

THE PHILIPPINE WASPS OF THE SUBFAMILY SPHECINÆ

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The wasps belonging to the subfamily Sphecinae are often called "thread-waisted," because of the petiolated abdomen. The habits and prey of the group vary considerably. The Chlorionini nest in the ground and provision their nests with Orthoptera. The Sphecini also nest in the ground but use lepidopterous larvæ as food for their young. The Sceliphronini are usually called "mud-daubers," because of their habit of constructing mud nests which are provisioned with spiders.

The group is easily recognized by the three complete cubital cells; petiolate abdomen; long propodeum, in which the spiracles are well removed from the base; the presence of two calcaria on intermediate tibiæ; rather large size; etc.

Key to the Philippine tribes of the subfamily Sphecinae.

1. Second and third cubital cells each receiving a recurrent vein; propodeum without a U-shaped area on its dorsal surface; robust species with a short petiole..... Chlorionini.
Second cubital cell receiving both recurrent veins; slender forms with a long petiole..... 2.
2. Propodeum without a U-shaped area on its dorsal surface; female with a tarsal comb..... Sphecini.
Propodeum with a U-shaped area on its dorsal surface; tarsal claws with an inner tooth; female without a tarsal comb..... Sceliphronini.

Tribe CHLORIONINI

Genus CHLORION Latreille

The species of this genus were monographed by Kohl in 1890 under the generic name *Sphex* and they are still often assigned to that genus, which is however properly applied to species assigned to *Ammophila*.

Key to Philippine species of the genus Chlorion.

1. Tarsal claws with one inner tooth..... 2.
- Tarsal claws with two inner teeth..... 3.

2. Body entirely metallic blue or green..... *Chlorion lobatum* (Fabricius).
Head and thorax reddish; abdomen metallic purplish.
Chlorion splendidum (Fabricius).
3. Metanotum bituberculate..... 4.
Metanotum not bituberculate or with a longitudinal sulcus..... 8.
4. Wings hyaline or mostly so; head and thorax with silvery pubescence.
Ammobia umbrosa var. *plumifera* (Costa).
Wings yellowish hyaline, with the apices smoky; pubescence black.
Ammobia umbrosa var. *rufipennis* (Fabricius).
Wings dark brown or blackish..... 5.
5. Legs black; wings blackish, with a distinct violaceous reflection;
pubescence black..... 6.
Legs at least partly reddish; wings brownish, without a distinct
violaceous reflection..... 7.
6. Propodeum with a median furrow..... *Ammobia* (?) *maura* (Smith).
Propodeum without a median furrow.... *Ammobia sulciscuta* (Gribodo).
7. Abdomen black; pubescence of head and thorax golden.
Ammobia aurulenta var. *lepeletierii* (Saussure).
Abdomen partly red; pubescence of head and thorax black.
Ammobia aurulenta var. *sericea* (Fabricius).
8. Scutellum without a median sulcus; black..... 9.
Scutellum with a distinct median sulcus..... 10.
9. Pubescence black; wings fuscous brown, with a coppery tinge.
Ammobia (?) *morosa* (Smith).
Pubescence pale, with a faint golden tinge; wings hyaline, with a
dark spot apically..... *Isodontia severini* var. *philippensis* var. nov.
10. Wings yellowish..... *Ammobia luteipennis* (Mocsáry).
Wings blackish..... 11.
11. Legs entirely black..... *Ammobia haemorrhoidalis* var. *mutica* (Kohl).
Hind femora red.
Ammobia haemorrhoidalis var. *siamensis* (Taschenberg).

Subgenus *Chlorion* Latreille

The two species of this subgenus that have been recorded from the Islands are not represented in the Philippine collections at my disposal. The record of *Chlorion splendidum* is open to question, and it may be well to eliminate this name from the list until specimens have been collected.

Chlorion (*Chlorion*) *lobatum* (Fabricius).

This beautiful species can be easily recognized by its metallic body.

Chlorion (*Chlorion*) *splendidum* (Fabricius).

This species has been recorded only in the Brown catalogue, and its occurrence in the Islands needs verification.

Subgenus *Ammobia* Billberg

Chlorion (*Ammobia*) *umbrosa* var. *plumifera* (Costa).

Chlorion umbrosus var. *plumiferus* Costa, WILLIAMS, Bull. Hawaiian Sugar Planters' Assoc. 14 (1919) 125.

This variety is included in many of the Philippine lists under the name (*Sphex*) *Chlorion argentata* Dahlbom. *Argentata* is a synonym of *umbrosa* and as there seems to be only one variety in the Islands which might be assigned this name, it is rather certain that references to the species apply to this variety rather than to the typical form.

LUZON, Manila (*W. A. Stanton*), female: Laguna Province, Los Baños (*Baker 369*). Two females and one male, under Bureau of Agriculture accession numbers, as follows: LUZON, Manila (*B. Arce*), accession No. 129: Bataan Province, Lamao, and Nueva Ecija Province, Cabanatuan (*C. R. Jones*), accession Nos. 843 and 1254.

Chlorion (*Ammobia*) *umbrosa* var. *rufipennis* (Fabricius).

Sphex umbrosa var. *rufipennis* Fabricius, KOHL, Ann. Naturh. Hofmus. Wien 5 (1890) 408; ASHMEAD, Proc. U. S. Nat. Mus. 22 (1904) 150.

Ashmead has recorded this variety as occurring in the Islands, but it is not represented in the collection before me. This variety can be recognized by the black pubescence and yellowish hyaline wings with smoky apices.

Chlorion (*Ammobia*?) *maura* (Smith).

Sphex maurus Smith, BINGHAM, Ann. & Mag. Nat. Hist. VI 16 (1895) 443; BINGHAM, Fauna Brit. India, Hym. 1 (1897) 247.

This species is recorded from Cape Engaño, Luzon, by Bingham but is not in the collection before me. From the descriptions the species is allied to *Ammobia sulciscuta* (Gribodo) but may be separated from it by the presence of a median furrow on the propodeum. The following characters from Bingham's description should aid in the identification of the species: "Black with black pubescence; the wings dark fuscous, with a rich purple effulgence," scutellum, metanotum, and propodeum furrowed down the middle; propodeum steeply rounded at apex, almost truncate, "the median furrow not reaching the edge of the truncation, but broadening out in spoon-shaped form just before the margin."

Length of male, 25 to 28 millimeters; of female, 28 to 34 millimeters. Tarsal claws with two teeth.

Chlorion (Ammobia) sulciscuta (Gribodo).

Sphex sulciscuta GRIBODO, Miscel. Ent. 2 (1894) 2.

A single male collected at Los Baños, Laguna, Luzon (*E. M. Ledyard 1024*) agrees with Gribodo's description, which is based on the female, except in regard to the clypeus, and it seems likely that this difference is sexual. The species very closely resembles *mutica* (Kohl) but is readily separated by the bilobed metanotum.

Uniformly black, with black pubescence; wings violaceous; face with silvery pile beneath the black hair; clypeus flat, the anterior margin broadly and shallowly emarginate.

Length, 26 millimeters.

Chlorion (Ammobia) aurulenta (Fabricius).

Sphex aurulenta Fabricius, KOHL, Ann. Naturh. Hofmus. Wien 5 (1890) 382; BINGHAM, Fauna Brit. India, Hym. 1 (1897) 250.

Sphex ferruginea LEPELETIER, Hist. Nat. Ins. Hym. 3 (1845) 345.

Sphex lineola LEPELETIER, Hist. Nat. Ins. Hym. 3 (1845) 353.

I have followed the synonymy as published by Kohl in 1890 for this species. Certain of the lists of Philippine Chlorionini have treated *ferruginea* and *lineola* as distinct varieties. Bingham, 1897, uses the name *lineola* for a variety which has the pubescence of the head and thorax silvery white; but he is evidently wrong, as the original description of *lineola* gives the color of the pubescence as golden. It is possible that what Bingham had as *lineola* is the variety *pallidahirta* Kohl and that Kohl's variety should be added to the Philippine list. Only two varieties are represented in the collections before me.

Chlorion (Ammobia) aurulenta var. lepeletierii (Saussure).

Chlorion aurulentus var. *ferrugineus* Lepeletier, WILLIAMS, Bull. Hawaiian Sugar Planters' Assoc. 14 (1919) 124.

LUZON, Laguna Province, Los Baños (*Baker 368*), female.

Chlorion (Ammobia) aurulenta var. sericea (Fabricius).

This variety has been recorded from Manila by Kohl (1890) and is represented in the collection before me by two males received from C. F. Baker.

LUZON, Laguna Province, Los Baños, Mount Maquiling (*Baker 2729*).

Chlorion (Ammobia?) morosa (Smith).

Sphex morosus Smith, BINGHAM, Ann. & Mag. Nat. Hist. VI 16 (1895) 443; BINGHAM, Fauna Brit. India, Hym. 1 (1897) 246.

In 1895 Bingham recorded as doubtfully belonging to this species a female collected at Cape Engaño, Luzon, by Whitehead,

but in 1897 he states that the female of this species is unknown. It is possible therefore that the name "*morosus*" should be excluded from the list of Philippine Chlorionini. I do not know the species and have taken the following characters from Bingham's 1897 description of the male:

Claws with two teeth; scutellum and metanotum without a median sulcus; petiole of the abdomen long, slightly curved upwards; propodeum "with a gentle rounded slope posteriorly, except the apex, where it is suddenly steep;" black, with black pubescence, the clypeus and face with dense silvery pile; "wings fuscous brown with a coppery effulgence, the hind wing much lighter and paler." "A variety has the posterior femora below and the inside of the posterior tibiae red."

Chlorion (Ammobia) luteipennis (Mocsáry).

Sphex luteipennis Mocsáry, KOHL, Ann. Naturh. Hofmus. Wien 5 (1890) 423.

Chlorion luteipennis Mocsáry, WILLIAMS, Bull. Hawaiian Sugar Planters' Assoc. 14 (1919) 127.

LUZON, Laguna Province, Los Baños (*Baker*), female; Mount Maquiling (*Baker* 2730), male, also a female.

Chlorion (Ammobia) haemorrhoidalis (Fabricius).

Sphex nigripes Smith, KOHL, Ann. Naturh. Hofmus. Wien 5 (1890) 421; BINGHAM, Fauna Brit. India, Hym. 1 (1897) 248.

Sphex haemorrhoidalis Fabricius, TURNER, Ann. & Mag. Nat. Hist. VIII 10 (1912) 369.

Turner in 1912 pointed out that the correct name to use for this species is *haemorrhoidalis* rather than *nigripes*. The typical *haemorrhoidalis* is African; the Oriental forms, although they differ greatly in color, are classed as varieties.

Chlorion (Ammobia) haemorrhoidalis var. mutica (Kohl).

Ammobia mutica Kohl, WILLIAMS, Bull. Hawaiian Sugar Planters' Assoc. 14 (1919) 128.

LUZON, Laguna Province, Los Baños (*Baker* 367, *F. X. Williams* 5), females.

Chlorion (Ammobia) haemorrhoidalis var. siamensis (Taschenberg).

MINDANAO, Dapitan (*Baker* 6842), one male.

Subgenus Isodontia Patton

Chlorion (Isodontia) severini var. philippensis var. nov.

Female.—Length, 17 millimeters; length of anterior wing, 12 millimeters. Differs from Kohl's description of the species

in absence of the rufous markings of the abdomen (the narrow testaceous bands on the apical margins of the tergites are not wanting). Fuscous spot in the anterior wing confined to the area anterior of cubitus and beyond end of the radial cell.

Male.—Length, 14 millimeters; length of anterior wing, 10 millimeters. In Kohl's monograph of the species of this group¹ the male runs to *Isodontia diodon* Kohl but differs from that species in the color of the wings. From *Isodontia egens* Kohl, to which it seems allied, it may be distinguished by the longer third antennal joint. In the male the mandibles are slender, acute apically, and with an inner tooth near apex (almost bidentate apically); the outer margin is simple and not as in the female; distance between eyes below but little less than the combined length of the third and fourth antennal joints; eighth sternite with a broad, arcuate emargination medianly; antenna longer than head and thorax. Color and sculpture as in the female.

Type locality.—Puerto Princesa, Palawan.

Allotype locality.—Los Baños, Laguna, Luzon.

Type.—Catalogue No. 23635, United States National Museum.

Both specimens from C. F. Baker, the allotype under his No. 370.

Tribe SPHECINI

Genus SPHEX Linnæus

All of the Philippine species of *Sphex* belong to those subgenera which have the first two abdominal segments forming the petiole. No species of *Psammophila*, which has the petiole formed of the basal part of the first segment, has been recorded. The species now called *Sphex* were formerly assigned to *Ammodiphris* (a synonym of *Sphex*) and are better known under that name.

Key to Philippine species of *Sphex*.

1. Tarsal claws with two inner teeth near the base; large, black, with violaceous wings..... *Sphex* (*Ceratosphex*) *bakeri* sp. nov.
- Tarsal claws simple; wings fuscohyaline..... 2.
2. Frons normal, convex; dorsal part of pronotum with distinct transverse rugæ; scape of female reddish..... *Sphex atripes* (Smith).
- Frons deeply concave; dorsal part of pronotum without distinct transverse rugæ (in one specimen there are a few indistinct wrinkles); scape black in both sexes..... *Sphex coronatus* (Costa).

¹ Ann. Naturh. Hofmus. Wien 5 (1890).

Subgenus *Sphex* Linnæus*Sphex* (*Sphex*) *coronatus* (Costa).

Ammophila coronata COSTA, Ann. Mus. Zool. Napoli 2 (1862-1864) 111.

Ammophila superciliaris SAUSSURE, Reise d. Novara, Zool. 2¹ Hymenoptera (1867) 24.

There seems no reason to doubt the above synonymy as both descriptions certainly apply to the species treated below. This species, although resembling *atripes* in general appearance, may readily be distinguished by the characters mentioned in the preceding key. The male is without red markings and shows very little variation, but the females vary some in the color of the legs and abdomen. Four females represent a variety in which the first two tergites are largely reddish and the tarsi almost entirely reddish. These color differences are not accompanied by any differences in structure. The structure varies somewhat, as certain specimens have a few rugæ on the side of the pronotum and there is some variation in the rugosity of the mesoscutum.

Typical females from: LUZON, Laguna Province, Los Baños (*Baker 372, 6844*): Bataan Province, Lamao (*C. V. Piper*), (*C. R. Jones*), accession NO. 844, Bureau of Agriculture. Females of the color variety from: MINDANAO, Davao (*Baker 6845*); Dapitan (*Baker 3207*); Iligan (*Baker 3205*). PANAY, Antique Province, Culasi, June, 1918 (*R. C. McGregor*). Males from: LUZON, Laguna Province, Los Baños (*Baker 374*); Mount Maquiling (*Baker*); Bataan Province, Lamao (*C. R. Jones*), accession No. 840, Bureau of Agriculture. MINDANAO, Iligan (*Baker 3206*); Cagayan (*Baker 3820*).

Sphex (*Sphex*) *atripes* (Smith).

Ammophila atripes Smith, BINGHAM, Fauna Brit. India, Hym. 1 (1897)

229; ASHMEAD, Proc. U. S. Nat. Mus. 28 (1904) 150.

Ashmead and Brown seem to be the only ones to record this species from the Islands, and I doubt if their records were based on specimens. I have seen no specimens of *atripes* from the Philippines but have included the species in the above key so it can be identified if it occurs there and to point out certain differences between it and *coronata*.

Subgenus *Ceratosphex* novum

This subgenus can be readily distinguished from true *Sphex* by the presence of two teeth on the tarsal claws at the base beneath. It bears about the same relation to *Sphex* as *Para-*

psammophila does to *Psammophila*, and as a group has long been recognized, but no one seems to have given it a name. To me it seems that there is a distinct use for a name for such a group.

Genotype, *Sphex* (*Ceratosphex*) *bakeri* sp. nov. described below.

Sphex (*Ceratosphex*) *bakeri* sp. nov.

Female.—Length, 33 millimeters; length of the anterior wings, 20 millimeters. Robust; head somewhat wider than the thorax, narrowing behind the prominent eyes, mandibles large, with a large inner tooth somewhat before the middle; clypeus convex, with a shallow median impression before apex, the surface with large, well-separated punctures (except around impression), the apical margin truncate; inner margins of the eyes very slightly diverging below; frons shining, convex, parted by a median impressed line, with rather small, separated punctures; ocelli in a low triangle, completely surrounded by an impressed line; post-ocellar line distinctly shorter than the ocellocular line; vertex convex, with small separated punctures which are closer in the area behind the ocelli; third antennal joint but little shorter than the two following, apical joint truncate, subequal in length to the preceding; pronotum narrow, sloping anteriorly, with only small, widely scattered setigerous punctures; mesoscutum opaque, with close, rather small punctures; tegulæ polished; scutellum and metanotum convex, with irregular, longitudinal, raised lines; propodeum coarsely reticulate, laterally with a tendency to striate reticulations, sharply truncate posteriorly, the lateral dorsal area (behind the spiracle) with distinct transverse rugæ; mesepisternum with distinct, large, rather close punctures; legs strongly spined, the posterior basitarsus subequal in length to the two following joints; cubitella postfurcal; third cubital cell more than twice as long on radius as on cubitus; second abscissa of radius shorter than the first and also shorter than either the second or third abscissa of cubitus; second abscissa of cubitus somewhat shorter than the third; abdomen shining, the first tergite distinctly longer than the second; second tergite distinctly widening beyond the spiracles (that is, beyond middle). Black, with black pubescence; caudal margin of prothoracic tubercule fringed with white hairs; wings black, with a strong violaceous reflection.

Type locality.—Mount Maquiling, Laguna, Luzon.

Type.—Catalogue No. 23636, United States National Museum.

Described from one female received from C. F. Baker, for whom the species is named.

Tribe SCELIPHRONINI

Genus SCELIPHRON Klug

Many authors have considered that all the species belonging to this genus should be referred to one superspecific group, but I am inclined to agree with Dahlbom, Patton, and others and recognize two subgenera separated by certain structural characters and easily distinguished by color. Patton² was the first to point out the structural characters and at that time he used as genera the names *Pelopaeus* and *Chalybion*. Since then the blue species have usually been referred to *Chalybion*. Hutson³ expresses the belief that this is wrong and that the name *Sceliphron* will have to be used for the metallic forms. He bases his opinion on recommendations *k* and *n* of the International Commission on Zoological Nomenclature and overlooks the designations of genotypes made by previous students. In 1810 Latreille designates the type of *Pelopaeus* as *spirifex* and in 1897 Bingham cites the same species as the type of *Sceliphron*. The species *spirifex* was included in the original account of both these genera, and both of the above type designations must be accepted as valid even if Bingham did not follow the recommendations (he violated no rules) of the International Code. *Sceliphron* Klug and *Pelopaeus* Latreille are isogenotypic and since *Sceliphron* is the older name Latreille's name will have to be placed in synonymy. This makes it possible to retain the name *Chalybion* for the metallic species.

Key to the subgenera of *Sceliphron*.

- Black and yellow species; petiole usually about twice as long as propodeum; clypeus bilobed or bidentate anteriorly..... *Sceliphron* Klug.
Metallic blue species; petiole subequal with the propodeum; clypeus with more than two teeth..... *Chalybion* Dahlbom.

Subgenus *Chalybion* Dahlbom

The only species of this genus was originally described under the name *bengalensis* by Dahlbom and considered to be different from the European form, but more recent authors have synonymized the two and I have followed them.

² Proc. Boston Soc. Nat. Hist. 20 (1880) 378.

³ Trans. Am. Ent. Soc. 45 (1919) 218.

Sceliphron (Chalybion) violaceum (Fabricius).

The few specimens of this species may be divided into two groups on the punctuation of the frons, but it is probable that this will vary. More specimens should be studied.

LUZON, Manila (*Robert Brown*): Laguna Province, Los Baños (*Baker 379, 1290*), Mount Maquiling (*Baker 1351*): Rizal Province, Alabang (*B. Arce*), accession No. 1853, Bureau of Agriculture.

Subgenus Sceliphron Klug

Three species of this subgenus are represented in the Philippine material before me. One other has been recorded from the Islands, and in the following key I have tabulated it as well as certain other Oriental species. Those not recorded from the Philippines are preceded by an asterisk.

Key to certain Oriental species of Sceliphron.

1. Comparatively large species without yellow marks on thorax and with black pubescence; length about 27 millimeters..... 2.
Medium-sized species with yellow markings on thorax and with pale pubescence, length under 18 millimeters..... 4.
2. Petiole and hind femora black..... *S. luzonensis* sp. nov.
Petiole and at least base of hind femora yellow..... 3.
3. Hind femora and tibiae marked with black..... * *S. intrudens* Smith.
Hind femora and tibiae all yellow..... * *S. spinolae* Lepeletier.
4. Petiole but little longer than the propodeum; apex of first tergite marked with yellow; scutellum yellow..... *S. deforme* (Smith).
Petiole twice or more than twice as long as the propodeum; postpetiole all black..... 5.
5. Scutellum black..... *S. madraspatanum* (Fabricius).
Scutellum yellow..... *S. conspicillatum* (Costa).

Sceliphron luzonensis sp. nov.

Sceliphron intrudens (Smith), var., WILLIAMS, Bull. Hawaiian Sugar Planters' Assoc. 14 (1919) 120.

This form is closely allied to *intrudens* and may ultimately be treated only as a subspecies. It is however as different as *spinolae*, and until the group can be treated from a study of material I prefer to treat the Philippine form as a species.

Female.—Length, 27 millimeters; length of anterior wing, 17 millimeters. Anterior margin of the clypeus with a deep, narrow, V-shaped median emargination, separating the broad, rounded, depressed lobes; frons with distinct, rather close punctures on a granular surface; a small area adjoining ocelli impunctate; ocelli in an equilateral triangle; postocellar line

slightly shorter than the ocellocular line; temples narrow; antennae long, the third joint somewhat longer than the fourth; pronotum with close punctures, rather long, rounded, a longitudinal, median notch posteriorly; mesoscutum opaque, closely and finely striate-granular, the striations better defined posteriorly; scutellum and metanotum rather finely, longitudinally striate; propodeum with a broad, longitudinal furrow dorsally and with strong curved rugae; posterior face of propodeum opaque, with strong transverse rugae below; mesepisternum shining, with small, well-separated punctures; sides of propodeum longitudinally rugate; petiole cylindrical, about twice as long as propodeum; abdomen subglabrous, basally the apical segments subopaque with irregular longitudinal wrinkles. Black; scape and pedicellum rufo-piceous; apices of femora and the rest of the legs yellowish, the four anterior pairs faintly reddish; head and thorax with long black hair; wings yellowish hyaline; venation color of wings.

Type locality.—Mount Maquiling, Laguna, Luzon.

Type.—Catalogue No. 23637, United States National Museum.

Described from two females from C. F. Baker under his Nos. 1350 (type) and 6843.

Sceliphron deform (Smith).

The name *deform* has been synonymized with *formosum* by Bingham⁴ but the Philippine specimens show so little variation and agree so well with the original description of *deform*, and differ from the original description of *formosum*, that I have preferred to use the name *deform* for them.

All the specimens before me are females. LUZON, Laguna Province, Los Baños (*Baker and Williams*); Mount Maquiling (*Baker*).

Sceliphron madraspatanum (Fabricius).

Sceliphron madraspatanum (Fabricius), WILLIAMS, Bull. Hawaiian Sugar Planters' Assoc. 14 (1919) 123.

This species has been recorded from the Islands by a number of authors but is not in any material I have seen from there.

Sceliphron conspicillatum (Costa).

Pelopaeus conspicillatus COSTA, Ann. Mus. Zool. Napoli 2 (1862) 1864, 112.

⁴ Fauna Brit. India, Hym. 1 (1897) 239.

This form is readily separated from the preceding by the yellow scutellum. One of the specimens has the petiole entirely yellow but otherwise differs no more than the other specimens do among themselves. The propodeum varies from entirely black to having a yellow apical spot, or with an apical spot and two short lines on the disk.

LUZON, Manila (*Robert Brown*): Laguna Province, Bay (*P. L. Stangl*); Los Baños (*Baker 373*): Bataan Province, Lamao (*C. R. Jones*), one male, accession No. 1725, Bureau of Agriculture. LEYTE, Tacloban (*Baker*). PALAWAN, Puerto Princesa (*Baker 3821*), a variety with black petiole.



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