

7-1-1919

## Philippine Bees of the Genus Nomia

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### Recommended Citation

Cockerell, T. D. A., "Philippine Bees of the Genus Nomia" (1919). Co. Paper 615.  
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Cell-1919

PHILIPPINE BEES OF THE GENUS NOMIA

By T. D. A. COCKERELL  
*Of the University of Colorado*

Separate from  
THE PHILIPPINE JOURNAL OF SCIENCE  
Published by the Bureau of Science of the Philippine Government  
Manila, P. I.  
VOLUME XV, No. 1, JULY, 1919

MANILA  
BUREAU OF PRINTING  
1919

166317

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# THE PHILIPPINE JOURNAL OF SCIENCE

VOL. XV

JULY, 1919

No. 1

## PHILIPPINE BEES OF THE GENUS *NOMIA*

By T. D. A. COCKERELL

*Of the University of Colorado*

The andrenid genus *Nomia* is widely distributed over the world, but is much more numerous in species in the Eastern than in the Western hemisphere. The species show such diverse characters that authors have at different times proposed to divide the genus into several genera and subgenera. It is doubtfully expedient, however, to recognize more than one genus, though most of the names proposed may properly be used in a subgeneric sense. The type of the genus, as Meade-Waldo has shown, is the Asiatic *Nomia curvipes* of Fabricius. This has colored tegumentary bands on abdomen, postscutellum unarmed, and the hind femora of the male greatly swollen and sharply toothed beneath. It may be considered typical of a group which in the Philippine fauna includes *N. thoracica*, *N. longitarsis*, *N. lusoria*, *N. strigata*, and *N. iridescens*; but none of these has the hind femora of the male as in *curvipes*. In *N. thoracica* these femora are swollen, but not toothed beneath.

*Hoplonomia* Ashmead resembles true *Nomia*, but has a bidentate process, or two teeth, on the postscutellum. The type is *N. quadrifasciata*, a Philippine species.

The following key will facilitate the separation of the Philippine species:

### *Key to the Philippine species of Nomia.*

- Abdomen pale red (Sulu Island)..... *dimidiata* Vachal.
- Abdomen not red..... 1.
- 1. Antennæ and legs entirely dull ferruginous; female, 12.5 millimeters long (Palawan)..... *philippina* Vachal.
- Antennæ and legs otherwise colored; or, if reddish, smaller species.... 2.
- 2. Postscutellum bidentate or bispinose..... 3.
- Postscutellum unarmed..... 4.
- 3. Male with hind tibiæ, except a large black spot behind, and hind tarsi, yellowish..... *quadrifasciata* (Ashmead).
- Male with hind tibiæ, except apical process, and hind basitarsi, black or brown..... *quadrifasciata notha* Cockerell.

4. Abdomen with tegumentary bands, not covered with hair..... 5.  
Abdomen without such bands, though the hind margins of segments  
may be reddish or testaceous..... 7.
5. Bands white..... thoracica stantoni (Ashmead).  
Bands yellowish or red..... longitarsis Cockerell.  
Bands green, sometimes suffused with red..... 6.
6. First abdominal segment without a band..... iridescens Smith.  
First abdominal segment with a band..... strigata (Fabricius).  
Like *strigata*, but hind legs modified (see description).  
lusoria sp. nov.
7. Abdomen clavate (males)..... 8.  
Abdomen not clavate..... 10.
8. Fifth ventral segment of abdomen of male with two red spots bearing  
black prominences..... elongatula Cockerell.  
Fifth ventral segment not so..... 9.
9. First abdominal segment of male narrow and little punctured.  
lautula sp. nov.  
First abdominal segment broader and more distinctly punctured;  
larger species..... levicauda Cockerell.
10. Males ..... 11.  
Females ..... 12.
11. Hind basitarsi pallid; hind femora enormously swollen.  
goniognatha sp. nov.  
Hind basitarsi dark..... philippinensis (Friesse).
12. Rather large species, quite robust, with coarse punctures on mesothorax  
and excessively fine and dense punctures on abdomen; hind margin  
of first abdominal segment black..... recessa sp. nov.  
Smaller species, with other characters..... 13.
13. Stigma small; area of metathorax almost or quite linear.  
philippinensis (Friesse).  
Stigma large; abdomen of male clavate..... 14.
14. Second abdominal segment smooth and shining..... levicauda sp. nov.  
Second abdominal segment rough and punctured..... palavanica Cockerell.

*Nomia quadrifasciata* (Ashmead).

*Hoplonomia quadrifasciata* ASHMEAD, ♂ (as "♀"), Journ. N. Y. Ent.  
Soc. 12 (1904) 4.

*Nomia quadrifasciata* (ASHMEAD) COCKERELL, Entomologist 48 (1915)  
177.

LUZON, Manila (W. A. Stanton). MINDANAO, Dapitan (Baker).

The Dapitan specimen agrees with Ashmead's account, but is  
I think certainly only a variation of the commoner form, *Nomia*  
*notha*. Unless additional material from Manila shows better  
distinctive characters, I must conclude that there is only one  
distinct species involved.

*Nomia quadrifasciata notha* (Cockerell ined.).

*Nomia notha* COCKERELL, Entomologist 51 (1918) 112.

*Hoplonomia quadrifasciata* ASHMEAD, ♂ (not "♀"), Journ. N. Y. Ent.  
Soc. 12 (1904) 4.

*Nomia incerta* "GRIBODO" COCKERELL, Entomologist 48 (1915) 177  
(not *incerta* Gribodo).

The receipt of genuine *Nomia incerta* from Java (Mount Salak, 2,500 feet, 3. 7. 09, Bryant and Palmer, United States National Museum), shows that this species (female) has the mesothorax with punctures of two sizes and the lobes of the postscutellar process very obtuse. The Philippine insect is clearly distinct, having the mesothorax with strong practically uniform punctures, and the lobes of the postscutellar process long and acute. The type, from Los Baños, is a female having the three abdominal bands apple green suffused with vermillion. All my material is from Baker.

LUZON, Manila (Stanton): Laguna Province, Los Baños and Mount Maquiling; Tayabas Province, Mount Banahao. MINDANAO, Dapitan and Davao. LEYTE, Tacloban. PALAWAN, Puerto Princesa. Related to *N. simplicipes* Friese.<sup>1</sup>

The following varieties look very distinct, but do not represent true races:

*Nomia quadrifasciata* var. *aurantia* var. nov.

*Female*.—Like *Nomia notha*, but abdominal bands rich orange, slightly tinged with apple green.

LUZON, Laguna Province, Mount Maquiling (Baker). Two specimens; one is Baker 7469.

*Nomia quadrifasciata* var. *viridans* var. nov.

*Female*.—Like *Nomia notha*, but abdominal bands very bright emerald green.

LUZON, Laguna Province, Los Baños (Baker).

*Nomia thoracica stantoni* (Ashmead).

*Paranomia stantoni* ASHMEAD, Journ. N. Y. Ent. Soc. 12 (1904) 4.

*Nomia thoracica stantoni* (ASHMEAD) COCKERELL, Entomologist 48 (1915) 177.

LUZON, Manila (Stanton): Laguna Province, Los Baños and Mount Maquiling (Baker). An insular race, smaller than typical *N. thoracica* Smith.

<sup>1</sup>*Nomia simplicipes* was described from Kaulun, near Hongkong. The male has the first segment of the abdomen green banded, and may not be conspecific with the female. As the specific name is derived from a character of the male, I herewith designate that as the type. This male is readily separated from *N. notha*; but a female *simplicipes* (agreeing with Friese's description) from Trong, Lower Siam, January–February, 1899 (W. L. Abbott; United States National Museum), is essentially like *N. notha*, except that the depressed part of the second abdominal segment is much broader (anteroposteriorly) in the middle.

*Nomia longitarsis* Cockerell.

*Nomia longitarsis* COCKERELL, Entomologist 49 (1916) 158.

The type is a male. The female (Mount Maquiling) is similar, with the usual sexual differences, the mesothorax more finely punctured, and the abdomen with much shallower and more feeble punctures. The stigma in both sexes is ferruginous.

LUZON, Laguna Province, Mount Maquiling (*Baker*).

*Nomia longitarsis eboris* var. nov.

*Male and female*.—Stigma black or reddish black; abdominal bands (except the first in female) clear opaque ivory color.

LUZON, Nueva Vizcaya Province, Imugan, male (type): Benguet Subprovince, Baguio, female. Both from Baker. Probably a subspecies, but without strong characters.

*Nomia strigata* (Fabricius).

*Andrena strigata* FABRICIUS, Ent. Syst. 2 (1793) 311.

*Nomia strigata* LEPELETIER, Hist. Nat. Ins. Hymén. 2 (1841) 291.

*Nomia iridescens* "SMITH," COCKERELL, Entomologist 48 (1915) 177 (not *iridescens* Smith).

I had formerly supposed<sup>2</sup> that the male of *Nomia iridescens* differed from the female in having the first five abdominal segments with colored bands, but I now find that there are males and females with (*strigata*) and without (*iridescens*) the band on first segment. Some specimens of *N. strigata*, as is usual in this group of *Nomia*, have bands which fail to assume the proper color, but then these bands are pallid or reddish, very different from the opaque black hind margin of the first segment in *iridescens*. It must be stated, however, that *strigata* and *iridescens* are extremely closely allied, and it is by no means certain that they are not forms of a single species. *Nomia quadridentata* Smith is based on a female that is evidently *strigata* and on a male of the *N. ellioti* group. The first and fullest description is that of the female, which is herewith designated as the type.

PALAWAN, Puerto Princesa. MINDANAO, Davao. NEGROS, Cuernos Mountains. All from Baker. The Philippine insect agrees with that from Java (Depok, Pelaboeam, Ratoe, Buitenzorg), collected by Bryant and Palmer (United States National Museum).

*Nomia strigata* var. *ridleyi* (Cockerell).

*Nomia iridescens* var. *ridleyi* COCKERELL, Ann. & Mag. Nat. Hist. VIII 5 (1910) 503.

<sup>2</sup> Ann. & Mag. Nat. Hist. VIII 5 (1910) 503.



MINDANAO, Davao (*Baker* 7468). Described from Singapore and also collected by Bryant and Palmer in Java (Buitenzorg, March, 1909; Depok). It is a color variety, doubtless alternating in Mendelian fashion with the typical form.

*Nomia iridescens* Smith.

*Nomia iridescens* SMITH, Journ. Proc. Linn. Soc. London, Zool. 2 (1857) 43.

LUZON, Laguna Province, Los Baños and Mount Maquiling. MINDANAO, Butuan and Davao. All from Baker. I have a female from F. Smith's collection, and the Philippine form agrees with it.

*Nomia iridescens* var. *rhodochlora* var. nov.

*Male and female*.—Abdominal bands bright yellowish green, suffused with vermilion.

MINDANAO, Dapitan (*Baker* 7466), male. NEGROS, Cuernos Mountains (*Baker*), female. The type locality is Dapitan.

*Nomia lusoria* sp. nov.

*Male*.—Like *N. strigata ridleyi*, but with third (as well as following) antennal joints clear red beneath; hind femora swollen, the upper side strongly convex; hind tibiae greatly enlarged apically, the end reddish yellow, the inner side flattened and expanded apically, its margin broadly rounded and expanded; hind basitarsi pale reddish dusky apically.

PALAWAN, Puerto Princesa (from *Baker*).

*Nomia elongatula* Cockerell.

*Nomia elongatula* COCKERELL, Entomologist 48 (1915) 178.

LUZON, Laguna Province, Los Baños (type locality) and Mount Maquiling: Benguet Subprovince, Baguio. LEYTE, Tacloban. MINDANAO, Iligan. PALAWAN, Puerto Princesa. All from Baker.

*Nomia levicauda* sp. nov.

*Nomia elongata* "FRIESE," COCKERELL, Entomologist 48 (1915) 178 (not *N. elongata* Friese).

Finding that this group of *Nomia* included several distinct species, recognizable by the characters of the male abdomen, I was led to reexamine the species from Luzon which Friese had identified with his *N. elongata*, described from Java. Evidently the Philippine species is distinct, for although Friese's description of the male is brief, he states that the fifth ventral abdominal segment is bare, whereas in our insect it is hairy right



across. The female is very similar to that of *N. philippinensis*, but the area of metathorax is rather broad (anteroposteriorly) and irregularly plicate, and the abdomen is shiny. The stigma is very much larger than that of *philippinensis* and is of the same general type as that of *N. palavanica*, but dusky or with a dusky margin. The second abdominal segment is smooth and shining, whereas in *palavanica* it is rough and punctured.

LUZON, Laguna Province, Los Baños (type locality): Benguet Subprovince, Baguio. MINDANAO, Zamboanga. The females come from the following places: LUZON, Laguna Province, Mount Maquiling: Benguet Subprovince, Baguio. MINDANAO, Davao and Iligan. All from Baker. The series of females may include examples of the next species, which is perhaps not clearly separable in that sex.

*Nomia lautula* sp. nov.

*Male*.—Length, about 6 millimeters; slender, with the basitarsi cream color, their apices and the small joints of tarsi ferruginous; abdomen clavate, slender basally; the hind margins of segments with pale ochreous-tinted hair bands; face with pale golden hair; stigma large, dusky reddish. This species is so similar to *N. levicauda* that I thought it might be only a race, but it is certainly a distinct species, differing by the narrow and little-punctured first abdominal segment, the very densely punctured mesothorax, and especially the fifth ventral segment of abdomen, which has a pair of separate rounded elevations, covered with short, dark-tipped, more or less bifid bristles, instead of being hairy right across as in *N. levicauda*.

MINDANAO, Davao (Baker; two bear the numbers 7470, 7471).

*Nomia palavanica* Cockerell.

*Nomia palavanica* COCKERELL, Entomologist 48 (1915) 178; 49 (1916) 158.

PALAWAN, Puerto Princesa (Baker 3848).

*Nomia philippinensis* (Fries).

*Nomia takauensis philippinensis* FRIESE, COCKERELL, Entomologist 48 (1915) 178.

LUZON, Laguna Province, Los Baños (type locality) and Mount Maquiling: Benguet Subprovince, Baguio: Tayabas Province, Malinao and Mount Banahao. MINDANAO, Davao. All from Baker.

*Nomia goniognatha* sp. nov.

*Male*.—Length, 7 to 8 millimeters; black, with the knees, tibiae at apex, and tarsi except apex, yellowish ferruginous; pubescence pale ochereous, the mesothorax and scutellum with short, fulvous, mosslike hair; tongue very slender; eyes brown, strongly converging below; mandibles broad, pale testaceous, with the apex piceous and the swollen inner side of base broadly black, while the lower margin, beyond the middle, is conspicuously angular; vertex minutely rugose-punctate; area of metathorax very small, with five oblique striae; tegulae reddish testaceous, with piceous base; wings dusky, stigma testaceous, not large; hind femora enormously swollen, helmet-shaped; hind tibiae short and broad, curved basally; abdomen finely punctured, the segments with pale fulvous hair bands; fourth ventral segment emarginate, with a median keel on a ferruginous band; fifth ventral with a strong dark keel produced to a claviform apex. The flagellum is bright ferruginous beneath, except at base and apex.

MINDANAO, Davao (from Baker).

In Bingham's table of Indian species this falls nearest to *N. aurifrons* Smith, to which are allied the later-described *N. aureobalteata* Cameron and *N. kangræ* Nurse. *Nomia aureobalteata* has a large metathoracic area, different legs, etc. *Nomia aurifrons* has testaceous legs. *Nomia kangræ* also differs in the legs and in other ways. The hair on the thorax in *N. goniognatha* recalls the much larger *N. thoracica* or the Indian *N. ardjuna* Cockerell.

*Nomia recessa* sp. nov.

*Female*.—Length, about 9 millimeters or rather more; robust, black, with fine pale cinereous to white (on cheeks) hair, on mesothorax and scutellum thin and mainly fuscous, on vertex with a pale golden tint, on inner side of tarsi orange-ferruginous; hind tibiae with hair mainly yellowish white, but on outer face dark fuscous; hind margin of first abdominal segment black, of the others broadly testaceous; no hair bands on apical margins of segments, but third segment with an even white basal fringe beneath the testaceous margin of second. Eyes dark reddish; mandibles dark reddish, black at base; antennae black, the flagellum red apically, especially beneath; face broad, with thin cinereous hair; mesothorax densely and strongly punctured, but shining between the punctures; scutellum shining,

with large well-separated punctures; area of metathorax very small, but with strong ridges; tegulae piceous with pallid margins; wings somewhat dusky, especially the apical marginal area; stigma dark castaneous; second submarginal cell receiving first recurrent nervure much beyond middle; legs entirely dark; abdomen dull, with excessively fine punctures; venter with reddish fulvous hair.

LUZON, Laguna Province, Mount Maquiling (*Baker*). Somewhat related to the Indian *N. basalis* Smith, but differing in the pubescence and the color of the wings.

*Nomia dimidiata* Vachal.

*Nomia dimidiata* VACHAL, *Miscellanea Entomologica* 5 (1897) 8 of separate.

SULU ISLAND. One female in collection of Gribodo. Length, 6.5 millimeters.

*Nomia philippina* Vachal.

*Nomia philippina* VACHAL, *Miscellanea Entomologica* 5 (1897) 7 of separate.

PALAWAN. One female in collection of Vachal. The author suggested that it was possibly a variety of *N. buddha* Westwood. The latter he had from Perak.



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