

## REVIEW OF THE GENUS *BIRMINDIA* MALAISE (HYMENOPTERA: SYMPHYTA: TENTHREDINIDAE: HETERARTHRIINAE) WITH TWO NEW DESCRIPTIONS

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### ABSTRACT

Four species of the genus *Birmindia* Malaise are recorded from India of which two species are new. They include: *Birmindia albipes* Malaise, *Birmindia turneri* Malaise, and the following two new species, viz. *Birmindia serrulata* sp. nov. and *Birmindia crociterga* sp. nov. A key to the known species of this genus from India is provided. Key characters for *B. serrulata* sp. nov. include: scape and pedicel as 3:2, antennal segments 3 and 4 as 4:3, post ocellar area convex wider than long as 2:1 and cerci reaching posterior end of ovipositor sheath. In case of *B. crociterga* sp. nov. scape and pedicel are equal, segments 3 and 4 as 8:5, postocellar area convex wider than long as 5:2 and metabasitarsus longer than following joints combined as 6:5.

### KEYWORDS

*Birmindia albipes*, *B. crociterga* sp. nov., *B. serrulata* sp. nov., *B. turneri*, Hymenoptera, India, key, new descriptions, redescription, review, taxonomy, tenthredinidae

### ABBREVIATIONS

1m-cu - First medio cubitus; AWMT - apical width of metatibia; EL - eye length; IATS - inner apical tibial spur; ICD - inter cenchri distance; IDMO - interocular distance at level of median ocellus; ITD - inter tegular distance; LID - lower interocular distance; M - median; MB - metabasitarsus; OATS - outer apical tibial spur; OCL - ocellulooccipital line; POL - postocellar line; UCL - oculooccipital line; UOL - oculoocellar line

Malaise (1947) erected the genus *Birmindia* with two new species, viz., *Birmindia albipes* and *Birmindia turneri*, of which the former is the type species. In the present text, two new species, viz., *Birmindia serrulata* sp. nov. and *Birmindia crociterga* sp. nov. are described and illustrated along with the redescription and illustrations of the already known two species following a uniform systematic pattern. All the species of this genus are confined to high altitude regions ranging between 1400-2500m above mean sea level. Some of the characteristics such as shape and size of scape and pedicel, ratio of antennal segments, specificity of various furrows on head, shape and size of postocellar area, curvature or pattern of head behind eyes, and comparison of subapical and apical teeth of tarsal claw have intentionally been omitted. Since all these characters are unstable to be considered at generic level, and therefore, will now be considered at species level only. These characters are species-specific and no variations have been noticed so far.

The type materials will be housed at the Division of Entomology, Pusa National Collections, Indian Agricultural Research Institute, New Delhi, India. The collection was made with the help of sweeping hand net.

### Genus *Birmindia* Malaise

*Birmindia* Malaise, 1947: 2, 33-34; Malaise, 1963: 176; Abe & Smith, 1991: 13, 105.

Type species: *Birmindia albipes* Malaise (Original designation).

### Distribution

Oriental Region.

### Diagnosis

Adult: Forewings with two radial and three or four cubital cells, first cubital crossvein frequently obliterate; vein M and 1m-cu distinctly convergent, and the former joins subcosta removed from the origin of cubitus, at a distance longer than the length of basal (1<sup>st</sup> or 2<sup>nd</sup>) cubital crossvein; anal cell with oblique crossvein. Hindwings with two closed middle cells, anal cell with long petiole which is perpendicular to nervellus. Hind orbits ecarinate, inner margins of eyes converging downwards, frontal area subconvexly elevated above the level of eyes; postocellar area convex; clypeus truncate; malar space linear. Antenna filiform, shorter than head and thorax combined. Metatibia subequal to metafemur and trochanter combined, metabasitarsus subequal to almost shorter than following tarsi combined. Tarsal claw with a subapical tooth and a distinct basal lobe.

### Remarks

The genus *Birmindia* was described by Malaise (1947) under subfamily Selandriinae who stated that this genus is not having close phylogenetic relations with any of the genera of Selandriinae though it shows some affinities to *Caliroa* O. Costa and *Poppia* Konow. The definition of the genus was based on two new species, i.e., *Birmindia albipes* and *Birmindia turneri*, and of these the former was designated as its type species. Following a long gap two more new species are being added to this genus from the high altitude regions of northeastern India.

***Birmindia crociterga* sp. nov.**

(Figs. 1-7)

**Material examined****Holotype:** Female, 19.v.1993, Pfutsero, Nagaland, India, 2100m, coll. V. Vasu, B980/RIT**Paratypes:** One male, 20.v.1989, Smit, Meghalaya, India, 1500m, coll. M.S. Saini; four males, one female, 16.v.1993, Zunheboto, Nagaland, India, 1870m, coll. V. Vasu, B981ab/RIT**Individual variation:** Tegula, tergite seven and apical two sternites fuscous in male. Tergite two and broad posterior margins of tergites 3-6 light brownish to fuscous.**Distribution**

India: Smit, Meghalaya; Pfutsero, Zunheboto, Nagaland

**Etymology**

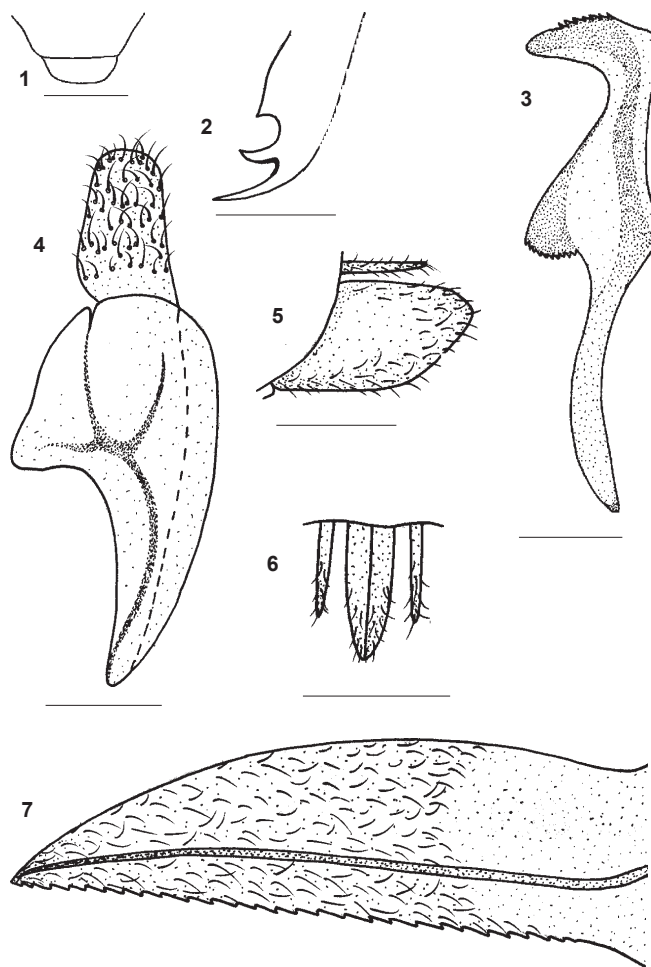
Species name refers to croesus-coloured tergites.

**Diagnostic features****Female****Colour:** Body black with fuscous apical joints of all legs, croesus are: apical half of tegula, tergites 2-6. Wings uniformly infumated, venation including costa, subcosta and stigma piceous.

**Structure:** Average length 3.5mm. Antenna 1.6x head width, scape 2.0x its apical width, pedicel 1.6x its apical width, scape and pedicel equal, segments three and four as 8:5; clypeus (Fig. 1) truncate, labrum (Fig. 1) broader than long as 3:2 with truncate anterior margin; malar space linear; LID:IDMO:EL = 1.0:1.4:1.2, POL:OCL:UOL:UCL = 1.0:0.75:1.0:0.5; supraclypeal area gently raised, supraantennal pit deep and oval; frontal area above level of eyes, supraantennal tubercles and frontal ridges insignificant; median fovea indistinct; post-, inter- and circumocellar furrows shallow; lateral furrows deep, bulging medially and ending abruptly just before hypothetical hind margin of head; postocellar area convex, wider than long as 5:2; head narrowing behind eyes; mesoscutellum flat, appendage ecarinate; tarsal claw (Fig. 2) with subapical tooth distinctly shorter than apical one and distance between two tips more than length of subapical one; metabasitarsus longer than following three joints combined as 6:5, IATS:MB:OATS:AWMT = 0.75:3.0:0.75:1.0. Cerci not reaching posterior apex of ovipositor sheath (Fig. 5, lateral view; Fig. 6, dorsal view); Lancet (Fig. 7) having prominently serrate margin with numerous equally spaced teeth.

**Sculpture:** Body impunctate, shining with general oily luster.**Pubescence:** Silvery but golden on coloured parts, 0.35x scape length.**Male**

Average length 3.0mm. Similar to female. Genitalia: penis valve (Fig. 3), gonoforceps (Fig. 4).



**Figures 1-7. *Birmindia crociterga* sp. nov.**  
 1 - Clypeus and labrum; 2 - Tarsal claw; 3 - Penis valve;  
 4 - Gonoforceps; 5 - Ovipositor sheath (lateral view);  
 6 - Ovipositor sheath (dorsal view); 7 - Lancet.  
 Scale = 1.0mm

**Remarks**

This species is closely related to *Birmindia turneri* Malaise from which it can be separated by the following characters: postocellar area wider than long as 5:2 (3:2 in *turneri*), scape and pedicel equal (as 4:3 in *turneri*), antennal segment three and four as 8:5 (3:2 in *turneri*), apical half of tegula croesus (black in *turneri*), pedicel black (pale in *turneri*), and tergites 2-6 croesus (propodeum and underside of abdomen pale in *turneri* but in one female studied by Malaise, 1947 tergites 2-3 and side of four pale also). This species is observed during premonsoon period and is restricted to high altitude areas of northeastern India.

***Birmindia serrulata* sp. nov.**  
(Figs. 8-12)

**Material examined**

Holotype: Female, 15.ix.1992, Dirang, Arunachal Pradesh, India, 1500m, coll. M.S. Saini, B711a/RIT

**Distribution**

India: Dirang, Arunachal Pradesh.

**Etymology**

Species is named after shape of serrulae of lancet.

**Diagnostic features**

**Female**

Colour: Body black, tegula brownish yellow more or less. Legs whitish yellow, fuscous are: procoxa except extreme apex, basal 1/3 of hind four coxae, front four femora except extreme apices and bases. Wings infumated, venation including costa, subcosta and stigma brownish.

Structure: Length 4.0mm. Antenna 1.5x head width, scape 1.5x its apical width, pedicel 1.0x its apical width, scape and pedicel as 3:2, segments three and four as 4:3; clypeus (Fig. 8) subtruncate, labrum (Fig. 8) broader than long as 2:1 with roundly pointed anterior margin; malar space linear; LID:IDMO:EL=1.0:1.3:1.0, POL:OCL:UOL:UCL=1.0:0.75:1.0:0.5; supraclypeal area gently triangularly raised, supraantennal pit distinct and crescent-shaped; frontal area above level of eyes, supraantennal tubercles insignificant, frontal ridges merely indicated; median fovea broad distinct, gradually and very faintly depressed towards its center, having small, deep pit anterior to median ocellus; postocellar furrow absent, inter- and circumocellar furrows distinct; lateral furrows deep, bulging medially and ending abruptly just before hypothetical hind margin of head; postocellar area convex, wider than long as 2:1; head parallel behind eyes; mesoscutellum subconvex, appendage ecarinate; tarsal claw (Fig. 9) with subapical tooth almost equal to apical one and distance between their tips less than length of subapical one; metabasitarsus longer than following three joints combined as 4:3, IATS:MB:OATS:AWMT = 1.2:5.0:3.0:1.0. Cerci reaching posterior end of ovipositor sheath (Fig. 10, lateral view; Fig. 11, dorsal view); lancet (Fig. 12) having prominently serrate margin with well separated teeth.

Sculpture: Head with a few, large, distinct, irregularly scattered punctures on frontal ridges and lateral to junction of ridges with supraantennal tubercles, surface shining; thorax impunctate, shining with general oily luster; abdomen impunctate, subshining.

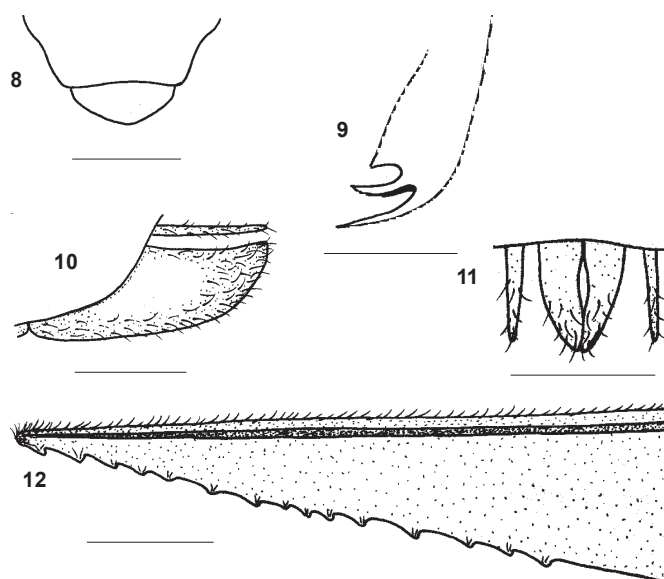
Pubescence: Body glabrous.

**Male**

Yet to be discovered.

**Remarks**

This species can be separated from its closely related species



**Figures 8-12. *Birmindia serrulata* sp. nov.**  
8 - Clypeus & labrum; 9 - Tarsal claw; 10 - Ovipositor sheath (lateral view); 11 - Ovipositor sheath (dorsal view); 12 - Lancet. Scale = 1.0mm

*i.e. Birmindia albipes* Malaise by the following characters: cerci reaching posterior apex of ovipositor sheath (not reaching in *albipes*), antennal segments three and four as 4:3 (2:1 in *albipes*), postocellar furrow absent (present in *albipes*), inter- and circumocellar furrows distinct (shallow in *albipes*), subapical tooth of tarsal claw almost equal to apical one (distinctly shorter than in *albipes*), head with large, scattered punctures (impunctate in *albipes*), and lateral furrows bulging medially (diverging posteriorly in *albipes*).

***Birmindia albipes* Malaise**

(Figs. 13-19)

*Birmindia albipes* Malaise, 1947: 34; Abe & Smith, 1991: 13.

**Material depository**

Holotype: Female, Naturhistoriska Riksmuseet, Stockholm.

Paratypes: Six females, eight males, Naturhistoriska Riksmuseet, Stockholm.

**Material examined**

Specimens: 20 Males, 20.v.1989, Smit, Meghalaya, India, 1500m, 20 males, 28.v.1989, Smit, Meghalaya, India, 1500m, coll. M.S. Saini; two females, one male, 1.v.1990, Riat, Meghalaya, India, 1450m, coll. M.S. Saini; four females, six males, 1.v.1994, Elephant Falls, Meghalaya, India, 1450m, coll. V. Vasu; two females, two males, 25.v.1989, Darjeeling, West Bengal, 1800m, coll. M.S. Saini; one female, two males, 10.v.1993, Mirik, West Bengal, 1700m, coll. V. Vasu; one female, 2.vi.1989, Bomdila, Arunachal Pradesh, India, 2450m, coll. M.S. Saini; one female, four males, 20.v.1992, Ukhrul, Manipur, India, 1750m, coll. M.S. Saini.

Individual variation: All specimens alike.

**Distribution**

Myanmar; India: Bomdila, Arunachal Pradesh; Ukhrul, Manipur; Smit, Riat and Elephant Falls, Meghalaya; Darjeeling and Mirik, West Bengal.

**Diagnostic features****Female**

**Colour:** Body black, tegula more or less fuscous. Legs whitish-yellow excepting basal 1/2 of mesocoxa, apical tarsi of front four legs and apical three metatarsi which are more or less fuscous. Wings uniformly infumated, venation including costa, subcosta and stigma dark brown to piceous.

**Structure:** Length 4.5mm. Antenna 1.5x head width, scape 1.0x its apical width, pedicel 1.5x its apical width, scape and pedicel equal, segments three and four as 2:1; clypeus (Fig. 13) truncate, labrum (Fig. 13) broader than long as 2:1 with truncate anterior margin; malar space linear; LID:IDMO:EL=1.0:1.4:1.2, POL:OCL:UOL:UCL=1.0:0.75:1.0:0.5; supraclypeal area subconvex, supraantennal pits deep and oval; frontal area at level of eyes, supraantennal tubercles and frontal ridges insignificant; median fovea in the form of broad depression just above supraclypeal area and posteriorly not reaching median ocellus; post-, inter- and circumocellar furrows shallow; lateral furrows ditch-like, diverging posteriorly and ending abruptly just before hypothetical hind margin of head; postocellar area convex, wider than long as 2:1; head narrowing behind eyes; mesoscutellum almost flat, appendage ecarinate; tarsal claw (Fig. 14) with subapical tooth distinctly shorter than apical one and distance between two tips equal to length of subapical one; metabasitarsus equal to following three joints combined, IATS:MB:OATS:AWMT=1.0:3.0:0.75:1.0. Cerci not reaching posterior apex of ovipositor sheath (Fig. 17, lateral view; Fig. 18, dorsal view); lancet (Fig. 19) having sinuate margin without serrulae or prominent teeth.

**Sculpture:** Body impunctate, shining with general oily lustre.

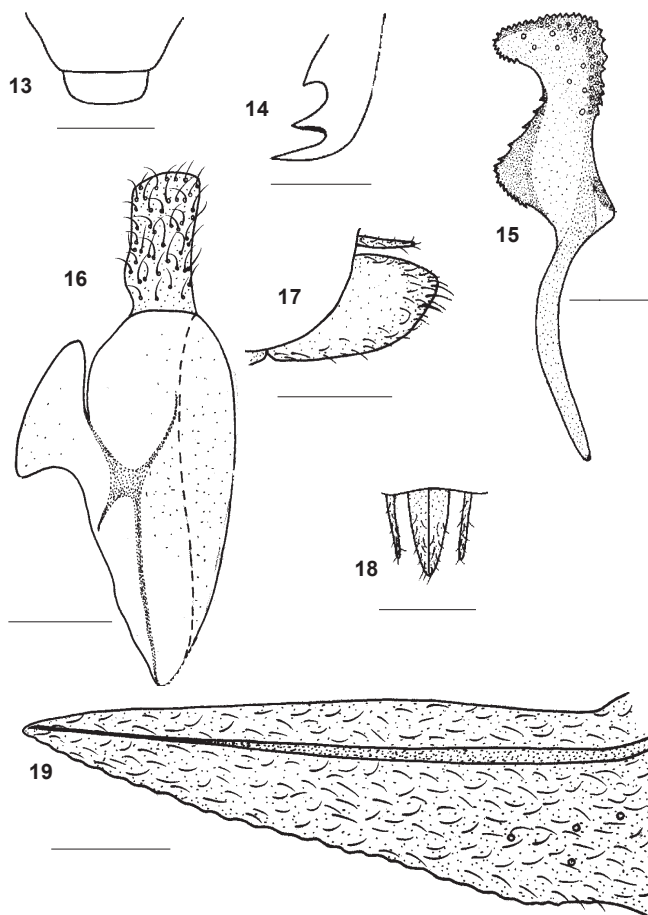
**Pubescence:** Silvery, 0.35x scape length.

**Male**

Average length 3.5mm. Similar to female. Genitalia: penis valve (Fig. 15), gonoforceps (Fig. 16).

**Remarks**

All the specimens studied comply well with the available description by Malaise (1947). The studies show that population exhibits no sexual dimorphism or individual variations even in the colour pattern of body. Colour pattern of abdomen is a sufficient and significant character to distinguish it from already known species *i.e.* *Birmindia turneri* Malaise. However, the characters distinguishing this and the allied new species are discussed under the latter. This species is widely distributed throughout the high altitude regions of northeastern India. The occurrence of both the sexes of this species though in abundance is limited to premonsoon period only.



**Figures 13-19. *Birmindia albipes* Malaise**  
13 - Clypeus & labrum; 14 - Tarsal claw; 15 - Penis valve;  
16 - Gonoforceps; 17 - Ovipositor sheath (lateral view);  
18 - Ovipositor sheath (dorsal view); 19 - Lancet.  
Scale = 1.0mm

***Birmindia turneri* Malaise**

(Figs. 20-26)

*Birmindia turneri* Malaise, 1947: 34-35.

**Material depository**

**Holotype:** Female, NHM, London.

**Paratypes:** One male, NHM, London; one female, Naturhistoriska Riksmuseet, Stockholm.

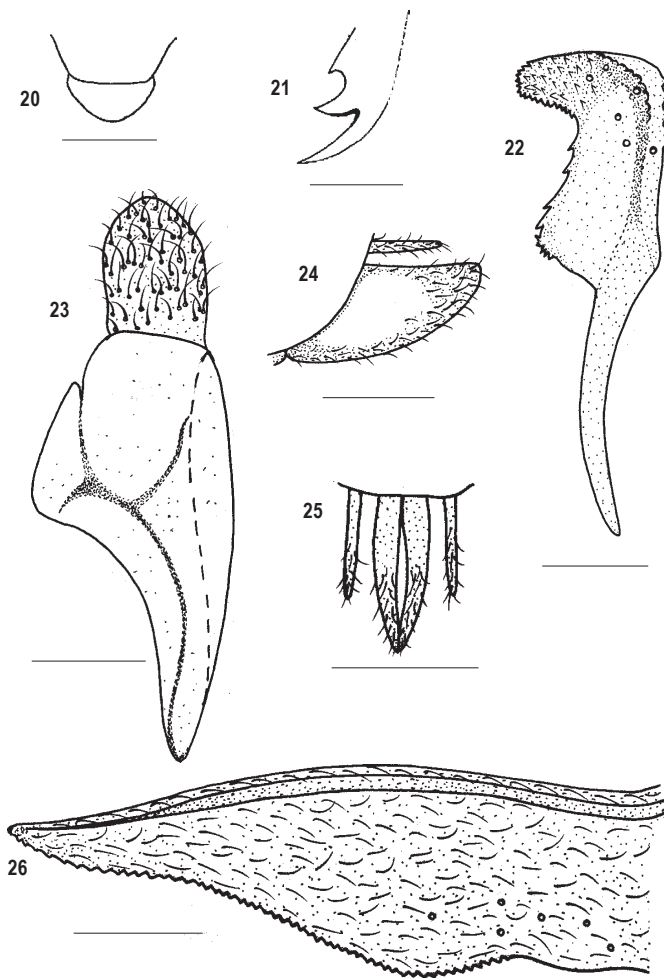
**Material examined**

**Determined specimens:** One female, one male, 14.v.1987, Shillong, Meghalaya, India, 1500m, det B. Singh, coll. M.S. Saini, B951D/RIT.

**Individual variation:** Extreme apex and base of pedicel, and segment three pale in male; tergites 2-3 and sides of tergite four in female pale (Malaise, 1947).

**Distribution**

India: Shillong, Meghalaya.



**Figures 20-26. *Birmindia turneri* Malaise**  
 20 - Clypeus & labrum; 21 - Tarsal claw; 22 - Penis valve;  
 23 - Gonoforceps; 24 - Ovipositor sheath (lateral view);  
 25 - Ovipositor sheath (dorsal view); 26 - Lancet.  
 Scale = 1.0mm

**Diagnostic features**

**Female**

**Colour:** Body black, pale to fulvous are: pedicel, basal half of antennal segment three, propodeum, abdomen below; legs whitish yellow with blackish bases of coxae and pale brownish apices of tarsi. Wings uniformly infumated, venation including costa, subcosta and stigma piceous.

**Structure:** Length 3.5mm. Antenna 1.6x head width, scape 0.75x its apical width, pedicel 1.0x its apical width, scape and pedicel as 4:3, segments three and four as 3:2; clypeus (Fig. 20) truncate, labrum (Fig. 20) broader than long as 4:3 with rounded anterior margin; malar space linear; LID:IDMO:EL=1.0:1.2:1.0, POL:OCL:UOL:UCL=1.0:1.0:1.0:0.5; supraclypeal area subconvex, supraantennal pits deep and oval; frontal area above level of eyes, supraantennal tubercles and frontal ridges insignificant; median fovea insignificantly depressed; post- and interocellar furrow shallow, circumocellar furrow distinct; lateral furrows distinct, diverging posteriorly and ending abruptly just at hypothetical hind margin of head; postocellar area subconvex, wider than long as 3:2; head narrowing behind eyes; mesoscutellum almost flat, appendage ecarinated; tarsal claw (Fig. 21) with subapical tooth shorter than apical one, and distance between their tips more than length of subapical one; metabasitarsus almost equal to following three joints combined, IATS:MB:OATS:AWMT = 1.0:3.0:0.75:1.0. Cerci not reaching posterior end of ovipositor sheath (Fig. 24, lateral view; Fig. 25, dorsal view); lancet (Fig. 26) having closely set numerous teeth.

**Sculpture:** Body impunctate, shining with general oily lustre.

**Pubescence:** Silvery, 0.35x scape length.

**Male**

Average length 3.5mm. Similar to female. Genitalia: penis valve (Fig. 22), gonoforceps (Fig. 23).

**Remarks**

Both the studied specimens comply almost well with the

**Key to the known species of the genus *Birmindia* Malaise**

- 1. Abdomen entirely black ..... 2
- 1A. Abdomen not entirely black ..... 3
- 2. Antenna 2x head width, scape and pedicel equal, segments 3 and 4 as 2.0:1.0; head narrowing behind eyes; inter- and circumocellar furrows shallow; supraantennal pit oval, frontal area at level of eyes; tarsal claw with subapical tooth shorter than apical one, distance between their tips equal to length of subapical one; cerci in female not reaching posterior end of ovipositor sheath ..... *B. albipes* Malaise
- 2A. Antenna 1.5x head width, scape and pedicel as 3.0:2.0, segments 3 and 4 as 4.0:3.0; head parallel behind eyes; inter- and circumocellar furrows distinct; supraantennal pit crescent-shaped, frontal area above level of eyes; tarsal claw with subapical tooth almost equal to apical one, distance between their tips shorter than length of subapical one; cerci in female reaching posterior end of ovipositor sheath ..... *B. serrulata* sp. nov.
- 3. Pedicel and segment 3 entirely black in both sexes; tergites 2-6 croceus; apical 1/2 of tegula croceus; antennal segments 3 and 4 as 8:5; scape and pedicel equal; circumocellar furrow shallow; lateral furrows bulging medially; postocellar area wider than long as 5:2 ..... *B. crociterga* sp. nov.
- 3A. Pedicel and basal 1/2 of segment 3 in female and extreme bases and apices of the same joints in male pale; base and underside of abdomen pale; in one female tergites 2-3 and sides of four pale, tegula black, antennal segments 3 and 4 as 3:2, scape longer than pedicel; circumocellar furrow distinct; lateral furrows diverging posteriorly; postocellar area wider than long as 3:2 ..... *B. turneri* Malaise

available description by Malaise (1947). The colour pattern of abdomen is of significant character that it separates it from all other species of *Birmindia* Malaise. The characters distinguishing this species and its allied new species and already known species are given in the key and respective taxa. This species is restricted to northeastern India.

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#### ACKNOWLEDGEMENTS

The authors are highly thankful to Dr D.R. Smith, USNM, Washington, D.C., USA for his valuable suggestions and for providing relevant literature. Thanks are also due to the Director, US PL480 research project under which the work was carried out.



## SIGHTING OF LARGE ORB-WEB SPIDER *ARGIOPE AEMULA* WALCKENAER (ARANEAE: ARANEIDAE) IN JABALPUR DISTRICT, MADHYA PRADESH

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*web supplement*

Among the different species of orb-web spiders, *Argiope aemula* (Walckenaer) is one of the most striking spiders found in India. While collecting spiders on the outskirts of Jabalpur City on 28 November 1997, I came across a web of an adult female *A. aemula*. The web had an incomplete X-shaped stabilimentum. The female was sitting in the hub (centre) of the web with her head pointing downwards. After photographing (Image 1<sup>w</sup>) the spider, she was collected and deposited with the National Zoological Collection, Zoological Survey of India, Jabalpur (Collection number A-5231).

According to Levi (1983), this showy spider is distributed in the tropics and subtropics from Japan, China, India to Indonesia and as far as Papua New Guinea. According to Tikader (1982), this species is distributed in India in Gujarat, Maharashtra, Tamil Nadu, West Bengal and Andaman & Nicobar Islands, and abroad in Sri Lanka, Myanmar, Indo- and Austro-Malaysia. It has been recorded from Bastar District in Chhattisgarh, and Seoni and Mandla districts in Madhya Pradesh. This is the first record of *A. aemula* from Jabalpur District, Madhya Pradesh.

Species under genus *Argiope* are known to have a zig-zag band called stabilimentum in their webs. These stabilimenta are of different shapes and sizes ranging from a single zig-zag band in the web of *A. aurantia* to crossed zig-zag bands in the web of *A. aemula*. According to Levi & Levi (1968), young spiders may construct more zig-zags than the adults.

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#### ACKNOWLEDGEMENT

I am grateful to Dr. K. Chandra, Officer-in-charge, C.R.S., Z.S.I., Jabalpur, for providing facilities.

<sup>w</sup> see Image 1 on the web at [www.zoosprint.org](http://www.zoosprint.org)



Manuscript 800; Received 8 Feb 2002; Revised finally accepted 11 March 2004;  
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