

Utah State University

DigitalCommons@USU

Da

Bee Lab

1-1-1921

The Wasps and Bees of Barkuda Island

Cedric Dover

Zoological Survey of India

Follow this and additional works at: https://digitalcommons.usu.edu/bee_lab_da

Recommended Citation

Dover, Cedric, "The Wasps and Bees of Barkuda Island" (1921). *Da*. Paper 263.

https://digitalcommons.usu.edu/bee_lab_da/263

This Article is brought to you for free and open access by the Bee Lab at DigitalCommons@USU. It has been accepted for inclusion in Da by an authorized administrator of DigitalCommons@USU. For more information, please contact digitalcommons@usu.edu.



THE WASPS AND BEES OF BARKUDA ISLAND.

By CEDRIC DOVER, Assistant, Zoological Survey of India.

In spite of the fact that the Hymenoptera of Barkuda were not diligently collected, a fairly representative collection has been made and a report on them will not, I think, be without value. I have not attempted to deal with the few parasitic forms collected, nor with the ants, but of the latter it may be mentioned that a race of *Camponotus compressus*, and *Phidole rhombinoda* are not uncommon on the island.¹ Elsewhere in these reports Dr. Annandale has made some interesting bionomic notes on these insects.

Like the butterflies, the Hymenoptera are represented in the main by common and widespread species, and many forms which occur on the neighbouring islands and on the mainland are here either scarce, or entirely absent. The fossorial families are fairly well represented. Mutillids are scarce, Scolids likewise, but the Pompilidae and Sphegidae are common. *Macromeris violaceae* and *Sceliphron violaceum* are the most abundant fossorial hymenopterons on the island. Individuals of the various species of solitary wasps found on Barkuda are rather scarce, and those of the only two species of social wasps mentioned in the list, abundant. The common yellow wasps (*Polistes hebraeus*) are not represented in the collection, but the species is one which I have occasionally seen. Individuals of the commoner species of Apidae are abundant, the larger forms being found chiefly round the pea *Crotolaria striata* and the abundant shrub *Glycosmis pentaphylla*; the smaller, as *Nomia oxybeloides*, in low herbage. The carpenter-bees are common, but not quite so common as a casual observer would think, as the brilliant effulgence of their wings and their noisy booming ways render them conspicuous. Leaf-cutting bees are abundant at certain seasons. One species (*Megachile lanata*) was very common in April, and used to build a nest, composed generally of six or seven mud cylinders, in any available hollow such as the backs of books and in keyholes and locks. The nests appeared to be parasitized by *Megachile disjuncta*. In the introduction to the fauna of the island it is stated that *Apis florea* is common and *A. dorsata* scarce, but I have never seen these species on Barkuda and they are not represented in the collection. Dr. Annandale informs me that he found honey of *A. florea* from Barkuda tasteless.

¹ The Tailor-Ant, *Oecophylla smaragdina* is found on Barkuda, but it apparently never succeeds in establishing a colony. Cf. Annandale in his introduction to these reports.

Systematics:
fauna

In this paper I have followed the arrangement given by Col. Bingham in his volumes on the Hymenoptera in the "Fauna of British India" series for convenience sake, and the numbers after the name of each species denote the page number of that work.

In conclusion I would like to take this opportunity of expressing my indebtedness to Dr. N. Annandale for the kindly interest he has always taken in my zoological studies, and for the opportunities he has repeatedly given me of touring under his guidance.

LIST OF SPECIES COLLECTED ON BARKUDA.

Tribe Fossores.	Tribe Diploptera.
Family Mutillidae.	Family Eumenidae.
<i>Mutilla ruficrus</i> Rad. M.S.	<i>Eumenes brevirostrata</i> Sauss.
<i>Mutilla</i> nr. <i>pondicherensis</i> Rad. and	<i>Eumenes petiolata</i> (Fab.).
Sich.	<i>Eumenes esuriens</i> (Fab.).
<i>Mutilla sexmaculata</i> Swed.	<i>Eumenes conica</i> (Fab.).
<i>Mutilla</i> nr. <i>sexmaculata</i> Swed.	<i>Rhynchium brunneum</i> (Fab.).
<i>Mutilla indostana</i> Smith.	<i>Odynerus punctum</i> (Fab.).
<i>Mutilla</i> sp.	Family Vespidae.
Family Scoliidæ.	<i>Polistes stigma</i> (Fab.).
<i>Elis thoracica</i> (Fab.).	<i>Vespa cincta</i> Fab.
Family Pompilidae.	Tribe Anthophila.
<i>Macromeris violaceae</i> Lepel.	Family Apidae.
<i>Salix perplexus</i> (Smith).	<i>Nomia westwoodi</i> Grib.
<i>Salix madraspatanum</i> (Smith).	<i>Nomia oxybeloides</i> Smith.
<i>Pompilus analis</i> (Fab.).	<i>Steganomus nodicornis</i> Smith.
<i>Pompilus rothneyi</i> Cam.	<i>Megachile disjuncta</i> (Fab.).
Family Sphegidae.	<i>Megachile lanata</i> (Fab.).
<i>Tachytes modesta</i> Smith.	<i>Megachile coeliox sides</i> Bing.
<i>Ammophila atripes</i> Smith.	<i>Ceratina viridissima</i> Guer.
<i>Ammophila laevigata</i> Smith.	<i>Coelioxys fuscipennis</i> Smith.
<i>Sceliphron madraspatanum</i> (Fab.).	<i>Coelioxys capitatus</i> Smith.
<i>Sceliphron violaceum</i> (Fab.).	<i>Xylocopa tenuiscapa</i> Westw.
<i>Sphex luteipennis</i> Mocs.	<i>Xylocopa fenestrata</i> (Fab.).
<i>Sphex aurulentus</i> (Fab.).	<i>Xylocopa</i> nr. <i>fenestrata</i> (Fab.).
<i>Ampulex compressa</i> (Fab.).	<i>Xylocopa aestuans</i> (Linn.).
<i>Stizus vespiiformis</i> (Fab.).	<i>Xylocopa rufescens</i> Smith.
<i>Cerceris vigilans</i> Smith.	Tribe Tubulifera.
<i>Cerceris</i> sp.	Family Chrysididae.
	<i>Stilbum cyanorum</i> var. <i>splendidum</i>
	(Fab.).
	<i>Chrysis lusca</i> Fab.

Tribe FOSSORES.

Family MUTILLIDÆ.

Mutilla ruficrus Rad. M. S., p. 14.

Barkuda, 2 ex., 15-22-xii-16 (*Gravelly*); 10-ix-20 (*Annandale*).

Recorded by Bingham from Bhamo in Upper Burma and the Karen hills. Represented in the collection of the Z.S.I. from the Shan hills in Upper Burma, "Burma," Margherita in N. Assam, Bengal, and Dehra Dun. The specimens were obtained among low herbage on a sandy patch in the jungle.

Mutilla nr. pondicherensis Rad. and Sich., p. 18.Barkuda, 1 ex., 15-22-vii-16 (*Gravely*).

Mutilla pondicherensis is represented in the collection of the Z.S.I. from Calcutta, Pusa, and Bulsar, Bombay. The Barkuda specimen differs from *pondicherensis* chiefly in the colouration of the head, which in *pondicherensis* is black and in our specimen pale red. Gravely (*Rec Ind. Mus.* VII, p. 87) has noticed the "mimicry" of *M. pondicherensis* by a spider, ? *Coenoptichus pulchellus* Simon (= *Myctocryptus mutillarius* Karsch).

Mutilla sexmaculata Swed., p. 25.Barkuda, 2 ex., 21-vii-14 (*Chilka Survey*); 25-vii-4-viii-17 (*Annandale*).

Represented in the Z.S.I. collection from Meerut, a cantonment in N. W. India, Deesa, in the Bombay Pres., Purneah, and the Bijnor dist. in the United Provinces. I saw this species on two occasions in October, 1919.

Mutilla nr. sexmaculata Swed.Barkuda, 1 ex., 15-22-vii-16 (*Annandale and Gravely*).

Differing from the preceding species only in the colouration of the head and thorax which is dark red.

Mutilla indostana Smith, p. 47.Barkuda, 2 ex., iv-20 (*Annandale and Dover*); ix-20 (*Annandale*).

The only other identified specimen in the Indian Museum is from Surat, in the Bombay Presidency.

Mutilla sp.Barkuda, 1 ex., 3-19-viii-19 (*Gravely*).

A small Mutillid which has been too badly preserved to render its specific determination possible.

Family SCOLIDAE.

Elis thoracica (Fab.), p. 99.Barkuda, 1 ex., ix-20 (*Gravely*).

The following localities represented by specimens in the collection of the Z.S.I. are not recorded by Bingham in the "Fauna"; Thibet, Nepal Terai, Kichna in the Naini Tal dist., Calcutta, Karachi, Ranchi, and Perak in the Malay Peninsula.

Family POMPILIDAE.

Macromeris violacea Lepel., p. 105.Barkuda, 5 ex., 25-vii-4-viii-17 (*Annandale*); 16-ix-18 (*Annandale*).

The species is found, except in very dry regions, throughout India, Burma, Tenasserim, and the Andamans. It is fairly common on Barkuda.

***Salius perplexus* (Smith), p. 130.**

Barkuda, 2 ex., 25-vii-4-viii-17 (*Annandale*).

Represented in the collection of the Z.S.I. from Bangalore, Ranchi, Satara district in the Bombay Presidency, and Gopkuda I. in Lake Chilka.

***Salius madraspatanus* (Smith), p. 139.**

Barkuda, 5 ex., 15-22-vii-16 (*Gravely*); 25-vii-4-viii-17 (*Annandale*).

This species is common all over the Indian Empire and in Ceylon. It is the most abundant Pompilid on the island.

***Pompilus analis* (Fab.), p. 150.**

Barkuda, 4 ex., 15-22-vii-16 (*Gravely*); 3-10-viii-19 (*Gravely*); 25-vii-4-viii-17 (*Annandale*); 16-ix-19 (*Brunetti*).

Found throughout India, Burma and Ceylon extending to the Malayan subregion. The labels on three of the specimens bear the remarks "carrying a large Thomisiid," "carrying a large *Sparassus*," and "carrying a young cockroach," which seem to corroborate Bingham's description of the habits of the genus.

***Pompilus rothneyi* Cam., p. 169.**

Barkuda, 1 ex., 17-vii-14 (*Chilka Survey*).

Recorded from Sikkim, Barrackpore, Burma, Tenasserim, and Ceylon; the species is represented in the Z.S.I. collection by only one specimen—the present one. This form closely resembles, and is probably a variety of, *P. pedestris* Smith, and also inhabits the same area as that species. *P. rothneyi* is usually rarer in collections and on this point Bingham remarks:—"The two species exist together, but, so far as I have been able to observe, *P. rothneyi* frequents the thickest forest, while *pedestris* is to be found in the open and occasionally comes into houses."

Family SPHEGIDAE.

***Tachytes modesta* Smith, p. 190.**

Barkuda, 1 ex., 21-vii-14 (*Chilka Survey*).

Calcutta and Bangalore (represented by specimens in the Z.S.I. collection) may be added to the localities given by Bingham. The species is common in Calcutta and Barrackpore.

***Ammophila atripes* Smith, p. 229.**

Barkuda, 7 ex., 21-vii-14 (*Chilka Survey*); 15-22-vii-16 (*Gravely*); 25-vii-4-viii-17 (*Annandale*); 19-ix-19 (*Brunetti*); 3-19-viii-19 (*Gravely*).

throughout
fairly com-

Found throughout India, Burma, Tenasserim and Ceylon extending to China and probably to the Malayan subregion.

Ammophila laevigata Smith, p. 231.

Barkuda, 3 ex., 12-19-vii-14 (*Chilka Survey*); xi-14 (*Annandale*).

Bangalore,
and Gopkuda

Represented in the collection of the Z.S.I. from Kangra valley in Sikkim, Jhansi in N. W. India, Bangalore, and Pusa. A rare species on the island.

viii-17 (*An-*

Sceliphron madraspatanum (Fab.), p. 237.

mpire and in
ind.

Barkuda, 5 ex., iv-20 (*Annandale* and *Dover*).

A common species found throughout our limits. It was not uncommon on Barkuda in April, 1920.

9 (*Gravely*);

Sceliphron violaceum (Fab.), p. 240.

nding to the
cimens bear
ing a large
ich seem to
genus.

Barkuda, 18 ex., 21-vii-14 (*Chilka Survey*), 15-22-vii-16 (*Gravely*); 25-vii-4-viii-17 (*Annandale*); 3-19-v-19 (*Gravely*); 2-vi-20 (*Annandale*); 14-16-viii-20 (*Dover* and *Ribeiro*).

Widely distributed, its range extending from S. Europe to Australia. It is the commonest Sphegid on Barkuda where it often builds its curious little mud-cells in the oddest corners in the bungalow. Individuals with the wings dark fusco-violaceous on the apical half or two-thirds are rare.

asserim, and
on by only
embles, and
inhabits the
er in collec-
species exist
P. rothneyi
ound in the

Sphex luteipennis Mocs., p. 247.

Barkuda, 2 ex., 15-22-vii-16 (*Gravely*); 25-vii-4-viii-17 (*Annandale*).

The Z.S.I. possesses specimens from Karachi, Satara dist., in the Bombay Pres., Waltair, and Katmandu in Nepal. This species was never seen in 1919 and 1920.

Sphex aurulentus (Fab.), p. 250.

Barkuda, 2 ex., 17-vii-14 (*Chilka Survey*); 3-19-viii-19 (*Gravely*).

Widely distributed in the Oriental region and found in China and N. Australia. Our specimens correspond to the var. *ferrugineous* Lepel.

ens in the
a by Bing-
pore.

Ampulex compressa (Fab.), p. 25.

Barkuda, 1 ex., iv-20 (*Annandale* and *Dover*).

A rather widely distributed species comparatively rare on Barkuda.

5-22-vii-16
(*netti*); 3-

Stizus vespiformis (Fab.), p. 277.

Barkuda, 3 ex., 21-vii-14 (*Chilka Survey*); 15-22-vii-16 (*Gravely*); 3-19-viii-19 (*Gravely*).

The species is represented in the Z.S.I. collection from Calcutta, Gopkuda I., L. Chilka, Kalka at the base of the Simla hills, Bangalore, Siliguri, Ranchi, Deesa, and the Ganjam dist. I have seen this species occasionally in April and August, 1920.

Cerceris vigilans Smith, p. 308.

Barkuda, 1 ex., 17-vii-14 (*Chilka Survey*).

Represented in the collection of the Z.S.I. from Calcutta and Sikkim.

Cerceris sp.

Barkuda, 1 ex., 21-vii-14 (*Chilka Survey*).

I am unable to identify this insect specifically at present.

Tribe DIPLOPTERA.

Family EUMENIDÆ.

Eumenes brevirostrata Sauss., p. 337.

Barkuda, 4 ex., 15-22-vii-16 (*Gravelly*); 16-20-ix-19 (*Brunetti*); 8-x-20 (*Annandale*).

Previously recorded from Sikkim, Madras and Calcutta. Not uncommon on the island. It is generally found along the shore.

Eumenes petiolata (Fab.), p. 341.

Barkuda, 5 ex., 21-vii-14 (*Chilka Survey*); 16 and 17-ix-19 (*Brunetti*); 3-19-viii-19 (*Gravelly*); iv-20 (*Annandale* and *Dover*).

A rather widely distributed species fairly common on Barkuda.

Eumenes esuriens (Fab.), p. 342.

Barkuda, 2 ex., 19-iv-20 (*Annandale* and *Dover*).

A common plains species found throughout India, Burma and Tenasserim. It was not uncommon on Barkuda in April, 1920.

Eumenes conica (Fab.), p. 343.

Barkuda, 2 ex., 25-vii-4-17 (*Annandale*); 18-ix-19 (*Brunetti*).

Distributed throughout the plains of India, Burma, and Ceylon extending to China and the Malayan subregion. This species was seen occasionally in September and October, 1919, and in August, 1920.

Rhynchium brunneum (Fab.), p. 355.

Barkuda, 2 ex., 18-ix-19 (*Brunetti*).

A common and widely distributed species apparently not found at great altitudes. One of the two specimens approaches the var. *carnaticum* of this species.

tion from Cal-
e of the Simla
anjam dist. I
gust, 1920.

a Calcutta and

at present.

7.
20-ix-19 (*Bru-*

Calcutta. Not
ng the shore.

and 17-ix-19
e and *Dover*).
n on Barkuda.

India, Burma
uda in April,

19 (*Brunetti*).
Burma, and
region. This
ctober, 1919,

parently not
s approaches

Odynerus punctum (Fab.), p. 365.

Barkuda, 1 ex., 15-22-vii-16 (*Annandale* and *Gravely*). A rather widely distributed species not common on the island.

Family VESPIDAE.

Polistes stigma (Fab.), p. 396.

Barkuda, 16 ex., 15-22-vii-16 (*Gravely*); 16-20-ix-19 (*Brunetti*); 25-vii-4-viii-17 (*Annandale*); 3-19-vii-19 (*Gravely*); iv-20 (*Annandale* and *Dover*); 17 and 18-viii-20 (*Dover* and *Ribeiro*).

Specimens from the following localities unnoticed by Bingham are represented in the collection of the Z.S.I.: Kangra valley in Sikkin, Shillong, Lucknow, Nepal Terai, Naini Tal dist., Gopkuda I., Bengal and Thibet. A common insect at all seasons.

Vespa cincta Fab., p. 402.

Barkuda, 3 ex., 25-vii-4-viii-17 (*Annandale*); 17-18-viii-20 (*Dover* and *Ribeiro*).

Found throughout our limits. This species is quite common in a cleared space enclosed for the most part by the sword-bean (*Canavalia ensiformis*). In a similar situation, and round flowers of *Pongamia glabra*, is also found the Meloid *Zonabris pustulata*, to which *V. cincta* bears a fanciful resemblance on the wing. It causes some damage among individuals of the preceding species and the bee *Nomia oxybeloides*. I have noticed the insect-eating habits of this hornet more fully in *Journ. Bomb. Nat. Hist. Soc.*, XXVII, p. 960 (1921). I have seen the common house gecko (*Hemidactylus frenatus*) raid the nest of this species and *Polistes* on Barkuda and elsewhere, without being stung, and Rothney notices that the Indian squirrel (*Sciurus palmarum*)¹ clears out the hornets feeding on the juice of the date-palm with its paws, without being molested in any way. Yet it is not an unknown incident for the Indian hornet to attack even elephants.²

Tribe ANTHOPHILA.

Family APIDAE.

Nomia oxybeloides Smith, p. 457.

Barkuda, 9 ex., 21-vii-14 (*Chilka Survey*); 25-vii-4-viii-17 (*Annandale*); 23-iv-20 (*Annandale* and *Dover*).

Recorded by Bingham from Bengal, Bombay, Punjab, and Karachi extending to Aden. The only named specimens in the Indian Museum are from Calcutta. The species is very common round low herbage at all seasons. An Asilid which Mr. Brunetti

¹ The generic name of this species has, I believe, been altered to *Fundambulus*.

² See Rothney, *Trans. Ent. Soc. Lond.*, 1903, p. 114.

has identified as *Allocotasia aurata* F. was taken while preying on a bee belonging to this species.

Nomia westwoodi Grib., p. 449.

Barkuda, 2 ex., 17-viii-20 (*Dover*); 17-ix-19 (*Brunetti*).

Bingham records this species from Bengal. It is represented in the collection of the Z.S.I. from the Kangra valley, Paresnath and Calcutta.

Steganomus nodicornis Smith, p. 460.

Barkuda, 1 ex., 25-vii-4-viii-17 (*Annandale*).

Previously known from Barrackpore in Bengal, Lucknow and Allahabad. There are specimens in the Z.S.I. collection from Sikkim, Siripur in N. Bengal, Bangalore, Mussorie, Dehra Dun and Lucknow. Rothney, (*loc. cit.* p. 115) says of this species: "It is a charming little bee and has a quite wierd little flight of its own, which is very puzzling till you get accustomed to it. The little white flowers of a species of *Pulicaria* are much frequented, and it has a habit of settling drawn up in a little compact ball on the stem beneath the flower, when it is almost impossible to discover it. I have been out collecting with a friend a whole day where this bee was fairly common without his capturing a single specimen until initiated in their ways." I have shared a similar experience myself, and it is this habit which probably accounts for the fact that only a single specimen was collected on Barkuda.

Megachile disjuncta (Fab.), p. 480.

Barkuda, 4 ex., 15-22-vii-'16 (*Gravelly*); 3-19-viii-19 (*Gravelly*); 20-ix-20 (*Brunetti*); 7-iv-20 (*Annandale*).

Recorded from India, Burma and Tenasserim. Somewhat scarcer than the following species.

Megachile lanata (Fab.), p. 480.

Barkuda, 3 ex., ix-20 (*Gravelly*); iv-20 (*Annandale* and *Dover*).

A common insect recorded from most parts of India, Burma, Tenasserim and Ceylon. This solitary bee was common to the extent of being a nuisance on Barkuda in April, 1920, where it used to build its cartridge-shaped mud nest in the backs of books and in every available hole and corner.¹ Its nest appeared to be parasitized by *Megachile disjuncta*.

¹ Cf. Horne, *Trans. Zool. Soc. Lond.*, VII, p. 176 (1872) for a description of the habits of this species and for many other common species mentioned in this paper.

Megachile coelioxsides Bing.

1898. *Megachile coelioxsides* Bing., *Journ. Bomb. Nat. Hist. Soc.* XII, p. 126.

Barkuda, 1 ex., 24-iv-20. (*Dover*).

Represented in the Z.S.I. collection from Deesa and Quetta.

Ceratina viridissima Guer., p. 501.

Barkuda, 9 ex., 21-vii-14 (*Chilka Survey*); 16 and 17-viii-20 (*Dover*); ix-20 (*Annandale*).

Found throughout our limits. The species was abundant in August, 1920.

Coelioxys ? *fuscipennis* Smith, p. 511.

Barkuda, 2 ex., 17-vii-14 (*Chilka Survey*); 18-ix-19 (*Brunetti*).

Represented in the collection of the Z.S.I. from the Kangra valley, Dehra Dun, Surat in the Bombay Pres., Calcutta and Bangalore. In the older of the two specimens from Barkuda the snow-white pubescence on the front and clypeus, and the transverse bands on the abdomen both dorsally and ventrally are wanting.

Coelioxys capitatus Smith, p. 512.

Barkuda, 2 ex., iv-20 (*Annandale* and *Dover*).

Bangalore and Ranchi, represented by specimen in the Z.S.I. collection, may be added to the localities given by Bingham.

Xylocopa tenuiscapa Westw., p. 537.

Barkuda, 3 ex., 25-vii-4-viii-19 (*Annandale*); 18-ix-19 (*Brunetti*).

Represented in the Z.S.I. collection from Bangalore, Murshidabad, Calcutta, Peradeniya in Ceylon and Tindharia. Occasionally seen in 1920.

It is rather difficult to separate the females of *L. tenuiscapa* from those of *X. latipes* on Bingham's descriptions alone. Smith's monograph on *Xylocopa* (*Trans. Ent. Soc.* 1874), Perez [*Act. Soc. Linn. Bordeaux* LVI, Ser. 6, VI, p. 50 (1901)] and Maidl [*Ann. Nat. Hofmus. Wien.* XXVI, p. 294 (1912)] should also be consulted.

Maidl (*op. cit.*, p. 295) regards Sichel's *albofasciata* as a female of *X. tenuiscapa*. As I can offer no opinion, never having seen Sichel's species, I quote Maidl's remarks *in extenso*. He says: "Ein ♀ von Ceylon ges. auf der 'Novara' Reise ist als Type von *albofasciata* Sichel bezeichnet. Es ist ganz unzweifelhaft ein *tenuiscapa* ♀, nur finden sich an den Abdominaltergiten Reste weisser Fettausschwitzungen. Diese weisser Fettausschwitzungen sind die weisser Binden Sichels! Zu Zeit Sichels waren sie wahrscheinlich starker, den inzwischen ist das Tier offenbar einmal in Benzin gewaschen worden, wobei sich die Binden aufgelöst haben! Die Art ist als synonym zu *X. tenuiscapa* Westw. zu setzen."

***Xylocopa fenestrata* (Fab.), p. 539.**

Barkuda, 2 ex., 25-vii-4-viii-17 (*Annandale*); ix-19 (*Brunetti*).
A widely distributed species rare on the island.

***Xylocopa* nr. *fenestrata* (Fab.)**

Barkuda, 1 ex., iv-20 (*Annandale* and *Dover*).

This specimen seems to be intermediate between *X. fenestrata* (Fab.) and *X. lunata* Klug, which Bingham doubtfully sunk as a synonym of the former species. It differs from both forms in the possession of a comparatively large and a small, almost reniform, hyaline marking on the hindwings. Were it not for the fact that the large marking on the right hindwing is almost lost I might have been tempted to describe this as a new variety of *X. fenestrata*.

***Xylocopa aestuans* (Linn.), p. 540.**

Barkuda, 18 ex., 3-19-viii-19 (*Gravely*); 16-20-ix-19 (*Brunetti*); 25-vii-4-viii-17 (*Annandale*); 26-iv-20 (*Dover*); 7-vi-20 (*Annandale*).

The most abundant *Xylocopa* on the island at all seasons. Its favourite food-plant appears to be the pea *Crotolaria striata*. It often bores in a dead log, cutting a rather neat round hole as an entrance to the nest. The handle of a disused *palki* (a sort of native carriage) was completely ruined by these insects in this manner.

***Xylocopa rufescens* Smith, p. 543.**

Barkuda, 3 ex., 25-vii-4-viii-17 (*Annandale*); 1-6-ix-19 (*Annandale*); 26-iv-20 (*Dover*).

Previously recorded by Bingham from Sikkim, Burma, Tenasserim, Java, Sumatra, and Borneo. It is represented in the collection of the Z.S.I. from the Andamans, Singapore, Sikkim, Murshidabad and the Ganjam dist. A comparatively rare bee of crepuscular habits. Its capture in the plains of Peninsular India is interesting.

The Indian Museum possesses three specimens from South Malabar identified as *Xylocopa ferruginea* Lepel., a species relegated to a foot-note description in Bingham's volume, as he had not been able to identify it. I am inclined to think that these examples are in reality *X. rufescens*, but they are in too bad a condition to admit of a definite opinion being expressed.

Tribe TUBULIFERA.**Family CHRYSIDIDAE.*****Stilbum cyanorum* var. *splendidum* (Fab.), II, p. 432.**

Barkuda, 1 ex., iv-20 (*Annandale* and *Dover*).
A cosmopolitan species.

Chrysis lusca Fab., II, p. 484.

Barkuda, 6 ex., 15-22-vii-16 (*Gravelly*); 18-20-ix-19 (*Brunetti*); ix-20 (*Annandale*).

Found throughout our limits. The species is rather common in the island.

X. fenestrata
sunk as a
forms in the
st reniform,
for the fact
almost lost I
ariety of *X.*

ix-19 (*Brunetti*); 7-vi-20

all seasons.
aria striata.
round hole
alki (a sort
ects in this

ix-19 (*An-*

Burma, Te-
nted in the
re, Sikkim,
rare bee of
sular India

from South
es relegated
ad not been
e examples
ndition to