

A LIST OF THE BEES OF THE GENUS  
*PERDITA* SMITH.

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The present list includes all the known species of *Perdita*, the genus being confined to North America, and only well developed in the arid southwest. The South American insects referred by Friese to *Perdita* belong to *Parafriesia*, a genus scarcely separable from *Calliopsis*. The Old World genus *Nomioides* has the closest possible superficial resemblance to *Perdita*, but is structurally quite distinct, having much in common with *Halictus*. The species of *Perdita* are mostly very small, and practically all are oligotrophic, confining their visits to a single genus, or to a few closely allied genera. Occasionally specimens will be found on plants of quite diverse families, and this seems especially to occur when the proper food plant is not yet in bloom. Most of the species occur in late summer and autumn, but there is quite a series of spring-appearing forms. I have never taken any species both in spring and summer, but Mr. Viereck took *P. phaceliæ* in May and June, and *P. pectidis* in April and May, at Alamogordo, New Mexico, these being previously known as September bees. It is not known whether the September brood hibernates and reappears in spring, or there are two generations in the year.

*Subgenera and Sections.*

COCKERELLIA Ashmead, *Psyche*, 1898, p. 284. Type *hyalina*.

A name for the group of *P. albipennis*, *verbesinæ*, *sparsa*, *utahensis*, etc.

NEOPERDITA Ashmead. The diagnosis seems to indicate species like *P. sphaeralceæ*, but the designated type is *P. zebrata*.

NOMADOPSIS Ashmead. The assigned type was *P. zonalis*, but the specimens pertain to a different, undescribed species.

PHILOXANTHUS Ashmead. Type *P. beata*.

For Ashmead's characterization of the above four groups, see *Trans. Amer. Ent. Soc.*, XXVI (1899), pp. 84-85.

PERDITELLA Cockerell. Type *P. larreæ*; also includes *P. marcialis*. For figure of venation see *Proc. Acad. Nat. Sci.*, Phila.,

1896, p. 62. Robertson has described *P. boltonia* (1902) as a *Perditella*.

**PENTAPERDITA** Cockerell and Porter. Type *P. albovittata*. Maxillary palpi 5-jointed; claws all cleft in males; simple in females.

**TETRAPERDITA** Cockerell and Porter. Type *P. sexmaculata*. Maxillary palpi 4-jointed; claws cleft in male, simple in female.

**GEOPERDITA** Cockerell and Porter. Type *P. chamarsarachæ*. Maxillary palpi rudimentary; labial palpi 3-jointed.

The last three, which should probably rank as genera, were described in *Annals and Mag. of Nat. History*, December, 1899, p. 415.

#### Tables.

(1) Cockerell, *Proc. Acad. Nat. Sci.*, Philadelphia, 1896, pp. 45-52.

(2) Cockerell, *Bull. Sci. Lab.*, Denison University, XI, pp. 52-59. (Species of New Mexico.)

(3) Cockerell, *University of Colorado Studies*, 1907, p. 247.

(4) Cockerell and Porter. *Ann. and Mag. of Nat. History*, December, 1899, pp. 414-415. (Table of measurements of labial palpi.)

(5) Cockerell, *Entom. News*, December, 1905, p. 331. (Species resembling *P. xanthisma*.)

(6) Cockerell in Viereck, *Entom. News*, January, 1904, p. 22. (Yellow species.)

After each name is given the type, locality, and the collector of the type, if known.

#### List of Species.

**Aeneifrons** Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Isocoma*.

**Affinis** Cresson 1878. Colorado (*Ridings*). Tab. 1, 2, 3, 4. Visits *Compositæ*.

**Albipennis** Cresson 1868. Between Fort Wallace, Colorado, and Fort Craig, New Mexico. (*S. Lewis*.) Tab. 1, 2. Visits *Helianthus*.

**Albipennis helianthi** Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Helianthus*.

**Albipennis lingualis** Cockerell 1896. Fort Collins, Colorado (*Baker*). A female variant.

**Albipennis pasonis** Cockerell 1896. El Paso, Texas (*Cockerell*). A form approaching *P. verbesina*.

**Albovittata** Cockerell 1895. San Augustine, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Ximenesia*.

- Anogræ** Cockerell 1902. Las Vegas, New Mexico (*Tuttle and Tipton*). Visits *Anogra*.
- Arcuata** Fox 1893. Calmalli Mines, Lower California (*Haines*). Tab. 1. Flies in April.
- Ashmeadi** Cockerell 1899. S. José de Guaymas, Mexico (*Howard*). Flies in April.
- Asteris** Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Aster* and *Heterotheca*. Also in Arizona.
- Austini** Cockerell 1895. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Gutierrezia*, and rarely *Isocoma*.
- Baccharidis** Cockerell 1900. Tempe, Arizona, October (*Cockerell*). Visits *Baccharis*.
- Baileyæ** Cockerell 1909. Mesilla, New Mexico (*Cockerell*). Visits *Baileya*.
- Bakeræ** Cockerell 1896. Fort Collins, Colorado (*Baker*). Tab. 1. Apparently distinct by male genitalia, but otherwise intergrades with *P. zebrata*. Visits *Solidago*.
- Beata** Cockerell 1896. Las Cruces, New Mexico (*A. M. Holt*). Tab. 1, 2, 6. Visits *Ximenesia*. A bright canary-yellow species.
- Bigeloviæ** Cockerell 1896. Albuquerque, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Isocoma*.
- Biparticeps** Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Pectis*.
- Bishoppi** Cockerell 1906. Paris, Texas, August (*Bishopp*). Visits *Heterotheca*. As to intergrades or hybrids with *P. ignota*, cf. Entomologist, 1906, p. 149.
- Boltoniæ** Robertson 1902. Carlinville, Illinois (*Robertson*). Visits *Boltonia*. Cheeks of male dentate.
- Bradleyi** Viereck 1907. Clementon, New Jersey (*J. C. Bradley*). Flies in May.
- Bruneri** Cockerell 1897. West Point, Nebraska, August (*Bruner*). Visits *Solidago* and *Grindelia*; cf. Ent. News, February, 1907, p. 55.
- Californica** Cresson 1878. California (*Edwards*). Tab. 1.
- Callicerata** Cockerell 1897. Las Cruces, New Mexico, August (*Townsend*). Tab. 2. Visits *Baileya*. Rarely at *Atamosco*; cf. Can. Ent., 1901, p. 283. Female; Proc. Acad. Nat. Sci., Phila., 1897, p. 357. Remarkable for having more light color on the face of the female than the male.

- Callicerata chrysoceras** Cockerell 1897. Near Las Cruces, New Mexico (*Cockerell*). Tab. 2.
- Callicerata leucura** Cockerell 1909. Mesilla, New Mexico (*Cockerell*). Perhaps a hybrid, *callicerata* × *pallidior*. Visits *Baileya*.
- Cambarella** Cockerell 1906. Paris, Texas, August 26 (*Bishopp*). Visits *Heterotheca*. Allied to *P. mellina*.
- Canina** Cockerell 1895. Santa Fé, New Mexico (*Cockerell*). Identical with *P. zebzata*.
- Cephalotes** Cresson 1878. Nevada (*Hy. Edwards*). Tab. 1. Head of male very large.
- Chamæsarachæ** Cockerell 1896. Albuquerque, New Mexico (*Cockerell*). Tab. 1, 2, 5. Visits *Chamæsaracha*.
- Chrysophila** Cockerell 1896. Organ, New Mexico (*Cockerell*). Tab. 2. Visits *Ximenesia* and *Hymenoxys*.
- Citrinella** Graenicher 1910. North Hudson, Wisconsin (*Graenicher*). Allied to *P. perpallida*. Visits *Petalostemon*.
- Cladothricis** Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Cladothrix*, and sometimes *Pectis*, *Isocoma* and *Gutierrezia*.
- Claypolei** Cockerell 1901. Mt. Lowe, California (*Cockerell*). Visits *Eriogonum polifolium*.
- Cockerelli** Crawford 1906. West Point, Nebraska (*Crawford*). Visits *Grindelia* and also *Solidago*. Resembles *P. bruneri*.
- Coreopsidis** Cockerell 1906. Cotulla, Texas, May 5 (*W. D. Pierce*). Visits *Coreopsis*.
- Crassiceps** Cockerell 1896. Albuquerque, New Mexico (*Cockerell*). Tab. 1, 2.
- Crawfordi** Cockerell 1901. Lincoln, Nebraska (*J. C. Crawford*). Visits *Grindelia*.
- Crotonis** Cockerell 1896. Albuquerque, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Croton*.
- Dallasiana** Cockerell 1906. Dallas, Texas, July (*W. W. Yothers*). Visits *Helianthus*. Runs in tables to vicinity of *hirsuta*.
- Dasyliirii** Cockerell 1907. Alamogordo, New Mexico, June (*Viereck*). Visits *Dasyliirion*. Allied to *P. lucia*.
- Dolichocephala** Swenk and Cockerell 1907. Warbonnet Cañon, Nebraska (*Carriker*). Visits *Helianthus*. Peculiar for its long head.



- Dubia** Cockerell 1896. Glenwood Springs, Colorado (*Gillette*).  
Tab. 1. Allied to *P. zebrata*.
- Erigeronis** Cockerell 1897. Mesilla, New Mexico (*Cockerell*).  
Tab. 2. Male of *P. fallax*; cf. Ent. News, 1907, p. 55.
- Exclamans** Cockerell 1895. Las Cruces, New Mexico (*Jessie Casad*). Tab. 1, 2. At flowers of *Prosopis* in May. Doctor Howard took it at S. José de Guaymas, Mexico.
- Fallax** Cockerell 1896. Las Cruces, New Mexico (*Cockerell*).  
Tab. 1, 2. Very close to *P. affinis*. Visits *Compositæ*.
- Florissantella** Cockerell 1906. Florissant, Colorado (*Cockerell*).  
Visits *Eriogonum*.
- Foxi** Cockerell 1895. Santa Fé, New Mexico (*Cockerell*). Tab.  
1, 2. Peculiar for its orange-rufous legs, and black unbanded  
abdomen.
- Gerhardi** Viereck 1904. East Chicago, Indiana (*Gerhard*). Tab.  
6. Visits *Monarda*. A yellow species.
- Grandiceps** Cockerell 1896. Las Cruces, New Mexico (*Cockerell*).  
Tab. 1, 2, 4. Visits *Solidago* early in September.
- Gutierreziae** Cockerell 1896. Albuquerque, New Mexico (*Cockerell*).  
Tab. 1, 2. Visits *Gutierrezia*. Related to *P. bigeloviae*.
- Halictoides** Smith 1853. North America. Tab. 1. Nearest  
to *P. æneifrons*; cf. Canad. Entom., 1904, p. 303. This is  
the type of the genus.
- Heliotropii** Cockerell 1900. Juarez, Mexico (*Cockerell*). Visits  
*Heliotropium*.
- Heterothecæ** Cockerell 1900. Tempe, Arizona (*Cockerell*).  
Visits *Heterotheca*. Resembles *P. ignota*.
- Hirsuta** Cockerell 1896. Las Cruces, New Mexico (*A. M. Holt*).  
Tab. 1, 2. Flies early in May.
- Howardi** Cockerell 1899. S. José de Guaymas, Mexico (*Howard*).  
Tab. 6. Bright lemon-yellow; flies in spring.
- Hyalina** Cresson 1878. Colorado (*Ridings and Morrison*). Tab. 4.  
Male of *P. albipennis*.
- Ignota** Cockerell 1896. Mesilla, New Mexico (*Cockerell*). Tab.  
2, 3. Visits *Compositæ*. Ranges to Nebraska.
- Interrupta** Cresson 1878. California (*Crotch*). Tab. 1.
- Jonesi** Cockerell 1906. Rosser, Texas (*Bishopp*). Visits *Monarda*;  
var. a. at *Petalostemon*. Allied to *P. octomaculata* and *affinis*.
- Lacteipennis** Swenk and Cockerell 1907. Niobrara, Nebraska

(*Swenk*). Visits *Helianthus*. Allied to *P. albipennis*. Also in Colorado.

**Larreae** Cockerell 1896. San Marcial, New Mexico (*Cockerell*). Tab. 1, 2, 4, 6. Small orange-yellow species; visits *Covillea*. Although several species of *Perdita* are dependent on *Covillea*, the plant can exist without these bees, as is shown by its occurrence in South America, where *Perdita* is absent.

**Larreae modesta** Cockerell 1897. Mesilla Park, New Mexico (*Cockerell*). Tab. 2, 6. Head of male not nearly so large. Visits *Covillea*.

**Larrearum** Cockerell 1896. San Marcial, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Covillea*.

**Laticeps** Cockerell 1896. Las Cruces, New Mexico (*A. M. Holt*). Tab. 1, 2. Visits *Ximenesia*.

**Laticincta** Swenk and Cockerell 1907. Glen, Sioux Co., Nebraska (*H. S. Smith*). Visits *Helianthus*.

**Lepachidis** Cockerell 1896. Santa Fé, New Mexico (*Cockerell*). Tab. 1, 2. Very close to *P. albipennis*. Visits *Ratibida*.

**Lepidii** Cockerell 1907. Florissant, Colorado (*Rohwer*). Visits *Lepidium*.

**Luciae** Cockerell 1899. S. José de Guaymas, Mexico (*Howard*). Flies in April. Allied to *P. martini*.

**Luteiceps** Cockerell 1896. Glenwood Springs, Colorado (*Gillette*). Tab. 1. Flies in August. Related to *P. martini*.

**Luteola** Cockerell 1894. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2, 4, 6. A yellow species, visiting *Isocoma* and *Gutierrezia*. Also occurs in Nebraska.

**Maculigera** Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 2. Visits *Salix* in May. (*Ent. News*, 1896, p. 255.)

**Maculipennis** Graenicher 1910. Milwaukee, Wisconsin, August (*Graenicher*). Stigma with a black spot.

**Maculipes** Cockerell 1896. Las Cruces, New Mexico (*A. M. Holt*). Tab. 1, 2. Visits *Isocoma*. Very close to *P. bigeloviae*.

**Marcialis** Cockerell 1896. San Marcial, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Covillea*. Related to *P. larreae*.

**Martini** Cockerell 1895. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Flies in April.

**Maura** Cockerell 1901. Cedar Bluffs, Nebraska (*Bruner*). Visits *Physalis*, and sometimes *Aster*.

- Megacephala** Cresson 1878. Texas (*Heiligbrodt*). Tab. 1. Male of *texana*.
- Melanostoma** Swenk and Cockerell 1907. Glen, Sioux Co., Nebraska (*P. R. Jones*). Visits *Gutierrezia*.
- Mellina** Cockerell 1900. Phoenix, Arizona (*Cockerell*). Tab. 5. Visits *Heterotheca*.
- Mentzelia** Cockerell 1896. Santa Fé, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Nuttallia*.
- Mentzeliarum** Cockerell 1897. Riley's Ranch, Organ Mts., New Mexico (*Cockerell*). Tab. 2, 4. Visits *Nuttallia*.
- Mentzeliarum lauta** Cockerell 1905. Near Tularosa, New Mexico (*E. O. Wooton*). Visits *Nuttallia*.
- Mexicanorum** Cockerell 1896. Mexico. Tab. 1. Peculiar for its yellow postscutellum.
- Monardæ** Viereck 1904. Riverton, New Jersey (*Viereck*). Visits *Monarda*.
- Nebrascensis** Swenk and Cockerell 1907. Neligh, Nebraska (*M. Cary*). Visits *Helianthus*.
- Nevadensis** Cockerell 1896. Nevada. Tab. 1.
- Nitidella** Cockerell 1895. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Isocoma*.
- Novæangliæ** Viereck 1907. Poquonock, Ct. (*Viereck*). Flies in June and July. Also in Massachusetts.
- Nuda** Cockerell 1896. New Mexico. Tab. 1, 2. Resembles *P. phymatæ*, but much larger.
- Numerata** Cockerell 1895. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Salix* in May.
- Obscurata** Cresson 1878. Georgia. Tab. 1. Visits *Hydrocotyle*. Also occurs in Florida.
- Octomaculata** Say 1824. United States. Tab. 1. Visits *Compositæ*; Illinois to Atlantic coast.
- Pallidior** Cockerell 1896. Albuquerque, New Mexico (*Cockerell*). Tab. 1, 2. Very near to *P. mentzelia*. Visits *Nuttallia*.
- Pallidior pulchrior** Cockerell 1896. Albuquerque, New Mexico (*Cockerell*). Tab. 1, 2. Checks of male spined.
- Pallidipennis** Graenicher 1910. Mouth of Yellow River, Wisconsin (*Graenicher*). Group of *P. albipennis*.
- Pectidis** Cockerell 1896. Las Cruces, New Mexico (*Cockerell*).

- Tab. 1, 2. Visits *Pectis*, and sometimes *Wedeliella* and *Kallstroemia*.
- Pellucida** Cockerell 1896. Las Cruces, New Mexico (*Cockerell*).  
Tab. 1, 2. Visits *Isocoma*.
- Perpallida** Cockerell 1901. Lehigh, Nebraska, July (*Cary*).  
Tab. 6. Visits *Petalostemon*. Close to *P. wootona*; cf. Ent. News, 1907, p. 57.
- Perpulchra** Cockerell 1896. Las Cruces, New Mexico (*A. M. Holt*). Tab. 1, 2. Visits *Ximenesia*. Male: Annals and Mag. of Nat. History, April 1897, p. 398.
- Phaceliæ** Cockerell 1898. La Cueva, Organ Mts., New Mexico. (*Townsend*). Tab. 4. Visits *Phacelia*.
- Phymatæ** Cockerell 1895. Las Cruces, New Mexico (*Cockerell*).  
Tab. 1, 2. Visits *Isocoma* and *Gutierrezia*.
- Pratti** Cockerell 1906. Corpus Christi, Texas, October (*F. C. Pratt*). Probably visits *Helenium*. Allied to *P. crawfordi*.
- Pulchrior** Cockerell 1896. Var. of *pallidior*.
- Punctata** Cockerell 1896. Fort Collins, Colorado (*Baker*).  
Tab. 1. Visits *Solidago*.
- Punctosignata** Cockerell 1895. Las Cruces, New Mexico (*Jessie Casad*). Tab. 1, 2. At flowers of *Prosopis*.
- Quadrangularis** Cockerell 1907. Alamogordo, New Mexico (*Viereck*). Flies in May.
- Rectangulata** Cockerell 1896. Fort Collins, Colorado (*Baker*).  
Tab. 1. Visits *Solidago* in August.
- Rehni** Cockerell 1907. Alamogordo, New Mexico (*Viereck*). In Tab. 1 runs to *pallidior*, but distinguished by smaller size, much darker abdomen, color of antennæ, etc. Flies early in June.
- Rhodura** Cockerell 1897. Embudo, New Mexico, September 25, (*Cockerell*). Tab. 2, 4, 5. Visits *Chrysothamnus*. Resembles *P. crotonis* in the color of the abdomen.
- Rhois** Cockerell 1901. San Diego, California (*Cockerell*). Visits *Rhus laurina*.
- Rhois reducta** Cockerell 1901. San Diego, California (*Cockerell*). Female variant.
- Salicis** Cockerell 1896. Las Cruces, New Mexico (*Cockerell*).  
Tab. 1, 2, 4. Visits *Salix* in May.
- Semicærulea** Cockerell 1896. San Marcial, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Corillea*.



- Semicrocea** Cockerell 1895. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2, 4, 5. Visits *Compositæ*.
- Senecionis** Cockerell 1896. Las Cruces, New Mexico (*E. O. Wootton*). Tab. 1, 2. Visits *Senecio* in October.
- Sexmaculata** Cockerell 1895. Santa Fé, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Chamæsaracha*.
- For figure of mouth-parts, see *Annals and Mag. of Nat. History*, December, 1899, p. 416.
- Sidæ** Cockerell 1897. Mesilla, New Mexico (*Cockerell*). Tab. 2, 4, 5. Visits *Sida hederacea*.
- Snowii** Cockerell 1896. Estes Park, Colorado (*F. H. Snow*). Tab. 1. Also at Santa Fé, New Mexico. Male; *Psyche*, 1910, p. 244. Visits *Grindelia*.
- Solitaria** Cockerell 1897. Soledad Cañon, Organ Mts., New Mexico (*Townsend*). Tab. 2. Visits *Pectis*.
- Sonorensis** Cockerell 1899. S. José de Guaymas, Mexico (*Howard*). Flies in April.
- Sparsa** Fox 1893. Margarita Island, Lower California (*Haines*). Tab. 1. Allied to *P. albipennis*, but flies in March.
- Sphæralceæ** Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Sphæralcea*. Rarely at *Nuttallia*; cf. *Jour. N. Y. Ent. Soc.*, 1896, p. 206.
- Sphæralceæ alticola** Cockerell 1896. Santa Fé, New Mexico (*Cockerell*). Visits *Sphæralcea*.
- Sphæralceæ suffusa** Cockerell 1896. Santa Fé, New Mexico (*Cockerell*). A variant of *alticola*.
- Stottleri** Cockerell 1896. Tularosa Creek, New Mexico (*Cockerell*). Tab. 2. Visits *Chrysothamnus* and *Gutierrezia*. Male; *Entomologist*, 1904, p. 6.
- Stottleri flavida** Swenk and Cockerell 1907. Glen, Nebraska (*Bruner*). Visits *Gutierrezia* and *Solidago*.
- Subfasciata** Cockerell 1897. Embudo, New Mexico, September 25 (*Cockerell*). Tab. 2. Visits *Chrysothamnus*.
- Tarda** Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Gutierrezia*.
- Texana** Cresson 1878. Texas (*Heiligbrodt*). Tab. 1.
- Tortifoliæ** Cockerell 1906. Florissant, Colorado (*Cockerell*). Visits *Chrysothamnus*. Possibly a mutation of *florissantella*; cf. *Entom.*, 1907, p. 267.



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