

Three new species of the genus *Irianjaya* Koçak & Kemal from Indonesia (Diptera: Asilidae: Asilinae)

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Key words: Halmahera; Lesser Sunda Islands; Moluccas; Mangole; Sula Islands; Sulawesi; Sumbawa. Three new species of the genus *Irianjaya* Koçak & Kemal, 2009 (Diptera: Asilidae: Asilinae) from Indonesia are described and partly illustrated. *Irianjaya halmaheraensis* spec. nov. from Halmahera (North Moluccas), *A. sulaensis* spec. nov. from Mangole (Sula Islands) and *I. sumbawaensis* spec. nov. from Sumbawa (Lesser Sunda Islands). *Eccoctopus impiger* van der Wulp, 1872, is a new junior synonym of *Irianjaya areolaris* (Walker, 1860). In addition, the following new combinations are given: *Irianjaya areolaris* (Walker, 1860), *I. impiger* (Wulp, 1872), and *I. mendax* (Walker, 1857), formerly placed in *Amphiscolops*.

Introduction

The new species described in this paper originate from small to medium-sized volcanic islands. Halmahera belongs to the North Moluccas and is less cultivated than the South Moluccas and retains some of its original rainforest. The climate is equatorial with the wet west monsoon from December to March and the dry east monsoon from May-October. The minimum average temperature is 22.3°C and the maximum average temperature is 32.5°C; the humidity is 83.5% throughout the year. The Sula islands (to which Mangole belongs) are near north-eastern Sulawesi and belong to faunal district of Sulawesi. Sumbawa is part of the Lesser Sunda Islands and is situated South of Java and Bali.

The exhaustive on-line checklist of the Asilidae by Geller-Grimm (2010) is the only overview for the fauna of Indonesia. The checklist includes 91 species for the Moluccas, 46 species for Sulawesi and adjacent islands and seven species for Timor. Here we report the first record of Asilidae from the Sula Islands.

Material and methods

Very few specimens belonging to the genus *Irianjaya* Koçak & Kemal, 2009 (formerly *Amphiscolops* Hull, 1962) are present in collections worldwide. The material for this paper was collected by the second author during two expeditions (together with Mr. R. de Vries) to the North Moluccas and Sula Islands in 1995 and the Lesser Sunda Islands in 1993. Additional material for study was received from the Natural History Museum (London; BMNH). Some of paratypes will be returned to the Museum Zoologicum Bogoriense, Cibinong (ZMB).

The map was made with the software of Carto Fauna Flora 2.0 (Barbier & Ras-mont, 2000) and the photos were taken by P. Limbourg at the Royal Belgium Institute of Sciences in Brussels.

Systematic part

Subfamily Asilinae Latreille, 1802
Genus *Irianjaya* Koçak & Kemal, 2009

The genus *Amphiscolops* Hull was described in 1962 with *Asilus mendax* Walker, 1857, as its type species. Koçak & Kemal (2009) incorrectly assumed that *A. complens* is the type species of the genus *Amphiscolops*. Hull (1962) illustrated the antenna (fig. 347, p. 622), the wing (fig. 760, p. 654) and the terminalia of the female (fig. 2404, p. 804) but excluded the male genitalia even though male specimens were available. This was un-fortunate, because the male genitalia are very informative for species recognition. Koçak & Kemal (2009) discovered the homonymy of the genus *Amphiscolops* Hull with *Amphiscolops* Graff, 1905 (Turbellaria) and renamed the genus into *Irianjaya*.

The genus *Irianjaya* is similar to the genera *Heligmoneuvra* Bigot, 1858, and *Oligo-schema* Becker, 1926, but is easily separable by the remarkable stout and sharp lateral spines on the margin of the sixth tergite (figs 6-7). Tomasovic (2006) transferred *Helig-moneuvra impiger* (van der Wulp, 1872) to the genus *Amphiscolops* (now *Irianjaya*). Van der Wulp (1872) illustrated the abdomen including the pair of postlateral sharp spines

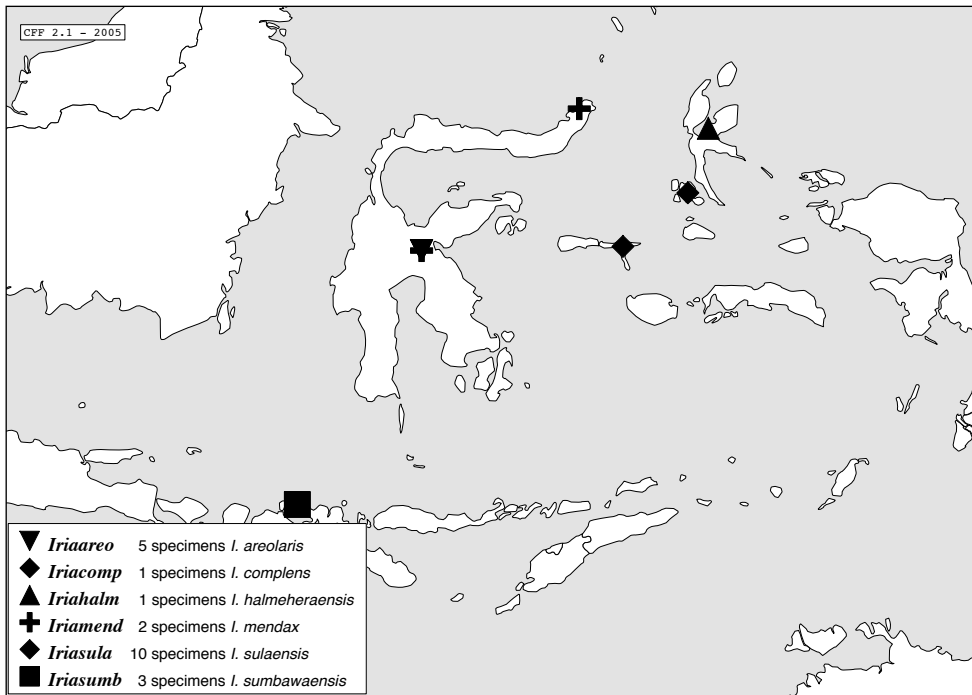


Fig. 1. Distribution of the genus *Irianjaya* Koçak & Kemal.

and Tomasovic & Grootaert (2008) illustrated this character and the male genitalia. At the moment the genus *Irianjaya* contains four named species: *Irianjaya areolaris* (Walker, 1860) **comb. nov.**, *I. impiger* (van der Wulp, 1872) **comb. nov.**, *I. mendax* (Walker, 1857) **comb. nov.** and *I. complens* (Walker, 1861) **comb. nov.**, from Sulawesi (Oldroyd, 1975) and Geller-Grimm (2010) listed the last species for West Papua.

Distribution (Fig. 1). The type localities of the described species are all on Sulawesi. The three new species originate from Mangole (Sula Islands, North of Sulawesi), Halmahera (North Moluccas) and from Sumbawa (Lesser Sunda Islands).

Provisional key to the species of the genus *Irianjaya* Koçak & Kemal

Note.— The study of the male genitalia is recommended for all Asilidae to be sure about the status of a species. Unfortunately, the genitalia male of *I. complens* and *I. mendax* are not studied; only too damaged and fragile type material was available.

1. Mystax with ample majority of setae whitish yellow, scape and pedicel yellow to brown, legs yellow or orange 2
- Mystax with majority of setae black 3
2. Wings black with lower part milky. Aedeagus with two prongs (fig. 4); Sulawesi *I. areolaris* (Walker, 1860)
- Wings entirely iridescent, but darkened distally. Aedeagus with very short prong (fig. 18); Sumbawa *I. sumbawaensis* spec. nov.
3. Legs black and red 4
- Legs entirely black 5
4. Lower part of wing blackish. Tergites with yellow ochre band posteriorly. Genitalia unknown. Sulawesi, ? New Guinea *I. complens* (Walker, 1861)
- Lower part of wing milky. Tergites without yellow ochre band posteriorly. Distal part of aedeagus sheath narrow tubular and hunchbacked apically, prongs slender with median prong longer than lateral prongs, apodeme broad (fig. 15). Sula Islands *I. sulaensis* spec. nov.
5. Wings black with a broad milky band. Genitalia unknown. Sulawesi *I. mendax* (Walker, 1857)
- Wings brownish hyaline with microtrichia on its distal third. Aedeagus with median prong markedly longer than lateral prongs (fig. 11); Halmahera *I. halmaheraensis* spec. nov.

Irianjaya areolaris (Walker, 1860) **comb. nov.**
(figs 2-5)

Asilus areolaris Walker, 1860: 108. Type locality: Sulawesi.

Amphiscolops areolaris; Oldroyd, 1975: 136.

Eccoctopus impiger van der Wulp, 1872: 234. Type locality: Sulawesi. **Syn. nov.**

Heligmoneura impiger; Oldroyd, 1975: 143.

Amphiscolops impiger; Tomasovic, 2006: 139.

Material.— Holotype of *A. areolaris*, ♂ (BMNH), 'Celebes, Walker'; 2 ♂ (BMNH), 'S. Celebes, Samango, No. 1895, H.F. Fruhstorfer', 'Ex Van de Poll, collection Per Janson, C.J. Wainwright. Collection B.M.

1948-488', '*Heligmoneura (Amphiscolops) sp.* L. Stacas det. 1975', '*Heligmoneura areolaris* Wlk., det. J.E. Chainey, 1985'; 1 ♂ (RMNH), '*Eccoctopus impiger* Wulp, 1872, Celebes'.

The male holotype of *I. areolaris* Walker (BMNH) and of *I. impiger* (RMNH) have been studied. Dr Erica McAlister (BMNH) kindly informed us that an additional male of *I. mendax* (Walker) is present in the collection '... although the genitalia have broken off but has the distinctive wing markings, which maybe the male that Walker (1857) described but it has no type label associated with it (rightly or wrongly)'.

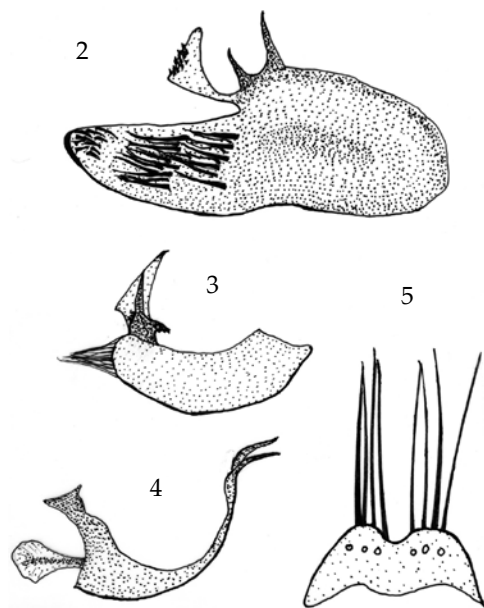
A careful examination of the genitalia of the holotype of *I. areolaris* showed that they were completely identical to those of *I. impiger* (van der Wulp, 1872) as interpreted by Tomasovic (2006). Walker (1860) described succinctly *I. areolaris*, therefore, the holotype is redescribed below.

Male. Length of body 18 mm. Entire body black with spots of yellow greyish tomentum on scutum.

Head.— Face with yellow tomentum. Mystax with strong and yellow setae at middle, above and below with finer and black setae. Frons and ocellar tubercle with long and fine black setae. Occiput with yellow grey tomentum and with ocellar setae and bristles black. Antenna (of other specimens; they are lacking on the holotype) with short and black setae; scape and pedicel yellow, scape three times longer than pedicel and with numerous setae (more than on pedicel), postpedicel and style black, postpedicel short, style fine and taller than scape, pedicel and postpedicel together. Proboscis shiny black with long and black setae on its ventral part. Palpus black with black bristles.

Thorax.— Scutum covered with black short setae, becoming longer on its distal third. Bristles: 2 notopleurales, 2 supra-alar, 1-2 post-alar, 6 dorso-centrales. Scutellum with long and fine setae on disk, 2 stout scutellar bristles. Katatergite with several rows of yellow and long katatergal setae, 2 fine metepisternal setae surrounded by fine setae. Lower part of wings milky. Legs not swollen, yellow orange with black and yellow setae. Femora with short black bristles. Tibia anteriorly with several rows of long, fine yellow setae on its outer face and on inner face with a short brush of yellow setae. Tarsomere darker and with black setae.

Abdomen.— Tergites: first-third with long and fine bristles, sixth with two remarkable sharp black spines laterally. Sternites: first-second with long bristles, third-fourth with black setae. Male genitalia black; empodium with long black setae, epandrium with a brush of black



Figs 2-5, *Irianjaya areolaris* (Walker). 2, epandrium, inner view; 3, gonocoxite and gonostylus, external view; 4, aedeagus, lateral view; 5, hypandrium, inner view.

setae on the lower distal part, on the upper part they are longer and scattered. Hypandrium with long and black setae.

Irianjaya halmaheraensis spec. nov.
(figs 8-11)

Material.— Holotype, ♂ (RMNH), 'Indonesia, Halmahera, Woda, ca. 20 m., 17.ii.-17.iii.1995, C. van Achterberg & R. de Vries, RMNH'95'.

Male. Length of body 18 mm. Whole body black with on the scutum spots of greyish tomentum. Wings brown hyaline with microtrichia on its distal third.

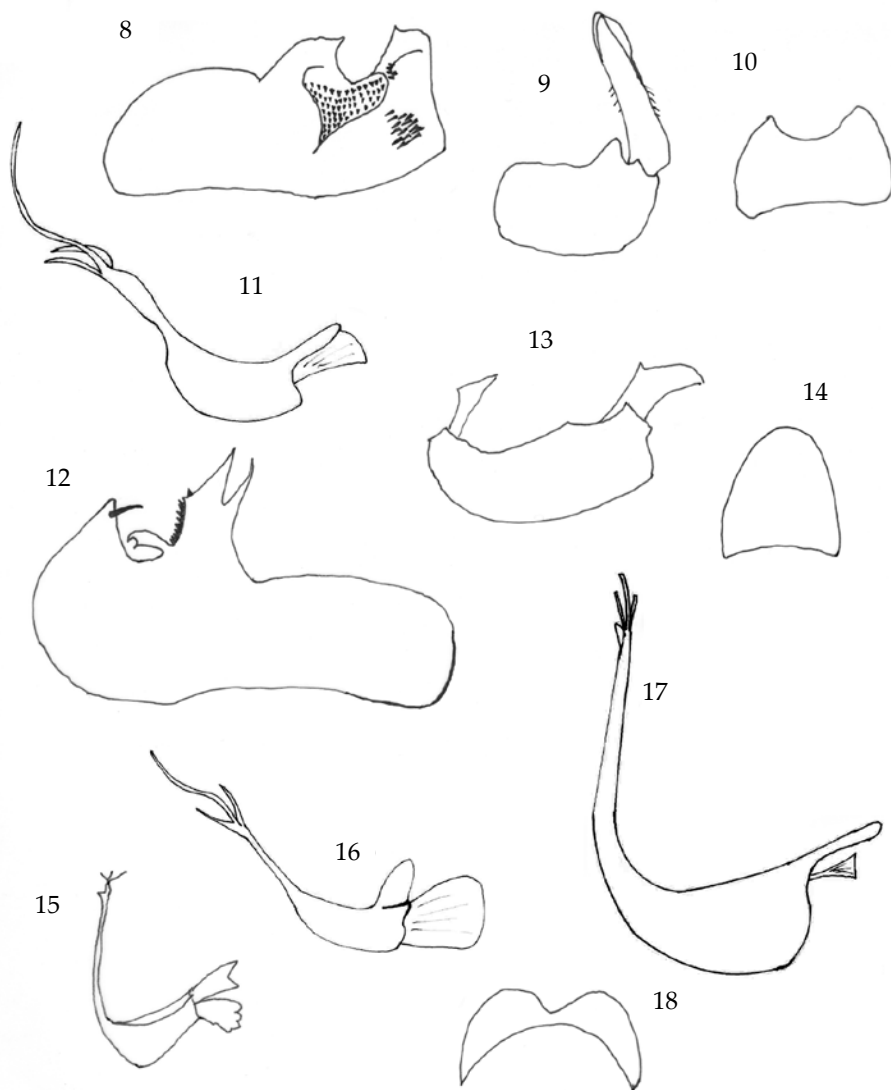
Head.— Face with yellow greyish tomentum. Mystax with black setae on upper part and white setae on lower part. Frons with long and fine black setae. Ocellar tubercle with many fine and black bristles. Occiput with greyish tomentum, upper part with black ocellar bristles and black fine setae. Upper occiput with black setae, lower occiput with white setae. Antenna black, scape with numerous ventral short and black setae, upper part of pedicel with a circle of short black setae, scape twice longer than pedicel, postpedicel short, style fine and longer than scape, pedicel and postpedicel together. Proboscis shiny black. Palpus black with black setae.

Thorax.— Setae black. Two thirds of scutum with black short sparse setae which



▲ Fig. 6. Habitus of *Irianjaya sulaensis* spec. nov., ♂, holotype, lateral aspect. Length 23 mm.

◀ Fig. 7. Detail of spines of sixth abdominal tergite of *I. sulaensis* spec. nov., characteristic for all the species of the genus *Irianjaya*.



Figs 8-11. Male genitalia: *Irianjaya halmaheraensis* spec. nov., ♂, holotype; 8, epandrium, inner view; 9, gonocoxite and gonostylus, external view; 10, hypandrium, inner view; 11, aedeagus, lateral view. Figs 12-15. Male genitalia: *I. sulaensis* spec. nov., ♂, holotype; 12, epandrium, inner view; 13, gonocoxite and gonostylus, external view; 14, hypandrium, inner view, 15, aedeagus, lateral view. Figs 16-18. Male genitalia: *I. sumbawaensis* spec. nov., ♂, holotype; 16, epandrium, external view; 17, gonocoxite and gonostylus, external view; 18, aedeagus, lateral view.

are longer on its distal third. Bristles: 2 notopleurales, 2 supra-alars, 2 post-alars, 8 dorso-centrales. Scutellum with long and fine setae on its disk, 3 stout and numerous fine scutellar bristles. Katatergite with several rows of stout katatergal setae, with 2 stout metepisternal setae. Wings brown hyaline with microtrichia on its distal third. Legs black with black setae. Femora slightly swollen, with ventrally numerous fine and long setae,

medially with 2 stout setae; posteriorly with 1 distal stout seta. Tibia with fine long setae; anterior and posterior tibia and metatarsi with a short reddish brown brush.

Abdomen.— Tergites with long fine black bristles, which are longer laterally and mixed with white setae, sixth tergite with 3 sharp black spines laterally. Sternites with long fine black setae together with long, fine white and black bristles. Genitalia male: black, epandrium and gonocoxite with broad tuft of long and black bristles on its lower part. Epandrium with a deep concavity and a structure in form of heart furnished with short and strong setae. Aedeagus with median prong markedly longer than the lateral prongs and apodeme normal. Cerques with numerous setae and bristles.

Irianjaya sulaensis spec. nov.
(figs 6-7, 12-15)

Material.— Holotype, ♂ (RMNH), 'Indonesia, Sula Isl., Mangole, nr. Buya, ca 450 m., 13.x-1.xi.1995, [Malaise] trap 14, C. van Achterberg, RMNH'95'. Paratypes (RMNH, ZMB): 5 ♂ + 2 ♀, same data as holotype.

Male. Length of body 23 mm. Entire body with yellowish tomentum. Lower part of wings milky. Legs reddish-brown.

Head.— Face with yellowish tomentum. Mystax with black setae fringed with black bristles. Frons with long and fine black setae. Ocellar tubercle with bristles indistinguishable between setae. Occiput with white yellowish tomentum, ocellar setae black, occipital bristles black, lower occipital bristles white. Antenna: scape and pedicel pale brown with black setae and bristles; scape wider and twice longer than pedicel, postpedicel short, 1.5 times as long as pedicel, style fine and longer than scape, pedicel and postpedicel together. Proboscis shiny black. Palpus black with black setae.

Thorax.— Scutum with short sparse erect black setae, longer at the back. Bristles black: 2 notopleurales, 1 supra-alar, 2 post-alar, 6 dorso-centrales. Scutellum with long and fine setae on its disk, 3 stout and 6 fine scutellar bristles. Katatergite with several rows of long, fine and black katatergal setae, with 2 stout metepisternal setae. Lower part of wings milky and upper part pale brown. Legs reddish-brown, tarsomeres black. Femora not swollen and with long and black setae, tibia with long and fine black setae and bristles, middle tibia and first tarsomere with a short and yellow brush.

Abdomen.— Tergites with short yellow setae medially, first-third tergites laterally with long yellow bristles, third tergite with 4-6 black or brown setae, sixth tergite with 2 sharp spines laterally. Second sternite with 6 black bristles. Genitalia male: black with numerous black setae these last in a tuft on the apex of epandrium. Epandrium with a strong setae at its pointed end and also carrying a remarkable structure with two teeth having on a side numerous short and strong setae as well as a short appendix in basal part. Gonocoxite with a long brush on distal part. Aedeagus and sheath narrow tubular at distal part and hunchbacked apically, prongs slender with median prong longer than lateral prongs, apodeme broad.

Irianjaya sumbawaensis spec. nov.
(figs 16-18)

Material.— Holotype, ♂ (RMNH), 'Indonesia, Sumbawa, Gn. Tambora, 500 m, Malaise trap 6, 27.ix.1993, C. van Achterberg, RMNH'93'. Paratype (ZMB): 1 ♂, same data as holotype.

Male, length of body 18 mm. Entire body with grewish tomentum. Wings iridescent darkened distally. Legs orange.

Head.— Face white. Mystax with white setae and some black setae in the upper. Frons with short white bristles. Ocellar tubercle with 6 fine black setae. Occiput with white tomentum, ocellar setae black, occipital bristles white. Antenna, scape and pedicel yellowish brown, with short black setae, scape twice as long as pedicel, postpedicel darker and longer than the pedicel, style long and black. Proboscis black with fine white bristles on its ventral face. Palpus black with black setae.

Thorax.— Presutural area with sparse and short erect black bristles which are on postsutural area longer and less spaced. Setae: 2 notopleurales, 3 post-alar, 10 dorsocentrals. Scutellum with sparse fine black bristles on its disk, with 2 scutellar setae. Katatergite with with a row of long and fine black setae mixed with white bristles, with 2 metepisternal setae. Legs: femora and tibiae orange, femora with black setae, setae of tibiae mostly yellow, tarsomeres darker than tibiae and with black setae. Wings iridescent but darkened distally.

Abdomen.— Tergites with numerous long and yellow setae laterally, sixth tergite with 3 sharp yellow spines laterally. First and second sternites with long, fine and white bristles, fifth sternite with stout yellow setae. Genitalia male: black with a tuft on the apex of epandrium and with a strong pointed inner teeth. Gonocoxite with a long brush on the distal part. Aedeagus with a fine and short prong, apodeme very small.

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