



## Checklist of Nomiinae (Hymenoptera: Apoidea: Halictidae) from West Bengal, India with new records

### Bhaswati Majumder

Zoological Survey of India, M Block, New Alipore, Kolkata-700053, West Bengal, India.

✉ [bhaswati94rai@gmail.com](mailto:bhaswati94rai@gmail.com)

<https://orcid.org/0000-0001-8347-1673>

### Riju Nath

Department of Entomology, Uttar Banga Krishi Viswavidyalaya, Cooch Behar, 736165, West Bengal, India.

✉ [rijunath1996@gmail.com](mailto:rijunath1996@gmail.com)

<https://orcid.org/0009-0009-6496-4988>

### Sarfrazul Islam Kazmi

Zoological Survey of India, M Block, New Alipore, Kolkata-700053, West Bengal, India.

✉ [kazmizsi@gmail.com](mailto:kazmizsi@gmail.com)

<https://orcid.org/0000-0003-2344-8660>

### Sabita Kumar Senapati

Department of Entomology, Uttar Banga Krishi Viswavidyalaya, Cooch Behar, 736165, West Bengal, India.

✉ [sksubko@rediffmail.com](mailto:sksubko@rediffmail.com)

<https://orcid.org/0009-0005-0137-1641>

### Anandhan Rameshkumar

Zoological Survey of India, M Block, New Alipore, Kolkata-700053, West Bengal, India.

✉ [drameshtrichy@gmail.com](mailto:drameshtrichy@gmail.com)

<https://orcid.org/0000-0001-7263-8968>

**ABSTRACT.** Two species of *Austronomia* Michener, 1965 (Hymenoptera: Halictidae, Nomiinae), namely *A. goniognatha* (Cockerell, 1919) and *A. takauensis* (Friese, 1910), are reported from India for the first time. Eleven Nomiinae bee species, *Austronomia capitata* (Smith, 1875), *Austronomia himalayana* (Nurse, 1902), *Austronomia notiomorpha* (Hirashima 1978), *Austronomia pseudoscutellata* Pauly, 2009, *Hoplonomia incerta* (Gribodo, 1894), *Lipotriches ceratina* (Smith, 1857), *Lipotriches phenacura* (Cockerell, 1911), *Macronomia antennata* (Smith, 1875), *Nomia crassipes* (Fabricius, 1798), *Pachynomia nathani* Pauly, 2009, *Steganomus fulvipennis* Cameron, 1898 are added to the West Bengal bee fauna. A checklist of Nomiinae bees comprising 30 species from West Bengal along with floral association is documented.

**Keywords:** *Austronomia*, distribution, floral association, Oriental, pollinators

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## INTRODUCTION

An Indian state with a wide range of diversity, West Bengal is located in the northeastern part of the country. It reaches from the Himalayas through the Gangetic plains to the Bay of Bengal, encompassing almost all the Indian subcontinent's geophysical features and biodiversity. Despite taking up just 2.7% of Indian land, West Bengal is home to 12.27% of Indian biodiversity. While most of those bio-resources have already been found and utilized, a substantial amount is still yet to be discovered and explored (Sanyal et al., 2012). In recognition of its rich diversity of wild and domesticated species, high endemism, and rare and threatened species with evolutionary significance, UNESCO has included eight sites in West Bengal as Biodiversity Heritage Sites, which include Jhargram, Cooch Behar, Darjeeling, Hooghly, Birbhum and in Nadia district of West Bengal (UNESCO, 2023).

**Corresponding author:** Anandhan Rameshkumar, ✉ [drameshtrichy@gmail.com](mailto:drameshtrichy@gmail.com)

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Aguilar et al. (2006) and Ricketts et al. (2008) both pointed out that animal pollination is one of the most critical ecosystem services in the agroecosystems, and among the various pollinating agents, insect pollinators play a significant role in increasing crop productivity. As an agriculture-oriented state, West Bengal cultivates many pollinator-dependent crops, but the study of pollinating bees is confined to only a few parts of its biodiversity heritage sites. Mitra et al. (2016) stated that West Bengal comprises 430 species of Hymenoptera, with the majority belonging to the superfamily Vespoidea followed by Apoidea, in which Apidae, Megachilidae, and Halictidae are the most studied families from West Bengal. The literature revealed that Vespidae (Girish Kumar & Sharma, 2014), Formicidae (Tiwari et al., 2003) and Ichneumonidae (Jonathan, 1987) are studied in detail from Hooghly, Howrah, South, and North 24 Parganas, Purulia, West Dinajpur, and Medinipur and a few parts of Darjeeling districts of West Bengal. Research in the context stated that the superfamily Apoidea (Hymenoptera) has led to the discovery of one new species of Apidae in the Sundarbans Biosphere Reserve (SBR) by Gupta et al. (2015), nine species of Halictidae from the same part by Sharma & Girish Kumar (2018) and two species of Halictidae under the subfamily Nomiinae from South 24 Parganas and Bankura districts of West Bengal by Majumder et al. (2020). Many species of halictids and apids have been recorded from the Hooghly district of West Bengal (Ascher & Pickering, 2024), and a megachilid species has been reported from the Buxa Tiger Reserve, Alipurduar district of West Bengal, by Sardar et al. (2021). In the present study, two species of Nomiinae bees are recorded for the first time from the country, and eleven species are new distribution records for West Bengal.

## MATERIAL AND METHODS

Specimens are collected from grassland habitats, mainly from weeds of the Asteraceae family. A few of them are also collected from some crop plants (Mustard plant) and medicinal plants (Nishinda leaf) with the help of random sweeping and collected bee specimens transferred into the killing jar. In the yellow pan trap method, pan traps of yellow colour filled up to 75% with soap water are placed around vegetation at ground level. Pans are carefully examined, and the contents are filtered through a sieve. For preservation, dead specimens are transferred to vials of absolute alcohol after being killed in a jar containing ethyl acetate. As per standard protocol, specimens were relaxed, stretched, and pinned for identification in the laboratory, and keys were used to identify them. Collected specimens were studied under a Nikon® SMZ25 stereo-microscope. A DS-i2® digital camera with an objective of 1X was used to take photomicrographs and then processed them with NIS-Elements BR Analysis V5.20.00 software. Vouchered specimens are deposited at the National Zoological Collection (NZC), Zoological Survey of India, Kolkata.

Species of *Austronomia* are identified by comparison with the original description and images of the type specimens (Pauly, 2024) and the generic characters of *Hoplonomia* Ashmead, 1904, *Macronomia* Cockerell, 1917, *Nomia* Latreille, 1804, *Pachynomia* Pauly, 1980, *Steganomus* Ritsema 1873, and *Lipotriches* Gerstaecker, 1857 by Michener (2007) and Pauly (2009). Previously recorded species of Nomiinae from West Bengal are also included based on available literature (Karunaratne et al., 2005; Pauly, 2009; Saini & Rathor, 2012; Pannure & Belavadi, 2017; Majumder et al., 2020; Pauly, 2024; Ascher & Pickering, 2024). The biogeographic delimitation for the Oriental region follows Moronne (2009) and Holt et al. (2013).

**Abbreviation.** T1–T6: Tergites 1–6; mm: millimetre; F1: Flagellum 1; S4: Sternite 4; S5: Sternite 5; S6: Sternite 6; AMNH – American Museum of Natural History; BMNH – British Museum of Natural History; MCSN – Museo Civico di Storia Naturale, Genoa Italy; MCZ – Museum of Comparative Zoology, Cambridge, USA; OUMNH – Oxford University Museum of Natural History; RMNH – Rijksmuseum Van Natuurlijke Historie, University of Amsterdam; SRB – Sundarbans Biosphere Reserve; USNM – United States National History Museum; UZMK – Universitets Zoologiske Museum, Copenhagen, Denmark.

## RESULTS

### *Taxonomic hierarchy*

**Class Insecta Linnaeus, 1785**

**Order Hymenoptera Linnaeus, 1758**

**Superfamily Apoidea Latreille, 1802**

**Family Halictidae Thomson, 1869**

**Subfamily Nomiinae Robertson, 1904**

**Genus *Austronomia* Michener, 1965**

***Austronomia albofimbriata* (Cameron, 1902)**

*Nomia albofimbriata* Cameron, 1902:252. Holotype ♀. Bengal, Barrackpore – BMNH.

***Distribution in Oriental.*** India (West Bengal - Karunaratne et al., 2005, Saini & Rathor, 2012, Pauly, 2024, Ascher & Pickering, 2024).

***Austronomia capitata* (Smith, 1875) (Fig. 1A)**

*Nomia capitata* Smith, 1875:54. Holotype ♂. Northern India – BMNH.

***Material examined.*** 1♂, India, West Bengal, Cooch Behar, Pundibari, Kalarayerkuthi, Uttar Banga Krishi Viswavidyalaya Campus, (26°23'60"N, 89°22'48"E), 08.viii.2022, Swept, leg. S. Sardar; 1♀, 22.iv.2023, Swept, leg. R. Nath.

***Distribution in Oriental.*** India (Karnataka, Maharashtra, Punjab – Pannure & Belavadi, 2017; West Bengal – **new record**), Sri Lanka (Ascher & Pickering, 2024).

***Austronomia goniognatha* (Cockerell, 1919) (Fig. 2A-I)**

*Nomia goniognatha* Cockerell, 1919:7. Holotype ♂. Philippines, Davao, Mindanao – USNM.

***Material examined.*** 3♂♂, 1♀, India: West Bengal, Cooch Behar, Pundibari, Uttar Banga Krishi Viswavidyalaya Campus (26°23'60"N, 89°22'48"E), 08.viii.2022, Swept, leg. B. Majumder; 1♂, 09.viii.2022, Swept, leg. S. Sardar; 4♂♂, 09.xi.2022, Swept, leg. R. Nath.

***Diagnostic characters. Male.*** Body length varies from 8 to 10 mm. Pubescence pale orange (Fig. 2A); clypeus covered with greyish-yellow pubescence; surface above antennal socket to vertex edge with golden yellow pubescence; antennal scape and pedicel black with golden bristle-like hairs surround the scape; F1 with yellow tip (Fig. 2C); scutum and scutellum with moss-like feltings over the whole surface, metanotum with greyish yellow fringed hairs covering both sides' margins, and the middle with fulvous tomentum; tegula reddish, auriform with a testaceous and piceous base (Fig. 2D); wings dusky (Fig. 2B) tergites punctuated, apex covered with a pale fulvous hair band (Fig. 2E); S4 emarginated with a strong dark keel, surrounded by greyish yellow pubescence, longer on the lateral side than in the middle; S5 produces a claviform apex with a strong dark keel (Figs 2F, 2H, 2I); hind femora enormously swollen and helmet-shaped with conical projection between femora of the intermediate legs; apical part of the hind tibia, except the tarsi's apex, is ferruginous (Fig. 2G).

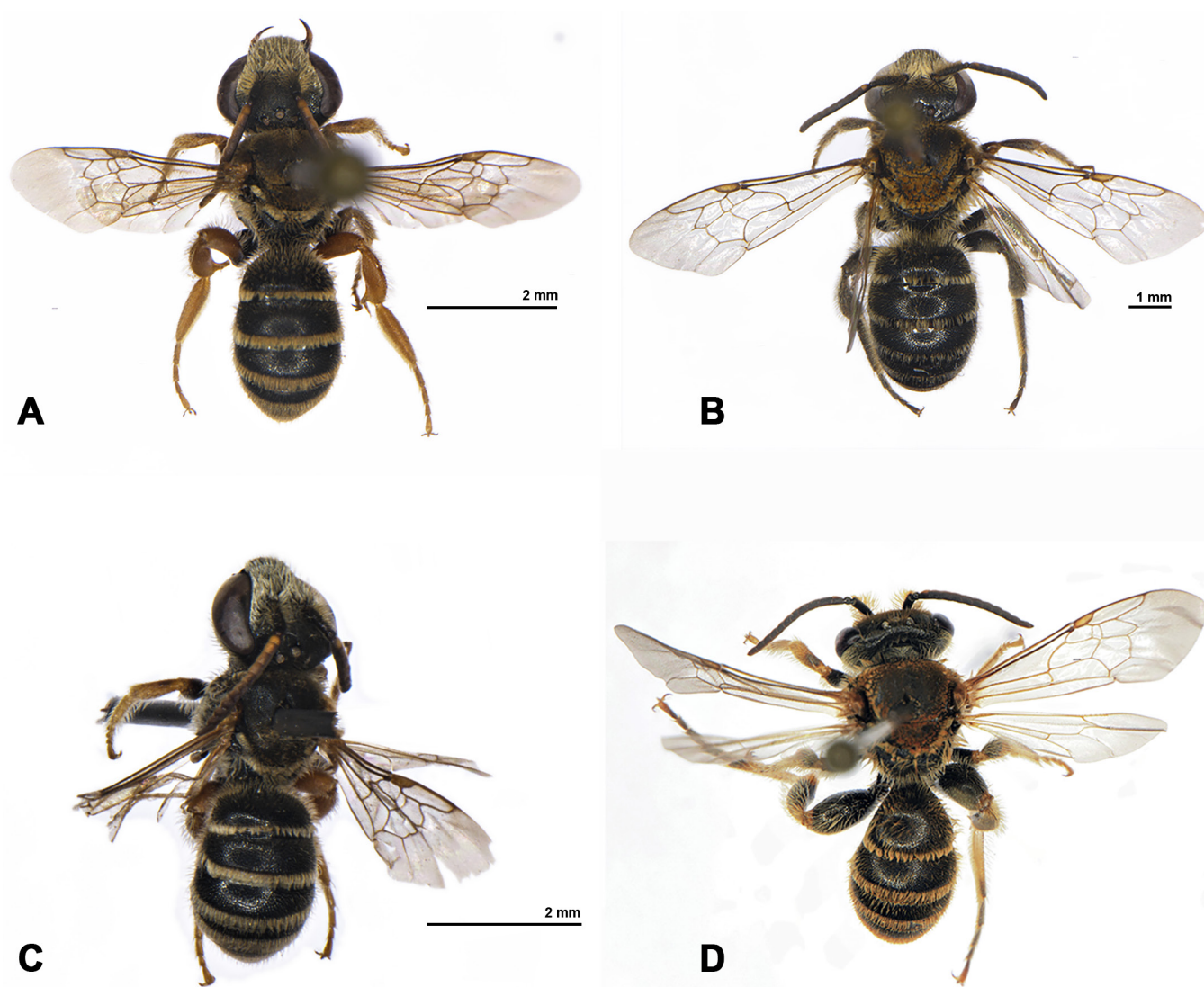
***Distribution in Oriental.*** Cambodia, Indonesia, Southern China (Ascher & Pickering, 2024), Malaysia, Philippines (Pauly, 2024), Singapore (Ascher et al., 2022), India (**new record** - West Bengal).

***Austronomia himalayana* (Nurse, 1902) (Fig. 1B)**

*Nomia himalayana* Nurse, 1902:148. Paralectotypes ♂♀. Shimla – BMNH.

***Material examined.*** 1♂, India, West Bengal, Hooghly, Chandan Nagar (22°51'36"N, 88°20'60"E), Swept, 8.xi.1965, leg. P. K. Maity & R. Kulin.

***Distribution in Oriental.*** India (Karnataka, Maharashtra, Punjab – Pannure & Belavadi, 2017; West Bengal – **new record**).



**Figure 1.** Species of the genus *Austronomia* Michener, 1965 (males). **A.** *Austronomia capitata* (Smith, 1875); **B.** *Austronomia himalayana* (Nurse, 1902); **C.** *Austronomia notiomorpha* (Hirashima, 1978); **D.** *Austronomia pseudoscutellata* Pauly, 2009.

***Austronomia notiomorpha* (Hirashima, 1978) (Fig. 1C)**

*Nomia* (*Austronomia*) *notiomorpha* Hirashima, 1978:100. Holotype ♂. Sri Lanka – USNM.

**Material examined.** 1♂, India, West Bengal, Cooch Behar, Pundibari, Kalarayerkuthi, Uttar Banga Krishi Viswavidyalaya Campus (26°23'60"N, 89°22'48"E), 07.viii.2022, Swept, leg. B. Majumder.

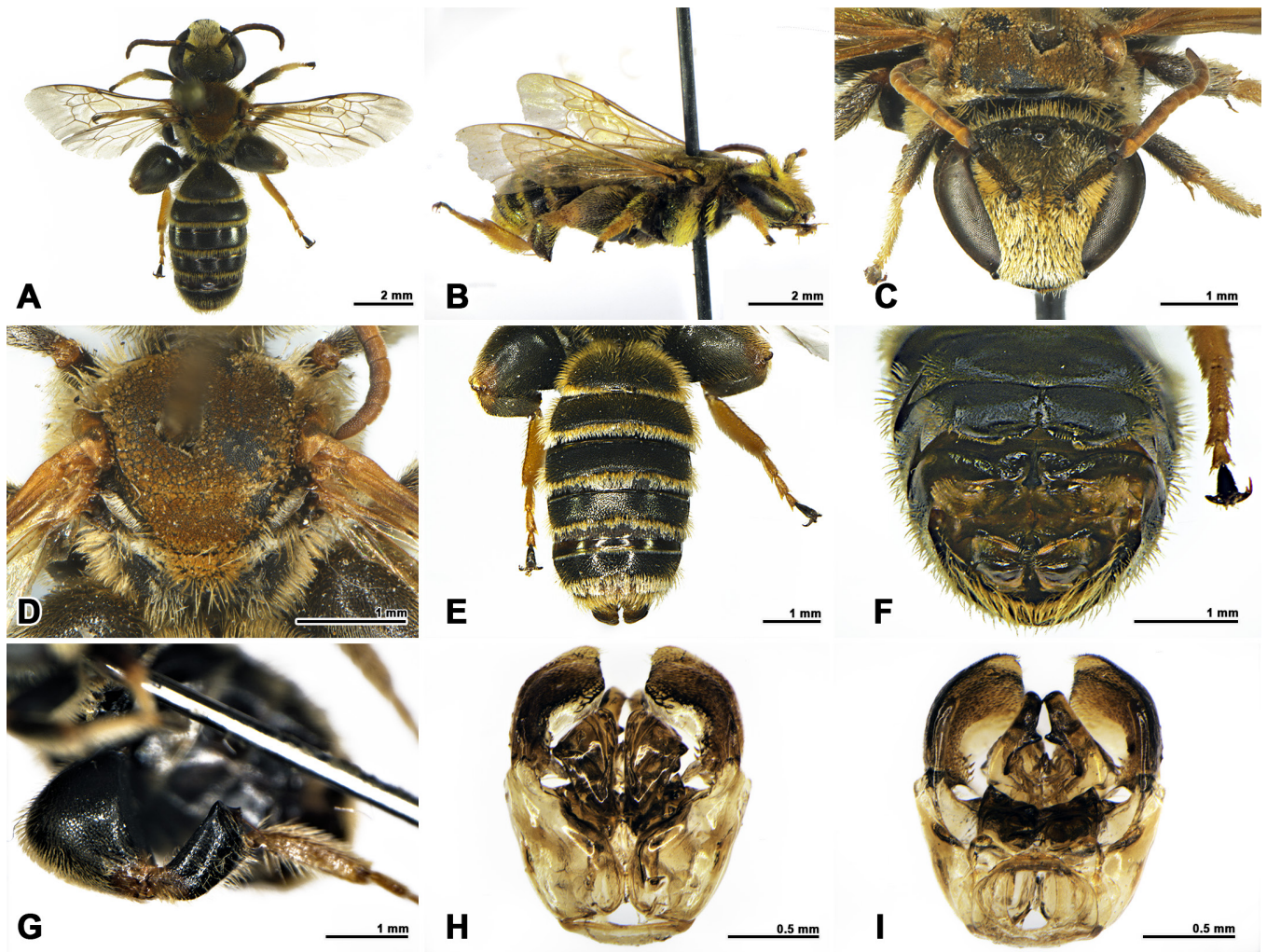
**Distribution in Oriental.** India (Karnataka, Kerala – Pannure & Belavadi, 2017; Maharashtra – Saini & Rathor, 2012; West Bengal – **new record**), Sri Lanka (Ascher & Pickering, 2024).

***Austronomia pseudoscutellata* Pauly, 2009 (Fig. 1D)**

*Austronomia pseudoscutellata* Pauly, 2009:203, Holotype ♂. South India, Kerala State, Walayar – RMNH.

**Material examined.** 1♂, India, West Bengal, Cooch Behar, Pundibari, Kalarayerkuthi, Uttar Banga Krishi Viswavidyalaya Campus (26°23'60"N, 89°22'48"E), 07.viii.2022, Swept, leg. B. Majumder; 1♂, Howrah, Kulgachia (22°27'36"N, 88°0'0"E), 28.xi.2020, Swept, leg. S. Sardar.

**Distribution in Oriental.** India (Kerala, Tamil Nadu – Ascher & Pickering, 2024; West Bengal – **new record**).



**Figure 2.** *Austronomia goniognatha* (Cockerell, 1919), male: **A.** Habitus, dorsal view; **B.** Habitus, lateral view; **C.** Head, frontal view; **D.** Mesosoma, dorsal view; **E.** Metasoma dorsal view; **F.** Metasoma ventral view (S4 to S8); **G.** Left hind leg, femur and tibia; **H.** Genitalia, dorsal view; **I.** Genitalia, ventral view.

***Austronomia scutellata* (Smith, 1875)**

*Nomia scutellata* Smith, 1875:45. Holotype ♀. India, Calcutta - BMNH

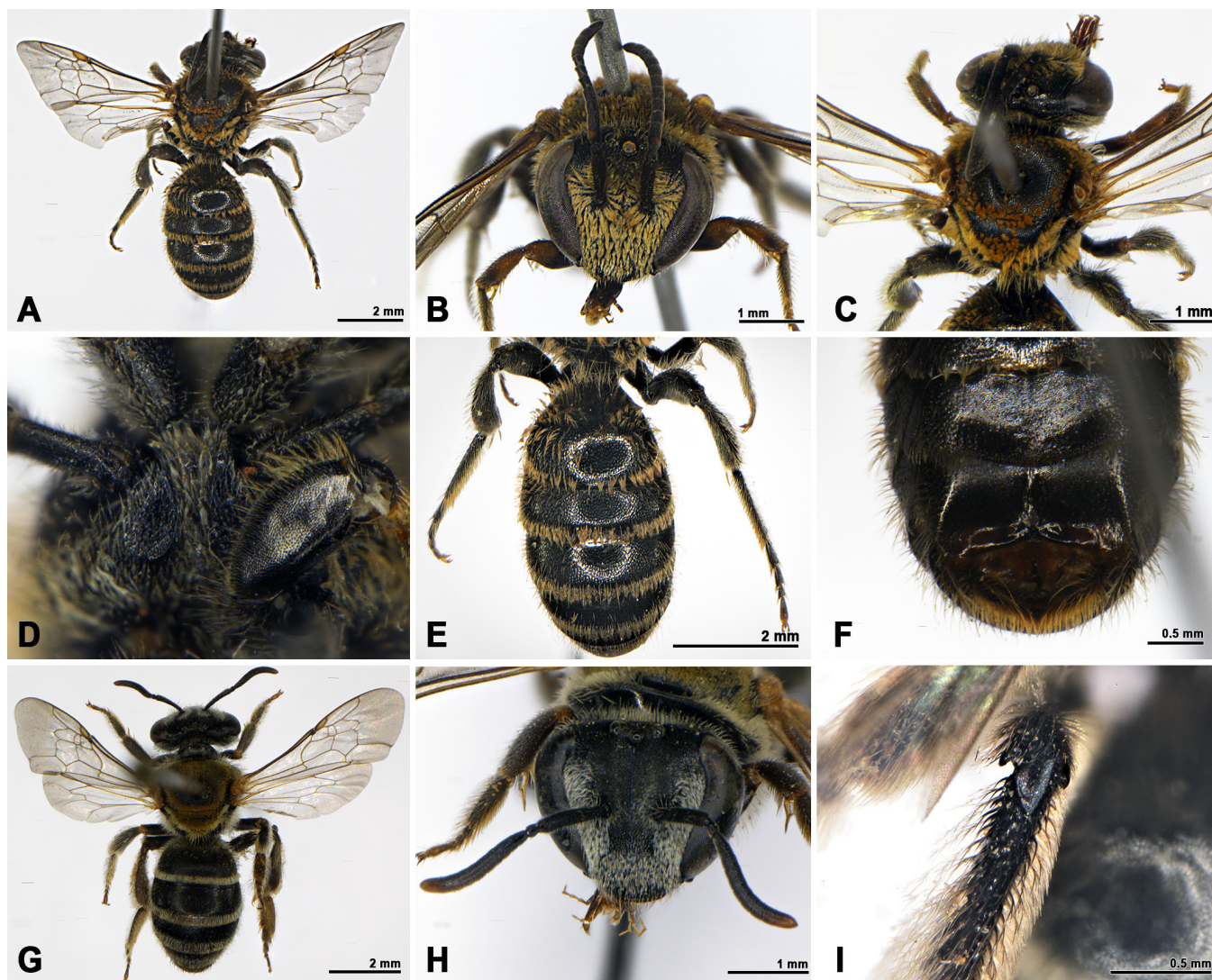
**Distribution in Oriental.** India (West Bengal - Pauly, 2009, Saini & Rathor, 2012, Pauly, 2024, Ascher & Pickering, 2024).

***Austronomia takauensis* (Friese, 1910) (Fig. 3A-I)**

*Nomia takauensis* Friese 1910:410. Syntypes ♂♂. Taiwan, Takau and Ku-Sia - AMNH.

**Material examined.** 1♂, 3♀♀, India, West Bengal, Cooch Behar, Pundibari, Uttar Banga Krishi Viswavidyalaya Campus (26°23'60"N, 89°22'48"E), 08.viii.2022, Swept, leg. R. Nath.

**Diagnostic characters. Male.** Body length approximately 8 mm. body colour black (Fig. 3A); clypeus flat, pointed end; antennal socket to the clypeus with yellow felting covers, antennal scape and pedicel black with golden bristle-like branched pubescence encircle scape, F1 shorter with its apex tinged yellow (Fig. 3B); scutum and scutellum with smooth, dense punctures evenly spaced with a felt covering; short ferruginous tomentum bridge spanning the margin of the scutum and scutellum; metanotum covered with golden yellow tomentum; tegula oval, testaceous with brownish-black base; wings hyaline with dark brown venation (Fig. 3C); area between coxa of intermediate legs without any conical or pointed structure (Fig. 3D); metasoma tergites with sparsely hairy and puncture; T1 with strong, sparse puncture;



**Figure 3.** *Austronomia takauensis* (Friese, 1910); Male: **A.** Habitus, dorsal view; **B.** Head, frontal view; **C.** Mesosoma, dorsal view; **D.** Mesosoma, ventral side; **E.** Metasoma dorsal view; **F.** Metasoma, ventral view (S4 to S8); Female: **G.** Habitus, dorsal view; **H.** Head, frontal view; **I.** Hind leg, basitibial plate (Pointed).

apex of T1–T6 covers with wide yellow-brown hair band (Fig. 3E); terminal margin of S4 with elongated bulging structure with a well-sclerotized keel in the centre (Fig. 3F); legs dark brown; hind femurs broader and thinner; hind tibia less developed; two calcaria derived from the tip of the tibia; tarsi brown, covered with yellowish hairs (Fig. 3E). **Female.** Body length approximately 7 to 8 mm; Female show similar characters like male except few and i. e. clypeal margin flat, sparsely covered with greyish hair; antennal scape, pedicel, and flagellum black (Fig. 3H); scutum and scutellum adorned with golden yellow felting; metanotum and propodeum laterally covered with greyish with branched hairs; tegula pale yellow, auriform, and piceous at its base; wings hyaline with fulvous stigma (Fig. 3G); apex of tergites adorned with greyish-white hair bands (Fig. 3G); inner hind tibial spur densely pectinate, apex sharply curved with a hook-like structure; hind basitibial plates pointed at the apex (Fig. 3I).

**Distribution in Oriental.** China, Indonesia, Malaysia, Taiwan, Thailand, Vietnam (Ascher & Pickering, 2024), Singapore (Ascher et al., 2022), Japan (Friese) (Hirashima, 1978), India (new record – West Bengal).

**Genus *Crociaspidia* Ashmead 1899*****Crociaspidia buddha* (Westwood, 1875)**

*Nomia buddha* Westwood, 1875:209. Lectotype ♂. India – OUMNH.

**Distribution in Oriental.** India (Bihar, Gujarat, Jammu and Kashmir, Maharashtra, West Bengal – Pauly, 2009, Saini & Rathor, 2012, Ascher & Pickering, 2024).

**Genus *Curvinomia* Michener, 1944*****Curvinomia iridescens* (Smith, 1853)**

*Nomia iridescens* Smith, 1857:43. Lectotype ♀. Shillong – OUMNH.

**Distribution in Oriental.** Cambodia, China, Guinea-Bissau, Hong Kong, India (Chhattisgarh, Jharkhand, Karnataka, Kerala, Maharashtra, Tamil Nadu, Uttarakhand, West Bengal – Pauly, 2009, Saini & Rathor, 2012, Ascher & Pickering, 2024), Indonesia, Laos, Macquarie Island, Malaysia, Macau, Myanmar, Negros, Philippines, Saint Pierre and Miquelon, Singapore, Sri Lanka, Thailand, Vietnam (Ascher & Pickering, 2024).

***Curvinomia strigata* (Fabricius, 1793)**

*Andrena strigata* Fabricius, 1793:311. Neotype ♀. Java, Batavia – UZMK.

**Distribution in Oriental.** Cambodia, China, Hong Kong, India (Andhra Pradesh, Chhattisgarh, Karnataka, Kerala, Maharashtra, Odisha, Uttarakhand, West Bengal – Pauly, 2009, Saini & Rathor, 2012, Ascher & Pickering, 2024), Indonesia, Laos, Malaysia, Nepal, Philippines, Singapore, Sri Lanka, Thailand (Ascher & Pickering, 2024).

**Genus *Gnathonomia* Pauly, 2005*****Gnathonomia thoracica* (Smith, 1875)**

*Nomia thoracica* Smith, 1875:45. Lectotype ♂. Calcutta – BMNH.

**Distribution in Oriental.** Cambodia, China, Hong Kong, India (Goa, Karnataka, Kerala, Rajasthan, Sikkim, Tamil Nadu, West Bengal – Pauly, 2009, Saini & Rathor, 2012, Ascher & Pickering, 2024), Indonesia, Laos, Malaysia, Mindanao, Myanmar, San Clemente, Santiago, Taiwan, Thailand, Vietnam (Ascher & Pickering, 2024).

**Genus *Hoplonomia* Ashmead, 1904*****Hoplonomia elliotii* (Smith, 1875)**

*Nomia elliotii* Smith, 1875:44. Holotype ♂. India, Madras, Barrackpore and Nischiudipore – OUMNH.

**Distribution in Oriental.** Bangladesh, Bhutan, Cambodia, China, Hong Kong, India (Chhattisgarh, Jammu and Kashmir, Karnataka, Kerala, Maharashtra, Punjab, Tamil Nadu, Uttarakhand, West Bengal – Pauly, 2009, Saini & Rathor, 2012, Ascher & Pickering, 2024), Laos, Myanmar, Papua New Guinea, Thailand (Ascher & Pickering, 2024).

***Hoplonomia incerta* (Gribodo, 1894) (Fig. 4A)**

*Nomia incerta* Gribodo 1894:129. Lectotype ♀. Java – Gribodo collection, MCSN.

**Material examined.** 2♂♂, India, Kolkata, Behala (22°29'24"N, 88°17'24"E), 7.x.2018, Sweeping Net, leg. P. Ghosh.

**Distribution in Oriental.** Southern China, India (Arunachal Pradesh, Meghalaya, Mizoram – Ascher & Pickering, 2024; West Bengal – **new record**), Indonesia, Japan, Malaysia, Philippines, Sumba, Thailand (Ascher & Pickering, 2024).

***Hoplonomia westwoodi* (Gribodo, 1894)**

*Nomia westwoodi* Gribodo 1894:128. Holotype ♂. India, Barrackpore – BMNH.

**Distribution in Oriental.** India (Andhra Pradesh, Chhattisgarh, Delhi, Goa, Gujarat, Karnataka, Kerala, Odisha, Madhya Pradesh, Maharashtra, Pondicherry, Rajasthan, Tamil Nadu, Uttarakhand, West Bengal – Pauly, 2009, Saini & Rathor, 2012, Ascher & Pickering, 2024), Southern Pakistan, Sri Lanka (Ascher & Pickering, 2024).

**Genus *Lipotriches* Gerstaecker, 1857*****Lipotriches ceratina* (Smith, 1857) (Fig. 4B)**

*Halictus ceratinus* Smith, 1857:42. Lectotype ♂. Sarawak – OUMNH.

**Material examined.** 1♂, India, West Bengal, Cooch Behar, Pundibari, Kalarayerkuthi, Uttar Banga Krishi Viswavidyalaya Campus (26°23'60"N, 89°22'48"E), 07.viii.2022, Sweeping Net, leg. B. Majumder; Darjeeling, Mirik day camp (26°53'24"N, 88°9'36"E), 1♀, 22.vi.1978, Sweeping Net, leg. P. Haldar.

**Distribution in Oriental.** India (Odisha, Puducherry – Ascher & Pickering, 2024; West Bengal - **new record**), Indonesia Laos, Malaysia, Myanmar, Philippines, South China, Thailand, and Vietnam (Pannure & Belavadi, 2017).

***Lipotriches fulvinerva* (Cameron, 1907)**

*Nomia fulvinerva* Cameron, 1907:1004. Lectotype ♀. Gujarat – BMNH.

**Distribution in Oriental.** India (Assam, Bihar, Goa, Gujarat, Karnataka, Maharashtra, Pondicherry, Tamil Nadu, Tripura, West Bengal – Pauly, 2009, Saini & Rathor, 2012, Pannure & Belavadi, 2017, Majumder et al., 2020, Ascher & Pickering, 2024).

***Lipotriches phenacopsis* (Cockerell, 1911)**

*Nomia phenacopsis* Cockerell, 1911:224. Holotype ♀. Nasik, Western India – BMNH.

**Distribution in Oriental.** India (Karnataka, Kerala, Maharashtra, Tamil Nadu - Ascher & Pickering, 2024; Tripura, West Bengal – Majumder et al., 2020).

***Lipotriches phenacura* (Cockerell, 1911) (Fig. 4C)**

*Nomia phenacura* Cockerell, 1911:223. Holotype ♀. Nasik, Western India – BMNH.

**Material examined.** 3♂♂, India, West Bengal, Cooch Behar, Pundibari, Kalarayerkuthi, Uttar Banga Krishi Viswavidyalaya Campus (26°23'60"N, 89°22'48"E), 07.viii.2022, Swept, leg. B. Majumder; Darjeeling, Mirik day camp (26°53'24"N, 88°9'36"E), 2♀♀, 22.vi.1978, Swept, leg. P. Haldar.

**Distribution in Oriental.** India (Karnataka, Kerala, Puducherry, Tamil Nadu - Pannure & Belavadi, 2017; Maharashtra - Saini & Rathor, 2012; Tripura - Majumder et al., 2020; West Bengal - **new record**), Sri Lanka (Pannure & Belavadi, 2017).

***Lipotriches pulchriventris* (Cameron, 1897)**

*Halictus pulchriventris* Cameron, 1897:110. Holotype ♂. Uttarakhand, Mussouri – Collection Rothney, OUMNH.

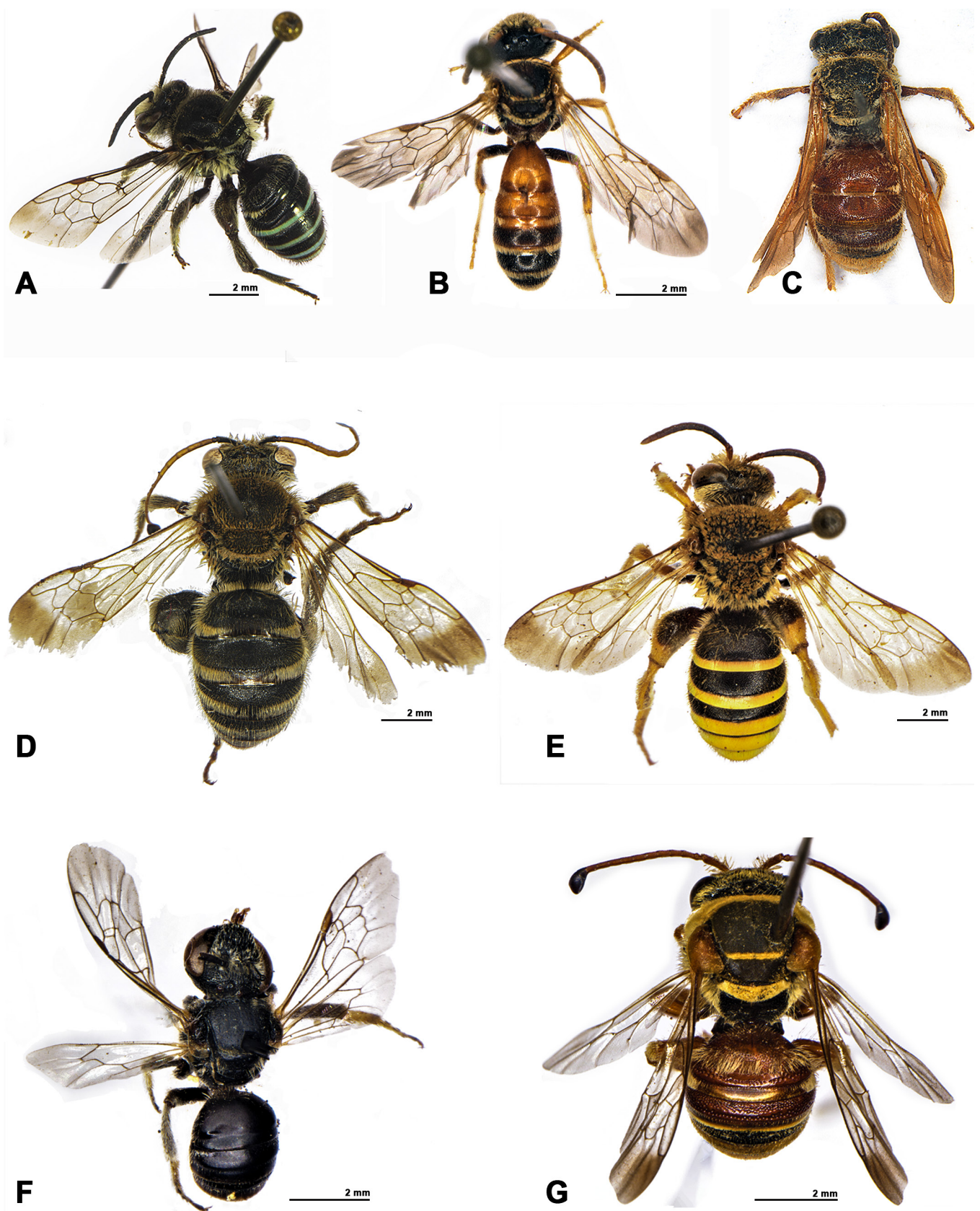
**Distribution in Oriental.** Australia, China, India (Assam, Maharashtra, Uttarakhand, West Bengal - Ascher & Pickering, 2024; Karnataka, Tamil Nadu – Pannure & Belavadi, 2017; Meghalaya, Tripura - Majumder et al., 2020), Indonesia, Laos, Malaysia, Nepal, New Guinea, Philippines, Solomon Islands, Sri Lanka, Thailand, and Vietnam (Pannure & Belavadi, 2017).

**Genus *Maculonomia* Wu, 1982*****Maculonomia anthophoroides* (Meade-Waldo, 1916)**

*Melitta anthophoroides* Meade-Waldo, 1916:463. Holotype ♀. Sikkim – BMNH.

**Distribution in Oriental.** India (West Bengal - Ascher & Pickering, 2024), Myanmar, Nepal (Ascher & Pickering, 2024).





**Figure 4.** Species of various genera of Nomiinae from India (males). **A.** *Hoplonomia incerta* (Gribodo, 1894); **B.** *Lipotriches ceratina* (Smith, 1857); **C.** *Lipotriches phenacura* (Cockerell, 1911); **D.** *Macronomia antennata* (Smith, 1875); **E.** *Nomia crassipes* (Fabricius, 1798); **F.** *Pachynomia nathani* Pauly, 2009; **G.** *Steganomus fulvipennis* Cameron, 1898.

**Genus *Macronomia* Cockerell, 1917*****Macronomia antennata* (Smith, 1875) (Fig. 4D)**

*Nomia antennata* Smith, 1875:46. Lectotype ♀. India – BMNH.

**Material examined.** 3♂♂, India, West Bengal, Cooch Behar, Pundibari, Kalarayerkuthi, Uttar Banga, Krishi Viswavidyalaya Campus, (26°23'60"N, 89°22'48"E), 07.viii.2022, Swept, leg. B. Majumder; 1♂, Jalpaiguri, Buxa Tiger Reserve, East Damanpur Range (26°33'0"N, 89°31'48"E), 28.iii.2019, Swept, leg. A. Rameshkumar.

**Distribution in Oriental.** India (Karnataka, Kerala - Pannure & Belavadi, 2017; Maharashtra – Saini & Rathor, 2012; Madhya Pradesh, Uttar Pradesh – Ascher & Pickering, 2024; West Bengal – **new record**).

**Genus *Maynenomia* Pauly, 1984*****Maynenomia chaprensis* (Cockerell, 1920)**

*Nomia chaprensis* Cockerell, 1920:208. Holotype ♀. India, Chapra – USNM.

**Distribution in Oriental.** India (Bihar – Ascher & Pickering, 2024; West Bengal – Saini & Rathor, 2012).

**Genus *Nomia* Latreille, 1804*****Nomia crassipes* (Fabricius, 1798) (Fig. 4E)**

*Eucera crassipes* Fabricius, 1798:278. Lectotype ♂. Copenhagen – MCZ.

**Material examined.** 2♂♂, India, West Bengal, Darjeeling, Lepchajagat, (27°06'00"N, 88°11'24"E), 21.vii.2013, Swept, leg. B. Mitra.

**Distribution in Oriental.** Bhutan, India (Delhi, Karnataka, Kerala, Odisha – Pannure & Belavadi, 2017; Maharashtra – Saini & Rathor, 2012; Chhattisgarh, Gujarat, Tamil Nadu – Ascher & Pickering, 2024; West Bengal – **new record**), South China, Sri Lanka, Thailand (Pannure & Belavadi, 2017).

***Nomia curvipes* (Fabricius, 1793)**

*Andrena curvipes* Fabricius, 1793:310. Lectotype ♂. Copenhagen – MCZ.

**Distribution in Oriental.** India (Maharashtra, Uttar Pradesh – Saini & Rathor, 2012; Gujarat, Kerala, Madhya Pradesh, Puducherry, Punjab, Tamil Nadu, West Bengal – Pannure & Belavadi, 2017), Myanmar, Nepal (Pannure & Belavadi, 2017).

**Genus *Pachynomia* Pauly 1980*****Pachynomia nathani* Pauly, 2009 (Fig. 4F)**

*Pachynomia nathani* Pauly, 2009:173. Holotype ♀. South India, Nilgiri Hills, Kallar – RMNH.

**Material examined.** 1♀, India: West Bengal, North 24 Parganas, Bidhan Nagar, Dutta bad (22°34'48"N, 88°23'24"E), 21.vi.1964, Sweeping Net, leg. B. Biswas.

**Distribution in Oriental.** India (Kerala, Tamil Nadu – Saini & Rathor, 2012, Pannure & Belavadi, 2017; West Bengal – **new record**), Sri Lanka (Pannure & Belavadi, 2017).

**Genus *Pseudapis* Kirby, 1900*****Pseudapis oxybeloides* (Smith, 1875)**

*Nomia oxybeloides* Smith, 1875:42. Lectotype ♀. Nischiudipore Bangladesh, Nischindipur – BMNH.

**Distribution in Oriental.** Bangladesh, India (Gujarat, Maharashtra, Punjab, Puducherry, Tamil Nadu, Uttar Pradesh – Saini & Rathor, 2012; Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Rajasthan, West Bengal – Pannure & Belavadi, 2017), Sri Lanka (Pannure & Belavadi, 2017).

**Genus *Steganomus* Ritsema, 1873*****Steganomus bipunctatus* (Fabricius, 1804)**

*Nomada bipunctata* Fabricius, 1804:392. Lectotype ♀. Copenhagen – UZMK.

**Distribution in Oriental.** India (Karnataka, Punjab, Tamil Nadu, Uttar Pradesh, West Bengal – Saini & Rathor, 2012, Pannure & Belavadi, 2017, Ascher & Pickering, 2024; Jammu & Kashmir, Tripura – Majumder et al., 2020), Sri Lanka (Pannure & Belavadi, 2017).

***Steganomus fulvipennis* Cameron, 1898 (Fig. 4G)**

*Steganomus fulvipennis* Cameron, 1898:56. Lectotype ♂. Poona, Bombay – OUMNH.

**Material examined.** 1♂, 1♀, India, West Bengal, Darjeeling, Teesta Vally Tea Garden village (27°00'00"N, 88°21'36"E), 29.v.1980, Swept, leg. R. N Tiwari.

**Distribution in Oriental.** India (Arunachal Pradesh – Majumder et al., 2020; Karnataka, Madhya Pradesh – Ascher & Pickering, 2024; Maharashtra – Saini & Rathor, 2012; West Bengal – **new record**).

***Steganomus lieftincki* Pauly, 2009**

*Steganomus lieftincki* Pauly, 2009:173–175. Holotype ♂. India, Delhi, Univ. Campus – RMNH.

**Distribution in Oriental.** India (Delhi, Jharkhand, Karnataka, Rajasthan, West Bengal – Saini & Rathor, 2012, Pannure & Belavadi, 2017).

## DISCUSSION

Nomiinae bees, with their presence in various habitats such as grasslands, natural forests, wetlands, open habitats, farmland, and riparian areas, hold a significant global presence. The documentation of Nomiinae includes a staggering 626 species globally, with 136 in the Oriental region (Pauly, 2009) and 78 in India (Ascher & Pickering, 2024). Currently, 15 genera are reported from India (Saini & Rathor, 2012) and 12 from West Bengal. With the addition of two more species from India, as per a new report, the number of species under the Nomiinae from India is now 83, underscoring the global significance of their distribution. Among the biogeographic distribution of Nomiinae bees, some unique characteristics stand out, piquing our curiosity and highlighting the diversity and adaptability of these bees. For instance, *Gnathonomia* and *Maculonomia* are exclusive to the Oriental countries, including India. The most diversified genera, *Lipotriches* and *Austronomia*, are found in all realms except the Nearctic part of the world (Pauly, 2009). The newly reported species, *Austronomia goniognatha*, is particularly intriguing as it is mainly associated with *Fimbristylis* cf. *umbellaris* (Globular fimbristylis), *Cyperus aromaticus* (Navua sedge) (Soh et al., 2023) and *A. takauensis* from *Nymphoides indica* (water snowflake) (Soh et al., 2023), adding to the fascinating diversity of Nomiinae bees.

While we have made significant strides in exploring the distributional details of Nomiinae bees, there are still vast areas in India that hold the potential for new discoveries. Based on the distributional details provided by Ascher and Pickering (2024), Pannure and Belavadi, (2017), Pauly (2009, 2014, 2024), Majumder et al. (2020, 2021), Karnataka, Kerala, Tamil Nadu, and Maharashtra states have been extensively studied for Nomiinae bees. However, the states of northeastern, central and northern parts of India, the union territories Andaman and Nicobar Island, Chandigarh, Dadra and Nadar Haveli, are yet to be extensively explored, offering a wealth of potential for new discoveries in our research. Nomiinae bees, known for their polylectic behaviour, are key players in our agricultural systems. This efficient pollination behaviour is particularly beneficial for crops such as Coffee, watermelon, cucurbits, beans, Cowpeas, and sesame (Eardley et al., 2009). Beyond their contributions to agricultural productivity, these bees also serve as vital pollinators, potentially aiding in the preservation of natural biodiversity in their respective regions. Our study reveals that despite their polylectic nature, Lamiaceae, Fabaceae, Asteraceae, Convolvulaceae, and Acanthaceae are predominantly pollinated by most Nomiinae species (Table 1). Notably, *Hyptis suaveolens* (Pignut) (Lamiaceae) emerges as the most frequently mentioned floral host in this subfamily.

**Table 1.** Checklist of Nomiinae (Halictidae) from India, West Bengal with Host plant family and distributional data

Sl. No	Species name	Host plant	References
1.	<i>Austronomia albofimbriata</i> (Cameron, 1902)	<i>Tridax procumbens</i> (Asteraceae)	Karunaratne et al. (2005)
2.	<i>Austronomia capitata</i> (Smith, 1875) **	<i>Tectona grandis</i> (Lamiaceae)	Pannure and Belavadi (2017)
3.	<i>Austronomia goniognatha</i> (Cockerell, 1919) *	<i>Cyperus aromaticus</i> (Cyperaceae)	Soh et al. (2023)
4.	<i>Austronomia himalayana</i> (Nurse, 1902) **	Unknown	Unknown
5.	<i>Austronomia notiomorpha</i> (Hirashima, 1978) **	<i>Hyptis suaveolens</i> (Lamiaceae)	Karunaratne et al. (2005)
6.	<i>Austronomia pseudoscutellata</i> Pauly, 2009**	Unknown	Unknown
7.	<i>Austronomia scutellata</i> (Smith, 1875)	Unknown	Unknown
8.	<i>Austronomia takauensis</i> (Friese, 1910) *	<i>Nymphoides indica</i> (Menyanthaceae)	Soh et al. (2023)
9.	<i>Crociaspidia buddha</i> (Westwood, 1875)	<i>Scutellaria columnae</i> (Lamiaceae)	Karunaratne et al. (2005)
10.	<i>Curvinomia iridescens</i> (Smith, 1857)	<i>Cratoxylum</i> sp. (Hypericaceae)	Ascher et al. (2019)
11.	<i>Curvinomia strigata</i> (Fabricius, 1793)	<i>Delleina suffruticosa</i> (Dilleniaceae)	Ascher et al. (2019)
12.	<i>Gnathonomia thoracica</i> (Smith, 1875)	<i>Merremia hederacea</i> (Convolvulaceae)	Karunaratne et al. (2005)
13.	<i>Hoplonomia elliotii</i> (Smith, 1875)	<i>Ipomoea nil</i> (Convolvulaceae)	Patel and Pastagia (2021)
14.	<i>Hoplonomia incerta</i> (Gribodo, 1894) **	<i>Neptunia plena</i> (Fabaceae)	Ascher et al. (2022)
15.	<i>Hoplonomia westwoodi</i> (Gribodo, 1894)	<i>Leucas aspera</i> (Lamiaceae)	Pannure and Belavadi (2017)
16.	<i>Lipotriches ceratina</i> (Smith, 1857) **	<i>Leena indica</i> (Vitaceae)	Ascher et al. (2019)
17.	<i>Lipotriches fulvinerova</i> (Cameron, 1907)	<i>Hyptis suaveolens</i> (Lamiaceae)	Karunaratne et al. (2005)
18.	<i>Lipotriches phenacopsis</i> (Cockerell, 1911)	Unknown	Unknown
19.	<i>Lipotriches pulchriventris</i> (Cameron, 1897)	<i>Justicia procumbens</i> (Acanthaceae)	Karunaratne et al. (2005)
20.	<i>Lipotriches phenacura</i> (Cockerell, 1911) **	Unknown	Unknown
21.	<i>Maculonomia anthophoroides</i> (Meade-Waldo, 1916)	Unknown	Unknown
22.	<i>Macronomia antennata</i> (Smith, 1875) **	<i>Tephrosia</i> sp. (Fabaceae)	Pannure and Belavadi (2017)
23.	<i>Maynenomia chaprensis</i> (Cockerell, 1920)	<i>Justicia procumbens</i> (Acanthaceae)	Karunaratne et al. (2005)
24.	<i>Nomia crassipes</i> (Fabricius, 1798) **	<i>Hyptis suaveolens</i> (Lamiaceae)	Pauly (2024)
25.	<i>Nomia curoipes</i> (Fabricius, 1793)	<i>Carthamus oxyacantha</i> (Asteraceae)	Bodlah et al. (2020)
26.	<i>Pachynomia nathani</i> Pauly, 2009**	<i>Euphorbia heterophylla</i> (Euphorbiaceae)	Karunaratne et al. (2005)
27.	<i>Pseudapis oxybeloides</i> (Smith, 1875)	<i>Callistemon citrinus</i> (Myrtaceae)	Pannure and Belavadi (2017)
28.	<i>Steganomus bipunctatus</i> (Fabricius, 1804)	<i>Phaseolus vulgaris</i> (Fabaceae)	Pannure and Belavadi (2017)
29.	<i>Steganomus fulvipennis</i> Cameron, 1898**	Unknown	Unknown
30.	<i>Steganomus lieftincki</i> Pauly, 2009	<i>Grewia hirsute</i> (Malvaceae)	Pannure and Belavadi (2017)

\* New report to India; \*\* New report to West Bengal.

## AUTHOR'S CONTRIBUTION

The authors confirm their contribution in the paper as follows: B. Majumder: Collection, genitalia dissections, identification, photography, manuscript preparation; R. Nath: Seasonal collection of specimens, and providing the data of the host plant, genitalia dissections; S.K. Senapati: Supervising, and manuscript preparation; S.I. Kazmi: Supervising, and technical reviewing of manuscript; A. Rameshkumar: Correspondence, conceptualization, collection and identification, manuscript preparation. The authors read and approved the final version of the manuscript.

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## AVAILABILITY OF DATA AND MATERIAL

The specimens listed in this study are deposited in to the Hymenoptera section, National Zoological collection of the Zoological Survey of India, HQ, Kolkata and are available from the curator, upon request.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study only included plants and arthropod material, and all required ethical guidelines for the treatment and use of animals were strictly adhered to in accordance with international, national, and institutional regulations. No human participants were involved in any studies conducted by the authors for this article.

## CONSENT FOR PUBLICATION

Not applicable.

## CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

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## فهرست گونه‌های زنبورهای زیرخانواده Nomiinae (Hymenoptera: Apoidea: Halictidae) بنگال غربی، هند و گزارش‌های جدید

بهسواتی ماجومدر<sup>۱</sup>، ریجو نات<sup>۲</sup>، سرفرازالاسلام کاظمی<sup>۱</sup>، صابیتا کومار سنپاتی<sup>۲</sup>، ناندهان رامشکومار<sup>۱\*</sup>

۱ بخش مطالعات جانورشناسی هند، نیو آلیپور، کلکته-۷۰۰۰۵۳، بنگال غربی، هند

۲ گروه حشره‌شناسی، دانشگاه کریشی ویشواویدالایا اتار بانگا، کوچ بهار، ۷۳۶۱۶۵، بنگال غربی، هند

\* پست الکترونیک نویسنده مسئول مکاتبه: [drrameshtrichy@gmail.com](mailto:drrameshtrichy@gmail.com)

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**چکیده:** دو گونه از زنبورهای جنس *Austronomia* Michener, 1965 (Hymenoptera: Halictidae) شامل *A. takauensis* (Friese, 1910) و *A. goniognatha* (Cockerell, 1919) برای اولین بار از هند گزارش شدند. یازده گونه زنبور متعلق به زیرخانواده Nomiinae شامل *Austronomia capitata* (Smith, 1875)، *Austronomia himalayana* (Nurse, 1902)، *Austronomia notiomorpha* (Hirashima 1978)، *Lipotriches ceratina* (Smith, 1857)، *Hoplonomia incerta* (Gribodo, 1894)، *pseudoscutellata* Pauly, 2009، *Nomia crassipes*، *Macronomia antennata* (Smith, 1875)، *Lipotriches phenacura* (Cockerell, 1911) (Fabricius, 1798)، *Pachynomia nathani* Pauly, 2009 و *Steganomus fulvipennis* Cameron, 1898 به فون زنبورهای بنگال غربی اضافه شدند. فهرست ۳۰ گونه از زیرخانواده Nomiinae در بنگال غربی به همراه روابط آن‌ها با گیاهان میزبان ارائه شد.

**واژگان کلیدی:** *Austronomia*، انتشار، ارتباط با گیاهان، خاورزمین، گرده‌افشان‌ها