

KEY TO SPECIES

1. Females ..... *see revised key, III* ..... 2  
 Males ..... 7
2. Clypeal and lateral face marks white; tubercles and posterior corners of pronotum usually white; wings whitish hyaline ..... 3  
*malacensis* (III)  
 Face and thorax entirely dark; wings slightly dusky hyaline, the nervures pale brown; abdomen with narrow, arcuate white bands, that on tergite 2 reduced to a small oblique spot on each side, and those on tergites 3 and 4 interrupted medially and abbreviated laterally ..... *nigrifacies*, n. sp. = C. 1111008
3. Abdomen with an interrupted white band on tergites 2 to 4; and sometimes a white spot on each side of tergite 1; clypeus sometimes broadly black on disk and white at sides, but the black sometimes reduced to two stripes or spots ..... 4  
 Abdomen with a broad white band on tergites 2 to 5; usually not interrupted except narrowly on tergite 2; clypeus, at most with two dark stripes or spots on disk, besides the usual pair of dots ..... 6
4. Lateral face marks transverse and not extending above level of top of clypeus ..... 5  
 Dark blue-green, the disk of mesoscutum and scutellum black; marks at sides of clypeus small, their inner margin in alignment with inner margin of lateral marks, the latter triangular, and reaching level of antennae; band on tergite 2 reduced to a small spot on each side, that on tergite 3 narrowly and that on 4 barely interrupted; wings less whitened than in *melanochlora* and puncturation comparatively strong; length, 6.5 mm. . . *nigroviridis*, n. sp.
5. Dark blue, the disk of mesoscutum and scutellum black; pubescence of head and thorax abundant, erect, white; punctures of mesoscutum moderately sparse, those of frons becoming closer; wings milky hyaline, the subcosta brown, the margins of stigma and nervures of marginal cell tinged with brown; length, 5-5.5 mm. . . *melanochlora* Cockerell  
*see II: 329 (bradleyana Timb + malacensis Timb) (III)*  
 Extremely similar to *melanochlora*, but the puncturation of frons and mesonotum a little closer, pygidial plate a little narrower and more acute at apex; margins of stigma and nervures more pallid; and abdomen with a minute appressed sericeous pubescence on middle tergites nearly as in *albovittata* ..... *coahuilensis*, n. sp.
6. Dark blue, the mesoscutum and scutellum black; dark stripes on clypeus generally abbreviated and sometimes absent; lateral marks broader than high and not reaching above level of clypeus; abdominal bands generally entire, except sometimes on tergite 2, and much bent backward at outer ends ..... *albovittata* Cockerell  
 Dark blue-green, the disk of mesoscutum and scutellum black; dark stripes of clypeus usually well developed; lateral marks triangular, reaching level of antennae, and a transverse supraclypeal mark present; abdominal bands broad and often interrupted medially on tergite 2 and sometimes on one or two other segments ..... *mandibularis*, n. sp.
7. Mandibles at most weakly geniculate between middle and base ..... 8  
*malacensis*  
 Mandibles strongly elbowed a little before the middle on outer side; face nearly all white below level of antennae, the lateral marks quadrate; dark green, the propodeum more bluish, the disk of mesoscutum and scutellum black; abdomen brown, with a small oblique yellowish mark on lateral margins of tergites 2 to 4 ..... *mandibularis*, n. sp.
8. Face with white marks ..... 9  
 Face entirely dark ..... 13
9. Lateral face marks strongly transverse, never reaching above level of clypeus; face thinly hairy below antennae; abdomen always entirely dark except for whitish hyaline apical depression of tergites ..... 10  
 Lateral marks less transverse, although usually more or less broader than high; supraclypeal and subantennal marks also sometimes present; face more densely hairy below level of antennae; abdomen at least with traces of yellowish markings ..... 12
10. Stipital parameres of aedeagus broadest at base, truncate at tip, and as seen from side appearing to taper to the slender apex ..... 11  
*see II: 329 (malacensis Timb) (III)*  
 Stipital parameres of aedeagus broadest on apical half, appearing very broad toward apex

in lateral view; dark blue or blue-green, the disk of mesoscutum and scutellum black; clypeus and transverse lateral marks white, the disk of clypeus with two abbreviated brown stripes ..... *bradleyana*, n. sp.

11. Similar to *bradleyana*, the disk of clypeus with two broad brown or black stripes, or sometimes all dark except on each side anteriorly; caulis of aedeagus without a projecting fold or lobe medially at apex above ..... *melanochlora* Cockerell

Like the two preceding species, but dark markings on disk of clypeus sometimes evanescent; base of mandibles generally with a white spot; caulis of aedeagus with a projecting vertical fold of the dorsal wall at apex on each side of the median fissure ..... *coahuilensis*, n. sp.

12. Apical tergite extremely large, tapering from the broad base to moderately narrow apex, which is emarginate to form two teeth, a little longer than their basal width; dark blue, the mesonotum except margins black; mandibles except reddish tips, clypeus, and broad transverse lateral marks white ..... *megapyga*, n. sp.

Apical tergite moderately enlarged and narrowly truncate at apex; dark green or blue-green, the disk of mesoscutum and scutellum black; lateral marks generally broad enough to reach level of antennal sockets, and face sometimes nearly all white below level of antennae

13. Dark blue or blue-green, the clypeus and scutellum black or a little tinged with brown; frons and vertex delicately tessellate and shining, the punctures of frons very minute and sparse; mesoscutum faintly tessellate; cheeks very broad behind posterior half of eyes

*chrysochila* Cockerell

Head and thorax dark green, more bluish on propodeum, the clypeus, mesoscutum except anterior border, and scutellum black; frons and vertex almost polished, the puncture of frons closer and more apparent than in *chrysochila*; mesonotum polished

*nigroviridis*, n. sp.

### *Perdita nigrifacies*, n. sp.

*Female*.—Head and thorax dark blue-green, the most of face below antennae, mesoscutum except anterior fourth, and the scutellum black. Labrum and mandibles dark rufous, the latter piceous at apex. Antennae black, the flagellum brown except toward base above. Thorax entirely dark. Abdomen black, somewhat tinged with reddish brown toward base and beneath, the pygidial plate rufous. A small triangular spot adjacent to the foveae on each side of tergite 2, and a narrow, arcuate, interrupted band on tergites 3 and 4, ending rather far from lateral margins, creamy white. Legs reddish brown, without pale markings. Tegulae testaceous hyaline, a little brownish at base. Wings slightly and uniformly dusky, the nervures and margins of stigma pale brown, the subcosta a little darker.

Head as broad as long, the inner orbits parallel. Mandibles stout and dilated on inner margin. Facial foveae elongate linear. Wings ample, the marginal cell almost as long as first submarginal cell, with the poststigmatal part nearly twice as long as the substigmatal part. Head and thorax finely tessellate, but shining, the disk of mesoscutum and scutellum becoming almost polished. Puncturation of head and thorax fine, but very distinct, the punctures rather close on frons, sides of face, and cheeks, and sparser elsewhere on head and thorax, the vertex impunctate. Abdomen minutely lineolate and punctate, the punctures rather close on tergites 3 to 5 and sparse on tergite 2. Pubescence ochreous white, rather thin except on legs and at apex of abdomen. Scopal hair of hind tibiae abundant, long and crinkly. Length, 6 mm.; anterior wing, 4.2 mm.

One female (holotype), Safford, Graham Co., Arizona, Sept. 17, 1933 (R. M. Bohart), in collection of Citrus Experiment Station, Riverside.

### *Perdita chrysochila* Cockerell

*Perdita chrysochila* Cockerell, 1896, Jour. New York Ent. Soc., 4:206, ♂; Cockerell, 1904, Entomologist, 37:6.

Two specimens have been collected since Cockerell first began collecting and studying *Perdita* about 1895. *P. chrysophila* Cockerell, described in 1896, has only recently been collected in numbers and its female recognized, which proves to be *P. nigrifacies* Timberlake. A new key to the females of this group has been prepared.

KEY TO FEMALES OF PENTAPERDITA

*ventuosum* *megalyga* Cook, MEX  
*crudita* Baja MEX  
*nevadiana* - Clark Co NV

1. Light bands of abdomen broad, usually not interrupted except on tergite 2; if interrupted on tergites 2 and 3 or 4, lateral face marks large, reaching level of antennae, marks on disk of pronotum and tubercles white, and mandibles broadly dilated, with short incurved tip...2  
 Light bands of abdomen narrow and generally interrupted medially; if band on tergite 3 entire, lateral face marks transverse, not reaching above level of summit of clypeus, or face, and pronotum dark .....3
2. Abdominal bands usually entire, except on tergite 2, and curved backward at outer ends; supraclypeal area dark ..... *albovittata* Cockerell  
 Abdominal bands usually less broad and sometimes interrupted on tergites 3 and 4; lateral face marks large and a transverse supraclypeal mark present; mandibles broad with short incurved tip ..... *mandibularis* Timberlake
3. Clypeal and lateral marks white .....4  
 Face and thorax dark, except collar of pronotum narrowly white; light bands of abdomen typically interrupted and abbreviated, reduced to lateral marks on tergite 2; mesoscutum sparsely punctured, especially on posterior part of disk. .... *chrysophila* Cockerell
4. Wings more or less whitish or milky hyaline, nervures mostly pallid. ....5  
 Wings slightly dusky, nervures almost uniformly testaceous brown; lateral face marks transverse; collar of pronotum and tubercles white; bands on tergites 2 to 4 interrupted, that on tergite 2 narrow and broadly interrupted. .... *amoena* Timberlake
5. Band on tergite 2 even when broadly interrupted abruptly bent backwards at outer ends. ....6  
 Band on tergite 2 reduced to short transverse mark far to each side; bands on tergites 3 and 4 successively less interrupted and oblique at outer ends; clypeus with two broad dark stripes on disk; frons distinctly tessellate and dullish; pygidial plate narrowly rounded at apex ..... *annexa* Timberlake
6. Lateral face marks more or less transverse or at least somewhat broader than high if more or less triangular; disk of clypeus often with two dark stripes. ....7  
 Lateral marks comparatively large, triangular, their inner margin continuous with inner margin of marks on sides of clypeus, disk of clypeus broadly black to summit; bands on tergites 2 and 3 narrow, not broadly interrupted, that on tergite 4 somewhat broader, abbreviated and entire ..... *nigroviridis* Timberlake
7. Pygidial plate narrowed to rounded apex; wings less whitened, subcosta brown, margins of stigma and nervures of marginal cell sometimes more or less brownish .....8  
 Pygidial plate very narrowly rounded at apex or almost acute; wings more whitened, nervures more pallid, only subcosta generally brownish .....10
8. Abdomen dullish, more evidently punctured and sericeous .....9  
 Abdomen more shining; appressed, sericeous pubescence nearly lacking on disk of tergites 2 to 4; abdominal bands more or less broadly interrupted and sometimes abbreviated
9. Bands on tergites 2 to 4 white and narrowly interrupted; minute sericeous pubescence of tergites 3 and 4 moderately developed. .... *idahoensis* Timberlake  
 Bands on tergites 2 to 4 yellowish; minute sericeous pubescence of abdomen nearly as dense as in *albovittata*; head less broad, lateral face marks subquadrate, not going above level of summit of clypeus ..... *micans*, n. sp.
10. Frons polished, rather closely punctured; band on tergite 2 rather broadly interrupted, those on tergites 3 and 4 successively less interrupted, each mark on tergite 4 ovally expanded within ..... *bradleyana* Timberlake

*nevadiana* Timb  
 Suppl  
 Clark Co NV, SB, Rio Co CA; sc AZ  
 Inyo  
 Casp. C. ID. Inyo Co CA  
 Clark MEX  
 54 TX, Zac  
 15th Nov 1916  
 10 Aug 1916  
 + u. sp. aff. *megalyga* terped. (except terg. 4 bands entire)  
 incl sep quadric. incl NL MEX

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Vertex and upper part of frons tessellate and slightly dullish; abdominal bands narrowly interrupted ..... *coahuilensis* Timberlake

*Perdita albovittata* Cockerell

*Perdita laticeps* Cockerell, 1896, Proc. Acad. Sci., Phila., 48:98, ♂ (synonymy confirmed).

*P. laticeps* has been considered a synonym of *albovittata* with but little doubt; I have now examined the type of *laticeps* and can confirm the synonymy.

*New record*.—One female, Cornish, Cache Co., Utah, on *Stephanomeria*, Aug. 5, 1959 (G. E. Bohart and R. M. Nielsen).

*Perdita amoena* Timberlake

*New records*.—One female, 15 miles west of Santa Clara, Washington Co., Utah, Sept. 2, 1964 (C. W. O'Brien). One male, Cochise Stronghold, Cochise Co., Arizona, Sept. 12, 1964 (O'Brien). One female, 1 male, 20 miles south of Estacion Llano, Sonora, Mexico, Aug. 17, 1964 (M. E. Irwin).

*Perdita annexa* Timberlake

*Perdita annexa* Timberlake, 1960, Univ. Calif. Publ. Entom., 17:133, ♂.

It seems to be reasonably certain that a male and female of *Pentaperdita* collected at Santa Fe, New Mexico, near the middle of July belong together, although taken in different years. More material is needed, however, to prove that the female belongs with *annexa* without any doubt.

*Female*.—Head and thorax dark blue-green; dark part of clypeus, supra-clypeal area, disk of mesoscutum, scutellum and metanotum black; clypeus and lateral marks white; two broad dark stripes on disk of clypeus, uniting on anterior border and enclosing a narrow light T-mark; lateral marks moderately large, transverse and rounded within but with slender extension on orbits nearly to level of antennae. Collar of pronotum and small spot at apex of tubercles whitish. Abdomen fuscous, tinged with brown, with narrow white band on tergites 2 to 4; band on tergite 2 reduced to narrow, transverse, and slightly oblique mark on each side, almost touching lateral foveae at or behind their middle; other two becoming successively broader and less interrupted, that on tergite 3 almost reaching lateral margin and that on tergite 4 much abbreviated. Pygidial plate ferruginous. Legs brownish fuscous, front and middle knees very narrowly whitish. Antennae fuscous, flagellum dark brown beneath. Mandibles fuscous, reddened on apical half. Tegulae testaceous hyaline, base brownish. Wings whitish hyaline, nervures pale testaceous, margin of stigma and subcosta testaceous brown.

Head as broad as long; cheeks strongly receding and rounded. Facial foveae well impressed, wider than narrow interval between them and eyes, and reaching from upper level of antennal sockets somewhat more than halfway to level of anterior ocellus. Mandibles moderately dilated within and incurved at apex. Proboscis moderately long, galeae reaching base of stipites; maxillary palpi about half as long as galeae, with five subequal joints. Pterostigma rather small, about half as wide as first submarginal cell; marginal cell as long as stigma, distinctly shorter beneath than beyond it, metacarpus nearly twice as long as apical truncation; second submarginal narrowed one-half to radius and receiving first recurrent nervure close to base. Head and thorax shining, mesonotum polished, frons and vertex finely tessellate, the frons rather dull. Punctures of face fine, distinct and rather sparse, those of mesoscutum similar and widely spaced on disk. Pubescence whitish, moderately long, erect and rather thin; hair of front coxae short and thin; scopal hair of hind tibiae long, moderately dense and rather coarse. Abdomen oval, subdepressed, shining; tergites 3 and 4 with shallow punctures; pygidial plate triangular, rather narrow and rounded at apex; disk plane. Length: about 5 mm.; anterior wing, 3.8 mm.

One male, Santa Fe, Santa Fe Co., New Mexico, July 14, 1934 (F. E. Lutz); 1 female, Santa Fe, July 18, 1938 (E. L. Bell).