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The Nepalese species of the genus *Enicospilus* Stephens, 1835 (Hymenoptera, Ichneumonidae, Ophioninae): a preliminary revision and identification key to species

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Abstract

A total of 10 species of *Enicospilus* (Hymenoptera, Ichneumonidae, Ophioninae) have previously been reported from Nepal. Six new species are described here (*E. alleni* Shimizu **sp. nov.**, *E. kakanicus* Shimizu **sp. nov.**, *E. nepalensis* Shimizu **sp. nov.**, *E. nikami* Shimizu **sp. nov.**, *E. phulchokiensis* Shimizu **sp. nov.**, and *E. tangi* Shimizu **sp. nov.**), and 10 are newly recorded (*E. ashbyi* Ashmead, 1904, *E. bifasciatus* (Uchida, 1928), *E. capensis* (Thunberg, 1824), *E. flavocephalus* (Kirby, 1900), *E. formosensis* (Uchida, 1928), *E. grammospilus* (Enderlein, 1921), *E. pudibundae* (Uchida, 1928), *E. purifenestratus* (Enderlein, 1921), *E. yonezawanus* (Uchida, 1928), and *E. zebrus* Gauld & Mitchell, 1981) from Nepal. A preliminary identification key to the Nepalese species of *Enicospilus* is provided. The elevational pattern of Nepalese *Enicospilus* is briefly discussed. *Enicospilus purifenestratus* is also recorded for the first time from Brunei.

Key Words

Biogeography, Darwin wasps, elevation, Nepal, new species, parasitoid wasps, systematics, taxonomy

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Introduction

Ophioninae Shuckard, 1840 (Hymenoptera, Ichneumonidae) is a moderately large monophyletic Darwin wasp subfamily within the higher Ophioniformes, which mainly comprises solitary koinobiont endoparasitoids of Lepidoptera (Gauld 1985b; Quicke et al. 2009; Bennett et al. 2019; Klopfstein et al. 2019). The Ophioninae comprises 32 genera and over 1,100 species worldwide (e.g. Yu et al. 2016; Shimizu and Lima 2018; Shaw and Voogd 2019). Many species of Ophioninae are considered to be crepuscular or nocturnal and usually have a testaceous body, very large ocelli (posterior ocellus close to or touching eye), and long antenna, with a few exceptions (e.g. all species of *Dictyonotus* Kriechbaumer, 1894 are diurnal, with a black body, small ocelli, and short antenna). These characters are frequently shared with other nocturnal Ichneumonoidea (e.g. *Netelia* Gray, 1860 (Ichneumonidae, Tryphoninae) and Xiphozelinae van Achterberg, 1979 (Braconidae)) (e.g. Shimizu 2017). Low latitudinal tropics are considered to be the general centre of species diversity in most groups of Ophioninae (e.g. Gauld and Mitchell 1981; Gauld 1985b, 1988), but a few genera are more diverse in mid-latitudinal temperate regions (e.g. *Alophophion* Cushman, 1947 and *Ophion* Fabricius, 1798) (e.g. Gauld 1985b; Alvarado 2014; Schwarzfeld et al. 2016). Reliable and robust phylogenetic and biogeographic estimates for ophionines have not been published yet.

Enicospilus Stephens, 1835 is the largest genus of Ophioninae and predominantly tropical, with more than 700 species worldwide (e.g. Broad and Shaw 2016; Gadallah et al. 2017; Shimizu 2017; Johansson 2018). *Enicospilus* has been considered to be polyphyletic (Gauld 1985b), but there are no phylogenetic studies with comprehensive taxon sampling.

Nepal is a landlocked country between India and China's Tibet Autonomous Region (26°22'N–30°27'N, 80°4'E–88°12'E) in the central part of the Himalaya, about 800 km in latitudinal length and 140 km in longitudinal length (RAOnline 2019). Dramatic changes of altitude (from less than 100 m to more than 8,000 m) along the short longitudinal span in Nepal have created a very diverse climatic and topographic environment as well as a uniquely very rich species diversity of flora and fauna (Savada 1991; MFSC 2014; RAOnline 2019). Furthermore, Nepal is located between the Oriental and Palaearctic regions and is a melting pot of species originating from both regions (MFSC 2014). Therefore, Nepal is an interesting and important place to study biodiversity and biogeography. However, no researchers have studied Ophioninae of Nepal, although Gauld and Mitchell's (1981) great regional revision for Indo-Papuan Ophioninae included a few specimens and species from Nepal. Hence, only 10 species of *Enicospilus* have been recorded in Nepal (Gauld and Mitchell 1981), whilst 107 species have been reported from China and 73 from India (Yu et al. 2016), indicating a high potential species diversity of *Enicospilus* in Nepal.

This study aims to (1) review all previously recorded species in Nepal, (2) describe new Nepalese species, (3) newly record species from Nepal, (4) provide a preliminary identification key to the Nepalese species, and (5) briefly discuss the biogeography of the Nepalese fauna and species relationships with elevation.

Material and methods

A total of 707 specimens of Nepalese species of *Enicospilus* were examined, 148 of which are from Nepal and 559 from other countries (e.g. Brunei, China, India, Japan, Laos, and Taiwan). Specimens were observed using a stereoscopic microscope (SMZ1500, Nikon, Tôkyô, Japan). Photographs were taken using a single lens reflex camera (α7II, Sony, Tôkyô, Japan) with a micro-lens (LAOWA 25 mm F2.8 2.5–5× ULTRA MACRO, Anhui Changgeng Optics Technology Co., Ltd, Hefei, China and A FE 50mm F2.8 Macro SEL50M28, Sony, Tôkyô, Japan) and 2× teleconverter lens (SEL20TC, Sony, Tôkyô, Japan), captured in RAW format, developed using Adobe Lightroom Creative Cloud, and stacked using Zerene Stacker. All figures were edited in Adobe Illustrator 2019 and Photoshop Creative Cloud.

Morphological terms follow those of Broad et al. (2018). Legs and wings are described separately from the mesosoma. The lower face is defined as the area between the ventral margin of the clypeus and of the antennal sockets. Terms for surface sculpture follow Eady (1968) and Gauld and Mitchell (1981). Terms for wing veins and cells follow Broad et al. (2018) and those for characters of the discosubmarginal cell follow Gauld and Mitchell (1981) (Fig. 1). 'Sclerites' refer to the sclerites of the fore wing fenestra, which are differentiated as the proximal, central and distal sclerites, all or none of which might be absent in any one species. The indices follow Shimizu and Lima (2018) and Shimizu et al. (2019) and are listed below.

Indices for head

GOI (geno-orbital index) = maximum breadth of eye in profile / maximum breadth of gena in same line

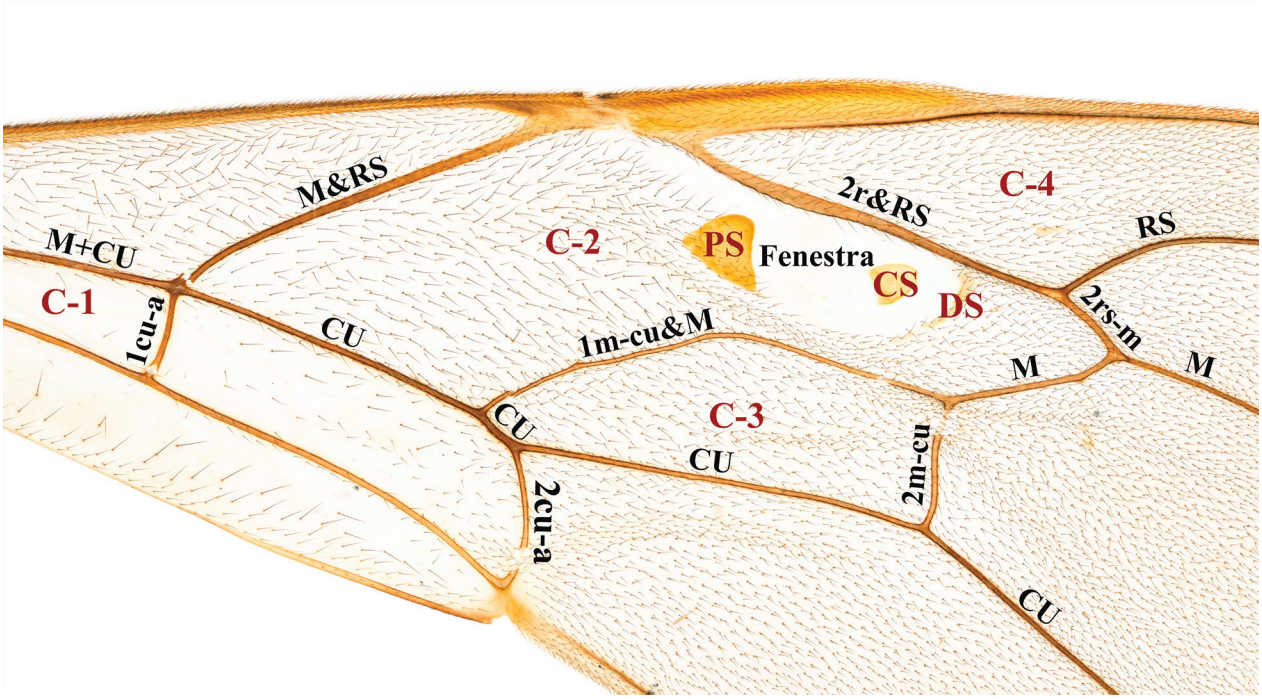

Figure 1. Morphological terms for the fore wing of *Enicospilus* species used in the present study. Brown characters indicate acronyms. **C-1.** Subbasal cell; **C-2.** Discosubmarginal cell; **C-3.** Second discal cell; **C-4.** Marginal cell; **PS.** Proximal sclerite; **CS.** Central sclerite; **DS.** Distal sclerite.

Indices for fore wing

AI (alar index) = length of 1m-cu&M between 2m-cu and bulla / length of 2rs-m

CI (cubital index) = length of CU between 1m-cu&M and 2cu-a / length of 2cu-a

DI (discoidal index) = maximum vertical distance between CU (between 2cu-a and 2m-cu) and 1m-cu&M / length of CU between 2cu-a and 2m-cu

ICI (intercubital index) = length of 2rs-m / length of M between 2m-cu and 2rs-m

SDI (second discoidal index) = length of CU between 2cu-a and 2m-cu / length of CU between M&RS and 1m-cu&M

SI (sinuousness index) = maximum length between 1m-cu&M and a straight line connecting the intersection of M, 2m-cu, and 1m-cu&M and the intersection of 1m-cu&M and CU / distance between the intersection of M, 2m-cu, and 1m-cu&M and the intersection of 1m-cu&M and CU

SRI (second recurrent index) = length of 2m-cu / length of CU between 2cu-a and 2m-cu

Indices for hind wing

NI (nervellar index) = length of CU between M and cu-a / length of cu-a

RI (radial index) = length of RS between RA and rs-m / length of rs-m

Indices for metasoma

DMI (dorsal metasomal index) = length of dorsum of tergite 2 / length of dorsum of tergite 3

PI (petiolar index) = distance between base of tergite 1 and anterior margin of spiracle / distance between posterior margin of spiracle and apex of tergite 1

THI (thyridium index) = distance between anterior margin of tergite 2 and anterior margin of thyridium / maximum diameter of thyridium

Wing characters are especially important for identifying ophionine species, but wings are almost always folded, wrinkled, and/or crooked. For accurate measurements of wing characters, the left wings have been removed from the body, placed between microscope slides in 99.9% ethanol, and photographed. Then, wings have been enclosed in paraffin paper, and the whole thing pinned under the respective specimen. Measurements were taken from photos using the software, ImgMeasure ver. 1.14.

The degree of sexual dimorphism of Ophioninae is almost always very small, and most species can morphologically readily be distinguished without needing to dissect male genitalia (Gauld 1984). Therefore, the male genitalia is not dissected and new species are described based on holotype of both sexes in the present study, like previous ophionine studies (e.g. Gauld 1988; Broad and Shaw 2016; Shimizu 2017).

The non-morphological abbreviations below are used in the present study.

LT light traps
MsT Malaise traps

Abbreviations for repositories used in the present study are as follows.

ANIC Australian National Insect Collection, Canberra, Australia
NHMUK Natural History Museum, London, United Kingdom
CNC Canadian National Collection of Insects, Ottawa, Canada
DEI Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany
EMUS Utah State University Insect Collection (= American Entomological Institute: AEI), Department of Biology, Utah State University, Logan, Utah, USA
EUM Ehime University Museum, Matsuyama, Japan
FZLU Fachbereich Zoologie, Martin-Luther-Universität, Halle, Germany
HMNH Hiwa Museum for Natural History, Shôbara, Japan
IZPAN Instytut Zoologiczny Polska Akademia Nauk, Warszawa, Poland
MCZ Museum of Comparative Zoology, Cambridge, USA
MNHA Museum of Nature and Human Activities, Sanda, Japan
MNHN Museum National d'Histoire Naturelle, Paris, France
MUC Marathwada University Collection, Aurangabad, India
NIAES Institute for Agro-Environmental Sciences, NARO (= National Institute for Agro-Environmental Sciences), Tsukuba, Japan
NM Naturhistorisches Museum, Vienna, Australia
NR Naturhistoriska Riksmuseet, Stockholm, Sweden
NSMT National Museum of Nature and Science, Tsukuba, Japan
OUMNH Oxford University Museum of Natural History (= the Hope Entomological Collection), Oxford, United Kingdom
SEHU The Laboratory of Systematic Entomology (= Entomological Institute: EIHU), Hokkaidô University, Sapporo, Japan
TARI Taiwan Agricultural Research Institute Council of Agriculture, Executive Yuan, Taichung, Taiwan
TM Termeszettudomanyi Muzeum, Budapest, Hungary
USNM Smithsonian National Museum of Natural History, Washington, DC, United States of America
ZIUU Zoological Institute, University of Uppsala, Sweden
ZSI Zoological Survey of India, Calcutta, India

Asterisks (*) are used for indicating a species newly recorded from Nepal.

Results

Over 31 morphospecies were recognised from 148 Nepalese specimens and Gauld and Mitchell's (1981) previous records. Six of these species are new to science described below, 10 are newly recorded species from Nepal, 10 have been recorded previously from Nepal, and more than five are tentatively treated as species inquirendae, pending further taxonomic work. *Enicospilus purifenestratus* is also newly recorded from Brunei below.

Taxonomy

Class Hexapoda Blainville, 1816
Order Hymenoptera Linnaeus, 1758
Superfamily Ichneumonoidea Latreille, 1802
Family Ichneumonidae Latreille, 1802
Subfamily Ophioninae Shuckard, 1840

Genus *Enicospilus* Stephens, 1835

Enicospilus Stephens 1835: 126; type species, *Ophion merdarius* Gravenhorst sensu Stephens (= *Ichneumon ramidulus* Linneaus), by monotypy (Stephens 1845).

Henicospilus Agassiz 1846: 138; unjustified emendation.

Allocamptus Förster 1869: 150; type species, *Ophion undulatus* Gravenhorst, 1829, by subsequent designation (Thomson 1888: 1189).

Dispilus Kriechbaumer 1894: 309; type species, *Ophion* (*Dispilus*) *natalensis* Kriechbaumer, 1894, by monotypy.

Pleuroneurophion Ashmead 1900: 86; type species, *Pleuroneurophion hawaiiensis* Ashmead, 1900, by original designation.

Banchogastra Ashmead 1900: 87; type species, *Banchogastra niger* Ashmead, 1900, by original designation.

Pycnophion Ashmead 1900: 87; type species, *Pycnophion molokaiensis* Ashmead, 1900, by original designation.

Cymatoneura Kriechbaumer 1901a: 22; type species, *Ophion undulatus* Gravenhorst, 1829, by subsequent designation (Viereck 1914: 8).

Pterospilus Kriechbaumer 1901b: 156; type species, *Ophion* (*Enicospilus*) *dubius* Tosquinet, 1896, by subsequent designation (Viereck 1914: 126); junior homonym of *Pterospilus* Rondani, 1856.

Trispilus Kriechbaumer 1901b: 156; type species, *Ophion* (*Enicospilus*) *trimaculatus* Tosquinet, 1896, by monotypy.

Abanchogastra Perkins 1902: 141; type species, *Abanchogastra debilis* Perkins, 1902, by monotypy.

Metophion Szépligeti 1905: 28; type species, *Metophion bicolor* Szépligeti, 1905, by subsequent designation (Viereck 1914: 94).

Ceratospilus Szépligeti 1905: 28; type species, *Ceratospilus biroi* Szépligeti, 1905, by monotypy.

Atoponeura Szépligeti 1905: 34; type species, *Atoponeura concolor* Szépligeti, 1905 (= *Enicospilus atoponeurus* Cushman, 1947), by monotypy.

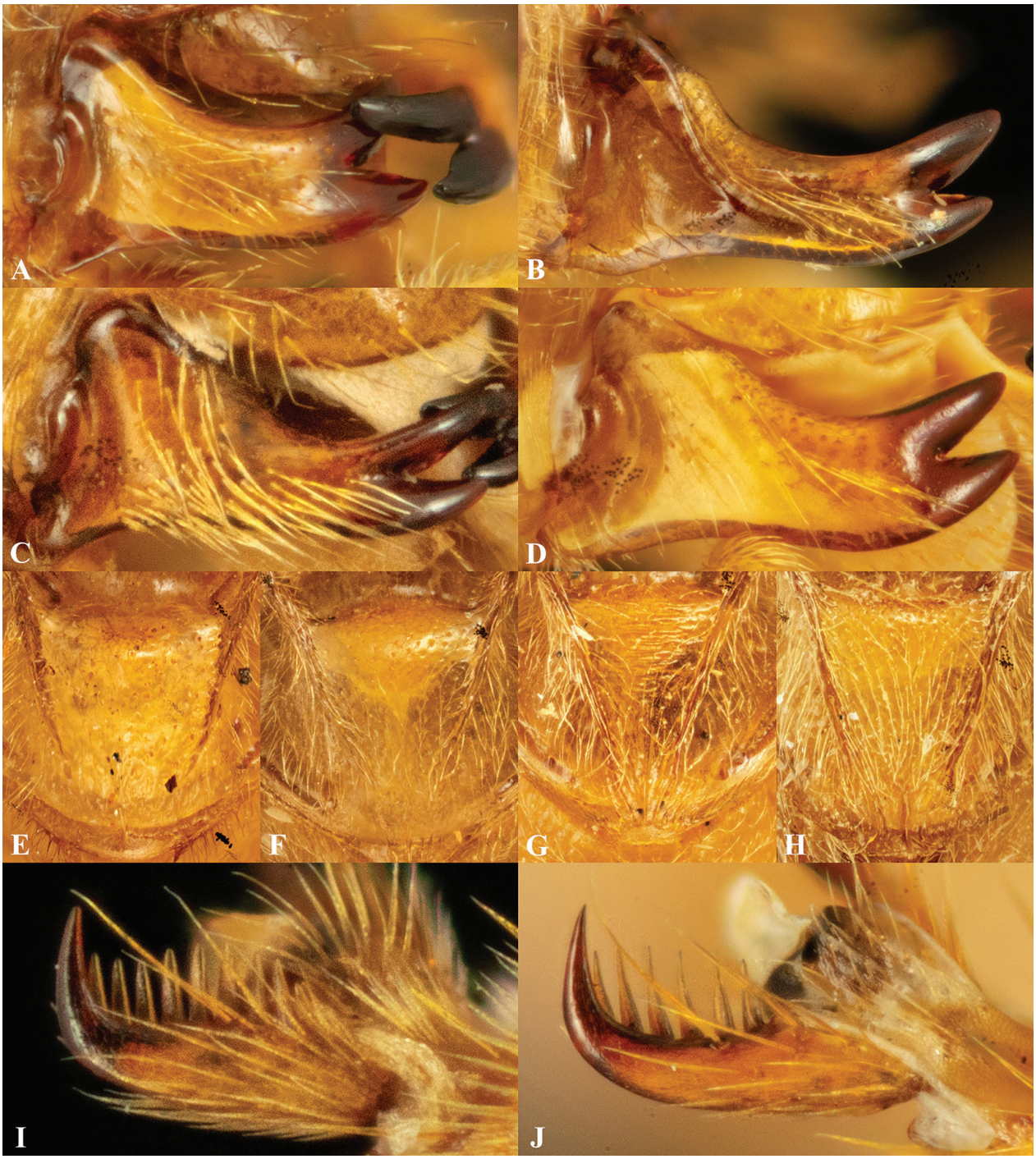

Figure 2. Diagnostic characters for some species of Nepalese *Enicospilus*. **A–D.** Outer surface of mandible: **A.** *E. nepalensis* Shimizu sp. nov., **B.** *E. tangi* Shimizu sp. nov., **C.** *E. tripartitus*, **D.** *E. yonezawanus*; **E–H.** Scutellum, in dorsal view: **E.** *E. formosensis*, **F.** *E. kakanicus* Shimizu sp. nov., **G.** *E. phulchokiensis* Shimizu sp. nov., **H.** *E. tangi* Shimizu sp. nov.; **I, J.** Hind tarsal claw: **I.** *E. biharensis*, **J.** *E. nikami* Shimizu sp. nov.

Ophiomorpha Szépligeti 1905: 34; type species, *Ophion curvinervis* Cameron, 1886 (= *Enicospilus cameronii* Dalla Torre, 1901), by subsequent designation (Hooker 1912); junior homonym of *Ophiomorpha* Nilsson, 1836.

Cryptocamptus Brèthes 1909: 230; unnecessary replacement name for *Allocamptus* Förster, 1869.

Amesospilus Enderlein 1914: 222; type species, *Ophion unicallosus* Vollenhoven, 1878, by original designation.

Eremotyloides Perkins 1915: 530; type species, *Eremotylus orbitalis* Ashmead, 1901, by monotypy.

Schizospilus Seyrig 1935: 79; type species, *Schizospilus divisus* Seyrig, 1935, by original designation.

Distribution. Worldwide except Antarctica (Yu et al. 2016).

Diagnosis. Moderately to very large insects (fore wing length usually 9.0–30.0 mm).

Head: mandible bidentate apically and weakly to strongly tapered and twisted (e.g. Fig. 2A–D); ocelli moderately to very large, and posterior ocellus often close to or touching eye (e.g. Figs 3B–D, 5B–D, 7B–D); occipital carina complete; antennae longer than fore wing length (e.g. Figs 5A, 12A, 16A), usually with more than 50 flagellomeres.

Mesosoma: pronotum unspecialised; notauli almost always absent; scutellum with lateral longitudinal carinae usually along more than 0.8× its length (e.g. Fig. 2E–H); epicnemial carina present laterally (e.g. Figs 5E, 8E, 18E); posterior transverse carina of mesosternum complete; propodeum with anterior transverse carina usually more or less complete medially, anterior area long and longitudinally striate.

Wings (e.g. Figs 1, 6F, 7F, 19F, 28F, 31B, D, F): pterostigma of fore wing fairly slender; vein 1m-cu&M of fore wing usually without ramulus; vein 2r&RS of fore wing usually more or less broadened proximally and/or centrally, straight, sinuous, or bowed, not proximally abruptly angled; discosubmarginal cell of fore wing with fenestra, and often also with one or more sclerites; vein RS of hind wing usually straight and rarely weakly curved; vein RA of hind wing usually with 4–12 uniform hamuli.

Legs: inner mesal surface of fore tibial spur without a membranous flange; outer distal margin of mid and hind trochantelli usually simple and without a decurved tooth; hind tarsal claw moderately to strongly curved with pectinae, usually all pecten are more or less uniform shape and length and a distal one is not significantly longer than true apex of claw (e.g. Fig. 2I, J).

Metasoma (e.g. Figs 3A, 9A): very slender; tergite 1 with spiracle clearly far behind the middle; thyridium moderately to strongly developed, and oval to ellipsoidal; ovipositor straight and usually short, its length less than posterior depth of metasoma.

Colour: body usually entirely testaceous, pale yellow to reddish brown (e.g. Figs 4A–E, 11A–E, 21A–E, 26A–E), sometimes posterior metasomal segments infuscate (e.g. Figs 9A, 17A, 18A); in some species body entirely brown to black, usually with testaceous to pale yellow patterns (e.g. Figs 5A–E, 28A–E); wings entirely hyaline or weakly infuscate (e.g. Figs 3F, 9F, 10F), rarely with strong infumate patches (e.g. Figs 5F, 28F); fenestra always hyaline (e.g. Figs 10F, 19F); sclerites hyaline to black (e.g. Figs 18F, 19F, 23F).

Differential diagnosis. Adult wasps of *Enicospilus* are moderately to very large insects and distinguished from other genera of Ophioninae by the following combination of character states: inner mesal surface of the fore tibial spur lacking a membranous flange; mandibles more or less narrowed apically and moderately to strongly twisted (e.g. Fig. 2A–D); fore wing discosubmarginal cell with a fenestra (e.g. Fig. 31B, D, F), extensive glabrous area, and often one or more sclerotised and pigmented sclerites and/or quadra (e.g. Figs 3F, 15F, 27F); posterior transverse carina of mesosternum complete.

The fore wing fenestra and sclerites are usually reliable characters for recognising *Enicospilus* species. However, similar sclerites of the fore wing fenestra are also known in the genus *Dicamptus* Szépligeti, 1905 and rarely in the genus *Leptophion* Cameron, 1901. *Enicospilus* species are distinguished from both *Dicamptus* and *Leptophion* by the mandibles (i.e. mandible always weakly to strongly tapered and twisted in *Enicospilus*, but very weakly tapered and not twisted in *Dicamptus* and *Leptophion*).

Biology. Species belonging to *Enicospilus* are koinobiont endoparasitoids of Lepidoptera, such as Noctuidae (e.g. Gauld and Mitchell 1981; Gauld 1985b, 1988; Broad and Shaw 2016; Broad et al. 2018). Adult female wasps usually lay eggs within late instar larvae of Lepidoptera, with some exceptions. Broad et al. (2018) summarised the biology of Ophioninae including *Enicospilus*. Both sexes of adults are very frequently attracted to the light and considered to be nocturnal or crepuscular (e.g. Shimizu and Maeto 2016; Shimizu 2017).

Identification key to *Enicospilus* species of Nepal

This is a preliminary key to the Nepalese species of *Enicospilus* because there are potentially many more unrecorded or undescribed species in Nepal and its adjacent areas.

1 Fore wing hyaline with two or three strongly infuscate patches in the central part of the discosubmarginal cell (from distal end of M&RS to base of 1m-cu&M) and the central part of the marginal cell (from antero-central margin to base of RS) (Figs 5F, 28F). Mesosoma either entirely black with pale yellow marks or pale yellow with black marks, never entirely testaceous or red-brown (Figs 5A, E, 28A, E)..... 2

– Fore wing entirely hyaline to weakly infuscate, without infuscate patches (e.g. Figs 4F, 7F, 10F). Mesosoma entirely testaceous or red-brown, without black marks (e.g. Figs 3A, E, 4A, E)..... 3

2 (1) Interocellar area black (Fig. 5D). Fore wing with fenestra moderately long, its anterodistal corner separated from proximal end of the vein RS by more than 1.0× of 2rs-m; ICI = 0.2, SDI = 1.1–1.2; posterodistal corner of the second discal cell ca 65°; central sclerite drop-shaped, its major axis parallel to 2r&RS; vein 2rs-m bowed (Fig. 5F). Propodeum without posterior transverse carina (Fig. 5E)..... *E. bifasciatus* (Uchida, 1928)*

– Interocellar area not infuscate (Fig. 28D). Fore wing with fenestra very long, its anterodistal corner almost reaching proximal end of the vein RS; ICI = 0.4–0.5, SDI = 1.4–1.5; posterodistal corner of the second discal cell ca 95°; central sclerite almost oval, its major axis parallel to distal margin of the fenestra; vein 2rs-m straight (Fig. 28F). Propodeum with strong posterior transverse carinae laterally (Fig. 28E)..... *E. zebrus* Gauld & Mitchell, 1981*

3 (1) Fore wing without sclerites and quadra (Fig. 31). Outer mandibular surface always more or less flat without a diagonal structures ..... *E. erythrocerus* species-group
– Fore wing with more or less sclerotised sclerites and sometimes with quadra (e.g. Figs 3F, 6F, 16F, 19F). Outer mandibular surface various, flat or with a diagonal groove or a line of punctures (e.g. Fig. 2A–D..... 4
4 (3) Fore wing fenestra without a proximal sclerite and only with a rather thick distal sclerite (Fig. 16F)..... ..... *E. lineolatus* (Roman, 1913)
– Fore wing fenestra always with a proximal sclerite, and if fenestra with distal sclerite, it is more or less thin (e.g. Figs 6F, 8F, 9F)..... 5
5 (4) Fore wing fenestra without a central sclerite and quadra (e.g. Figs 6F, 12F, 13F, 19F) 6
– Fore wing fenestra with a central sclerite (e.g. Figs 3F, 4F, 9F, 11F)..... 14
6 (5) Proximal sclerite more or less triangular; always strongly pigmented; its proximal margin more or less joining proximal margin of fenestra (Figs 13F, 24F, 25F, 27F) 7
– Proximal sclerite not triangular, various (i.e. narrow and linear, or semicircular); usually weakly pigmented or not, except for that of *E. javanus* strongly pigmented; its proximal margin usually distinctly separated from proximal margin of fenestra by more than its own width (Figs 6F, 12F, 19F, 22F, 23F)..... 10
7 (6) Outer mandibular surface flat without a diagonal setose deep groove ..... *E. purifenestratus* (Enderlein, 1921)*
– Outer mandibular surface with a diagonal setose deep groove between its dorsoproximal corner and base of mandibular apical teeth (Fig. 2B, D) 8
8 (7) Lower face wider and 0.9× as wide as high (Fig. 25B). Upper mandibular tooth 2.1× as long as lower one (Fig. 2B). Mandible very long, proximally tapered and distally parallel sided (Fig. 2B)..... *E. tangi* Shimizu sp. nov.
– Lower face narrower and 0.7–0.8× as wide as high (Figs 13B, 27B). Upper mandibular tooth 1.2–1.5× as long as lower one (Fig. 2D). Mandible moderately long, more or less evenly tapered (Fig. 2D)..... 9
9 (8) Lateral longitudinal carinae of scutellum reaching anterior 0.6 of scutellum (Fig. 2F). Proximal and distal sclerites more or less confluent (Fig. 13F). Metapleuron entirely finely punctate, highly shiny, never with wrinkles or striae (Fig. 13E)..... *E. kakanicus* Shimizu sp. nov.
– Lateral longitudinal carinae of scutellum reaching posterior end of scutellum (Fig. 2H). Proximal and distal sclerites separated (Fig. 27F). Metapleuron moderately punctate to striate, moderately shiny, almost always with wrinkles or striae (Fig. 27E)..... *E. yonezawanus* (Uchida, 1928)*
10 (6) Proximal sclerite more or less wide and semicircular (Figs 12F, 22F)..... 11
– Proximal sclerite narrow and more or less linear (Figs 6F, 19F, 23F)..... 12
11 (10) Fore wing with proximal sclerite confluent with distal one and its posterior end touching margin of fenestra; vein 1m-cu&M evenly curved; AI = 1.1–1.9, CI = 0.2–0.5, SDI = 1.0–1.1 (Fig. 12F) ..... *E. javanus* (Szépligeti, 1910)
– Fore wing with proximal sclerite isolated and distal sclerite absent or vestigial; vein 1m-cu&M sinuous; AI = 0.7–0.9, CI = 0.6–0.7, SDI = 1.3–1.4 (Fig. 22F) ..... *E. pseudoconspersae* (Sonan, 1927)
12 (10) Hind tarsal claw uniformly pectinate (Fig. 2I). Fore wing vein 1m-cu&M evenly curved (Fig. 6F)..... ..... *E. biharensis* Townes, Townes & Gupta, 1961
– Pecten of hind tarsal claw absent proximally (e.g. Fig. 2J). Fore wing vein 1m-cu&M evenly curved to sinuous (Figs 19F, 23F) 13
13 (12) Fore wing vein 1m-cu&M moderately sinuous (Fig. 19F). 20th flagellomere 1.5× as long as wide..... ..... *E. nikami* Shimizu sp. nov.
– Fore wing vein 1m-cu&M evenly curved (Fig. 23F). 20th flagellomere 2.0–2.2× as long as wide .... *E. pudibundae* (Uchida, 1928)*
14 (5) Fore wing vein 1m-cu&M strongly angled and broadened centrally (Fig. 9F) ..... *E. flavocephalus* (Kirby, 1900)*
– Fore wing vein 1m-cu&M evenly curved or sinuous, never strongly angled and broadened (e.g. Figs 3F, 7F, 8F)..... 15
15 (14) Outer mandibular surface always with a diagonal setose deep groove between its dorsoproximal corner and base of mandibular apical teeth..... 16
– Outer mandibular surface almost flat, without a diagonal setose groove (e.g. 2A, C) 20
16 (15) Proximal sclerite not confluent with distal one (Figs 7F, 15F)..... 17
– Proximal sclerite strongly confluent with distal one (Figs 17F, 20F, 29F)..... 18
17 (16) Meso- and metapleurae entirely very densely punctate, submatt to matt, punctures of metapleuron contiguous or separated by less than a puncture diameter, thus very weakly or not shiny (Fig. 7A, E) .... *E. capensis* (Thunberg, 1824)*
– Meso- and metapleurae finely to moderately punctate to punctostriate, punctures never contiguous and separated by more than a puncture diameter, moderately to strongly shiny (Fig. 15A, E)..... *E. laqueatus* (Enderlein, 1921)
18 (16) Central sclerite rather linear, positioned in rather anterodistal part of the fenestra (Fig. 29F). Proximal corner of proximal sclerite almost right angled (Fig. 29F)..... *Enicospilus* sp. 1
– Central sclerite more or less oval, positioned in mediodistal part of the fenestra (Figs 17F, 20F). Proximal corner of proximal sclerite acutely angled (Figs 17F, 20F) 19

19 (18) Posterior segments of metasoma infuscate (Fig. 17A). Scutellum smooth to punctate. Fore wing vein 1m-cu&M almost evenly curved (Fig. 17F)..... *E. melanocarpus* Cameron, 1905
– Metasoma entirely testaceous (Fig. 20A). Anterior 0.4 of scutellum transversely striate, anterior 0.4–0.5 punctate, and posterior 0.5 longitudinally strigose (Fig. 2G). Fore wing vein 1m-cu&M more or less sinuous (Fig. 20F)..... *E. phulchokiensis* Shimizu sp. nov.
20 (15) Proximal sclerite not triangular (Fig. 11F). Central sclerite positioned in almost central part of fenestra; linear and parallel to vein 2r&RS (Fig. 11F) ..... *E. grammospilus* (Enderlein, 1921)*
– Proximal sclerite more or less triangular (e.g. Figs 3F, 8F, 14F). Central sclerite positioned in distal part of fenestra; variously shaped (e.g. Figs 4F, 10F, 26F)..... 21
21 (20) Outer mandibular surface with conspicuous very dense stout and long setae and its proximal concavity deep (Fig. 2C)..... *E. tripartitus* Chiu, 1954
– Outer mandibular surface with scattered slender and short to moderately long setae and its proximal concavity shallow or absent (e.g. Fig. 2A) 22
22 (21) Central sclerite linear and parallel to distal margin of fenestra (Fig. 10F). Sides of scutellum rather weakly convergent posteriorly and sometimes subquadrate (Fig. 2E). Lower face wider and 0.8–0.9× as wide as high (Fig. 10B)..... *E. formosensis* (Uchida, 1928)*
– Central sclerite oval to linear, if linear it is parallel to vein 2r&RS (e.g. Figs 4F, 8F, 18F, 21F). Sides of scutellum moderately to strongly convergent posteriorly. Lower face usually narrower and 0.6–0.8× as wide as high (e.g. Figs 3B, 8B, 18B) 23
23 (22) Proximal sclerite separated from distal sclerite (Figs 18F, 21F) 24
– Proximal sclerite confluent with distal sclerite (Figs 3F, 4F, 8F, 14F, 30F)..... 25
24 (23) Central sclerite weakly sclerotised and pigmented, ill-delineated, positioned in posterodistal part of fenestra (Fig. 18F). Posterior ocellus separated from eye by 0.3× its maximum diameter (Fig. 18B–D). Fore wing vein 1m-cu&M almost evenly curved (Fig. 18F)..... *E. nepalensis* Shimizu sp. nov.
– Central sclerite strongly sclerotised and pigmented, more or less well delineated, positioned in centrodistal part of fenestra (Fig. 21F). Posterior ocellus separated from eye by less than 0.2× its maximum diameter (Fig. 21B–D). Fore wing vein 1m-cu&M moderately sinuous (Fig. 21F)..... *E. pseudantennatus* Gauld, 1977
25 (23) Outer margin of propodeal spiracle separated from pleural carina (e.g. Fig. 3E) 26
– Outer margin of propodeal spiracle joining pleural carina by a strong ridge (Figs 8E, 14E, 30E) 27
26 (25) Propodeum with distinct posterior transverse carina laterally (Fig. 3E). Proximal corner of proximal sclerite of fore wing fenestra sharply angled at ca 40° (Fig. 3F). Fore wing fenestra with two vestigial central sclerites (Fig. 3F)..... *E. alleni* Shimizu sp. nov.
– Propodeum without posterior transverse carina (Fig. 4E). Proximal corner of proximal sclerite of fore wing fenestra blunt, angled at ca 65° (Fig. 4F). Fore wing fenestra with one vestigial to strong central sclerite (Fig. 4F) ..... *E. ashbyi* Ashmead, 1904*
27 (25) Central sclerite oval (Fig. 30F). Wings entirely very sparsely setose (Fig. 30F)..... *Enicospilus* sp. 2
– Central sclerite linear (Figs 8F, 14F). Wings entirely densely setose (Figs 8F, 14F)..... 28
28 (27) Central sclerite slender (Fig. 8F). Larger species with fore wing length more than 17.0 mm ..... *E. flavicaput* (Morley, 1912)
– Central sclerite stouter (Fig. 14F). Smaller species with fore wing length less than 15.0 mm..... *E. kanshirensis* (Uchida, 1928)

Enicospilus alleni Shimizu, sp. nov.

http://zoobank.orgBCA16349-534C-4CB2-9126-FFC9C451362B

Fig. 3

Etymology. The specific name is dedicated to the collector of the holotype, Mike Allen, who collected many specimens of Nepalese Hymenoptera that are now in NHMUK.

Material examined. 1♀: Nepal.

Type series: holotype ♀, Chautasa (6,000 ft), Nepal, 24.IX.1983, M.G. Allen leg. (NHMUK) (Fig. 3).

Distribution. Nepal.

Description. Female (Holotype) (Fig.3). Body length ca 29.5 mm.

Head with GOI = 2.9 (Fig. 3C). Lower face 0.7× as wide as high, very finely coriaceous with fine punctures and setae (Fig. 3B). Clypeus 1.9× as wide as high, shiny and very finely coriaceous with fine punctures and setae, almost flat in profile, and its lower margin acute (Fig. 3B, C). Malar space 0.2× as long as basal mandibular width (Fig. 3B, C). Mandible weakly twisted by ca 25°, moderately long, evenly narrowed, its outer surface flat and smooth without a diagonal groove or a diagonal line of punctures (Fig. 3B, C). Upper mandibular tooth 1.4× as long as lower one (Fig. 3B). Frons, vertex and gena moderately shiny with fine setae (Fig. 3B–D). Posterior ocellus large and almost touching eye (Fig. 3B–D). Ventral end of occipital carina joining oral carina. Left antenna complete with 64 flagellomeres, and right antenna apically incomplete with 53 flagellomeres; first flagellomere 1.7× as long as second; 20th flagellomere 1.6× as long as wide.

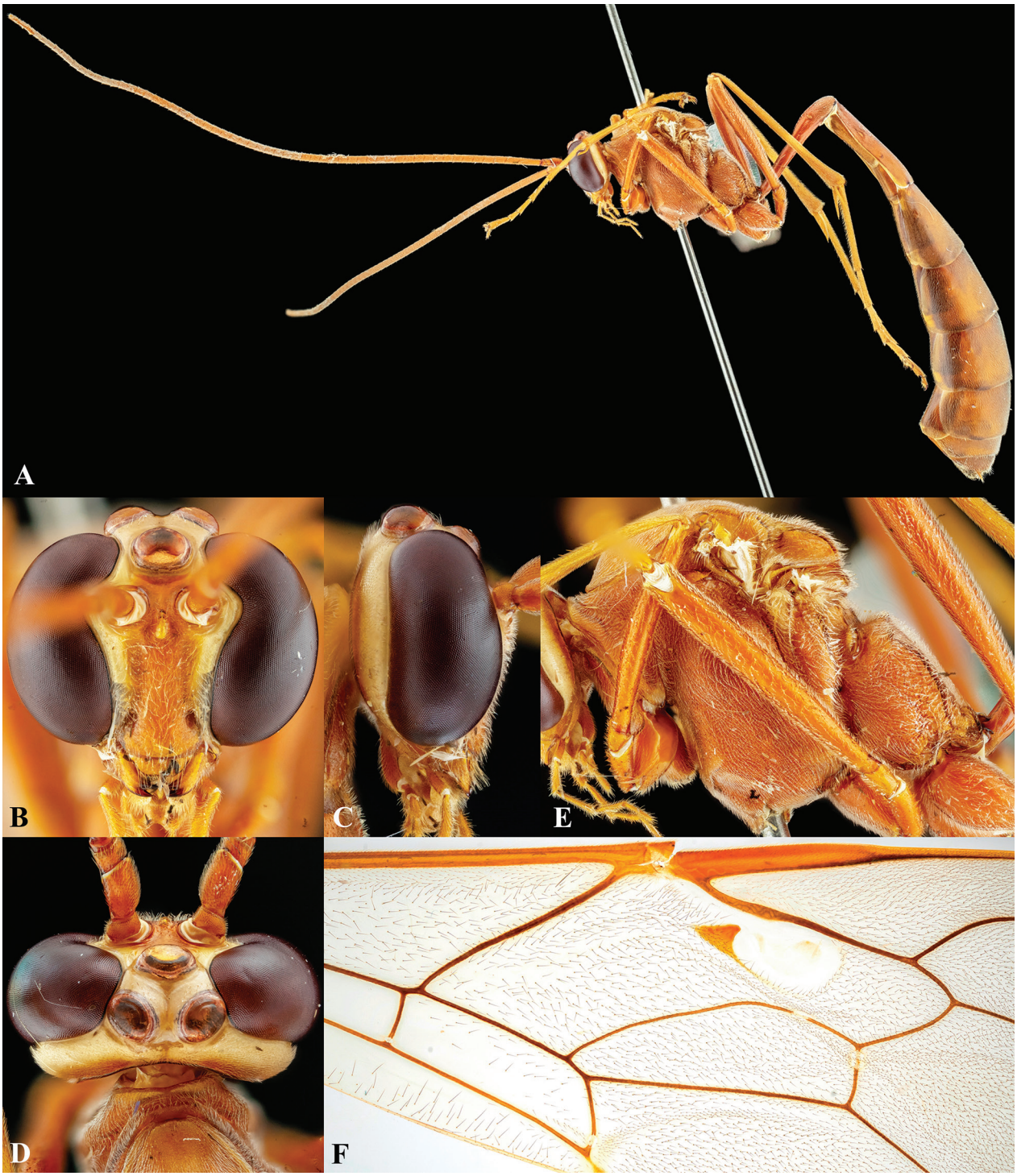

Figure 3. *Enicospilus alleni* Shimizu sp. nov., ♀, holotype. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Mesosoma entirely very weakly shiny or not (Fig. 3E). Pronotum entirely striate. Mesoscutum 1.5× as long as its maximum width, very closely coriaceous with dense setae, very weakly shiny, evenly rounded in profile, and its anterior margin almost truncate in dorsal view and rounded in profile (Fig. 3E). Notauli absent (Fig. 3E). Scutellum moderately convex, very closely coriaceous with setae, with lateral longitudinal carinae reaching posterior end (Fig. 3E). Epicnemium densely punctate with setae. Epicnemial carina weak, almost straight and inclined to anterior, its dorsal end not reaching anterior margin of mesopleuron (Fig. 3E). Mesopleuron entirely closely longitudinally strigose (Fig. 3E). Submetapleural carina very strongly broadened anteriorly and forming a lobe. Metapleuron densely punctate to reticulate with setae, moderately swollen (Fig. 3E). Propodeum very strong-

ly and abruptly declivous in profile; anterior transverse carina complete; pleural carina almost absent; anterior area longitudinally striate; spiracular area almost smooth with setae and strongly shiny; posterior area moderately subconcentrically strigose with a pair of strong posterior carinae laterally; propodeal spiracle elliptical, its outer margin not joining pleural carina by a ridge (Fig. 3E).

Wings. Fore wing length ca 19.5 mm with AI = 1.0, CI = 0.4, DI = 0.3, ICI = 0.6, SDI = 1.6, SI = 0.1, SRI = 0.2; vein 1m-cu&M almost evenly curved; vein 2r&RS very slightly sinuous and RS evenly curved; fenestra and sclerites of discosubmarginal cell as in Figure 3F; proximal sclerite triangular, confluent with distal sclerite, strongly pigmented; central sclerite entirely weakly sclerotised, very weakly pigmented partially, positioned in anterodistal part of fenestra; distal sclerite present proximally and absent distally; proximal corner of marginal cell uniformly setose; posterodistal corner of second discal cell ca 110°; posterodistal corner of subbasal cell ca 95°; vein 1cu-a antefurcal to M&RS by 0.3× 1cu-a length (Fig. 3F). Hind wing with NI = 2.8, RI = 2.2; vein RS straight; vein RA with 10 uniform hamuli.

Legs. Outer surface of fore tibia with scattered short spines. Hind leg with coxa in profile 1.8× as long as deep; basitarsus 2.0× as long as second tarsomere; fourth tarsomere 0.6× as long as third tarsomere and 2.9× as long as wide; tarsal claw simply pectinate.

Metasoma with DMI = 1.4, PI = 2.7, THI = 3.5; dorsal margin of tergite 1 slightly sinuous in profile; thyridium elliptical (Fig. 3A).

Colour (Fig. 3). Entirely testaceous except for yellow eye orbit and vertex, apex of mandible black. Wings hyaline; fore wing sclerites and pterostigma testaceous; veins testaceous to brown.

Variation. Unknown, only known from the holotype.

Male. Unknown

Differential diagnosis. The affinities of *E. alleni* sp. nov. are unclear, but it may be related to the *E. flavicaput* group. However, *E. alleni* sp. nov. is a very distinctive species, readily distinguished by many characters, such as the elongate lower face (Fig. 3B), sculpture of the mesosoma (Fig. 3E), shape of propodeum (Fig. 3E), and two vestigial central sclerites of the fore wing fenestra (Fig. 3F).

Enicospilus ashbyi Ashmead, 1904*

Fig. 4

Enicospilus ashbyi Ashmead 1904: 17; holotype ♂, Philippines, USNM.

Henicospilus tainanensis Uchida 1928: 225; lectotype ♂, Taiwan, SEHU, designated by Gauld and Mitchell (1981: 446), examined; synonymised by Gauld and Mitchell (1981: 446).

Enicospilus concavus Chiu 1954: 45; holotype ♂, Taiwan, TARI, examined; synonymised by Gauld and Mitchell (1981: 446).

Material examined. 11♀♀4♂♂: Nepal (1♂), India (11♀♀1♂), Taiwan (2♂♂).

Type series: lectotype of *Henicospilus tainanensis* Uchida, 1928, ♂, Tainan, Taiwan, S. Takano leg. (SEHU); holotype of *Enicospilus concavus* Chiu, 1954, ♂, Taihoku, Taiwan, 24.I.1932, J. Sonan leg. (TARI).

Non-type series: 1♂, Kathmandu (1,350 m), Nepal, VII.1983, M.G. Allen leg. (LT) (NHMUK) (Fig. 4); 9♀♀1♂, Patancheru, Andhra Pradesh, India, VII (7♀♀1♂) and VIII (2♀♀).1980, Bhatnagar leg. (LT) (NHMUK); 1♀, Jeypore, Orissa, India, IX.1958, P.S. Nathan leg. (EMUS); 1♀, Nilgira Hills, India, V. 1953, P.S. Nathan leg. (CNC).

Distribution. Australasian and Oriental regions (Yu et al. 2016). Newly recorded from Nepal.

Diagnosis. *Head* (Fig. 4B–D): GOI = 2.1–2.4; lower face 0.7–0.8× as wide as high; clypeus flat to slightly convex in profile, its lower margin subacute; mandible rather weakly twisted by 25–30°, moderately long, evenly tapered, its outer surface without a diagonal structure; upper mandibular tooth 1.2–1.5× as long as lower one; posterior ocellus almost touching eye; antenna with 45–56 flagellomeres and 20th flagellomere 1.6–1.9× as long as wide.

Mesosoma (Fig. 4E): mesopleuron longitudinally punctostriate to striate; scutellum with lateral longitudinal carinae reaching posterior end and convergent posteriorly; metapleuron punctostriate; propodeum declivous, its posterior area moderately reticulate, outer margin of propodeal spiracle not joining pleural carina by a ridge.

Wings (Fig. 4F): fore wing with AI = 0.7–1.2, CI = 0.2–0.3, ICI = 0.5–0.7, SDI = 1.2–1.3; fore wing vein 1m-cu&M evenly curved, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 4F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite triangular, confluent with distal one, strongly pigmented; central sclerite usually partially strongly pigmented and sclerotised, strongly pigmented part linear and parallel to vein 2r&RS, positioned in anterodistal part of fenestra; distal sclerite present proximally and vestigial distally; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a antefurcal to subinterstitial to M&RS by less than 0.1× 1cu-a length.

Colour (Fig. 4): body including interocellar area entirely testaceous; wings hyaline.

Differential diagnosis. *Enicospilus ashbyi* is similar to *E. pallidus* (Taschenberg, 1875) and separated from it by a few characters of the central sclerite (pigmented part of central sclerite narrower in *E. ashbyi* and wider in *E. pallidus*). However, the sclerite characters (e.g. the shape and degree of sclerotisation of the central sclerite) exhibit a wide range of variation within both species, suggesting that there are cryptic species and that integrative taxonomy is needed to define species limits in this complex.

Enicospilus bifasciatus (Uchida, 1928)*

Fig. 5

Henicospilus bifasciatus Uchida 1928: 222; holotype ♀, Taiwan, SEHU, examined.

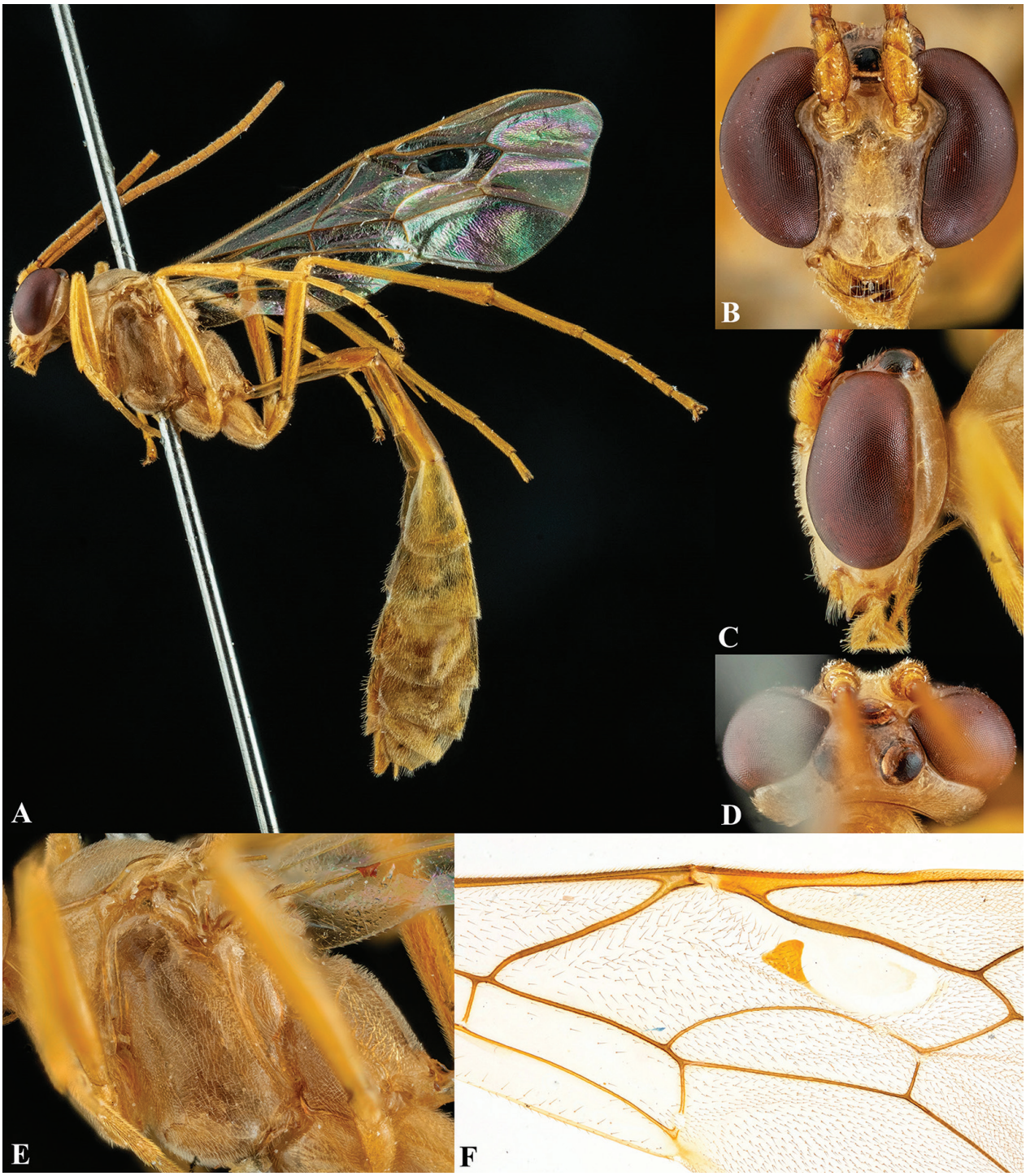

Figure 4. *Enicospilus ashbyi* Ashmead, 1904, ♂. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Material examined. 7♀♀3♂♂: Nepal (2♀♀), Taiwan (5♀♀3♂♂).

Type series: holotype of *Henicospilus bifasciatus* Uchida, 1928, ♀, Baibara, Taiwan, Uchida leg. (SEHU).

Non-type series: 2♀♀, Godaveri (1,550–1,700 m), Nepal, 1.VI.1984, M.G. Allen leg. (LT) (NHMUK) (Fig. 5); 1♂, Bukai, Taiwan, 13.VI.1934, L. Gressitt leg. (NHMUK); 1♂, Horisha, Taiwan, V. 1927, Sonan leg. (TARI); 1♀, Musha, Taiwan, IV.1938, Sonan leg. (TARI); 1♂, Shinten, Taiwan, IV.1921, Sonan leg. (TARI); 2♀♀, Taihoku, Taiwan, I. 1924, Sonan leg. (TARI); 1♀, Taipei, Taiwan, V.1950, Chiu leg. (TARI).

Distribution. Oriental region (Yu et al. 2016). Newly recorded from Nepal.

Diagnosis. *Head* (Fig. 5B–D): GOI = 3.1–3.4; lower face 0.6–0.7× as wide as high; clypeus moderately convex in profile, its lower margin acute; mandible rather strongly twisted by 55–65°, moderately long,

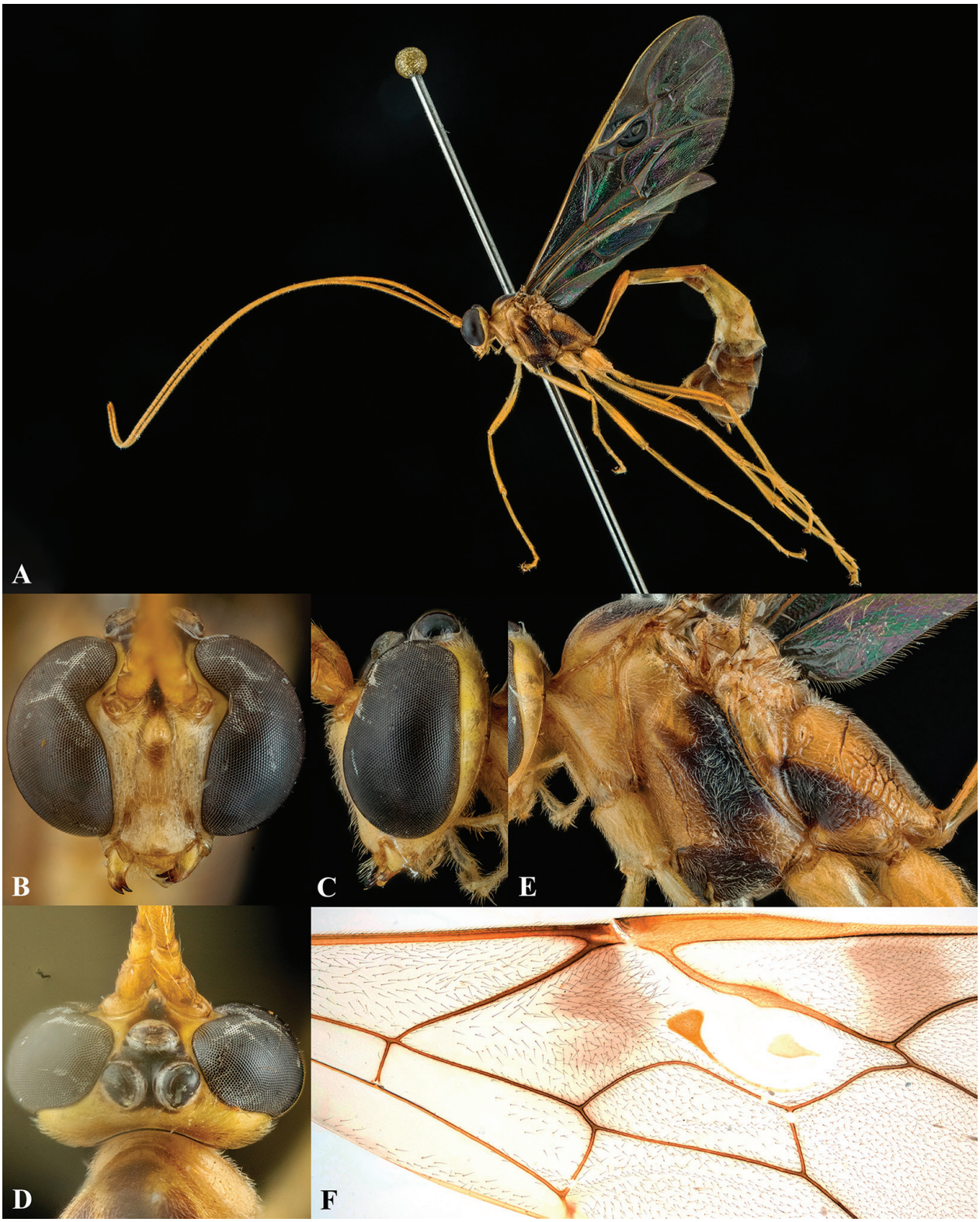

Figure 5. *Enicospilus bifasciatus* (Uchida, 1928), ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

evenly tapered, its outer surface without a diagonal structure; upper mandibular tooth 1.2–1.3× as long as lower one; posterior ocellus close to eye; antenna with 54–56 flagellomeres and 20th flagellomere 3.1–3.3× as long as wide.

Mesosoma (Fig. 5E): mesopleuron rather coarsely longitudinally punctostriate to striate; scutellum with lateral longitudinal carinae reaching posterior end and convergent posteriorly; metapleuron rather coarsely striate; propodeum evenly weakly rounded, its posterior area

moderately reticulate, outer margin of propodeal spiracle joining pleural carina by a ridge.

Wings (Fig. 5F): fore wing with AI = 0.7–1.0, CI = 0.4–0.5, ICI = 0.2, SDI = 1.1–1.2; fore wing vein 1m-cu&M evenly curved, 2r&RS almost straight, centrally broadened; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 5F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite triangular, confluent with distal one, strongly pigmented; central sclerite rather weakly pigmented and sclerotised, drop-shaped and its major axis parallel to vein 2r&RS, positioned in mediodistal part of fenestra; distal sclerite present proximally and vestigial distally; proximal corner of marginal cell of fore wing very sparsely setose, almost glabrous; vein 1cu-a subinterstitial to antefurcal to M&RS by less than 0.2× 1cu-a length.

Colour (Fig. 5): body entirely pale yellow with black marks on mesosoma, interocellar area, and posterior segments of metasoma; wings hyaline with two strongly infumate patches in the central part of the discosubmarginal cell (from anterior end of M&RS to base of 1m-cu&M) and the central part of the marginal cell (from anterocentral margin to base of RS).

Differential diagnosis. *Enicospilus bifasciatus* is a very distinctive species and no closely related species are currently known. Hence, it is easily distinguished from all *Enicospilus* by many characters listed in the above diagnosis as well as identification key, such as two strongly infumate patches in the central part of the discosubmarginal cell (from anterior end of M&RS to base of 1m-cu&M) and the central part of the marginal cell (from anterocentral margin to base of RS) of fore wing, characteristic shape of sclerites of discosubmarginal cell of fore wing (cf. Fig. 5F), very sparsely setose and almost glabrous proximal corner of marginal cell of fore wing, and small value of ICI (= 0.2).

Enicospilus biharensis Townes, Townes & Gupta, 1961

Figs 2I, 6

Henicospilus horsfieldi var *glabratus* Morley 1913: 395; holotype ♀, India, NHMUK, examined; junior secondary homonym of *Enicospilus glabratus* (Say, 1835).

Enicospilus biharensis Townes, Townes and Gupta 1961: 271; replacement name for *Henicospilus horsfieldi* var. *glabratus* Morley, 1913.

Enicospilus (*Bicorniata*) *bicornis* Rao and Nikam 1971a: 177; holotype ♀, India, MUC; synonymised by Nikam (1980: 149).

Material examined. 11♀♀1♂: Nepal (10♀♀1♂), India (1♀).

Type series: holotype of *Henicospilus horsfieldi* var *glabratus* Morley, 1913 (= *Enicospilus biharensis* Townes, Townes & Gupta, 1961), ♀, Bihar, Chapra, India (NHMUK, Type 3b.1266).

Non-type series: 1♀, Dotslghst (900 m), Nepal, 7.VII.1983, M.G. Allen leg. (Figs 2I, 6); 2♀♀, Kathmandu (4,300′), Nepal, VIII.1981, M.G. Allen leg.; 1♀, Kathmandu (1,300 m), Nepal, X.1982, M.G. Allen leg. (LT); 1♀, Kathmandu (1,350 m), Nepal, VII.1983, M.G. Allen leg. (LT); 1♀, Kathmandu (1,400 m), Nepal, IX.1983, M.G. Allen leg. (LT); 1♂, Kathmandu (1,500 m), Nepal, III.1983, M.G. Allen leg. (LT); 1♀, Sec. Vegetation (1,390 m), B. Embassy, Kathmandu, Nepal, VI.1983, M.G. Allen leg. (LT); 2♀♀, Dolalghat (900 m), Nepal, 7.VII.1983, M.G. Allen leg.; 1♀, Chautara (6,000′), Nepal, 24.IX.1983, M.G. Allen leg. (all NHMUK).

Distribution. Eastern Palaearctic and Oriental regions (Yu et al. 2016). Gauld and Mitchell (1981) recorded this species from Nepal.

Diagnosis. *Head* (Fig. 6B–D): GOI = 2.5–3.2; lower face 0.6–0.8× as wide as high; clypeus almost flat in profile, its lower margin acute; mandible moderately twisted by 30–40°, moderately long, evenly strongly tapered, its outer surface without a diagonal structure; upper mandibular tooth 1.2–1.3× as long as lower one; posterior ocellus almost touching eye; antenna with 53–64 flagellomeres and 20th flagellomere 1.7–2.1× as long as wide.

Mesosoma (Fig. 6E): mesopleuron densely punctate to closely longitudinally punctostriate; scutellum with lateral longitudinal carinae reaching posterior end and convergent posteriorly; metapleuron densely punctate; propodeum declivous, its posterior area moderately reticulate, outer margin of propodeal spiracle not joining pleural carina by a ridge.

Wings (Fig. 6F): fore wing with AI = 0.6–0.7, CI = 0.3–0.5, ICI = 0.7–0.8, SDI = 1.2–1.4; fore wing vein 1m-cu&M evenly curved, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 6F; fenestra of fore wing not long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite linear, separated from or vestigially confluent with distal one, weakly pigmented; central sclerite absent; distal sclerite present proximally, vestigial to moderately strong distally; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a antefurcal to M&RS by 0.2–0.3× 1cu-a length.

Colour (Fig. 6): body including interocellar area entirely testaceous; wings hyaline to slightly infuscate.

Differential diagnosis. *Enicospilus biharensis* is similar to *E. maruyamanus*, *E. nikami* sp. nov., *E. pudibundae*, and *E. transversus*, but can be distinguished from *E. maruyamanus*, *E. nikami* sp. nov., and *E. transversus* by the evenly curved fore wing vein 1m-cu&M (Fig. 6F) (more or less sinuous in *E. maruyamanus*, *E. nikami* sp. nov., and *E. transversus*, e.g. as in Figure 19F), and from *E. nikami* sp. nov. and *E. pudibundae* by the proximally complete pectination of the hind tarsal claw (Fig. 2I) (proximally incomplete in *E. nikami* sp. nov. and *E. pudibundae*).

Enicospilus capensis (Thunberg, 1824)*

Fig. 7

Ichneumon capensis Thunberg 1824: 262; holotype ♀, South Africa, ZIUU.

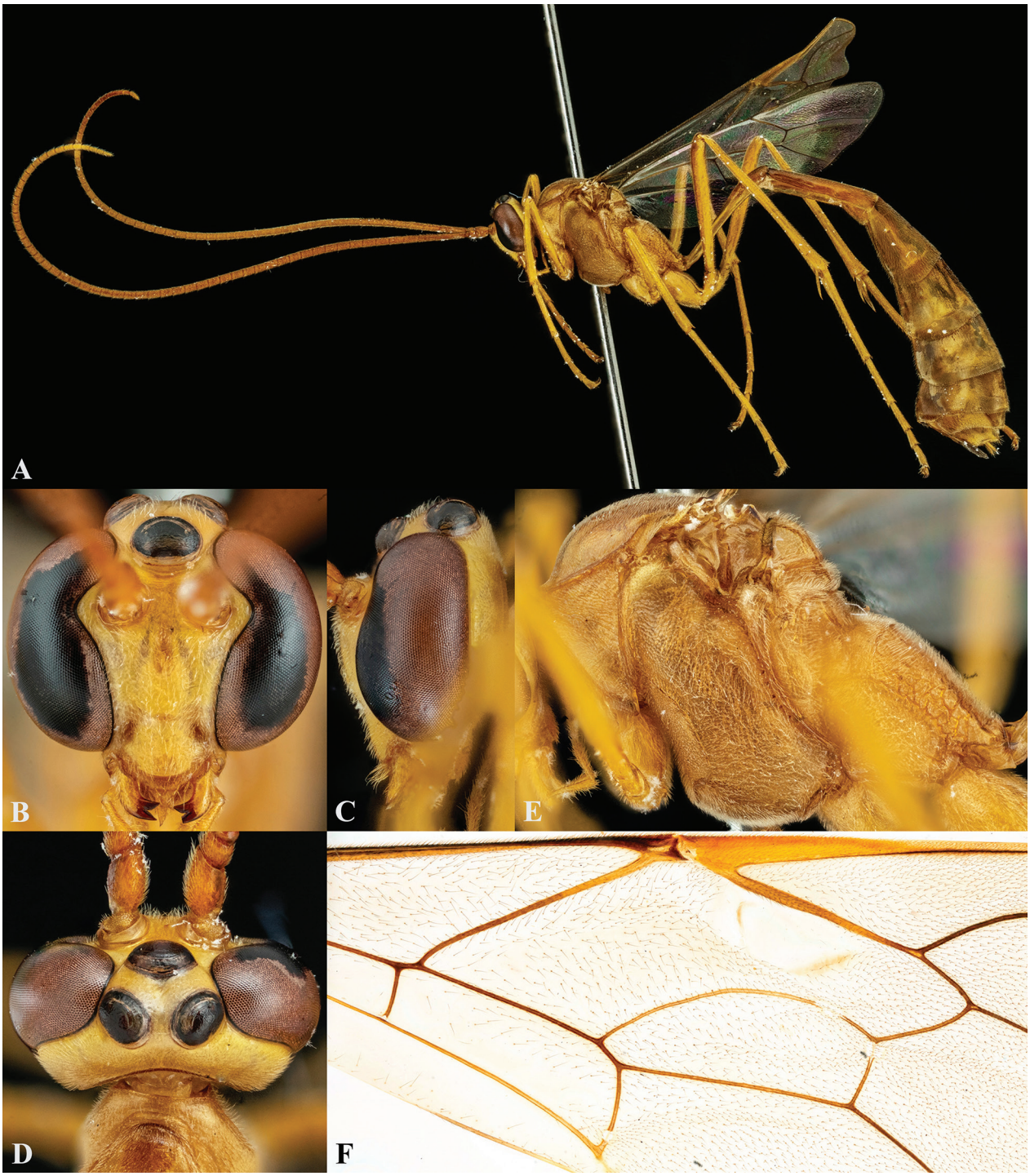

Figure 6. *Enicospilus biharensis* Townes, Townes & Gupta, 1961, ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Ophion lativertex Taschenberg 1875: 435; holotype ♀, Java, FZLU; synonymised by Gauld and Mitchell (1981: 385).

Ophion antankarus Saussure 1892: 15; type ♂, Madagascar, MNHN; synonymised by Townes and Townes (1973: 174).

Henicospilus montinus Enderlein 1921: 21; holotype ♀, Java, IZPAN; synonymised by Gauld and Mitchell (1981: 385).

Henicospilus praedator Enderlein 1921: 28; holotype ♀, Madagascar, IZPAN; synonymised by Townes and Townes (1973: 175).

Henicospilus incarinatus Enderlein 1921: 30; holotype ♂, Madagascar, IZPAN; synonymised by Townes and Townes (1973: 175).

Henicospilus euxoae Wilkinson 1928: 261; holotype ♀, Zimbabwe, NHMUK, examined; synonymised by Gauld and Mitchell (1978: 143).

Enicospilus obnoxius Seyrig 1935: 75; lectotype ♀, Kenya, MNHN, designated by Townes and Townes (1973: 18); synonymised by Gauld and Mitchell (1978: 143).

Henicospilus yanagiharai Sonan 1940: 371; holotype ♂, Ryûkyû Island, TARI, examined; synonymised by Gauld and Mitchell (1981: 385).

Enicospilus selvaraji Rao and Kurian 1950: 174, 178, 180, 188; nomen nudum.

Enicospilus selvaraji Rao and Kurian 1951: 68; holotype ♀, India, ZSI; synonymised by Gauld and Mitchell (1981: 385).

Enicospilus fossatus Chiu 1954: 63; holotype ♀, Malaysia, TARI, examined; synonymised by Gauld and Mitchell (1981: 385).

Enicospilus indica Rao and Grover 1960: 280; holotype ♀, India, MUC, destroyed (cf. Gauld and Mitchell 1981: 385); synonymised by Gauld and Mitchell (1981: 385).

Material examined. 66♀♀43♂♂ and 3 unsexed: Nepal (1♀), India (57♀♀41♂♂), Japan (1♂), Kenya (2♀♀1♂ and 1 unsexed), Madagascar (1♀ and 1 unsexed), Malaysia (1♀), Saudi Arabia (1 unsexed), South Africa (1♀), Uganda (2♀♀), Zimbabwe (1♀).

Type series: holotype of *Henicospilus yanagiharai* Sonan, 1940, ♂, Kitadaitô-jima, Okinawa Pref., Ryûkyûs, Japan, 18.III.1939, M. Yanagihara leg. (TARI); holotype of *Enicospilus fossatus* Chiu, 1954, ♀, Jahore, Malaysia, 1.X.1916, J. Sonan leg. (TARI); holotype of *Henicospilus euxoae* Wilkinson, 1928, ♀, Salisbury, Zimbabwe, 31.XII.1927, J.I. Roberts leg. (from *Euxoa*) (NHMUK, Type 3b.1289).

Non-type series: 1♀, Chitwan (200 m), Terai, Nepal, 12–13.III.1983. M.G. Allen leg. (Fig. 7); 1♀5♂♂, Coimbatore, India, III–IV.1935, P.S. Nathan leg.; 55♀♀36♂♂, Andhra Pradesh, Patancheru, India, I (26♀♀19♂♂), II (1♂), VII (1♀), IX (1♀), X (2♀♀), XI (7♀♀4♂♂), XII (18♀♀12♂♂).1980, Bhatnagar leg. (LT) (all NHMUK); 1♀, Agra, India, IX.1955, V.K. Gupta leg. (EMUS); 1 unsexed, Asir, Suda, Saudi Arabia, 5.VII.1962, G. Popoy leg.; 1 unsexed, Bekily, Madagascar, VIII.1933, A. Seyrig leg.; 1♀, Madagascar, XII.1920, A. Seyrig leg.; 2♀♀, Ruwenzori Range, Ibanda, Uganda, 20–21.VIII (1♀), 4–12.IX (1♀).1952, D.S. Fletcher leg.; 1♂, Nairobi, Kenya, 10–12.XII.1952, C.G.M. de Worms leg.; 1♀, Kenya; 1♀ and 1 unsexed, Kabete, Kenya, III.1929, H.E. Box leg. (all NHMUK); 1♀, Grahamstown, South Africa, 10–12.III.1971, F. Gess leg. (CNC).

Distribution. Afrotropical, Australasian, Oceanic, and Oriental regions (Yu et al. 2016). Newly recorded from Nepal.

Diagnosis. *Head* (Fig. 7B–D): GOI = 1.5–2.0; lower face 0.8–1.0× as wide as high; clypeus rather strongly convex in profile, its lower margin impressed; mandible weakly twisted by 10–20°, long, proximally tapered and distally parallel sided, its outer surface with a diagonal setose groove between its dorsoproximal corner and base of mandibular apical teeth; upper mandibular tooth 2.5–3.0× as long as lower one; posterior ocellus separated from eye by 0.1–0.2× its own maximum diameter; antenna with 44–66 flagellomeres and 20th flagellomere 1.6–2.0× as long as wide.

Mesosoma (Fig. 7E): mesopleuron densely punctate, submatt to matt; scutellum with lateral longitudinal carinae reaching posterior end and convergent posteriorly; metapleuron densely punctate, submatt to matt; propodeum declivous, its posterior area moderately reticulate, outer margin of propodeal spiracle not joining pleural carina by a ridge.

Wings (Fig. 7F): fore wing with AI = 0.4–0.8, CI = 0.3–0.6, ICI = 0.4–0.6, SDI = 1.3–1.5; fore wing vein 1m-cu&M slightly sinuous, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 7F; fenestra of fore wing not long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite triangular, not confluent with distal one, strongly pigmented; central sclerite rather weakly to strongly pigmented and sclerotised, and ill-delineated oval to semicircular, positioned in antero- to mediodistal part of the fenestra; distal sclerite absent proximally and strong distally; proximal corner of marginal cell of fore wing approximately uniformly setose; vein 1cu-a subinterstitial to antefurcal to M&RS by less than 0.3× 1cu-a length.

Colour (Fig. 7): body including interocellar area entirely yellow- to red-brown; wings hyaline.

Differential diagnosis. *Enicospilus capensis* is most similar to *E. insularis* and distinguished from it by the not clearly delineated central sclerite (Fig. 7F) (well delineated in *E. insularis*), but diagnostic characters for these species are not strongly supported and need more study. *Enicospilus capensis* also more or less resembles *E. ramidulus*, but distinguished from it by the densely punctate and submatt to matt meso- and metapleurae (Fig. 7E) (meso- and metapleurae moderately punctate and never submatt to matt in *E. ramidulus*).

Enicospilus flavicaput (Morley, 1912)

Fig. 8

Enicospilus xanthocephalus Cameron 1907: 178; holotype ♀, Myanmar, NHMUK, examined; junior primary homonym of *Enicospilus xanthocephalus* Cameron, 1905.

Henicospilus flavicaput Morley 1912: 45; replacement name for *Enicospilus xanthocephalus* Cameron, 1907.

Henicospilus urospilus Enderlein 1921: 27; holotype ♀, Sumatra, IZ-PAN; synonymised by Townes et al. (1961: 72).

Material examined. 5♀♀ and 1 unsexed: Brunei (3♀♀), Indonesia (1♀), Myanmar (1♀), Sri Lanka (1 unsexed); no Nepalese specimens were examined.

Type series: holotype of *Enicospilus xanthocephalus* Cameron, 1907 (= *Henicospilus flavicaput* Morley, 1912), ♀, Haundraw Valley, Tenasserim, Myanmar, VIII.1894, C.T. Bingham leg. (NHMUK, Type 3b.1233).

Non-type series: 1♀, U. Temburong (1,500 m), Bukit Retak, Brunei, IV.1981, I.D. Gauld leg. (Fig. 8); 1♀, Montane forest (1,618 m), Bukit Retak, Brunei, V.1979, I.D. Gauld leg.; 1♀, Pagon Ridge, Pagon, Brunei, II.1982, G. Allen leg.; 1♀, Perliawatte (1,200–1,500 m), Mt Gede, West Java, Indonesia, I.1938; 1 unsexed, near Mahiyangana, Badulla Dist., Sri Lanka, 24.V.1974, Gans & Prasanna leg. (all NHMUK).

Distribution. Australasian and Oriental regions (Yu et al. 2016). Gauld and Mitchell (1981) recorded this species from Nepal.

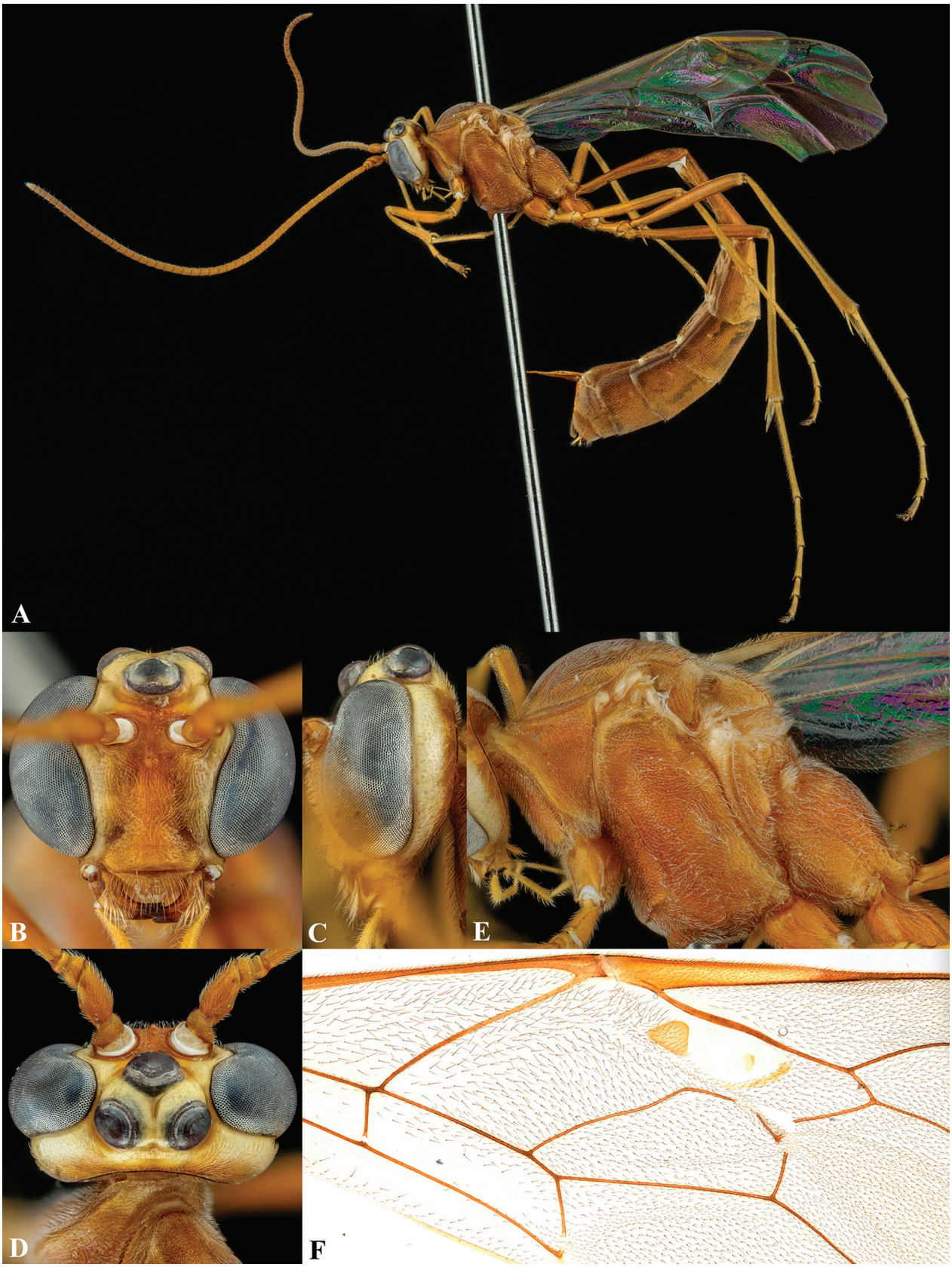

Figure 7. *Enicospilus capensis* (Thunberg, 1822), ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Diagnosis. *Head* (Fig. 8B–D): GOI = 2.9–3.1; lower face 0.6–0.7× as wide as high; clypeus weakly convex in profile, its lower margin subacute; mandible moderately twisted by 30–40°, moderately long, evenly tapered, its outer surface without a diagonal structure; upper mandibular tooth 1.3–1.6× as long as lower one; posterior ocellus

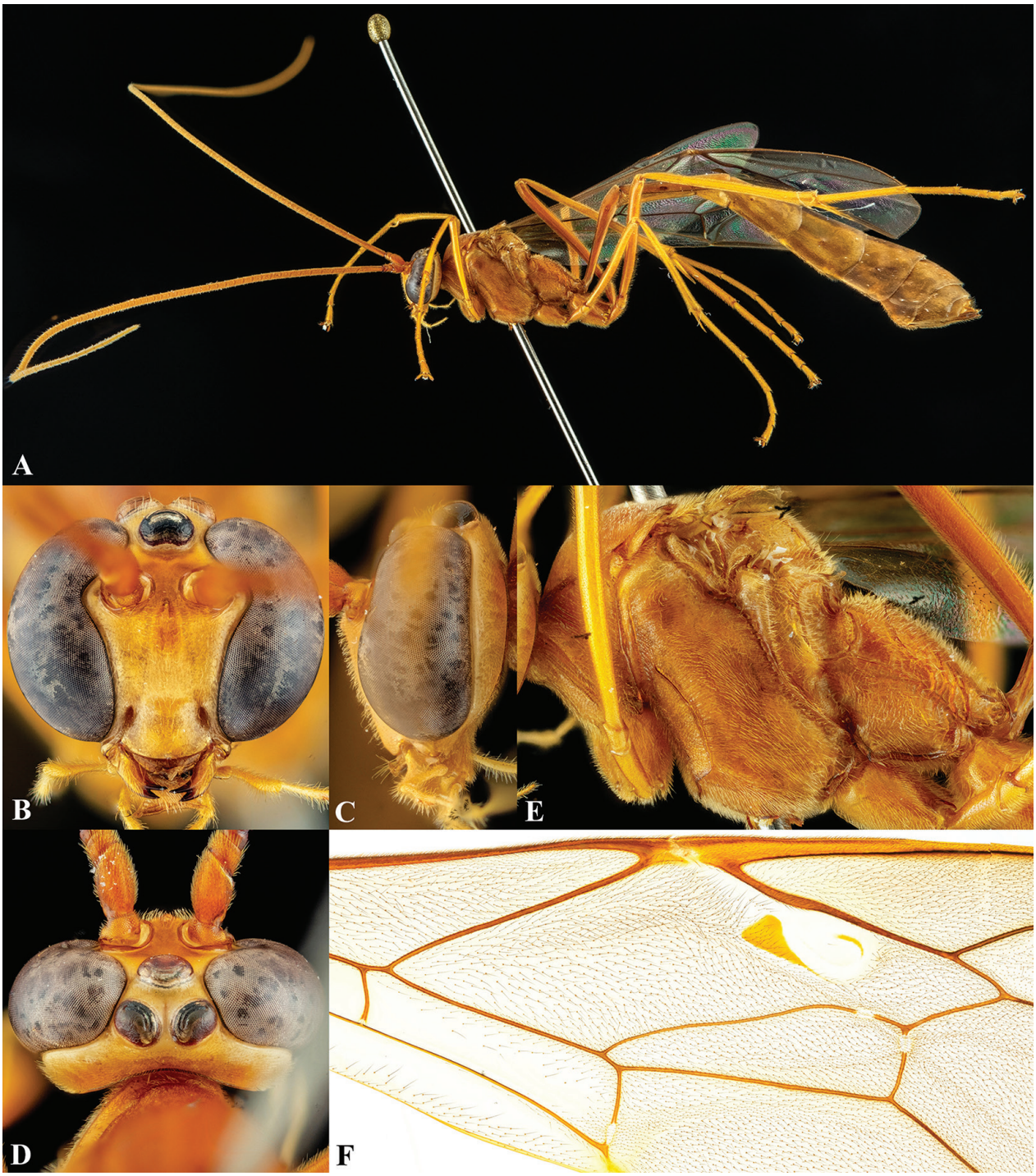

Figure 8. *Enicospilus flavicaput* (Morley, 1912), ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

close to eye; antenna with 71–76 flagellomeres and 20th flagellomere 2.3–2.5× as long as wide.

Mesosoma (Fig. 8E): mesopleuron rather coarsely longitudinally striate; scutellum with lateral longitudinal carinae reaching anterior 0.8–1.0 and convergent posteriorly; metapleuron rather coarsely striate to strigose; propodeum evenly rounded to slightly declivous, its posterior area coarsely reticulate, outer margin of propodeal spiracle joining pleural carina by a strong ridge.

Wings (Fig. 8F): fore wing with AI = 0.3–0.4, CI = 0.2–0.4, ICI = 0.6–0.7, SDI = 1.2–1.4; fore wing vein 1m-cu&M weakly sinuous, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 8F; fenestra of fore wing not long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite triangular, confluent with distal one, strongly pigmented; central sclerite strongly pigmented and sclerotised, linear and parallel to vein 2r&RS, positioned in anterodistal part of fenestra; distal sclerite

present proximally and vestigial to absent distally; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a antefurcal to M&RS by 0.1–0.2× 1cu-a length.

Colour (Fig. 8): body including interocellar area entirely testaceous; wings hyaline to weakly infuscate.

Differential diagnosis. *Enicospilus flavicaput* is most similar to *E. kanshirensis* but can be distinguished from it by the slender central sclerite (Fig. 8F) (central sclerite stouter in *E. kanshirensis*, as in Figure 14F), and larger body size (i.e. fore wing length more than 17.0 mm in *E. flavicaput* but less than 15.0 mm in *E. kanshirensis*).

Enicospilus flavocephalus (Kirby, 1900)*

Fig. 9

Ophion flavocephalus Kirby 1900: 82; lectotype ♂, Christmas Island, NHMUK, examined, designated by Gauld (1977: 79).

Henicospilus lunulatus Szépligeti 1906: 143; holotype ♂, Bismarck Island, TM; synonymised by Gauld and Mitchell (1981: 416).

Henicospilus albicaput Morley 1912: 50; holotype ♂, Australia, NHMUK, examined; synonymised by Townes et al. (1961: 275).

Henicospilus similis Matsumura and Uchida 1926: 221; holotype ♂, Ryûkyû Island, SEHU, examined; synonymised by Uchida (1928: 221).

Material examined. 13♀♀11♂♂ and 1 unsexed: Nepal (2♀♀1♂), Australia (5♀♀2♂♂ and 1 unsexed), Brunei (2♀♀1♂), Japan (1♂), Singapore (1♀), Taiwan (3♀♀6♂♂).

Type series: lectotype of *Ophion flavocephalus* Kirby, 1900, ♂, Flying Fish Cove, Christmas Island, Australia, C.W. Andrews leg. (NHMUK, Type 3b.1273); holotype of *Henicospilus albicaput* Morley, 1912, ♂, Mackay, Queensland, Australia (NHMUK, Type 3b.1254); holotype of *Henicospilus similis* Matsumura & Uchida, 1926, ♂, Okinawa, Ryûkyûs, Japan, S. Sakaguchi leg. (SEHU).

Non-type series: 1♀, Kathmandu (1,350 m), Nepal, VII.1983, M.G. Allen leg. (LT) (Fig. 9); 1♀, Kathmandu (1,300 m), Nepal, XI.1982, M.G. Allen leg. (LT); 1♂, Pokhara, Nepal, VIII.1982, M.G. Allen leg. (LT); 5♀♀, Christmas Island, Australia, 1939; 1 unsexed, Christmas Island, Australia, 1898, C.W. Andrews leg.; 1♂, Ulu Temburong (300 m), Base camp hut, Brunei, 16.II–9.III.1982, M.C. Day leg.; 1♀, Pagon, Pagon Ridge, Brunei, II.1982, M.G. Allen leg.; 1♀, Bukit Retak (1,618 m), Montane forest, Brunei, IX.1979, I.D. Gauld leg.; 1♀, Singapore, 1908, H.N. Ridley leg. (all NHMUK); 1♀, Wanfeng Hill, Taichung, Taiwan, VII.1984, K.S. Lin & K.C. Chou leg. (MsT); 1♂, Kukuan (730 m), Taichung, Taiwan, 14–17.X.1980, K.S. Lin & C.H. Wang leg,; 1♀1♂, Pingtung, Taiwan, IV.1961, K.S. Lin leg. (LT); 1♀1♂, Silo, Yunlin, Taiwan, V.1961, K.S. Lin leg. (LT); 1♂, Lishan, Taichung, Taiwan, 14.IX.1978; 2♂♂, Chung-ying, Taiwan, III.1961, S.C. Chiu leg. (all TARI).

Distribution. Australasian, Oceanic, and Oriental regions (Yu et al. 2016). Newly recorded from Nepal.

Diagnosis. *Head* (Fig. 9B–D): GOI = 2.5–2.9; lower face 0.5–0.7× as wide as high; clypeus very slightly convex in profile, its lower margin subacute to blunt; mandible moderately twisted by 25–35°, moderately long, more or less evenly tapered, its outer surface without a diagonal structure; upper mandibular tooth 1.1–1.2× as long as lower one; posterior ocellus almost touching eye; antenna with 45–51 flagellomeres and 20th flagellomere 1.8–2.3× as long as wide.

Mesosoma (Fig. 9E): mesopleuron punctate to longitudinally punctostriate; scutellum with lateral longitudinal carinae reaching posterior end and convergent posteriorly; metapleuron moderately strigose to striate; propodeum evenly rounded, its posterior area rather finely reticulate, outer margin of propodeal spiracle joining pleural carina by a ridge.

Wings (Fig. 9F): fore wing with AI = 0.4–1.5, CI = 0.6–0.8, ICI = 0.4–0.6, SDI = 1.1–1.2; fore wing vein 1m-cu&M centrally strongly angulated and broadened, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 9F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite almost oval, isolated and not touching margin of fenestra, strongly pigmented; central sclerite strongly pigmented and sclerotised, linear and parallel to distal margin of the fenestra, positioned in mediodistal part of the fenestra; distal sclerite absent; proximal corner of marginal cell of fore wing almost uniformly setose; vein 1cu-a subinterstitial to antefurcal to M&RS by less than 0.2× 1cu-a length.

Colour (Fig. 9): body including interocellar area entirely pale yellow with pale brown posterior segments of metasoma; wings hyaline.

Differential diagnosis. *Enicospilus flavocephalus* is a very distinctive species, but its body size, colour pattern, and profile are very similar to *E. xanthocephalus*. *Enicospilus flavocephalus* is easily distinguished from *E. xanthocephalus* by many characters, such as the pale yellow interocellar area (Fig. 9B, D) (black in *E. xanthocephalus*) and centrally abruptly angled and broadened fore wing vein 1m-cu&M (Fig. 9F) (evenly curved in *E. xanthocephalus*).

Enicospilus formosensis (Uchida, 1928)*

Figs 2E, 10

Henicospilus formosensis Uchida 1928: 223; holotype ♀, Taiwan, SEHU, examined.

Enicospilus saepis Chiu 1954: 77; holotype ♀, Japan, TARI, examined; synonymised by Gauld and Mitchell (1981: 424).

Material examined. 2♀♀2♂♂ and 1 unsexed: Nepal (1♂), Brunei (1♂), India (1 unsexed), Japan (1♀), Taiwan (1♀).

Type series: holotype of *Henicospilus formosensis* Uchida, 1928, ♀, Baibara, Taiwan, 15.VI.1926, Y. Saito & Kikuchi leg. (SEHU); holotype of *Enicospilus saepis* Chiu, 1954, ♀, Nara, Honshû, Japan, 17.VIII.1918, J. Sonan leg. (TARI).

Non-type series: 1♂, mixed forest (1,550 m), Godaveri, Nepal, 6.V.1984, M.G. Allen leg. (LT) (Figs 2E, 10); 1♂, Ulu Temburong (1,000 m), Brunei, II.1980, M.G.

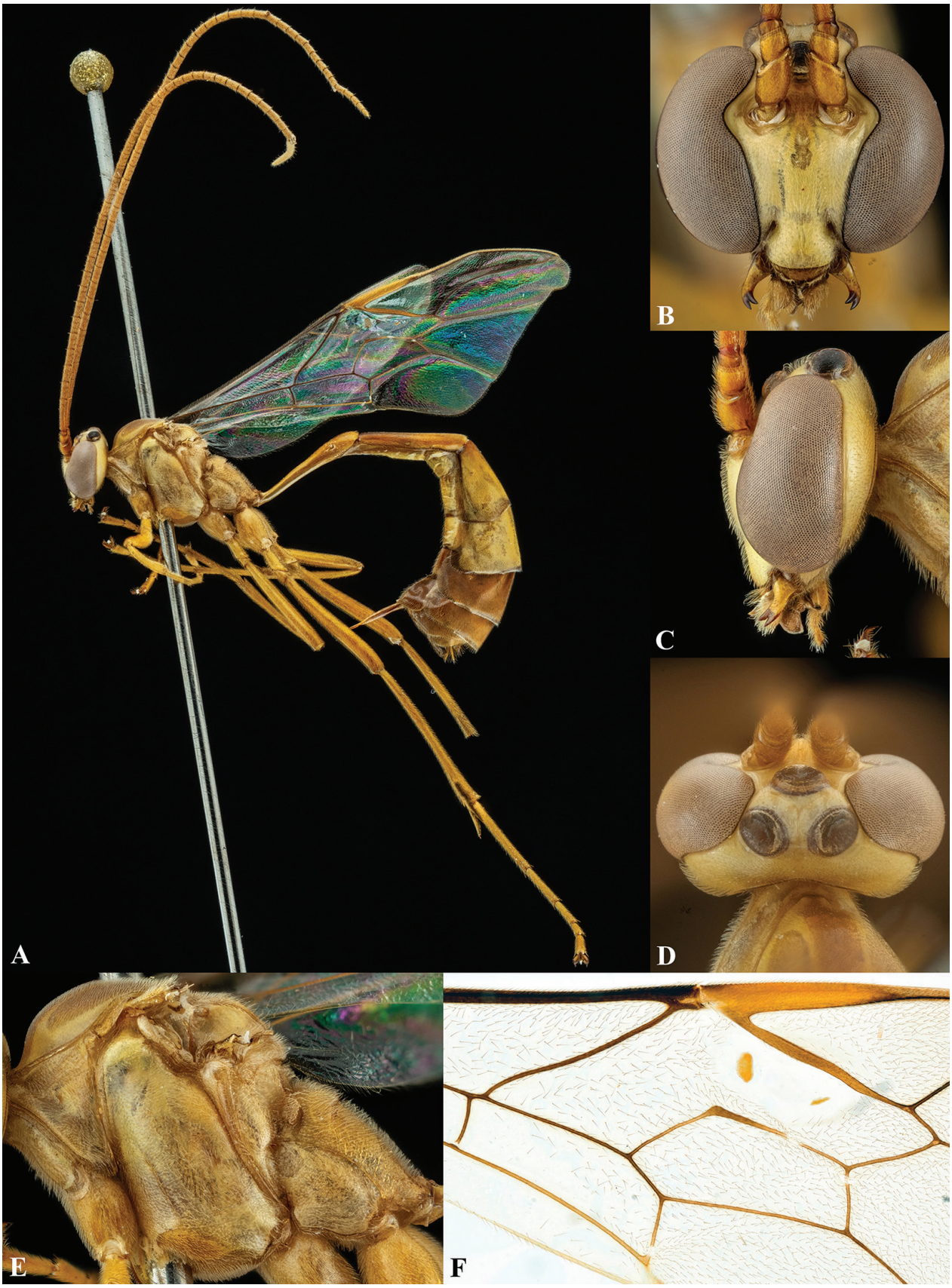

Figure 9. *Enicospilus flavocephalus* (Kirby, 1900), ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

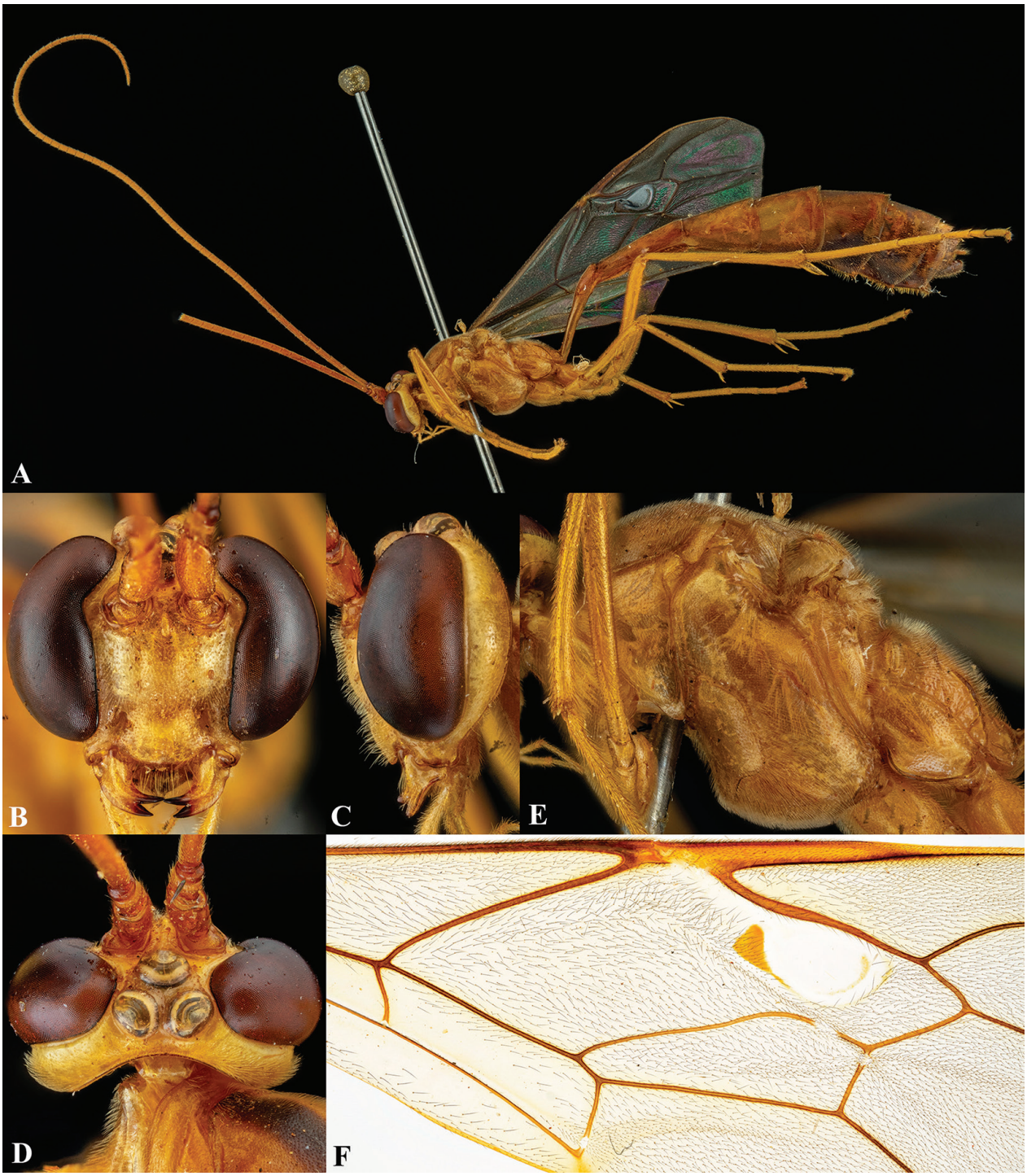

Figure 10. *Enicospilus formosensis* (Uchida, 1928), ♂. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Allen leg.; 1 unsexed, NW Himalaya, Dalhousie, India, 8.VII.1965, Tikar leg. (all NHMUK).

Distribution. Eastern Palaearctic and Oriental regions (Yu et al. 2016). Newly recorded from Nepal.

Diagnosis. *Head* (Fig. 10B–D): GOI = 2.2–2.4; lower face 0.8–0.9× as wide as high; clypeus moderately convex in profile, its lower margin subacute to blunt; mandible weakly twisted by 10–20°, moderately long, evenly tapered, its outer surface without a diagonal structure; upper mandibular tooth 1.2–1.4× as long as lower one; posterior ocellus close to eye; antenna with 66–69 flagellomeres and 20th flagellomere 2.1–2.2× as long as wide.

Mesosoma (Fig. 10E): mesopleuron moderately punctate; scutellum with lateral longitudinal carinae reaching anterior 0.8 or more and weakly convergent posteriorly so that subquadrate (Fig. 2E); metapleuron punctate with isolated striae; propodeum declivous in profile, its posterior area coarsely irregularly wrinkled, sometimes with posterior transverse carina laterally,

outer margin of propodeal spiracle joining pleural carina by a ridge or not.

Wings (Fig. 10F): fore wing with AI = 0.2–0.6, CI = 0.2–0.9, ICI = 0.5–0.6, SDI = 1.1–1.3; fore wing vein 1m-cu&M weakly sinuous, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 10F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite triangular, confluent with distal one, strongly pigmented; central sclerite moderately to strongly pigmented and sclerotised, linear and parallel to distal margin of fenestra, positioned in distal part of fenestra; distal sclerite present proximally and vestigial to absent distally; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a subinterstitial to antefurcal to M&RS by less than 0.2× 1cu-a length.

Colour (Fig. 10): body including interocellar area testaceous; wings weakly infumate.

Differential diagnosis. *Enicospilus formosensis* is a distinctive species and can easily be distinguished by many characters, such as the wide face (Fig. 10B), shape of the central sclerite (Fig. 10F), more or less subquadrate scutellum (Fig. 2E), as listed in the diagnosis.

Enicospilus grammospilus (Enderlein, 1921)*

Fig. 11

Dicamptus grammospilus Enderlein 1921: 17; holotype ♂, Sumatra, IZPAN, photos examined.

Material examined. 14♀♀3♂♂: Nepal (1♀), Indonesia (1♂), Brunei (13♀♀2♂♂).

Type series: holotype of *Dicamptus grammospilus* Enderlein, 1921, ♂, Soekaranda, Sumatra, Indonesia, Dohrn leg. (IZPAN) [photos examined].

Non-type series: 1♀, Pokhara (950 m), Nepal, VII–VIII.1983, M.G. Allen leg. (LT) (Fig. 11); 2♀♀1♂, Montane Forest (1,618 m), Bukit Retak, Brunei, IX.1979, I.D. Gauld leg.; 8♀♀1♂, Bukit Retak (1,500 m), U. Temburgon, Brunei, IV.1981, I.D. Gauld leg.; 2♀♀, Pagon (1,700 m), U. Temburong, Brunei, IV.1981, I.D. Gauld leg.; 1♀, Pagon Ridge, Pagon, Brunei, II.1982, M.G. Allen leg. (all NHMUK).

Distribution. Oriental region (Yu et al. 2016). Newly recorded from Nepal.

Diagnosis. *Head* (Fig. 11B–D): GOI = 2.5–2.7; lower face 0.7–0.8× as wide as high; clypeus almost flat in profile, its lower margin acute; mandible moderately twisted by 20–30°, moderately long, proximally tapered and distally almost subparallel sided, its outer surface without a diagonal structure; upper mandibular tooth 1.4–1.5× as long as lower one; posterior ocellus (almost) touching eye; antenna with 58–62 flagellomeres and 20th flagellomere 1.7–1.9× as long as wide.

Mesosoma (Fig. 11E): mesopleuron punctate dorsally and rather closely longitudinally punctostriate to striate ventrally; scutellum with lateral longitudinal carinae reaching anterior 0.8 or more and convergent posteriorly; metapleuron rather closely striate; propodeum declivous in profile, its posterior area concentrically striate, outer margin of propodeal spiracle not joining pleural carina by a ridge.

Wings (Fig. 11F): fore wing with AI = 0.8–1.4, CI = 0.5–0.6, ICI = 0.4–0.5, SDI = 1.4–1.5; fore wing vein 1m-cu&M almost evenly curved, 2r&RS weakly bowed centrally; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 11F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite not triangular, confluent with distal one, weakly to strongly pigmented; central sclerite weakly to strongly pigmented and sclerotised, linear and parallel to vein 2r&RS, positioned in central part of fenestra; distal sclerite weak; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a subinterstitial to antefurcal to M&RS by less than 0.1× 1cu-a length.

Colour (Fig. 11): body including interocellar area entirely testaceous; wings hyaline.

Differential diagnosis. *Enicospilus grammospilus* is a very distinctive species on account of its characteristic shape of fore wing vein 2r&RS and sclerites as in Figure 11F. No similar species are recognised and is very easily distinguished from all other *Enicospilus* species by the characters summarised in the above diagnosis, such as concentrically striate posterior area of propodeum and characteristic shape of sclerites of discosubmarginal cell of fore wing (cf. Fig. 11F).

Enicospilus javanus (Szépligeti, 1910)

Fig. 12

Henicospilus javanus Szépligeti 1910: 93; holotype ♀, Java, TM.

Enicospilus fulacorensis Brues 1918: 117; holotype ♀, Solomon Island, MCZ; synonymised by Gauld and Mitchell (1981: 260).

Enicospilus gephyrus Chiu 1954: 32; holotype ♀, Japan, TARI, examined; synonymised by Gauld and Mitchell (1981: 260).

Enicospilus (*Bicorniata*) *diurnus* Nikam 1975: 193, 194; holotype ♀, India, MUC; synonymised by Gauld and Mitchell (1981: 260).

Material examined. 44♀♀4♂♂: Nepal (5♀♀2♂♂), Brunei (30♀♀2♂♂) India (2♀♀), Papua New Guinea (4♀♀), Singapore (1♀), Sri Lanka (2♀♀).

Non-type series: 2♀♀1♂, Kakani (2,000 m), Nepal, VIII.1982, M.G. Allen leg. (LT); 3♀♀, Kathmandu (1,350 m), Nepal, VII.1983, M.G. Allen leg. (LT) (Fig. 12); 1♂, Pokhara, Nepal, VIII.1982, M.G. Allen leg. (LT); 2♀♀1♂, Gn. Pagon (1,700 m), U. Temburong, Brunei, IV.1981, I.D. Gauld leg.; 24♀♀, Bukit Retak (1,500 m), U. Temburong, Brunei, IV.1981, I.D. Gauld leg.; 1♂, Montane forest (1,618 m), Bukit Retak, Brunei, IX.1979, I.D. Gauld leg.; 2♀♀, Pagon Ridge, Pagon, Brunei, II.1982, I.D. Gauld leg.; 2♀♀, 1′ forest (500 m), U. Temburong, Brunei, IV.1981, I.D. Gauld leg.; 1♀, Thekkadi, Periyar Dam, Travancore, India, 6–10.V.1937; 1♀, Andhra Pradesh, Patancheru, India, XII.1980, Bhatnagar leg. (LT); 1♀, Wau (1,200 m),

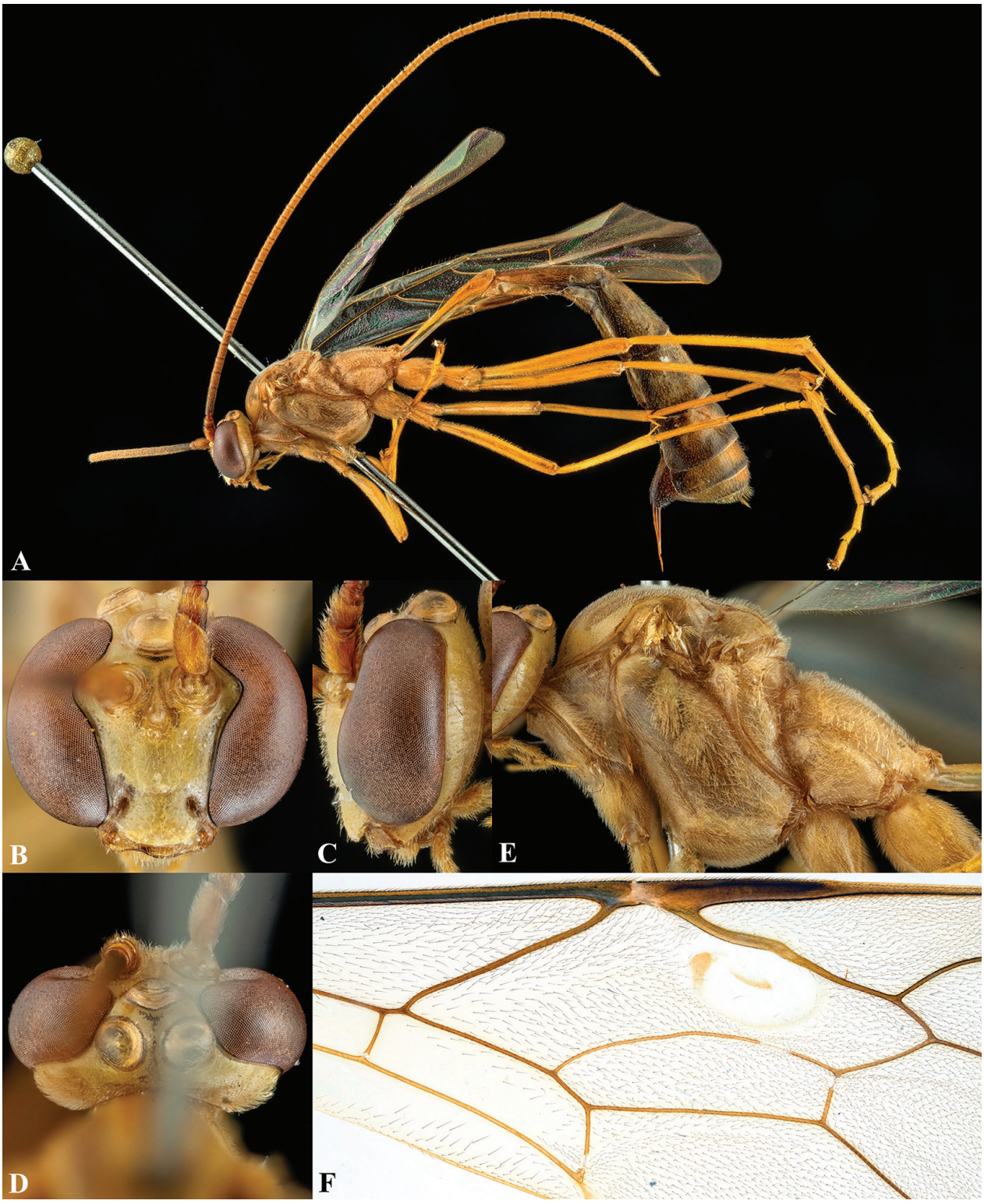

Figure 11. *Enicospilus grammospilus* (Enderlein, 1921), ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Morobe Dist., Papua New Guinea, X.1979, I.D. Gauld leg.; 3♀♀, Mt Lawes (400 m), Port Moresby, Papua New Guinea, 5.III–12.V.1963, W.W. Brandt leg.; 1♀, Singapore, 1901, H.N. Kidley leg.; 1♀, Peradeniya, Sri Lanka, 25.VII.1919, N.K. Jardine leg.; 1♀, Matale (1,500 m), Sri Lanka, 10.V.1919, N.K. Jardine leg. (all NHMUK).

Distribution. Australasian, Eastern Palaearctic, and Oriental regions (Yu et al. 2016). Gauld and Mitchell (1981) recorded this species from Nepal.

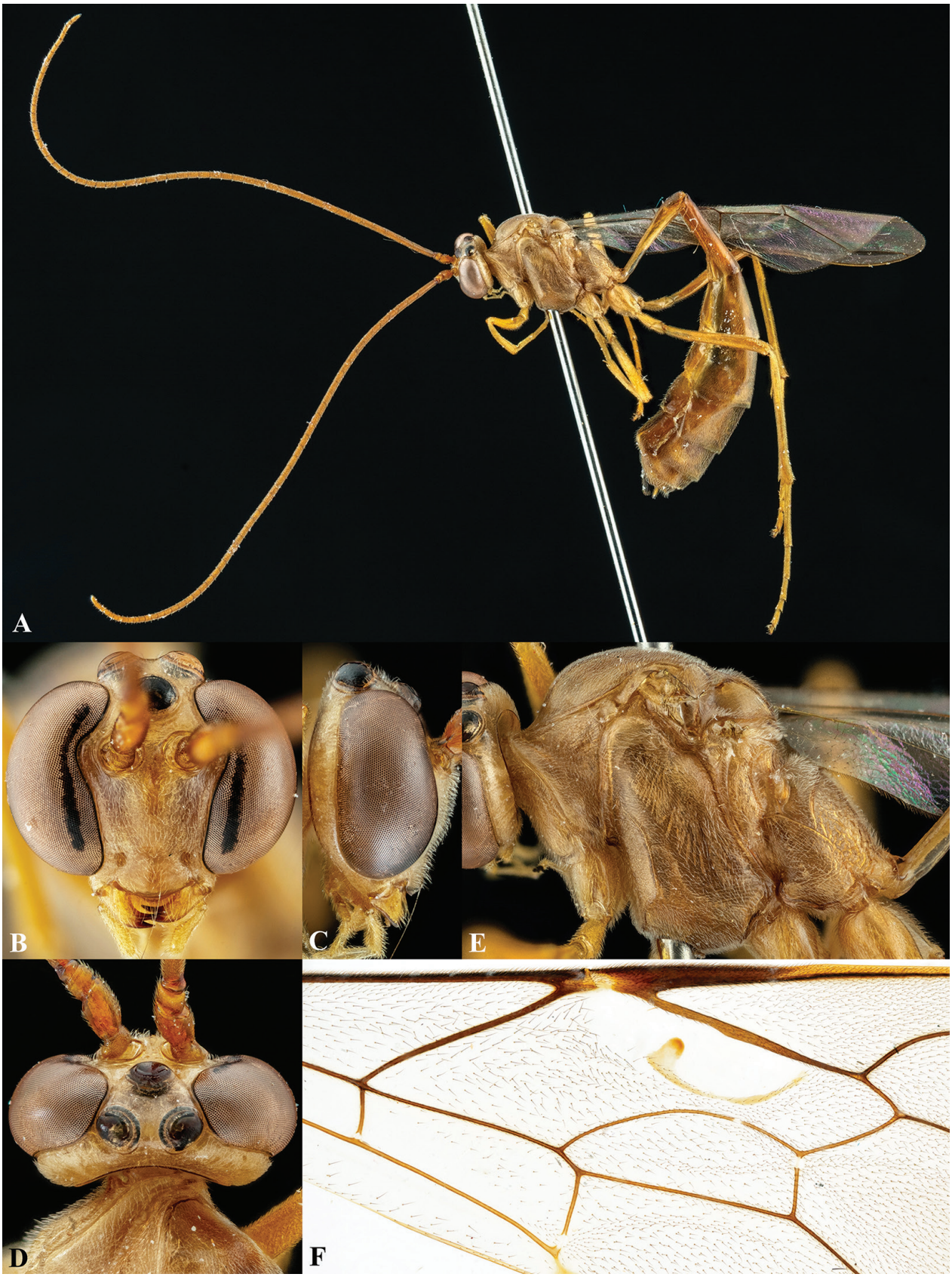

Figure 12. *Enicospilus javanus* (Szépligeti, 1910), ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Diagnosis. *Head* (Fig. 12B–D): GOI = 2.7–3.2; lower face 0.7–0.8× as wide as high; clypeus moderately convex in profile, its lower margin blunt; mandible moderately twisted by 15–30°, moderately long, evenly tapered, its outer surface without a diagonal structure; upper mandibular tooth 1.2–1.5× as long as lower one; posterior ocellus almost touching eye; antenna with 55–62 flagellomeres and 20th flagellomere 2.0–2.5× as long as wide.

Mesosoma (Fig. 12E): mesopleuron dorsally punctate to longitudinally striate and ventrally longitudinally striate; scutellum with lateral longitudinal carinae reaching posterior end and convergent posteriorly; metapleuron striate; propodeum declivous, its posterior area moderately reticulate, outer margin of propodeal spiracle joining pleural carina by a ridge.

Wings (Fig. 12F): fore wing with AI = 1.1–1.8, CI = 0.2–0.5, ICI = 0.4–0.6, SDI = 1.0–1.1; fore wing vein 1m-cu&M evenly curved, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 12F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite not triangular, confluent with distal one, at least anteriorly very strongly pigmented; central sclerite absent; distal sclerite more or less strong and rather thick; proximal corner of marginal cell of fore wing more or less uniformly setose; vein 1cu-a subinterstitial to antefurcal to M&RS by less than 0.1× 1cu-a length.

Colour (Fig. 12): body including interocellar area entirely testaceous; wings hyaline to slightly infumate.

Differential diagnosis. *Enicospilus javanus* is distinctive and one of the most easily distinguishable species on account of the proximally extended fore wing fenestra and the shape of the sclerites (cf. Fig. 12F).

Enicospilus kakanicus Shimizu, sp. nov.

http://zoobank.orgCF0FE094-738D-4491-8EBA-3C673E97C238

Figs 2F, 13

Etymology. The specific name is derived from the type locality, Kakani, Nepal.

Material examined. 1♂: Nepal.

Type series: holotype ♂, Kakani (2,000 m), Nepal, VIII.1982, M.G. Allen leg. (LT) (NHMUK) (Figs 2F, 13).

Distribution. Nepal.

Description. Male (Holotype) (Fig. 13). Body length ca 24.0 mm.

Head with GOI = 2.8 (Fig. 13C). Lower face 0.7× as wide as high, moderately punctate with setae, strongly shiny (Fig. 13B). Clypeus 1.5× as wide as high, moderately punctate with setae, moderately convex in profile, and its lower margin impressed (Fig. 13B, C). Malar space 0.4× as long as basal mandibular width (Fig. 13B, C). Mandible moderately twisted by ca 30°, moderately long, more or less evenly tapered, its outer surface with a diagonal setose groove between its dorsoproximal corner to base of mandibular apical teeth (Fig. 13B, C). Upper mandibular tooth 2.0× as long as lower one (Fig. 13B). Frons, vertex and gena strongly shiny with fine setae (Fig. 13B–D). Posterior ocellus close to eye (Fig. 13B–D). Ventral end of occipital carina joining oral carina. Antenna with 73 flagellomeres; first flagellomere 1.7× as long as second; 20th flagellomere 2.8× as long as wide.

Mesosoma entirely moderately to strongly shiny with setae (Fig. 13E). Pronotum punctate with wrinkles centrally. Mesoscutum 1.4× as long as its maximum width, finely punctate with setae, and evenly rounded in lateral profile (Fig. 13E). Notauli absent (Fig. 13E). Scutellum moderately convex, finely punctate with setae, with lateral longitudinal carinae reaching anterior 0.6 (Fig. 2F). Epicnemium densely punctate. Epicnemial carina strongly present, evenly and moderately curved to anterior, its dorsal end reaching anterior margin of mesopleuron (Fig. 13E). Mesopleuron entirely punctate with longitudinal wrinkles or striae (Fig. 13E). Submetapleural carina almost parallel sided (Fig. 13E). Metapleuron entirely finely punctate with setae (Fig. 13E). Propodeum weakly evenly rounded in profile; anterior transverse carina complete; anterior area longitudinally striate; spiracular area finely punctate with setae; posterior area moderately longitudinally strigose centrally and irregularly wrinkled to reticulate laterally; propodeal spiracle elliptical, its outer margin not joining pleural carina by a ridge (Fig. 13E).

Wings. Fore wing length ca 17.0 mm with AI = 0.4, CI = 0.4, DI = 0.3, ICI = 0.5, SDI = 1.4, SI = 0.1, SRI = 0.3; vein 1m-cu&M almost evenly curved; vein 2r&RS straight and RS evenly curved; fenestra and sclerites of discosubmarginal cell as in Figure 13F; proximal sclerite triangular, confluent with distal sclerite, strongly pigmented; central sclerite absent; distal sclerite more or less entirely present from base to apex, weakly to moderately pigmented; proximal corner of marginal cell evenly setose; posterodistal corner of second discal cell ca 95°; posterodistal corner of subbasal cell ca 95°; vein 1cu-a antefurcal to M&RS by 0.2× 1cu-a length (Fig. 13F). Hind wing with NI = 1.8, RI = 1.8; vein RS straight; vein RA with six uniform hamuli.

Legs. Outer surface of fore tibia with scattered spines. Hind leg with coxa in profile 1.9× as long as deep; basitarsus 2.0× as long as second tarsomere; fourth tarsomere 0.6× as long as third tarsomere and 4.2× as long as wide; tarsal claw simply pectinate.

Metasoma with PI = 3.8, DMI = 1.2, THI = 3.6; dorsal margin of tergite 1 not sinuous; thyridium elongate (Fig. 13A).

Colour (Fig. 13). Entirely testaceous except for apex of mandible black. Wings hyaline; sclerites of fenestra and veins testaceous.

Variation. Unknown.

Female. Unknown.

Differential diagnosis. *Enicospilus kakanicus* sp. nov. is similar to and can be confused with *E. longitarsis* Tang, 1990, *E. tangi* sp. nov., and *E. yonezawanus* (Uchida, 1928). These species all belong to the *E. ramidulus* complex and share the following characters: outer surface of mandible with a diagonal setose deep groove

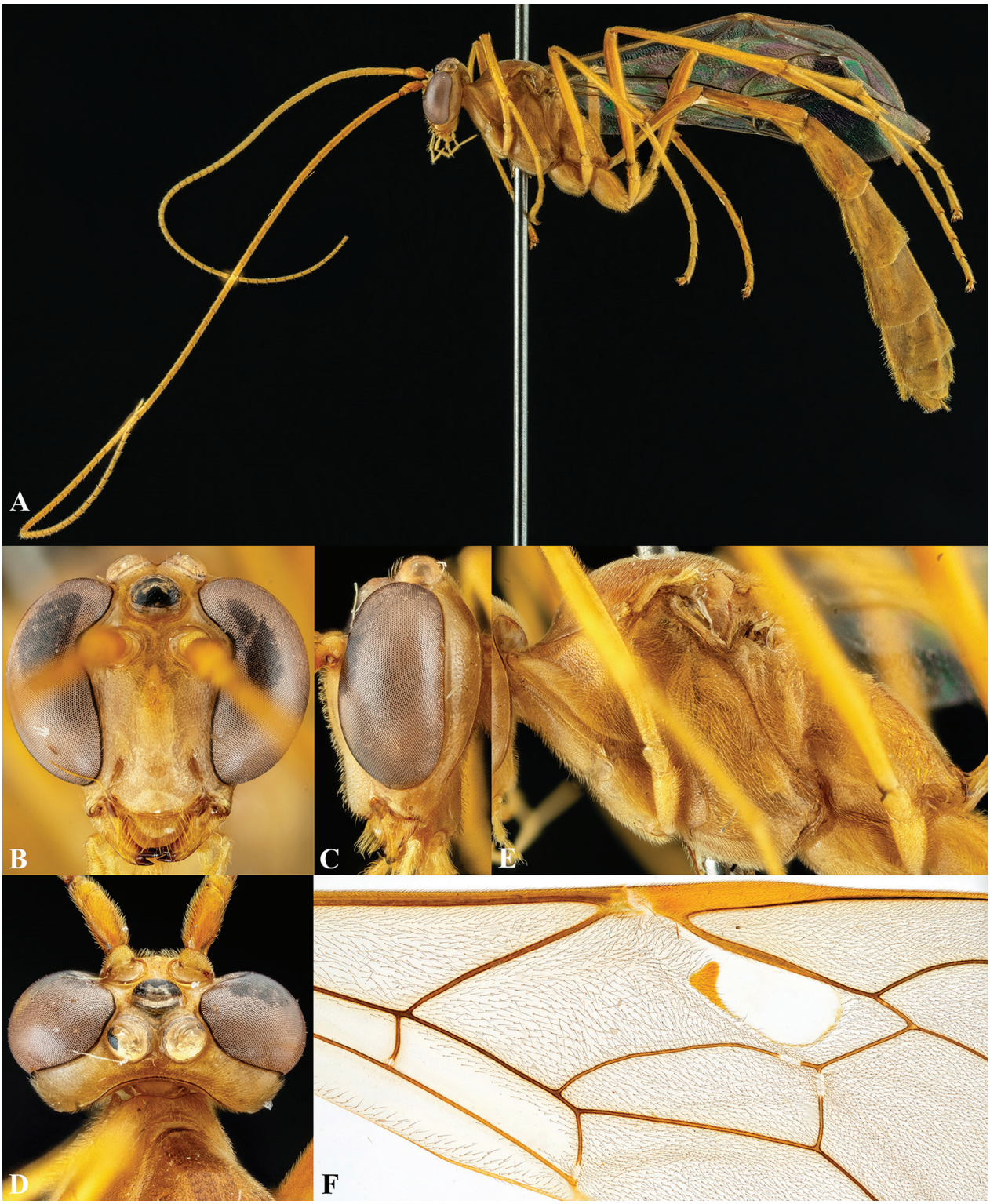

Figure 13. *Enicospilus kakanicus* Shimizu sp. nov., ♂. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

between its dorsoproximal corner and base of mandibular apical teeth (e.g. Fig. 2B, D), fore wing fenestra without central sclerite (e.g. Figs 13F, 25F, 27F), and proximal sclerite triangular (e.g. Figs 13F, 25F, 27F). *Enicospilus kakanicus* sp. nov. is distinguished from the above species by the rather short lateral longitudinal carinae of the scutellum, i.e. reaching the anterior 0.6 of the scutellum in *E. kakanicus* sp. nov., as in Figure 2F, but almost always reaching the posterior end of the scutellum in *E. longitarsis* Tang, 1990, *E. tangi* sp. nov., and *E. yonezawanus*, as in, e.g., Figure 2H, and also by the characters used in the above key, such as width of lower face, mandibular shape and length, and surface sculptures of metapleuron.

Enicospilus kanshirensis (Uchida, 1928)

Fig. 14

Henicospilus kanshirensis Uchida 1928: 226; holotype ♂, Taiwan, SEHU, examined.

Enicospilus sauteri Cushman 1937: 310; holotype ♂, Taiwan, DEI; junior secondary homonym of *Enicospilus sauteri* Enderlein, 1921; synonymised by Gauld and Mitchell (1981: 459).

Enicospilus cushmani Chiu 1954: 45; replacement name for *Enicospilus sauteri* Cushman, 1937; synonymised by Gauld and Mitchell (1981: 459).

Material examined. 3♀♀3♂♂: Nepal (1♂), India (1♀), Indonesia (1♀1♂), Taiwan (1♀1♂).

Type series: holotype of *Henicospilus kanshirensis* Uchida, 1928, ♂, Kanshirei [= Gauziling], Tainan, Taiwan, 15.IV.1908, S. Matsumura leg. (SEHU).

Non-type series: 1♂, Dharan Sal & 2^{y} forest (330m), Terai, Nepal, 14–15.XI.1983, M.G. Allen leg. (Fig. 14); 1♀, Anamalai Hills (3,500′), Cinchona, India, V.1957, P.S. Nathan leg.; 1♂, Tjigaeha, Mt Djampang, West Java, Indonesia, I.1938, K.M. Walsh leg.; 1♀, Tengah, Mt Tjioeng, Djampang Mts, West Java, Indonesia, I.1938, K.M. Walsh leg.; 1♀, Sunmoon Lake, Taiwan, 22–29.IX.1970, Shui-Chen Chiu leg. (all NHMUK).

Distribution. Australasian and Oriental regions (Yu et al. 2016). Gauld and Mitchell (1981) recorded this species from Nepal.

Diagnosis. *Head* (Fig. 14B–D): GOI = 2.8–3.1; lower face 0.7× as wide as high; clypeus moderately convex in profile, its lower margin subacute to blunt; mandible moderately twisted by 20–30°, moderately long, evenly tapered, its outer surface without a diagonal structure; upper mandibular tooth 1.4–1.6× as long as lower one; posterior ocellus close to eye; antenna with 63–66 flagellomeres and 20th flagellomere 2.1–2.3× as long as wide.

Mesosoma (Fig. 14E): mesopleuron entirely closely to rather coarsely longitudinally striate; scutellum with lateral longitudinal carinae reaching anterior 0.8 or more and convergent posteriorly; metapleuron rather coarsely striate to strigose; propodeum weakly declivous, its posterior area coarsely reticulate to concentrically striate, outer margin of propodeal spiracle joining pleural carina by a ridge.

Wings (Fig. 14F): fore wing with AI = 0.4–0.5, CI = 0.2–0.3, ICI = 0.5–0.7, SDI = 1.1–1.3; fore wing vein 1m-cu&M moderately sinuate, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 14F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite almost triangular, confluent with distal one, strongly pigmented; central sclerite strongly pigmented and sclerotised, linear and parallel to vein 2r&RS, positioned in anterodistal part of fenestra; distal sclerite present proximally and vestigial to absent distally; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a antefurcal to M&RS by 0.1–0.2× 1cu-a length.

Colour (Fig. 14): body including interocellar area entirely testaceous; wings hyaline.

Differential diagnosis. *Enicospilus kanshirensis* is most similar to *E. flavicaput* but can be distinguished from it by the stouter central sclerite (Fig. 14F) (central sclerite slender in *E. flavicaput* as in Figure 8F), and smaller body size (i.e. fore wing length less than 15.0 mm in *E. kanshirensis* but more than 17.0 mm in *E. flavicaput*).

Enicospilus laqueatus (Enderlein, 1921)

Fig. 15

Henicospilus laqueatus Enderlein 1921: 26; holotype ♂, Taiwan, IZPAN.

Enicospilus leetoni Chiu 1954: 38; holotype ♀, Taiwan, TARI, examined; synonymised by Gauld and Mitchell (1981: 396).

Material examined. 29♀♀7♂♂ and 2 unsexed: Nepal (3♀♀4♂♂), India (2♀♀1♂), Taiwan (23♀♀2♂♂ and 2 unsexed), Zambia (1♀).

Type series: holotype of *Enicospilus leetoni* Chiu, 1954, ♀, Taihoku, Taiwan, 1.IX.1925, J. Sonan leg. (TARI).

Non-type series: 1♂, Gokarna (1,450 m), Nepal, VI.1983, M.G. Allen leg. (Fig. 15); 1♀, Kathmandu (1,350 m), Nepal, VII.1983, M.G. Allen leg. (LT); 1♂, Kathmandu, Nepal, M.G. Allen leg.; 2♀♀, Kakani (2,070 m), Nepal, VII.1983, M.G. Allen leg. (LT); 1♂, Kakani (2,000 m), Nepal, VIII.1982, M.G. Allen leg. (LT); 1♂, Phulchoki (2,500 m), Nepal, IX.1982, M.G. Allen leg. (LT); 2♀♀, Delhi, India, 14.XI.1967 (1♀), 5.III.1968 (1♀); 1♂, U.P. Garjia, India, 22.IV.1967, Gupta leg. (all NHMUK); 1♀1♂ and 1unsexed, Taitung, Taiwan, 31.V–6.VI (1♀), 7–13.VI (1♂), 1–14.XI (1 unsexed).1971 (MsT); 21♀♀1♂ and 1 unsexed, Kuanhsi, Taiwan, 16.VIII (1♂), 19.VIII (1 unsexed), 29.VIII (2♀♀), IX (13♀♀), 10.X (3♀♀), 24–30.XII (1♀).1968, 11–17.III.1969 (1♀), 30.VIII.1970 (1♀) (MsT) (all TARI); 1♀, 15 km E Lusaka, Zambia, 22–31.I.1980, R.A. Beaver leg. (NHMUK).

Distribution. Afrotropical and Oriental regions (Yu et al. 2016). Gauld and Mitchell (1981) recorded this species from Nepal.

Diagnosis. *Head* (Fig. 15B–D): GOI = 2.9–3.1; lower face 0.7–0.8× as wide as high; clypeus moderately convex in profile, its lower margin acute; mandible weakly twisted by 10–25°, moderately long, evenly tapered, its outer surface with a diagonal setose groove between its dorsoproximal corner and base of mandibular apical teeth; upper mandibular tooth 1.3–1.4× as long as lower one; posterior ocellus almost touching eye; antenna with 56–62 flagellomeres and 20th flagellomere 2.0–3.0× as long as wide.

Mesosoma (Fig. 15E): mesopleuron punctate to longitudinally punctostriate; scutellum with lateral longitudinal carinae reaching posterior end and convergent posteriorly; metapleuron punctostriate; propodeum weakly declivous in profile, its posterior area moderately reticulate, outer margin of propodeal spiracle joining pleural carina by a ridge.

Wings (Fig. 15F): fore wing with AI = 0.4–0.6, CI = 0.4, ICI = 0.4–0.6, SDI = 1.2–1.4; fore wing vein 1m-cu&M almost evenly curved or very slightly sinuous, 2r&RS al-

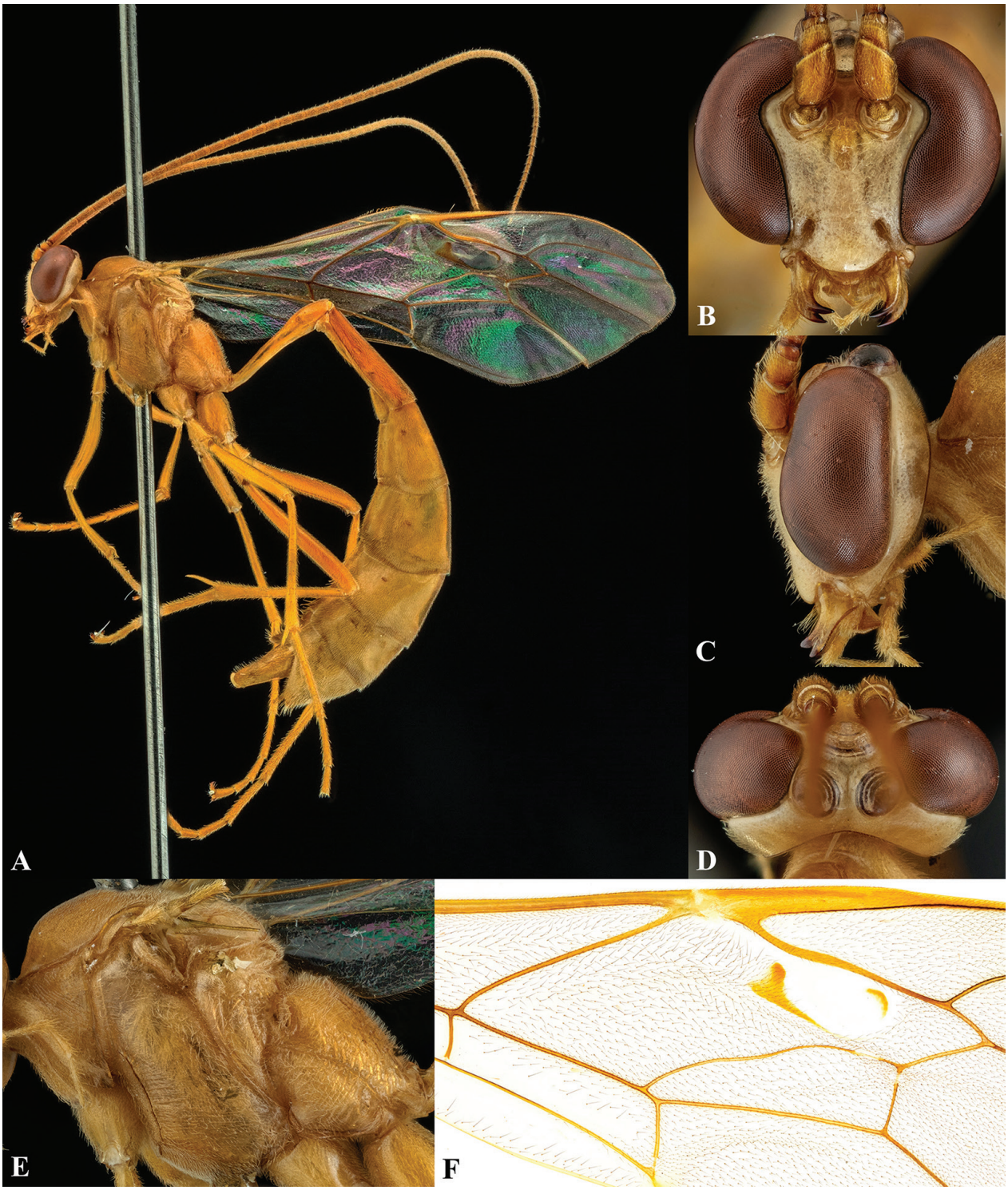

Figure 14. *Enicospilus kanshirensis* (Uchida, 1928), ♂. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

most straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 15F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite triangular, separated from distal one, strongly pigmented; central sclerite strongly pigmented, sclerotised, well-delineated D-shaped to semi-circular, positioned in almost mediodistal part of fenestra; distal sclerite absent proximally and more or less strong distally; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a antefurcal to M&RS by 0.1–0.3× 1cu-a length.

Colour (Fig. 15): body including interocellar area entirely testaceous; wings hyaline.

Differential diagnosis. *Enicospilus laqueatus*, *E. pseudoantennatus*, *E. vestigator*, and *E. tripartitus* share similar fenestra, sclerites, and fore wing venation (e.g.

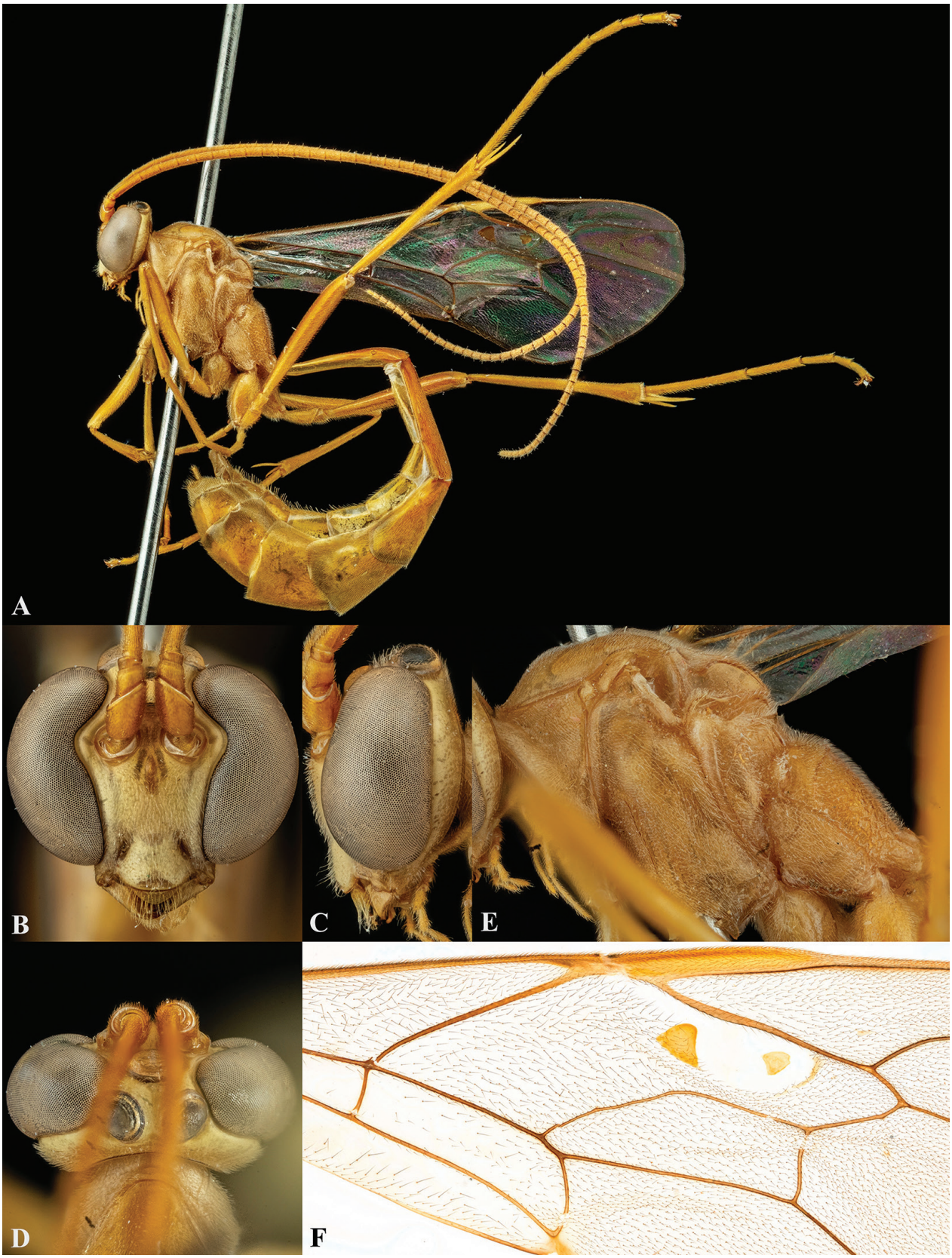

Figure 15. *Enicospilus laqueatus* (Enderlein, 1921), ♂. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Figs 15F, 21F, 26F). However, *E. laqueatus* can be readily separated from *E. pseudoantennatus*, *E. vestigator*, and *E. tripartitus* by a diagonal setose deep groove of the outer surface of the mandible between its dorsoproximal corner and base of mandibular apical teeth (outer mandibular surface without a distinct diagonal setose deep groove in

E. pseudoantennatus, *E. vestigator*, and *E. tripartitus*, as in e.g. Figure 2C).

Enicospilus lineolatus (Roman, 1913)

Fig. 16

Enicospilus striatus Cameron 1899: 103; holotype ♀, India, OUMNH; junior secondary homonym of *Enicospilus striatus* (Brullé); synonymised by Gauld and Mitchell (1981: 304).

Henicospilus lineolatus Roman 1913: 30; holotype ♂, Philippines, NR.

Enicospilus uniformis Chiu 1954: 25; holotype ♀, Taiwan, TARI, examined; synonymised by Gauld and Mitchell (1981: 304).

Enicospilus flatus Chiu 1954: 28; holotype ♀, Taiwan, TARI, examined; synonymised by Gauld and Mitchell (1981: 304).

Enicospilus gussakovskii Viktorov 1957: 185; holotype ♀, Ussr, Moscow; synonymised by Gauld and Mitchell (1981: 304).

Enicospilus striolatus Townes, Townes and Gupta 1961: 290; replacement name for *Enicospilus striatus* Cameron, 1899; synonymised by Gauld and Mitchell (1981: 304).

Enicospilus unicornis Rao and Nikam 1969: 343; lectotype ♂, India, NHMUK, examined, designated by Gauld and Mitchell (1981: 304); synonymised by Gauld and Mitchell (1981: 304).

Enicospilus unicornis Rao and Nikam 1970: 103; holotype ♀, India, MUC; junior primary homonym of *Enicospilus unicornis* Rao & Nikam, 1969; synonymised by Gauld and Mitchell (1981: 305).

Material examined. 88♀♀15♂♂ and 3 unsexed: Nepal (10♀♀4♂♂), Australia (1♀), Brunei (2♀♀), India (34♀♀7♂♂ and 1 unsexed), Japan (17♀♀), Papua New Guinea (2♀♀), Sri Lanka (1♀), Taiwan (21♀♀4♂♂ and 2 unsexed).

Type series: holotype of *Enicospilus uniformis* Chiu, 1954, ♀, Taihoku, Taiwan, 14.IV.1921, S. Aoki leg. (TARI); holotype of *Enicospilus flatus* Chiu, 1954, ♀, Taihoku, Taiwan, 28.V.1931, J. Sonan leg. (TARI); lectotype of *Enicospilus unicornis* Rao & Nikam, 1969, ♂, Himayatbagh, Aurangabad, Maharashtra, India, VIII.1968, Nikam leg. (NHMUK, Type 3b.2858).

Non-type series: 1♂, Kathmandu (4,300′), Nepal, VIII.1981, M.G. Allen leg. (Fig. 16A–E); 1♀, Kathmandu (4,300′), Nepal, VIII.1982, M.G. Allen leg.; 1♀2♂♂, Phulchoki (2,000 m), Nepal, VIII.1982, M.G. Allen leg. (LT) (Fig. 16F by ♂); 2♀♀, Godavarl (6,000′), Kathmandu, Nepal, 1–2 (1♀), 3 (1♀). VIII.1967 (MsT); 1♀, Godavarl (5,000′), Kathmandu, Nepal, 10.VIII.1967 (MsT); 1♀, near Simra (180 m), Adhabhar, Nepal, 23–28.VIII.1967 (MsT); 1♀, Kakani (2,070 m), Nepal, VII.1983, M.G. Allen leg. (LT); 2♀♀, Kakani (2,000 m), Nepal, VIII.1982, M.G. Allen leg. (LT); 1♀1♂, Kathmandu (1,350 m), Nepal, VII.1983, M.G. Allen leg. (LT); 1♀, Victoria, Toolangi, Australia, I–II.1983, Farrugia & Gauld leg.; 2♀♀, U. Temburong (1,500 m), Bukit Retak, Brunei, IV.1881, I.D. Gauld leg.; 34♀♀6♂♂ and 1 unsexed, Andhra Pradesh, Patancheru, India, VI (1♀), VII (1♀), VIII (4♀♀), IX (27♀♀5♂♂ and 1 unsexed), X (1♀).1980 (1♂), Bhatnagar leg. (LT) (all NHMUK); 17♀♀, Hitsujigaoka (43°00'N, 141°24'E), Sapporo, Hokkaidô, Japan, 16–23. VIII (1♀), 30.VIII–6.IX (1♀).2007, 28.VII–4.VIII (1♀), 4–11 (6♀♀), 11–18 (4♀♀).VIII, 1–8.IX (4♀♀).2008, K. Konishi leg. (MsT) (EUM); 1♀, Kokoda (365 m), Papua New Guinea, VI.1933, L.E. Cheesman leg.; 1♀, Wau (1,200 m), Morobe District, Papua New Guinea, 24–26. II.1963, J. Sedlacek leg. (MsT); 1♀, Peak View Motel (550 m), Kandy, Sri Lanka, 15–24.I.1970, Davis & Rowe leg. (all NHMUK); 3♀♀3♂♂ and 2 unsexed, Karen, Taiwan, 6–14.V (1♀1♂ and 1 unsexed), 26.VIII–4. XI (1♀2♂♂).1972, 16–22.IV.1973 (1♀ and 1 unsexed) (MsT); 16♀♀1♂, Wanfeng Hill, Taichung, Taiwan, I (2♀♀1♂), II (1♀), IV (10♀♀), V (3♀♀).1984, K.S. Lin & K.C. Chou leg. (MsT) (all TARI).

Distribution. Australasian, Eastern Palaearctic, Oceanic, and Oriental regions (Yu et al. 2016). Gauld and Mitchell (1981) recorded this species from Nepal.

Diagnosis. *Head* (Fig. 16B–D): GOI = 2.2–2.7; lower face 0.7–0.8× as wide as high; clypeus almost flat in profile, its lower margin acute to subacute; mandible rather weakly twisted by 10–20°, moderately long, proximally tapered and distally more or less parallel sided, its outer surface without a diagonal structure; upper mandibular tooth 1.3–1.5× as long as lower one; posterior ocellus almost touching eye; antenna with 51–61 flagellomeres and 20th flagellomere 1.9–2.2× as long as wide.

Mesosoma (Fig. 16E): mesopleuron punctate; scutellum with lateral longitudinal carinae reaching at least anterior 0.8 and convergent posteriorly; metapleuron punctate to punctostrigose; propodeum weakly declivous, its posterior area moderately reticulate, outer margin of propodeal spiracle not joining pleural carina by a ridge.

Wings (Fig. 16F): fore wing with AI = 0.5–0.9, CI = 0.5–0.9, ICI = 0.7–1.0, SDI = 1.3–1.5; fore wing vein 1m-cu&M moderately sinuous, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 16F; fenestra of fore wing not long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal and central sclerites absent; distal sclerite strong and more or less centrally broadened; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a interstitial to antefurcal to M&RS by less than 0.3× 1cu-a length.

Colour (Fig. 16): body including interocellar area entirely testaceous; wings hyaline.

Differential diagnosis. Some species of Oriental *Enicospilus* (e.g. *E. fusiformis* and *E. unicolor*) have a centrally broadened distal sclerite and lack proximal and central sclerites, as in Figure 16F. Among them, *E. lineolatus* is most similar to *E. unicolor*, but distinguished by the narrower distal sclerite than that of *E. unicolor* and testaceous fore wing pterostigma and sclerite (brown in *E. unicolor*).

Enicospilus melanocarpus Cameron, 1905

Fig. 17

Enicospilus reticulatus Cameron 1902: 52; holotype ♂, Maldives, NHMUK, examined; synonymised by Gauld and Mitchell (1981: 377); junior primary homonym of *Enicospilus reticulatus* Cameron, 1899.

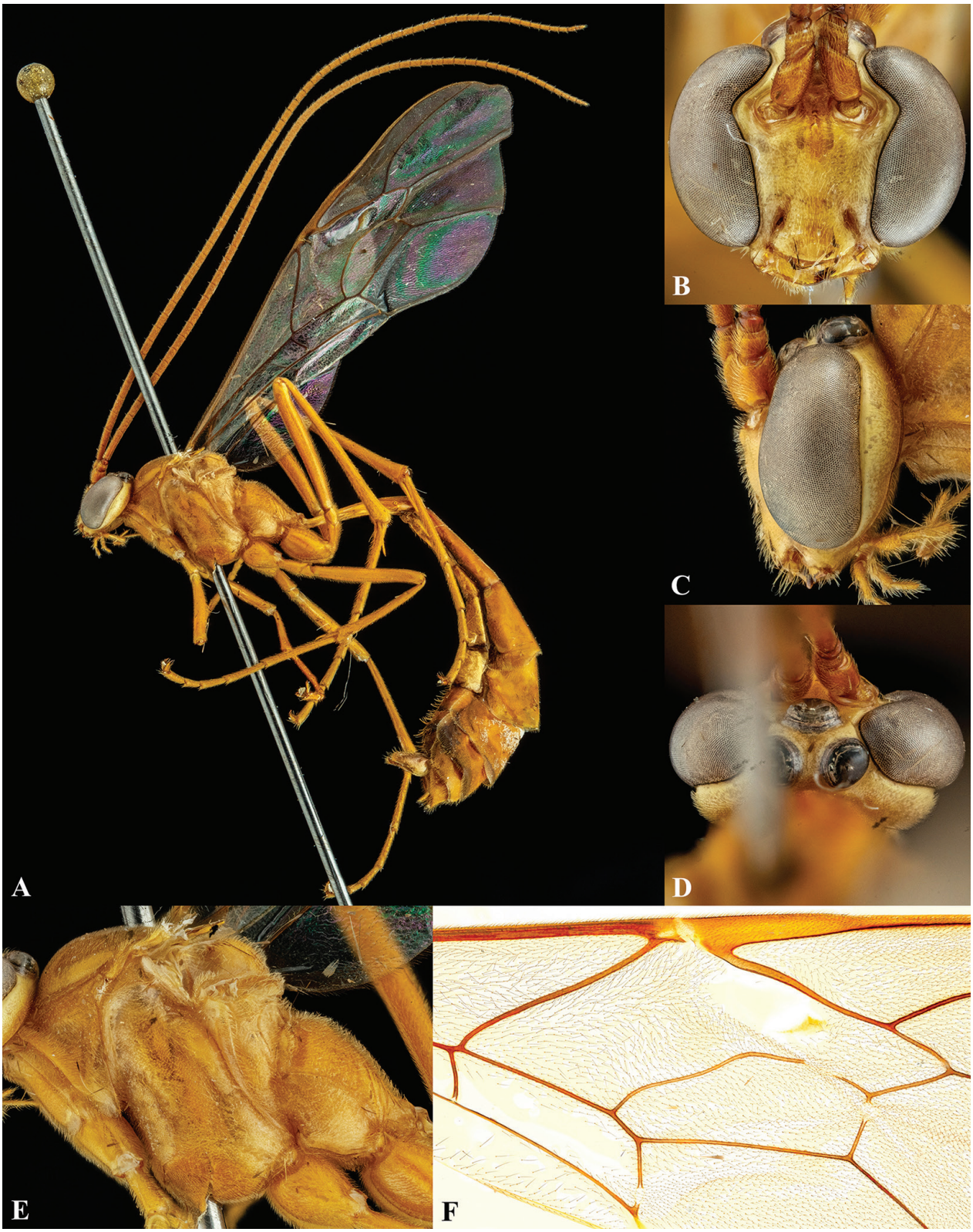

Figure 16. *Enicospilus lineolatus* (Roman, 1913), ♂. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Eniscospilus (sic) *melanocarpus* Cameron 1905: 122; holotype ♀, Sri Lanka, NHMUK, examined.

Henicospilus nigrinervis Szépligeti 1906: 142; holotype ♀, New Guinea, TM; synonymised by Gauld and Mitchell (1981: 377); junior secondary homonym of *Enicospilus nigrinervis Cameron*, 1901.

Ophion (*Henicospilus*) *nocturnus* Kohl 1908: 315; holotype ♀, Samoa, NM; synonymised by Gauld and Mitchell (1981: 378).

Henicospilus batavianus Szépligeti 1910: 92; holotype ♀, Java, TM; synonymised by Gauld and Mitchell (1981: 378).

Henicospilus turneri Morley 1912: 51; lectotype ♀, Australia, NHMUK, examined, designated by Townes et al. (1961: 291); synonymised by Gauld and Mitchell (1981: 378).

Henicospilus atricornis var. *zeylanicus* Morley 1913: 392; holotype ♀, Sri Lanka, NHMUK, examined; synonymised by Gauld and Mitchell (1981: 378).

Henicospilus uncivena Enderlein 1921: 23; holotype ♀, India, IZPAN; synonymised by Gauld and Mitchell (1981: 378).

Henicospilus crassivena Enderlein 1921: 24; holotype ♀, Sumatra, IZPAN; synonymised by Townes et al. (1961: 281).

Enicospilus nigrivenalis Cushman 1937: 307; holotype ♀, Taiwan, DEI; synonymised by Gauld and Mitchell (1981: 378).

Enicospilus quintuplex Chiu 1954: 61; holotype ♀, China, TARI, examined; synonymised by Gauld and Mitchell (1981: 378).

Enicospilus (*Polycorniata*) *brunnis* Rao and Nikam 1971b: 105; holotype ♀, India, MUC; synonymised by Gauld and Mitchell (1981: 378).

Material examined. 105♀♀21♂♂ and 6 unsexed: Nepal (5♀♀2♂♂), Australia (1♀), China (1♀), Maldives (1♂), India (26♀♀), Indonesia (4♀♀2♂♂ and 1 unsexed), Japan (2♀♀), Malaysia (1♀), Papua New Guinea (7♀♀1♂), Philippines (7♀♀), Singapore (1 unsexed), Sri Lanka (8♀♀), Taiwan (43♀♀15♂♂ and 4 unsexed).

Type series: holotype of *Enicospilus reticulatus* Cameron, 1902, ♂, Hulule, Maldive Islands, 20.VI.1900 (NHMUK, Type 3b.1268); holotype of *Eniscospilus* (sic) *melanocarpus* Cameron, 1905, ♀, Sri Lanka (NHMUK, Type 3b.1234); lectotype of *Henicospilus turneri* Morley, 1912, ♀, Mackay, Queensland, Australia, 1899, Turner leg. (NHMUK, Type 3b.1261); holotype of *Henicospilus atricornis* var. *zeylanicus* Morley, 1913, ♀, Kandy, Sri Lanka, 11.VII.1910, Green leg. (NHMUK, Type 3b.2098); holotype of *Enicospilus quintuplex* Chiu, 1954, ♀, Shaowu, Fukien, China, 8.X.1945, S.H. Chao leg. (TARI).

Non-type series: 1♂, Godaveri (1,550–1,700 m), Nepal, VI.1983, M.G. Allen leg. (LT) (Fig. 17); 1♂, Pokhara (950 m), Nepal, VII–VIII.1983, M.G. Allen leg. (LT); 1♀, montane and oak forest (2,760 m), Phulchoki, Nepal, VIII.1983, M.G. Allen leg. (LT); 1♀, Phulchoki (2,500 m), Nepal, IX.1982, M.G. Allen leg. (LT); 1♀, Phulchoki (2,000 m), Nepal, VIII.1982, M.G. Allen leg. (LT); 1♀, Kathmandu (1,350 m), Nepal, VII.1983, M.G. Allen leg. (LT); 1♀, Kakani (2,000 m), Nepal, VIII.1982, M.G. Allen leg. (LT); 18♀♀, Pradesh, Patancheru, India, I (1♀), II (1♀), VIII (2♀♀), IX (5♀♀), X (9♀♀).1980, Bhatnagar leg. (LT); 8♀♀, Mysore, Mudigere, India, X–XI.1979, J.S. Noyes leg.; 3♀♀, Radjamandula, Java, Indonesia, XI.1937, K.M. Walsh leg.; 1♂ and 1 unsexed, Mt Djampang, Tjigaeha, Java, Indonesia, I.1938, K.M. Walsh leg.; 1♀, Mt Melang, Djampang Wetan, Java, Indonesia, VIII.1937, K.M. Walsh leg.; 1♂, Gunung Gede, Lebak Sioe, Java, Indonesia, IX.1937, K.M. Walsh leg. (all NHMUK); 1♀, Buzena, Nago City, Kunigami County, Okinawa-hontô, Okinawa Pref., Japan, 15.IV.1991, M. Hayashi leg.; 1♀, Uebaru, Nakijin Vil., Kunigami County, Okinawa-hontô, Okinawa Pref., Japan, 23.IV.1991, M. Hayashi leg. (LT) (all NIAES); 1♀, Clearing, Perak, Malaysia, 1.VI.1941, F. Gerald leg.; 5♀♀1♂, Bulolo forestry Reserve, Papua New Guinea, IX.1979, I.D. Gauld leg.; 2♀♀, Wau (1,000 m), Morobe, Papua New Guinea, X.1979, I.D. Gauld leg.; 7♀♀, Bay Bay, Leyte, Visca forest, Philippines, VIII (1♀), 30.VIII–4.IX (4♀♀), 5–13.IX (2♀♀).1980, L. Tuangganr leg.; 1 unsexed, Singapore, 2.XII.1967, C.G. Roche leg.; 6♀♀, Peak View Motel, Kandy, Kan. Dist. Sri Lanka, 7–14 (3♀♀), 14–24 (3♀♀).I.1970, Davis & Rowe leg. (all NHMUK); 5♀♀6♂♂ and 4 unsexed, Karen, Taiwan, 25.VI–1.VII (2♂♂), 17–23.VIII (3 unsexed), 26.VIII–4.XI (1♀), 12–19 (2♀♀), 14–19 (1♂).XI.1972, 16–22.IV.1973 (2♀♀3♂♂ and 1 unsexed) (MsT); 12♀♀2♂♂, Sunmoon Lake, Taichung, Taiwan, 2.X (1♀), 8.XI (1♀).1968, 9 (1♀), 31 (1♂).IV, 11 (1♂), 14 (1♀).VII, 1 (3♀♀), 2–8 (2♀♀), 7–13 (1♀), 9–15 (1♀).IX, 4–10.XI (1♀).1969 (MsT); 26♀♀7♂♂, Wufeng, Taichung, Taiwan, 25–28.VI (2♀♀), 1–3 (1♀1♂), 7–11 (1♀), 16–20 (1♂).VII, 19–26.X (1♀), 29.X–5.XI. (2♀♀), 5–10 (3♀♀), 10–15 (1♀2♂♂), 17–22 (1♀1♂).XI, 27.XI–3.XII.1979 (2♀♀1♂), 7–14 (1♀1♂), 15–21 (1♀), 20–26 (2♀♀).XII.1979, 1–4 (3♀♀), 4–11 (1♀), 25–31 (2♀♀).I.1980, 9–20.II (2♀♀).1980, K.C. Chou leg. (all TARI).

Distribution. Australasian, Eastern Palaearctic, Oceanic, and Oriental regions (Yu et al. 2016). Gauld and Mitchell (1981) recorded this species from Nepal.

Diagnosis. *Head* (Fig. 17B–D): GOI = 2.5–3.1; lower face 0.7–0.8× as wide as high; clypeus slightly to strongly convex in profile, its lower margin acute; mandible weakly twisted by 10–20°, moderately long, evenly tapered, its outer surface without a diagonal structure; upper mandibular tooth 1.2–1.5× as long as lower one; posterior ocellus almost touching eye; antenna with 53–65 flagellomeres and 20th flagellomere 1.8–2.4× as long as wide.

Mesosoma (Fig. 17E): mesopleuron punctate to longitudinally punctostriate; scutellum with lateral longitudinal carinae reaching posterior end and convergent posteriorly; metapleuron punctate to punctostriate; propodeum almost evenly rounded, its posterior area moderately reticulate, outer margin of propodeal spiracle not joining pleural carina by a ridge.

Wings (Fig. 17F): fore wing with AI = 0.4–1.1, CI = 0.3–0.5, ICI = 0.4–0.5, SDI = 1.1–1.4; fore wing vein 1m-cu&M more or less evenly curved, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 17F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite triangular, strongly confluent with distal one, strongly pigmented; central sclerite moderately to strongly pigmented and sclerotised, usually well-delineated oval, positioned in antero- to medio-distal part of fenestra; distal sclerite more or less evenly strong from proximal to distal; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a subinterstitial to antefurcal to M&RS by less than 0.3× 1cu-a length.

Colour (Fig. 17): body including interocellar area entirely testaceous with black posterior segments of metasoma; wings hyaline.

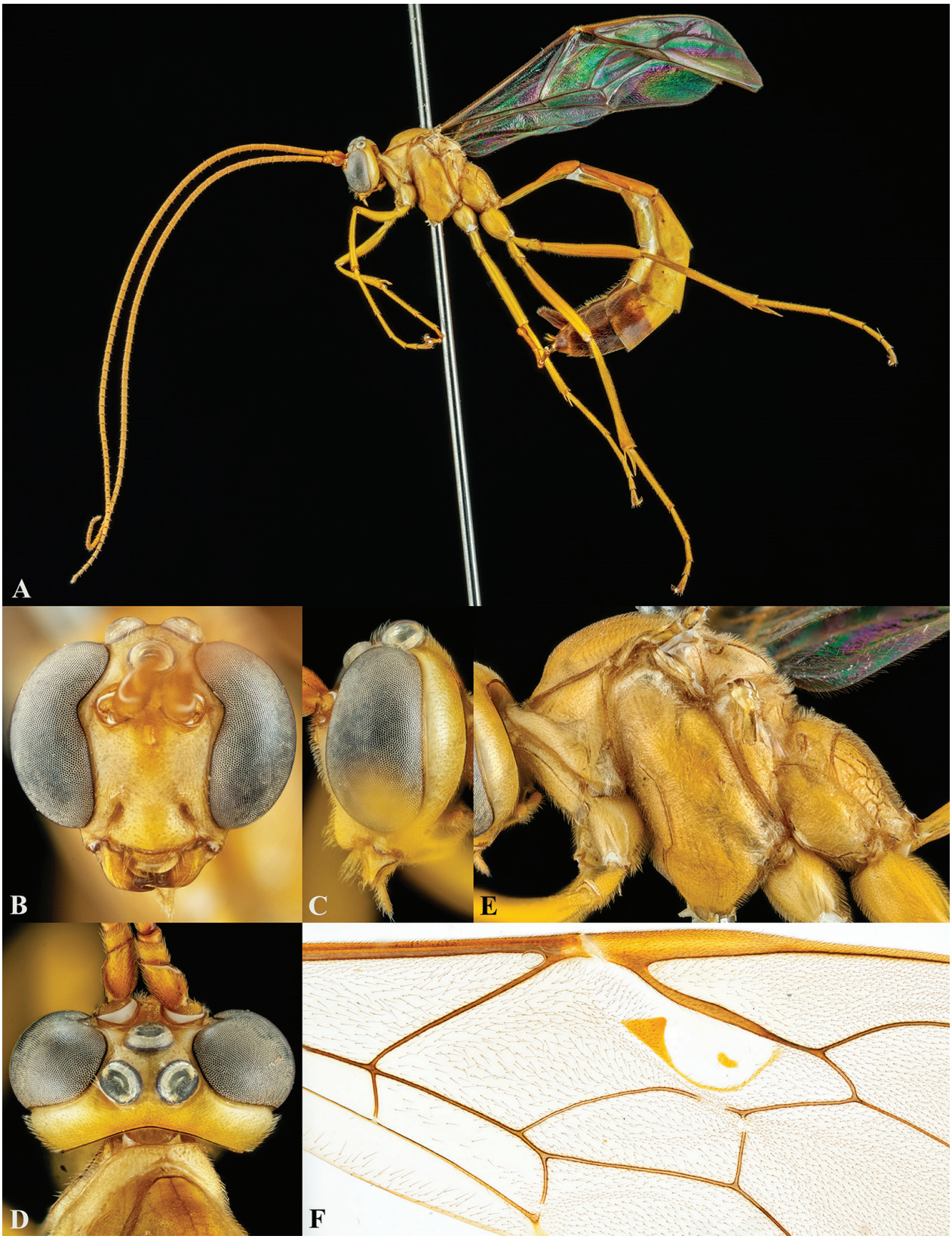

Figure 17. *Enicospilus melanocarpus* Cameron, 1905, ♂. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Differential diagnosis. *Enicospilus melanocarpus* is very similar to *E. sauteri*, but distinguished by the uniformly setose marginal cell of the fore wing (Fig. 17F) (marginal cell of fore wing proximally glabrous in *E. sauteri*) and the oval central sclerite (Fig. 17F) (central sclerite linear in *E. sauteri*). Many species were synony-

mised with *E. melanocarpus* under Gauld's conservative species criteria, but their wide distribution and considerable range of morphological variation indicate this name includes many species. Therefore, further researches are needed to reveal the true species diversity under the name '*melanocarpus'*.

Enicospilus nepalensis Shimizu, sp. nov.

http://zoobank.org7C19F1EE-EC88-4090-A25B-0089401B750A

Figs 2A, 18

Etymology. The specific name is derived from the type locality.

Material examined. 2♀♀: Nepal.

Type series: holotype ♀, Pokhara (950 m), Nepal, VII–VIII.1983, M.G. Allen leg. (LT) (NHMUK) (Figs 2A, 18); paratype ♀, same label and repository as holotype.

Distribution. Nepal.

Description. Female (Holotype) (Fig. 18). Body length ca 16.5 mm.

Head with GOI = 2.5 (Fig. 18C). Lower face 0.8× as wide as high, finely punctate with setae, strongly shiny (Fig. 18B). Clypeus 1.6× as wide as high, finely punctate with setae, moderately convex in profile, its lower margin impressed (Fig. 18B, C). Malar space 0.4× as long as basal mandibular width (Fig. 18B, C). Mandible weakly twisted by ca 15°, moderately long, its proximal half evenly narrowed and distal half subparallel sided, its outer surface entirely almost flat with long and rather stout setae (Figs 2A, 18B, C). Upper mandibular tooth 1.7× as long as lower one, very slender and cylindrical (Figs 2A, 18B). Frons, vertex and gena strongly shiny with fine setae (Fig. 18B–D). Posterior ocellus rather small and separated from eye by 0.3× its own maximum diameter (Fig. 18B–D). Ventral end of occipital carina joining oral carina. Antenna with 49 flagellomeres; first flagellomere 1.6× as long as second; 20th flagellomere 2.3× as long as wide.

Mesosoma entirely strongly shiny with setae (Fig. 18E). Pronotum punctostriate dorsally and finely coriaceous ventrally (Fig. 18E). Mesoscutum 1.5× as long as its maximum width, almost smooth with very fine punctures with setae, and evenly rounded in profile (Fig. 18E). Notauli absent (Fig. 18E). Scutellum moderately convex, almost smooth with very fine and sparse punctures with setae, with lateral longitudinal carinae reaching posterior end (Fig. 18E). Epicnemium from densely strigose dorsally to densely punctate ventrally with setae. Epicnemial carina present, evenly curved to anterior, its dorsal end not reaching anterior margin of mesopleuron (Fig. 18E). Mesopleuron finely punctate dorsally and longitudinally punctostriate to strigose ventrally (Fig. 18E). Submetapleural carina almost parallel sided centrally and weakly broadened anteriorly (Fig. 18E). Metapleuron moderately punctate with setae (Fig. 18E). Propodeum evenly rounded in profile; anterior transverse carina complete centrally, its lateral end almost joining pleural carina; anterior area longitudinally striate; spiracular area almost smooth with very fine and sparse punctures and setae; posterior area rather finely subconcentrically striate; propodeal spiracle elliptical, its outer margin not joining pleural carina by a ridge (Fig. 18E).

Wings. Fore wing length ca 11.0 mm with AI = 0.4, CI = 0.3, DI = 0.4, ICI = 0.4, SDI = 1.2, SI = 0.2, SRI = 0.3; vein 1m-cu&M almost evenly curved; vein 2r&RS slightly sinuous and RS evenly curved; fenestra and sclerites of discosubmarginal cell as in Figure 18F; proximal sclerite triangular, not confluent with distal sclerite, very strongly pigmented; central sclerite small and its major diameter subequal to thickness of vein 2r&RS, suboval, weakly sclerotised and pigmented, positioned in posterodistal part of fenestra; distal sclerite moderately pigmented; proximal corner of marginal cell evenly setose; posterodistal corner of second discal cell ca 95°; posterodistal corner of subbasal cell ca 95°; vein 1cu-a slightly antefurcal to M&RS by 0.1× 1cu-a length (Fig. 18F). Hind wing with NI = 1.2, RI = 1.7; vein RS straight; vein RA with 6 uniform hamuli.

Legs. Outer surface of fore tibia without dense and long spines. Hind leg with coxa in profile 1.7× as long as deep; basitarsus 2.0× as long as second tarsomere; fourth tarsomere 0.6× as long as third tarsomere and 3.5× as long as wide; tarsal claw simply pectinate.

Metasoma with PI = 2.8, DMI = 1.3, THI = 2.5; dorsal margin of tergite 1 more or less sinuous; thyridium elongate (Fig. 18A).

Colour (Fig. 18). Entirely testaceous except for apex of mandible, posterior part of T5, and T6–8 black. Wings hyaline; proximal sclerite brown; central and distal sclerites amber; veins brown.

Variations (n = 2): body length 15.5–16.5 mm; head with GOI = 2.4–2.5; clypeus 1.6–1.7× as wide as high; malar space 0.3–0.4× as long as basal mandibular width; mandible twisted by 15–25°; upper mandibular tooth 1.6–2.1× as long as lower one; antenna with first flagellomere 1.6–1.7× as long as second; pronotum punctostriate dorsally and finely coriaceous ventrally or entirely almost smooth to weakly coriaceous with very sparse and fine punctures; metapleuron sparsely to moderately punctate; fore wing length 10.0–11.0 mm; hind coxa in profile 1.6–1.7× as long as deep; fourth tarsomere 3.5–3.7× as long as wide; metasoma with PI = 2.7–2.8; THI = 2.5–2.8; mandible proximally testaceous and apically black or entirely dark brown to black.

Male. Unknown.

Differential diagnosis. *Enicospilus nepalensis* sp. nov. is probably closely related to or belongs to the *E. ramidulus* complex. Among the complex, *E. nepalensis* sp. nov. is most closely related to *E. tricorniatus* Rao & Nikam, 1970 based on the rather small ocelli relative to other *Enicospilus* (posterior ocellus separated from eye by more than 0.3× its own maximum diameter) (e.g. Fig. 18B–D), highly shiny body (e.g. Fig. 18A–E), shape

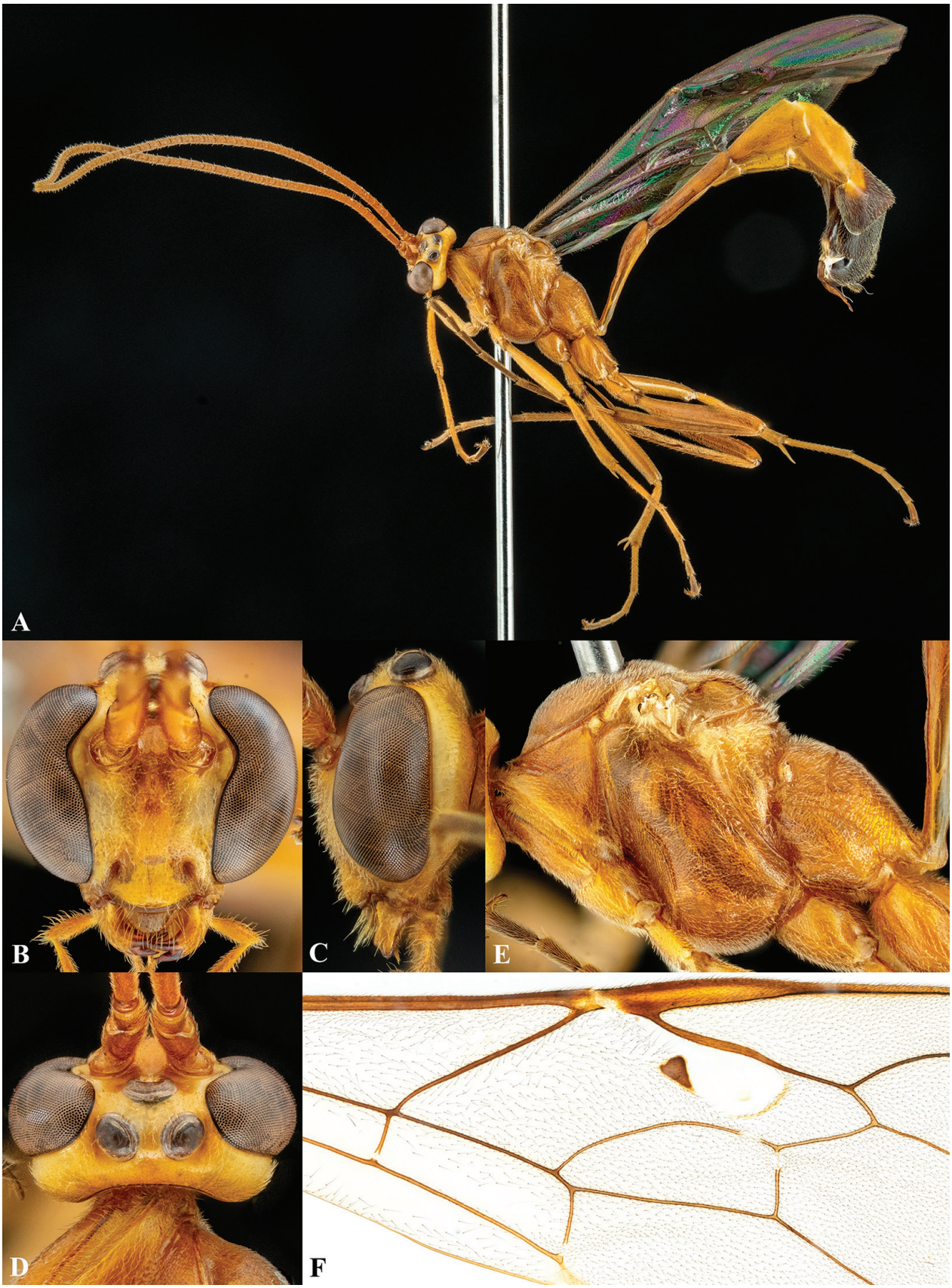

Figure 18. *Enicospilus nepalensis* Shimizu sp. nov., ♀, holotype. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

of body (e.g. Fig. 18A), shape and position of the fore wing veins and sclerites (e.g. Fig. 18F), distribution, etc. However, *E. nepalensis* sp. nov. is readily distinguishable from *E. tricorniatus* by the following characters: lower face more or less elongate and 0.8× as wide as high (Fig. 18B) (lower face subquadrate to transverse and 1.0–1.1× as wide as high in *E. tricorniatus*), the central sclerite weakly sclerotised and pigmented (Fig. 18F) (moderately to strongly sclerotised and pigmented in *E. tricorniatus*), moderate-sized, fore wing length 10.0–11.0 mm (small, fore wing length less than 8.5 mm in *E. tricorniatus*), posterior ocellus separated from eye by 0.3× its own maximum diameter (Fig. 18B–D) (posterior ocellus separated from eye by almost its own maximum diameter in *E. tricorniatus*).

Enicospilus nikami Shimizu, sp. nov.

http://zoobank.org26026EC4-711F-49F7-AFA8-C4772D6E0F99

Figs 2J, 19

Etymology. The specific name is dedicated to Dr P.K. Nikam who studied Ophioninae as well as other groups of Hymenoptera mainly of India.

Material examined. 1♀: Nepal.

Type series: holotype ♀, Kathmandu (1,300 m), Nepal, XI.1982, M.G. Allen leg. (LT) (NHMUK) (Figs 2J, 19).

Distribution. Nepal.

Description. Female (Holotype) (Fig. 19). Body length ca 23.0 mm.

Head with GOI = 2.9 (Fig. 19C). Lower face 0.6× as wide as high, shiny, rather finely punctate with setae (Fig. 19B). Clypeus 1.6× as wide as high, sparsely and finely punctate with setae, almost flat in profile, and its lower margin acute (Fig. 19B, C). Malar space 0.2× as long as basal mandibular width (Fig. 19B, C). Mandible weakly twisted by ca 25°, long, proximally strongly narrowed, centrally to apically subparallel sided, its outer surface flat and smooth without a diagonal groove and line of punctures (Fig. 19B, C). Upper mandibular tooth 1.3× as long as lower one (Fig. 19B). Frons, vertex and gena moderately shiny with fine setae (Fig. 19B–D). Posterior ocellus almost touching eye (Fig. 19B–D). Ventral end of occipital carina joining oral carina. Antenna with 59 flagellomeres; first flagellomere 1.9× as long as second; 20th flagellomere 1.5× as long as wide.

Mesosoma entirely moderately shiny with setae (Fig. 19E). Pronotum finely coriaceous with punctures to closely strigose (Fig. 19E). Mesoscutum 1.5× as long as its maximum width, finely punctate with setae, strongly shiny, and evenly rounded in profile (Fig. 19E). Notauli absent (Fig. 19E). Scutellum moderately convex, with lateral longitudinal carinae almost reaching posterior end, and moderately punctate with setae (Fig. 19E). Epicnemium densely punctate with setae. Epicnemial carina present, evenly weakly curved to anterior, its dorsal end not reaching anterior margin of mesopleuron (Fig. 19E). Mesopleuron entirely moderately punctate, and ventral margin longitudinally finely strigose (Fig. 19E). Submetapleural carina broadened anteriorly (Fig. 19E). Metapleuron diagonally closely strigose (Fig. 19E). Propodeum declivous in profile; anterior transverse carina complete centrally, its lateral end not joining pleural carina; pleural carina absent posteriorly; anterior area longitudinally striate medially and smooth laterally; spiracular area finely coriaceous; posterior area concentrically striate; propodeal spiracle elliptical, its outer margin not joining pleural carina by a ridge (Fig. 19E).

Wings. Fore wing length ca 15.0 mm with AI = 0.5, CI = 0.6, DI = 0.3, ICI = 0.8, SDI = 1.5, SI = 0.1, SRI = 0.3; vein 1m-cu&M moderately sinuous; vein 2r&RS very slightly bowed but almost straight, and RS evenly curved; fenestra and sclerites of discosubmarginal cell as in Figure 19F; proximal sclerite linear, weakly pigmented and virtually unsclerotised so that vestigial, separated from distal sclerite; central sclerite absent; distal sclerite almost absent but anterodistal part slightly pigmented; proximal corner of marginal cell uniformly setose; posterodistal corner of second discal cell ca 90°; posterodistal corner of subbasal cell ca 65°; vein 1cu-a antefurcal to M&RS by 0.2× 1cu-a length (Fig. 19F). Hind wing with NI = 2.6, RI = 1.7; vein RS straight; vein RA with 11 uniform hamuli.

Legs. Outer surface of fore tibia with very few spines. Hind leg with coxa in profile 1.7× as long as deep; basitarsus 2.2× as long as second tarsomere; fourth tarsomere 0.6× as long as third tarsomere and 2.6× as long as wide; tarsal claw simply pectinate except lacking pecten proximally.

Metasoma with PI = 3.2, DMI = 1.3, THI = 2.5; dorsal margin of tergite 1 not sinuous; thyridium elongate (Fig. 19A).

Colour (Fig. 19). Entirely testaceous except for apex of mandible black. Wings hyaline; sclerites of fore wing fenestra very slightly pigmented, testaceous; veins black to testaceous.

Variation. Unknown

Male. Unknown

Differential diagnosis. Enicospilus nikami sp. nov. is similar to *E. biharensis*, *E. maruyamanus*, *E. pudibundae*, and *E. transversus* and these species are rather difficult to separate from each other. However, *E. nikami* sp. nov. can be distinguished from *E. biharensis*, *E. maruyamanus* and *E. transversus* by the proximally incomplete pectinae of hind tarsal claw (Fig. 2J) (hind tarsal claw completely pectinate from its base to apex in *E. biharensis*, *E. maruyamanus* and *E. transversus*, as in e.g. Figure 2I), from *E. biharensis* and *E. pudibundae* by the sinuous fore wing vein 1m-cu&M (Fig. 19F) (1m-cu&M evenly curved in *E. biharensis* and *E. pudibundae* as in Figures 6F, 23F), from *E. maruyamanus* by

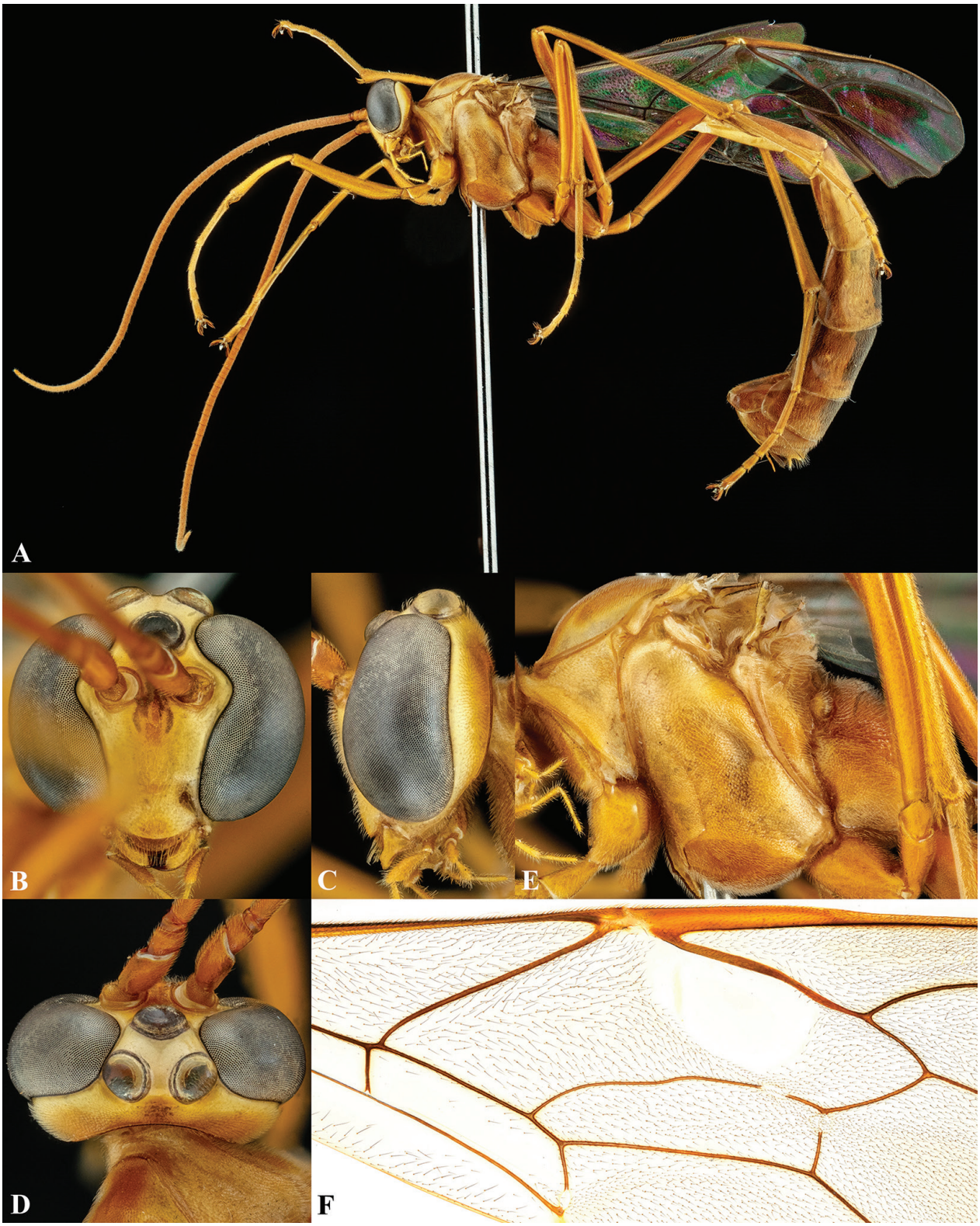

Figure 19. *Enicospilus nikami* Shimizu sp. nov., ♀, holotype. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

the entirely moderately punctate mesopleuron (Fig. 19E) (mesopleuron entirely longitudinally punctostriate in *E. maruyamanus*) and the angle of posterodistal corner of second discal cell (i.e. ca 90° in *E. nikami* sp. nov. as in Figure 19F, but ca 115° in *E. maruyamanus*), and from *E. transversus* by the entirely moderately punctate mesopleuron (Fig. 19E) (mesopleuron entirely longitudinally striate in *E. transversus*).

Enicospilus phulchokiensis Shimizu, sp. nov.

http://zoobank.org23580571-7C71-49F7-B2BE-5EDC87CAC2C3

Figs 2G, 20

Etymology. The specific name is derived from the type locality.

Material examined. 1♀: Nepal.

Type series: holotype ♀, Phulchoki, M.G. Allen leg. (NHMUK) (Figs 2G, 20).

Distribution. Nepal.

Description. Female (Holotype) (Fig. 20). Body length ca 21.5 mm.

Head with GOI = 2.9 (Fig. 20C). Lower face 0.7× as wide as high, rather finely punctate with setae, strongly shiny (Fig. 20B). Clypeus 1.3× as wide as high, finely punctate with setae, moderately convex in profile, and its lower margin impressed (Fig. 20B, C). Malar space 0.4× as long as basal mandibular width (Fig. 20B, C). Mandible weakly twisted by ca 20°, moderately long, evenly narrowed, its outer surface with a diagonal setose deep groove between its dorsoproximal corner to base of mandibular apical teeth (Fig. 20B, C). Upper mandibular tooth 1.6× as long as lower one, slender and cylindrical (Fig. 20B). Frons, vertex and gena strongly shiny with fine setae (Fig. 20B–D). Posterior ocellus almost touching eye (Fig. 20B–D). Ventral end of occipital carina joining oral carina. Antenna with 64 flagellomeres; first flagellomere 1.7× as long as second; 20th flagellomere 2.2× as long as wide.

Mesosoma entirely strongly shiny with setae (Fig. 20E). Pronotum finely punctate dorsally and strigose to rugose ventrally (Fig. 20E). Mesoscutum 1.5× as long as its maximum width, almost smooth with very fine punctures with setae, and evenly rounded in profile (Fig. 20E). Notauli absent (Fig. 20E). Scutellum moderately convex, anterior 0.4 transversely striate, anterior 0.4–0.5 punctate, and posterior 0.5 longitudinally strigose, with lateral longitudinal carinae reaching posterior end (Figs 2G, 20E). Epicnemium densely punctate with setae. Epicnemial carina present, evenly curved to anterior, its dorsal end close to anterior margin of mesopleuron (Fig. 20E). Mesopleuron entirely finely punctate, longitudinally strigose ventrally (Fig. 20E). Submetapleural carina weakly evenly broadened anteriorly (Fig. 20E). Metapleuron entirely finely punctate with setae (Fig. 20E). Propodeum almost evenly rounded in profile; anterior transverse carina complete; anterior area longitudinally striate; spiracular area almost smooth with very fine and sparse punctures with setae; posterior area rather finely irregularly rugose; propodeal spiracle elliptical, its outer margin not joining pleural carina by a ridge.

Wings. Fore wing length ca 13.5 mm with AI = 0.4, CI = 0.4, DI = 0.4, ICI = 0.5, SDI = 1.2, SI = 0.1, SRI = 0.3; vein 1m-cu&M weakly sinuous; vein 2r&RS almost straight and RS evenly curved; fenestra and sclerites of discosubmarginal cell as in Figure 20F; proximal sclerite triangular, confluent with distal sclerite, moderately pigmented; central sclerite rather small and its minor diameter smaller than thickness of vein 2r&RS, elliptical, moderately sclerotised and pigmented, positioned in mediodistal part of fenestra; distal sclerite moderately pigmented; proximal corner of marginal cell evenly setose; posterodistal corner of second discal cell ca 105°; posterodistal corner of subbasal cell ca 85°; vein 1cu-a subinterstitial to M&RS (Fig. 20F). Hind wing with NI = 1.3, RI = 1.7; vein RS straight; vein RA with 7 uniform hamuli.

Legs. Outer surface of fore tibia with sparse spines. Hind leg with coxa in profile 2.0× as long as deep; basitarsus 2.0× as long as second tarsomere; fourth tarsomere 0.6× as long as third tarsomere and 4.6× as long as wide; tarsal claw simply pectinate.

Metasoma with PI = 2.9, DMI = 1.4, THI = 2.9; dorsal margin of tergite 1 weakly sinuous; thyridium elongate (Fig. 20A).

Colour (Fig. 20). Entirely testaceous except for apex of mandible black. Wings hyaline; sclerites amber; veins brown.

Variation. Unknown

Male. Unknown

Differential diagnosis. Mandibular structure and mesosoma sculpture of *E. phulchokiensis* sp. nov. indicate that it belongs to the *E. ramidulus* complex. *Enicospilus phulchokiensis* sp. nov. runs to couplet 230 (including *E. melanocarpus* and *E. xavius*) of Gauld and Mitchell's (1981: 143) key, and to couplet 61 (including *E. melanocarpus* and *E. sauteri*) of Tang's (1990: 34, 181) key. However, *E. phulchokiensis* sp. nov. is distinguishable from *E. melanocarpus*, *E. sauteri* and *E. xavius* by the strongly sculptured scutellum (Fig. 2G), sinuous fore wing vein 1m-cu&M (Fig. 20F), and entirely testaceous metasoma without black posterior segments (Fig. 20A). Moreover, *E. phulchokiensis* sp. nov. is possibly related to *E. puncticulatus* Tang, 1990 and its related species-group, but distinguished from *E. puncticulatus* by the confluent proximal and distal sclerites (Fig. 20F) (separated in *E. puncticulatus*).

Enicospilus pseudantennatus Gauld, 1977

Fig. 21

Enicospilus pseudantennatus Gauld 1977: 92; holotype ♀, Australia, ANIC.

Material examined. 6♀♀6♂♂: Australia (5♀♀6♂♂), Indonesia (1♀). No Nepalese specimens were examined.

Type series: paratypes of *Enicospilus pseudantennatus* Gauld, 1977, 1♀, Paramatta, NSW, Australia, 16.I.1921 (EMUS); 5♂♂,Tambourine Mts, SE Queensland, Australia, 1–9.V.1935, R.E. Turner leg.; 1♂, Cabramatta, NSW, Australia, 6.IV.1963, M. Nikitin leg.; 1♀, Merrylands, NSW, Australia, 25.XI.1964, M. Nikitin leg. (all NHMUK).

Non-type series: 1♀, D.P.I Research Stn, Gatton, SE Queensland, Australia, 13–21.IV.1981 (MsT) (Fig. 21); 1♀, Mt Tanbourine, Queensland, Australia, 12–18.X.1978, I.D. Galloway leg.; 1♀, Canberra, ACT, Australia, IX.1981, I.D. Gauld leg. (all NHMUK); 1♀, Ambon, Indonesia, 29.IX.1960, A.M.R. Wegner leg. (EMUS).

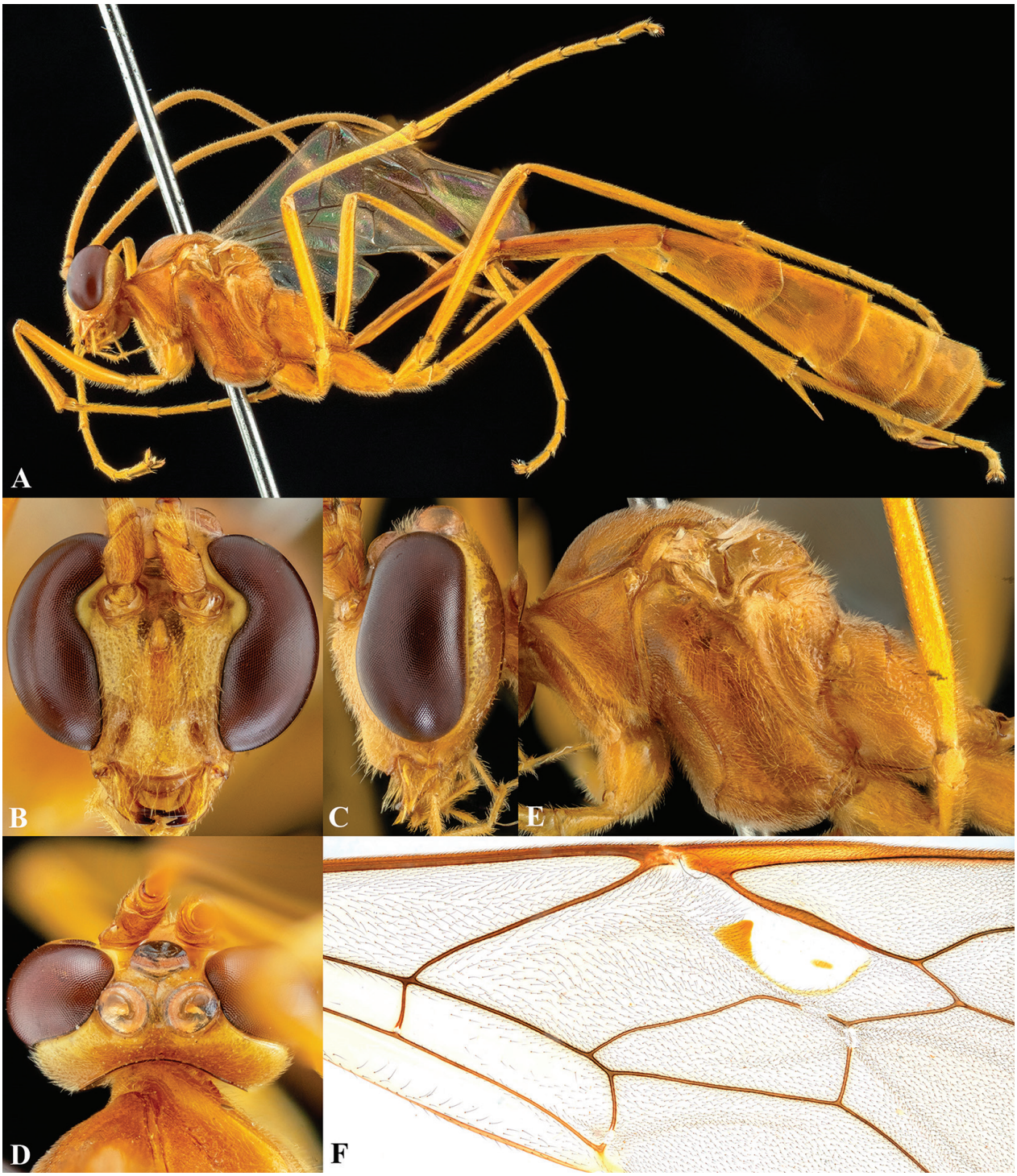

Figure 20. *Enicospilus phulchokiensis* Shimizu sp. nov., ♀, holotype. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Distribution. Australasian, Oceanic and Oriental regions (Yu et al. 2016). Gauld and Mitchell (1981) recorded this species from Nepal.

Diagnosis. *Head* (Fig. 21B–D): GOI = 2.2–2.8; lower face 0.7–0.8× as wide as high; clypeus moderately convex in profile, its lower margin impressed; mandible rather weakly twisted by 10–20°, moderately long, evenly tapered, its outer surface without a diagonal structure; upper mandibular tooth 1.3–1.6× as long as lower one; posterior ocellus close to eye; antenna with 56–63 flagellomeres and 20th flagellomere 2.2–2.4× as long as wide.

Mesosoma (Fig. 21E): mesopleuron entirely punctate; scutellum with lateral longitudinal carinae reaching posterior end and convergent posteriorly; metapleuron punctate; propodeum evenly weakly rounded, its posterior area moderately reticulate, outer margin of propodeal spiracle not joining pleural carina by a ridge.

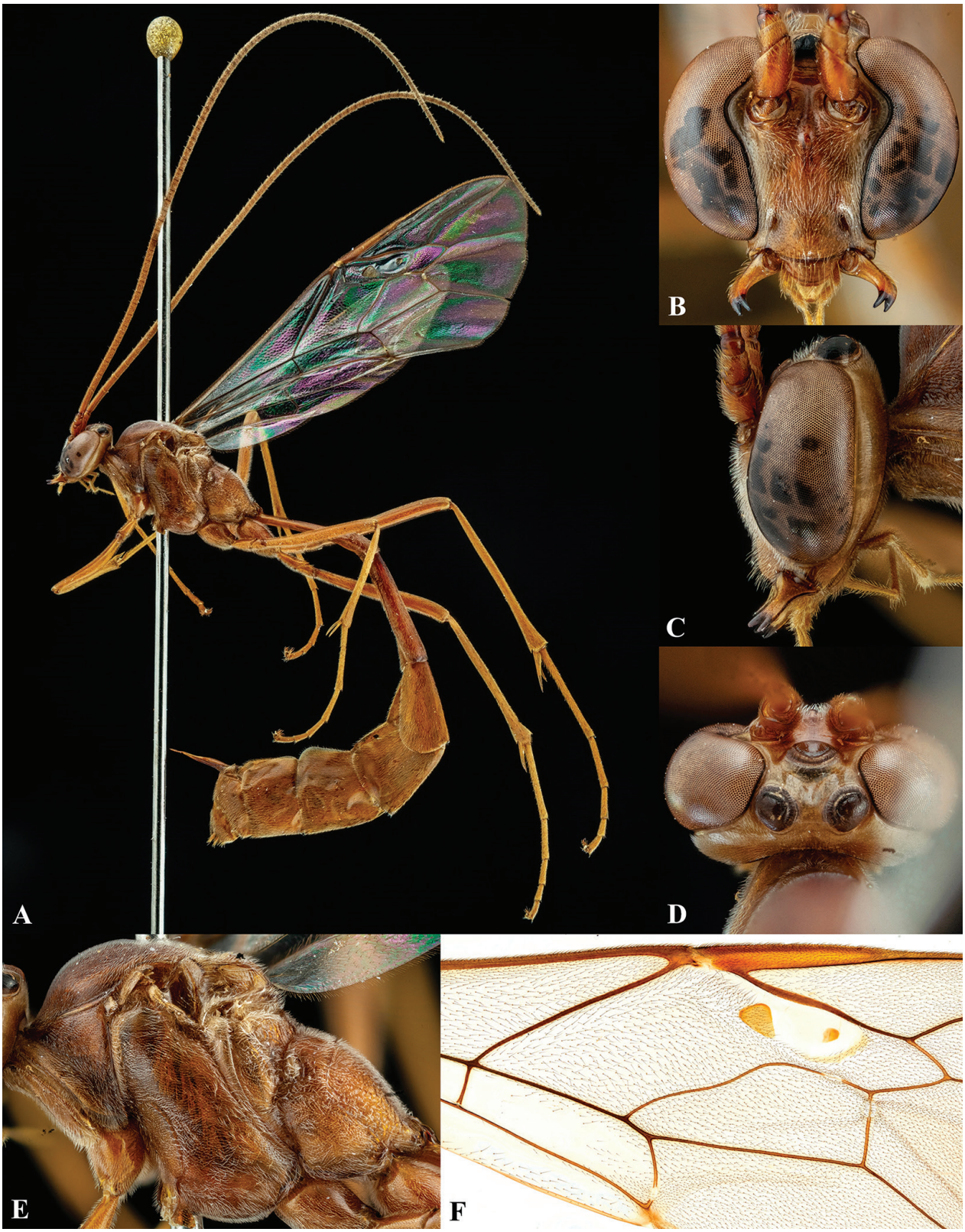

Figure 21. *Enicospilus pseudantennatus* Gauld, 1977, ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Wings (Fig. 21F): fore wing with AI = 0.3–0.6, CI = 0.3–0.4, ICI = 0.5–0.7, SDI = 1.2–1.4; fore wing vein 1m-cu&M moderately sinuous, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 21F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite triangular, separated from distal one, strongly pigmented; central sclerite

partially strongly pigmented and sclerotised, ill-delineated oval, positioned in almost medio-distal part of fenestra; distal sclerite strong distally; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a subinterstitial to antefurcal to M&RS by less than 0.2 1cu-a length.

Colour (Fig. 21): body including interocellar area entirely red-brown; wings hyaline.

Differential diagnosis. As mentioned under *E. laqueatus*, four Oriental species of *Enicospilus* (*E. laqueatus*, *E. pseudantennatus*, *E. vestigator*, and *E. tripartitus*) have similar fenestra, sclerites, and fore wing veins (e.g. Figs 15F, 21F, 26F). Among them, *E. pseudantennatus* is distinguished from *E. laqueatus* by the flat outer surface of the mandible (outer surface of mandible with a diagonal deep setose groove between dorsoproximal corner and base of mandibular apical teeth in *E. laqueatus*), from *E. tripartitus* by the not densely setose and proximally more or less flat outer mandibular surface (outer surface of mandible with very dense setae and sharp and rather deep proximal concavity in *E. tripartitus*, as in Figure 2C), and from *E. vestigator* by the weakly twisted mandible (10–20°) (mandible strongly twisted by 60–80° in *E. vestigator*).

Enicospilus pseudoconspersae (Sonan, 1927)

Fig. 22

Henicospilus pseudoconspersae Sonan 1927: 48; holotype ♂, Taiwan, TARI, examined.

Henicospilus mushanus Uchida 1928: 216; holotype ♀, Taiwan, SEHU, examined; synonymised by Gauld and Mitchell (1981: 344).

Enicospilus tenuinubeculus Chiu 1954: 34; holotype ♀, China, TARI, examined; synonymised by Gauld and Mitchell (1981: 345).

Material examined. 7♀♀7♂♂: Nepal (5♀♀4♂♂), China (1♀1♂), Japan (1♂), Taiwan (1♀1♂).

Type series: holotype of *Henicospilus pseudoconspersae* Sonan, 1927, ♂, Taihoku, Taiwan, 25.IV.1927, J. Sonan leg. (TARI); holotype of *Henicospilus mushanus* Uchida, 1928, ♀, Musha, Taiwan, 24.VII.1925, Matsumura (SEHU); holotype of *Enicospilus tenuinubeculus* Chiu, 1954, ♀, Fukien, Shaown, China, 23–29.V.1944, H.F. Chao leg. (TARI).

Non-type series: 1♀, Kakani (2,070 m), Nepal, VII.1983, M.G. Allen leg. (LT) (Fig. 22); 1♀, Kathmandu (1,300 m), Nepal, XI.1982, M.G. Allen leg. (LT); 1♀, Godaveri (1,550–1,700 m), Nepal, V.1983, M.G. Allen leg. (LT); 1♂, Godaveri (5,000′), Nepal, 5.VIII.1967; 1♀, Phulchoki (2,000 m), Nepal, VIII.1982, M.G. Allen leg. (LT); 1♀, Kathmandu (4300′), Nepal, VIII.1982; 1♂, Sal & 2y forest (330 m), Dharan, Terai, Nepal, 14–15.XI.1983, M.G. Allen leg.; 1♂, Godavari, Kathmandu, Nepal, 5.VIII.1967; 1♂, 1 mi. S of Ulleri (5,500–7,000′), Nepal, 16.V.1954, J. Ouinlan leg.; 1♂, China (all NHMUK); 1♂, Hiji agricultural road (85 m, 26°43'16.8"N, 128°10'43.4"E), Hiji, Kunigami Village, Kunigami County, Okinawa-hontô, Okinawa Pref., Japan, 3–4.VII.2016, S. Shimizu et al. leg. (LT) (NIAES).

Distribution. Eastern Palaearctic and Oriental regions (Yu et al. 2016). Gauld and Mitchell (1981) recorded this species from Nepal.

Diagnosis. *Head* (Fig. 22B–D): GOI = 2.8–3.1; lower face 0.6–0.7× as wide as high; clypeus almost flat in profile, its lower margin acute to subacute; mandible rather weakly twisted by 15–25°, moderately long, proximally tapered and distally approximately parallel sided, its outer surface without a diagonal structure; upper mandibular tooth 1.2–1.4× as long as lower one; posterior ocellus almost touching eye; antenna with 52–65 flagellomeres and 20th flagellomere 1.7–2.3× as long as wide.

Mesosoma (Fig. 22E): mesopleuron punctate to longitudinally punctostriate; scutellum with lateral longitudinal carinae reaching posterior end and convergent posteriorly; metapleuron punctostriate; propodeum evenly rounded, its posterior area moderately reticulate, outer margin of propodeal spiracle not joining pleural carina by a ridge.

Wings (Fig. 22F): fore wing with AI = 0.7–0.9, CI = 0.6–0.7, ICI = 0.4–0.6, SDI = 1.3–1.4; fore wing vein 1m-cu&M moderately sinuous, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 22F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite semicircular, isolated and not touching margin of fenestra, almost always (very) weakly pigmented; central sclerite absent; distal sclerite absent or vestigial; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a antefurcal to M&RS by 0.2–0.3× 1cu-a length.

Colour (Fig. 22): body including interocellar area entirely testaceous; wings hyaline.

Differential diagnosis. *Enicospilus pseudoconspersae* is one of the most distinctive and easily distinguishable species among the Oriental species of *Enicospilus* on account of the characteristic isolated and weakly pigmented semicircular proximal sclerite (Fig. 22F). There are no known morphologically similar species.

Enicospilus pudibundae (Uchida, 1928)*

Fig. 23

Henicospilus pudibundae Uchida 1928: 219; lectotype ♂, Japan, SEHU, designated by Townes et al. (1965: 330), examined.

Material examined. 18♀♀2♂♂: Nepal (2♀♀1♂), Brunei (3♀♀), India (1♀), Japan (12♀♀1♂).

Type series: lectotype of *Henicospilus pudibundae* Uchida, 1928, ♂, Sapporo, Hokkaidô, Japan, 4.VI.1925, Tamanuki leg. (emerged from *Dasychira pudibunda* L.) (SEHU).

Non-type series: 2♀♀, Kakani, Nepal, 1–30.V.1984, M.G. Allen leg. (Fig. 23); 1♂, Sal & 2^{y} forest (330 m), Dharan, Terai, Nepal, 14–15.XI.1983, M.G. Allen leg.; 2♀♀, U. Temburong (1,700 m), Gn. Pagon, Brunei, IV.1981, I.D. Gauld leg.; 1♀, U. Temburong (1,500 m), Bukit Retak, Brunei, IV.1981, I.D. Gauld leg. (all NHMUK); 1♀, Anamalai Hills (3,500′), Cinchona, India, IV.1956, P.S. Nathan leg. (CNC); 1♀, Takadomari, Fuk-

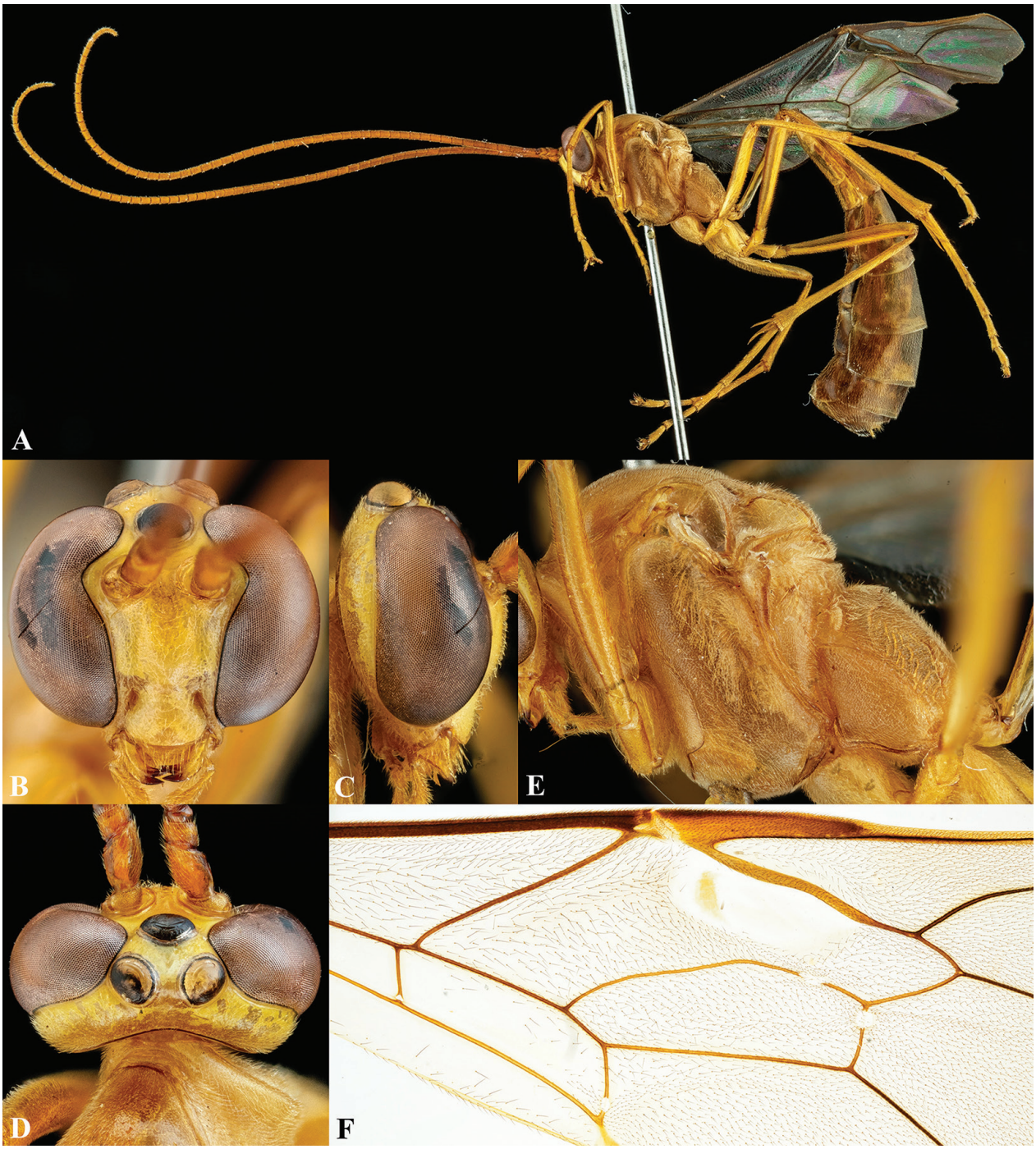

Figure 22. *Enicospilus pseudoconspersae* (Sonan, 1927), ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

agawa City, Hokkaidô, Japan, 5–19.VIII.2007, H. Hara leg. (MsT) (NSMT); 1♀, Yoshigahira, Niigata Pref., Japan, 25.VI.1954, K. Baba leg. (MNHA); 1♀, Kurokawa, Niigata Pref., Japan, 22.VI.1954, K. Baba leg. (MNHA); 1♀, Oyamada, Machida City, Tôkyô, Japan, IX.2008, S. Ohsato leg. (NHMUK); 1♀, Dokan-Shinmichi, Imperial Palace, Chiyoda Ward, Tôkyô, Japan, 27.VII–3.VIII.2010 (MsT) (NSMT); 1♀, Mt Futatabi-san, Kôbe City, Hyôgo Pref., Japan, 28.VIII.1990, N. Sugiura leg. (MNHA); 6♀♀, Mori, Tôjyô Town, Shôbara City, Hiroshima Pref., Japan, 21.VII.2015 (1♀), 6 (2♀♀), 8 (1♀). IX, 3.X (1♀).2016, 17.IX.2017 (1♀), N. Takashiba leg. (LT) (HMNH).

Distribution. Eastern Palaearctic and Oriental regions (Yu et al. 2016). Newly recorded from Nepal.

Diagnosis. *Head* (Fig. 23B–D): GOI = 2.6–2.8; lower face 0.7× as wide as high; clypeus almost flat in profile, its lower margin acute to subacute; mandible weakly twisted by 10–20°, moderately long, evenly tapered, its outer surface without a diagonal structure; upper mandibular tooth 1.2–1.5× as long as lower one; posterior ocellus (almost) touching eye; antenna with

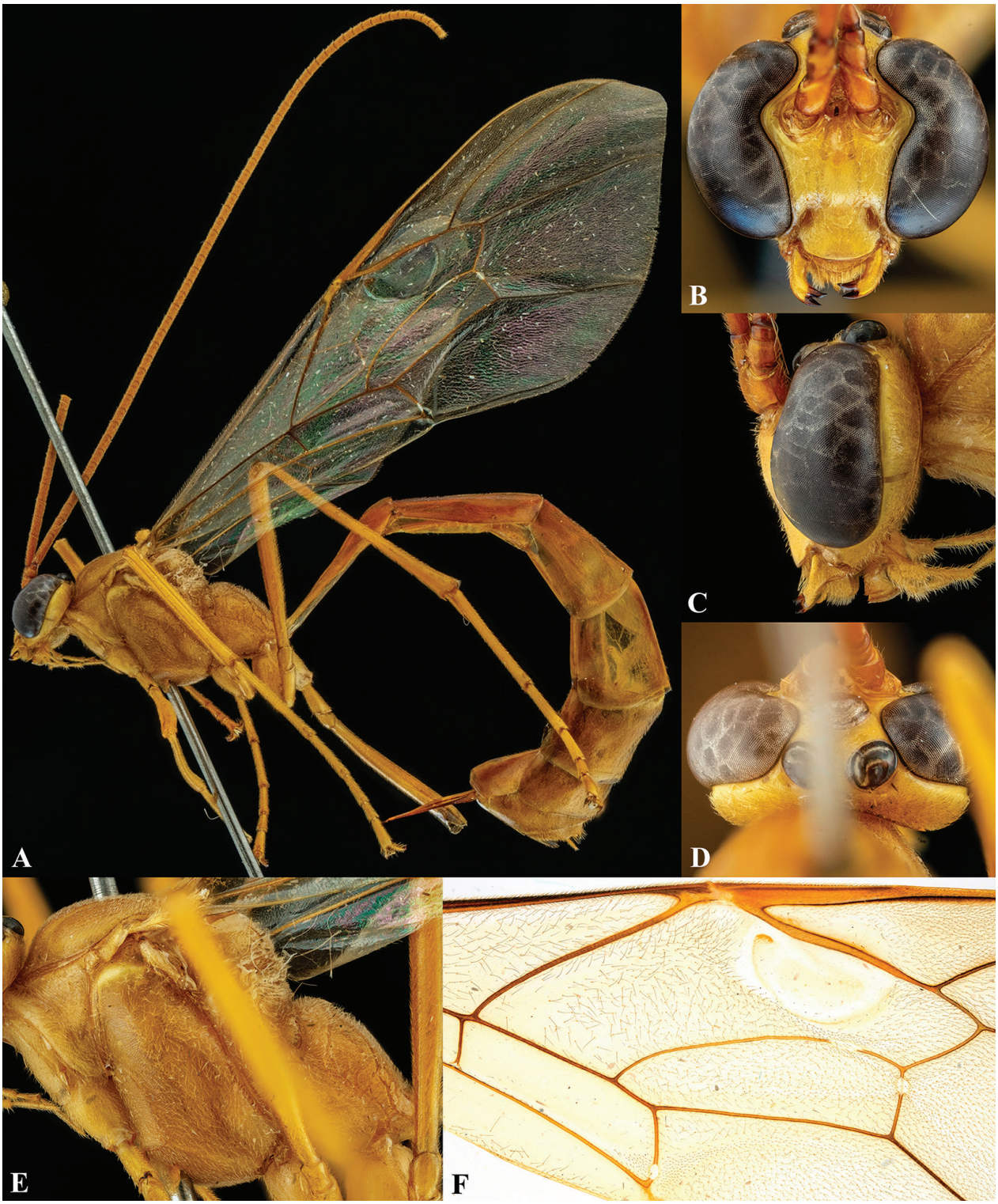

Figure 23. *Enicospilus pudibundae* (Uchida, 1928), ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

54–59 flagellomeres and 20th flagellomere 2.0–2.1× as long as wide.

Mesosoma (Fig. 23E): mesopleuron entirely punctate; scutellum with lateral longitudinal carinae reaching posterior end and convergent posteriorly; metapleuron punctate; propodeum weakly declivous, its posterior area irregularly wrinkled, outer margin of propodeal spiracle not joining pleural carina by a ridge.

Wings (Fig. 23F): fore wing with AI = 0.5–1.0, CI = 0.5–0.7, ICI = 0.5–0.7, SDI = 1.4–1.5; fore wing vein 1m-cu&M evenly curved, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 23F;

fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite more or less linear, very weakly confluent with distal one or not, very weakly to strongly pigmented; central sclerite absent; distal sclerite more or less weak to absent; proximal corner of marginal cell of fore wing sparsely to uniformly setose; vein 1cu-a subinterstitial to antefurcal to M&RS by less than 0.2× 1cu-a length.

Colour (Fig. 23): body including interocellar area entirely testaceous, sometimes posterior segments of metasoma weakly infuscate; wings hyaline to very slightly infuscate.

Differential diagnosis. *Enicospilus pudibundae* resembles *E. biharensis*, *E. maruyamanus*, *E. nikami* sp. nov., and *E. transversus*, but can be distinguished from *E. biharensis*, *E. maruyamanus*, and *E. transversus* by the proximally incomplete pectination of the hind tarsal claw (pectination of hind tarsal claw complete from base to apex of the claw in *E. biharensis*, *E. maruyamanus*, and *E. transversus*, as in e.g. Figure 2I) and also from *E. maruyamanus*, *E. nikami* sp. nov., and *E. transversus* by the evenly curved fore wing vein 1m-cu&M (Fig. 23F) (1m-cu&M more or less sinuous in *E. maruyamanus*, *E. nikami* sp. nov. and *E. transversus*, as in e.g. Figure 19F). The Nepalese and some other Oriental specimens exhibit a rather wider proximal sclerite and sparser setosity in the proximal corner of the fore wing fenestra than the holotype and Eastern Palaearctic specimens, suggesting that the Oriental specimens are potentially cryptic species. However, at present, I have not enough evidence to describe them as a new species and tentatively follow Gauld and Mitchell's (1981) species criteria.

Enicospilus purifenestratus (Enderlein, 1921)*

Fig. 24

Amesospilus purifenestratus Enderlein 1921: 17; holotype ♀, Sumatra, IZPAN.

Material examined. 4♀♀4♂♂: Nepal (1♀4♂♂), Brunei (2♀♀), Singapore (1♀).

Non-type series: 1♀, Kathmandu (1,350 m), Nepal, VII.1983, M.G. Allen leg. (LT); 4♂♂, Phulchoki (2,000 m), Nepal, VIII.1982, M.G. Allen leg. (LT) (Fig. 24); 2♀♀, Seria, Brunei, XII.1979, Allen leg.; 1♀, Singapore, 1905, H.N. Ridley leg. (all NHMUK).

Distribution. Australasian, Eastern Palaearctic, and Oriental regions (Yu et al. 2016). Newly recorded from Nepal and Brunei.

Diagnosis. *Head* (Fig. 24B–D): GOI = 2.7–3.0; lower face 0.6–0.7× as wide as high; clypeus slightly convex in profile, its lower margin subacute to blunt; mandible weakly twisted by 10–20°, moderately long, proximally tapered and distally more or less parallel sided, its outer surface without a diagonal structure; upper mandibular tooth 1.3–1.5× as long as lower one; posterior ocellus almost touching eye; antenna with 56–59 flagellomeres and 20th flagellomere 1.6–1.9× as long as wide.

Mesosoma (Fig. 24E): mesopleuron punctate to longitudinally punctostriate; scutellum with lateral longitudinal carinae reaching anterior 0.8 or more and convergent posteriorly; metapleuron punctostriate to striate; propodeum weakly declivous, its posterior area irregularly to subconcentrically wrinkled, outer margin of propodeal spiracle not joining pleural carina by a ridge.

Wings (Fig. 24F): fore wing with AI = 0.5–0.6, CI = 0.2–0.4, ICI = 0.6–0.8, SDI = 1.3–1.4; fore wing vein 1m-cu&M moderately sinuous, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 24F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite triangular, confluent with distal one, strongly pigmented; central sclerite absent; distal sclerite more or less entirely pigmented; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a antefurcal to M&RS by 0.1–0.3× 1cu-a length.

Colour (Fig. 24F): body including interocellar area entirely testaceous; wings hyaline.

Differential diagnosis. *Enicospilus purifenestratus* is very similar to *E. urocerus* Gauld & Mitchell, 1981, but distinguished from it by the unswollen segments 3 and 4 of the maxillary palp (segments 3 and 4 of the maxillary palp swollen in *E. urocerus*) and thinner distal sclerite (Fig. 24F) (distal sclerite thicker in *E. urocerus*).

Enicospilus tangi Shimizu, sp. nov.

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Figs 2B, H, 25

Etymology. The specific name is dedicated to Dr Yuqing Tang who described *E. longitarsis*, which is morphologically the most similar species to the one that is hereby described, and has contributed to the taxonomy of Ophioninae in Asia, represented by the monograph of Chinese *Enicospilus* (Tang 1990).

Material examined. 1♂: Nepal.

Type series: holotype ♂, Kakani (2,070 m), Nepal, 1–23.VIII.1983, M.G. Allen leg. (NHMUK) (Figs 2B, H, 25).

Distribution. Nepal.

Description. Male (Holotype) (Figs 2B, H, 25). Body length ca 24.5 mm.

Head with GOI = 2.5 (Fig. 25C). Lower face 0.9× as wide as high, moderately punctate with setae and shiny (Fig. 25B). Clypeus 1.7× as wide as high, moderately punctate with setae, moderately convex in profile, lower margin impressed (Fig. 25B, C). Malar space 0.4× as long as basal mandibular width (Fig. 25B, C). Mandible weakly twisted by ca 25°, very long, proximally strongly narrowed, centrally to apically subparallel sided, its outer surface with a diagonal setose deep groove between dorsoproximal corner to base of mandibular apical teeth (Figs 2B, 25B, C). Upper mandibular tooth 2.1× as long as lower one, stouter than lower one (Figs 2B, 25B). Frons, vertex and gena moderately shiny with fine setae

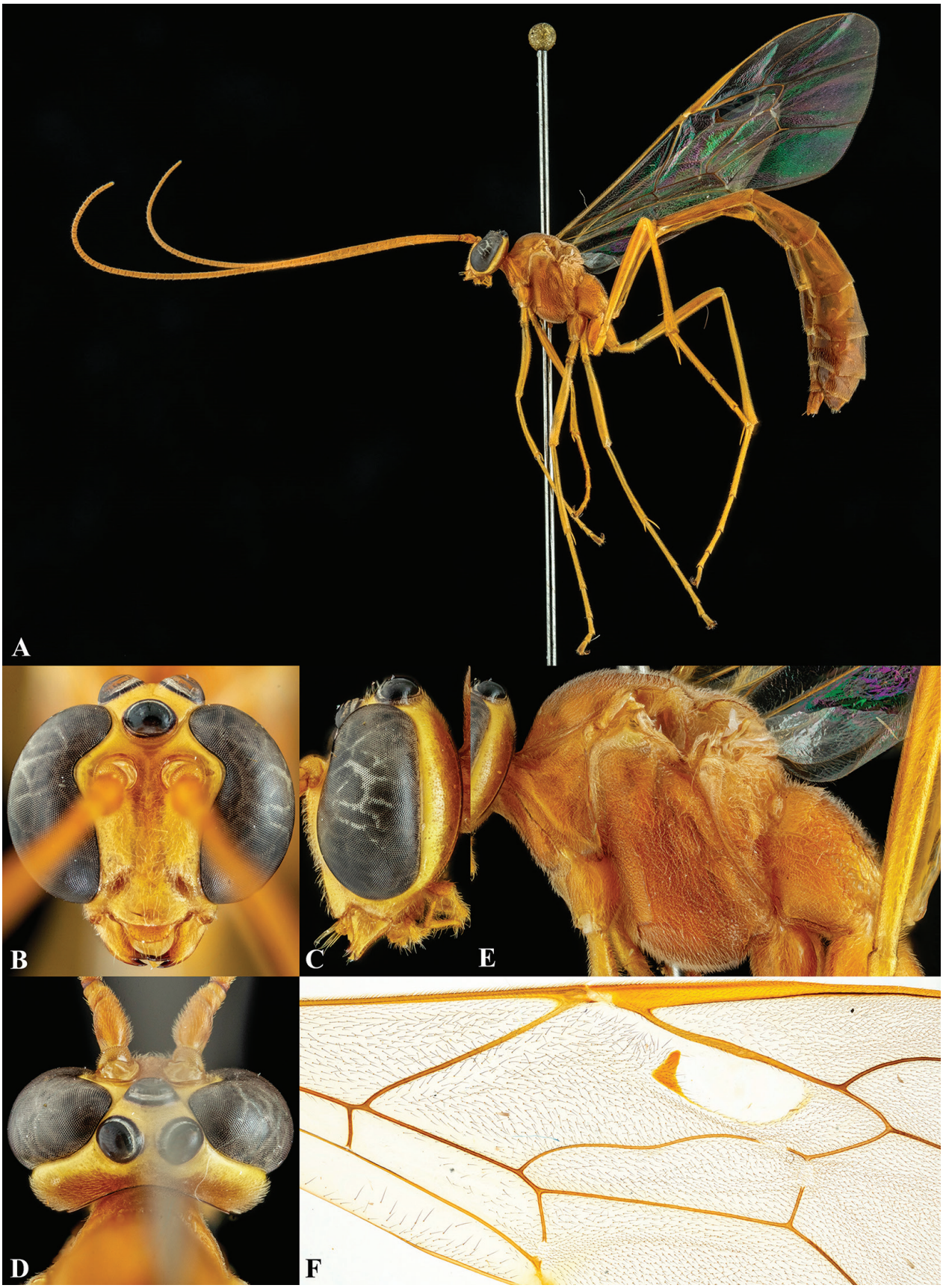

Figure 24. *Enicospilus purifenestratus* (Enderlein, 1921), ♂. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

(Fig. 25B–D). Posterior ocellus close to eye, separated from eye by less than 0.1× its own maximum diameter (Fig. 25B–D). Ventral end of occipital carina joining oral carina. Antenna incomplete apically, right antenna with 64 flagellomeres and left antenna with 65 flagellomeres; first flagellomere 1.9× as long as second; 20th flagellomere 2.2× as long as wide.

Mesosoma entirely moderately shiny with setae (Fig. 25E). Pronotum punctate dorsally and punctostrigose centrally to ventrally (Fig. 25E). Mesoscutum 1.5× as long as its maximum width, densely and finely punctate with setae, rather weakly shiny, and evenly rounded in profile (Fig. 25E). Notauli absent (Fig. 25E). Scutellum moderately convex, moderately punctate with setae, with lateral longitudinal carinae almost reaching posterior end (Figs 2H, 25E). Epicnemium densely punctate with setae. Epicnemial carina present, evenly weakly curved to anterior, its dorsal end not reaching anterior margin of mesopleuron (Fig. 25E). Mesopleuron entirely weakly to moderately punctostriate to reticulate-strigose longitudinally (Fig. 25E). Submetapleural carina almost parallel sided centrally and weakly broadened anteriorly (Fig. 25E). Metapleuron densely punctostriate with setae (Fig. 25E). Propodeum almost evenly rounded in profile; anterior transverse carina complete centrally, its lateral end almost joining pleural carina; pleural carina vestigial; anterior area longitudinally striate; spiracular area strongly shiny and finely punctures with setae; posterior area rather moderately rugose; propodeal spiracle elliptical, its outer margin not joining pleural carina by a ridge (Fig. 25E).

Wings. Fore wing length ca 15.5 mm with AI = 0.4, CI = 0.4, DI = 0.3, ICI = 0.5, SDI = 1.3, SI = 0.1, SRI = 0.3; vein 1m-cu&M almost evenly curved; vein 2r&RS almost straight and RS evenly curved; fenestra and sclerites of discosubmarginal cell as in Figure 25F; proximal sclerite triangular, confluent with distal sclerite, moderately pigmented; central sclerite absent; distal sclerite weakly pigmented; proximal corner of marginal cell uniformly setose; posterodistal corner of second discal cell ca 95°; posterodistal corner of subbasal cell ca 90°; vein 1cu-a antefurcal to M&RS by 0.3× 1cu-a length (Fig. 25F). Hind wing with NI = 1.8, RI = 1.5; vein RS straight; vein RA with 6 uniform hamuli.

Legs. Ventral 0.7 of outer surface of fore tibia with rather dense spines. Hind leg with coxa in profile 1.8× as long as deep; basitarsus 2.0× as long as second tarsomere; fourth tarsomere 0.7× as long as third tarsomere and 5.0× as long as wide; tarsal claw simply pectinate.

Metasoma with PI = 2.8, DMI = 1.3, THI = 2.1; dorsal margin of tergite 1 slightly sinuous; thyridium elongate (Fig. 25A).

Colour (Fig. 25). Entirely testaceous except for apex of mandible black. Wings hyaline; proximal sclerite testaceous, distal sclerite very weakly pigmented; veins brown.

Variation. Unknown.

Female. Unknown.

Differential diagnosis. *Enicospilus tangi* sp. nov. can be confused with *E. kakanicus* sp. nov., *E. longitarsis*, and *E. yonezawanus*, all of which belong to the *E. ramidulus* complex. Among these species, *E. tangi* sp. nov. is most closely related to *E. longitarsis*, and these species are distinguished from the other Oriental species of *Enicospilus* by the triangular proximal sclerite (e.g. Fig. 25F), the absence of the central sclerite (e.g. Fig. 25F), moderately large value of SDI (over 1.3) (e.g. Fig. 25F), a diagonal setose deep groove of the mandibular outer surface (e.g. Fig. 2B), moderately large fore wing fenestra (e.g. Fig. 25F), rather dense spines on the outer surface of the fore tibia, etc. *Enicospilus tangi* sp. nov. is distinguished from *E. longitarsis* by the following character states: scutellum narrowed posteriorly (Fig. 2H) (subquadrate in *E. longitarsis*); fore wing vein 1m-cu&M evenly curved (Fig. 25F) (slightly sinuous in *E. longitarsis*); lower face 0.9× as wide as high (Fig. 25B) (0.8 in *E. longitarsis*); GOI = 2.5 (Fig. 25C) (1.8 in *E. longitarsis*).

Enicospilus tripartitus Chiu, 1954

Figs 2C, 26

Enicospilus tripartitus Chiu 1954: 36; holotype ♀, Taiwan, TARI, examined.

Material examined. 27♀♀10♂♂ and 2 unsexed: Nepal (24♀♀8♂♂ and 1unsexed), China (1♀), India (1♂), Japan (1 unsexed), Taiwan (2♀♀), unknown (1♂).

Type series: holotype of *Enicospilus tripartitus* Chiu, 1954, ♀, Taihoku, Taiwan, 27.VIII.1937, J. Sonan leg. (TARI); paratype of same species, 1♂, no data (NHMUK).

Non-type series: 24♀♀8♂♂, Kakani (2,000 m), Nepal, VIII.1982 (2♀♀), VI (4♀♀1♂), VII (4♀♀3♂♂), 1–23 (2♀♀2♂♂).VIII (3♀♀1♂), IX (4♀♀), X (2♀♀).1983, 1–30.V (1♀1♂), 1–14.VII (2♀♀).1984, M.G. Allen leg. (Figs 2C, 26); 1 unsexed, Sangu (ca 6,200′), Taplejung district, Nepal, 16–29.X.1961; 1♀, ShinKaiSi (1,340 m), Mt Omei, Szechuen, China; 1♂, Kangra Valley (1,370 m), India, X.1899, Dudgeon leg. (all NHMUK); 1 unsexed, Genka-yama, Okinawa-hontô, Okinawa Pref., Japan, 4.V.1964, T. Takara & T. Kakinohana leg. (MNHA); 1♀, Kuanhsi, Taiwan, 29.VIII.1968 (MsT) (TARI).

Distribution. Eastern Palaearctic and Oriental regions (Yu et al. 2016). Gauld and Mitchell (1981) recorded this species from Nepal.

Diagnosis. *Head* (Figs 2C, 26B–D): GOI = 2.2–2.9; lower face 0.7–0.8× as wide as high; clypeus moderately to strongly convex in profile, its lower margin more or less blunt; mandible rather weakly twisted by 10–20°, moderately long, proximally tapered and distally parallel sided, its outer surface flat but with conspicuous dense setae and a proximal deep concavity; upper mandibular

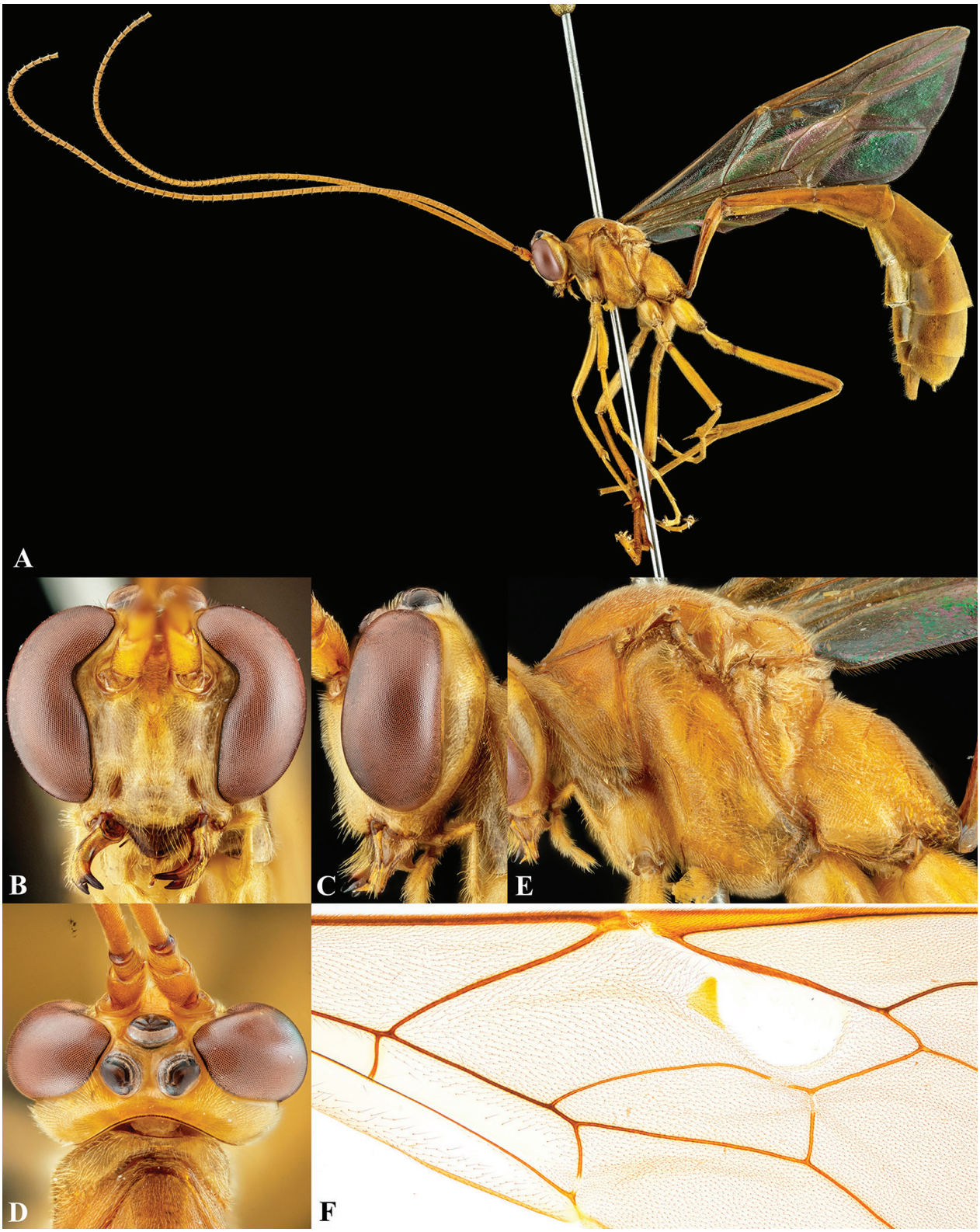

Figure 25. *Enicospilus tangi* Shimizu sp. nov., ♂, holotype. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

tooth 1.2–1.6× as long as lower one; posterior ocellus close to eye; antenna with 55–66 flagellomeres and 20th flagellomere 2.2–2.4× as long as wide.

Mesosoma (Fig. 26E): mesopleuron entirely more or less densely punctate and submatt; scutellum with lateral longitudinal carinae reaching posterior end and conver-

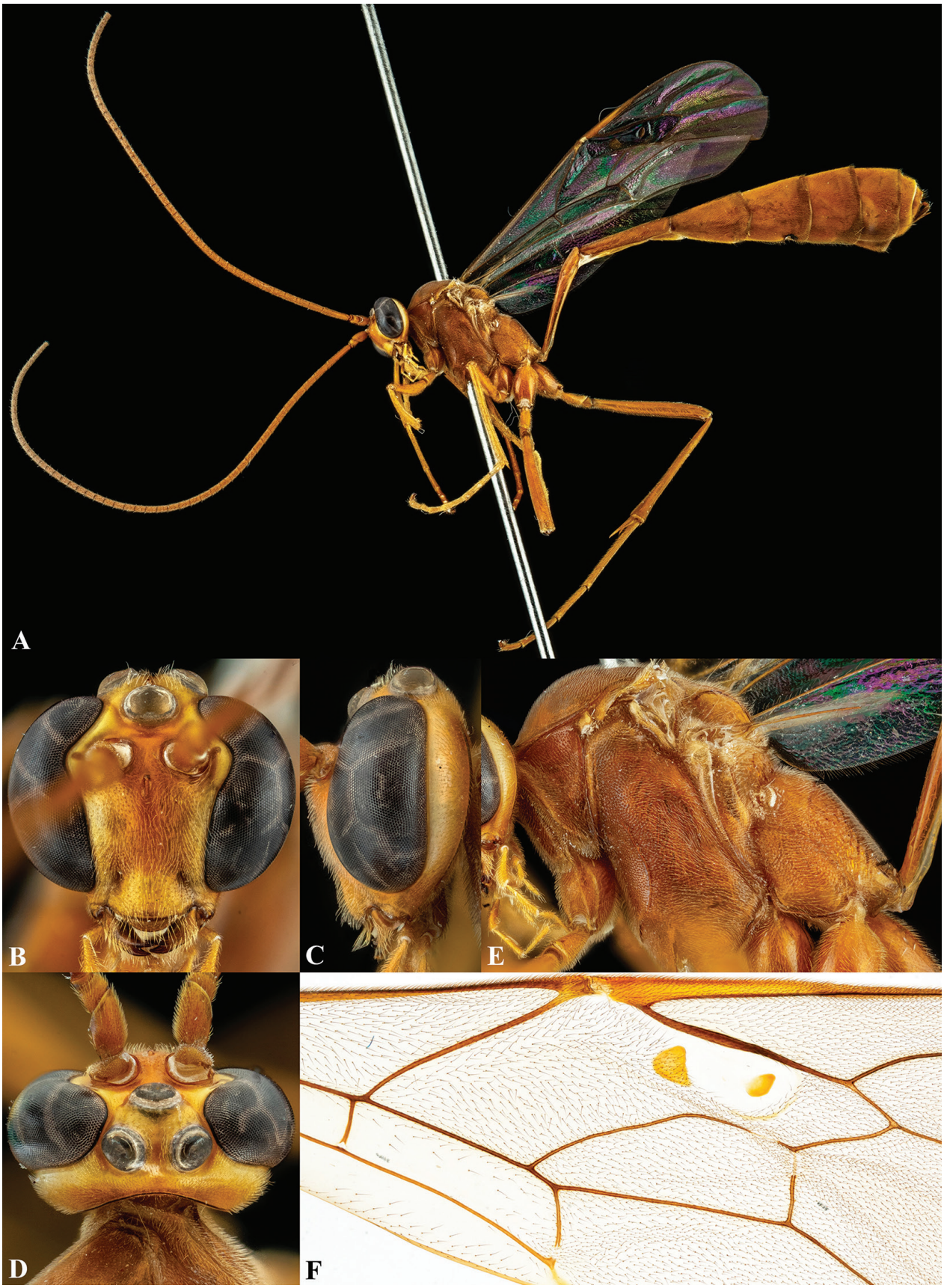

Figure 26. *Enicospilus tripartitus* Chiu, 1954, ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

gent posteriorly; metapleuron densely punctate as mesopleuron; propodeum weakly declivous, its posterior area moderately reticulate, outer margin of propodeal spiracle not joining pleural carina by a ridge.

Wings (Fig. 26F): fore wing with AI = 0.3–0.6, CI = 0.3–0.4, ICI = 0.5–0.7, SDI = 1.2–1.6; fore wing vein 1m-cu&M almost evenly curved to slightly sinuous, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 26F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite triangular, separated from distal one, strongly pigmented; central sclerite strongly pigmented and sclerotised, well-delineated oval and its major axis parallel to distal margin of fenestra, positioned in mediodistal part of fenestra; distal sclerite absent to weak; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a subinterstitial to antefurcal to M&RS by less than 0.2× 1cu-a length.

Colour (Fig. 26): body including interocellar area entirely reddish brown; wings hyaline.

Differential diagnosis. Four Oriental *Enicospilus* species, *E. laqueatus*, *E. pseudantennatus*, *E. vestigator*, and *E. tripartitus*, have similar fenestra, sclerites, and fore wing veins (e.g. Figs 15F, 21F, 26F), as mentioned under *E. laqueatus* and *E. pseudantennatus*. Among them, *E. tripartitus* is readily distinguishable from other species by the outer mandibular surface: outer surface of mandible with very dense setae and sharp and rather deep proximal concavity in *E. tripartitus* (Figs 2C, 26B, C), but more or less flat proximally with scattered setae in *E. laqueatus* (Fig. 15B, C) *E. pseudantennatus* (Fig. 21B, C) and *E. vestigator*.

Enicospilus yonezawanus (Uchida, 1928)*

Figs 2D, 27

Henicospilus yonezawanus Uchida 1928: 218; lectotype ♀, Japan, SEHU, designated by Townes et al. (1965: 337), examined.

Enicospilus microstriatellus Uchida 1956: 95; holotype ♂, Ryûkyû Island, SEHU, examined; synonymised by Gauld and Mitchell (1981: 337).

Material examined. 27♀♀8♂♂: Nepal (1♀), India (10♀♀), Indonesia (1♀), Japan (2♀♀7♂♂), Laos (8♀♀), Malaysia (4♀♀), Papua New Guinea (1♀), Taiwan (1♂).

Type series: lectotype of *Henicospilus yonezawanus* Uchida, 1928, ♀, Yonezawa, Yamagata Pref., Honshû, Japan, 23.VII.1919, S. Matsumura leg. (SEHU); holotype of *E. microstriatellus* Uchida, 1956, ♂, Sinmura, Amami-ôshima, Kagoshima Pref., Ryûkyûs, Japan, 7.IV.1954, T. Kumata leg. (SEHU).

Non-type series: 1♀, Godaveri (1,550–1,700 m), Nepal, IX.1983, M.G. Allen leg. (LT) (Figs 2D, 27); 10♀♀, Andhra Pradesh, Patanchneru, India, IX.1980, Rhatnagar leg. (LT); 1♀, Medan, L. Fulmek, Sumatra, Indonesia (all NHMUK); 1♂, Isa (32°8'29.3"N, 130°33'13.7"E), Kagoshima Pref., Kyûshû, Japan, 7.IX.2012, Y. Matsubara & K. Fukuda leg. (MsT) (NSMT); 5♂♂, Isa (32°6'41.8"N, 130°31'38.4"E), Kagoshima Pref., Kyûshû, Japan, 7.IX.2012, Y. Matsubara & K. Fukuda leg. (MsT) (CNC); 1♀, Hiji agricultural road (85 m, 26°43'16.8"N, 128°10'43.4"E), Hiji, Kunigami Vil., Kunigami County, Okinawa-hontô, Okinawa Pref., Ryûkyûs, Japan, 2–3.VII.2016, S. Shimizu et al. leg. (LT) (MNHA); 4♀♀, Phou Khoun (19.250697 N, 102.254204 E), Luang Phabang, Laos, 21–22.IV.2018, H. Yoshitomi leg. (EUM); 4♀♀, Sala Phou Khoun (19°25'7.57"N, 102°25'41.6"E), Luang Phabang, Laos, 21.IV.2018, K. Yasuda leg. (LT) (EUM); 1♀, Serdang, Malaysia, IX.1979, Khashiyah leg.; 1♀, Carambola Farm, Serdang, Selangor, Malaysia, XI.1979; 2♀♀, Serdang, Selangor, Malaysia, X (1♀) and XI (1♀).1979, I.D. Gauld leg.; 1♀, Morobe (1,000 m), Wau, Papua New Guinea, X.1979, I.D. Gauld leg. (all NHMUK); 1♂, Chihpen, Taitung, Taiwan, 17–18.II.1982, L.Y. Chou & K.C. Chou leg. (TARI).

Distribution. Australasian, Eastern Palaearctic, and Oriental regions (Yu et al. 2016). Newly recorded from Nepal.

Diagnosis. *Head* (Figs 2D, 27B–D): GOI = 2.9–3.2; lower face 0.7–0.8× as wide as high; clypeus moderately convex in profile, its lower margin impressed; mandible weakly twisted by 10–20°, moderately long, evenly tapered, its outer surface with a diagonal setose groove between its dorsoproximal corner and base of mandibular apical teeth; upper mandibular tooth 1.2–1.5× as long as lower one; posterior ocellus almost touching eye; antenna with 63–70 flagellomeres and 20th flagellomere 2.0–2.2× as long as wide.

Mesosoma (Fig. 27E): mesopleuron punctate to rather closely longitudinally striate; scutellum with lateral longitudinal carinae reaching posterior end and convergent posteriorly; metapleuron punctate to striate; propodeum almost evenly rounded, its posterior area moderately reticulate, outer margin of propodeal spiracle joining pleural carina by a ridge.

Wings (Fig. 27F): fore wing with AI = 0.3–0.7, CI = 0.2–0.4, ICI = 0.4–0.6, SDI = 1.2–1.3; fore wing vein 1m-cu&M almost evenly curved to very slightly sinuous, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 27F; fenestra of fore wing not very long and its anterodistal corner distinctly separated from proximal end of vein RS; proximal sclerite triangular, separated from distal one, strongly pigmented; central sclerite absent; distal sclerite absent proximally and weak distally; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a antefurcal to M&RS by 0.1–0.3× 1cu-a length.

Colour (Fig. 27): body including interocellar area entirely testaceous; wings hyaline.

Differential diagnosis. *Enicospilus yonezawanus* is one of the most common in the Eastern Palaearctic and Oriental regions and more or less distinctive species based on some characters, such as mandibular and

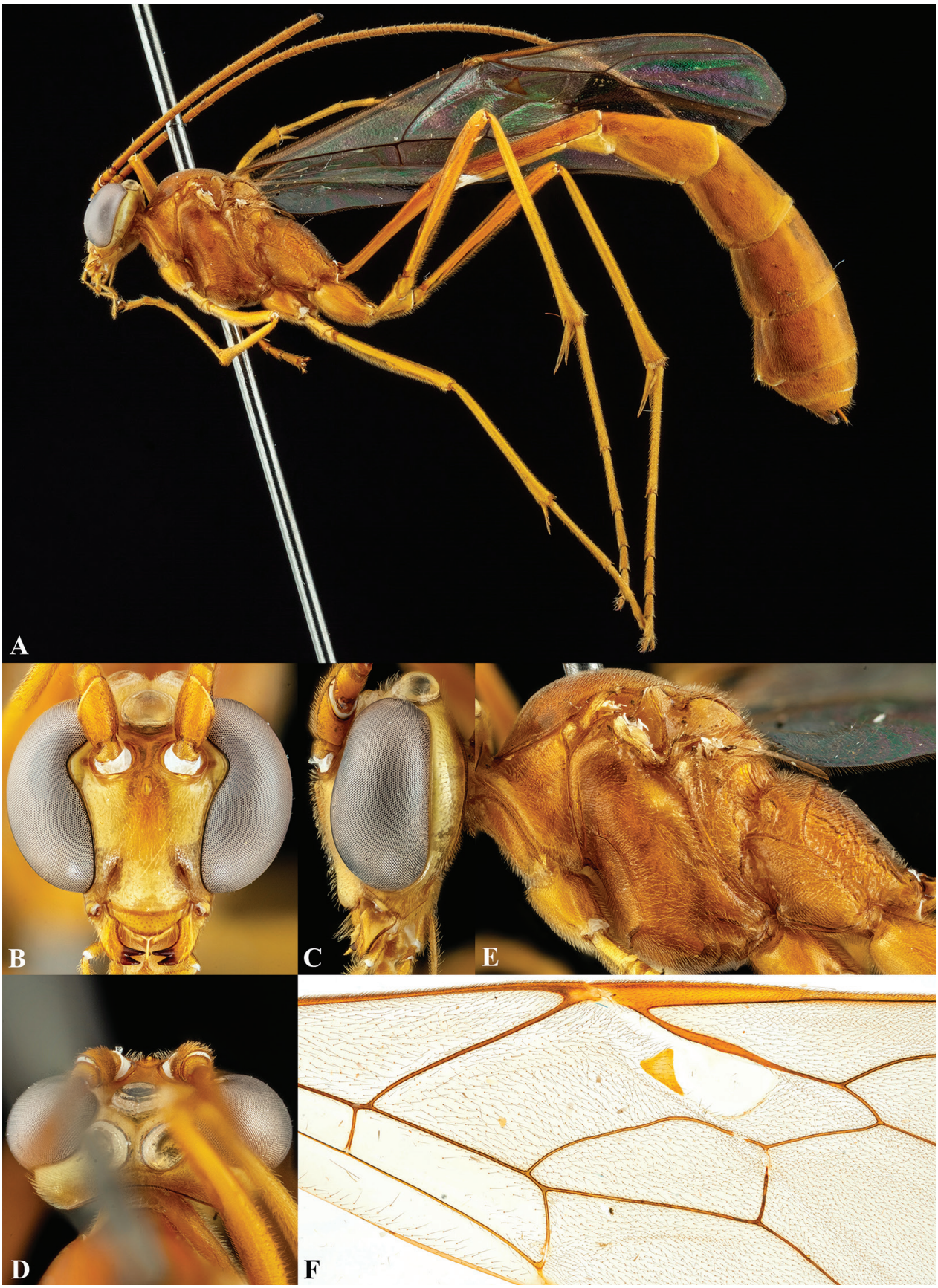

Figure 27. *Enicospilus yonezawanus* (Uchida, 1928), ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

clypeal structure, shape of fore wing sclerites, and surface sculpture of mesopleuron, but can be confused with *E. kakanicus* sp. nov., *E. longitarsis*, and *E. tangi* sp. nov. However, *E. yonezawanus* is distinguishable from *E. kakanicus* sp. nov. by the complete lateral longitudinal carinae of the scutellum (lateral longitudinal carinae of the scutellum posteriorly absent in *E. kakanicus* sp. nov., as in Figure 2F), from *E. longitarsis* and *E. tangi* sp. nov. by the scattered spines on the outer fore tibial surface (spines rather dense in *E. longitarsis* and *E. tangi* sp. nov.) and the separated proximal and distal sclerites (Fig. 27F) (proximal and distal sclerites confluent in *E. longitarsis* and *E. tangi* sp. nov. as in e.g. Figure 25F).

Enicospilus zebrus Gauld & Mitchell, 1981*

Fig. 28

Enicospilus zebrus Gauld and Mitchell 1981: 406; holotype ♀, Myanmar, EMUS, examined.

Material examined. 8♀♀3♂♂: Nepal (3♀♀2♂♂), China (2♀♀1♂), Myanmar (3♀♀).

Type series: holotype of *Enicospilus zebrus* Gauld & Mitchell, 1981, ♀, Mt Victoria (2,800 m), Myanmar, V.1938, G. Heinrich leg. (EMUS); paratypes of *E. zebrus*, 2♀♀, same data as holotype except for 2,400 m (NHMUK and EMUS).

Non-type series: 1♂, Choche Lekh (3,500 m), Chautara Dist., Nepal, 17.VI.1983, G. Robinson leg.; 1♂, Phulchoki peak (2,700 m), Nepal, X.1983, M.G. Allen leg. (LT); 1♀, Phulchoki (2,500 m), Nepal, IX.1982, M.G. Allen leg. (LT) (Fig. 28); 1♀, montane & oak forest (2,760 m), Phulchoki, Nepal, VIII.1983, M.G. Allen leg. (LT); 1♀, Nauling Lekh (9,000′), Gobre, Nepal, VI.1983, M.G. Allen leg. (LT); 2♀♀1♂, Yu Lung Mountain (3,200 m), Likiang, Yunnan, P.R. China, 15–21.VI.2009, A.C. Galsworthy leg. (LT) (all NHMUK).

Distribution. Oriental region (Yu et al. 2016). Newly recorded from Nepal.

Diagnosis. *Head* (Fig. 28B–D): GOI = 3.0–3.2; lower face 0.6–0.7× as wide as high; clypeus slightly convex in profile, its lower margin acute; mandible weakly twisted by 10–20°, moderately long, proximally tapered and distally more or less parallel sided, its outer surface without a diagonal structure; upper mandibular tooth 1.2–1.3× as long as lower one; posterior ocellus almost touching eye; antenna with 58–61 flagellomeres and 20th flagellomere 2.6–2.7× as long as wide.

Mesosoma (Fig. 28E): mesopleuron punctate to rather coarsely longitudinally striate; scutellum with lateral longitudinal carinae reaching posterior end and convergent posteriorly; metapleuron rather coarsely striate; propodeum evenly weakly rounded, its posterior area more or less coarsely irregularly wrinkled with strong posterior transverse carina laterally, outer margin of propodeal spiracle joining pleural carina by a ridge.

Wings (Fig. 28F): fore wing with AI = 0.5, CI = 0.3–0.4, ICI = 0.4–0.5, SDI = 1.4–1.5; fore wing vein 1m-cu&M very slightly sinuous, 2r&RS almost straight; fenestra and sclerites of discosubmarginal cell of fore wing as in Figure 28F; fenestra of fore wing very long and its anterodistal corner very close to proximal end of vein RS; proximal sclerite triangular, confluent with distal one, strongly pigmented; central sclerite moderately pigmented and sclerotised, ill-delineated semicircular to oval, its major axis parallel to distal margin of fenestra, positioned in very distal and slightly anterior part of fenestra; distal sclerite entirely moderately pigmented; proximal corner of marginal cell of fore wing uniformly setose; vein 1cu-a antefurcal to M&RS by 0.1× 1cu-a length.

Colour (Fig. 28): body entirely black with pale yellow patterns, interocellar area not infuscate; wings hyaline but fore wing with three strongly infumate areas around anterocentral part of discosubmarginal cell, proximal part of second discal cell, and central part of marginal cell.

Differential diagnosis. Gauld and Mitchell (1981) suggested that *E. zebrus* is related to the *E. signativentris* species-group and very close to *E. biumbratus* (Morley, 1912) on body and wing colour pattern as well as other characters, but *E. zebrus* is distinguished from *E. biumbratus* by many characters, such as the longer fore wing fenestra (Fig. 28F), smaller and semicircular to oval central sclerite (Fig. 28F), etc.

Species inquirendae and pending taxonomic acts

Some morphospecies and species-groups listed below are tentatively treated as species inquirendae pending taxonomic acts. Two morphospecies (*Enicospilus* sp. 1 (Fig. 29) and *Enicospilus* sp. 2 (Fig. 30)) are likely to be undescribed species, but the only available specimens are in poor condition, so they are not be described here. Also, the *E. erythrocerus* species-group is currently taxonomically challenging. Type specimens must be re-examined and integrative taxonomic methods should be included to delimit and redefine species. Three morphospecies are included in Nepalese specimens of the *E. erythrocerus* group (Fig. 31), and at least one of these is potentially an undescribed species.

Enicospilus sp. 1

Fig. 29

Material examined. 1 unsexed: Nepal.

1 unsexed, Phulchoki (2,000 m), Nepal, VIII.1982, M.G. Allen leg. (LT) (NHMUK) (Fig. 29).

Comments. The mandibular structure of this species indicates it is associated with the *E. ramidulus* complex. *Enicospilus* sp. 1 does not key out to any species in Gauld and Mitchell's (1981) and Tang's (1990) keys and is possibly an undescribed species. It may potentially be found to be closely related to *E. choui* Tang, 1990 or *E. sinicus* Tang, 1990. However, only one broken specimen is known, so I tentatively treat this species as a species inquirenda.

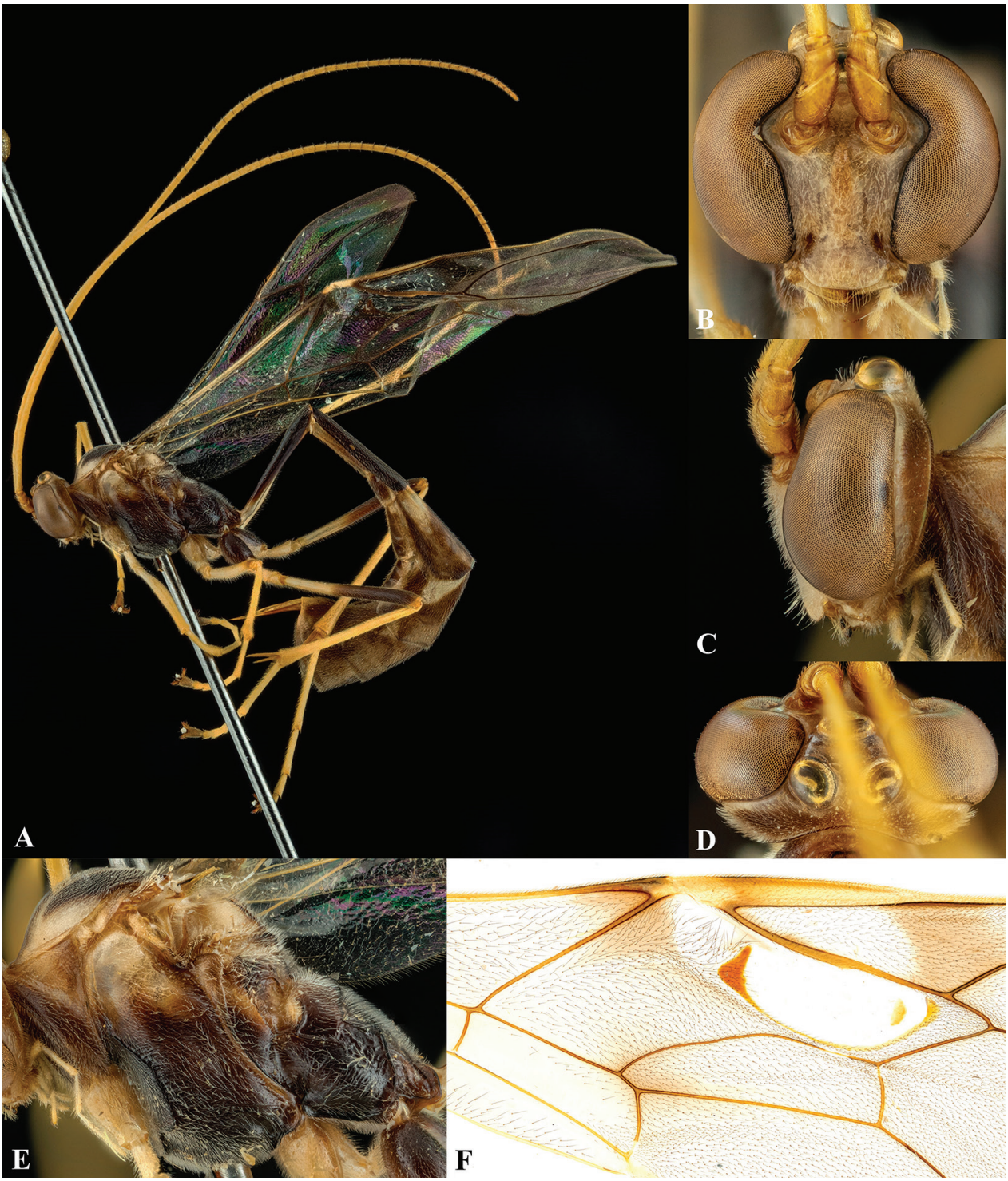

Figure 28. *Enicospilus zebrus* Gauld & Mitchell, 1981, ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Enicospilus sp. 2

Fig. 30

Material examined. 1♂: Nepal.

1♂, Terai (200 m), Chitwan, Nepal, 12–13.III.1983, M.G. Allen leg. (NHMUK) (Fig. 30).

Comments. The material examined is not in bad condition except for incomplete antennae. However, antennal characters are often useful and important for distinguishing *Enicospilus* species, as previous studies suggested (e.g. Broad and Shaw 2016). Therefore, antennae should be complete to describe a new species.

The affinities of this species are not clear, but, as with *Enicospilus* sp. 1, it also does not key out to any species in Gauld and Mitchell's (1981) or Tang's (1990) keys, indicating that it is potentially an undescribed species.

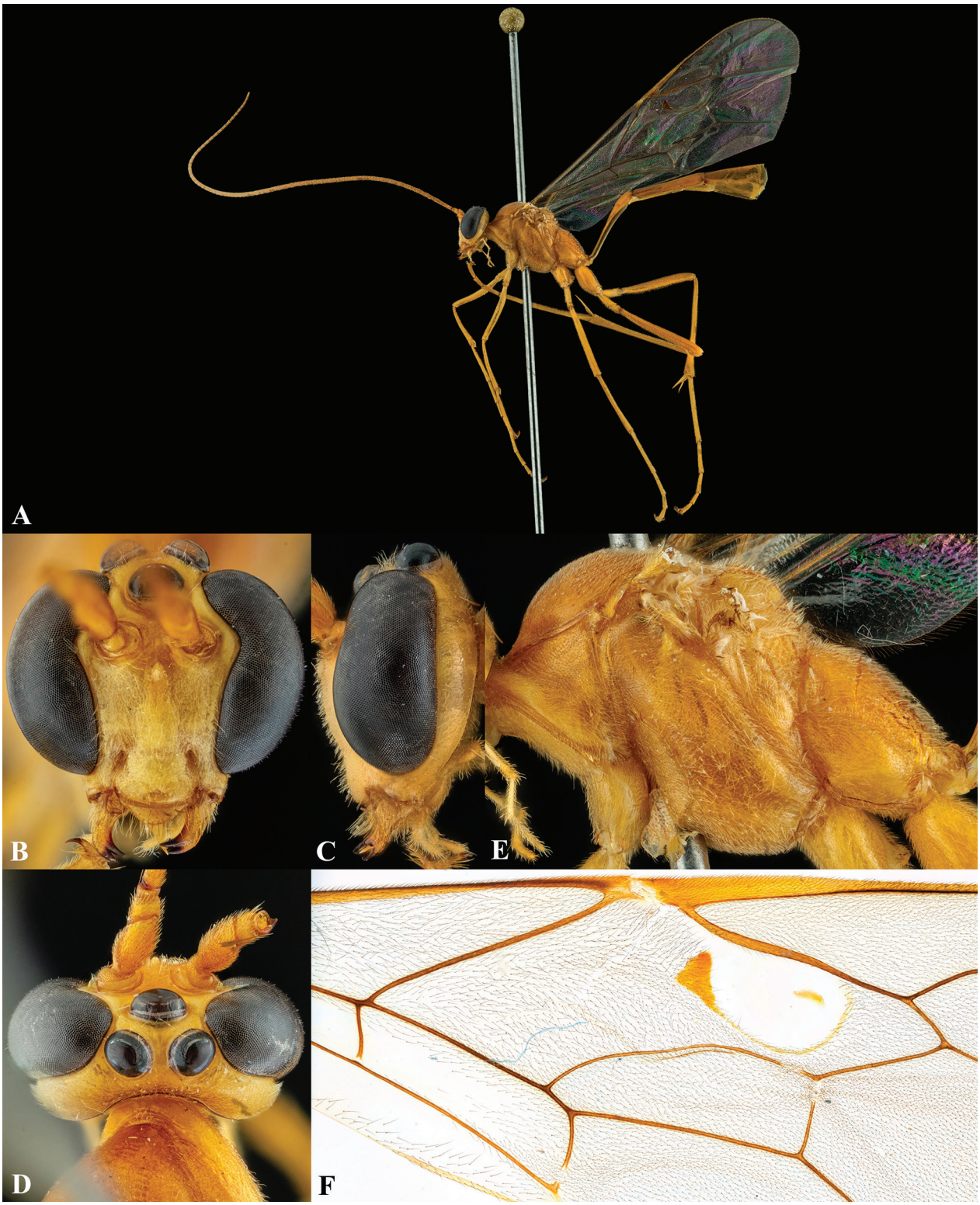

Figure 29. *Enicospilus* sp. 1, unsexed, ♀. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

Enicospilus erythrocerus species-group

Fig. 31

Material examined. 8♀♀19♂♂: Nepal.

1♀1♂, Godaveri (1,550–1,700 m), Nepal, VI (1♂), IX (1♀).1983, M.G. Allen leg. (LT); 1♂, Chautasa (6,000′), Nepal, 24.IX.1983, M.G. Allen leg. (Fig. 31A, B); 1♀, Kakani (2,070 m), Nepal, VII.1983, M.G. Allen leg. (LT); 1♀, secondary vegetation (1,500 m), Kathmandu, Nepal, 10.VI.1984, M.G. Allen leg. (LT); 1♂, Godaveri (1,550–1,700 m), Nepal, 5.VIII.1984, M.G. Allen leg. (LT) (Fig. 31C, D); 1♀, Kakani

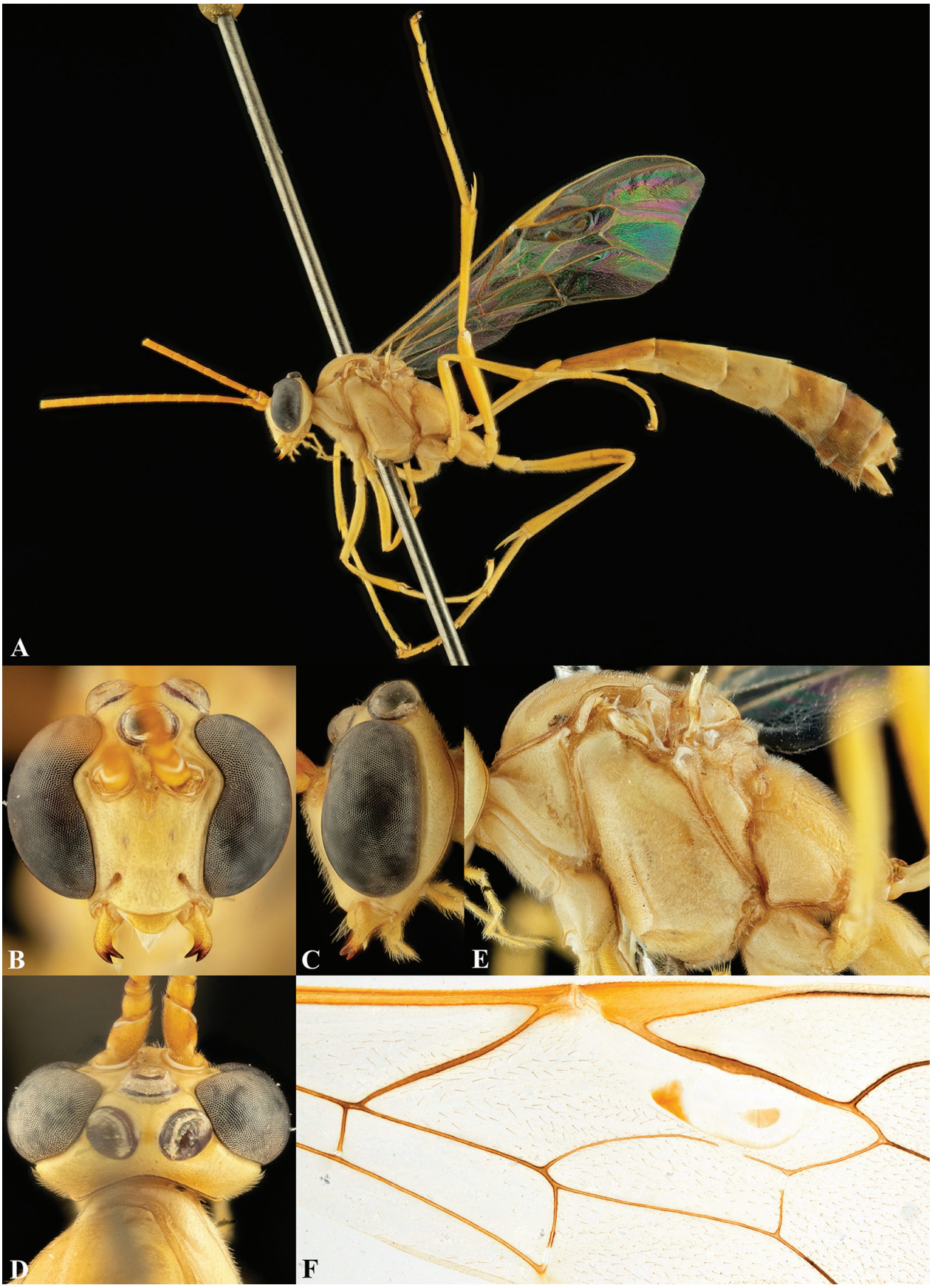

Figure 30. *Enicospilus* sp. 2, ♂. **A.** Habitus; **B.** Head, frontal view; **C.** Head, lateral view; **D.** Head, dorsal view; **E.** Mesosoma, lateral view; **F.** Central part of fore wing.

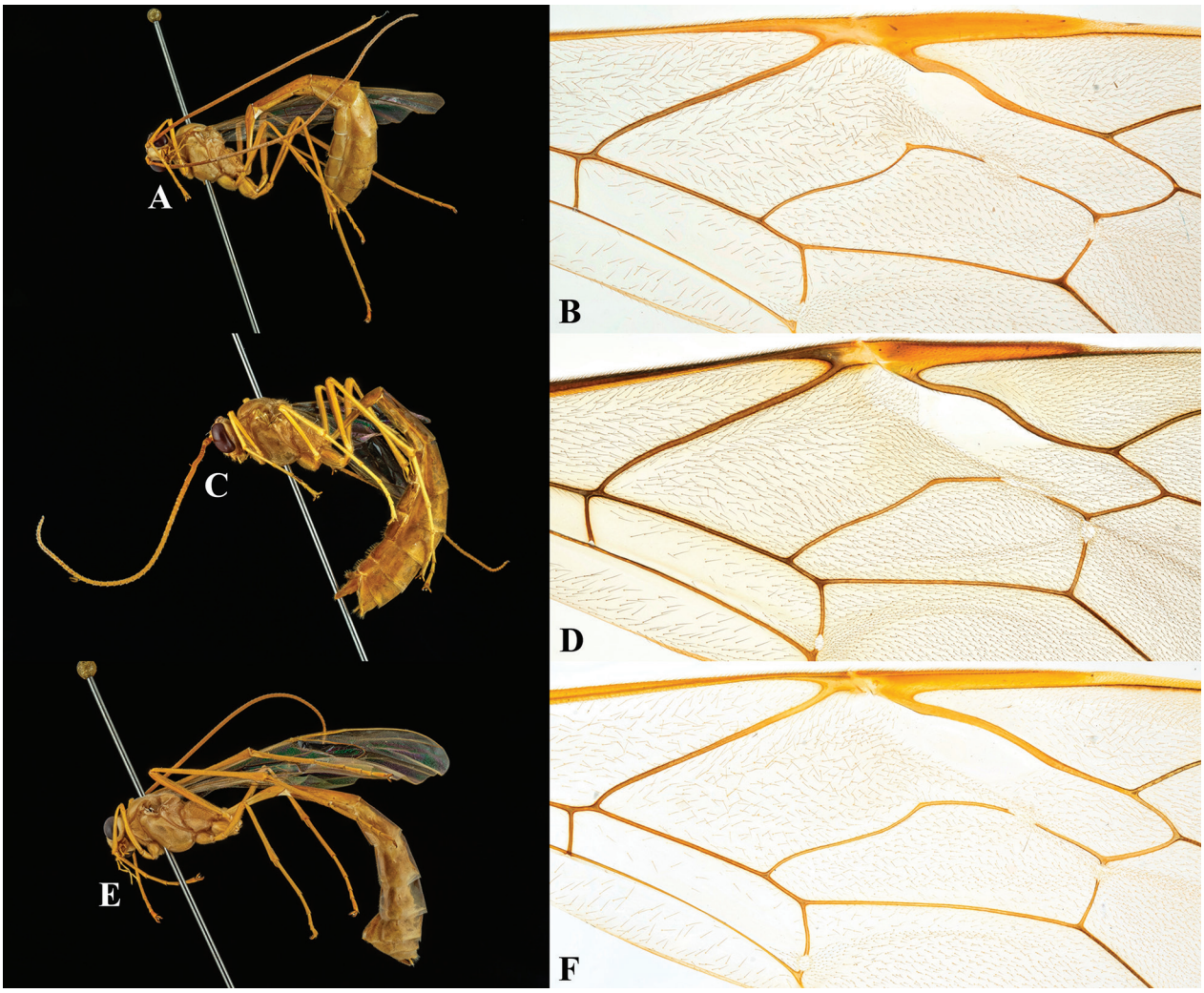

Figure 31. Nepalese specimens of the *Enicospilus erythrocerus* species-group spp. **A-B.** ♂ from Chautasa: **A.** habitus, **B.** central part of fore wing; **C-D.** ♂ from Godaveri: **C.** habitus, **D.** central part of fore wing; **E-F.** ♀ from Kathmandu: **E.** habitus, **F.** central part of fore wing.

(2,070 m), Nepal, VII.1983, M.G. Allen leg. (LT); 3♀♀15♂♂, Kathmandu (1,300 m), Nepal, X (3♂♂), XI (3♀♀12♂♂).1982, M.G. Allen leg. (LT) (Fig. 31E, F, 1♀); 1♀, Kakani (2,070 m), Nepal, VII.1983, M.G. Allen leg. (LT); 1♂, Pokhara (950 m), Nepal, M.G. Allen leg. (LT) (all NHMUK).

Comments. The *E. erythrocerus* species-group is moderately large and one of the most taxonomically confusing groups within *Enicospilus*. It consists of rather large wasps with the fore wing fenestra lacking any trace of sclerites, SDI more than 1.2, lateral longitudinal carinae of the scutellum almost always reaching the posterior end, moderately sized fore wing fenestra, etc. In this study, I examined 27 Nepalese specimens of this species-group and recognised at least three morphospecies (Fig. 31). However, further research is needed to identify or describe them. Therefore, I tentatively treat all specimens of the *E. erythrocerus* species-group as species inquirenda.

Discussion

Many species of Nepalese *Enicospilus* were recognised from middle elevations, and the median value of elevation for 83% of Nepalese *Enicospilus* fauna is between 950–2,070 m (Fig. 32). These species are generally widely distributed in the mountainous areas of the (sub)tropical Oriental region and, in some species, such as *E. lineolatus* and *E. yonezawanus*, also in the Eastern Palaearctic region. On the other hand, three species (i.e. *E. capensis*, *E. kanshirensis*, and *E. pudibundae*) have been collected only at lower elevations, from 200–330 m (Fig. 32). These species are also widely distributed in the Oriental region, as with the middle-elevation species, and in particular *E. capensis* is a very widespread Old World species known from the Afrotropical, Australasian, Oceanic, and Oriental regions (Gauld and Mitchell 1981). However, *E. zebrus* has been collected only at higher elevations (Fig. 32), above 2,500 m, suggesting that this species is restricted

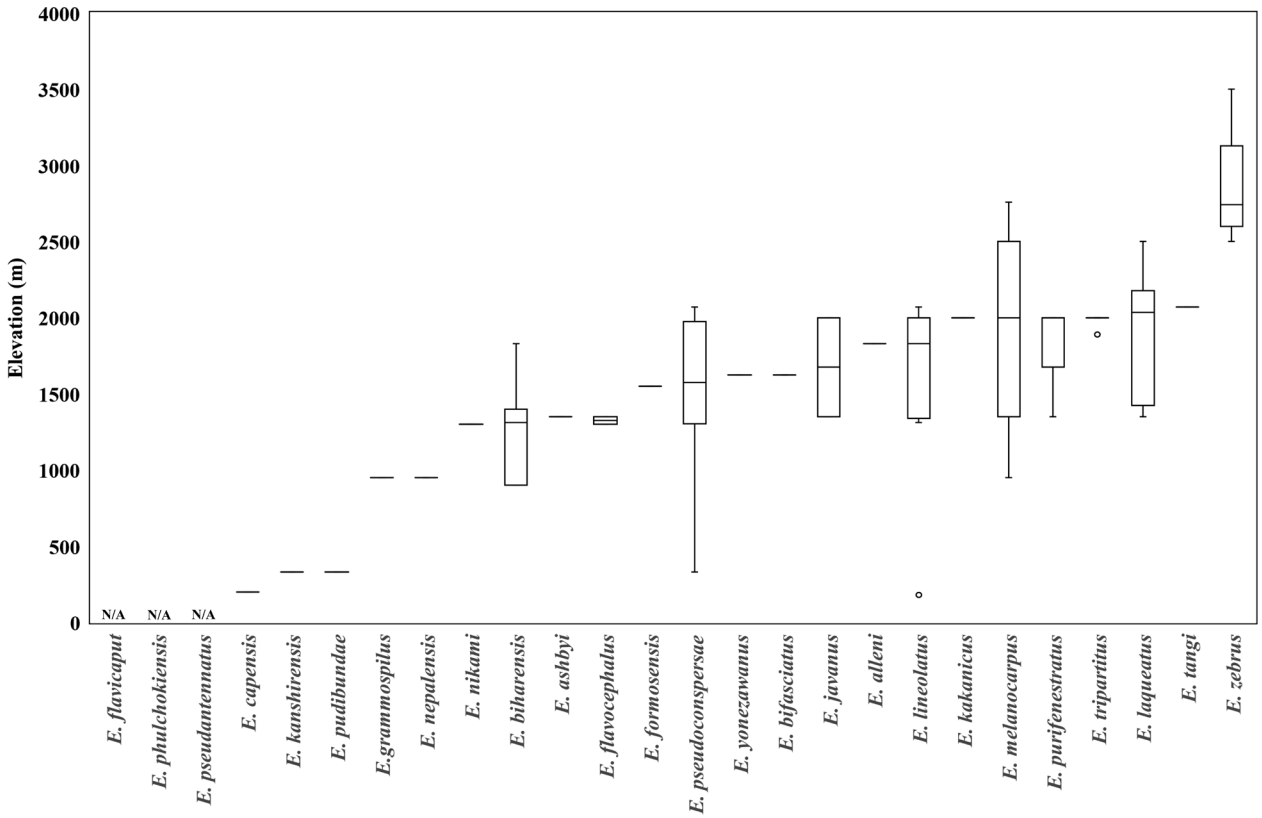

Figure 32. Elevational distribution pattern of the *Enicospilus* in Nepal.

to the northern high-elevational margin of the continental Oriental region and endemic to the southern slope and eastern highlands of the Himalayas. This is a preliminary study of the Nepalese fauna of *Enicospilus*, as well as of Ophioninae; the sample size is small and the sampling bias of the materials used in the present study is not known, but trends of elevational distribution patterns are indicated. These elevational and distribution patterns of Nepalese *Enicospilus* species are fairly consistent with those proposed by Gauld and Mitchell (1981) and Gauld (1985a).

The Nepalese fauna of *Enicospilus* has trebled through this study, even though it is a preliminary work. Based on species represented by more than two specimens, no endemicity of the Nepalese fauna is recognised, with most species common to other Oriental countries. Moreover, several common Oriental *Enicospilus* species, such as *E. abdominalis* (Szépligeti, 1906), *E. aciculatus* (Taschenberg, 1875), *E. concentralis* Cushman, 1937, *E. dasychirae* Cameron, 1905, *E. dolosus* (Tosquinet, 1896), *E. exaggeratus* Chiu, 1954, *E. nigropectus* Cameron, 1905, *E. riukiuensis* (Matsumura & Uchida, 1926), *E. shinkanus* (Uchida, 1928) and *E. signativentris* (Tosquinet, 1903), have not been found in Nepal yet, but they may be present in the country. Considering the *Enicospilus* fauna of adjacent areas of Nepal and that of the Old World, at least 60 species are potentially found in Nepal. Therefore, additional studies and greater sampling efforts are needed to reveal the true *Enicospilus* diversity in Nepal.

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