

## Studies of the genus *Anthelephila* Hope (Coleoptera: Anthicidae) 20. *A. caeruleipennis* species-group

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KEJVAL Z. 2019: Studies of the genus *Anthelephila* Hope (Coleoptera: Anthicidae) 20. *A. caeruleipennis* species-group. *Acta Musei Moraviae, Scientiae biologicae* **104(2):** 147–168. – An informal *Anthelephila caeruleipennis* species-group is established for seven species of *Anthelephila* Hope, 1833 and a key to their identification is provided. A new species, *Anthelephila incisa* sp.nov., is described from Myanmar. A new synonymy, *Anthelephila viridipennis* (Krekich-Strassoldo, 1931) (= *Formicomus lindbergi* Bonadonna, 1960, syn.nov.), is proposed. Lectotypes are designated for *Formicomus antiquus* Krekich-Strassoldo, 1919 and *F. viridipennis* Krekich-Strassoldo, 1931.

**Keywords.** Coleoptera, Anthicidae, *Anthelephila*, new species, new synonymy, Palaearctic Region, Oriental Region

### Introduction

This contribution to knowledge of the genus *Anthelephila* Hope, 1833 addresses seven species newly placed in an informal *A. caeruleipennis* species-group. Members of this group tend to be quite uniform in external appearance (body form, coloration) and their grouping is further supported by a number of shared male characters, e.g. a peculiar, file-like median process of male abdominal sternum VII (Figs 26, 27), widely fused sclerites of male tergite VIII, and similar morphology of the tegmen of the aedeagus.

### Material and methods

Specimens were examined with a Leica MZ 9.5 stereomicroscope; morphological measurements were taken by means of an ocular graticule. Male genitalia were examined after being cleared in a hot 10% KOH solution and then placed on the same card as the specimen in water-soluble dimethyl hydantoin formaldehyde resin (DMHF). Illustrations were made using a drawing tube attached to an Olympus CH-2 compound microscope. Photographs were taken with a Nikon Coolpix 4500 digital camera attached to a Leica MZ 9.5 trinocular stereomicroscope; images of the same specimen at different focal planes were combined with Helicon Focus 5.2 Pro and edited with Adobe Photoshop 9.0.2 software.

Species are ordered alphabetically. Separate labels are indicated by a double slash (//) and comments on specimens and label data are placed in square brackets ([...]). The label data for the additional specimens have been rewritten almost entirely. Locality data of the specimens from Iran (Exped. NMP) are specified and/or supplemented by coordinates after HOBERLANDT (1981, 1983). The terminology of body setae follows WERNER & CHANDLER (1995).

The following abbreviations are used in the text: [p] – printed; [h] – handwritten; env. – environs of; rec. – record from; lgt. – collected by; spec. – specimen; Mts – mountains; b.s.l. – below sea level; prov. – province; distr. – district; coll. – collection; Exped. NMP – collected by members of the Czechoslovak-Iranian Entomological expeditions to Iran (1970, 1973 and 1977) organized by the National Museum in Prague (Czechia).

The following abbreviations are used for the places in which the material is deposited:

BMNH	.....	The Natural History Museum, London, United Kingdom
DCDC	.....	Donald S. Chandler collection, Durham, New Hampshire, U.S.A.
DTDC	.....	Dmitry Telnov collection, Dzidriņas, Latvia
HNHM	.....	Hungarian Natural History Museum, Budapest, Hungary
KCKC	.....	Karel Černý collection, Kralupy nad Vltavou, Czechia
KOOC	.....	Kamil Orszulik collection, Ostrava, Czechia
MMOC	.....	Marion Mantič collection, Ostrava, Czechia
MHNG	.....	Muséum d'Histoire Naturelle, Genève, Switzerland
MNHN	.....	Museum National d'Histoire Naturelle, Paris, France
MZLU	.....	Biological Museum, Lund University, Lund, Sweden
NFIC	.....	National Forest Insect Collection, Forest Research Institute, Dehra Dun, India
NHMB	.....	Naturhistorisches Museum, Basle, Switzerland
NHMW	.....	Naturhistorisches Museum, Vienna, Austria
NME	.....	Naturkundemuseum Erfurt, Erfurt, Germany
NMPC	.....	National Museum, Prague, Czechia
TKHC	.....	Tomáš Kopecký collection, Hradec Králové, Czechia
ZIN	.....	Institute of Zoology, Russian Academy of Sciences, St. Petersburg, Russia
ZKDC	.....	Zbyněk Kejval collection, Domažlice, Czechia
ZSMC	.....	Zoologische Staatssammlung München, Germany

## Taxonomy

### *Anthelephila caeruleipennis* species-group

**Diagnosis.** Small to medium-sized species (body length 3.3–5.8 mm), head usually darker than reddish pronotum, elytra dark, with bluish or greenish reflection (Figs 22, 23), almost evenly punctate and setose (lacking conspicuous, setose elytral bands); head always well-differentiated from short neck; antennomere I quite short, about twice as long as wide; pronotal disc always evenly convex, postero-lateral pronotal impressions smooth; mesoventrite with antero-lateral margins arcuate; male metaventrite always simple; all tibiae with two terminal spurs (subequal); penultimate tarsomere widened/flattened apically to a greater or lesser extent, with terminal tarsomere articulated dorsally (Figs 28, 29); male abdominal sterna III–V simple; male abdominal sternum VII always emarginate posteriorly, with conspicuous median process exhibiting a peculiar, file-like sculpture ventrally (Figs 26, 27); male abdominal tergite VIII forming paired, widely connected sclerites; apical sclerite of male abdominal segment IX inconspicuous, weakly sclerotized, rounded apically; parameral plate of tegmen always distinctly shorter than basal-piece, shortly bilobed apically (Fig. 21).

**Species included.** *Anthelephila antiqua* (Krekich-Strassoldo, 1919), *A. arabica* (Pic, 1899), *A. caeruleipennis* (LaFerté-Sénéctère, 1847), *A. incisa* sp.nov., *A. lewisi* (Marseul, 1876), *A. limaria* Kejval, 2006, and *A. viridipennis* (Krekich-Strassoldo, 1931).

**Distribution.** Southern subtropical part of the whole Palaearctic Region, including Japan and Taiwan in the East. In sub-Saharan Africa only northeastern region (Ethiopia, Eritrea, Somalia and Chad). In Oriental Asia mostly mainland countries, with a few isolated records from Indonesia (Bali, Java and the Lombok Islands).

**Remarks.** Two species couplets (*A. caeruleipennis*, *A. viridipennis* and *A. incisa* sp.nov., *A. lewisi*) may possibly represent geographical subspecies, sharing all male characters, except some detail differences in the morphology of sternite VIII. However, more material is needed better to understand their distributions, which may overlap in southern Iran, Oman, United Arab Emirates and southern Myanmar.

#### A key to the species

- 1(2) Large, robust species (body length 4.9–5.8 mm); legs and antennae largely brownish-black; elytra more convex, almost ovoid, humeri slightly indicated (Fig. 22); median bulge of mesoventrite raised and more distinct posteriorly at base of intercoxal process (especially in males); male profemoral process conspicuous, robust, with longer fringe of densely-spaced, stiff setae (Fig. 1); male protibiae distinctly lobed on inner side; male abdominal sternum VI with median process; prongs of male sternite VIII more elongate and simple, with two pairs of small medio-basal projections (Fig. 2). ..... *A. limaria* Kejval
- 2(1) Small to medium-sized, more slender species; legs and antennae reddish to reddish-brown, only partly darkened; elytra moderately convex, humeri more distinct (Fig. 23); median bulge of mesoventrite only indicated, inconspicuous, evenly developed; male profemoral process small to indistinct, at most with short fringe of stiff setae subapically (Figs 11, 17); male protibiae nearly simple, with delicate carina on inner side; male abdominal sternum VI simple; prongs of male sternite VIII shorter and wider, with conspicuous ventral and median projections.
- 3(8) On average, a larger species (body length 3.6–5.3 mm); elytra mostly minutely and more densely punctate and setation less raised (decumbent); penultimate metatarsomere about as wide as metatarsomere III, with terminal tarsomere articulated beyond mid-length (Fig. 29); male profemoral process always distinct, quite rounded apically, with subapical tuft of short, stiff setae (Fig. 11); male sternum VII deeply emarginate posteriorly (median margins of posterior lobes subparallel), median process slender, subparallel to slightly constricted in basal half in ventral view, with very conspicuous, keel-like, median longitudinal carina passing into process (Fig. 26).
- 4(5) Prongs of male sternite VIII as in Figs 3, 4, their ventral process wide and bearing long stiff setae apically, median process rather short and robust. ....  
..... *A. arabica* (Pic)

- 5(4) Ventral process of prongs of male sternite VIII slender, bearing comparatively short, stiff setae apically, median process longer and straight (Figs 8, 10).
- 6(7) Elytra with bluish reflection; transverse subapical groove of prongs of male sternite VII developed only ventrally, ventral margin at most slightly sinuous in lateral view (Figs 5–8). ..... *A. caeruleipennis* (LaFerté-Sénéctère)
- 7(6) Elytra with greenish reflection; transverse subapical groove of prongs of male sternite VII also extending laterally, ventral margin excavate or incised in lateral view (Figs 9, 10, 12–16). ..... *A. viridipennis* (Krekich-Strassoldo)
- 8(3) On average, a smaller species (body length 3.3–4.7 mm); elytra somewhat more coarsely and sparsely punctate and setation more raised (suberect); penultimate metatarsomere distinctly wider distally than metatarsomere III, with terminal tarsomere articulated at, or shortly before, its mid-length (Fig. 28); male profemoral process absent or small and pointed, with delicate setae (Fig. 17); male sternum VII less deeply emarginate (median margins of posterior lobes divergent), median process widest basally, almost evenly narrowing towards apex in ventral view, with more or less projecting, transverse carina at base, and lacking keel-like carina (Fig. 27).
- 9(10) Male profemoral process absent (at most slight carina present); paired prongs of male sternite VIII widely, somewhat unevenly, rounded apically, their ventral projections quite long and slender, with delicate, longer setae and short, stiff setae (Figs 18, 24); long thick setae on ventral side (mesially) partly articulated on small projection (Fig. 24). .....  
..... *A. antiqua* (Krekich-Strassoldo)
- 10(9) Male profemoral process present and mostly quite distinct (Fig. 17, variation); paired prongs of male sternite VIII abruptly narrowed or incised apically, their ventral projection shorter and wider, with longer delicate setae only, long thick setae on ventral side (mesially) arranged in simple row (Fig. 25).
- 11(12) Prongs of male sternite VIII abruptly narrowed and rounded apically (Fig. 19). ..... *A. lewisi* (Marseul)
- 12(11) Prongs of male sternite VIII deeply incised and pointed apically (Figs 20, 25). ..... *A. incisa* sp.nov.

***Anthelephila antiqua* (Krekich-Strassoldo, 1919)**

(Figs 18, 24, 28)

*Formicomus antiquus* Krekich-Strassoldo, 1919: 172, figs 9a–d.*Formicomus antiquus*: BONADONA (1978): 72 (rec. Bangladesh); UHMANN (1987): 699 (rec. Assam, Uttarakhand); TELNOV (2001): 184 (distribution, rec. Vietnam); TELNOV (2003): 288 (check-list, distribution); CHANDLER *et al.* (2008): 421 (catalogue, distribution).*Formicomus iridipennis* Krekich-Strassoldo, 1928: 79, fig. 13.*Formicomus iridipennis*: KREKICH-STRASSOLDO (1931): 7 (synonymy).**Type locality.** *F. antiquus* – India, Bihar, Pusa; *F. iridipennis* – India, Uttarakhand, Sitapur.

**Type material.** *F. antiquus* – Lectotype ♂, “Pusa Bengal 20.VII.11 S.S. // TYPE // coll. Heberdey // antiquus det. v. Kreckich” (NHMW). Paralectotypes: 2 ♀♀ from Pusa (BMNH) and Calcutta (NHMW). *F. iridipennis* – Syntypes: 1 spec. (BMNH).

**Additional material.** **BANGLADESH:** 1 ♂, Khulna, v.1973, J. Krystl lgt. (ZKDC). **INDIA:** 1 ♀, Delhi, 18.x.1979 [no collector] (ZKDC); 1 ♀, Delhi, airport, 15.vi.1991, S. Jakl lgt. (ZKDC). **Assam:** 2 ♀♀, Guwahati, 200 m, at light, 5.xi.1978, C. Besuchet & I. Löbl lgt. (MHNG); 5 ♂♂ 3 ♀♀, Guwahati env., 3.vii.1995, K. Werner lgt. (ZKDC); 16 ♂♂ 12 ♀♀, Guwahati, 150 m, 15.v.2007, P. Pacholátko lgt. (NHMB, ZKDC). **Jammu & Kashmir:** 1 ♂, Jammu, Talab Tillo, 25.v.1972, T. Sengupta lgt. (ZSMC); 1 ♂, Jammu, viii.1986, K. Werner lgt. (ZKDC); 1 ♂ 2 ♀♀, 16 km from Srinagar, 550 m, 29.x.1979, I. Löbl lgt. (MHNG, ZSMC). **Meghalaya:** 1 ♂, West Garo Hills, Nokrek National Park, GPS 25°29.6'N 90°19.5'E (WGS 84) 1100±150 m, 9–17.v.1996, E. Jendek & O. Šauša lgt. (ZKDC); 1 ♀, same locality, 25°25'N 90°20'E, 1150 m, 13.–22.xii.1997, V. Siniaev & S. Murzin lgt. (ZKDC). **Uttarakhand:** 1 ♂ 1 ♀, Haridwar, Chila, 330 m, 9.–14.viii.1994, M. Snížek lgt. (ZKDC); 8 ♂♂ 12 ♀♀, Rishikesh, 450 m, viii.1988, K. Werner lgt. (ZSMC, ZKDC); 3 ♀♀, Rishikesh, 3.vii.1989, A. Riedel lgt. (ZKDC); 1 ♂ 2 ♀♀, same data, except: 6.viii.1989 (ZKDC); 1 ♂ 1 ♀, Rishikesh, 350 m, at light, 3.–7.vii.1989, Hiermeier lgt. (ZKDC); 1 ♂, Srinagar, 550 m, 29.x.1979, I. Löbl lgt. (ZKDC). **Uttar Pradesh:** 1 ♂, Agra, 28.ix.1997, Pucholt lgt. (KCKC). **Rajasthan:** 7 ♂♂ 13 ♀♀, Bharatpur, 12.viii.1989, A. Riedel lgt. (ZKDC); 2 ♀♀, Bharatpur, 27°12.42'N 70°30.48'E, 31.viii.–5.ix.2002, P. Šípek & M. Fikáček lgt. (ZKDC); 1 ♂ 1 ♀, N of Udaipur, Eklingji, 24°45'N 73°43'E, 7.vii.2006, Z. Kejval lgt. (ZKDC); 1 ♀, 100 km W of Udaipur, Mount Abu, 24°35.35'N 72°42.72'E, 1150 m, 24.–27.iii.2002, P. Šípek & M. Fikáček lgt. (ZKDC). **West Bengal:** 1 ♂, Darjeeling distr., Pesoke, 800 m, sifted in garden, 4.vi.1980, G. Topál lgt. (ZKDC); 2 ♂♂, Darjeeling distr., Sevoke, 200 m, at light, 5.–6.vi.1980, G. Topál lgt. (ZSMC); 1 ♀, Darjeeling env., 2000–2400 m, 4.–7.vii.1997, J. Schneider lgt. (ZKDC); 1 ♂, Calcutta, Ramakrishna Mission Guest House, at light, 16.–20.xii.1979, G. Topál lgt. (ZSMC); 1 ♀, Calcutta, Russel Street, 3rd floor, at light, 9.–12.vi.1980, G. Topál lgt. (ZSMC); 1 ♂, Singur, at light, 26.ix.1967, G. Topál lgt. (ZKDC). **NEPAL:** 1 ♀, Bheri prov., Nepalgunj, W Rapti River, 30.v.1997, A. Weigel lgt. (ZSMC); 1 ♀, Bheri prov., Nepalgunj, Hotel Batika, 28°02'36"N 81°36'35"E, 170 m, 11.–12.vii.2001, A. Kopetz lgt. (NME); 1 ♂ 4 ♀♀, Bheri prov., Bardiya Chisapani, Karnali River, 28°38'23"N 81°17'14"E, 180 m, riverside, 17.vi.2005, A. Weigel lgt. (NME); 1 ♂ 1 ♀, Bheri prov., Bardiya, 18 km W of Kohalpur, Man Khola, 28°12'49.5"N 81°35'18"E, 170 m, 17.vi.2005, A. Weigel lgt. (NME); 1 ♂, Gandaki prov., Tanahun distr., Biasakhe Ghat, 10 km W of Dulegounda, 630 m, 10.x.1994, Csorba & Ronkay lgt. (HNHM); 2 ♀♀, Koshi prov., Arun Valley, Tumlingtar–Chandanpur, 600–400 m, 18.vi.1992, J. & J. Probst lgt. (ZKDC); 1 ♀, Mahakali prov., Kanchanpur distr., 7 km E of Mahendranagar, Daiji, near Chaudara River, 28°56'52"N 80°15'41"E, 190 m, 17.vi.2005, M. Hartmann lgt. (NME); 7 ♂♂ 4 ♀♀, Mahakali prov., Kanchanpur distr., Mahendranagar env., Hotel Suda, 28°57'41"N 80°12'51"E, 230 m, 2.vii.2017, A. Weigel lgt. (NME); 1 ♀, Narayani prov., Sauraha env., 27°34'N 84°30'E, 180 m, 15.vi.2005, K. Bhatta lgt. (NME); 4 ♂♂ 5 ♀♀, Narayani prov., Sauraha, Hotel Sweet Home, 27°35'97"N 84°29'29"E, 180 m, 6.vii.2017, A. Weigel lgt. (NME); 1 ♀, Narayani prov., Chitwan, 13 km W of Sauraha, Kasara, Chitwan National Park, 27°33'07"N 84°21'59"E, 190 m, 20.vi.2005, A. Weigel lgt. (NME); 1 ♀, Chitwan National Park, at light, 230 m, 29.v.1993, J. Probst lgt. (ZKDC). **PAKISTAN: Baluchistan:** 1 ♂, 30 km W of Kingri village, 23.vii.1998, L. Černý lgt. (ZKDC); 1 ♀, Sulaiman Mts, Zhob valley [ca. 31°21'N 69°27'E], 1700 m, viii.2005 [no collector] (ZKDC). **Punjab:** 1 ♂, 20 km E of Rawalpindi, 13.xii.1955, C. Lindemann lgt. (ZKDC); 3 ♀♀, 70 km S of Lahore, Changa Manga Forest, 18.–22.viii.1998, L. Čížek lgt. (ZKDC); 2 ♀♀, Taxila, 33°44'47.2"N 72°48'05"E, gravely banks of stream, 525 m, 23.ix.2001, M. Šlachta lgt. (ZKDC).

**Variation.** Body length (♂♀) 3.3–4.7 mm; head base evenly rounded to moderately angled medially in dorsal view; pronotal disc more or less densely and coarsely punctate.

**Distribution.** Bangladesh, India (Assam, Bihar, Jammu and Kashmir, Rajasthan, Uttarakhand, Uttar Pradesh, West Bengal), Nepal, and Pakistan (Baluchistan, Punjab).

**Remarks.** KREKICH-STRASSOLDO (1919) described *Formicomus antiquus* from a series of specimens collected in India (“Bengalen, Calcutta”) and Bangladesh (“Ost-Bengalen, Gralpatham”), and mentioned the presence of a male from “Bengalen” in his collection.

The lectotype is designated here for the male syntype from Pusa deposited in NHMW; its abdomen was dissected by Krekich and its parts mounted in a microscope slide.

The occurrence of *Anthelephila antiqua* in China, Thailand and Vietnam, recorded by TELNOV (2001), is dubious and very probably based on misidentified specimens of *A. lewisi*, which is externally very similar.

***Anthelephila arabica* (Pic, 1899)**

(Figs 3, 4)

*Formicomus arabicus* Pic, 1899a: 264.

*Formicomus arabicus*: Pic (1911): 16 (catalogue); WINKLER (1927): 836 (catalogue); UHMANN (1998): 96 (distribution, rec. Saudi Arabia).

*Anthelephila arabica*: CHANDLER *et al.* (2008): 421 (catalogue, distribution); KEJVAL (2012): 351 (note).

**Type locality.** Saudi Arabia, Hedjaz (“Arabie”).

**Type material.** Syntype ♂, “El Hadjaz Arabie [h] // type [h; yellowish label] // TYPE [p; red label] // MUSÉUM PARIS 1958 COLL. M. PIC [p] // arabicus Pic [h]” (MNHN).

**Additional material.** **IRAN: Fars:** 19 ♂♂ 65 ♀♀, Korsiah, 28°46'N 54°25'E, 29.–30.v.1973 [no collector, Exped. NMP] (NMPC, ZKDC). **IRAQ:** 1 ♂, Abbu Ghreib, Baghdad, 28.v.1987, Šuška lgt. (ZKDC); 1 ♀, Baghdad [no date], Káalová lgt. (ZKDC); 2 ♀♀, Baghdad, 11.v.1988, Olejníček lgt. (ZKDC). **SYRIA:** 1 ♂, Ath Thadyayn, 5 km E, banks of Euphrates River, 27.v.2009, M. Šárovec lgt. (ZKDC); 1 ♂ 1 ♀, Al Rakka, 25.–27.v.1990, M. Krajčák lgt. (ZKDC); 1 ♀, As-Safira, Sabkhat al-Jabbul Lake env., 9.ix.1998, A. Bezděk lgt. (ZKDC); 2 ♂♂ 6 ♀♀, Dayr az Zawr, 11.–16.vi.1980, H. Mühle lgt. (ZKDC, ZSMC); 1 ♂, Dayr az Zawr, 10 km SE, banks of Euphrates River, 26.v.2009, M. Šárovec lgt. (ZKDC); 1 ♂, Thaden env. [SW of Lake Assad], 12.–13.ix.1998, A. Bezděk lgt. (ZKDC); 6 ♂♂ 1 ♀, Zalabiyah, 40 km NW of Dayr az Zawr, Euphrates River env., 300 m, 24.iv.2000, S. Benedikt lgt. (ZKDC); 5 ♂♂ 4 ♀♀, same data, except: P. Kresl lgt. (ZKDC).

**Variation.** Body length (♂♀) 4.4–5.4 mm.

**Distribution.** Iran, Iraq, Saudi Arabia, and Syria.

**Remarks.** The records of *Formicomus arabicus* from Saudi Arabia by UHMANN (1998) belong to *Anthelephila bispilifasciata* (Pic, 1897) (KEJVAL 2012). The occurrence in Yemen (UHMANN 1998, CHANDLER *et al.* 2008) is probably based on unpublished locality data and should be confirmed by new findings.

***Anthelephila caeruleipennis* (LaFerté-Sénéctère, 1847)**

(Figs 5–8, 26)

*Anthicus caeruleipennis* LaFerté-Sénéctère, 1847: 369.

*Formicomus caeruleipennis*: LAFERTÉ-SÉNÉCTÈRE (1849a): 4 (new comb., redescription, rec. Spain); LAFERTÉ-SÉNÉCTÈRE (1849b): 73 (same); WOLLASTON (1864): 517 (rec. Canary Islands); MARSEUL (1879): 47, 49 (key, redescription); DESBROCHERS DES LOGES (1881): 152 (rec. Algeria, note); PIC (1892): 213 (rec. Algeria); PIC (1894): 24 (catalogue, distribution); PIC (1911): 17 (catalogue); FUENTE (1932): 107 (catalogue, rec. Spain); WOLLASTON (1865): 442 (rec. Canary Islands); VAN HILLE (1977): 197 (rec. Egypt, Somalia, Sudan, Yemen); UHMANN (1985): 181 (rec. Algeria, Spain); UHMANN (1990): 581 (rec. Corsica, Egypt, Spain, Tunisia); UHMANN (1992): 98, figs. 61–65 (redescr., key); UHMANN (1995): 38 (rec. Oman); UHMANN & RIHANE (1995): 42 (rec. Oman); UHMANN (1996): 25 (rec. Egypt); UHMANN (1998): 96 (rec. Saudi Arabia, distribution); TELNOV (1998): 166 (rec. Morocco, Spain); TELNOV (1999): 25 (rec. Egypt).

*Formicomus caeruleipennis* [misspelling]: ROSENHAUR (1856): 224 (rec. Spain); DYECK (1870): 151 (rec. Spain); GEMMINGER & HAROLD (1870): 2087 (catalogue); CUNÍ Y MARTORELL & MARTORELL PEÑA (1876): 214 (rec. Spain); BAUDI DI SELVE (1877): 664 (diagnosis, distribution); CUNÍ Y MARTORELL (1888): 152 (rec. Spain); PIC (1896b): 166 (rec. Algeria); WINKLER (1927): 836 (catalogue); KREKICH-STRASSOLD (1931):



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- 7, fig. 8a (note, male characters); PIC & LINDBERG (1932): 29 (rec. Morocco); BODENHEIMER (1932): 59 (rec. Israel); KOCH (1937): 186 (note); BODENHEIMER (1937): 133 (check-list); KOCHER (1956): 23 (catalogue, rec. Morocco); PIC & HAWKINS (1957): 441 (rec. Yemen); CHAUDHRY *et al.* (1970): 51 (rec. Pakistan, Bangladesh, note); TELNOV (2002): 21 (note); OROMÍ *et al.* (2001): 200 (Canary Islands, catalogue); FINKEL *et al.* (2002): 196 (rec. Israel).
- Formicomus coeruleipennis* [misspelling]: CHAUDHRY & KHAN (1967): 32 (rec. Bangladesh).
- Formicomus caeruleipennis* [misspelling]: TEUNISSEN (1998): 29 (rec. Spain).
- Anthelephila caeruleipennis*: UHMANN *et al.* (2005): 11 (rec. Israel, distribution); TELNOV (2008): 287, pl. 24 (rec. United Arab Emirates, habitus figure); CHANDLER *et al.* (2008): 422 (catalogue, distribution); DIÉGUEZ FERNÁNDEZ (2011): 56 (rec. Spain); KEJVAL (2012): 353, fig. 20 (rec. Yemen, habitus figure); VALLADARES *et al.* (2013): 33 (rec. Spain); EL-TORKEY (2014): 182, 184, fig. 11 (key, rec. Egypt, distribution); BOLU (2016): 86 (rec. Turkey); TELNOV & GHAHARI (2018): 478 (rec. Iran); GARCIA CARILLO *et al.* (2018): 123, Fig. 1 (rec. Gibraltar, habitus figure); DRUMONT & GARCIA CARRILO (2018): 143 (rec. Belgium, an introduced spec.).
- Myrmecosoma coeruleipenne*: TRUQUI (1855): 345 (rec. Lebanon).
- Formicomus cyanopterus* LaFerté-Sénéctère, 1849a: 5.
- Formicomus cyanopterus*: LAFERTÉ-SÉNÉCTÈRE (1849b): 74 (repeated description); GEMMINGER & HAROLD (1870): 2087 (catalogue); MARSEUL (1879): 47, 49 (key, diagnosis, note); SAHLBERG (1913): 188 (rec. Egypt, Lebanon); KREKICH-STRASSOLDO (1931): 7, fig. 8b (note, male characters); BODENHEIMER (1934): 222 (rec. Israel); UHMANN (1985): 181 (rec. Egypt, Iraq, Israel, Saudi Arabia, Syria, Tunisia); UHMANN (1988): 398 (rec. Jordan).
- Formicomus caeruleipennis* var. *cyanopterus*: PIC (1892): 213 (rec. Algeria); PIC (1893): 65 (rec. Algeria); PIC (1894): 24 (catalogue, distribution); PIC (1896a): 39 (rec. Algeria); PIC (1899): 173 (rec. Egypt); PIC (1906): 283 (rec. Algeria, Tunisia); PIC (1907): 63 (rec. Eritrea, note); PIC (1911): 17 (catalogue); BONADONA (1963): 593 (rec. Chad, distribution).
- Formicomus coeruleipennis* var. *cyanopterus* [misspelling]: BAUDI DI SELVE (1877): 664 (diagnosis, distribution); WINKLER (1927): 836 (catalogue); BODENHEIMER (1937): 133 (check-list); BONADONA (1956): 116 (rec. Algeria); PIC & HAWKINS (1957): 441 (rec. Yemen, distribution); HARIRI (1968): 205 (check-list, Syria).
- Formicomus coeruleipennis* ab. *cyanopterus* [misspelling]: KOCHER (1956): 24 (rec. Morocco).
- Formicomus coeruleipennis* var. *cyanopterus* [misspelling]: ALFIERI (1976): 146 (catalogue, rec. Egypt).
- Formicomus caerneipennis* var. *cyanopterus* Laf. [misspelling]: PIC (1955): 1042 (rec. Mauritania).
- Formicomus coeruleipennis* ssp. *cyanopterus* [misspelling]: KOCH (1935): 136 (key, rec. Egypt); KOCH (1937): 186 (rec. Libya, note).
- Formicomus coeruleipennis cyanopterus* [misspelling]: HANNA (1969): 594 (rec. Egypt).

**Type locality.** *A. caeruleipennis* – Algeria, Skikda (= Philippeville); *F. cyanopterus* – Egypt.

**Type material** (see Remarks).

**Additional specimens.** **ALGERIA:** 1 ♂, Bou Saada, 3.v.1987, J. Strejček lgt. (ZKDC); 2 ♀♀, Ghardaia, 32°30'24"N 3°37'43"E, garden, 520 m, 7.–9.x.2015, Baba Aissa lgt. (ZKDC); 1 ♂, El Golea, 17.iii.1979, R. Grimm lgt. (ZSMC); 1 ♀, Sidi Freidi, pr. Alger, 9.v.1987, J. Strejček lgt. (ZKDC). **EGYPT:** 2 ♂♂ 1 ♀, Abu Simbel, ix.1996, M. Petrus lgt. (ZKDC). **ISRAEL:** 3 ♂♂ 2 ♀♀, Kiryat Shefayim, 5.ix.1980, F. Hebauer lgt. (ZKDC, ZSMC); 1 ♀, Tel Aviv, 5.ix.1980, F. Hebauer lgt. (ZKDC). **JORDAN:** 1 ♂, 20 km N of Amman, 32°12.906'N 35°53.093'E, 250 m, 19.v.2007, Z. Kejval lgt. (ZKDC); 1 ♀, Jordan Valley, near Dead Sea, 300 m b.s.l., 1.vii.1964, J. Klapperich lgt. (ZSMC); 2 ♀♀, Wadi Rawhda, N of Ma'daba, 31°49.719'N 35°47.675'E, 681 m, 1.iv.2016, Wrase & Laser lgt. (ZKDC). **MOROCCO:** 3 ♂♂ 1 ♀, Agadir, 7.–14.vi.2004, K. Orszulik lgt. (ZKDC); 2 ♂♂ 2 ♀♀, Al Hoceima, sea coast, 35°12'N 03°52'W, 19.v.2014, K. Orszulik lgt. (ZKDC); 1 ♀, Aoulouz env., Sous River valley, 20.iv.1992, M. Krajčák lgt. (ZKDC); 2 ♀♀, same locality, 21.–23.v.2003, T. Kopecký lgt. (TKHC); 1 ♀, Argana, 17.v.1995, J. Hájek lgt. (ZKDC); 1 ♂ 2 ♀♀, Grand Atlas, Asni, 1200 m, 10.–11.iii.1991, Meinander lgt. (ZKDC); 1 ♀, Asni, 27.iv.1990, M. Snížek lgt. (ZKDC); 1 ♀, Assaka, 31°49.84'N 07°02.72'W, 4.vi.2013, 650–750 m, J. Pávek lgt. (ZKDC); 1 ♂, Assaka, 31°50'N 07°03'W, 700 m, 4.vi.2013, K. Orszulik lgt. (ZKDC); 1 ♂ 2 ♀♀, Cascades d'Ouzoud, 70 km SW of Beni-Mellal, 12.v.1997, Z. Jindra lgt. (ZKDC); 1 ♀, El Kelaa Mgouna, 16.v.1995, J. Hájek lgt. (ZKDC); 1 ♂, Erfoud, Oued Ziz, 13.v.1995, P. Bulirsch lgt. (ZKDC); 1 ♀, Goulmima, pr. Errachidia, 23.iv.1995, J. Stanovský lgt. (ZKDC); 1 ♀, Ksar-el-Kbin, 23.v.1995, J. Bašta lgt. (ZKDC); 1 ♀, Ksar-el-Kebir, 18.v.1995, J. Bašta lgt. (ZKDC); 6 ♂♂ 2 ♀♀, Lehad

N'ait Mzal, 30°03.254'N 09°06.658'W, 635 m, 23.iv.2012, P. Krásenský lgt. (ZKDC); 2 ♂♂ 3 ♀♀, Marrakech, 15.iv.1990, Z. Kejval lgt. (ZKDC); 1 ♀, same locality, 2.v.1998, M. Kafka lgt. (ZKDC); 2 ♂♂ 2 ♀♀, Mechra-Benabbou, 32°39'N 07°48'W, 20.v.2014, K. Orszulik lgt. (ZKDC); 1 ♀, Mohammedia, pr. Casablanca, 15.iv.1990, Z. Kejval lgt. (ZKDC); 3 ♂♂, mouth of Moulouya River, 4.xii.1991, Chavanon lgt. (ZKDC); 2 ♀♀, Oued Dra Zaoula-er-Barhini, 30 km SE of Zagora, 5.vi.2007, M. Šárovec lgt. (ZKDC); 1 ♂, Oulad Driss, M'Hamid, 29°49.930'N 05°38.762'W, 572 m, 12.iv.2012, P. Krásenský lgt. (ZKDC); 2 ♀♀, Oued Tairhem, 14 km E of Rissani, 31°15'N 04°10'W, 719 m, 11.v.2012, P. Kabátek lgt. (ZKDC); 2 ♀♀, Quarzazate env., reservoir, 30°58'N 06°45'W, 1100 m, 25.v.2013, J. Hejkal lgt. (ZKDC); 2 ♂♂ 6 ♀♀, same data, except: K. Orszulik lgt. (ZKDC); 1 ♂ 1 ♀, Tamnougalt env., 20 km S of Agdz, Draa River valley, 18.–21.v.2003, T. Kopecký lgt. (TKHC); 1 ♂ 2 ♀♀, same data, except: F. Pavel lgt. (ZKDC); 1 ♂ 1 ♀, Taourirt env., 23.x.1991, Chavanon lgt. (ZKDC); 4 ♀♀, Taroudannt, 16.–18.iv.1990, Z. Kejval lgt. (ZKDC); 1 ♂, Taza env., Bah-Azhar, 9.v.2008, K. Orszulik lgt. (ZKDC); 1 ♂, Zagora, 30.v.1995, S. Bílý lgt. (ZKDC); 1 ♀, same locality, 15.v.1997, P. Průdek lgt. (ZKDC); 3 ♀♀, 6 km SE of Zagora, 30°18.6'N 05°45.9'W, 714 m, 12.v.2007, P. Kabátek lgt. (ZKDC); 1 ♂ 1 ♀, Ziz valley, 60 km N of Errachidia, 32°28'N 4°30'W, 6.vi.1999, P. Průdek lgt. (ZKDC). **OMAN:** 4 ♂♂ 1 ♀, Al Mughsayl, 16°53'00"N 53°47'42"E, 9.iii.2019, K. Orszulik lgt. (KOOC, ZKDC); 1 ♂, road Al Mughsayl – Salalah, ca 3 km from Al Mughsayl, 8.–11.viii.1999, 20 m, R. Červenka lgt. (ZKDC); 1 ♀, Bahla, 22°57'38"N 57°17'49"E, 8.ix.2017, K. Orszulik lgt. (ZKDC); 4 ♀♀, Rakhyut, 16°44'54"N 53°13'26"E, 9.iii.2019, K. Orszulik lgt. (KOOC, ZKDC); 1 ♂, Salalah E, Jebel al Quarra, Wadi Darbat, 17°06'20.0"N 54°27'11.3"E, 190 m, Schnitter lgt. (ZKDC); 2 ♀♀, Taqah, 17°02'30"N 54°20'00"E, 5.ix.2018, K. Orszulik lgt. (KOOC); 1 ♂, Wadi Darbat, 17°05'N 54°26'E, 160 m, 9.x.2013, J. Halada lgt. (ZKDC). **SAUDI ARABIA:** 1 ♂, Jizan prov., Jizan, near Red Sea, 25.–26.iii.1983, C. Holzschuh lgt. (ZKDC); 2 ♀♀, Jizan prov., Wadi Ramlan, 17°47'N 42°23'E, 190 m, 10.ii.2016, J. Bezděk & D. Král lgt. (ZKDC); 1 ♀, Asir prov., Wadi Hali, 18°30'N 42°03'E, 530 m, 11.ii.2016, J. Bezděk & D. Král lgt. (ZKDC). **SPAIN:** 1 ♂ 3 ♀♀, Alicante prov., Denia, 27.v.–10.vi.2000, J. Januš lgt. (ZKDC); 1 ♀, Malaga prov., Marbella, 24.–26.v.1995, F. Pavel lgt. (ZKDC); 1 ♂ 2 ♀♀, Granada prov., Motril, 15.v.1991, M. Snížek lgt. (ZKDC); 2 ♂♂ 1 ♀, Malaga prov., Torremolinos, vii.1993, P. Kubina lgt. (ZKDC); 1 ♀, Valencia [no date], V. M. Duchon lgt. (NMPC); 2 ♀♀, Valencia [no date and collector] (NMPC); 2 ♀♀, Valencia prov., La Albufera, 5 m, 4.vii.1988, Wiesner lgt. (ZKDC); 1 ♂, Valencia prov., Parque Natural del Marial de Pego-Oliva, 2.–5.vi.2000, J. Januš lgt. (ZKDC); 4 ♀♀, Valencia prov., S of Oliva, 25.v.1995, P. Bulirsch lgt. (ZKDC); 1 ♀, Zaragoza prov., Caspe, 31.v.2003, I. G. Rozner lgt. (HNHM); 2 ♀♀, Zaragoza prov., Caspe, Ebro River env., 3.vi.2009, V. Šilha lgt. (ZKDC). **SUDAN:** 1 ♂ 3 ♀♀, Ed Damer, Hudeiba, v.–vii.1962 [different dates], R. Remane lgt. (ZKDC, ZSMC); 1 ♂, Khartoum, 9.viii.1966, P. Štys lgt. (ZKDC); 1 ♂, Khartoum, vii.1974, V. Seichert lgt. (ZKDC). **SYRIA:** 1 ♀, Latakia Governorate, Slinfah, 1500 m, 28.iv.2000, P. Kresl lgt. (ZKDC). **TUNISIA:** 2 ♂♂, Douz, 12.iv.2003, K. Hürka lgt. (NMPC); 1 ♀, El Guetar, 21.–22.v.1999, M. Kafka lgt. (ZKDC); 2 ♀♀, 15 km W of El Hamma, Khebbali Oasa, 2.–3.v.1997, T. Kopecký lgt. (TKHC); 1 ♀, Gabes, 21.iv.1971, J. Gusenleitner lgt. (ZKDC); 1 ♂, 15 km S of Gabes, Chenini Oasis, 4.–5.v.1997, T. Kopecký lgt. (TKHC); 2 ♂♂, Gafsa Oasis [no date], B. v. Bodemeyer lgt. (NMPC, ZKDC); 1 ♂, 24 km W of Kasserine, Jebel Chambi Mts, 29.–30.v.2005, P. Kabátek lgt. (ZKDC); 1 ♂ 6 ♀♀, Monastir, 14.–20.vi.2009, K. Orszulik lgt. (KOOC, ZKDC); 1 ♀, 10 km W of Nefta, 30.v.1994, F. Kantner lgt. (ZKDC); 1 ♀, Sousse, 27.v.–6.vi.2004, L. Černý lgt. (ZKDC); 1 ♀, Sousse, 13.–15.v.2006, P. Kresl lgt. (ZKDC); 2 ♂♂ 2 ♀♀, Tabarka, 36°57'16"N 08°45'29"E, seashore, at light, 7.vii.2008, M. Mantič lgt. (ZKDC); 1 ♂, Tozeur, 16.–17.iii.2003, T. Lackner lgt. (ZKDC). **TURKEY:** 4 ♂♂ 6 ♀♀, Cevlik, 5 km N of Samandag, 29.–30.iv.1992, P. Bulirsch lgt. (ZKDC). **YEMEN:** 3 ♂♂, 60 km NW of Ar Ryan, 14°55'N 49°02'E, 1141 m, 19.x.2007, S. Kadlec lgt. (ZKDC); 1 ♀, 24 km NWW of Turbah, Jabal aš Šalw, 13°19'N 44°07'E, 1863 m, 25.x.2005, S. Kadlec lgt. (ZKDC); 1 ♀, Wadi Surdud, W of San'a, 15°15'N 43°30'E, 627 m, 2.xi.2005, P. Kabátek lgt. (ZKDC).

**Variation.** Body length (♂♀) 3.6–5.3 mm; legs unicolorous, reddish to partly darkened (distal swollen portion of femora and tibiae, especially hind legs). Moderately variable in shape of prongs of male sternite VIII (Figs 5, 6).

**Distribution.** Algeria, Canary Islands, Chad, Egypt, Eritrea, Ethiopia, Iraq, Israel, Jordan, Lebanon, Libya, Mauritania, Morocco, Oman, Saudi Arabia, Somalia, Spain, Sudan, Tunisia, Turkey, United Arab Emirates, and Yemen. The recently reported record from Belgium is based on an introduced specimen (DRUMONT & GARCIA CARRILO 2018).



**Remarks.** No attempt was made by the present author to examine the type specimens of *Anthicus caeruleipennis* and *Formicomus cyanopterus* that should be deposited in MNHN. They are currently treated as synonyms (CHANDLER *et al.* 2008) and *Anthelephila caeruleipennis* is undoubtedly a very distinctive and common species.

The records of *Formicomus caeruleipennis* from Iran (TELNOV & GHAHARI 2018) need verification and those from Pakistan and Bangladesh (CHAUDHRY *et al.* 1970, CHAUDHRY & KHAN 1967) are indubitably erroneous, very probably belonging to the externally similar *A. antiqua* and/or *A. viridipennis*.

PIC (1913b) described *Formicomus caeruleipennis* var. *talianus* from China (Yunnan). It was later listed by WINKLER (1927), recorded from Iraq (KOCH 1937), and UHMANN (1998) also made vague reference to the existence of a subspecies in China that may concern this taxon, currently treated as a separate species of a different group (KEJVAL 2002).

***Anthelephila incisa* sp.nov.**

(Figs 17, 20, 21, 23, 25, 27)

**Type locality.** Myanmar, Sagaing Division, Chatthin Wildlife Sanctuary, 23°32'05"N 95°38'53"E, altitude 200 m.

**Type material.** Holotype, ♂: "MYANMAR: Sagaing Division Chatthin Wildlife Sanctuary 23°32'05"N 95°38'53"E ca. 200m, 5.–17.10.1998 leg. Schillhammer (2) [p]" (NHMW). Paratypes: 12 ♂♂ 15 ♀♀, same data as holotype (NHMW, ZKDC); 1 ♂, "1–5.VI.2003 BURMA–MON STATE KYAIKTO KLÍCHA M. Lgt [p]" (ZKDC); 1 ♂, "V. 1997 BURMA RANGOON DISTR. HLEGU – GOYGON KLÍCHA M. Lgt. [p]" (ZKDC); 1 ♂, "MYANMAR (Mandalay-State) Mandalay-Hill (Mandalay) 2.XI.2003 M. Hornburg [lgt., p]" (ZKDC).

**Additional material.** MYANMAR: 2 ♀♀, W Mandalay Division, Bagan – Nyaung, 29.–31.v.1997, J. Kaláb lgt. (ZKDC).

**Description.** Male (holotype). Body length 4.0 mm. Head brownish-black; pronotum reddish; elytra brownish-black, with slight greenish reflection (Fig. 23); legs reddish, distal swollen portion of metafemora brownish; antennae largely reddish basally, gradually darkening, completely brownish in apical third.

Head nearly 1.2 times as long as wide, its base almost evenly rounded, differentiated from short neck; tempora narrowing posteriad, posterior angles absent. Eyes medium-sized, quite convex. Dorsal surface lustrous, distinctly punctate; punctures minute to coarse, clearly separated. Setation quite long and raised, mostly decumbent; scattered longer tactile setae. Antennae slightly enlarged in apical third; antennomere X 2.1 times, XI 2.7 times as long as wide.

Pronotum 1.4 times as long as wide, distinctly narrower than head including eyes, evenly rounded anteriorly, narrowed and distinctly impressed (constricted) postero-laterally in dorsal view; pronotal disc evenly convex in lateral view. Surface of disc smooth and lustrous, distinctly, if somewhat unevenly, punctate, including some coarse punctures posteriorly; anterior lateral side largely impunctate; postero-lateral impressions smooth and adjacent dorso-lateral, longitudinal strip of surface rugose. Setation similar to that on head, subdecumbent; scattered tactile setae.

Mesoventrite with slight indication of narrow, rounded median longitudinal bulge; metaventrite simple.

Elytra 1.7 times as long as wide, conjointly and somewhat unevenly rounded apically; humeri distinct; postscutellar impression absent. Surface lustrous, distinctly punctate; punctation simple, coarser in basal half. Setation longer than on head, decumbent; numerous tactile setae.

Metathoracic wings fully developed.

Forelegs modified (Fig. 17); profemora with distinct, pointed, thorn-like protrusion, situated somewhat distally; protibiae nearly simple, with slight carina on inner side at about mid-length; penultimate tarsomere widened/flattened distally, with terminal tarsomere articulated dorsally in all tarsi. Setation normally developed, somewhat longer and more raised, especially for metatibiae; all tibiae with two terminal spurs.

Abdominal sternum VII (Fig. 27). Tergum VII widely rounded posteriorly. Sternite VIII as in Figs 20, 25. Tergite VIII with simple paired sclerites, nearly evenly rounded apically, widely connected medially. Terminal sclerite of segment IX (spiculum) subtriangular, evenly rounded apically. Aedeagus (Fig. 21); parameral plate of tegmen 0.6 times as long as basal piece, shortly bilobed apically.

Female. Identical with male for most external characters; forelegs simple; mesoventrite with indication of narrow, rounded median longitudinal bulge, with several longer setae postero-medially; abdominal sternum VII simple, its posterior margin very slightly angled medially; tergum VII subtriangular, rounded to very slightly emarginate apically, setae longer near apex.

**Variation.** Body length (♂♀) 3.4–4.4 mm; male profemoral process slightly varying in size (always distinct).

**Differential diagnosis.** *Anthelephila incisa* sp.nov. is nearly identical to *A. lewisi*, except for the sharply incised prongs of male sternite VIII (*cf.* Figs 20 and 19). It may represent a geographical subspecies confined to the Irrawaddy River Basin; nevertheless the differences in the shape of the male prongs is striking and stable, and sympatric occurrence of both species in southern Myanmar is not excluded.

**Distribution.** Myanmar.

**Etymology.** The species name refers to the shape of prongs of male sternite VIII.

***Anthelephila limaria* Kejval, 2006**

(Figs 1, 2, 22)

*Anthelephila limaria* Kejval, 2006: 181, figs 17–23, 32, 35.

*Anthelephila limaria*: TELNOV (2003): 288 (check-list, distribution); CHANDLER *et al.* (2008): 423 (catalogue, distribution); KEJVAL (2010): 211 (rec. Nepal).

**Type locality.** Nepal, Narayani Zone, Chitawan District, Chitawan National Park, Sauraha-Thati-Bagh Mara, altitude 200–500 m.

**Type material.** Holotype ♂ (NMPC), and 7 paratypes (ZKDC, NHMB, DTDC, ZSMC, ZIN).

**Variation.** Body length (♂♀) 4.9–5.8 mm.

**Distribution.** Nepal, India (Uttarakhand).

***Anthelephila lewisi* (Marseul, 1876)**

(Fig. 19)

*Formicomus Lewisi* Marseul, 1876: 458.

*Formicomus lewisi*: LEWIS (1879): 20 (catalogue); SCHÖNFELDT (1887): 137 (catalogue); LEWIS (1895): 446 (check-list); PIC (1911): 18 (catalogue); PIC (1913a): 130 (rec. Taiwan); KREKICH-STRASSOLDO (1931): 7, fig. 9 (male characters); NOMURA (1964): 57 (rec. Japan); UHMANN (1983): 191 (rec. Taiwan, India, Laos); UHMANN (1987): 688 (rec. Bali); SAKAI (1989): 413 (check-list); UHMANN (1996): 26 (rec. Thailand); HUA (2002): 132 (check-list, distribution); TELNOV (2003): 288 (distribution, check-list); CHANDLER *et al.* (2008): 423 (catalogue, distribution).

*Formiconus lewisi* [misspelling]: MIWA (1931): 180 (catalogue).

*Anthelephilus lewisi*: WINKLER (1927): 836 (catalogue).

**Type locality.** Japan, Kyushu, Nagasaki.

**Type material.** Syntypes: 1 ♂ 1 ♀ [mounted on same card], “Formicomus Lewisi Japon ... [h, partly illegible; round ochraceous label]” (coll. Marseul, MNHN).

**Additional material.** **INDONESIA:** 6 ♂♂ 3 ♀♀, Bali, Legian, xi.1978, J. T. Huber lgt. (MHNG, ZSMC, ZKDC); 1 ♀, Java, Yogyakarta, 1938 [no collector] (BMNH); 1 ♂, Lombok, Senaro, N slope of Rinjani, 1100 m, 2.–5.ii.1994, Bolm lgt. (ZSMC). **REPUBLIC OF CHINA:** 1 ♂, Taiwan, Takao, 1.–15.xii.1907 [no collector] (ZKDC). **THAILAND:** 1 ♂, Khon Kaen, at light, Sastri Saowakontha lgt. (ZSMC). **VIETNAM:** 1 ♂, Nam Cat Tien National Park, 1.–15.v.1994, P. Pacholátko & L. Dembický lgt. (ZKDC).

**Variation.** Body length (♂♀) 3.3–3.9 mm; male profemoral process varying in size, somewhat slight, protuberance-like in some specimens from Bali and Taiwan; quite distinct, thorn-like (as in Fig. 17) in the two males from Thailand and Vietnam; apex of prongs may be widened and nearly subtruncate (Vietnam).

**Distribution.** Indonesia (Bali, Java, Lombok), Japan (Kyushu), Laos, Republic of China (Taiwan), Thailand, and Vietnam.

**Remarks.** The records from India (West Bengal) by UHMANN (1983) belong to *Anthelephila antiqua*.

***Anthelephila viridipennis* (Krekich-Strassoldo, 1931)**

(Figs 9–16, 29)

*Formicomus viridipennis* Krekich-Strassoldo, 1931: 7, fig. 8.

*Anthelephila viridipennis*: TELNOV (2003): 289 (check-list, distribution).

*Formicomus lindbergi* Bonadona, 1960: 56, figs 11–14, **syn.nov.**

*Formicomus viridipennis lindbergi*: BONADONA (1970): 382 (subspecies status, rec. Iran); UHMANN (1985): 182 (rec. Afghanistan).

*Anthelephila viridipennis lindbergi*: CHANDLER *et al.* (2008): 424 (catalogue, distribution).

*Anthelephila caeruleipennis lindbergi* [misspelling]: TELNOV (2002): 21 (rec. Afghanistan).

*Anthelephila caeruleipennis lindbergi*: TELNOV & GHAHARI (2018): 478 (rec. Iran).

**Type locality.** *F. viridipennis* – India, Uttar Pradesh, Agra (see Remarks); *F. lindbergi* – Afghanistan, Nangarhar Province, Sultanpur, altitude 585 m [34°25'4"N 70°19'26"E].

**Type material.** *F. viridipennis* – Lectotype ♂, “Agra Ind. or. [h] // [male sex-symbol] // TYPE [p; red label] 553 A [h] coll. Heberdey [p]” (NHMW). *F. lindbergi* – Holotype and 2 paratypes, see Remarks (coll. Bonadona, MNHN).

**Additional material.** **AFGHANISTAN:** 3 ♂♂, Kandahar-Kuna, 950 m, 7.ii.1953, J. Klapperich lgt. (ZKDC); 2 ♀♀, E of Kandahar, 31°37'N 65°53'E, 1.viii.1975, A. Senglet lgt. (MHNG). **IRAN:** **Fars:** 2 ♂♂ 2 ♀♀, 12 km NW of Kangan, 27°55'N 52°00'E, 70 m, 21.–22.iv.1977 [no collector, Exped. NMP] (NMPC); 5 ♂♂ 8 ♀♀, Sivand, NE of Shiraz, 30°08'N 52°50'E, 1770 m, 15.vii.2004, S. Kadlec lgt. (ZKDC). **Hormozgan:** 10 ♂♂ 21

♀♀, 60 km E of Bandar-e Abbas, 27°22'N 56°46'E, 125 m, 25.v.2014, J. Halada lgt. (ZKDC); 1 ♀, Genu, 30 km N of Bandar-e Abbas, 23.iv.2002, S. Kadlec lgt. (ZKDC); 1 ♂ 3 ♀♀, Hassan Langi, 62 km E of Bandar-e Abbas, 26.iv.2002, S. Kadlec lgt. (ZKDC); 2 ♂♂, Hassan Langi, 27°23'N 56°50'E, 155 m, 17.–19.vii.2004, P. Kabátek lgt. (ZKDC); 2 ♂♂ 2 ♀♀, same data, except: 18.vii.2004, S. Kadlec lgt. (ZKDC); 12 ♂♂ 12 ♀♀, Isin, 27°19'N 56°17'E, 11.–15.iv.1973 [no collector, Exped. NMP] (NMPC); 14 ♂♂ 21 ♀♀, same data, except: 28.iv.–6.v.1977 [no collector, Exped. NMP] (NMPC); 3 ♂♂ 1 ♀, Isin, S slopes of Kuhha-ye Genu, 27°25'N 56°09'E, 26.v.1973 [no collector, Exped. NMP] (NMPC); 2 ♂♂ 7 ♀♀, Minab, 27°09'N 57°05'E, 19.–20.v.1973 [no collector, Exped. NMP] (NMPC); 2 ♂♂ 1 ♀, 15 km S of Minab, 26.iv.2002, P. Kabátek lgt. (ZKDC); 3 ♂♂ 5 ♀♀, Senderk, 26°46'N 57°20'E, 12.–13.v.1977 [no collector, Exped. NMP] (NMPC); 1 ♂, 10 km E of Tujak, 26°04'N 57°18'E, 10 m, at light, 14.–15.iv.2000, J. Hájek & M. Mikát lgt. (ZKDC); 1 ♀, Ziarat, 23 km NWN Bila'i, 27°41'N 57°05'E, 14.–15.v.1977 [no collector, Exped. NMP] (NMPC). **Kerman:** 1 ♂, Anbarabad, 21.–30.iv.1956, W. Richter lgt. (ZSMC); 2 ♂♂, Banu-e Charehar, 28°30'N 57°00'E, 1800–2000 m, 8.v.1973 [no collector, Exped. NMP] (NMPC); 3 ♂♂ 10 ♀♀, 43 km N of Kahnuj, road Minab–Sabzevaran, 28°21'N 57°46'E, 16.–17.v.1977 [no collector, Exped. NMP] (NMPC); 5 ♂♂ 15 ♀♀, Mohammadabad, 28°57'N 57°55'E, 1600 m, 3.–5.v.1973 [no collector, Exped. NMP] (NMPC); 1 ♂, Mijam (Jiroft), 28°52'29"N 57°53'01"E, 1650 m, 27.–28.v.2014, F. Černý lgt. (ZKDC); 1 ♀, 33 km W of Sabzvaran, 28°44'N 57°28'E, 1100 m, 6.–7.v.1973 [no collector, Exped. NMP] (NMPC); 3 ♂♂ 1 ♀, Shahdad, 30°25'N 57°44'E, 670 m, 31.v.–1.vi.1977 [no collector, Exped. NMP] (NMPC); 14 ♂♂ 10 ♀♀, Shahdad, 60 km NE of Kerman, 1.v.2010, K. Orszulik lgt. (KOOCC, ZKDC). **Lorestan:** 1 ♀, 10 km SE of Bavineh, 33°36'08"N 47°11'59"E, 1100 m, 16.–17.x.1998, P. Kabátek lgt. (ZKDC). **Sistan va Baluchestan:** 18 ♂♂ 30 ♀♀, Bahu-Kalat, 25°44'N 61°32'E, 3.–4.iv.1973 [no collector, Exped. NMP] (NMPC, ZKDC); 3 ♂♂ 3 ♀♀, Bampur, 17.–27.iii.1996, M. Kafka lgt. (ZKDC); 2 ♂♂ 2 ♀♀, 30 km N of Bampur, 27°27'N 60°25'E, 12.–13.iv.1973 [no collector, Exped. NMP] (NMPC); 2 ♂♂ 2 ♀♀, 2 km S of Espakeh, 26°48'N 60°10'E, 690 m, 9.–10.iv.2000, J. Hájek & M. Mikát lgt. (ZKDC); 7 ♂♂ 1 ♀, Ghasemabad, Bampur River valley, 27°10'N 60°20'E, 11.–12.iv.1973 [no collector, Exped. NMP] (NMPC); 1 ♂ 1 ♀, Iranshahr, 800 m, 1.–10.iv.1954, Richter & Schäuuffele lgt. (ZSMC); 1 ♂ 3 ♀♀, 25 km S of Kahiri, 26°44'N 61°04'E, 1050 m, 10.–11.iv.2000, J. Hájek & M. Mikát lgt. (ZKDC); 2 ♀♀, 13 km SSE of Nikshahr, 26°08'N 60°11'E, river valley, 8.–9.iv.1973 [no collector, Exped. NMP] (NMPC); 262 spec., Rask, about 3 km N, Sarbaz River valley, 26°13'N 61°25'E, 3.–4.iv.1973 [no collector, Exped. NMP] (NMPC, ZKDC); 1 ♂, Sarbaz env., Sarbaz River valley, 26°39'N 61°15'E, 1.–2.iv.1973 [no collector, Exped. NMP] (NMPC). **OMAN:** 2 ♀♀, Farfarah (near Shinas), 24°42'45.697"N 56°28'37.627"E, near seashore, mangrove, saline, 2.iv.2018, T. Kopecký lgt. (TKHC, ZKDC). **PAKISTAN: Baluchistan:** 1 ♂ 2 ♀♀, Bela, 13.–14.iii.1995, D. Hauck & L. Čížek lgt. (ZKDC); 2 ♂♂ 2 ♀♀, Tump, 90 km W of Turbat, 13.–15.iv.1993, S. Bečvář lgt. (ZKDC); 1 ♂ 1 ♀, Turbat, 8.–19.iv.1993, S. Bečvář lgt. (ZKDC). **Punjab:** 1 ♂, Chinchawatni, 15.vi.1928, R. N. Mathur lgt. (NHMW); 1 ♀, Khanewal, 30.ix.1928, R. N. Mathur lgt. (NHMW); 1 ♀, Rawalpindi, Ayub Park, 7/8.ix.1988, Heinz lgt. (ZSMC). **Sindh:** 1 ♀, Karchat, Kirthar National Park, 25.ii.–4.iii.1995, D. Hauck & L. Čížek lgt. (ZKDC); 1 ♂ 1 ♀, Keenjhar Lake (Indus delta), 24.viii.1985, C. W. & L. B. O'Brien lgt. (DCDC). **UNITED ARAB EMIRATES:** 5 ♂♂ 26 ♀♀, Jebel Ali Hotel, 30.iv.1996, J. Wiesner & I. Worm lgt. (ZKDC); 2 ♂♂ 1 ♀, Musandam Peninsula, Khor Fakkan, 12.–28.ii.1989, U. & H. J. Bremer lgt. (ZSMC, ZKDC).

**Variation.** Body length (♂♀) 3.8–5.2 mm; head entirely black to partly brownish; elytra dark brown to black, unicolorous or paler medially on suture; variable in detailed morphology of apical part of prongs of male sternite VIII (Figs 12–16).

**Distribution.** Afghanistan, India (Uttar Pradesh, Uttarakhand), Iran, Oman, Pakistan, and United Arab Emirates.

**Remarks.** KREKICH-STRASSOLDO (1931) described *Formicomus viridipennis* from an unstated number of specimens originating from Agra and Dehra Dun; lectotype is designated herein for the only available syntype from Agra, deposited in NHMW and dissected by Krekich-Strassoldo (genitalia and parts of abdomen mounted on microscope slide no. 553A). No attempt was made by the present author to check the existence of other syntypes deposited possibly in NFIC.

BONADONA (1960) described *Formicomus lindbergi* from Sultanpur (“Soltampour”) in Afghanistan, based on an unstated number of specimens collected by Knut Lindberg. There are no type specimens of *F. lindbergi* at MZLU (C. Fägerström, pers. comm.) held in the Lindberg Collection, which is the depository given by Bonadona, but they have been found (but only subject to cursory examination) in the Bonadona Collection (MNHN). The newly-proposed synonymy is based mainly on the above-listed male specimens from Kandahar-Kuna, identified by P. Bonadona (bearing his characteristic identification label “*Formicomus lindbergi* Bonad. P. BONADONA dét [p+h]”). These were examined in detail and found to be identical with *Anthelephila viridipennis*.

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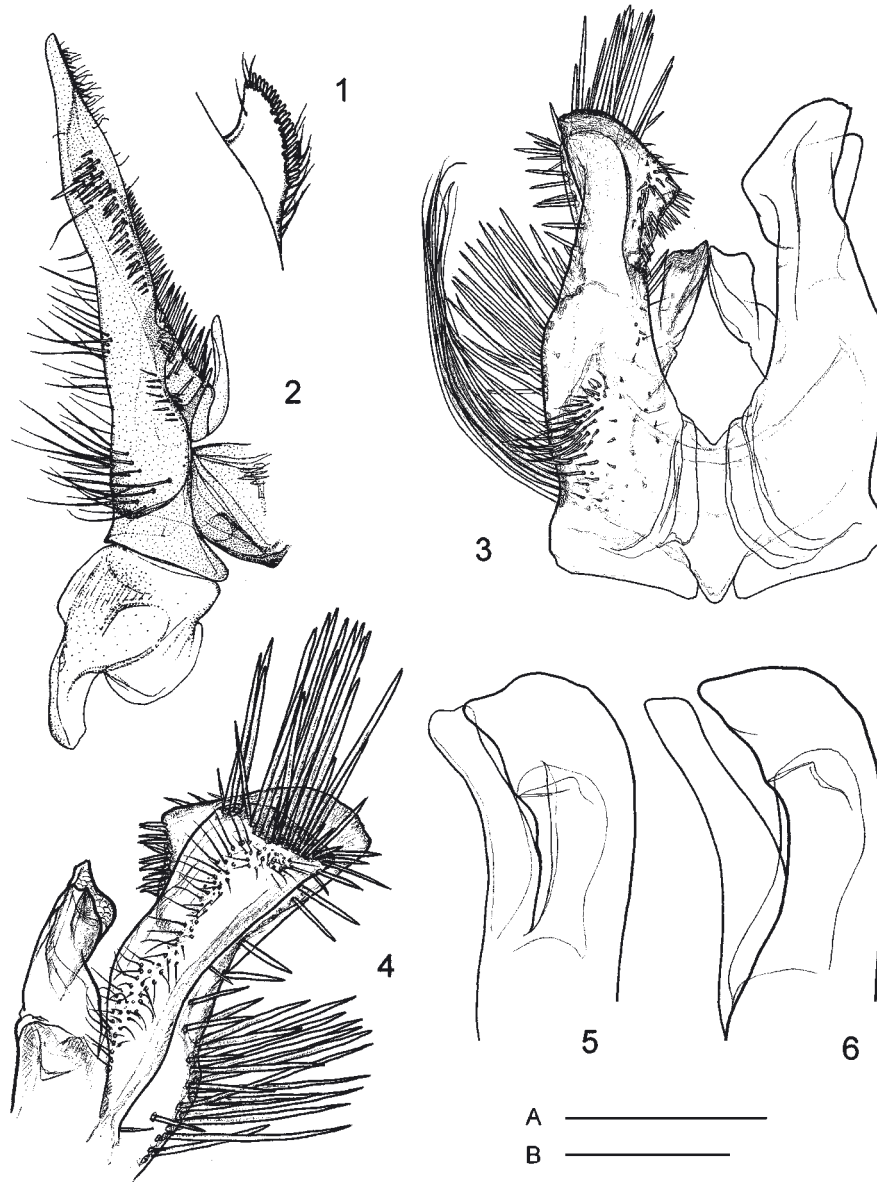
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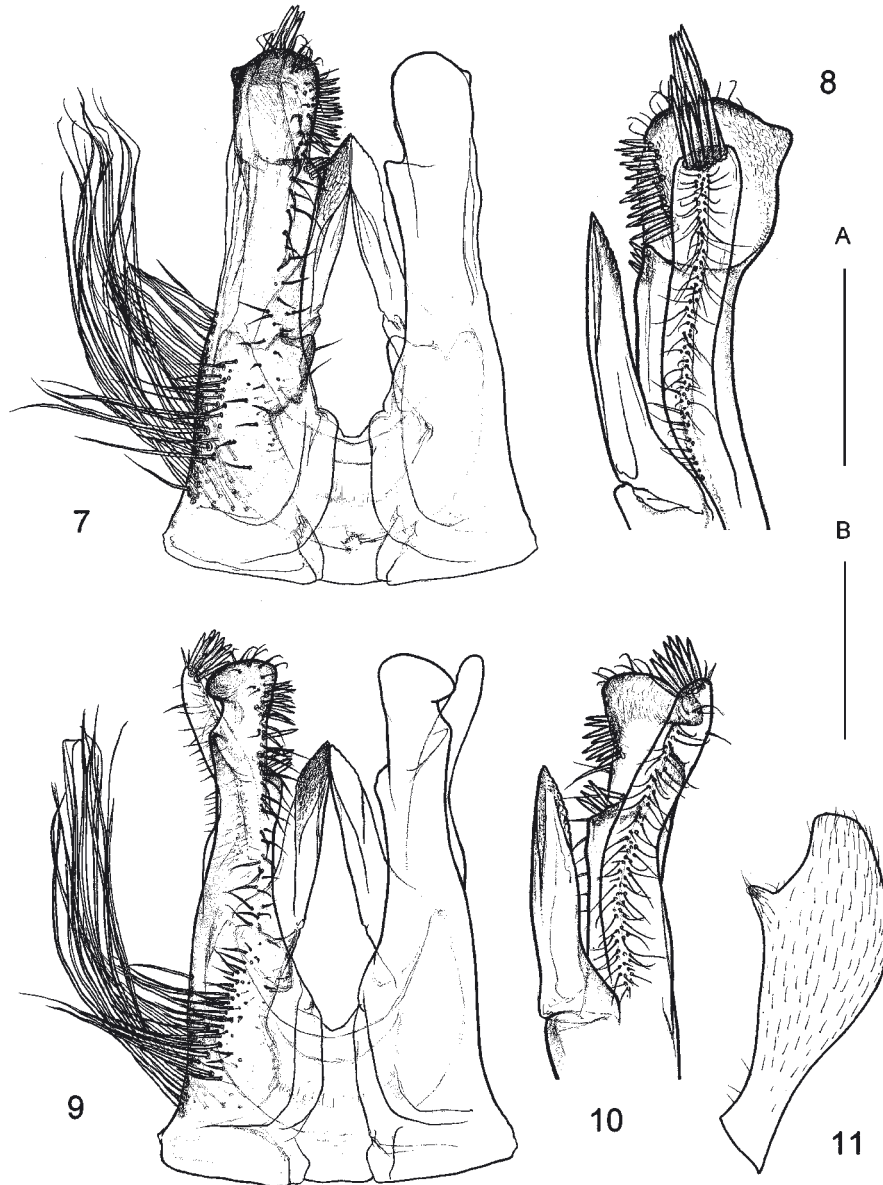
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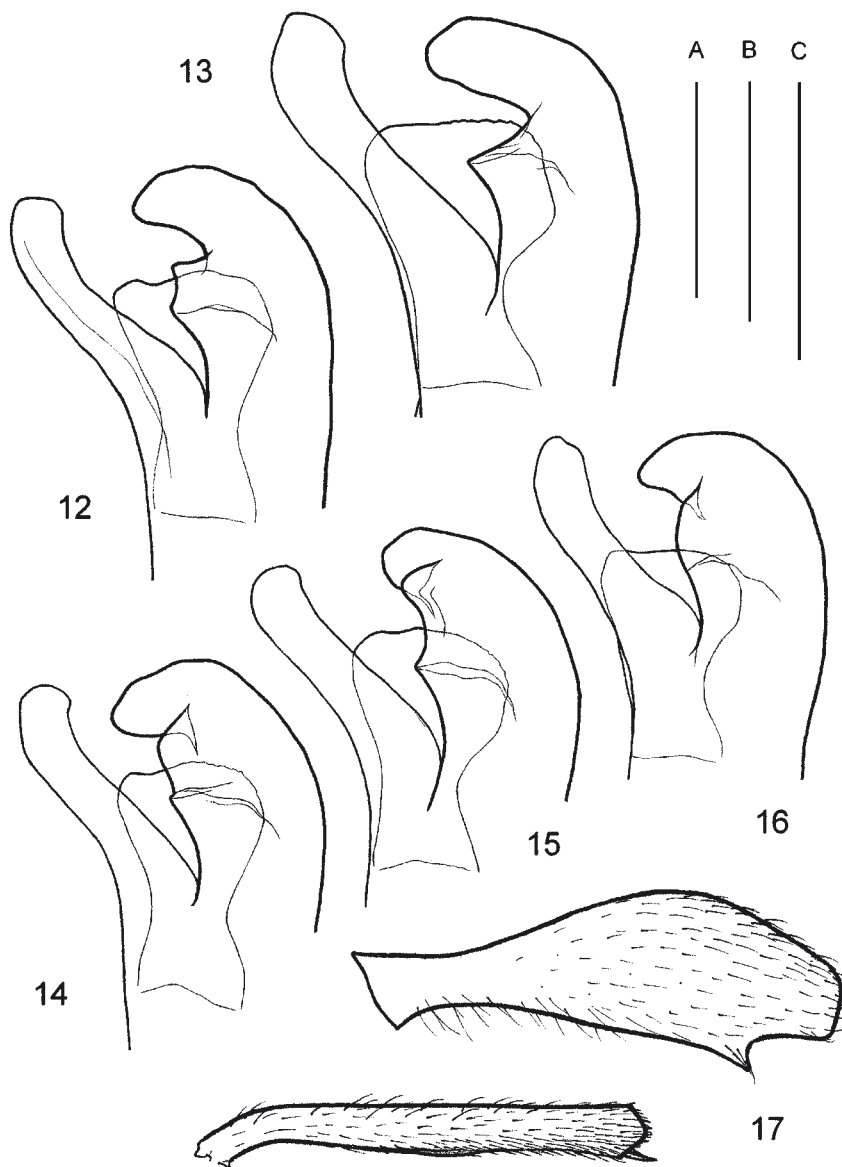


**Figs 1–6.** 36–38. 1, 2: *Anthelephila limaria* Kejval (holotype): 1 – male profemoral process; 2 – male sternite VIII (half). 3, 4. *A. arabica* (Pic), Syria, Dayr az Zawr: 3 – prongs of male sternite VIII, dorsally; 4 – apical part of prong, ventrally. 5, 6. *A. caeruleipennis* (LaFerté-Sénéctère), outline of prong of male sternite VIII, laterally: 5 – Tunisia, Tabarka; 6 – Turkey, Cevlik. Scale (0.2 mm): A – Figs 4, 6; B – 3, 5. Figs 1, 2 after KEJVAL (2006).

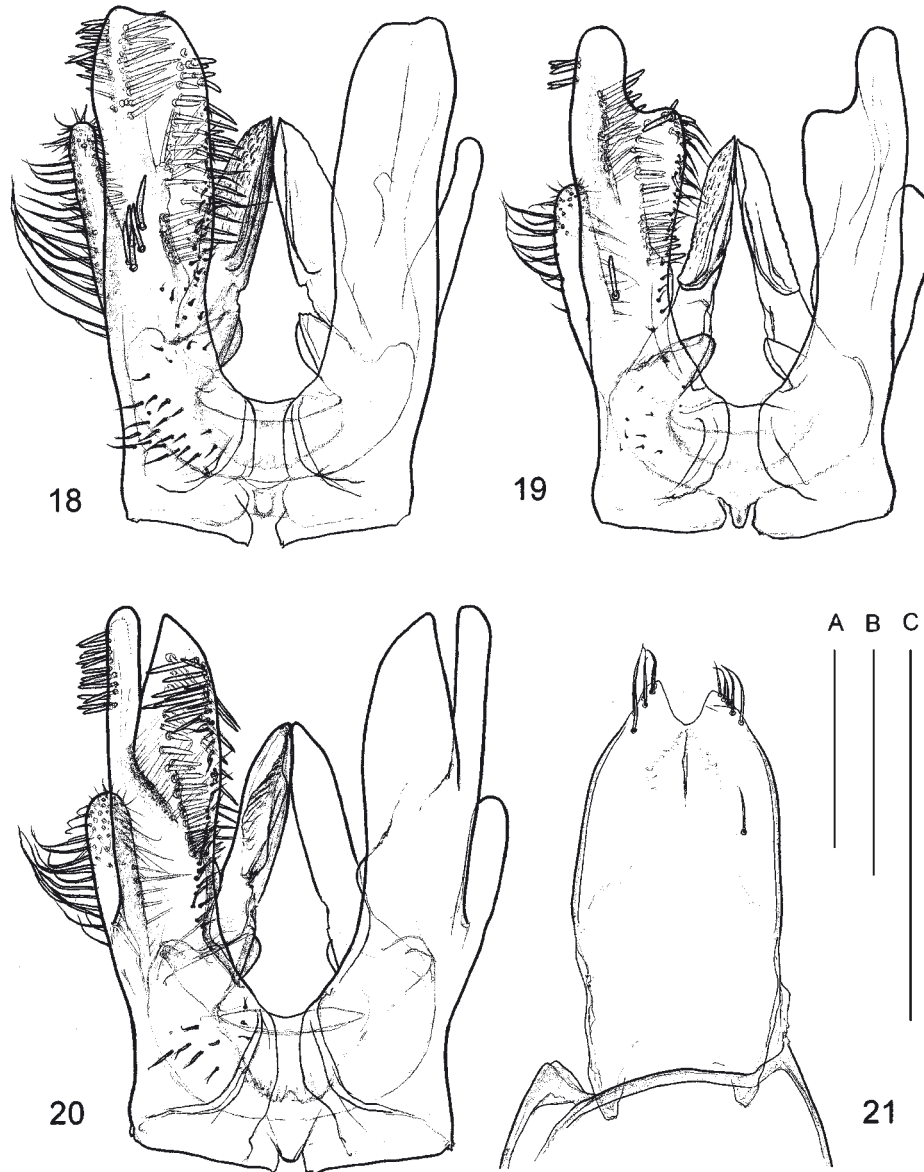




**Figs 7–11.** 7, 8. *Anthelephila caeruleipennis* (LaFerté-Sénectère), Tunisia, Tabarka: 7 – prongs of male sternite VIII, dorsally; 8 – apical part of prong, ventrally. 9–11. *A. viridipennis* (Krekich-Strassoldo), Afghanistan, Kandahar: 9 – prongs of male sternite VIII, dorsally; 10 – apical part of prong, ventrally; 11 – male profemur. Scale (0.2 mm): A – Figs 8, 10; B – Figs 7, 9; (0.5 mm): B – Fig. 11.



**Figs 12–17.** 12–16. *Anthelephila viridipennis* (Krekich-Strassoldo), outline of prong of male sternite VIII, laterally: 12 – Afghanistan, Kandahar-Kuna; Iran; 13 – Pakistan, Baluchistan, Turbat; 14 – Iran, Kerman prov., Shahdad; 15 – Iran, Hormozgan prov., 60 km E of Bandar-e Abbas; 16 – United Arab Emirates, Jebel Ali Hotel. 17 – *A. incisa* sp.nov., male profemur (top) and protibia (bottom). Scale (0.2 mm): A – Figs 14–16; B – 12, 13; (0.5 mm): C – Fig. 17.



**Figs 18–21.** 18–20. Prongs of male sternite VIII, dorsally: 18 – *Anthelephila antiqua* (Krekich-Strassoldo), India, Guwahati (ZKDC); 19 – *A. lewisi* (Marseul), Taiwan, Takao (ZKDC); 20 – *A. incisa* sp.nov. 21 – *A. incisa* sp.nov., apical part of tegmen. Scale (0.2 mm): A – Fig. 21; B – Fig. 19; C – Figs 18, 20.



**Figs 22–29.** 22, 23. Habitus: 22 – *Anthelephila limaria* Kejval, Nepal, Sauraha-Thati-Bagh Mara (ZKDC); 23 – *A. incisa* sp.nov. 24, 25. Prong of sternite VIII, ventrally: 24 – *A. antiqua* (Krekich-Strassoldo), India, Guwahati; 25 – *A. incisa* sp.nov. 26, 27. Median process of male sternum VII: 26 – *A. caeruleipennis* (LaFerté-Sénéctère), Tunisia, Tabarka; 27 – *A. incisa* sp.nov. 28, 29. Metatarsus (distal part): 28 – *A. antiqua* (Krekich-Strassoldo), India, Guwahati; 29 – *A. viridipennis* (Krekich-Strassoldo), Pakistan, Turbat.