A Study of Chinese *Elachertus* Spinola (Hymenoptera: Eulophidae)

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Chao-Dong Zhu and Da-Wei Huang (2001) A study of Chinese *Elachertus* Spinola (Hymenoptera: Eulophidae). *Zoological Studies* 40(4): 317-354. This paper treats Chinese species of *Elachertus* Spinola. Twenty-three valid species are recognized, and a key to species groups and another to species are provided. Nine species are newly recorded from China: *E. auripes* (Girault), *E. charondas* (Walker), *E. fenestratus* Nees, *E. inunctus* Nees, *E. isadas* Walker, *E. lateralis* (Spinola), *E. pulcher* (Erdös), *E. sobrinus* (Girault and Dodd), and *E. simithorax* (Girault). Fourteen new species are described and compared with closely related species: *E. flavimaculatus*, *E. longiramulus*, *E. ater*, *E. petiolifuniculus*, *E. divergens*, *E. flavifuniculus*, *E. scutellaris*, *E. obliquus*, *E. oligarum*, *E. parallellus*, *E. sulcatus*, *E. pilifer*, *E. ramosus*, and *E. varicapitulum*. Among Chinese species, ten can be placed in 2 of Bouček’s (1988) species groups, while another 13 are classified into 5 newly proposed groups. New hosts and distributional records are provided. http://www.sinica.edu.tw/zool/zoolstud/40.4/317.pdf

**Key words:** Hymenoptera, Eulophidae, *Elachertus*, New species, New records.

*Elachertus* is a large and widespread genus of the Eulophinae, with over 101 species worldwide (Noyes 1998). The genus was divided into several species groups (Bouček 1988), but to date there are no revisions or keys to species of *Elachertus* other than those for Britain (Askev 1968) and the Nearctic region (Schauff 1985). In China, Liao et al. (1987) recorded *E. nigritulus* (Zetterstedt) from Hebei. We have checked all specimens they identified, and found that those specimens all belong to *Hyssopus* (Girault). Chen and Luo (1986 1987) studied the biology of one species reared from *Phyllocnistis citrella* Stainton. They reported it as *Elachertus* sp. Dr. J. Noyes considers this species to be a member of the subfamily Tetrastichinae of the Eulophidae (NQ Lin, pers. comm.). The senior author obtained some samples of this species and confirmed their finding. Thus, no true *Elachertus* has been reported from China before this paper. Investigations of Chinese Eulophinae revealed new records and new species of *Elachertus*. At present, twenty-three valid species are recognized (Table 1). Among them, fourteen new species are described and compared to closely related species, while 9 are newly recorded from China. Among these species, ten can be placed

**Table 1. Checklist of Chinese *Elachertus***

<table>
<thead>
<tr>
<th>Species</th>
<th>New species</th>
<th>New record</th>
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<tbody>
<tr>
<td><em>E. flavimaculatus</em></td>
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<td><em>E. longiramulus</em></td>
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<td><em>E. ater</em></td>
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<td><em>E. auripes</em></td>
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<td><em>E. petiolifuniculus</em></td>
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<td><em>E. charondas</em></td>
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<td><em>E. divergens</em></td>
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<td><em>E. fenestratus</em></td>
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<td><em>E. flavifuniculus</em></td>
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<td><em>E. scutellaris</em></td>
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<td><em>E. inunctus</em></td>
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<td><em>E. isadas</em></td>
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<td><em>E. lateralis</em></td>
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<td><em>E. obliquus</em></td>
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<td><em>E. oligarum</em></td>
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<td><em>E. parallellus</em></td>
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<td><em>E. sulcatus</em></td>
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<td><em>E. pilifer</em></td>
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<td><em>E. pulcher</em></td>
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<td><em>E. ramosus</em></td>
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<td><em>E. simithorax</em></td>
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<td><em>E. sobrinus</em></td>
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<td></td>
</tr>
<tr>
<td><em>E. varicapitulum</em></td>
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</tr>
</tbody>
</table>

Total: 23

14

9

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in 2 of Bouček’s (1988) species groups, while another 13 are classified into 5 newly proposed species groups (Table 2).

The purposes of this paper are to: 1) record and review Chinese species of *Elachertus* Spinola; 2) provide a key to Chinese species; 3) describe new species found in China; 4) provide new host and distributional records for some species.

Morphological terminology follows that of Gibson (1997). Absolute measurements, in millimeters (mm), are used for body and forewing length. For all other dimensions, relative measurements are used. Unless indicated otherwise, all examined specimens are deposited at the Institute of Zoology, Chinese Academy of Sciences, Beijing (IOZ). Other examined specimens are deposited at the following collections: the Natural History Museum, London (BMNH), and the Insect Collection, Taiwan Agricultural Research Institute, Taipei (TARI). Some external specimens identified together with Chinese ones are also deposited at IOZ, for they were gifts from Korean students, or collected by the junior author in the USA.

**Genus Elachertus** Spinola


*Elachestus* Nees, 1834: 135. Emendation for *Elachertus*.

*Elachistus* Förster, 1856: 73. Emendation for *Elachertus*.


Sympiesomorphelleus Girault, 1913a: 75. Type species *Sympiesomorphelleus sutteni* Girault, 1913a. Synonymized by Bouček 1988: 639.


*Proardalus* Girault and Dodd, in Girault, 1915: 288. Type species *Proardalus nigricaput* Girault and Dodd, 1915. Synonymized by Bouček 1988: 639.

*Eparaldus* Girault, 1917: 5. Type species *Eparaldus cidariae* Ashmead, 1898. Synonymized by Peck 1951: 455.


**Diagnosis:** Mandibles with distinct teeth, but without dense setae on inner margin (Figs. 1, 19, 59, 86, 110, cf. Figs. 2-3). Funicle mostly 4 segmented in both sexes (Figs. 10, 43, 52, 62, 67, 95), rarely 5 segmented in males of some species, more rarely 5 segmented in both sexes (Fig. 153). Male funicles mostly symmetrical and not branched, rarely asymmetric. Pronotum not very elongate or rounded.

### Table 2. Species Groups of Chinese Elachertus

<table>
<thead>
<tr>
<th>Species</th>
<th>Bouček’s species group</th>
<th>Newly defined or re-defined species group</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. divergens</td>
<td>australis</td>
<td>australis</td>
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<tr>
<td>E. flavifuniculus</td>
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<td>australis</td>
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<td>E. longiramulus</td>
<td>australis</td>
<td>australis</td>
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<tr>
<td>E. oligiramus</td>
<td>australis</td>
<td>australis</td>
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<tr>
<td>E. petiolifuniculus</td>
<td>australis</td>
<td>australis</td>
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<tr>
<td>E. ramosus</td>
<td>australis</td>
<td>australis</td>
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<tr>
<td>E. sobrinus</td>
<td>australis</td>
<td>australis</td>
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<td>E. charondas</td>
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<td>charondas</td>
</tr>
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<td>E. pilifer</td>
<td>N/A</td>
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<td>E. pulcher</td>
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<td>charondas</td>
</tr>
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<td>E. acutellari</td>
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<td>charondas</td>
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<tr>
<td>E. varicapitulum</td>
<td>N/A</td>
<td>charondas</td>
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<td>E. flavimaculatus</td>
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<td>flavimaculatus</td>
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<td>E. inunctus</td>
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<td>E. isadas</td>
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<td>E. fenestratus</td>
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<td>E. simithorax</td>
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<td>E. ater</td>
<td>nigritorax</td>
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<td>E. auripes</td>
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<tr>
<td>E. obliquus</td>
<td>nigritorax</td>
<td>nigritorax</td>
</tr>
</tbody>
</table>

Total: 23  
2  
7
anteriorly, less than mid lobe of mesoscutum medi-
ally (Figs. 4, 13, 15, 21, 25, 28, 34, see Fig. 5). The
propleura in contact with each other at middle line to
posterior end (Figs. 6, 36, 55, 66, 74, 82). Notaulus
complete to anterior margin of axilla or scutellum
(Figs. 4, 13, 14, 15, 21, 25, 28, 34, 96). Mid lobe of
mesoscutum with at least 6 (3 pairs of) setae (Figs.
13, 14, 136) or scattered setae all over disc (Figs.
4, 15, 25, 28, 34, 96, 121, 127, 148, 151, 158). Scutel-
num usually with longitudinal sublateral grooves,
with 2 pairs of setae (Figs. 4, 13, 14, 15, 21, 25, 34); ad-
tional weaker setae sometimes present on axilla
(Figs. 148, 158) or regions just laterad to 2 pairs of
strong setae. Propodeum without plicae or costulae,
delimited laterally by broad grooves (Figs. 7, 20, 72,
90, 97, 113). Ventral part of propodeum distinctly
separated from metepisternum by transverse carina
(Figs. 8, 37, 46, 56, 75, 83, 105, 115). Metepister-
num more or less divided by longitudinal median ca-
rina (Fig. 8, cf. Fig. 11). Marginal vein smoothly con-
tinuous with submarginal vein via parastigma.
Postmarginal vein more than 1.5 times longer than
stigmal vein (Figs. 119, 123, 129, 131, 135, 137, 139,
141, 143, 149, 153, 155, 161). Hind tibia with spur at
most 2/3 length of 1st tarsal segment, with distinct
pegs at apex (Figs. 7, 9, 76, 91).

Bouček (1988) placed Elachertus in the tribe
Elachertini, which includes other genera such as
Euplectophilinus Girault, Stenomesius Westwood,
Hyssopus Girault, Alothomorphella Girault, Dlg-
lyphomorphomyia Girault, Deutereulophus Schulz,
and several other Australian or New Zealand genera.
He stated that Elachertini might eventually be incor-
porated under Eulophini. Gauthier et al. (2000)
found no molecular data or convincing morphological
support to differentiate Bouček’s Eulophini, Elachert-
ini, or Euplectrini. They proposed Eulophini to
include all 3 previous tribes. But the members of
Elachertini and Euplectrini in China generally have
more shared characters (cf. Zhu and Huang 2001a):
1) funicle mostly 4 segmented in both sexes (Fig.
10), rarely 5 segmented in males of some species,
more rarely 5 segmented in both sexes, 2) pronotum
not very elongate or rounded anteriorly (Figs. 4, 5), 3)
propleura in contact with each other at middle line to
posterior end (Fig. 6), 4) mid lobe of mesoscutum
with at least 6 (3 pairs of) setae, 5) scutellum usually
with 2 pairs of setae, 6) propodeum without plicae or
costulae, delimited laterally by broad grooves (Fig.
7), 7) ventral part of propodeum distinctly separated
from metepisternum by transverse carina (Fig. 8),
and 8) metepisternum more or less divided by longi-
tudinal median carina (except Hyssopus Girault).
With the above shared characters, both tribes seem
to form a very distinct group to be differentiated from
both Eulophini and Ophelini (proposed as Cirro-
spilini by Gauthier et al. 2000). With the following
shared characters, members of the Elachertini in
China can be separated from those of Euplectrini: 1) 
distinct teeth on inner margin of mandibles (Fig. 1),
and 2) hind tibia without enlarged spur(s) longer
than the 1st segment of hind tarsi, with distinct pegs,
but no long hairs on apex (Fig. 9). Euplectrini is also
distinct in having the peculiar biological trait of spin-
ning around dead caterpillars. Peck et al. placed
genera related to Elachertus and those related to
Cirrospilus under the name Elachertini. But genera
related to Cirrospilus seem to form a natural group
distinct from Elachertini (Bouček 1988, Gauthier et

References indicate closer relationships be-
tween Elachertus and Hyssopus Girault (Schauff
1985, Bouček 1988, Schauf et al. 1997). Members of
Hyssopus had been provisionally treated in
Elachertus by European authors, while American re-
searchers regarded it as a distinct genus. Bouček
and Graham (1978) accorded it generic status. Both
genera share the following characters: funicle 4 or 5
segmented (Fig. 10); scutellum with distinct sublat-
eral grooves; and notaulus complete and groove
shaped. But the latter has a large and semi-globose
pronotum, and the mid lobe of the mesoscutum has
only 2 pairs of setae (Fig. 5). In ventral view, mem-
bers of Hyssopus have no longitudinal carinae on the
propodeum (Fig. 11). We consider the absence of
such carina on the ventral part of the propodeum as
one distinct apomorphic character of Hyssopus,
by which character this genus can be distinguished from
all other examined Chinese genera in Elachertini.

Bouček (1988) mentioned in his key to the gen-
era of Eulophidiae that genera related to Elachertus
have no sharp carina on the pronotum anteriorly ex-
cept in Euplectophilinus Girault, a character that
distinguishes Elachertus from Euplectophilinus.
Some species closer to E. australis (Girault) in this
paper have distinct transverse carina anteriorly on the
pronotum, but these species are also distinct in
having the sublateral grooves on scutellum slightly or
very much incurved to nearly contacting each other
posteriorly. They can be distinguished from mem-
bers of Euplectophilinus by having axilla not reach-
ing inner angles, petiole mostly less than 1.2 times
length of width, and having a granulate surface; while
the latter species have axilla reaching each other at
inner angles, the petiole more than 3 times length of
its width, and having longitudinal carinae on the sur-
face (Fig. 12).

Bouček (1988) relied much on petiole length in
dividing *Elachertus* into several species groups. But the length of the petiole greatly varies, ranging from hidden to a length more than 4 times the width among members of this genus found in China. Among examined specimens of *E. simithorax*, we found the length of the petiole varied between 1.8 and 3.0 times the length of the width. Evaluation using our data revealed 5 species groups defined by the characters in the following key.

1. Mid lobe of mesoscutum protruding backwards markedly; notaulus divergent posteriorly, thus posterior margin of mid lobe of mesoscutum with distinct angle at junction with notaulus (Figs. 13, 14); if above states not distinct, then mid lobe of mesoscutum with no more than 8 hairs ............ 2

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**Figs. 1-3.** Different types of inner margin of mandibles in different genera: 1. *Elachertus fenestratus* Nees; 2. *Euplectromorpha* sp.; 3. *Euplectrophelinus* sp. **Figs. 4-5.** Dorsal view of thorax, showing pronotum in different genera: 4. *Elachertus lateralis* (Spinola); 5. *Hyssopus* sp. **Fig. 6.** *Elachertus sulcatus* sp. nov., ventral view of thorax. **Fig. 7.** *Elachertus lateralis* (Spinola), dorsal view of propodeum. **Fig. 8.** *Elachertus sulcatus* sp. nov., ventral view of propodeum. **Fig. 9.** *Elachertus ramosus* sp. nov., apex of hind tibia. **Fig. 10.** *Elachertus isadas* (Walker), antenna. **Fig. 11.** *Hyssopus* sp., ventral view of propodeum. **Fig. 12.** *Euplectrophelinus* sp., dorsal view of petiole.
Mid lobe of mesocutum not or almost not protruding backwards (Fig. 4); notaulus, at most, slightly divergent posteriorly, thus posterior margin of mid lobe of mesocutum without distinct angle at junction with notaulus (Fig. 4); if above state not clear, then mid lobe of mesocutum with at least 12 hairs (Fig. 15) ........................................ 3
2. Scutellum distinctly reticulate (Fig. 13) .................................. charondas group
   – Scutellum smooth and shiny (Fig. 14) ............................ inunatus group
3. Head and thorax at least with some yellow patches
   .......................................................... flavimaculatus group
   – Head and thorax completely metallic green or dark ........ 4
4. Scutellum smooth and shiny (Fig. 15) ............................... 5
   – Scutellum distinctly reticulate (Figs. 4, 7) ............................. 6
5. Sublateral grooves on scutellum smoothly united; mid lobe of mesoscutum slightly protruding backwards; axilla slightly protruding beyond anterior margin of scutellum (Fig. 15); body bright metallic green ............................... isadus group
   – Sublateral grooves on scutellum not united posteriorly or reaching each other at mid point; mid lobe of mesoscutum never protruding backwards; axilla not protruding beyond anterior margin of scutellum; body black or dark green, never bright .......................................................... nigritorax group
6. Epistomal suture present; clypeus entire (Fig. 1); anellus II bare (Figs. 16, 17); sublateral grooves on scutellum smoothly united posteriorly, delimiting a narrow band of scutellum at the posterior end (Figs. 4, 7); propodeal median carina simple, lacking any rami (Figs. 4, 7, 9, 25, 96, 97, 113) .......................... .......................................................... lateralis group
   – Epistomal suture absent; clypeus bilobed (Fig. 19); anellus II pilose (Fig. 18); scutellar sublateral grooves slightly or very much incurved to nearly reach the each other posteriorly, but never united posteriorly; propodeal median carina nearly always branched, with distinct rami (Figs. 121, 127, 160) .......................................................... australis group

Bouček (1988), Peck et al. (1964), and Schaub et al. (1997) provided keys to genera of Eulophidae. A key to species groups of Elachertus was presented by Bouček (1988). Keys to species of Elachertus are respectively provided by Askey (1968) for the fauna of Britain, Schaff (1985) for fauna of the Nearctic region, and Zerova et al. (1992) for the fauna of southwestern region of the previous USSR. In China, this paper is the first to report on the presence of this genus.

Biology: Probably all are primary parasitoids of various lepidopterous larvae belonging to several different families (Hinckley 1963, Sengupta 1967, Becker 1973, Herting 1975, Ahmad 1976, Van Dam and Wilde 1977, Smith and Robinson 1983, Madrigal et al. 1984, Lee et al. 1987, Campos and Cure 1993). Members of this genus also attack Coreidae in Hemiptera (Herting 1971), Anthomyiidae (Aderkas and Peterson 1987) and Tephritidae in Diptera (Herting 1978), and Braconidae in Hymenoptera (Thomson 1955). The larvae of wasps are frequently seen clustering on the surface of leaves or on the body of their hosts. Several of these hosts are of economic importance.

The following hosts have been newly recorded: E. flavimaculatus from Coccus sp. (Homoptera), E. charondas from Athyma selenophora laeta (Lepidoptera: nymphalidae), E. isadus from Rhyacia logana (Lepidoptera: Tortricidae), and E. lateralis from larvae of Notodontidae, Olethreutes variegana (Olethreutidae), and Coleophora sp. (Coleophoridae).

Distribution: Worldwide.

Key to species (♂ and ♀)∗

1. Mid lobe of mesoscutum protruding backwards markedly; notaulus divergent posteriorly, thus posterior margin of mid lobe of mesoscutum with distinct angle at junction with notaulus; axilla protruding beyond anterior margin of scutellum; if above states not distinct, then mid lobe of mesoscutum with no more than 8 hairs (Figs. 13, 14, 151) .......................... .......................................................... nigritorax group
   – Mid lobe of mesoscutum not or almost not protruding backwards; notaulus, at most, slightly divergent posteriorly, thus posterior margin of mid lobe of mesoscutum without distinct angle at junction with notaulus; anterior margin of scutellum and axilla nearly in a straight line (Figs. 4, 21, 25, 28, 34, 96, 118, 91, 127, 136, 148); if above state not clear, then mid lobe of mesoscutum with at least 12 hairs (Fig. 15) .......................... 2
2. Scutellum smooth (Fig. 14) or thorax with yellow patches and very vaguely reticulate on scutellum (Fig. 136) .......................... 3
   – Scutellum distinctly reticulate (Fig. 13), and thorax never with yellow patches ........................................ 6
3. Mid lobe of mesoscutum with only 3 pairs of strong setae (Fig. 14) .......................................................... 4
   – Mid lobe of mesoscutum with additional setae scattered on disc in addition to some pairs of stronger setae (Fig. 158) .......................... .......................................................... 5
4. Scutellum distinctly reticulate; thorax yellow with dark scutellum and median part of pronotum (Fig. 138); scape completely yellow; forewing fuscous at stigma (Fig. 137) .......................... .......................................................... E. s扶elarisi sp. nov.
   – Scutellum smooth (Fig. 14); body completely dark; scape at least partly brownish (Fig. 138); forewing completely hyaline (Fig. 139) ...................... E. inunatus Nees
5. Axilla with 1 to several setae (Fig. 158); head completely dark; thorax with at least pronotum, anterior 1/2 of mid lobe of mesoscutum, and propodeum black .... E. pilifer sp. nov.
   – Axilla bare; head and thorax completely yellow or with small patches on occiput and thorax (which patches may be metallic) .......................... 6
6. Sublateral grooves on scutellum united posteriorly (Fig. 13); hind tibia completely yellow, or mostly brownish, but without a dark brown apex .......................... E. charondas (Walker)
   – Sublateral grooves on scutellum parallel posteriorly (Fig. 151); hind tibia yellow except dark brown at apex (Fig. 150) .......................... 7
7. Funicle 5 segmented (Fig. 152); head completely black; hind femora black with yellow apex (Fig. 151) .......................... 8
   – Funicle 4 segmented (Fig. 153); head golden-yellow to black; hind femora black with yellow apex (Fig. 151) .......................... 9

∗Males of most Chinese species in Elachertus are similar to females, except those in the australis group have protuberances on male funicular segments. Therefore, we treat both sexes in the same key to species.
8. Scutellum smooth (Figs. 15, 20, 21, 34, 72, 90), or thorax with yellow patches and scutellum very vaguely reticulate (Fig. 118) ................................................................. 9

9. Head and thorax mostly brown with yellow patches located on most parts of mid lobe of mesoscutum, scutellum, and propodeum (Figs. 118, 119); male only .................................................. 12

E. flavimaculatus sp. nov.
10. Sublateral grooves on scutellum smoothly united posteriorly (Fig. 72); mid lobe of mesoscutum slightly protruding backwards; axilla slightly protruding beyond anterior margin of scutellum (Fig. 15); dorsum rounded posteriorly (Fig. 72); epistomal sulcus absent, and lower face without distinct transverse sculpture (Figs. 67, 68); setae evenly scattered on posterior part of head (Fig. 69); body bright metallic green .............................................. *E. isaias* (Walker)

**Note:** With the slightly protruding axilla, this species may sometimes be misidentified as *E. pilosiscuta* Bouček, 1971. But this species is always bright green, while the latter one is black.

11. Body black; funicles yellow, about same length and width; 1st gastral tergite covering more than 2/3 length of gaster (Fig. 22); in dorsal view, gastral petiole with several (around 6) distinct, longitudinal, regular carinae on surface (Fig. 24); apex of hind tibia with distinct pegs, but 1st hind tarsomere without distinct pegs (Fig. 38); 2nd anellus pilosus (Fig. 33) .............................................................. *E. ater* sp. nov.

12. Sublateral grooves on scutellum smoothly united posteriorly; median carina on propodeum without rami (Figs. 4, 7, 25, 28, 96, 113) .............................................................. *E. obliquus* sp. nov. .......................... 13

13. Length of petiole more than 1.5 times width, completely parallel sided and sculptured other than on transverse striae (Fig. 26) .......................................................... *E. simithorax* (Girault)

14. Legs yellow, except sometimes hind coxae brown or with some metallic patches (Fig. 144) and flagellum yellow or yellowish brown (Fig. 142); gaster at most 1.2 times longer than wide (Fig. 84) .................................................. *E. lateralis* (Spinola)

15. Speculum large (Fig. 131); reticulation level with thoracic surface (Fig. 28); gaster dark with at least some pale parts, never metallic; dorsum smooth or very finely reticulate (Fig. 28); lower face with vague epistomal sulcus (Figs. 29, 49) .......................................................... *E. fenestratus* Nees

16. Mid lobe of mesoscutum with only paired setae on posterior 1/2; a few additional weaker setae on anterior 1/2, vaguely reticulate; notaulus groove shaped; pronotum semiglobular, nearly as long as mid lobe of mesoscutum; scutellum vaguely reticulate or partly smooth; rami of propodeal median carina not very distinct; all funicular segments wider than long; speculum large .................................................. *E. aures* (Girault)

17. Male funicle mostly with 4-5 asymmetrical segments; clypeal margin bilobed (Fig. 19); scutellum with additional weaker setae in addition to 2 pairs of strong ones just outside of sublateral grooves, or axilla with additional setae (Fig. 148) .............................................................. 18

18. Body bright metallic green; all coxae at least partly metallic green (Fig. 147); axilla with several distinct setae (Fig. 148); 1st gastral tergite of females bright metallic green, never collapsed, nearly 2/5 length of gaster; male funicle with 4 symmetrical segments; rami of propodeal median carina present only mediually ............................................. *E. oligrimus* sp. nov.

19. Pronotum without transverse anterior carina (body completely metallic green; legs completely yellow) .......................................................... *E. sobrinus* (Girault and Dodd)

20. Body completely reddish brown; antennae completely yellow, with F4 not readily apparent from clava (Fig. 134); sublateral grooves on scutellum slightly incurved posteriorly (Fig. 133) .......................................................... *E. flavifunicus* sp. nov.

21. Body completely dark metallic green; all legs yellow (Fig. 124); rami of propodeal median carina more distinct on anterior 1/2, last pair of which extending from mid point of carina to postero lateral corners of propodeum (Fig. 121) .................................................. *E. longiramulus* sp. nov.

22. Fore and mid femora brown with yellow apex, hind femur...
completely dark brown (Fig. 125); scape black, pedicel and flagellum completely dark brown (Fig. 126); scutellum very vaguely reticulate, nearly smooth; occipital carina complete to posterolateral corners of eyes; rami not distinct laterad to propodeal median carina; sublateral grooves on scutellum sub-parallel on posterior 2/3.

- All femora at most brownish on dorsal margin; scape yellow, pedicel and flagellum pale brown (Fig. 128); scutellum distinctly reticulate; occipital carina not complete to posterolateral corners of eyes; several rami distinct laterad to propodeal

Figs. 25-26. Elachertus simithorax (Girault): 25. dorsal view of thorax; 26. dorsal view of gastral petiole. Fig. 27. Elachertus lateralis (Spinola), lateral view of gaster and petiole. Fig. 28. Elachertus fenestratus Nees, dorsal view of thorax. Figs. 29-30. Frontal view of lower face: 29. Elachertus fenestratus Nees; 30. Elachertus sulcatus sp. nov. Figs. 31-36. Elachertus ater sp. nov.: 31. frontal view of head; 32. posterior view of head (mouth parts removed); 33. anelli; 34. dorsal view of thorax; 35. lateral view of thorax; 36. ventral view of thorax.
median carina; sublateral grooves on scutellum gradually divergent (Fig. 127) ................. *E. divergens* sp. nov.

**SYSTEMATIC TREATMENT OF SPECIES**

**The australis Species Group**

*Diagnosis:* Sublateral grooves on scutellum slightly or much incurved and nearly reaching each other posteriorly, but never united posteriorly; propodeal median carina nearly always branched, with distinct rami (Figs. 121, 127, 160). Males of most species except those of *Elachertus petiolifuniculus* sp. nov., have asymmetric protuberances on funicular segments.

The following characters also help to distinguish this species group from others in *Elachertus*: anellus II pilose (Fig. 18); epistomal suture absent; clypeus bilobed (Fig. 19); scutellum distinctly reticulate; head and thorax completely metallic green or dark; mid lobe of mesoscutum not or almost not protruding backwards (Fig. 4); notaulus at most slightly divergent posteriorly, thus posterior margin of mid lobe of mesoscutum without distinct angle at junction with notaulus (Fig. 4); if above state is not clear, then mid lobe of mesoscutum with at least 12 hairs (Fig. 15).

*Examined species:* *E. longiramus* sp. nov., *E. petiolifuniculus* sp. nov., *E. divergens* sp. nov., *E. flavifuniculus* sp. nov., *E. oligiramus* sp. nov., *E. ramosus* sp. nov., and *E. sobrinus* (Girault and Dodd).

***Elachertus divergens*** sp. nov.

(Figs. 127, 128, 129)

*Diagnosis:* This species differs from *E. sobrinus* in having distinct transverse anterior carina (Fig. 127) and color pattern of legs. Sublateral grooves on the scutellum gradually divergent (Fig. 127). Several rami distinctly lateral to propodeal median carina, with no rami extending from the mid point of carina to posterolateral corners of propodeum (Fig. 127).

The following characters also help to distinguish this species from other species in this group. Body completely black. Setae on thorax all yellowish brown, distinct. All femora at most brownish on dorsal margin; scape yellow, pedicel and flagellum pale brown. Scutellum distinctly reticulate. Scutellar parts outside of sublateral grooves with no additional setae other than 2 paired ones. Occipital carina not complete to posterolateral corners of eyes. Pronotum with distinct transverse anterior carina, collar nearly 1/2 length of mid lobe of mesoscutum.

*Female:* Body length 2.03 mm, forewing length 1.38 mm.


Pronotum with transverse carina, reticulate. Notaulus straight, converging posteriorly, ending at inner angles of axilla. Mid lobe of mesoscutum not protruding backwards markedly, without 1 pair of strong setae posteriorly, with weaker setae scattered all over dorsal surface including median part, with isodiamic, engraved reticulations. Axilla with anterior margin in line with scutoscutellar sutures, reticulate. Scutellum longer than mesoscutum, with isodiamic, engraved reticulations. Sub-lateral grooves on scutellum straight. Two pairs of setae present on scutellum. Dorsellum smooth, rectangular on posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Propodeal median carina with distinct rami all along carina, only 1 or 2 rami reaching posterolateral corners of propodeum. Callus with 13 setae. Plicate absent. Relative measurements: thorax length 22, thorax width 16, pronotum 5, mesoscutum 8, scutellum 10, dorsellum 2.5, propodeum 5.5.

Forewing hyaline. Setae on lower surface in 1 or 2 lines, appearing on distal 1/2; those on upper surface present on apex. Submarginal vein with 7 setae on dorsal surface. Cubital vein straight at base. Basal cell with several setae below submarginal vein. Speculum large, bare under parastigma and near basal vein. Hindwing subacute apically. Relative measurements: forewing length 45, forewing width 18, submarginal vein 34, costal cell 47, para- stigma 17, marginal vein 36, postmarginal vein 23, sigmal vein 14.

Gaster subtrunad, as broad as thorax. First tegrite of gaster covering 1/3 of or nearly all other segments. Apex of gaster acute. Tip of ovipositor sheath visible. Relative measurements: gaster...
length 30, gaster width 19.

Male: Unknown.

Material examined: Holotype: ♀, Hubei, Badong, 12 Aug. 1989, 1500 m, (DW Huang) (IOZ).
Paratypes: 2 ♀, Hubei, Xuan’en, 4 Aug. 1989, 1000 m (DW Huang) (IOZ); 1 ♀, Guangxi, Napo, Baidu, Xiaobaihe, Apr. 1998, 1100 m (CD Zhu) (IOZ).

Host range: Unknown.

Distribution: China: Hubei, Guangxi.

Etymology: The specific name is derived from the Latin divergens (= curved outwards) for its curving sublateral grooves on scutellum.

Figs. 37-39. Elachertus ater sp. nov.: 37. ventral view of propodeum; 38. apex of hind tibia; 39. gastral ventral view of petiole. Figs. 40-48. Elachertus charondas (Walker): 40. frontal view of head; 41. frontal view of lower face; 42. posterior view of head; 43. antenna; 44. anellii; 45. ventral view of propodeum; 46. apex of hind tibia; 47. dorsal view of gaster; 48. ventral view of gaster.
**Elachertus flavifuniculus sp. nov.**
(Figs. 133, 134, 135)

**Diagnosis:** Only last 1 or 2 rami of propodeal median carina reaching posterolateral corners of propodeum. Antennae completely yellow. Funicular segments all subquadrate. $F_4$ not readily apparent from clava (Fig. 134). Body completely reddish brown. Pronotum with distinct transverse anterior carina. Setae on thorax all yellowish brown, distinct. Scutellum distinctly reticulate all over. Sublateral grooves on scutellum slightly curved inward (Fig. 133).

The following characters also help to distinguish this species from others in this group. Scutellar parts outside of sublateral grooves with no additional setae other than 2 paired ones. Mid lobe of mesoscutum with setae scattered all over disc, not distinctly sculptured. Notaulus shallow, carinate at inner margin.

**Female:** Body length 1.23 mm, forewing length 1.08 mm.


Head wider than high. Vertex with isodiamic, engarved reticulations. Eyes with sparse setae. Occipital carina present, complete to posterolateral corners of eyes, not developed into translucent projection. Occiput reticulate. Postoccipital carina absent. Toruli placed at lower margin of eyes. Funicle 4 segmented, with $F_1$ subquadrate, other segments nearly transverse, but $F_4$ not readily distinguishable from clava. Clava 3 segmented. Scape slightly flattened. Flagellum usually about same width. Clava longer than each funicular segment. Relative measurements: head width 46, head length 18, head height 31, POL 12, OOL 5, length of eye 21, width of eye 9, interorbital distance 28, malar space 13, mouth opening 15, toruli to anterior ocellus, toruli to mouth margin 9, scape 15, pedicle 5, $F_1$ 6, $F_2$ 6, $F_3$ 5, $F_4$ 5, clava 14.

Pronotum with distinct transverse carina. Notaulus straight, converging, carinate at inner margins, and ending at inner tip of axilla. Mid lobe of mesoscutum not protruding backwards, with setae scattered all over surface, very vaguely sculptured, with isodiamic, engarved reticulations. Axilla with anterior margin in line with scutoscutellar sutures, reticulate. Scutellum slightly shorter than mesoscutum, with isodiamic, superficial reticulations. Sublateral grooves on scutellum slightly curved inwards posteriorly. Only 2 pairs of strong setae present on scutellum. Dorsellum smooth, rectangu-


Gaster subtordunt, as broad as thorax. First tergite smooth, nearly covering most other segments. Apex of gaster truncate. Tip of ovipositor sheath visible. Relative measurements: gaster length 11, gaster width 12.

**Male:** Unknown.

**Materials examined:** Holotype: $\varphi$, Hainan, 27 Apr. 1964, 100 m, ex. *Coccus* sp. (DX Liao) (IOZ). Paratype: 1 $\varphi$, Hainan, 27 Apr. 1964, 100 m, ex. *Coccus* sp. (DX Liao) (IOZ).

**Host range:** Newly recorded from *Coccus* sp. [Coccidae].

**Distribution:** China: Hainan.

**Etymology:** The specific name is derived from the Latin *flav-* (= yellow) and *funiculus* (= funicular segments) for its yellow funicular segments.

**Elachertus longiramulus sp. nov.**
(Figs. 121, 122, 123, 124)

**Diagnosis:** This species differs from members of this group in having only the last 1 or 2 rami of the propodeal median carina reaching the posterolateral corners of the propodeum (Fig. 121). Neither a thin lamina is present at the clypeal margin, nor additional weak hairs occur outside of sublateral grooves on scutellum. It is evidently closely related to *E. sobrinus*, but it differs in having a distinct transverse pronotal carina (Fig. 121). Sublateral grooves on scutellum curve inward posteriorly, with a distance between each other of around 1.5 times width of grooves (Fig. 121).

The following characters also help to distinguish this species from others in this group. Body completely dark metallic green; all legs yellow; antennae brown except scape yellow. Setae on thorax all yellowish brown, distinct. Scutellar parts outside of
sublateral grooves or axilla without additional weaker setae other than 2 pairs of strong setae. Mid lobe of mesoscutum with setae scattered all over disc; distinctly rugulose.

**Female:** Body length 2.31 mm, forewing length 1.69 mm.


**Figs. 49-56.** *Elachertus fenestratus* Nees: 49. frontal view of head; 50. posterior view of head; 51. posterior view of lower head; 52. funicule; 53. anelli; 54. lateral view of thorax; 55. ventral view of thorax; 56. ventral view of propodeum. **Figs. 57-60.** *Elachertus inunctus* Nees: 57. ventral view of gaster (♀); 58. frontal view of head; 59. frontal view of lower face; 60. posterior view of head.
tarsomere 4 brown.

Head wider than high. Vertex with isodiamic, engraved reticulations. Eyes with dense piles. Occiput reticulate, with carina complete to posterolateral corners of eyes; carina not developed into translucent projection. Postoccipital carina absent. Toruli placed at lower margin of eyes. Funicle 4 segmented. Clava 3 segmented. Scape cylindrical. Flagellum usually about same width. Clava longer than each funicular segment. Relative measurements: head width 63, head length 20, head height 50, POL 15, OOL 7, length of eye 37, width of eye 20, interorbital distance 35, malar space 12, mouth opening 11, toruli to anterior ocellus 30, toruli to mouth margin 7, scape 28, pedicel 9, F1 13, F2 10, F3 9, F4 8, clava 18.

Pronotum with distinct anterior transverse carina, reticulate. Notaulus converging posteriorly, meeting with axilla at latter’s inner corners. Mid lobe of mesoscutum not protruding backwards markedly, with scattered setae all over dorsal surface, rugulose. Axilla with anterior margin in line with scutocutellar sutures, reticulate. Scutellum as long as mesoscutum, with isodiamic, engraved vague reticulation, without additional setae except 2 pairs of stronger setae. Dorsellum smooth, rectangular on posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Callus with 24 setae. Median carina present, Propodeal median carina with distinct rami on anterior 1/2. Last ramus very long, starting from mid point of median carina and ending at posterolateral corner of propodeum. Plicae absent. Relative measurements: thorax length 26, thorax width 18, pronotum 8, mesoscutum 9, scutellum 10, dorsellum 2.5, propodeum 7.5.


Gaster dark, oblong-ovate, narrower than thorax. First tergite around 1/3 length of gaster, smooth. Apex of gaster acute. Longer cercal setae less than twice length of remaining ones. Tip of ovipositor sheath visible. Relative measurements: gaster length 37, gaster width 15.

**Male:** Unknown.

**Material examined:** Holotype: ♂, Jiangxi, Lu Mt., 3 May 1997 (CD Zhu) (IOZ).

**Host range:** Unknown.

**Distribution:** China: Jiangxi.

**Etymology:** The specific name is derived from the Latin long- and ramulus (= short branch) for it has 1 or 2 longer ramus/rami reaching the posterolateral corners of the propodeum.

**Elachertus oligiramus sp. nov.**

(Figs. 146, 147, 148, 149)

**Diagnosis:** This species is unique in this group in having several setae on the axilla. Sublateral grooves nearly reaching each other posteriorly, with distance between each other around width of groove. Ram of propodean median carina very distinct (Fig. 147).

Body bright metallic green. All coxae at least partly metallic green. First gastral tergite of females bright metallic green, never collapsed, nearly 2/5 length of gaster. Male funicle with 4 symmetrical segments. Scutellum with no additional weaker setae except 2 pairs of strong ones. Mid lobe of mesoscutum with setae scattered all over disc, distinctly rugulose.

**Female:** Body length 2.12 mm, forewing length 1.75 mm.

tion yellow. Legs yellow, with coxae metallic green.


Pronotum with transverse carina, reticulate. Notaulus straight, converging, ending at inner angles of axilla. Mid lobe of mesoscutum not protruding backwards markedly, with setae scattered all over dorsal surface, including median part, with isodiamic, engraved reticulations. Axilla with anterior margin in line with scutocutellar sutures, reticulate. Scutellum longer than mesoscutum, with isodiamic, engraved reticulation, with 2 pairs of setae. Sublateral grooves on scutellum nearly reaching...

Forewing hyaline. Setae on lower surface scattered all over surface, those on upper surface

Figs. 61-66. Elachertus inunctus Nees: 61. posterior view of lower head; 62. antenna; 63. anelli; 64. dorsal view of dorsellum and propodeum; 65. lateral view of thorax; 66. ventral view of thorax. Figs. 67-72. Elachertus isidas Walker: 67. frontal view of head; 68. frontal view of lower face; 69. posterior view of head; 70. posterior view of lower head; 71. anelli; 72. dorsal view of dorsellum and propodeum.


Host range: Unknown.

Distribution: China: Guangxi, Yunnan.

Etymology: The specific name is derived from the Greek olig- (= few) and ramus (= branch) for it has only 1 pair of rami medially on the propodeal median carina.

*Elachertus petiolifuniculus* sp. nov.

(Figs. 125, 126)

Diagnosis: The male greatly differs in having 4 symmetrical, petiolate funicular segments bearing long setae (Fig. 126). Rami not distinct laterad to propodeal median carina. Sublateral grooves on scutellum curved inward posteriorly, with a distance between each other around 1.5 width of grooves. Anterior margin of scutellum and axilla nearly on a line.

The following characters also help to distinguish this species from others in this group. Body completely black. Fore and mid femora brown with yellow apex; hind femur completely dark brown. Scape black, pedicel and flagellum completely dark brown. Scutellum very vaguely reticulate, but not smooth. Pronotum with distinct transverse carina anteriorly. Setae on thorax all yellowish brown, distinct visually. Occipital carina complete to posterolateral corners of eyes. Scutellars parts outside of sublateral grooves or axilla without additional weaker setae other than 2 pairs of strong setae.

Male: Body length 1.85 mm, forewing length 1.72 mm. Body black. Eyes black. Ocelli brown. Antennae dark brown, with scape black. Mandibles yellow. Setae dark brown except those on eyes, lower face, and callus yellow. Venation yellow. Legs yellow, with black coxae, fore femur brown with yellow apex, mid and hind femora brown with apical part yellow.

Head wider than high. Vertex with isodiametric, engraved reticulations. Lower face reticulate. Piles on eyes dense. Occipital carina present, complete to posterolateral corners of eyes, not developed into translucent projection. Occiput reticulate. Toruli placed at lower margin of eyes. Funicle 4 segmented, with each segment with same length and width, distinctly petiolate and setose. Petiole nearly 1/3 length of each funicular segment. Clava 3 segmented. Scape slightly flattened. Clava longer than each funicular segment. Relative measurements: head width 61, head length 20, head height 46, POL 14, OOL 7, scape 25, pedicel 9, F₁ 11, F₂ 10, F₃ 10, F₄ 10, clava 17.

Pronotum with distinct transverse carina anteriorly, reticulate. Notaulus straight, converging, ending at inner tip of axilla, carinate at inner margins. Mid lobe of mesoscutum rugulose, not protruding backwards markedly, with setae scattered all over dorsal surface. Axilla with anterior margin in line with scutocutellar sutures, reticulate. Scutellum longer than mesoscutum, with isodiametric, engraved reticulation, without additional weaker setae in additional to 2 pairs of strong setae. Sublateral grooves on scutellum not united posteriorly, with distance between grooves nearly 1.5 width of groove. Dorssellum smooth, rectangular on posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Callus with 14 setae. Median carina present, without distinct rami. Plicae absent. Relative measurements: thorax length 27, thorax width 18, pronotum 5, mesoscutum 12, scutellum 12, dorsellum 2, propodeum 7.5.


Gaster sub-rectangular, as long as thorax, narrower than thorax. First gastric tergite turgid, around 1/2 length of gaster. Apex of gaster not acute. Relative measurements: gaster length 23,
gaster width 15.

**Female**: Unknown.


**Host range**: Unknown.

**Distribution**: China: Tibet.

**Etymology**: The specific name is derived from the Latin petiol- (= with stem) and funiculus (= funicular segments) for its petiolate funicular segments.

**Elachertus ramosus sp. nov.**

(Figs. 9, 18, 19, 101-108, 159, 160)

**Figs. 73-78.** *Elachertus isadas* Walker; 73. lateral view of thorax; 74. ventral view of thorax; 75. ventral view of propodeum; 76. apex of hind tibia; 77. dorsal view of gaster; 78. ventral view of gaster. **Figs. 79-84.** *Elachertus lateralis* (Spinola); 79. frontal view of head; 80. frontal view of lower face; 81. lateral view of thorax; 82. ventral view of thorax; 83. ventral view of propodeum; 84. ventral view of gaster.
Diagnosis: Body dark green, never bright; all coxae yellow; axilla with indistinct setae; 1st gastric tergite dark green with sub-basal pale patch, collapsed medially, less than 1/3 length of gaster; male funicle with 4 asymmetrical segments; rami of propodeal median carina present all along carina (Fig. 160).

The following characters also help to distinguish this species from other members: Sublateral grooves nearly reaching each other posteriorly, with distance between each other around width of groove. Mid lobe of mesoscutum with setae scattered all over disc.

Female: Body length 2.31 mm, forewing length 2 mm.


Forewing hyaline. Setae on lower surface scattered all over surface, those on upper surface all along margin. Submarginal vein with 8 setae on dorsal surface. Cubital vein straight at base. Basal cell with 1 setal line parallel to submarginal vein. Speculum with only a few hairs, open on lower side. Hindwing nearly truncate apically. Relative measurements: forewing length 65, forewing width 28, submarginal vein 42, costal cell 61, parastigma 20, marginal vein 58, postmarginal vein 46, stigmatic vein 24.

Gaster subrounded, longer than thorax, as broad as thorax. Apex of gaster not acute. Longer setae less than twice length of remaining ones. Tip of ovipositor sheath visible. Relative measurements: gaster length 35, gaster width 18.

Male: Same as female, except funicle asymmetrical.


Host range: Unknown.

Distribution: China: Guangxi, Tibet; Taiwan.

Etymology: The specific name is derived from the Latin ramosus (= with many branches) for it has several short branches on the propodeal median carina.

Elachertus sobrinus (Girault and Dodd)

Diagnosis: Rami of propodeal median carina very distinct; but only last 1 or 2 reaching posterolateral corner of propodeum. Pronotum without transverse anterior carina, with distinct collar nearly 1/2 length of mid lobe of mesoscutum. Sublateral grooves on scutellum slightly curved inward, with distance between each other around width of grooves.

The following characters also help to distinguish it from others in this group. Body completely metallic dark green. Legs completely yellow. Setae on thorax all yellowish brown, distinct. Scutellar distinctly reticulate all over. Scutellar parts outside of sublater-
al grooves with no additional setae other than 2 paired ones. Mid lobe of mesoscutum with setae scattered all over disc, distinctly rugulose.


Host range: Unknown.

Distribution: China: Guangxi.

The charondas Species Group

Diagnosis: Scutellum distinctly reticulate (Fig. 13); mid lobe of mesoscutum protruding backwards.

Figs. 85-91. *Elachertus obliquus* sp. nov.: 85. frontal view of head; 86. frontal view of lower face; 87. posterior view of head; 88. posterior view of lower head; 89. pedicel and anelli; 90. dorsal view of scutellum and thorax; 91. apex of hind tibia and 1st tarsomere. Figs. 92-96. *Elachertus sulcatus* sp. nov.: 92. frontal view of head; 93. posterior view of head; 94. posterior view of lower head; 95. antenna; 96. dorsal view of thorax.
markedly; notaulus divergent posteriorly, thus posterior margin of mid lobe of mesoscutum with distinct angle at junction with notaulus (Figs. 13, 14); if above states not clear, then mid lobe of mesoscutum with no more than 8 hairs.

**Examined species:** *E. charondas* (Walker), *E. scultellaris* sp. nov., *E. parallelius* sp. nov., *E. pilifer* sp. nov., *E. pulcher* (Erdős), and *E. varicapitulum* sp. nov.

**Elachertus charondas** (Walker)
(Figs. 13, 40-49)


**Diagnosis:** Mid lobe of mesoscutum with only 3 pairs of strong setae, strongly protruding backward. Axilla bare, with anterior margin not in line of scutocutellar suture (Fig. 13). F₁ slightly longer than pedicel (Fig. 43). Sublateral grooves on scutellum united posteriorly (Fig. 13). Hind tibia completely yellow or mostly brownish, but without brown patch at apex. Body completely black.

This species does not fit in any species-group of Bouček (1988). We propose the *charondas* group for this species. Chinese specimens differ from those loaned from BMNH in having fore femur completely brown, mid femur brown at apical 1/2, and hind femur brown at apex. Reticulations on scutellum of this species varied from rounded to elongate (1.5 or 3 times as long as wide).


**Distribution:** China: Guangxi; Taiwan. Also Neotropical and Paleartic regions.

**Elachertus parallelius** sp. nov.
(Figs. 150, 151, 152, 153)

**Diagnosis:** Sublateral grooves on scutellum parallel posteriorly (Fig. 151). Funicle 5 segmented (Fig. 152). Body completely black. Hind femur black with yellow apex, hind tibia yellow with brown apex (Fig. 150).

**Male:** Body length 2.12 mm, forewing length 2 mm.


Pronotum without transverse carina, reticulate. Notaulus curved, strongly curved inward medially, turning outside posteriorly, ending at inner angles of axilla. Mid lobe of mesoscutum with 5 pairs of setae, without scattered setae, with isodiametric, engraved reticulations. Axilla with anterior margin in line with

Forewing hyaline. Setae on lower surface scattered all over surface, those on upper surface all along margin. Submarginal vein with 5 setae on dorsal surface. Cubital vein straight at base. Basal cell bare below submarginal vein. Speculum with only a few hairs, closed on lower side. Hindwing subacute apically. Relative measurements: forewing length 63, forewing width 29, submarginal vein 38, costal cell 60, parastigma 22, marginal vein 60, postmarginal vein 40, stigmal vein 20.

Gaster elongate, narrower than thorax. Apex of

Figs. 97-100. Elachertus sulcatus sp. nov.: 97. dorsal view of scutellum, dorsellum, and propodeum; 98. lateral view of thorax; 99. dorsal view of gastric petiole; 100. ventral view of gastric petiole. Figs. 101-108. Elachertus ramosus sp. nov.: 101. frontal view of head; 102. posterior view of head; 103. posterior view of lower head; 104. lateral view of thorax; 105. ventral view of thorax; 106. dorsal view of gastric petiole; 107. ventral view of gastric petiole; 108. ventral view of gastric apex.

Male: Unknown.


Host range: Unknown.

Distribution: China: Yunnan.

Etymology: The specific name is derived from Greek parallelius for its sublateral grooves on the scutellum being parallel until the end.

**Elachertus pilifer sp. nov.**

(Figs. 157, 158)

Diagnosis: Axilla with more than 3 setae. Thorax yellow to mostly dark with at least pronotum, anterior 1/2 of mid lobe of mesoscutum, and propodeum black (Fig. 158). Head completely dark. Legs completely yellow. Mid lobe of mesoscutum with additional weaker setae scattered anteriorly on disc in addition to some pairs of stronger setae (Fig. 158).

Female: Body length 2.58 mm, forewing length 2.58 mm.


Gaster subround, narrower than thorax. Apex of gaster acute. Relative measurements: petiole length 7, petiole width 5, gaster length 26, gaster width 22.


Host range: Unknown.

Distribution: China: Guangxi; Taiwan.

Etymology: The specific name is derived from the Latin pilifer (= pilose) for its pilose axilla.

**Elachertus pulcher (Erdős)**


Diagnosis: Head and thorax completely yellow or with dark patches on occiput and thorax. F₁ more than 3 times longer than wide, other funicular segments all more than 2.5 times longer than wide, dark brown. Axilla bare. Legs completely yellow. Mid lobe of mesoscutum with additional setae scattered on disc in addition to some pairs of stronger setae.

European samples examined differs in having head yellow with part of occiput brown, thorax yellow with dark patches (these patches might be weakly metallic), antenna with F₁ slightly to 1.5 times longer than wide, other funicular segments quadrate to transverse, all brownish. Samples from Yugoslavia with speculum very narrow or absent.
Female: Body length 2.95 mm, forewing length 2.40 mm.


Head wider than high. Eyes with sparse piles. Occiput rounded behind posterior ocelli. Postoccipital carina absent. Toruli placed above lower margin of eyes. Funicle 4 segmented, with F1 more than 4 times as long as wide, other segments subequal in length, more than 2.5 times as long as wide. Clava 3 segmented. Scape slightly flattened. Flagellum subequal in width. Relative measurements: head width 67, head length 22, head height 49, POL 11, OOL 5.5, length of eye 29, width of eye 14, interorbital distance 39, malar space 8, mouth opening 30, toruli to anterior ocellus 27, toruli to mouth margin 15, scape 29, pedicel 10, F1 20, F2 16, F3 16, F4 15, clava 17.

Pronotum with indistinct transverse carina anteriorly. Mid lobe of mesoscutum protruding backwards markedly, with additional weaker setae scattered all over surface in additional to 1 pair of strong setae on posterior end, very vaguely sculptured, with isodiamic, engraved reticulations. Notaulus curved outwards posteriorly, distinctly angled with anterior margin of axilla. Axilla bare. Scutellum nearly as long as mid lobe of mesoscutum medially, with very vague, isodiamic, superficial reticulation, without additional weaker setae other than 2 pairs of

Figs. 109-117. Elachertus simithorax (Girault): 109. frontal view of head; 110. frontal view of lower face; 111. posterior view of head; 112. anelli; 113. dorsal view of scutellum, dorsellum, and propodeum; 114. lateral view of thorax; 115. ventral view of propodeum; 116. dorsal view of gaster; 117. ventral view of gaster.

Forewing hyaline or fuscous around stigma. Setae on lower surface completely in a line, with additional 1 or 2 lines of setae on distal 1/2; those on upper surface complete along anterior margin of costal cell. Submarginal vein with 9 setae on dorsal surface. Cubital vein straight at base. Basal cell bare. Speculum narrow, closed on lower side. Hindwing rounded apically. Relative measurements: forewing length 77, forewing width 31, submarginal vein 54, costal cell 77, parasigma 21, marginal vein 77, postmarginal vein 58, stigmatic vein 31.


Male: Same as female, except the following aspects: body smaller; head mostly yellow with brown patches or mostly brown; flagellum with dense longer setae.


Host range: Unknown.

Distribution: China: Taiwan. Also Paleartic region.

Elachertus scutellaris sp. nov.
(Figs. 136, 137)

Diagnosis: Scutellum distinctly reticulate. Thorax yellow except scutellum and median part of pronotum dark brown (Fig. 136). Scape completely yellow. Forewing with slight infumation around stigma (Fig. 137).

Female: Body length 2.22 mm, forewing length 1.94 mm.


Gaster subrounded, as broad as thorax. Apex of gaster acute. Tip of ovipositor sheath visible. Rela-
tive measurements: gaster length 30, gaster width 14.

*Male:* Unknown.


*Host range:* Unknown.

*Distribution:* China: Fujian.

*Etymology:* The specific name is derived from the Latin *scut* (= scutellum) for its dark and distinctly reticulate scutellum.

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**Figs. 118-120.** *Elachertus flavimaculatus* sp. nov.: 118. dorsal view of body; 119. forewing; 120. lateral view of head with antenna. **Figs. 121-124.** *Elachertus longiramulus* sp. nov.: 121. dorsal view of head and thorax; 122. antenna; 123. forewing; 124. hind leg. **Figs. 125-126.** *Elachertus petioluniculus* sp. nov.: 125. hind leg; 126. antenna. **Figs. 127-129.** *Elachertus divergens* sp. nov.: 127. dorsal view of body; 128. antenna; 129. forewing. **Figs. 130-132.** *Elachertus fenestralis* Nees: 130. hind leg; 131. forewing; 132. antenna. **Figs. 133-135.** *Elachertus flavifuniculus* sp. nov.: 133. dorsal view of thorax and gaster; 134. antenna; 135. forewing. **Figs. 136-137.** *Elachertus scutellaris* sp. nov.: 136. dorsal view of head and thorax; 137. forewing. **Figs. 138-139.** *Elachertus inunctus* Nees: 138. antenna; 139. forewing. **Figs. 140-141.** *Elachertus isadas* Walker: 140. antenna; 141. forewing. **Figs. 142-144.** *Elachertus lateralis* (Spinola): 142. antenna; 143. forewing; 144. hind leg.
Elachertus varicapitulum sp. nov.
(Figs. 162, 163, 164)

Diagnosis: This species is closely related to E. charondas (Walker). It could be distinguished from the latter by having yellow head with brown patches (Fig. 163), hind tibia yellow with a dark patch apically (Fig. 164).

The following characters also help to distinguish this species from others. Body completely black except head yellow or orange yellow with brown patches, without metallic shine. Funicle 4 segmented, without setae extending beyond apex. Scutellum with isodiametric, engraved reticulations. Sublateral grooves on scutellum parallel posteriorly. Hind tibia yellow except dark brown apex. Axilla bare.

Female: Body length 3.02 mm, forewing length 2.4 mm.


Male: Unknown.

Materials examined: Holotype: ♂, C. Taiwan, Nantou, Meifeng, 2-4 June 1980, 2150 m (LY Chou, CC Chen) (TARI). Paratypes: 1 ♀, C. Taiwan, Nantou, Tungpu, 18-23 Nov. 1981, 1200 m (T Lin, WS Tang) (IQZ); 1 ♀, Guangxi, Nanpo, Defu, 5 Apr. 1998, 1400 m (CD Zhu)(IQZ); 1 ♀, Jilin, Gongzhuling, 3 June 1956 (TL Chen) (IQZ).

Host range: Unknown.

Distribution: China: Jilin, Guangxi; Taiwan.

Etymology: The specific name is derived from the Latin vari- (= various, diverse) and capitulum (= head) for the color pattern on its head.

The flavimaculatus Species Group

Diagnosis: Head and thorax mostly brown with yellow patches. Mid lobe of mesoscutum not protruding backwards or nearly so (Fig. 4); notaulus slightly divergent posteriorly, thus posterior margin of mid lobe of mesoscutum without distinct angle at junction with notaulus (Fig. 4).

Examined species: E. flavimaculatus sp. nov.

Elachertus flavimaculatus sp. nov.
(Figs. 118, 119, 120)

Diagnosis: Head (Fig. 120) and thorax mostly brown with yellow patches located characteristically on most parts of mid lobe of mesoscutum, scutellum, and propodeum (Fig. 118). Petiole hidden. Mid lobe of mesoscutum not protruding backwards markedly, with only 3 pairs of setae. Notaulus nearly parallel posteriorly (Fig. 118).

This species would not be placed in any group of Bouček (1988) for its characteristic color pattern. We propose the above species group for this species.

Male: Body length 1.54 mm, forewing length 1.38 mm.

Body brown with yellow patches. Eyes gray. Ocelli yellow. Stripes present around eye margins, lower face, genae, malar space, clypeus, and mandibles yellow. Antennae brown. Setae yellow except
those on pronotum, mesoscutum, forewing, and marginal fringe brown. Pleuron, posterior part of mesoscutum, area between sublateral grooves and admarginal ones, posterior part of scapular flange, area between axilla and sublateral grooves, and median panel of dorsellum yellow. Dorsellum laterally yellowish brown. Venation yellow. Legs yellow, except hind coxa with a brown patch basally. Gaster T1 brown mostly yellow with brown transverse bands at both anterior and posterior ends; other segments brown.


propodeum 3.

Gaster subrotund, as broad as thorax. Gastral T1 smooth, covering more than 1/2 of gaster. Apex of gaster not acute. Relative measurements: gaster length 18, width 15.

Female: Unknown.
Host range: Unknown.
Distribution: China: Shandong.
Etymology: This species is unique in Elachurus for its color pattern and parallel sublateral grooves on scutellum. The specific name is derived from the Latin flavus (= yellow) and maculates (=blotted) for the yellow patches on dorsal of thorax.

The inunctus Species Group

Diagnosis: Scutellum completely smooth. Mid lobe of mesoscutum protruding backwards markedly; notaular divergent posteriorly, thus posterior margin of mid lobe of mesoscutum with distinct angle at junction with notaular (Figs. 13, 14); if above states are not clear, then mid lobe of mesoscutum with no more than 8 hairs.

Examined species: E. inunctus Nees.

Elachurus inunctus Nees (Figs. 14, 57-66)


Diagnosis: Face under toruli smooth. Scape completely dark brown. Body completely dark, mostly black, sometimes green with metallic shine on head, thorax, or gaster.

We propose the inunctus species group for this species.

Comments: This species varies in color. Specimens collected from Hubei, Henan, and Jilin and some from Taiwan have completely yellow legs, while those from Gansu and some from Taiwan have dark coxae, mostly brown femora, or even brown tibiae. In England, there are also such variations among specimens collected from Cambs or Burnham.


Host range: Elachistidiae, Epermeniidae, Gracil-

**Distribution:** China: Jilin, Henan, Hubei, Jiangsu, Guangdong, Gansu; Taiwan. Also Paleartic region.

**The isadas Species Group**

**Diagnosis:** Sublateral grooves on scutellum roundedly united and arc-shaped posteriorly; axilla slightly to considerably protruding beyond anterior margin of scutellum (Fig. 15); scutellum bright shiny and smooth; mid lobe of mesoscutum with at least 12 hairs (Fig. 15), not protruding backwards or nearly so (Fig. 4); notaulus not divergent posteriorly, posterior margin of mid lobe of mesoscutum without distinct angle at junction with notaulus (Fig. 4).

**Examined species:** *E. isadas* Walker.

**Elachertus isadas Walker**
(Figs. 10, 15, 67-78)


**Diagnosis:** This species could not be placed in any species groups of Bouček’s (1988). We propose the isadas species group for it.

**Host range:** Parasitoid of Gracillariidae, Oecophoridae, and Tortricidae (Lepidoptera).

**Materials examined:** 18 ♀♂, 66 ♀♀, 1 ♀, Hebei, Xiaowutai, 12 Aug. 1964 (TL Chen)(IOZ); 1 ♀, Fujian, Xiaguadun, 11 June 1982 (JF Xu)(IOZ); 2 ♀♂, 2 ♀♀, Guangxi, Yao, 4 Apr. 1998, 1440 m (CD Zhu)(IOZ); 1 ♀, Guangxi, Yao, 5 Apr. 1998 (CD Zhu)(IOZ); 1 ♀, Guangxi, Yao, 6 Apr. 1998 (CD Zhu)(IOZ); 1 ♀, Hainan, Lingshui, Wuzhi Mts., Shuiman, 25 May 1960, 600 m (CF Li)(IOZ); 1 ♀, Hainan, Jianfeng Mts., 4 Mar. 1984 (CF Li)(IOZ); 1 ♀, Hainan, Jianfeng Mts., 1 Apr. 1984 (CF Li)(IOZ); 1 ♀, Hainan, Jianfeng Mts., 24 Apr. 1984 (CF Li)(IOZ); 4 ♀♂, Hainan, Jianfeng Mts., 26 Apr. 1984 (CF Li)(IOZ); 1 ♀, Sichuan, Emei, 18 June 1955 (KR Huang, GT Jin)(IOZ); 1 ♀, Sichuan, Qingcheng Mts., 19 Oct. 1983 (CF Li)(IOZ); 1 ♀, Sichuan, Qingcheng Mts., 20 Oct. 1983 (CF Li)(IOZ); 1 ♀♂, 1 ♀, Yunnan, Lijiang, Ludian, Machang, Aug. 1984, 3200 m (CF Li)(IOZ); 1 ♀, Yunnan, Lijiang, Baishui, 17 July 1984, 2850 m (CF Li)(IOZ); 1 ♀, Yunnan, Lanping, 22 Aug. 1984, 2300 m (CF Li)(IOZ); 1 ♀, Yunnan, Lijiang, Lpidip, 16 Aug. 1984, 3200 m (CF Li)(IOZ); 2 ♀♀, Yunnan, Lijiang, Baishui, 19 July 1984, 3000 m (CF Li)(IOZ); 1 ♀, Yunnan, Kunming, 20 Mar. 1955, 1900 m (Keleiderofsfij)(IOZ); 1 ♀, Yunnan, Lijiang, Yuhu, 24 July 1984, 2750 m (CF Li)(IOZ); 1 ♀, Yunnan, Menglong, Banna, Mengsong, 26 Apr. 1958, 1600 m (CP Hong)(IOZ); 1 ♀, Tibet, Cona, 7 Aug. 1974 (TS Li)(IOZ); 1 ♀, Tibet, Medog, Bangxing, 28 Nov. 1982, 1200-1400 m (YH Han)(IOZ); 1 ♀, Tibet, Nyingchi, 7 June 1978, 3050 m (FS Li)(IOZ); 1 ♀, Shanxi, Foping, 28 June 1999, 890 m (CD Zhu)(IOZ); 1 ♀♀, Gansu, Wenxian, Qujiaisa, 21 July 1999, 2150 m (CD Zhu)(IOZ); 3 ♀♂, 33 ♀♀, C. Taiwan, Nantou, Meifeng, 5-9 Oct. 1980, 2150m (CC Chen, CC Chien)(TARI); 2 ♀♂, 3 ♀♀, C. Taiwan, Nantou, Meifeng, 2-4 June 1980, 2150 m (LY Chou, CC Chen)(TARI); 5 ♀♀, C. Taiwan, Nantou, Meifeng, 26 Aug. 1980, 2150 m (KS Lin, CH Wang)(TARI); 2 ♀♀, 6 ♀♀, C. Taiwan, Nantou, Meifeng, 7 May 1981, 2150 m (KS Lin, SC Lin)(TARI); 1 ♀, C. Taiwan, Nantou, Tungpu, 18-23 Nov. 1981 (TL Lin, WS Tang)(TARI); compared with following specimens deposited at BMNH: 1 ♀, SCOTLAND: Sutherland, Inchnadamph, 12-23 June 1961, B. M. 1961-418, det. Z Bouček, 1981 (R B Bensch); 1 ♀, WALES: Caernarv. Trevor, 13 Sept. 1977, det. Z Bouček (Z Bouček); 1 ♀, Forest Res. Strn., Farnham, Surrey, shoot 27, coll. 22 July 1972, und 2 Aug. 1972, ex. _Rhyaciania logana_ larva, emerg. 16 Aug. 1972, det. Z Bouček, 1973 (Rultmore Barff); 1 ♀, Forest Res. Strn., Farnham, Surrey, emerg. 12 Mar. 1973, det. Z Bouček, 1980 (Rultmore Barff).

**Host range:** Parasitoid of Gelechiidae, Gracillariidae, Oecophoridae, and Tortricidae (Lepidoptera) (Bouček and Askew 1968, Herting 1975, Trjapitzin 1978).

**Newly recorded from larva of Rhyaciania logana.**

**Distribution:** China: Hebei, Fujian, Hainan, Guangxi, Sichuan, Yunnan, Tibet, Gansu, Taiwan. Also Paleartic region.
The *lateralis* Species Group

*Diagnosis:* Sublateral grooves on scutellum smoothly united posteriorly to delimit a narrow band of scutellum at the posterior end (Figs. 4, 7); propodeal median carina simple, with no ramus (Figs. 4, 7, 25, 96, 97, 113); epistomial suture present; clypeus entire (Fig. 1); anellus II bare (Figs. 16, 17); scutellum distinctly reticulate; body completely dark or metallic green; mid lobe of mesoscutum with at least 12 hairs (Fig. 15), not or almost not protruding backwards (Fig. 4); notaulus, at most, slightly divergent posteriorly, posterior margin of mid lobe of mesoscutum without distinct angle at junction with notaulus (Fig. 4).

*Examined species:* *E. fenestratus* Nees, *E. lateralis* (Spinola), *E. sulcatus* sp. nov., and *E. simithorax* (Girault).

**Elachertus fenestratus Nees**

(Figs. 1, 28, 29, 49-56)


*Eulepturus viridaceus* Cresson, 1887: 243. Emendation for *Eulepturus veridoeneus* Provancher, 1887.

*Eulepturus viridaceus* Dalla Torre, 1898: 75.


*Diagnosis:* Speculum large, bare along basal vein and parastigma, extending to distal end of parastigma. Dorsellum smooth or very finely reticulate. Reticulations on thorax distinct, level with thoracic surface. Lower face with vague epistomial sulcus. Gaster more than 1.4 times as long broad, dark with at least some pale parts, never metallic. Legs with at least hind femur mostly fuscous. Petiole at most 1.2 times as long as wide, more or less conical and smooth along its attachment to propodeum, parallel sided and with transverse striae posteriorly.

This species could not be placed in any of Bouček's species groups. We propose the *lateralis* group for *E. lateralis* (Spinola, 1808) and consider this species much closer to members of this group. It is fairly difficult to be distinguished from *E. lateralis* or *E. sulcatus*. Diagnostic characters proposed in the key and diagnosis of these 3 species would help to separate most of samples.

*Materials examined:* 1 ♂, Beijing, Badaling, 16 May 1984 (DW Huang) (IOZ); 1 ♂, Beijing, Jingdong Valley, 26 Apr. 1997 (CD Zhu) (IOZ); 1 ♂, Hebei, Laiyuan, 13 June 1985 (HF Mi) (IOZ); 1 ♀, Hebei, Xiaowutai, 16 Aug. 1964 (TL Chen) (IOZ); 1 ♀, Shanxi, Shanyin, 20 June 1990, 980 m (DW Huang) (IOZ); 1 ♀, Liaoning, Shenyang, 18 June 1968 (DW Huang) (IOZ); 1 ♀, Shaanxi, Zouzhi, Houzhengzi, 24 June 1999, 1350-1450 m (CD Zhu) (IOZ); 1 ♀, Guizhou, Guyuan, 8 Sept. 1984 (DX Liao) (IOZ); 1 ♀, Tibet, Médog, 14 Nov. 1982, 1200 m (YH Han) (IOZ); 1 ♀, Tibet, Nang, 30 June 1997, 4100 m (CD Zhu) (IOZ); 1 ♀, Sichuan, Tianquan, 12 Aug. 1997 (CD Zhu) (IOZ); 2 ♂, Qinghai, Tongren, Maixiu, 14 June 1997 (CD Zhu) (IOZ); 1 ♀, JAPAN: Kyushu, Fukuoka, Mt. Tachibana, 17 Aug. 1992 (K Yamagishi) (IOZ); compared with following specimens deposited at BMNH: 1 ♂, 1 ♀, ENGLAND: Burnham Beeches Bucks; 16 May 1976 (Z Bouček); 1 ♀, Berks Silwood Park (Ascot), 28 May 1975, BM 1975-265, det. Z Bouček (J Noyes).

*Host range:* Parasitoid of Blastobasidae, Coleophoridae, Gelechiidae, Gracillariidae, Noctuidiae, Oecophoridae, Pyralidae, and Tortricidae (Lepidop-

**Distribution:** China: Beijing, Hebei, Shanxi, Liaoning, Sichuan, Guizhou, Tibet, Qinghai. Also Nearctic and Palearctic regions.

**Elachertus lateralis** (Spinola) (Figs. 4, 7, 16, 27, 79-84)


**Elachertus clavatus** Erdős, 1966: 401.

**Diagnosis:** Legs yellow, sometimes hind coxa brown or with some metallic patches and flagella yellow or yellowish brown. Gaster harderly longer than broad. Malar sulcus straight. Petiole at most 1.2 times as long as wide, more or less conical and smooth along its attachment to propodeum, parallel sided and with transverse striae on posterior part.

This species may be much closer to Bouček’s MG-group, but samples we examined all have a distinctly sculptured petiole. We propose the *lateralis* species group for this species.

**Materials examined:** 16 ♀ ♂, 49 ♀ ♂ deposited at IOZ: 1 ♀, Beijing, Jushan Farm 18 May 1984, (DW Huang); 1 ♀, Beijing, Jingdong Great Valley, 26 June 1997 (CD ZHU); 2 ♀ ♂, 5 ♀ ♂, Beijing, Yingtao Gou, 9 June 1984 (DW Huang); 1 ♀, Beijing, Xishan, 15 May 1957 (JL MAO); 1 ♀, Beijing, Songshan, 26 Aug. 1984 (DW Huang); 1 ♀, Beijing, Xiangshan, 12 Apr. 1997 (CD ZHU); 1 ♀, Hebei, Xiaowutai, 7 Aug. 1964 (DX Liao); 1 ♀, Inner Mongolia, Ali R., 13 Aug. 1981 (DX Liao); 1 ♀, Liaoning, Xutun, 20 May 1962 (TL Chen); 1 ♀, Jilin, Changbai Mts., 3 Aug. 1996, 1150 m (DW Huang); 2 ♀ ♂, Jilin, Changbai Mts., 24 July 1990 (DW Huang); 1 ♀, Jilin, Changbai Mts., 3 Aug. 1975 (DW Liao); 2 ♀ ♂, Heilongjiang, Yichun, 19 Aug. 1978, 3500 m (DX Liao); 1 ♀, Heilongjiang, Yichun, 12 Aug. 1978 (DX Liao); 2 ♀ ♂, Heilongjiang, Dailing, 28 June 1962 (DX Liao); 1 ♀, Anhui Coll. of Agric., 1983; 1 ♀, Anhui, Huangshan, 31 Oct. 1981 (DX Liao); 1 ♀, Fujian, Sanming, 11 Mar. 1982 (YQ Tang); 1 ♀, Fujian, Sanming, 10 Nov. 1982 (YQ Tang); 1 ♀ ♂, Fujian, Sanming, 8 Nov. 1982 (YQ Tang); 5 ♀ ♂, Shandong Inst. of Forestry, 6 Aug. 1975, ex.: Notodontidae (ZX Zhang); 3 ♀ ♂, Shandong Inst. of Forestry, 11 Feb. 1982, ex.: larvae of Notodontidae (ZX Zhang); 1 ♀, Shandong, Fushan, 17 May 1958 (JL MAO); 2 ♀ ♂, Shandong, Fushan, 7 May 1958 (JL MAO); 1 ♀, Hubei, Lichuan, Xingdoushan, 25 July 1989, 900 m (DW Huang); 1 ♀, Hunan, Xianfang, 19 Aug. 1989, 650 m (DW Huang); 7 ♀ ♂, Guangdong, Guangzhou, V/1991 (WN Wu); 1 ♀, Guangxi, Nan, Baidai, Xiaobaihe, Apr. 1998, 1100 m (CD ZHU); 1 ♀, Guangxi, Fangcheng, Fulong, 13 Mar. 1998 (CD Zhu); 1 ♀, Sichuan, Emei, 21 Sept. 1963 (DX Liao); 1 ♀, Sichuan, Pengshui, 11 July 1989, 850 m (DW Huang); 1 ♀, Sichuan, Huili, 2 June 1961, 2100 m (DX Liao); 1 ♀, Sichuan, Xichang, 21 June 1961 (DX Liao); 1 ♀, Yunnan, Funing, Bo’ai, 13 Apr. 1998, 260 m (CD ZHU); 1 ♀, 1 ♀, Guizhou, Qingcheng, 31 July 1963 (DX Liao); 1 ♀, Ningxia, Liupan Mts., 31 July 1984 (DX Liao); 1 ♀, Xinjiang, Arli R., 13 Aug. 1981, (DX Liao); 1 ♀, Shanxi, Fuoping, 28 June 1999, 890 m (CD ZHU); 1 ♀, 1 ♀, Gansu, Wenxian, Qijia, 21 July 1999, 2150 m (CD ZHU); 1 ♀, Gansu, Wenxian, Chengguan, 19 July 1999, 960 m (CD ZHU); 1 ♀, 2 ♀ ♂, Gansu, Wenxian, Chengguan, 20 July 1999, 960 m (CD ZHU); 3 ♀ ♂, USA: Mendocino Co., CA UC Coast Range Rsrv., 59°45′N 121°38′W, 9 July 1997 (DW Huang); 2 ♀ ♂, SOUTHERN KOREA: Suwon City, Kyunggi Prov., 22 Apr. 1994 (QS Ku); 1 ♀, 1 ♀, SSangyong, Kangwon Prov., 24 May 1995 (QS Ku); 1 ♀, Suwon City, Kyunggi Prov., 25 Apr. 1994 (QS Ku); 1 ♀, Suwon City, Kyunggi Prov., 18-19 June 1995 (QS Ku); 1 ♀, Byungnai, Doam, Pyungchang, Kangwon Prov., 9 Sept. 1997 (QS Ku). Compared with following specimens deposited at BMNH: 1 ♀, YUGOSLAVIA: Slovenia, Postojna, 16 July 1958, B. M. 1958-41, det. Z Bouček, 1973 (RL Coe); 2 ♀ ♂ on 2 point plates, FRANCE: Voges, ex. Olethreutes variegana, det. Z Bouček, 1973; 3 ♀ ♂ on 1 rectangular plate, Le Neir M Ent Suisse Jura, 24 Feb. 1970, ex. Coleopora sp., det. Z Bouček.

**Host range:** Parasitoid of Anacampsis populella
(Clerck) [Gelechiidae]; Phyllonorycter acernella (Zeller), Xanthosiliapteryx syringella [Gracillariidae]; and Acronicta megacephala (Denis et Schiffermüller), Mamestra brassicae (Linnaeus) [Noctuidae]; Clostera curtula (Linnaeus) [Notodontidae]; Cacocimorpha pronubana (Hübner), Choristoneura mairiana (Hübner), Cneophasia chrysanthaeana (Duponchel), and Griselda myrtillana (Westwood) [Tortricidae] (Bouček and Askew 1968, Herting 1975 1976, Trjapitzin 1978).

Newly recorded from larvae of Notodontidae, Oletthreutes variagana (Olethreutidae), and Coleophora sp. (Coleophoridae).

Distribution: China: Beijing, Hebei, Inner Mongolia, Liaoning, Jilin, Heilongjiang, Anhui, Fujian, Shandong, Hubei, Hunan, Guangdong, Sichuan, Guizhou, Shaanxi, Ningxia, Xinjiang. Also Australian/Pacific and Paleartic regions.

Elachertus simithorax (Girault)
(Figs. 25, 26, 109-117)


Diagnosis: Occiput sharply margined behind posterior ocelli (Fig. 111). Funicle with segments all longer than broad. Petiole more than 1.5 times as long as broad, completely parallel sided and scultured other than for transverse striae.

Bouček (1988) proposed simithorax species group for this species. He emphasized the value of petiole length defining several species groups. But Chinese specimens show considerable variation in petiole length. Petirole length of this species ranges between 1.5 or 3 times as long as wide. Also, it is much similar to members of the lateralis species group morphologically. Therefore, we place it in this group.

Materials examined: Deposited at IOZ: 1 ♂, Beijing, Jingdong Valley, 26 Apr. 1997 (CD Zhu); 1 ♂, Henan, Luanchuan, Longyuwan, 12 July 1996, 1400 m (H Xiao); 1 ♂, Henan, Luanchuan, Longyuwan, 14 July 1996, 1400 m (H Xiao); 1 ♂, Henan, Song, Baiyunshan, 16 July 1996 (H Xiao); 1 ♂, Henan, Song, Baiyunshan, 17 July 1996 (H Xiao); 1 ♂, Henan, Song, Baiyunshan, 18 July 1996 (H Xiao); 2 ♂, Guangxi, Nan, Baihe, 8 Apr. 1998, 440 m (CD Zhu); 4 ♂♂, 2 ♀♀, Guangxi, Nan, Baihe, 9 Apr. 1998, 440 m (CD Zhu); 1 ♀, Guangxi, Nan, Dehu, 4 Apr. 1998 (CD Zhu); 5 ♂♂, Guangxi, Nan, Dehu, 5 Apr. 1998, 1440 m (CD Zhu); 1 ♂, Guangxi, Longzhou, 26 Mar. 1998 (CD Zhu); 1 ♂, Guangxi, Nan, Baidou, 10 Apr. 1998, 540 m (CD Zhu); 38 ♂♂, 16 ♀♀, Guangxi, Nan, Baihe, 9 Apr. 1998 (CD Zhu); 1 ♂, 3 ♀♀, Guangxi, Lin, Xialei, 31 Mar. 1998 (CD Zhu); 1 ♂, 3 ♀♀, Guangxi, Lin, 29 Mar. 1998 (CD Zhu); 1 ♀, Guangxi, Jingxi, 1 Apr. 1998 (CD Zhu); 16 ♂♂, 9 ♀♀, C. Taiwan, Nantou, Tungpu, 18-23 Nov. 1981, 1200 m (T Lin, WS Tang) (TARI); 1 ♂, C. Taiwan, Nantou, Meifeng, 26 Aug. 1980, 2150 m (KS Lin, CH Wang) (TARI); 1 ♂, C. Taiwan, Nantou, Tungpu, 5-8 Oct. 1981, 1200 m (T Lin, WS Tang) (TARI); 1 ♂, C. Taiwan, Nantou, Meifeng, 2-4 June 1980, 2150 m (LY Chou, CC Chen) (TARI); 5 ♀♀, C. Taiwan, Nantou, Meifeng, 5-9 Oct. 1980, 2150 m (CC Chen, CC Chen) (TARI); 1 ♀, Fujian, Sanming, Taijiang, 8 Oct. 1982 (YQ Tang); 1 ♀, Sanming, Taijiang, 10 Oct. 1980 (YQ Tang); 1 ♀, Fujian, Fuzhou, Apr.1983 (MS Chen); 1 ♀, Fujian, Sangang, 9 May 1982 (JF Xu); 1 ♂, Hainan, Jiangfeng Mts., 14 May 1964 (CF Li); 1 ♂, Hainan, Lingshi, 11 Apr. 1964 (TL Chen); 1 ♀, Hainan, Bawang Mts., 8 Apr. 1984 (CF Li); 1 ♀, Hainan, Jianfeng Mts., 4 Apr. 1984, 1350 m (CF Li); 2 ♀♀, Hainan, Wuzhi Mts., 26 Apr. 1984, 1867 m (CF Li); 6 ♂♂, Hainan, Wuzhi Mts., 26 Apr. 1984, 1867 m (CF Li); 3 ♀♀, Hainan, Wuzhi Mts., 24 Apr. 1984 (CF Li); 10 ♂♂, Hainan, Wuzhi Mts., 26 Apr. 1984, 1867 m (CF Li); 1 ♂, Hainan, Jianfeng Mts., 4 Apr. 1984, 1350 m (CF Li); 1 ♀, Sichuan, Wulong, 4 Jul. 1989, 750 m (DW Huang); 1 ♀, Yunnan, Lijiang, Yuhu, 23 July 1984, 2750 m (CF Li); 1 ♀, Yunnan, Dqing, Xiozhouzhi, 31 July 1984, 3200 m (CF Li); 1 ♀, Yunnan, Yongsheng, Liude, 8 July 1984, 2300 m (CF Li); 2 ♀♀, Yunnan, Lijiang, Ludian, Machang, Aug. 1984, 3200 m (CF Li); 1 ♀, Yunnan, Lijiang, Ludian, 10 Aug. 1984, 2300 m (CF Li); 1 ♀, Yunnan, Lanping, Jinding, 24 Aug. 1984, 2300 m (CF Li); 1 ♀, Yunnan, Jingdong, 3 May 1985, 2302 m (CF Li); 3 ♀♀, Gansu, Kangxian, Qinhe Forestry Center, 7 Jul. 1999, 1350 m (CD Zhu); 2 ♀♀, Gansu, Zhugu, Shatan Forestry Center, 2350 m (CD Zhu); 1 ♂, Tibet, Bomi, Tangma, 13 July 1997 (CD Zhu). Compared with the following specimens deposited at BMNH: 3 ♀♀, N. N. S. WALES: Tooloom Scrub, 8 Jan. 1977 (Z Bouček), det. Z Bouček 1982, 1983 (Z Bouček).

Host range: Unknown.

Distribution: China: Fujian, Hainan, Yunnan; Taiwan. Also Australia.

Elachertus sulcatus sp. nov.
(Figs. 6, 8, 17, 30, 92-100)

Diagnosis: Lower face with distinct groove shaped epistomal sulcus (Fig. 30). Speculum very narrow or absent. Reticulations vaulted over tho-
racic surface. Gaster dark metallic green. Dorsalum distinctly reticulate. Legs yellow with dark coxae, femora dark except for yellow apex. Petiole at most 1.2 times as long as wide, more or less conical and smooth along its attachment to propodeum, parallel sided and with transverse striae posteriorly.

This species is very difficult to separate from E. fenestratus morphologically. But with a long series of specimens, we found distinct shape of epistomal groove on the lower face in this species, and we are sure it is distinct from the latter species and proposed above diagnostic characters.

**Female:** Body length 2.15 mm, forewing length 1.75 mm.


Gaster subtrunclate, as broad as thorax. Apex of gaster not acute. Longer setae less than twice length of remaining ones. Tip of ovipositor sheath visible. Relative measurements: gaster length 27, gaster width 19.

**Male:** Same as female except having more setae on flagellum.

**Materials examined:** Holotype: ♀, Yunnan, Lijiang, Ludian, Machang, Aug. 1984, 3200 m (CF Li) (IOZ). Paratypes: 1 ♂, 58 ♀♀: 48 ♀♀, Yunnan, Lijiang, Ludian, Machang, Aug. 1984, 3200 m (CF Li) (IOZ); 5 ♀♀, Yunnan, Lijiang, Lidiping, 14 Aug. 1984, 3400 m (CF Li) (IOZ); 1 ♀, Yunnan, Lijiang, Ludian, 11 Aug. 1984, 2300 m (CF Li); 1 ♀, Yunnan, Lijiang, Baishui, 19 July 1984, 3000 m (CF Li) (IOZ); 1 ♀, Yunnan, Lijiang, Lidiping, 16 Aug. 1984, 3200 m (CF Li) (IOZ); 1 ♀, Yunnan, Lijiang, Machang, 15 Aug. 1984, 3200 m (CF Li) (IOZ).

Other specimens examined and deposited at TARI: 34 ♂♂, 23 ♀♀, 3 ♂♂, 2 ♀♀, C. Taiwan, Nantou, Meifeng, 2-4 June 1980, 2150 m (LY Chou, CC Chen); 2 ♂♂, C. Taiwan, Nantou, Meifeng, 26 Aug. 1980, 2150 m (KS Lin, CH Wang); 14 ♂♂, 4 ♀♀, C. Taiwan, Nantou, Meifeng, 5 Oct. 1980, 2150 m (CC Chen, CC Chen); 12 ♂♂, 17 ♀♀, C. Taiwan, Nantou, Meifeng, 7-9 May 1981, 2150 m (KS Lin, SC Lin).

**Host range:** Unknown.

**Distribution:** China: Yunnan, Taiwan.

**Etymology:** The specific name is derived from the Latin sulcatus (= groove, trench), for it has distinct epistomal groove.

**The nigrithorax Species Group**

**Diagnosis:** Sublateral grooves on scutellum not united posteriorly or reaching each other at mid point posteriorly; mid lobe of mesoscutum never protruding backwards; axilla not protruding beyond anterior margin of scutellum; body black or dark green, never bright; mid lobe of mesoscutum not protruding backwards or nearly so (Fig. 4); notaulus, at most, slightly divergent posteriorly, thus posterior margin of mid lobe of mesoscutum without distinct angle at junction with notaulus (Fig. 4); if above state of notaulus is not
clear, then mid lobe of mesoscutum with at least 12 hairs (Fig. 15).

**Examined species:** *E. ater* sp. nov.; *E. auripes* (Girault); *E. obliquus* sp. nov.

**Elachertus ater sp. nov.**
(Figs. 20, 22, 24, 31-39)

**Diagnosis:** Body black. Funicle yellow. First gastric tergite covering 1/2 to 2/3 length of gaster. From dorsal view, gastric petiole with several (approximately 6) distinct, longitudinal, regular carinæ on surface (Fig. 24). Apex of hind tibia with distinct pegs, but 1st hind tarsome without distinct pegs. Second anellus pilose. Epistomal sulcus distinct (Fig. 31).

This species is closely related to members in Bouček’s *nigrithorax* species group (1988), for it has a transverse petiole, 1st tergite convex, covering 1/2 to 2/3 of short gaster, and smooth scutellum. We concur with Bouček’s proposal.

**Female:** Body length 1.69 mm, forewing length 1.42 mm. Body black. Eyes, ocelli, antennæ, setae, and legs yellow.


Pronotum without distinct transverse carina, but abruptly turned down to neck. Notaulus straight, converging, ending at inner tip of axilla. Mid lobe of mesoscutum not protruding backwards, with 5-8 pairs of setae, with vague, transverse, engraved reticulations. Axilla with anterior margin in line with scutoscutellar sutures, smooth. Scutellum slightly longer than mesoscutum, smooth, without additional weaker setae other than 2 pairs of strong setae. Sublateral grooves on scutellum reach each other posteriorly, but never smoothly joined. Dorsellum smooth, rectangular on posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Callus with 12 setae.

Median carina on propodeum with no rami. Median area of propodeum delimited from lateral parts by broad grooves. Relative measurements: thorax length 21, thorax width 17, pronotum 7, mesoscutum 6.5, scutellum 10, dorsellum 2, propodeum 5.5.


**Male:** Same as female.


**Host range:** The holotype and paratypes have been reared from *Gelechia* sp. (Gelechiidae).

**Distribution:** China: Fujian, Hainan.

**Etymology:** The specific name is derived from the Latin *ater* (= black) for its black body.

**Elachertus auripes** (Girault)


**Diagnosis:** Mid lobe of mesoscutum with paired setae on posterior 1/2, with or without a few additional weaker setae scattered on anterior 1/2, vaguely reticulate. Notaulus straight, converging, groove shaped, not carinate on inner margin. Pronotum semiglobular, nearly as long as mid lobe of mesoscutum, without transverse anterior carina. Scutellum very vaguely reticulate or partly smooth. Rami of propodeal median carina not very distinct. All funicular segments wider than long. Speculum
large, extending to distal end of paras stigma.

This species is in Bouček's *nigrithora* species group (1988). As we could find no differences between determined specimens of *E. auripes* (Girault) and *E. nigrithora* (Girault) by Bouček, we suspect the 2 to be conspecific. Chinese samples from Pingxiang and Napo have only 3 pairs of setae on the mid lobe of the mesoscum, sublateral grooves on scutellum reach each other medially; while those from Australia all have a few additional weaker setae on anterior 1/2 of mid lobe of mesoscum in addition to 3 pairs of strong setae, with the distance between sublateral grooves on the scutellum nearly equal to the width of the grooves. It is also closer to *E. ater* sp. nov. But the latter species differs in having a smooth scutellum, funicles completely yellow, and black head.

**Materials examined:** Deposited at IOZ: 1♀, Guangxi, Dasin, Xialei, 31 Mar. 1998 (CD Zhu); 1♀, Guangxi, Dasin, 29 Mar. 1998 (CD Zhu); 1♀, Guangxi, Pangxiang, Gate of Friendship, 24 Mar. 1998 (CD Zhu); 1♀, Guangxi, Napo, Baidou, Baiwei, 10 Apr. 1998, 540 m (CD Zhu). Compared with the following specimens deposited in BMNH: 1♀, Australia: Rockampton: Mt. Archer, Queensland, 4 Dec. 1976, (Z Bouček), det. by Bouček, 1982 as *E. (Pseudelachertus) auripes* (Girault); 1♀, SE. Queensland, Bribie Is., 22 Dec. 1976 (Z Bouček), det. by Bouček as nr. *E. citricrora [citricr-orus] (Girault) in 1982, det. by Bouček as *E. citricrora (Girault) in 1983; 1♀, SE. Queensland, Bribie Is., 28 Dec. 1976 (Z Bouček), det. by Bouček as *E. nigrithora (Girault) in 1987; 1♀, QLD, Samford, Nr. Brisbane, 27 Dec. 1982 (Z Bouček), det. by Bouček as *E. nigrithora (Girault) in 1983.

**Host range:** Unknown.

**Distribution:** China: Guangxi. Also Australian Pacific regions.

**Comments:** We found no distinguishing characters between loaned specimens determined by Bouček as *E. auripes*, *E. citricrora*, or *E. nigrithora*. Further examination of types of these species will make it clear if they are conspecific.

**Elachertus obliquus** sp. nov.

(Figs. 21, 23, 85-91, 145)

**Diagnosis:** Body dark metallic green. Funicles brown, gradually widening apically, with F1 subquadrate, other segments transverse (Fig. 145). First gastral tergite varied between 1/5 and 4/5 length of gaster. From dorsal view, gastral petiole nearly smooth at apex, with vague, transverse, irregular carinae on surface. One oblique line of pegs distinct on 1st hind tarsomere (Fig. 91), but apex of hind tibia without pegs. Second anellus bare. Sublateral grooves nearly reaching each other posteriorly. Scutellum smooth (Fig. 21).

**Female:** Body length 2.28 mm, forewing length 1.91 mm.


Head wider than high. Vertex smooth. Eyes with sparse piles. Occipital carina present, complete, not developed into translucent projection. Occiput striated. Toruli placed above lower margin of eyes. Funicle 4 segmented. Clava 3 segmented. Scape cylindrical. Flagellum becoming wider apically. Clava longer than each funicular segment. Relative measurements: head width 61, head length 15, head height 47, POL 16, OOL 8, length of eye 31, width of eye 10, interorbital distance 41, malar space 14, mouth opening 15, toruli to anterior ocellus 27, toruli to mouth margin 12, scape 26, pedicel 8, F1 8, F2 8, F3 8, F4 7, clava 15.


Gaster ovoid, shorter and narrower than thorax.
Apex of gaster not acute. Relative measurements: petiole length 10, petiole width 15, gaster length 17, gaster width 13.

**Male:** same as female, except having funicle with all segments longer than broad, with white setae.

**Materials examined:** Holotype: ♂, Tibet, Bomi, 12 July 1997, (CD Zhu)(IOZ). Paratypes deposited at IOZ and TARl: 2 ♀, C. Taiwan, Nantou, Meifeng, 26 Aug. 1980, 2150 m (KS Lin, CH Wang)(TARI); 1 ♀, C. Taiwan, Nantou, Meifeng, 7-9 May 1981, 2150 m (KS Lin, SC Lin)(TARI); 1 ♀, Beijing, Changping, Qinling Bridge, 26 Sept. 1998 (CD Zhu); 7 ♀ ♀, Guangxi, Shangsi, Red Flag Forest Center, 18 Mar. 1998 (CD Zhu); 1 ♀, Guangxi, Nao, Baihe, 8 Apr. 1998, 1100 m (CD Zhu); 1 ♀, Guangxi, Nao, Baihe, 9 Apr. 1998 (CD Zhu); 1 ♀, Guangxi, Nao, Baidu, Xiaobaihe, Apr. 1998, 1100 m (CD Zhu); 1 ♀, Guangxi, Nao, Baidu, Baiwai, 10 Apr. 1998, 540 m (CD Zhu); 1 ♀, Guangxi, Nao, Dehu, 4 Apr. 1998, 1440 m (CD Zhu); 2 ♀ ♀, Guangxi, Dasin, 29 Mar. 1998 (CD Zhu); 1 ♀, Guangxi, Jingxi, 1 Apr. 1998 (CD Zhu); 1 ♀, Guangxi, Dasin, 31 Apr. 1998 (CD Zhu); 1 ♀, Guangxi, Pingxiang, Friendship Gate, 24 Mar. 1998 (CD Zhu); 1 ♀, C. Taiwan, Nantou, Tungpu, 18-23 Nov. 1981, 1200 m (T Lin, WS Tang) (TARI); 1 ♀, C. Taiwan, Nantou, Tungpu, 18-23 Nov. 1981, 1200 m (T Lin, WS Tang) (TARI); 1 ♀, Yunnan, Lijiang, Ludian, Machang, Aug. 1984, 3200 m (CF Li); 1 ♀, Yunnan, Dali, 30 May 1955, 2100 m (B. Bobofu); 1 ♀, Yunnan, Lijiang, Baishui, 17 July 1984, 2850 m (CF Li); 1 ♀, Gansu, Wenxian, Chengguan, 19 July 1999, 960 m (CD Zhu).

**Host range:** Unknown.

**Distribution:** China: Beijing, Fujian, Hainan, Guangxi, Gansu, Tibet, Taiwan.

**Etymology:** The specific name is derived from the Latin *obliquus* (= slanting) for it is unique in this genus in having a slanting line of pegs on the 1st hind tarsomere.

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1092.


中國狹面姬小蜂屬 (Elachertus Spinola) (膜翅目: 姬小蜂科) 研究

朱朝東 黃大衛

本文研究了中國狹面姬小蜂屬 (Elachertus Spinola) (膜翅目: 姬小蜂科) 的現有物種。本屬為中國新記錄屬。文中追及本屬 23 個物種，並提供了種組和物種檢索表。這些物種中有 9 種是中國新記錄種：E. auripes (Girault)、E. charondas (Walker)、E. fenestratus Nees、E. inunctus Nees、E. isadas Walker、E. lateralis (Spinola)、E. pulcher (Erdös)、E. subrins (Girault & Dodd)、和 E. simithorax (Girault)。文中還描述了 14 個新種，並將它們和近似種進行了比較：E. flavimaculatus、E. longiramulus、E. ater、E. petiolifuniculus、E. divergens、E. flavifuniculus、E. scutellaris、E. obliquus、E. oligiramus、E. parallelus、E. sulcatus、E. pilifer、E. ramosus、和 E. varicapitulum。這 23 個物種中，10 個物種可以被歸入 Bouček (1988) 定義的 2 個種組中，而其他 13 個物種則被歸入本文新立的 5 個種組中。文中還提供了部分物種的寄主和分佈新記錄。

關鍵詞：膜翅目，姬小蜂科，狹面姬小蜂屬，新種，新記錄。

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