than head; head slightly broader than long; pygidial plate narrowly triangular; most wing veins very pale; very small bees, 4mm or slightly less……………………………………………………………………………………………………………………………………….***nubila***

Inner eye margins parallel, ***if*** slightly converging ***then*** glossa longer than head length; head length x width variable; pygidial plate usually more broadly triangular; wing vein color variable; size variable, but often larger than 4mm………………………..…………………………………………………………………….……………..15

**15(14).** Head longer than broad *and* face and thorax without maculae; wing veins yellowish; T2-T4 (sometimes T1 also) with yellowish basal bands interrupted medially; margins of pygidial plate sub-parallel, apex notched; 6-7mm in length…………………………………………………………..…***tridentata*** *in part*

Head usually broader than long, ***if***length and width of head sub-equal, ***then*** face with maculae; wing veins variable; tergites with or without maculae or bands; pygidial plate variable…….…………………16

**16(15).** Wing veins brown; clypeus entirely ivory, paraocular areas ivory; T2-T3 usually with narrow basal ivory bands interrupted medially, but these bands often reduced to absent (and tergites entirely unmaculated); eastern US……………………………………………………………………………………***bishoppi bishoppi***

Wing veins mostly pale yellow to almost colorless; Great Plains species……………………...…………………17

**17(16).** Larger, 6-7mm; frons shiny with faint punctures at 60x, punctures separated by 1-3 puncture diameters, microsculpture hardly present; head length and width sub-equal; maculations yellow ……………………………………………………………………………………………….………………………………………….***pratti***

Smaller, 4-5mm; frons without evident punctures at 60x, but frons microsculpture/tessellation plainly evident; head broader than long; maculations ivory………….…….……………………***bishoppi planorum***

**18(12).** Head noticeably longer than broad, pygidial plate notched apically; length usually 6mm or greater……………………………………………………………………………………………………….………………………………….19

[*dolichocephala, laticincta*, *tridentata* in part]

Head no longer than broad; pygidial plate notched or not; bees often less than 6mm in length…………21

[*boltoniae, bruneri, fallax, ignota, octomaculata, swenki*, *xanthisma*]

**19(18).** Tergites 1-5 with broad and complete yellow bands; clypeus all yellow, shiny and punctate; wings whitened, with pale yellow veins…………….…………………………………………………..…………..***laticincta***

Tergites 1-5 with limited narrow maculae or all dark; clypeus with a median yellow or whitish stripe, or an oval-ish maculation, or entirely dark; wings clear, veins pale yellow or slightly darker…………………20

**20(19**). Face with yellow or whitish maculae (clypeus with a median yellow or whitish stripe or oval mark, dark laterally, and paraocular areas with narrow maculae); tergites either all dark or with narrow abbreviated maculae…………………………………..…………………………………………..………………….***dolichocephala***

Face entirely dark, without yellow or whitish maculae; tergites 2-3 (sometimes 1 and 4 also) with narrow basal maculae……………….…………………………………………………………………………..…………….***tridentata*** in part

**21(18).** Frons entirely dull, usually without punctures……………………………………………………………………22

*bruneri, fallax, octomaculata, swenki*

Frons with tessellate microsculpture but still shining, punctures weak and scattered but clearly present …………………………..…………………………………………………………………………………………………………………………23

*boltoniae, ignota, xanthismae*

**22(21).** Wing veins dark, labrum dark, supraclypeal area usually dark, and mid- and hind legs dark except for “knees”; tergal maculae widely separated medially, not forming bands; length 6mm or more; widespread species…………………………………………………………………..…………………………..***octomaculata***

Wing veins lighter, labrum usually pale to light brown to yellow, supraclypeal area usually yellow or whitish at least in part, and at least mid-legs with some yellow or whitish coloration in addition to the “knees”; tergal maculae variable but usually forming bands which may or may not be medially divided; size variable, distribution variable……………………………………………………………………………***swenki*** and allies

[**Note**: *P. bruneri* occurs in the northern TGP (ND,MN) and is easily confused with *swenki*. *P. bruneri* is slightly larger than *swenki* (*bruneri* 6.5-7.5 mm, *swenki* 5-6mm) and with light yellow maculae instead of the bright yellow maculae of *swenki.* The labrum is usually pale brownish in *bruneri*, all yellow in *swenki,* the *bruneri* clypeus has two very narrow elongate dark marks surrounded by yellow, not attached to the supraclypeal margin, these marks shorter and broader and frequently attached to the supraclypeal margin in *swenki*, the supraclypeal area is usually all or partly dark in *bruneri*, usually all yellow in *swenki,* the mid-basitarsi are usually brownish in *bruneri,* usually yellow in *swenki* . An unnamed or unrecognized species similar to *bruneri* and occurring with it in eastern ND at least, has the head noticeably broader than long (head LxW equal in *bruneri* and *swenki*). *P. prionopsidis* Timberlake is a Kansas species very much like *swenki* but the wing veins are darker and the pubescence of the scutum is very short; *P. prionopsidis* has been found in KS almost to the MO border just west of Joplin. *P. fallax* Cockerell, a western Great Plains species, has recently been found in MN; it is small like *swenki* but with the tergal bands clearly separated medially and the supraclypeal area usually black or with some limited whitish maculations.]

**23(21).** Wing veins pale brown, clypeus dark at least in part, hind tibial scopal hairs pale dusky, pygidial plate broadly triangular, all tarsi pale brown; southeastern US up the Mississippi embayment into southeastern MO and western IL………………………………………………………………………………..***boltoniae***

Wing veins pale yellow to almost colorless, clypeus entirely whitish-yellow, hind tibial scopal hairs white, pygidial plate narrowly triangular, all tarsi pale yellow; widespread in the central US..…………..24

**24(23).** T2-T4 with yellow/ivory bands complete medially, the medial length of the bands long, half the length of the tergites; mid-basitarsi 3x as long as broad or slightly longer…………………….***xanthismae***

T2-T4 with yellow/ivory bands usually incomplete medially (often narrowly so), or reduced to smaller maculae, or occasionally absent or nearly so; bands medial length short, only ¼ length of tergites or less; mid-basitarsi broader than in *xanthisma*, 2.5x as long as broad; pygidial plate narrowly triangular…………………………………………………………………………………………………………………………….***ignota***

**References**: see Timberlake’s numerous papers listed in the Bibliography section