Scolopendromorpha of New Guinea and adjacent islands
(Myriapoda, Chilopoda)

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Abstract

The centipede fauna of the second largest island in the world, New Guinea, and its adjacent islands, is poorly known, with most information deriving from the first half of the 20ᵗʰ century. Here we present new data on the order Scolopendromorpha based on material collected in the area in the last 40 years, mainly by Bulgarian and Latvian zoologists. The collections comprise eleven species of six genera and three families. The diagnosis of Cryptops (Trigonocryptops) is emended in the light of the recent findings. The old and doubtful record of Scolopendra multidens Newport, 1844 from New Guinea is referred to S. subspinipes Leach, 1815 and the species is here excluded from the present day list of New Guinean scolopendromorphs. Cryptops nepalensis Lewis, 1999 is here recorded from New Guinea for the first time. An annotated list and an identification key to the scolopendromorphs of the studied region are presented.

Key words: West Papua, Papua New Guinea, Scolopendromorpha, intraspecific variability, distribution, Trigonocryptops, new synonymy, identification key

Introduction

New Guinea is the second largest island in the world after Greenland, and encompasses a territory of 785,753 sq. km. After the Amazon and Congo, New Guinea maintains the third largest rainforest in the world and at least 5% of the world’s animal and plant species. The island is shared by two countries—Papua New Guinea to the east and the Indonesian provinces of Papua and West Papua to the west (Fig. 1); the Eastern part includes also Bismarck Archipelago. The island’s remote location and diverse landscape, unstable political environment, underdeveloped road network and infrastructure are just a few obstacles that prevented scholars from carrying out thorough biodiversity explorations and still very little is known about the actual biodiversity of the island. Most collecting trips were carried out in the surroundings of Port Moresby, the largest sea ports and other big cities, mostly along the sea shores or the main roads.

Like many other organism groups, the existing information on the centipedes of New Guinea is outdated and scattered among a number of old publications. Most information derives from the last decade of the 19th and the first half of 20th centuries and concerns mostly the accessible areas of Papua New Guinea. The Indonesian provinces Papua and West Papua are much less studied. The major sources of information on Papuan Scolopendromorpha are the works of Silvestri (1894/1895), Attems (1914a, b, c, 1915a, b, 1930) and Chamberlin (1920, 1939, 1944ab). Additional information can be found in the works of Haase (1887), Daday (1893), Ribaut (1912), Hirst (1914), Schileyko & Stagl (2004) and Lewis (2010, 2014).

The main aim of this paper is to provide an overview of the Scolopendromorpha fauna of New Guinea and adjacent islands, and to contribute new data to the distribution and morphological variability of the studied species (see Appendix 1). Furthermore, the subgenus Cryptops (Trigonocryptops) Verhoeff, 1906 has been analyzed and discussed in the light of the recent findings.

To facilitate future studies we provide an annotated list of the species and a key for their identification. A list of old and present local geographical names from the region under study is also presented (see Appendix 2).
Material and methods

The region under study includes Maluku Islands, Raja Ampat Islands (i.e. Aru Islands, Kai Islands, Waigeo Island), New Guinea Island and the Bismarck Archipelago (Fig. 1). The major part of the studied material was collected from the Indonesian province West Papua by Dr. Dmitry Telnov (The Entomological Society of Latvia, Riga) in 2010, 2012 and 2015 (“DT” in text henceforth) and from Papua New Guinea by Dr. Petar Beron (National Museum of Natural History, Sofia, Bulgaria) in 1975 (“PB” in text henceforth) as part of the British Speleological expedition. Information about millipedes from the British Speleological expedition can be found in Hoffman (1977/1978, 2005), Golovatch & Stoev (2009, 2010, 2011, 2014ab) and Golovatch et al. (2010, 2013). Several New Guinean specimens stored in the collection of the ZMMU (No. 7088, 7091 and 7485) have also been examined.

In order to analyse the morphological variability of the studied species we used comparative material from other regions of the world. In some cases related species were used for comparison, too. The list of additional material is presented in Appendix 4.

Morphological descriptions are provided only for the less known species, such as the members of genus Cryptops. The terminology for external anatomy follows Bonato et al. (2010). All specimens of Ethmostigmus Pocock, 1898 and Scolopendra L., 1758 were found dried in the collection (see Fig. 2) and were subsequently transferred into 75% ethanol. Since some characters, such as the extent of sutures and sulci in Cryptops and of tergal keels and spines in Otostigmus, may not be always clearly visible, specimens were examined both wet and sucked dry under various angles of direct illumination. The pictures have been taken by digital cameras DeltaPix Invenio-8DII and Levenhuk C310 NG 3M.

Conventions and abbreviations: “ad”—adults, “sad”—subadults, “juv”—juveniles (age was determined based on size and degree of sclerotisation of some anatomical features, such as tarsungula, spines, etc.), “spm”—specimen(s), “no ult. legs”—specimens with ultimate legs missing.

All collecting data are given as written on the original labels. Additional information about localities is given in square brackets; question marks indicate uncertain/unknown data. The detailed distribution of the species in the studied region is presented in Appendix 1.

The studied material is deposited in the collection of Dmitry Telnov (Riga, Latvia) (СDT), the National Museum of Natural History (Sofia, Bulgaria) (NMNHS) and the Zoological Museum of the Moscow Lomonosov State University, Moscow (ZMMU). One specimen from the Naturhistorisches Museum in Wien, Austria (NHMW) was used for comparison. Inventory numbers which are not accompanied by museum’s acronym mean that the material is deposited in the collection of the ZMMU.
FIGURE 2. Dried specimens of *Ethmostigmus rubripes platycephalus* (Newport, 1845) and *Scolopendra subspinipes* Leach, 1815.


**FIGURE 3.** Spm 1: right pleuron of leg-bearing segment 3; (s)—spiracle, (ep)—thread-like ectoparasites.

**FIGURE 4.** Spm 1: distal articles of maxillae 2 telopodites + anterior margin of forcipular coxosternite, ventral view; (pt)—process of forcipular trochanteroprefemur, (bs)—basal suture of trochanteroprefemural process, (pm2)—preatarsus of maxilla 2, (acs)—accessory spine.
**Systematic part**

**Order Scolopendromorpha Leach, 1815**

**Family Scolopocryptopidae Pocock, 1896**

**Subfamily Scolopocryptopinae Pocock, 1896**

**Genus Scolopocryptops Newport, 1896**

Type-species. *Scolopocryptops melanostoma* Newport, 1845 (by subsequent designation by Lucas, 1849).

**Remark.** The presence of a single (upper) accessory spine on the pretarsus of maxillae 2 has been shown for *S. melanostoma* (see below); this character was previously unknown in this genus.

**Range.** North, Central and South America; China; Japan; Korea; Vietnam; Philippines; Sunda Archipelago; New Guinea; West Africa.

1. *Scolopocryptops melanostoma* Newport, 1845

Figs 3–6

*Otocryptops melanostomus*: Attems, 1930: 263;
*Scolopocryptops melanostoma*: Chagas, 2010: 164;

**Material.** E Indonesia, West Papua Province, S Bird’s Neck: 1 ad [spm 1, No. 7503], Kaimana 47 km E, Triton bay, environs Kamaka (former Warika) village, lake Kamakawal, 03°45’33”S, 134°12’05”E, 90 m, primeval lowland rainforest on limestone, 09.09.2010, leg. M. Kalninsh; 1 ad [spm 2, No. 7504], Kaimana 7–9 km NW, 25–200 m, prmeval lowland rainforest on limestone, 05.09.2010, leg. DT; 1 ad [spm 3, CDT], Kaimana 40 km E, Triton bay, environs Lobo village, 03°45’00”S, 134°05’33”E, 700–900 m, primeval rainforest on limestone, 17.09.2010, leg. M. Kalninsh.

**Range.** Mexico; Central America (Guatemala, Honduras, Costa Rica, Panama), Greater Antilles (Puerto Rico, Haiti), Lesser Antilles (Martinique, Saint Vincent and Grenadines, Trinidad); South America (Venezuela, Colombia, Ecuador, Peru, Brazil); Australasia (Fiji Islands), Indochina (Nicobar Island, Vietnam), Taiwan, Philippines, E Indonesia, Papua New Guinea.

**Remarks.** Spiracles of spm 1 and 2 were filled up by white thin thread-like parasites, which are superficially similar to nematods (Fig. 3) and were loosely attached to the host and easy to remove. These parasites were missing in spm 3.

Morphologically, the studied specimens fit well to the diagnosis of *S. melanostoma* as per Schileyko (2014), including also the presence of three longitudinal ridges at the meral surface of forcipular tarsungula (see Fig. 2 in Schileyko (2014)) and basal transverse suture of process of forcipular trochanteroprefemur (Fig. 4; see also Fig. 3 in Schileyko (2014)).

West Papuan specimens are considerably larger than those from Venezuela used for comparison (the type locality of this species is St.Vincent in Lesser Antilles, thus the Venezuelan material can reasonably be used as a reference). Furthermore, they differ from the latter also by the following features: 1) tergites with irregular patches of a dark pigment (Fig. 5), 2) 4 (vs. 6) basal antennomeres being glabrous, 3) pretarsus of maxillae 2 with one (upper) very short but well-developed and darkly sclerotized accessory spine (Fig. 4), 4) coxopleural process (Fig. 6) conical (triangular) and comparatively short (cylindrical, slender and nearly twice as long as sternite 23 in the examined Venezuelan specimen) (see Fig. 6 in Schileyko (2014)), 5) tip of coxopleural process and a very narrow posterior area poreless (Fig. 6), 6) legs 1–20 (vs 1–18) with two tibial and one tarsal spur, leg 21 (vs 19) with tarsal spur only, leg 22 without spurs, and 7) all legs lacking accessory spines (though some rudiments recognizable at x85 magnification) vs legs 1–9 with minor accessory spines. Attems (1930: 259, 263) considered the lack of accessory spines as a diagnostic character for *S. melanostoma*. 

FIGURES 5–6. Scolopocryptops melanostoma Newport, 1845.

FIGURE 5. Spm 1: head capsule + leg-bearing segments 1–4, dorsal view; (dp)—dark pigmentation.

FIGURE 6. Spm 1: leg-bearing segment 21, ventro-lateral view; (cp)—coxopleural process, (pa)—poreless area of coxopleuron.

FIGURES 7–9. Scolopendra subspinipes Leach, 1815.

FIGURE 7. Spm 1: leg-bearing segment 21, ventral view.

FIGURE 8. Spm 1: prefemur of left ultimate leg, ventral view; (ps)—prefemoral spines, (cs)—corner spine.

FIGURE 9. Spm 3: forcipular segment, ventral view; (pt)—process of forcipular trochanteroprefemur.

FIGURE 10. Otostigmus (O.) astenus (Kohlrusch, 1881), Studied spm: forcipular segment, ventral view; (tp)—tooth-plate.
Family Scolopendridae Leach, 1815

Subfamily Scolopendrinae Leach, 1815

Genus *Scolopendra* Linnaeus, 1758

Type-species: *Scolopendra morsitans* Linnaeus, 1758 (by ruling of the ICZN, 1957, Opinion 454)

**Range.** All tropical, subtropical and warm temperate regions.

2. *Scolopendra subspinipes* Leach, 1815

Figs 7–9

*Scolopendra subspinipes subspinipes*: Attems, 1930: 29;
*S. subspinipes subspinipes*: Lewis, 1991: 337;
*S. subspinipes*: Zalesskaja & Schileyko, 1991: 13;
*S. (s.str.) subspinipes*: Schileyko, 1995: 75;
*S. subspinipes subspinipes*: Schileyko, 2007: 75;
*S. subspinipes*: Kronmüller, 2007: 20;
*S. subspinipes*: Waldock & Lewis, 2014: 73;

**Material.** E Indonesia, West Papua Province: 1 ad [spm 1, No. 7505], [North-Central region of the Bird's Head Peninsula], Tamarau [=Tamrau] mts., nearly 12 km NW Fef village, 1050 m, primeval lower montane rainforest, MV light, 12–13.02.2012, leg. DT; 1 ad [spm 2, largest, No. 7506], Raja Ampat District, Waigeo Island, Waisai 9–10 km NEE, 00°23'21"S, 130°54'17"E, 80 m, clearing in primeval lowland rainforest on limestone, 18.02.2012, leg. DT; 1 sad [spm 3, CDT], S Bird's Neck, Kaimana 40 km E, Triton bay, Lobo village env., 03°45'00"S, 134°05'33"E, 700–900 m, primeval rainforest on limestone, 17.09.2010, leg. M. Kalninsh.

**Range.** All tropical and subtropical regions of Asia. A few peripheral localities in Africa; Madagascar; The Seychelles; The Comoros; Rodriguez Island; The Philippines; E Indonesia; N Papua New Guinea; Christmas Island; Australia; New Zealand; Oceania. Introduced in New World (Bermuda, Caribbean, South America). For details see Simaiakis & Edgecombe (2013).

**Variability.** Coxopleural processes with 3+3 (spm 3), 2+2 (spm 2) and 2+0 apical spines (spm 1 has right process abnormally spineless (regenerated?), Fig. 7).

**Remarks.** Studied specimens are quite similar to those from Vietnam as described by Schileyko (1995). They differ mainly by having ultimate prefemur with 2 ventro-lateral, 2 ventro-medial and 2 dorso-medial small spines (Fig. 8) vs 1 ventro-lateral, 1 medial and 1 dorso-medial somewhat larger spines in the Vietnamese specimens. Furthermore, Papuan exemplars have relatively more slender basal articles of ultimate legs.

In general, *S. subspinipes* has relatively small process of forcipular trochanteroprefemur, however in the studied Papuan specimens it seems to be even more reduced (Fig. 9) compared with the Vietnamese ones. Thus, specimens of *S. subspinipes* from West Papua demonstrate certain resemblance to the representatives of *Ethmostigmus* in which this process is virtually absent.

Having on disposal only a single specimen, Attems (1914a: 568, 1914c: 59) recorded for New Guinea *S. subspinipes multidens* Newport, 1844 (*S. multidens* sensu Chao & Chang (2003)) [quote]: “With some doubt I put a specimen from Moaif [Indonesia, Papua Province] here, as all the characters agree not quite with Kraeplin’s diagnosis, also … *multidens* was previously known with certainty only from Japan and China”. He described this specimen as follows: “Head and antennae yellow-brownish, as well as segment 1; 6 basal antennomeres glabrous; each tooth-plate with 6 very small teeth, trochanteroprefemur with normal, not very well-developed process. Paramedian sutures from tergite 3, lateral margination from tergite 5. Sternites 1–19 with deep but posteriorly shortened sutures. Coxopleural process without apical spines (vs typical *multidens*, which has 3 such spines); shape of coxopleural process as in the nominal form. Legs 20 without tarsal spur. Ultimate prefemur with 2 outer and 3–4 inner spines ventrally; disto-dorsal process of prefemur with 3 equal spines”. This description accords perfectly to the studied specimens (absence of apical spines of coxopleural process in Attems’ specimen is a certain
abnormality being similar to our specimen 1) which are typical representatives of *S. subspinipes*. So for now we exclude *S. multidens* from the list of the New Guinean species.

**Subfamily Otostigminae Kraepelin, 1903**

**Genus *Otostigmus* Porat, 1876**

**Subgenus *Otostigmus* Porat, 1876**

Type-species. *Otostigmus (O.) orientalis* Porat, 1876 (by original designation).

**Range.** According to Lewis (2010: 1) the genus ranges “… from the Canary Islands through Africa and Asia to Australia and New Zealand and the islands of the Pacific”.

3. *Otostigmus (O.) astenus* (Kohlrausch, 1881)

Figs 10–12

*Otostigmus (O.) astenus*: Attems, 1930: 143;
*Otostigmus (O.) moluccanus*: Schileyko, 1995: 81;
*Otostigmus (O.) astenus*: Lewis, 2001: 21;
*Otostigmus (O.) astenus*: Schileyko, 2007: 78;

**Material.** E Indonesia, West Papua Province, S Bird’s Neck, Kaimana 2–4 km NE, road from Kaimana to Bitsyaru bay, 03°39’26”S, 133°46’21”E, 150 m, primeval lowland rainforest on limestone, 1 ad, 20.09.2010, leg. M. Kalninsh, No. 7507.

**Range.** According to Lewis (2010) and Bonato *et al.* (2016): Madagascar (introduced), eastwards from Cambodia to Oceania namely: Vietnam; Taiwan; The Philippines; Central and East Indonesia; Papua New Guinea; Solomon Islands; Australia; New Caledonia; Samoa Islands; Marianas; Caroline Islands (Yap); Tonga Islands; Fiji Islands; Hawaiian Islands.

Herewith, we add to the list the villages Khoti and Sissu (Keylong City) in Himachal Pradesh State, India which are the most western records of the species worldwide.

**Remarks.** The specimen can be recognized by the specific shape of the forcipular tooth-plate (Fig. 10). It is in accord with Lewis’ (2010: 9) description and drawings of *O. astenus* this including the presence of tarsal spur of ultimate legs, a character which is generally rare in Scolopendridae. Our specimen differs insignificantly from Lewis’ (2009) description in having two tarsal spurs on legs 1–3 (Lewis recorded legs 1–4(17)) and well-developed (vs “small”) spines at ultimate prefemur (Fig. 11). Additional material (No. 6351, 6352, 6390, 7009) shows these spines well-developed as well.

Further material of *O. astenus* in the ZMMU collection (22 specimens) shows considerable variability in the structure of the spiracles (size, shape, depth of atrium). Comparing to the North Indian (No. 7009), Hawaiian (No. 6352) and Vietnamese (No. 6390) material the West Papuan specimen has considerably reduced spiracle atrium (Fig. 12), a condition observed also in exemplars from Tonga (No. 6351). According to our own experience the spiracles with deep atrium are more common in *Otostigmus*.

The accessory spines in the studied exemplar are of the usual shape, while in the specimen from Hawaii they are much enlarged (nearly triangular) and short.

4. *Otostigmus (O.) multidens* Haase, 1887

Figs 13–17

*Otostigmus (O.) loriae*: Attems, 1930: 140;
*Otostigmus (O.) multidens*: Attems, 1930: 141;
FIGURES 11–12. *Otostigmus (O.) astenus* (Kohlrausch, 1881).

**FIGURE 11.** Studied spm: prefemur of left ultimate leg, lateral view.

**FIGURE 12.** Studied spm: right pleuron of leg-bearing segment 3; (s)—spiracle.


**FIGURE 13.** Spm 4: forcipular segment, ventral view; (tp)—tooth-plate.

**FIGURE 14.** Spm 5: forcipular segment, ventral view; (tp)—tooth-plate.

**FIGURE 15.** Spm 4: coxopleural processes, dorsal view; (as)—apical spines, (sds)—subapical dorsal spine, (sls)—subapical lateral spine.

**FIGURE 16.** Spm 3: leg-bearing segment 18, dorsal view; (tk)—tergal keels.

**FIGURE 17.** Spm 4: right pleuron of leg-bearing segment 3; (s)—spiracle.
Otostigmus (O.) loriae: Schileyko, 1995: 81;
Otostigmus (O.) loriae loriae: Schileyko, 2007: 79;

Material. E Indonesia, West Papua Province, S Bird’s Neck, 05–09.09.2010: 1 ad [spm 1, largest, No. 7508], Kaimana 7–9 km NW, 3°35’02”S, 133°42’58”E, 25–200 m, primeval lowland rainforest on limestone, leg. DT; 1 ad [spm 2, No. 7509] + 2 ad [spm 3, CDT; spm 4 (larger one), No. 7510], Kaimana 47 km E, Triton bay, Kamaka (former Warika) village env., lake Kamakawalar and surroundings, 03°46’22”S, 134°12’02”E, 60–310 m, primeval lowland rainforest on limestone, leg. DT; 1 ad [spm 5, No. 7511], Kaimana 47 km E, Triton bay, Kamaka (former Warika) village env., lake Kamakawalar, 03°45’33”S, 134°12’05”E, 90 m, primeval lowland rainforest on limestone, leg. M. Kalninsh.

Range. Cambodia; Vietnam; The Philippines; West Malaysia (Pahang); Indonesia: Sumatra, Maluku Islands, West Papua; Papua New Guinea.

Remarks. Our specimens correspond well to the comprehensive description and drawings of Lewis (2014: 400) and can be readily recognized by the specific shape of the multi-dentated forcipular tooth-plates (Figs 13, 14). They differ insignificantly in having 22 (vs 21) antennomeres, of which 2.3–2.7 (vs 2.3) basal ones with few long setae, complete paramedian sutures at tergites 4–20 (vs 6–20) and 1 additional dorsal (subapical) spine of coxopleural process (Fig. 15). The New Guinean specimens are also considerably larger reaching a length of 68–69 mm (spm 1).

It should also be noted that the studied specimens have tergites (11)13–20 with 9 well-recognizable keels (Fig. 16), latter being replaced in the Vietnamese and Malaysian exemplars by a single weakly developed medial keel. The degree of development of the tergal keels seems to vary quite widely in subgenus Parotostigmus (Schileyko, 2014: 177). As for Otostigmus s.str. Lewis (2007, 2010) regarded these structures as widely variable intraspecifically—from well-developed to nearly absent; for example Lewis (2007) noted that some exemplars of O. (O.) orientalis (which is type-species of the genus) have these keels but others lack them. Thus, the presence of tergal keels is a species-specific character for some species (eg, O. scaber Porat, 1876, O. amballae Chamberlin, 1913, O. orientalis), but varies significantly in others (eg, O. multidens). All studied specimens have spiracles with well-developed and deep atrium, spiracles of segment 3 are quite narrow (Fig. 17); similar conditions are found in the Vietnamese exemplars, too.

Otostigmus telus was described by Chamberlin (1939) from Pionierbivak at Mamberamo river (Indonesia, Papua Province) on the basis of a single adult(?) (48 mm long) specimen. Its short and meager description lacks drawings and important detail (eg, information about the structure of forcipular tooth-plates). However, Chamberlin stated that O. telus is “close to O. loriae [= O. multidens] Silvestri”. Lewis (2014: 408) considered this species as nomen dubium although in Bonato et al. (2016) it is listed among the valid species. Since we haven’t examined the type specimen and given its poor morphological diagnosis it is not included in our List of Papuan species.

Genus Rhysida H.C.Wood, 1862

Type-species. Branchiostoma lithobioides Newport, 1845 (by subsequent designation).

Range. Indo-Australia, Ethiopia, Neotropical region.

Remarks. Koch (1983) compared the size of spiracles of Rhysida and Ethmostigmus. At page 836 he stated that anteriormost spiracle in the former is considerably shorter than half of the length of the lateral margin of respective tergite. However, some of examined adults of R. l. longipes (No. 6633, 7003) have the spiracles of the 3rd body segment at least as long as ½ of the length of corresponding tergite (Fig. 18).

5. Rhysida immarginata immarginata (Porat, 1876)
Figs 19–21

Rhysida nuda immarginata: Attems, 1930: 190;
R. immarginata: Koch, 1985: 212, 213;
R. immarginata immarginata: Lewis, 2001: 45;

FIGURE 18. *Rhysida longipes longipes* (Newport, 1845), No. 7003: left pleuron of leg-bearing segment 3; (s)—spiracle.


FIGURE 19. Spm 1: leg-bearing segment 21 + prefemora of ultimate legs, ventral view; (rpf)—regenerated (abnormally spineless) right prefemur.

FIGURE 20. Spm 2: left pleuron of leg-bearing segment 3; (s)—spiracle.

FIGURE 21. No. 7126: distal articles of maxillae 2 telopodites, ventral view; (pm2)—pretrusus of maxilla 2, (acs)—accessory spine.


FIGURE 22. Studied spm: leg-bearing segment 21 + prefemur of right ultimate leg, ventral view; (ps)—prefemoral spines, (cp)—coxopleural process, (as)—apical spine, (svs)—subapical ventral spine, (ls)—lateral spine.

FIGURE 23. No. 6633: left pleuron of leg-bearing segment 3; (s)—spiracle.

FIGURE 24. No. 7003: leg-bearing segment 21, ventral view; (cp)—coxopleural process, (as)—apical spine, (svs)—subapical ventral spines, (ls)—lateral spine.


FIGURE 25. Spm 4: leg-bearing segment 11, ventral view; (sps)—sternal paramedian suture, (spsl)—sternal paramedian sulci.

FIGURE 26. Spm 1: leg-bearing segments 13–14, ventral view; (sps)—sternal paramedian sutures, (spsl)—sternal paramedian sulci.
Material. Papua New Guinea, Madang Province, Madang District, [environs of Madang] Nagada, 2 (s)ad [spm 1, 2 (larger one)], 20.08.1998, leg. P. Drozd, No. 7091.

Range. According to Bonato et al. (2016) the species is known from Sudan, Congo, Sri Lanka, Cuba, El Salvador, Guatemala. Attems (1930) recorded it also from Sunda Islands, India, Myanmar, The Philippines and Venezuela. Waldock & Lewis (2014) recorded R. immarginata from Christmas Island and wrote [quote] “Although R. immarginata appears to be very widely distributed, the nominate subspecies has only been recorded from Kalimantan, Mentawai Islands, Sumatra (Lewis, 2001), Uruguay, Kedah (Malaysia) and Taiwan (Chao, 2008)”. Gravely (1910) recorded this species from Nepal. We add to the above list Papua New Guinea.

Remarks. Both specimens from Papua New Guinea have only tergite 21 marginate (diagnostic character of this species). They conform well to the descriptions of Attems (1930) and Waldock & Lewis (2014) except for the length of antennae, which reach posterior margin of tergite 3 (vs 5/6) when reflexed. However, Koch (1985: 212) already recorded that the antennae could be shorter in specimens from Borneo.

The studied exemplars demonstrate high degree of resemblance with the material from Nepal including key-chars such as the number of glabrous basal antennal articles (three), number and distribution of leg spurs (legs 1–2/3 with 1 tibial, legs 1–16/17 with 2 tarsal and legs 20 with none), spinulation of prefemur of ultimate legs (3–4 spines in total) and shape + spinulation of coxopleural processes (Fig. 19). The latter character accords well to Koch’s (1985) scheme (p. 207). Also, the shape of spiracles (Fig. 20) is identical in all examined specimens.

The main difference between the Papuan and Nepalese exemplars is the length of antennae, which are longer in the latter and reach the anterior margin of tergite 6 when folded backward.

Spm 2 has the second maxillary pretarsus with only one, very thin and long (about 2/3 of pretarsus) accessory spine, situated just below the pretarsus, and closely attached to it; in spm 1 this accessory spine is not well visible. The same accessory spine is well observed in both additional exemplars (Fig. 21); this character has not been recorded for R. immarginata before.

6. Rhysida longipes longipes (Newport, 1845)
Figs 18, 22–24

Rhysida longipes longipes: Attems, 1930: 194;
R. longipes: Koch, 1985: 212;
R. l. longipes: Lewis, 2002: 86;
R. l. longipes: Chao & Chang, 2003: 8;
R. longipes: Schileyko, 2007: 82;
R. l. longipes: Lewis & Cole, 2007: 82;

Material. Papua New Guinea, Bismarck Archipelago, New Britain [Island], [East New Britain Province], Rabaul [city], under bark, 1 juv, 18.11.1975, leg. PB, No. 10 803 in NMNHS.

Range. India, Nepal, East and West Africa, S Arabian Peninsula (Yemen), Madagascar, Seychelles, Mauritius, Chagos Archipelago, Taiwan, Haiti, introduced into Florida; see also Simiaakis & Edgecombe (2013). Attems (1930) recorded the species also from Central and South America, however, we were not able to trace back where the record comes from. We add to the above list also Peru (Loreto Region, Iquitos), Pakistan[Iran?] (Makran Coast), Sri Lanka (Sabarakamuwa Province), The Philippines (Cebu Island), Vietnam (Dong Nai Province, Ma Da), Cambodia (Rattanakiri Province, Banlung) and Papua New Guinea.

Remarks. In spite of its small length (about 17 mm) the only specimen we have at disposal was easy to identify following the key of Attems (1930). It differs slightly from Attems’ description in having somewhat shorter antennae (juvenile condition?), which are coiled but can reach to the middle of tergite 5 (vs 6) at most when folded backwards. Another difference is the number of spines of coxopleural process: 2 apical + 1 subapical + 1 lateral (Fig. 22) vs 3 apical + 1 lateral sensu Attems (1930). However, the studied exemplar conforms well to the recent and more detailed descriptions of Lewis (2002), Lewis & Cole (2007) and Waldock & Lewis (2014). The length of antennae shows considerable variation in the non-Papuan specimens. The Banlung adult specimen (contorted exemplar, No 7003) has very short antennae (right of 17 articles, left of 16 articles with apical one(s) missing). Both adults from Makran Coast (initially semi-dried, No 7068) and the juvenile specimen from Vietnam (19–20 mm, No. 6633) also have very short antennae: left of 17 articles, right of 13 ones, with a few apical
antennomeres missing in No. 7068 and 18 + 18 antennomeres which reach the posterior margin of tergite 3 when folded backward in No. 6633. The adult specimen from Sri Lanka (N 7455) has antennae of average length (18 + 18 articles) which reach to the posterior margin of tergite 4 and in all other non-Papuan exemplars the antennae are longer, reaching the posterior margin of tergites 5–6.

Our specimen is too small to recognize clearly the spinulation of maxillae 2, but additional material shows pretarsus with the only (under) accessory spine like in previous species (see above). This spur-like spine is approximately half as long as pretarsus and closely pressed to the latter.

All specimens at hand show elongated, oval (not triangular) spiracles with well developed atrium. The characteristic inner papillae are few and hardly visible in the juvenile New Guinean specimen, but in the others they are numerous and cover the innermost part of the atrium completely (Fig. 18). An intermediate stage of development of inner papillae is present in the juvenile (19–20 mm long) from Vietnam (Fig. 23).

In the Banlung exemplar, the left coxopleural process has 1 apical + 2 subapical + 1 lateral spines, but in the right process 1 apical and 2 subapical spines are partially fused (Fig. 24).

*R. longipes* can readily be distinguished from *R. immarginata* by having marginations from tergites 7–11 onwards, legs 1–5/8 bearing 2 tarsal spurs (vs 1–16/17 in the latter) and more spines on the prefemora of ultimate legs (8–10 vs 3–4) (compare Figs 22 with 19).

**Genus Ethmostigmus, Pocock, 1898**

Type-species. *Scolopendra trigonopoda* Leach, 1817 (by subsequent designation).

**Range.** India: Tamil Nadu, Assam, Madras; W Nepal (Annapurna Reservation Area); Bhutan; Sri Lanka; China; Myanmar; Cambodia; Laos; Thailand; Vietnam; Singapore; Taiwan; Philippines; Peninsular Malaysia, Borneo Island (Sarawak); Indonesia: Java Island, Sulawesi Island, Maluku Islands, Raja Ampat Islands, West Papua; Papua New Guinea: Madang Province, Bismarck Archipelago; Australia: Northern Territory (Keep River National Park), Western Australia (McDermid Rock, Kimberley, Banjwain, Goldsworthy); Solomon Islands; Polynesia: Tahiti, Society Islands, Tuvalu Islands; Turkey (?); Africa: Algeria; Ethiopia; Sudan; Tanzania; Gambia (Bijilo Forest Park); Angola; Malawi; Congo; Zanzibar Archipelago; Fernando Po Island.

**Remarks.** *Ethmostigmus relictus* was described by Chamberlin (1944b) from “«Luid[?]»,” Dutch New Guinea [West Papua Province]” on the basis of one specimen. According to the author the species is morphologically close to *E. rubripes* in the form of the “pseudopleural [=coxopleural] process” but differs from the latter “in having but two spines above [=dorsal] with these low and blunt, almost abortive. It differs also in lacking a tarsal spine [=spur] on the 20th pair of legs”. All these “differences” fall well within the intraspecific variability of *E. r. rubripes*, so this dubious form has not been included in the list of species. According to Bonato et al. (2016) *E. relictus* is known also from Java Island (Indonesia) but we were not able to find where this record comes from.

7. *Ethmostigmus rubripes platycephalus* (Newport, 1845)

Figs 25–37

*Ethmostigmus platycephalus*: Attems, 1930: 180;
*E. platycephalus cribrifer*: Attems, 1930a: 182;
*E. platycephalus*: Chamberlin, 1939: 4;
*E. platycephalus loriae*: Chamberlin, 1939: 4;
*E. platycephalus*: Chamberlin, 1944a: 182;
*E. platycephalus*: Chamberlin, 1944b: 3;

**Material.** E Indonesia, North Maluku Province: 1 sad [spm 1, smallest, No. 7512], Tidore Island, caldera of Sabale volcano, Lake Telaga, 0°43’38"N, 127°25’46"E, 405 m, under rotten bark, 29.06.2013, leg. DT; 2 ad [spm 2, No. 7513; spm 3, No. 7514], Halmahera N [=Morotai] Island, Galela area, Mt. Ngededo, Ma Girapang at Roko village, 1°50’07"N, 127°43’17"E, 230 m, primary & secondary lowland rainforest, under rotten bark, 02.07.2013, leg. DT. E Indonesia, West Papua Province: 1 sad [spm 4, right ult. leg regenerated, CDT], Raja Ampat District, Misool Island (central), river Gam upstream, Gamta village 12–14 km NW, 01°57’50”S, 130°11’09”E,
70–350 m, primeval lowland rainforest on limestone, 04–06.02.2012, leg. DT; 1 ad [spm 5, largest, No. 7515], S Bird’s Neck, Kaimana 7–9 km NW, 200 m, primeval lowland rain forest on limestone, inside rotten log, 05.09.2010, leg. DT; 1 sad [spm 6, No. 7485], Manokwari, Tugu Jepeng, 00°53’67”S, 134°02’98”E, 40 m, 18–20.05.1998, leg. N. Naidenow. Papua New Guinea, Madang Province, Madang District, near town of Madang, village Baita-Bag, P.D. [?], 1 sad [juv?] [spm 7], 11.03.1999, leg. P. Drozd, No. 7088.

Range. (According to Schileyko & Stagl (2004), updated): Tahiti; Solomon Islands; New Guinea Island; Bismarck Archipelago; E Indonesia; NE Papua New Guinea; The Philippines: Spratly Island; Australia(?); Sri Lanka; Laos; N and S Vietnam; Cambodia; China.

Variability. The studied exemplars differ from each other mainly by the length and shape of coxopleural process (see below) and the size and number (insignificantly in not regenerated legs) of spines on ultimate leg prefemora (see below).

Certain variability is observed in a degree of development of both sternal sutures and sulci (Figs 25, 26) which are practically absent in largest spm 5 (length about 127 mm) and are well developed in the smallest spm 7 (the only one from Papua New Guinea), covering up to ⅓ of sternal length in posterior sternites.

Spm 1 and 4–7 have tergite 1 with transverse fold at its very anterior margin (Fig. 27). In spm 6 and 7 the posterior margin of head capsule is clearly placed inside this fold (Fig. 28), in spm 2 and 3 it is very definitely covered by tergite 1; other 4 exemplars have this character in intermediate (or unclear) conditions (Fig. 27)

Only the largest spm 5 has leg 20 with tarsal spur and very long pretarsus of ultimate legs (as long as tarsus 2); this kind of variability has been already described by Schileyko & Stagl (2004: 117).

The studied material shows certain variation in the size of spiracles which are of typical structure for Ethmostigmus; in spm 3 the spiracles of the first pair occupy nearly whole surface of the respective pleuron (Fig. 29).

Remarks. The examined material fits well to the general description of Ethmostigmus rubripes (Brandt, 1840) as per Schileyko & Stagl (2004). The differences we were able to find are as follows: the forth basal antennal article is not completely setose ventrally (Fig. 30); the lateral margination of tergites 6–9/12(13) is definite but incomplete; the remaining tergites have complete lateral margination; sternites (5)6–19 have incomplete paramedian sulci and short anterior paramedian sutures inside these sulci (these being poorly- to well-developed—compare Figs 25 with 26); sternite 21 with incomplete depression (from poorly- to well-developed) in posterior half; leg 1 with (or without) a rudiment of prefemoral spur, one poorly developed femoral and one tibial spur, legs 1–2 with two tarsal spurs, legs 3–19(20) with 1 tarsal spur.

Schileyko & Stagl (2004) noted that the most variable features of E. rubripes platycephalus are both length and shape of coxopleural process, which may be about three times as long as sternite 21 (adult exemplar from Cambodia, No. 3242 in NHMW). Studied specimens show insignificant variations of the length of coxopleural process which may be about three times as long as sternite 21 (adult exemplar from Papua New Guinea), covering up to ⅓ of sternal length in posterior sternites.

Studied exemplars have pretarsus of maxillae 2 with two well-developed accessory spines (Fig. 34).

Schileyko & Stagl (2004) recorded the interesting peculiarity of all subspecies of E. rubripes—an ordered arrangement of the setae on some distal antennal articles, we read (p. 117): “Small seta[e], which cover more distal antennomeres, are arranged in longitudinal parallel rows”. In both studied and additional material these parallel rows of setae are well developed on antennal articles from 6–8 (Fig. 35).

E. rubripes (Brandt, 1840) is an obviously polymorphic species; Schileyko & Stagl (2004) consider as valid three subspecies: E. r. rubripes (Brandt, 1840), E. r. platycephalus (Newport, 1845) and E. r. spinosus (Newport, 1845). We still do not have molecular data on which to evaluate the real taxonomic status of these forms, so we discuss them as subspecies. The nominal form and E. r. platycephalus have partly overlapping distributions—both have been recorded from Laos, China, Solomon Islands and New Guinea. As for the region considered in this article, they both were recorded from environs of Mamberamo river (Papua Province of Indonesia). Sometimes in such shared localities these subspecies may not be readily distinguishable because of wide variation in their main diagnostic characters (length + structure + spinulation of coxopleural process and spinulation of the ultimate prefemur). However, the studied material clearly differs from the nominal form having relatively long and “lyriform” coxopleural process (Fig. 31) which is rounded dorsally vs coxopleural process much shorter (approximately as long as ultimate sternite), not “lyriform” and strongly arculate dorsally (see Fig. 34 in Schileyko & Stagl (2004)). Also the studied specimens have considerably larger the prefemoral spines and corner spine of ultimate legs (compare Figs 36, 37 with 38).
FIGURES 27–32. *Ethmostigmus rubripes platycephalus* (Newport, 1845).

**FIGURE 27.** Spm 4: head and leg-bearing segment 1, dorsal view; *(tf)—transverse fold.*

**FIGURE 28.** Spm 6: head and leg-bearing segment 1, dorso-lateral view; *(tf)—transverse fold.*

**FIGURE 29.** Spm 3: right pleuron of leg-bearing segment 3, lateral view; *(s)—spiracle.*

**FIGURE 30.** Spm 4: articles 3–4 of right (contorted) antenna, ventral view; *(3a)—antennal article 3, (sa)—ventral setose area.*

**FIGURE 31.** Spm 2: leg-bearing segment 21, ventral view; *(cp)—coxopleural process, (as)—apical spine, (ls)—lateral spines.*

**FIGURE 32.** Spm 4: leg-bearing segment 21, ventral view; *(cp)—coxopleural process, (as)—apical spine, (ls)—lateral spines.
FIGURES 33–37. Ethmostigmus rubripes platycephalus (Newport, 1845).

FIGURE 33. Spm 7: right coxopleural process, lateral view; (as)—apical spines, (sds)—subapical dorsal spine, (ls)—lateral spines, (dar)—dorsal arcuate ridge.

FIGURE 34. Spm 3: distal articles of telopodites of maxillae 2, ventral view; (pm2)—pretarsus of maxilla 2, (acs)—accessory spines of pretarsus.

FIGURE 35. Spm 7: articles 3–20 of right antenna, dorsal view; (3a)—antenal article 3, (lrs)—longitudinal rows of setae.

FIGURE 36. Spm 6: prefemur of right ultimate leg, ventro-medial view; (ps)—prefemoral spines, (cs)—corner spine.

FIGURE 37. Spm 4: leg-bearing segment 21 + prefemora of ultimate legs, ventral view; (ps)—prefemoral spines, (cs)—corner spine.

FIGURE 38. Ethmostigmus rubripes rubripes (Brandt, 1840), No. 7023: leg-bearing segment 21 + prefemora of ultimate legs, ventral view; (ps)—prefemoral spines, (cs)—corner spine.
The difference between the New Guinean material and *E. r. spinosus* is not as clear as in the previous case, because some specimens (for example spm 4, 6) have quite enlarged corner spine and spines of ultimate prefemora (Figs. 36, 37) being similar to *E. r. spinosus* (Fig. 39). Nevertheless as *E. r. spinosus* occurs only in Sri Lanka, Myanmar (?) and S Vietnam we consider the studied material as *E. r. platycepalus* because of both morphological characters and distribution.

As a result of the study of 7 specimens of *E. rubripes platycepalus* (6 from E Indonesia and 1 from Papua New Guinea) we note that the difference between *E. r. platycepalus* and *E. r. spinosus* is less clear-cut than it was thought before. For example subadult spm 4 has ultimate prefemur with three ventro-lateral spines, which is the typical condition for *r. platycepalus* (two spines in *r. spinosus*), but both prefemoral spines and corner spine of not-regenerated ultimate leg (Fig. 37) are practically as large as in *r. spinosus*. In this respect the E Indonesian specimens present an intermediate form between typical *r. platycepalus* from Papua New Guinea and typical *r. spinosus* from Indo-Malaya (Sri Lanka, Vietnam etc).

*Ethmostigmus spinosus nannus* was described by Chamberlin (1939) for two juvenile ("about 35 mm. in length") specimens from "Doormanpad, elevation 1410 m" - a locality in Indonesian Province Papua at upper Lorentz river in the Snow Mountains, 03°30’S, 138°30’E. According to the original description (p. 5) this form has only one diagnostic character: the lack of the dorsal spine(s) of coxopleural process. However, it is known that this a character varies in *E. rubripes*. For instance, Schileyko & Stagl (2004) noted that some subadults of *rubripes spinosus* (for example No. 1564 in NHMW) (note that both syntypes of *E. spinosus nannus* are also subadults!) have coxopleural process without dorsal spines. However, formally speaking, Schileyko & Stagl left open the question about the validity of the latter form. As noted above, the differences between *rubripes spinosus* and *r. platycepalus* seems to be very shallow, so at the moment "spinosus nannus" is rather a synonym of *r. platycepalus* because the latter has been collected in the type locality of "spinosus nannus" and *r. spinosus* does not occur in New Guinea at all. So we have not included this very doubtful form in the List of Species, but as we have not seen syntypes, this form is provisionally left as independent taxon. *E. spinosus nannus* is recorded by Bonato et al. (2016) as *Ostostigma spinosus nannus* Chamberlin, 1939 with the following note: “Possibly a junior synonym of *Ethmostigma rubripes spinosus* (Newport, 1845)".

**Family Cryptopidae Kohlrausch, 1881**

**Genus Cryptops Leach, 1815**

**Subgenus Cryptops s.str.**

Type-species. *Cryptops hortensis* (Donovan, 1810) (by monotypy).

**Range.** All tropical, subtropical and warm temperate regions.

8. *Cryptops (C.) doriae* Pocock, 1891

Figs 40–44

*Cryptops (C.) doriae*: Lewis, 1999: 20;
*Cryptops (C.) doriae*: Lewis, 2007: 15;
*Cryptops (C.) doriae*: Schileyko, 2007: 86;
*Cryptops (C.) doriae*: Lewis, 2013: 12.

**Material.** E Indonesia, West Papua Province, leg. DT: 1 ad + 1 sad [spm 3, CDT; spm 4, No. 7516; in both no ult.legs], S Bird’s Neck, Kaimana 47 km E, Triton bay, Kamaka (former Warika) village env., lake Kamakawalar and surroundings, 03°46’22”S, 134°12’02”E, 60–310 m, primeval lowland rainforest on limestone, 08.09.2010; 1 ad [spm 7, No. 7517], Doberai [= Bird’s Head] Peninsula, Arfak mts, Anggi Gigi Lake S env., Uper vill. & surroundings, 1°18’09”S, 135°54’07”E, 1890–2100 m, primary mid montane rainforest, 08.09.2015. Papua New Guinea, Western Province, [West Sepik District]: 1 sad + 1 juv [spm 1, 2], Mt. Fugilil, 2980 m, 29.09.1975, leg. PB, No. 10 804 in NMNHS; 1 juv [spm 6], Mt. Fugilil, the top, 3150 m, 29.08.1975, leg. PB, No. 10 805 in NMNHS; 1 juv [spm 5; no ult. legs], Bahrman Mts., from Finim Tel [Plateau] to the pass, 2260–2600 m, BSE[?], 1975, leg. PB & Ph. Chapman, No. 10 806 in NMNHS.

**Description** of spm 1 (data on spm 2 in square brackets, when relevant).
FIGURE 39. *Ethmostigmus rubripes spinosus* (Newport, 1845), No. 6534: leg-bearing segment 21 + prefemora of ultimate legs, ventral view; (ps)—prefemoral spines, (cs)—corner spine.

FIGURES 40–44. *Cryptops (C.) doriae* Pocock, 1891.

FIGURE 40. Spm 1: head and leg-bearing segment 1, dorsal view; (cps)—cephalic paramedian sutures.

FIGURE 41. Spm 1: head and forcipular segment, ventral view; (cls)—clypeal setae.

FIGURE 42. Spm 7: right ultimate leg, medial view; (stf)—saw tooth of femur, (dsp)—distal spinose process, (f)—femur, (pf)—prefemur.

FIGURE 43. Spm 7: head and leg-bearing segments 1–3, dorsal view.

FIGURE 44. Spm 3: leg-bearing segments 8–9, ventral view; (ms)—sternal median suture, (ts)—sternal transverse suture.

FIGURES 45. *Cryptops (C.) nepalensis* Lewis, 1999, Spm 1: head and forcipular segment, ventral view; (scp)—setose clypeal plates, (cls)—clypeal seta.
17 antennomeres. Head capsule with very subtle (hardly recognizable at x87.5) but complete paramedian sutures [with half-complete paramedian sulci?] which clearly diverging from heads posterior margin; the latter is covered by tergite 1 (Fig. 40). Clypeus anteriorly with 2 setae (Fig. 41), without setose clypeal plates sensu Lewis (2005) (= they are not recognizable at x87.5).

Tergites 1–2 without sutures and sulci (Fig. 40), tergites 4–6(7) with incomplete paramedian sutures posteriorly, from tergites (7)8 these sutures become complete [tergites from 3 with well-developed complete paramedian sutures]. Sternites with median and transverse sutures equally developed in the anterior body half, without any trigonal sutures (sensu Lewis 2005).

Tarsi of legs undivided, pretarsus with 2 small accessory spines.

Small pore field approximately as long as ½ of coxopleuron. Femur of left ultimate leg with 1 saw tooth, femur of right one without [present on both femora]; tibia with four and tarsus 1 with two saw teeth (as ultimate legs of spm 1 are somewhat contorted we present a picture of spm 7 which has tibia with five and tarsus 1 with three saw teeth, Fig. 42). Prefemora, femora and tibiae of ultimate legs with paired apical dorso-distal teeth (“Endzähne” sensu Attems (1930)).

**Range.** Myanmar, E Nepal (Sagarmatha National Park), W Nepal (Poon-Hill Ridge), India, Vietnam, Cambodia, Laos, Malaysia (Tanah Rata), Indonesia (Java and Sumatra), Tonga Islands (Niuafo’ou Island), the Seychelles (Schileyko (2007), updated; Lewis (2013)). Introduced into UK. To the above list we add also SW Australia (Collie), the Philippines (Luzon Island, Batad), E Indonesia and Papua New Guinea.

Schileyko (2007: 88) recorded 1 exemplar of *C. doriae* (No. 6507) from “Pacific Ocean, Luisiade Archipelago near New Guinea, Niuafoou Isl.” following the original label, which read as “Niuafoou, Louisiade Archipelago”. In fact Niuafo’ou Island belongs to the Tonga Islands, so Louisiade Archipelago should be excluded from the species range.

**Variability.** Studied specimens conform well to the description above, but only spm 1 has head capsule with well defined paramedian sutures.

Spm 3–5, 7 have three setae at the place of setose clypeal plates. In general, the studied specimens have anterior margin of forcipular coxosternite with 2+2 submarginal setae.

In adult spm 3, 7 and two additional specimens from Tonga and Philippines (No. 6507, 7493) pretarsal accessory spines of both legs and ultimate legs are not visible at x87.5 (Fig. 42).

Specimens 1–6 as well as the Australian one (No. 137 in NHMW) show no traces of dark pigmentation (Fig. 40) at tergites and pleurites, which fact cannot be explained by discoloration in alcohol, as our specimens are quite “fresh-collected”. In specimen 7 and two other additional specimens (No. 7124, 7493) this pigmentation well-developed (Fig. 43).

In general, the sternal “cruciform” sutures are equally developed (Fig. 44), but in spm 5 the transverse suture seems to be more sclerotised than the median one.

**Remarks.** Paramedian sutures of head capsule, which are very hardly visible only in spm 1, are not typical for this species but according to all other characters this specimen is also a typical *C. doriae*.

In the studied specimens (as well as in No. 137 in NHMW) the tarsus of legs is not (or not definitely) divided in tarsus 1 and 2, this division being found instead in numerous Vietnamese specimens described by Schileyko (2007). So we confirm Lewis’ (2009) statement that this character (mono- vs bipartite leg tarsus) is quite subjective. We regard this character as not reliable as diagnostic for *C. doriae* and related species (i.e. *C. nepalensis* Lewis, 1999, *C. niuensis* Chamberlin, 1920, etc). See also Remarks to *C. nepalensis* below.

In *C. doriae* the pretarsal accessory spines of both legs and ultimate legs may be absent, so this character should not be used as diagnostic.

9. **Cryptops (C.) nepalensis** Lewis, 1999

Figs 45–47

*Cryptops (C.) nepalensis*: Lewis, 1999: 29;


**Material.** Papua New Guinea: 1 ad + 1 juv [spm 1, 2; no ult.legs], Western Province, [West Sepik District], Mt. Fugilil, 2700 m, 29.09.1975, leg. PB, No. 10 807 in NMNH; 1 juv [spm 3; no ult.legs], [East New Britain Province], New Britain [Island], Kimbe Bay, 15.11.1975, leg. PB, No. 10 808 in NMNH.

Locus typicus: E Nepal, Taplejung District, NW Yamputhin, 2300–2500 m.

**Short description** of spm 1.

FIGURE 46. Spm 1: head and leg-bearing segments 1–2, dorsal view.

FIGURE 47. Spm 1: leg-bearing segments 5–6, ventral view; (ms)—sternal median suture, (ts)—sternal transverse suture.

FIGURES 48–49. Cryptops (C.) anomalans Newport, 1844.

FIGURE 48. No. 7450, spm 2: anterior part of head capsule, ventral view; (scp)—setose clypeal plate, (cls)—clypeal seta.

FIGURE 49. No. 7450, spm 1: leg-bearing segment 8, ventral view; (stt)—sternal transverse thickening between the coxae of legs.

FIGURES 50–52. Cryptops (T.) spinipes Pocock, 1891.

FIGURE 50. Studied spm: right side of leg-bearing segment 5, lateral view; (kpl)—katopleure, (s)—spiracle, (cx)—coxa.

FIGURE 51. Studied spm: left ultimate leg, lateral view; (ss)—strong setae, (dsp)—distal spinose process, (f)—femur, (ti)—tibia, (t1)—tarsus 1.

FIGURE 52. Studied spm: head capsule and anterior part of forcipular segment, ventral view; (acp)—anterior setose clypeal plate, (pcp)—posterior setose clypeal plate, (lt)—labral teeth.
Body uniformly yellow, dark pigmentation of tergites and pleurons absent. Cephalic plate with very subtle (hardly recognizable at x87.5) rudimentary paramedian sutures at its posterior margin. Clypeus with two setae and two well-developed setose plates (Fig. 45)—large anterior and very small posterior. Anterior margin of forcipular coxosternite with 2+3 submarginal setae.

Tergite 1 without sutures/sulci, covering the posterior margin of the head capsule (Fig. 46). Sternal “cruciform” sutures not equally developed: transverse suture considerably more sclerotised than poorly developed median longitudinal one (Fig. 47).

Tarsus of legs 1–19 not divided in tarsus 1 and 2. Pretarsal accessory spines rudimentary, practically not recognizable at x87.5.

Coxopleural pore field short (not reaching to posterior margin of sternite 21), oval and narrow, consisting of ca. 25 pores of various sizes.

**Range.** Central and Eastern Nepal; SW Papua New Guinea and New Britain Island.

**Variability.** Spm 2 and 3 accord well to this description, however both of them have clypeal setose plates much less recognizable and sternal transverse suture less differing from median one. We suppose these conditions to be the juvenile ones as the juveniles of *C. anomalans* Newport, 1844 have these characters also less developed than the adult specimens.

Spm 2 has anterior margin of forcipular coxosternite with 3+3 marginal and 1+1 submarginal setae. In juvenile spm 3 pretarsal accessory spines are not recognizable, coxopleural pore field small, consisting of large pores (juvenile condition).

**Remarks.** Studied exemplars demonstrate unique key-character of *C. nepalensis*—strongly sclerotised sternal transverse suture (Fig. 47) (which is considerably shorter than sternal transverse thickening in subgenus *Trigonocryptops*). However, as a geographical gap between Nepal (the only known area of *C. nepalensis*) and New Guinea is considerable, we tried to confirm the identity of studied material to this species. Lewis (2011) has reasonably divided Cryptops s.str. in three groups of species: *anomalans*, horntensis and *doriae* group. As studied specimens lack sutures at tergite 1 they cannot belong to the first group. The other two groups differ from each other by the presence (in *doriae*) vs absence (in horntensis) of saw tooth/teeth at ultimate femur, but since ultimate legs were detached and lost this character is of no use here. However, Lewis (2011: 46) wrote: “No members of the horntensis-group have been recorded as naturally occurring in Australasia…” (which fact is confirmed by our own data), so we consider our specimens to be closely related to *C. doriae*. Our specimens generally accord to the original description of *C. nepalensis* and to the paratypes (No. 7488) except for the unknown structure of ultimate legs. The presence of setose clypeal plates (which are “indistinct” in some cases, see Lewis (2005), p. 121) has been recorded for subgenus *Trigonocryptops* only, however Lewis (unpubl.) discovered these plates also in *Cryptops (C.) anomalans*. Some additional specimens of *C. (C.) anomalans* demonstrate clypeus with one small triangular (“heart-shaped” sensu Lewis (2005), see pp. 116, 121) plate which bears 4–7 setae (Fig. 48) and is unclearly bordered by subtle sutures. Studied paratypes of *C. nepalensis* have no setose clypeal plates but have legs with normally developed pretarsal accessory spines (the last character is of minor taxonomic value; see also Remarks to *Trigonocryptops*).

Lewis (2013) wrote (page 19): “The species [*C. doriae* and *C. nepalensis*] are sympatric and Lewis (1999) described intermediates” and (page 21): “It may be that they are a single variable species”. We like to note that these two species are really very similar being distinguishable by only one character (strongly sclerotised sternal transverse suture), which is quite subjective and is present (at least) in another representative of the nominal subgenus—*C. (C.) anomalans* (Fig. 49). Lewis (1999, 2013) recorded another difference—mono- vs bipartite structure of leg tarsus, but we consider this character as quite variable intraspecifically and in some cases depending on age, thus being of minor taxonomic value (see also Remarks to *C. doriae*).

It should be also noted, that two of three studied specimens were collected at 2700 m in which respect they resemble *C. nepalensis*, which occurs the similar altitudes.

**Subgenus Trigonocryptops Verhoeff, 1906**

Type-species. *Cryptops gigas* Kraepelin, 1903 (by subsequent designation of Attems, 1930).
Range. Caribbean Islands: Cuba. S America: Peru, SE Brazil (São Paulo State, Rio de Janeiro State, Minas Gerais State). Europe: Spain. Africa: Algeria, Morocco, Ivory Coast, Guinea, Tanzania, Somalia, Yemen (Sokotra Island), Gabon, Benin, Cameroon, Congo. SE Asia: India (Nagpur), Vietnam. Pacific: Australia (Queensland; Western Australia, Roe Plains), Sumba, East Timor, New Guinea Island, Solomon Islands, New Caledonia, New Zealand, Fiji. We add to this list Argentina (Buenos Aires, Sierra de la Ventana Pcia, Cuevas del Torro).

Remarks. Attems (1930) wrote the first general key for subgenus *Trigonocryptops*, which at the time contained 8 species; the most recent key to the subgenus is the one of Demange (1968), which comprises 10 (sub-)species. According to Bonato (2013) contained 8 species; the most recent key to the subgenus is the one of Demange (1968), which comprises 10 species. Ferreira (2013) described *C. (T.) iheringi* Demange, 1963. Murienne et al. (2011) transferred to this subgenus *C. (C.) pictus* Ribaut, 1923 and Ázara & Ferreira (2013) described *C. (T.) iporangensis* and *C. (T.) hephaestus*. Thus, at the moment *Trigonocryptops* should include 28 species.

Although the number of species of *Trigonocryptops* has increased more than in three times since Attems' (1930), the recent papers concerning this taxon contain neither new identification keys, nor new subgeneric diagnosis. Both Edgecombe (2005) and Ázara & Ferreira (2013) repeated the combined data of Verhoeff (1906) and Attems (1930), but it should be corrected according to recent knowledge. For example at p. 235 Attems stated, that head of *Trigonocryptops* covers the anterior margin of tergite 1, however both studied New Guinean representatives of this subgenus clearly show posteriormargin of head capsule covered by tergite 1 (see below; also p. 102 in Würmli (1972)). Also Attems (p. 235) noted “zweiteilig” (=bipartite) katopleure (as in additional representatives of this subgenus clearly show posterior margin of head capsule covered by tergite 1 (see below; also p. 102 in Würmli (1972)). Thus, at the moment *Trigonocryptops* should include 28 species.

We also do not regard the following characters as diagnostic: coloration, bi- vs monopartite tarsus of legs, shape of spiracles and paired distal spinose processes of prefemur, femur, tibia and tarsus 1 of ultimate legs. All these features vary widely (sometimes even intraspecifically) in both *Cryptops s.str.* and *C. (Trigonocryptops)*, so they have not been included in our new diagnosis. Summing up: all characters listed in Diagnosis below are shared by other species of *Cryptops s.str.* (see also Lewis (2005: 123)) and none of them is shared by all representatives of *Trigonocryptops*. Thus we regard the subgeneric status of the latter as questionable, confirming the recent statement of Lewis (in press) who has considered *Cryptops* and *Trigonocryptops* not “as clear cut as current research indicates”.

Attems (1930) wrote the first general key for subgenus *Trigonocryptops*, which at the time contained 8 species; the most recent key to the subgenus is the one of Demange (1968), which comprises 10 (sub-)species. According to Bonato et al. (2016), *Trigonocryptops* includes 24 species, but Lewis (2005) synonymised to it the subgenus *Paratrigonocryptops* Demange, 1963 with its single species *C. (P.) quadrirulatus* Demange, 1963. Murienne et al. (2011) transferred to this subgenus *C. (C.) pictus* Ribaut, 1923 and Ázara & Ferreira (2013) described *C. (T.) iporangensis* and *C. (T.) hephaestus*. Thus, at the moment *Trigonocryptops* should include 28 species.

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We also do not regard the following characters as diagnostic: coloration, bi- vs monopartite tarsus of legs, shape of spiracles and paired distal spinose processes of prefemur, femur, tibia and tarsus 1 of ultimate legs. All these features vary widely (sometimes even intraspecifically) in both *Cryptops s.str.* and *C. (Trigonocryptops)*, so they have not been included in our new diagnosis. Summing up: all characters listed in Diagnosis below are shared by other species of *Cryptops s.str.* (see also Lewis (2005: 123)) and none of them is shared by all representatives of *Trigonocryptops*. Thus we regard the subgeneric status of the latter as questionable, confirming the recent statement of Lewis (in press) who has considered *Cryptops* and *Trigonocryptops* not “as clear cut as current research indicates”.

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Muriénne et al. (2011) at page 70 called the “rhomboid setose field delimited by sutures on the clypeus” and “trigonal sutures on anterior sternites” to be the “unique apomorphies of *C. (Trigonocryptops)*”. However, the recent concept of this subgenus includes some species which have no sternal trigonal sutures; also clypeal setose plates are shared at least by *C. (C.) nepalensis* and *C. (C.) anomalans* (see above; Figs 45, 48 respectively). The latter species has also well-developed sternal transverse thickening which are one of characteristic features of *Trigonocryptops*. Thus, we believe that the recent concept of *Trigonocryptops* must be reconsidered and only species having anterior sternites with complete trigonal sutures and clypeus with setose plate(s) should be assigned to *Trigonocryptops*.

New diagnosis. Cephalic plate usually with paramedian sutures—complete or (more rarely) incomplete, its posterior margin covers (more rarely is covered by) the anterior margin of tergite 1. Clypeus with 1 or 2 (large anterior and very small posterior) setose plates which are limited by sutures and bear 2–10 setae (“setose clypeal plates” sensu Lewis (2005)). Labrum with 1 or (more rarely) 3 teeth.

Tergite 1 mainly with anterior transverse suture, often with (complete or incomplete) paramedian sutures. Sternites with well-developed transverse thickening between the coxae. Endosternites clearly delimited anteriorly (often by the very characteristic trigonal sutures). Katopleure mainly bipartite.

Femur of ultimate legs mainly with 1 well-developed saw tooth.
FIGURE 53. Cryptops (T.) spinipes Pocock, 1891. Studied spm: leg-bearing segments 6–7, ventral view; (stt)—sternal transverse thickening between the coxae of legs.

FIGURES 54–57. Cryptops (T.) sp.

FIGURE 54. Studied spm: right side of leg-bearing segments 17–21, lateral view; (t1)—tarsus 1, (t2)—tarsus 2, (cpf)—coxopleural pore field, (pa)—poreless area of coxopleuron.

FIGURE 55. Studied spm: head and leg-bearing segment 1, dorsal view; (cps)—cephalic paramedian sutures.

FIGURE 56. Studied spm: head capsule and anterior part of forcipular segment, ventral view; (acp)—anterior setose clypeal plate.

FIGURE 57. Studied spm: leg-bearing segment 6, ventral view; (stt)—sternal transverse thickening between the coxae of legs.
10. Cryptops (T.) spinipes Pocock, 1891
Figs 50–53

Cryptops (T.) spinipes: Edgecombe, 2005: 322;
Cryptops (T.) spinipes: Schileyko, 2007: 90;
Cryptops (T.) spinipes: Maurienne et al., 2011: 62.

Material. Papua New Guinea, Western Province, [West Sepik Province], Bahrman Mts., from Finim Tel [Plateau] to the pass, 2260–2600 m, BSE[?], 1 ad, 1975, leg. PB & Ph. Chapman, No. 10 809 in NMNHS.

Description. The whole body covered by numerous setae of various size and length, legs and ultimate legs more setose than the body (Fig. 51).

Head capsule with complete paramedian sutures, its posterior margin covered by tergite 1. Clypeus with two setose clypeal plates (Fig. 52) delimited by sutures—larger anterior (with 2 setae inside, one of them lost) and much smaller posterior (with 1 lost seta inside)—and 5–6 setae around setose plates. Labrum with three teeth (Fig. 52).

Anterior margin of forcipular coxosternite with 6+6 marginal setae (some setae are lost but their sockets are well-recognizable) and 4+4 submarginal setae. Tarsungula very thin and long.

Tergite 1 with anterior transverse suture at very anterior margin and well-developed depression in the middle. Sternites with well-developed transverse ridge between the coxae (Fig. 53). Endosternites better visible in anterior sternites, trigonal sutures well recognizable at sternites 2–5(6). Katopleure not divided vertically (Fig. 50); spiracles definitely oval (not slit-like).

Legs 1–19 with undivided tarsus, 20 with definitely divided tarsus; accessory spines rudimentary (hardly recognizable at x87.5).

Coxopleural pore field bordered posteriorly by wide poreless area consisting of ca 50 pores of various sizes. Ultimate prefemur, femur, tibia and tarsus 1 with paired distal spinose processes (Fig. 51) which are better developed in tibia and tarsus 1. Femur of ultimate legs with a single well-developed saw tooth.


11. Cryptops (T) sp.
Figs 54–57

Material. Papua New Guinea, Western Province, [West Sepik District], Mt. Fugilil, the top, 3150 m, 1 ad [no ult.legs], 29.08.1975, leg. PB, No. 10 810 in NMNHS.

Description. The whole body covered by setae of various length; setae are considerably more numerous at forcipules, legs, margins of tergites and sternites, coxopleuron and ultimate sternite (Fig. 54).

Head capsule with thin but well-developed complete paramedian sutures diverging frontwards, posterior margin covered by tergite 1 (Fig. 55). Clypeus with 2 setose clypeal plates: larger and well-limited rhomboid anterior one (which bears 3 setae) and very undeﬁnately developed minute posterior one (Fig. 56). Labrum with 1 tooth.

Anterior margin of forcipular coxosternite with 5+5 marginal setae plus 3+3 setae on the coxosternite. Tarsungula very thin and long.

Tergite 1 without sutures, tergites (6)7–19 with paramedian sulci and sutures (the latter are visible from a certain angle of illumination). Sternites: transverse ridge between the coxae quite poorly developed (Fig. 57), trigonal sutures well recognizable at sternites 2–6. Katopleure not divided vertically; spiracles oval.

Legs 3–30 with definitely divided tarsus (Fig. 54), accessory spines well-developed.

Coxopleural pore field consists of ca 40 pores of various sizes and is bordered posteriorly by narrow poreless area (Fig. 54).

Remarks. The studied specimen resembles C. (T.) pictus Ribaut, 1923 in most characters except for the lack of dark pigmentation of tergites (Fig. 55), a character which is known to vary a lot in Cryptops. Maurienne et al. (2011) considered C. pictus as a species restricted to New Caledonia stating (p. 71): “Cryptops pictus is more widely distributed than is represented by our sampling”. This specimen has sternal transverse thickening between
the coxae of legs less developed than in C. (T.) spinipes (Fig. 57), thus more resembling the sternal transverse suture of Cryptops s.str. The body and legs are less setose compared with C. (T.) spinipes.

As the ultimate legs of the studied specimen are missing and important taxonomic characters are thus lost its true identity remains uncertain until further material is examined.

Discussion

Altogether 34 specimens from 18 localities (Fig. 1, Appendix 3) of 10 taxa of species rank belonging to 6 genera and Cryptops (Trigonocryptops) sp. were identified (marked by asterisk in the list below). Of them, C. (C.) nepalensis Lewis, 1999 and Rhysida longipes longipes (Newport, 1845) are new for the Papua New Guinea and the adjacent islands (underlined in the list of species).

Considering the available data, the scolopendromorph fauna of New Guinea and adjacent islands currently comprises 32 taxa of species rank belonging to 9 genera—Scolopocryptops Newport, 1844 (1 species), Scolopendra L., 1758 (2), Cormocephalus Newport, 1844 (5), Asanada Meinert, 1886 (1), Otostigmus Porat, 1876 (8), Rhysida Wood, 1862 (4), Ethmostigmus Pocock, 1898 (6), Cryptops Leach, 1815 (4) and Paracryptops Pocock, 1891 (1). However, given that large parts of New Guinea remain poorly sampled this list is likely to increase in future when studies are carried out in the hardly accessible inner territories of the island and some remote islands.

Besides, further studies, including revisions of the type material, are needed to clarify the taxonomic status of doubtful species such as Otostigmus telus Chamberlin, 1939, Ethmostigmus relictus Chamberlin, 1944, E. spinosus nannus Chamberlin, 1939 and E. telior Chamberlin, 1939.

Identification key to the Scolopendromorpha of New Guinea and adjacent islands

1. 23 leg-bearing segments .......................................................... Scolopocryptops melanostoma
   - 21 leg-bearing segments .......................................................... 2.
2. Eyes present .......................................................... 3.
   - Eyes absent .......................................................... 28.
   - Spiracle cup divided horizontally into three flaps .......................................................... 21.
4. Leg-bearing segment 7 without spiracles .......................................................... 5.
   - Leg-bearing segment 7 with spiracles .......................................................... 12.
5. 3 or more basal antennal articles glabrous dorsally .......................................................... 6.
   - 2–2.7 basal antennal articles glabrous dorsally .......................................................... 7.
6. Coxopleural process comparatively long (ratio of length of coxopleuron to sternite 21 about 2:1) with a dorsal spine .......................................................... O. angusticeps
   - Coxopleural process much shorter, without dorsal spine .......................................................... Otostigmus politus
7. At least a few posterior sternites tuberculate .......................................................... O. tuberculatus pauperatus
   - Posterior sternites without tubercles .......................................................... 8.
8. Coxopleuron of segment 21 without a dorsal spine .......................................................... O. orientalis
   - Coxopleuron of segment 21 with a dorsal spine .......................................................... 10.
9. Forcipular tooth-plate with 4–5 teeth .......................................................... O. orientalis
   - Forcipular tooth-plate with (6)7–8 teeth .......................................................... O. multidentis.
10. Prefemur of leg 20 with corner spine .......................................................... 11.
    - Prefemur of leg 20 without corner spine .......................................................... O. astenus
11. Forcipular tooth-plate with 4 main teeth, tergites without spinules .......................................................... O. spinosus
    - Forcipular tooth-plate with 3 main teeth, tergites usually with spinules .......................................................... O. punctiventor
    - Forcipular trochanteroprefemur without a process .......................................................... Genus Rhysida
13. Genus Ethmostigmus
14. Genus Scolopendra

- Posterior sternites without tubercles .......................................................... 8.
- Coxopleuron of segment 21 without a dorsal spine .......................................................... 9.
- Forcipular tooth-plate with 4–5 teeth .......................................................... 10.
- Genus Scolopendra

SCHILEYKO & STOEV
<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Genus</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Lateral margination present on tergite 21 only.</td>
<td>Cryptops</td>
</tr>
<tr>
<td></td>
<td>Lateral margination present on several posterior tergites</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Coxopleural process with 2 apical spines</td>
<td>Ethmostigmus</td>
</tr>
<tr>
<td></td>
<td>Coxopleural process with 3 apical (or 2 apical + 1 subapical) spines.</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Tergites with median and (at least two) lateral longitudinal keels</td>
<td>R. immarginata</td>
</tr>
<tr>
<td></td>
<td>Tergites without longitudinal keels</td>
<td>R. longipes longipes</td>
</tr>
<tr>
<td>16</td>
<td>Forcipular tooth-plate with 4 well-defined teeth</td>
<td>E. telior</td>
</tr>
<tr>
<td></td>
<td>Forcipular tooth-plate with 3 well-defined teeth</td>
<td>E. rubripes</td>
</tr>
<tr>
<td></td>
<td>Forcipular tooth-plate with 2 apical spines</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Tergites with spinules or/and small tuberces</td>
<td>Ethmostigmus pygomegas</td>
</tr>
<tr>
<td></td>
<td>Tergites smooth</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Coxopleural process with 2 apical spines and 1–2 small dorsal ones</td>
<td>E. granulosus</td>
</tr>
<tr>
<td></td>
<td>Coxopleural process with 1 apical spine and 5–7 small dorsal ones</td>
<td>E. venenosus</td>
</tr>
<tr>
<td>19</td>
<td>Sternites without paramedian sulci and sutures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>At least some posterior sternites with incomplete paramedian sutures which</td>
<td></td>
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<tr>
<td></td>
<td>may be accommodated inside incomplete paramedian sulci.</td>
<td></td>
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<tr>
<td>20</td>
<td>Coxopleural process strongly arcuate dorsally, as long as or shorter than</td>
<td>E. rubripes</td>
</tr>
<tr>
<td></td>
<td>tergite 21, with 0–3 dorsal spines</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coxopleural process not arcuate dorsally, considerably longer than tergite</td>
<td>E. r. platycephaus</td>
</tr>
<tr>
<td></td>
<td>21, with 3–5 (rarely 2) dorsal spines</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Coxopleuron without pores.</td>
<td>Asanada brevicornis</td>
</tr>
<tr>
<td></td>
<td>Coxopleuron with pores</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Legs with tarsal spurs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Legs without tarsal spurs</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Prefemur and femur of ultimate legs flattened dorsally, prefemur with 5 or</td>
<td>S. morsitans</td>
</tr>
<tr>
<td></td>
<td>more ventral spines.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Articles of ultimate legs rounded dorsally, prefemur with 0–3 (rarely 4)</td>
<td>S. subspinipes</td>
</tr>
<tr>
<td></td>
<td>ventral spines.</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Tergite 1 without paramedian sutures (very rarely with rudimentary anterior</td>
<td>C. westwoodi westwoodi group</td>
</tr>
<tr>
<td></td>
<td>ones)</td>
<td></td>
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<tr>
<td></td>
<td>Tergite 1 with a well-developed (complete or incomplete) paramedian sutures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Paramedian sutures of tergite 1 interrupted in the middle.</td>
<td>C. neocaledonicus Dawson group</td>
</tr>
<tr>
<td></td>
<td>Paramedian sutures of tergite 1 complete.</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Tergite 21 with a median suture</td>
<td>C. gervaisianus</td>
</tr>
<tr>
<td></td>
<td>Tergite 21 without a median suture</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Antennal articles 1–6/7 glabrous</td>
<td>C. impressus</td>
</tr>
<tr>
<td></td>
<td>All basal antennal articles setose</td>
<td>C. amphicyrura</td>
</tr>
<tr>
<td>27</td>
<td>Forcipular tarsungula very short, not reaching each other when closed</td>
<td>Paracryptops breviunguis</td>
</tr>
<tr>
<td></td>
<td>Forcipular tarsungula of moderate length</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Anterior sternites with trigonal sutures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sternites without trigonal sutures</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Tergite 1 with anterior transverse suture, labrum with 3 teeth</td>
<td>C. (T) spinipes</td>
</tr>
<tr>
<td></td>
<td>Tergite 1 without such a suture, labrum with a single tooth</td>
<td>C. (T) sp.</td>
</tr>
<tr>
<td>30</td>
<td>Sternal transverse suture considerably more sclerotised than the poorly</td>
<td>C. (C) nepalesis</td>
</tr>
<tr>
<td></td>
<td>developed median longitudinal one</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Sternal “cruciform” sutures equally developed</td>
<td>C. (C) doria</td>
</tr>
</tbody>
</table>

**Acknowledgements**

We are grateful to Dr. Dmitry Telnov, Dr. Petar Beron and all other collectors who committed material for this study. We’d like to thank the two reviewers Prof. Alessandro Minelli and Dr. Stelios Simaiakis, and the Zootaxa editor Dr. Thomas Wesener, for their valuable comments that significantly improved the manuscript. The work of AS has been supported by a grant AAAA-A16-116021660077-3 (“Taxonomic and chorological analysis of the animal world, as a ground for study and conservation of the biological diversity”) from the Moscow Lomonosov State University.


Lewis, J.G.E. (2011) A review of the species in the genus *Cryptops* Leach, 1815 from the Old World related to *Cryptops* (Cryptops) *hortensis* (Donovan, 1810) (Chilopoda, Scolopendromorpha). *International Journal of Myriapodology*, 4, 11–50. [dx.doi.org/10.3897/ijm.4.1116](http://dx.doi.org/10.3897/ijm.4.1116)


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APPENDIX 1. List of species with their distribution in New Guinea and adjacent islands.

All literature sources concerning the Scolopendromorpha of New Guinea have been examined and information on the distribution summarized below. The new records are given at the end of the paragraphs and marked as new. Species investigated personally are marked by asterisk, species which are new for New Guinea are underlined.

*1. Scolopocryptops melanostoma Newport, 1845
   Indonesia. North Maluku Province: Halmahera Island (Soah Konorah); Maluku Province: W Seram Island (Honitetu); West Papua Province: Etna Bay (S Bird’s Neck); (West ?) Papua Province: Doormanpad (at 2000-2900/3000 m); Papua Province: Pionierbivak (Mamberamo river), Zoutbron camp (Begowre river).
   Papua New Guinea. Central Province, Moroka, m.1300; Tawarin Island.
   New Guinea, without locality.
   New: E Indonesia, West Papua Province, S Bird’s Neck: environs Kaimana; Triton bay.

2. Scolopendra morsitans L., 1758
   Indonesia. North Maluku Province: Halmahera Island; Maluku Province: Kai Islands (Great and Little Kai Islands), Ambon Island, Aru Islands (Terangan Island); North of West Papua Province, without locality.
   New Guinea, without locality.

*3. Scolopendra subspinipes Leach, 1815
   Indonesia. North Maluku Province: Halmahera Island; Maluku Province: Kai Islands (Great Kai Island), Aru Islands (Wammer and Meriri Islands); West Papua Province: Manokwari, Mansinam Island, Prauvenbir(?), Lorentz river (Doormanpad, Alkmaar), upper Sermowai river; Papua Province: Zoutbron camp (Begowre river), Sentani Lake (about 20 km from Jayapura City), Moaif (coast W from Jayapura City), Pionierbivak (Mamberamo river), “Regen-Eiland”; S part of Papua Province: Mimika river, Utakwa river (“Base Camp and Canoe Camp”), Merauke; E part of Papua Province, W and S coasts of the Yos Sudarso Bay (Hollandia camp, Kajo-bay).
   New Guinea, without locality.
   Not clarified localities. Jaona(?).
   New: E Indonesia, West Papua Province: Waigeo Island (Raja Ampat District), Triton bay (S Bird’s Neck, 40 km E Kaimana), Tamara [="Tamrau"] mountains (North-Central part of the Bird's Head Peninsula).

4. Cormocephalus amphieurys (Kohlrausch, 1878)

5. Cormocephalus neocaledonicus (Kraepelin, 1903)
   Remarks. Attems (1914c: 38, 58) recorded “Cupipes neocaledonicus Krpl.” from New Guinea Island and “Insel Neu-Pommern” (= New Britain Island, Bismarck Archipelago). However, there are no further records of this species in the studied region; according to Bonato et al. (2016) C. neocaledonicus occurs in New Caledonia alone.

6. Cormocephalus impressus Porat, 1786
   Indonesia. Maluku Province, Aru Islands.
   Remarks. Rubaut (1912) recorded one specimen of “Cupipes impressus (Por.)” from “Seltutti, Ile Kobroor”, a record which was subsequently repeated by Attems (1914c: 38, 58, 104) as “Cupipes impressus Por.” from Aru Island. There are no other available data on distribution of this species in studied region.
   According to Attems (1930) and Bonato et al. (2016) C. impressus impressus Porat, 1876 (+ C. impressus var. neglectus (Chamberlin, 1914)) occurs only in the Neotropics (Mexico, Antilles, Ecuador, Peru, Brasil). However, another subspecies – C. impressus armatus (Daday, 1891) – is presented in studied region (see next). As the two taxa occur in areas situated well apart from each other we presume that they may represent two closely related but nonetheless different species.

7. Cormocephalus impressus armatus (Daday, 1891)
   Indonesia. Maluku Province, Barat Daya Islands, Nila Island; East of Papua Province, Hollandia camp (W coast of the Yos Sudarso Bay, Kajo-bay); West Papua, without locality.
   New Guinea, without exact locality.
   Remarks. According to Attems (1930: 104) C. papuanus Attems, 1914 is a junior synonym of C. impressus armatus, the latter being known from New South Wales, Australia (type locality) and “Hollandia [Jayapura city], N[orth]-Neuguinea” (type locality of C. papuanus) + “Insel Nila, Banda See” (Maluku Province of Indonesia).
8. **Cormocephalus westwoodi** (Newport, 1844)

    Indonesia: West Papua Province: Sorong.
    New Guinea, without exact locality.

9. **Asanada brevicornis** Meinert, 1886

    Papua New Guinea: Central Province: Moroka, m.1300 (Hughsibago).
    New Guinea, without exact locality.

10. **Otostigmus angusticeps** Pocock, 1898

    Indonesia: S Papua Province, Merauke.
    Papua New Guinea: East Sepik Province, Sepik river; Bismarck Archipelago, New Britain Island.

    **Remarks.** Lewis (2001: 35) considered **Otostigmus politus pigmentatus** Attems, 1930 identical with **O. angusticeps** and stated that the latter possibly occur in Papua New Guinea and Irian Jaya (= West Papua Province).

11. **Otostigmus astenus** (Kohlrausch, 1878)

    Indonesia: Maluku Province: Ambon Island, Laut Banda (Islands of Banda Sea); West Papua Province: Sorong, Matupi, E Bird’s Head; North of West Papua Province, without exact locality.
    Papua New Guinea: Central Province: Moroka, m.1300; Bismarck Archipelago: New Britain Island, Hermit Island.
    New Guinea, without exact locality.
    New: E Indonesia: North Maluku Province, Ternate Island; West Papua Province, S Bird’s Neck, environs Kaimana.

    **Remarks.**
    1) Among the localities given by Attems (1930: 143) for **O. astenus** are Ambon and “Banda Sea” (both Maluku Province of Indonesia) and “Teoeen” (we were not able to locate the latter). It is not clear where these records come from (see also Lewis, 2010: 9).
    2) Ribaut (1912) described **Otostigmus rugulosus** var. *mertoni* from Dobo at Wammer Island (Aru Islands, Maluku Province) with quite unclear/variable diagnostic characters. Lewis (2002: 16) noted [quote] “These characters allow a possible identification as **O. astenus**, which makes more sense geographically, however, I have been unable to locate the specimen and as the details given are insufficient for a confident identification it is regarded as a nomen dubium”.

12. **Otostigmus multidens** Haase, 1887

    Indonesia: Maluku Province, Aru Islands (Doboe); Papua Province, Pionierbivak.
    Papua New Guinea: Central Province: Moroka, m.1300; Tawarin Island.
    New Guinea, without exact locality; “Nord New Guinea”.
    New: E Indonesia, West Papua Province, S Bird’s Neck: environs Kaimana; 47 km E Kaimana, Triton bay.

13. **Otostigmus orientalis** Porat, 1876

    Indonesia: Maluku Province, Maluku Islands, Seram Island.

14. **Otostigmus politus** Karsh, 1881

    Indonesia: West Papua Province: Lorentz river (Alkmaar), Mosso river, Ramoi near Sorong; S part of Papua Province, Merauke; ? Province, Jaga.
    Papua New Guinea: East Sepik Province: Sepik river; Morobe Province: NE Huon Gulf, 13 km SSE of Finschhafen, Tami Islands; Madang Province: S of Madang, Stephansort.
    New Guinea, without exact locality.

    **Remarks.** Kraepelin (1903: 109) was the first to record this species from New Guinea (without exact locality), separating New Guinean representatives by their relatively long coxopleural process lacking dorsal spines. In 1914 Attems recorded **O. politus** from “Jaga, Mosso” (1914a: 567, 569) and also from “New Guinea”, the latter being without precise locality (1914c: 37, 60, 108). Attems (1915b) repeated his data of 1914a adding to the list of records also “1904 Merauke (Dr. Koch), 1907 Alkmaar 3.Aug.1907” (p. 3) and “Tami, Berg am Kaiserin Augusta-Fluss, Stephansort, Kaiserin Augusta-Fluss Expedition, Ramoi, Neu-Guinea, (Berlin.Mus.)” (p. 17). These records are not accompanied by descriptions or drawings, neither the subspecific status of the studied material was mentioned. In his monograph Attems (1930: 150) described **O. p. pigmentatus** (= **O. angusticeps**) from Sepik river (North of Papua New Guinea) and Merauke (South of Indonesian Province Papua) and specified that **O. p. politus** occurs in China. Chamberlin (1920: 14, 235) recorded **O. politus** (without mentioning which subspecies) from “New Guinea” giving no any other details.

    Taking into consideration these data, **O. politus** (in the perception of old authors) should occur in about ten localities throughout New Guinea. However, Lewis (2001, 2003) revised the species concept, and at the moment it contains the nominal subspecies only. According to both Lewis (2003) and Schileyko (2007), the range of **O. p. politus** is limited to China, Cambodia, Myanmar, Korea, N Vietnam and, perhaps, India. Bonato *et al.* (2016) recorded it also from Madagascar, but this might be an error. Thus, the New Guinean specimens recorded by Attems and Chamberlin may belong to **O. angusticeps** (however Kraepelin’s material should belong to **O. politus** s.str. as it has no dorsal spine at coxopleural process). Summing up, as we have not seen any of those specimens, we prefer to keep **O. politus** (without subspecies) separately in this list.
15. *Otostigmus punctiventer* (Tömösváry, 1885)  
**Indonesia.** Maluku Province: Seram Island; West Papua Province: Waigeo Island (environs Beo), Sorong, Doormanpad (2000-3000 m), Bird’s Head; Papua Province: Pionierbivak and Bataviabivak at Mamberamo river; East of Papua Province, Hollandia camp (W coast of the Yos Sudarso Bay, Kajo-bay).

**Papua New Guinea.** Bismarck Archipelago, New Britain Island.

**New Guinea, without locality.**

**Remarks.** 1) Lewis (2010: 9) noted that “Most records of *O. punctiventer* probably refer to *O. astenus*”.

2) Attems (1914c: 108) recorded “*Otostigmus punctiversites* Tömösv. (Krpl. p.114)” from “Borneo, Neu-Pommern [New Britain Island], Neu-Lauenburg [Duke of York Islands], Nord-Neu-Guinea”. The taxon is missing in both Tömösváry (1885) and Kraepelin (1903), the latter author gave at page 114 the description of *O. punctiventer*. We tend to believe that “punctiversites” was lapsus calami of Attems instead of “punctiventer”.

16. *Otostigmus spinosus* Porat, 1876  
**New Guinea, without exact locality.**

**Remarks.** Attems (1914c: 37, 60) recorded this species from “Neu-Guinea” without exact locality; we were not able to find any other records of *O. spinosus* from the region in concern. According to Bonato et al. (2016) it is known from Taiwan, Myanmar, Singapore, Peninsular Malaysia, Sarawak (Borneo Island), Jawa Island and “Sumatera” (= W Sumatra Island); Schileyko (2007: 81) recorded it from Vietnam.

17. *Otostigmus tuberculatus pauperatus* Attems, 1915  
**Indonesia.** West Papua Province, Raja Ampat District, South Waigeo Island, Saonek.

18. *Rhysida carinulata* (Haase, 1887)  
**Indonesia.** “Nordwest Neu Guinea”, without exact locality.

**Remarks.** Attems (1914c: 109) (repeating Haase, 1887: 83), recorded this species from Thursday Island (Torres Strait Islands Archipelago, Queensland Province, Australia) which is located close to the studied region.

*19. Rhysida immarginata* (Porat, 1876)  
**Indonesia.** Maluku Province, Ambon Island.

**New:** Papua New Guinea, Madang Province, Madang District, environs of Madang.

**Rhysida longipes** (Newport, 1845)  
**Indonesia.** North Maluku Province: Halmahera Island, Ternate Island; Maluku Province: Seram Island (Kairatu), Banda Island.

**Papua New Guinea.** Bismarck Archipelago, New Britain Island.

**New Guinea, without exact locality.**

*20. Rhysida longipes longipes* (Newport, 1845)  
**New:** Papua New Guinea, New Britain Island, East New Britain Province, Rabaul.

21. *Rhysida nuda* (Newport, 1845)  
**Indonesia.** Maluku Province, Banda Islands.

**Remarks.** Attems (1914c: 60) recorded this species from “Banda” without precise locality; we were not able to find any other records of *R. nuda* from the studied region. Bonato et al. (2016) gave no data on distribution of this species, citing L. E. Koch (1985): “Many published records of *Rhysida nuda* Newport, 1845 are probably referrable to *Rhysida immarginata* (Porat, 1876)”.

22. *Ethmostigmus granulosus* Pocock, 1898  

23. *Ethmostigmus pygomegas* (Kohlraush, 1878)  
**New Guinea, without exact locality.**

**Remarks.** Schileyko & Stagl (2004) mentioned this species to occur in “Himalaya (Terra typica): Silhet, Bhutan; E Himalayas, Assam [=India]; Myanmar”. They noted its closest resemblance to *E. trigonopodus*, writing (p. 116): “we prefer to keep provisionally the name pygomegas until more material becomes available”.

**Ethmostigmus rubripes** (Brandt, 1840)  
**Indonesia.** Maluku Province, Banda Islands; Papua Province: Pionierbivak at Mamberamo river; West Papua, without locality.

**Papua New Guinea.** Central Province: Moroka, m.1300.
New Guinea, without locality.

Remarks. Haase (1887) described Heterostoma rugosum for only one adult (body 95 mm + ultimate legs 20 mm long) specimen from Halmahera Island (North Maluku Province of Indonesia) which should be kept in “Mus. Leiden”. Attems (1930) did not include E. rugosus in his Ethmostigmus-key considering it as doubtful / unrecognizable form. It should be noted, that according both original description (p. 91) and drawings (Haase’s Fig. 96a), E. rugosus is quite similar to E. rubripes but differs from all subspecies of the latter by very long (= high) forcipular tooth-plates.

24. Ethmostigmus rubripes rubripes (Brandt, 1840)

Indonesia. Papua Province: Pionierbivak at Mamberamo river; S part of of Papua Province, Merauke.

Papua New Guinea. Western Highlands Province: Kubor Mountains, Mt. Kuta.

*25. Ethmostigmus rubripes platycephalus Newport, 1845

Indonesia. North Maluku Province: Halmahera Island, Ternate Island, Maluku Province: Kai Islands (Great Kai Island), Seram Island, Ambon Island, Buru Island; West Papua Province: Manokwari at NE Bird’s Head Peninsula, Dorey bay, Prauenbir(?), Mansinam Island, Biak Islands (Biak, Supiori and Numfor), E Bird’s Head, Doormanpad (1410 m), “Angadi”;

Papua Province: Yaper Island (Cenderawasih Bay), Hellwig Mountain, “Bivak-Eiland”, Zoutbron camp (Begowre river), near Mamberamo and Idenburg rivers, Sentani Lake (about 20 km from Jayapura City); S part of Papua Province: Mimika river, Utakwa river (“Base Camp and Canoe Camp”), Merauke; E part of Papua Province: Tanahmerah Bay (50 km NW of Jayapura), Hollandia camp (W coast of the Yos Sudarso Bay, Kajo-bay).

Papua New Guinea. Sandaun Province: “coast S from Yos Sudarso Bay”, Aitape, confluence of Bewani and Arso river (Holsin Bivak); East Sepik Province: Sepik river, “Andai” (Karawari Rural District); Central Province: Moroka, m.1300; Madang Province, Madang city; Northern Province, Gani [Creek]; Tawarin Island; Islands Region (Bismarck Archipelago): New Britain Island, Duke of York Islands; Morobe Province, Umboi Island.


Not clarified localities. Rubi(?), Jaona(?), Swaust Valley(?).

New: E Indonesia, West Papua Province: Misool Island (Raja Ampat District), Kaimana (S Bird’s Neck); Papua New Guinea: environs of Madang (Madang Province).

26. Ethmostigmus telior Chamberlin, 1939

Indonesia. Papua Province, Pionierbivak at Mamberamo river.

Remarks. Ethmostigmus telior Chamberlin, 1939 was described from Pionierbivak at Mamberamo river (Indonesia, Papua Province) for only juvenile/subadult (“Length about 42 mm”) specimen, which should be “especially distinct in the short coxopleural processes and in characteristic spining of the anal legs”. From our point of view the most reliable feature of this questionable form is total absence of sternal both sulci and sutures. There is no available information on E. telior except for Chamberlin (1944) who repeated (in list) the data from the original description. E. telior is not recorded by Bonato et al. (2016).

27. Ethmostigmus venenosus Attems, 1897

Indonesia. North Maluku Province, Halmahera Island.

*28. Cryptops (C.) doriae Pocock, 1891

Papua New Guinea. Central Province: Moroka, m.1300; Bismarck Archipelago, New Britain Island.

New Guinea, without locality.

New: E Indonesia, West Papua Province: S Bird’s Neck (47 km E Kaimana, Triton bay), Bird’s Head Peninsula (Arfak mts, Anggi Gigi Lake S env). Papua New Guinea, Western Province, West Sepik District: Mt. Fugilil, Bahman Mts. (Finim Tel Plateau and environs).

*29. Cryptops (C.) nepalensis Lewis, 1999

New: Papua New Guinea: Western Province, West Sepik District, Mt. Fugilil; Bismarck Archipelago, New Britain Island, East New Britain Province, Kimbe Bay.

*30. Cryptops (T.) spinipes Pocock, 1891

Indonesia. West Papua Province, without locality.

New: Papua New Guinea, Western Province, West Sepik District, Bahman Mts., Finim Tel Plateau and environs.

*31. Cryptops (T.) sp.

New: Papua New Guinea, Western Province, West Sepik District, Mt. Fugilil.

32. Paracryptops breviunguis Silvestri, 1894

Papua New Guinea. National Capital District, near Port Moresby, South slope of Astrolabe Mountains, Gerekanumu.

New Guinea, without locality.
APPENDIX 2. List of old and traditional geographic names.

**Indonesia**

_Angadi_ = locality in West Papua Province  
_Banda Inseln_ = Banda Archipelago (Maluku Islands, Maluku Province)  
_Bataviabivak_ (Batavia Bivak) = locality at Mamberamo river close to van Rees Mountains (Papua Province)  
_Bivak-Eiland_ = locality in Central part of Papua Province (05°01'01"S, 138°39'0"E)  
_Boeroe Insel_ = Buru Island (Maluku Province)  
_Ceram (Seran, Serang)_ Island = Seram Island (Maluku Islands, Maluku Province)  
_Doherai (Vogelkop)_ Peninsula = Bird's Head Peninsula (West Papua Province)  
_Doormanpad (Doormanpad-bivak)_ = locality at upper Lorentz river in the Snow Mountains, altitude a 2400 m (Papua Province, 03°30'S, 138°30'E)  
_Dore_ = Dorey bay environs Manokwari at NE Bird's Head Peninsula (West Papua Province)  
_Dutch New Guinea_ = West Papua Province  
_Etna-Bai_ = Etna Bay, S Bird's Neck (West Papua Province)  
_Gilolo (Jailolo)_ = Halmahera Island (Maluku Islands, North Maluku Province)  
_Hellwig-Gebirge_ = Hellwig Mountain (Papua Province)  
_Hollandia (Numbay, Kota Baru)_ = Jayapura city (Papua Province)  
_Hollandia Bivak_ = locality in Kajo Bay close to Jayapura city, W coast of the Yos Sudarso Bay (Papua Province, 02°32'29"S, 14°04'4"E)  
_Humboltbai (Humboldt Bay)_ = Yos Sudarso Bay (Papua Province)  
_Irian Jaya_ = West Papua Province  
_Jobii_ (Japen) = Yapen Island in Cenderawasih Bay (Papua Province)  
_Key Inseln_ = Kai Islands, island group in the Banda Sea, SE Maluku Islands, Maluku Province  
_Mafoor (Numfoor, Noemfoor, Noemfoer)_ = Numfor Island in Cenderawasih Bay (N part of West Papua Province)  
_Mamberano (Mamberana)_ = Mamberamo river (N part of Papua Province)  
_Mambikion-Gebiet_ = area in East part of Bird's Head (West Papua Province)  
_Moluccas_ = Maluku Islands  
_Mysore_ = Biak and Supiori Islands (or Biak Islands) in Cenderawasih Bay (N part of West Papua Province)  
_Nord-Neuguinea_ = large area around Northern part of boundary between Western and Eastern parts of New Guinea Island  
_Nord-Lorentz-Fluss_ = N part of Lorentz river  
_Oberlauf des Sermowai-Flusses_ = upper Sermowai river (N part of West Papua Province)  
_Papua Barat_ = West Papua Province  
_Pionierbivak (Pioneer Bivak)_ = locality at Mamberamo river (Papua Province)  
_Praevenbir_ = locality in West Papua Province  
_Pulau Mansinam_ = Mansinam Island in 6 km from Manokwari at NE Beard's Head Peninsula (West Papua Province)  
_Regen-Eiland_ = locality in Central part of Papua Province (04°49'58"S, 138°46'01"E)  
_Schouten Islands_ = Biak Islands in Cenderawasih Bay (N part of West Papua Province)  
_Snow Mountains (Pegunungan Maoke)_ = Maoke Mountains (WS part of Papua Province)  
_Sungai Mosso_ = Mosso river (West Papua Province)  
_Tanah-Merah-Bucht (Teluk Tanahmerah)_ = Tanahmerah Bay (or Tanah Merah Bay) about 50 km NW of Jayapura (Papua Province)  
_Waigeou (Waigiu, Amberi)_ = Waigeo Island (West Papua Province)  
_Zoutbron Bivak_ = locality/camp at Begowre river (Papua Province, 03°1'33"S, 140°57'30"E)

**Papua New Guinea**

_Andai_ = locality in mountains of Karawari Rural District (S border of East Sepik Province)  
_Deutsch Neuguinea_ = NE part of Papua New Guinea  
_Eitape_ = Aitape city (Sandaun Province, 02°32'29"S, 14°04'412"E)  
_Friedrich Wilhelmshafen (Friedrich Wilhelms-Hafen)_ = Madang city (Madang Province)  
_Hauptbivak (Haupt-Bivak)_ = locality at Sepik river at the mouth of October river (East Sepik Province, 04°04'18"S, 141°07'15"E)  
_Holsin (Hussin)_ Bivak = locality at Bewani river close to its confluence with Arso river (Sandaun Province)  
_New Pommern (Neupommern, Neu Pommern, New-Pommern) Insel_ = New Britain Island (Bismarck Archipelago, Islands Region of Papua New Guinea)  
_New-Lauenburg (Neulauenburg)_ = Duke of York Islands (Bismarck Archipelago, Islands Region of Papua New Guinea)  
_Kaiserin Augusta Fluss(e) (Sepik Strom)_ = Sepik river (East Sepik and Sandaun Provinces)  
_Kaiser-Wilhelmsland (Wilhelmsland)_ = NE part of Papua New Guinea  
_Not clarified localities_  
_Jaga (Indonesia), Jaona, Rubi, Sabang (not one at N tip of Sumatra Island), Swaust Valley.
APPENDIX 3. List of localities.

The material treated here derives from 18 localities and 5 Provinces: North Maluku, West Papua (both Indonesia), Islands Region, Madang and Western Province (all Papua New Guinea) (Fig. 1). These localities are:

E Indonesia, Maluku Islands, North Maluku Province:
1. Tidore Island, caldera of Sabale volcano, Lake Telaga, 0°43'38"N, 127°25'46"E, 405 m, under rotten bark
2. Halmahera N (= Morotai) Island, Galela area, Mt. Ngededo Ma Girapang at Roko village, 1°50'07"N, 127°43'17"E, 230 m, primary & secondary lowland rainforest, under rotten bark

E Indonesia, West Papua Province, Raja Ampat District:
3. Waigeo Island, Waisai 9-10 km NEE, 00°23'21"S, 130°54'17"E, 80 m, clearing in primeval lowland rainforest on limestone
4. Misool Island (central), river Gam upstream, Gamta village 12–14 km NW, 01°57'50"S, 130°11'09"E, 70–350 m, primeval lowland rainforest on limestone

E Indonesia, West Papua Province, Bird's Head:
5. NE Bird's Head Peninsula, Manokwari, Tugu Jepeng, 00°53'67"S, 134°02'98"E, 40 m
6. North-Central region of the Bird's Head Peninsula, Tamarau (= Tamrau) mts., nearly 12 km NW Fef village, 1050 m, primeval lower montane rainforest
7. Doberai [= Bird's Head] Peninsula, Arfak mts, Anggi Gigi Lake S environs

E Indonesia, West Papua Province, S Bird's Neck:
8. Kaimana 2–4 km NE, road from Kaimana to Bitsyaru bay, 03°39'26"S, 133°46'21"E, 150 m, primeval lowland rainforest on limestone
9. Kaimana 7–9 km NW, 3°35'02"S, 133°42'58"E, 25–200 m, primeval lowland rainforest on limestone
10. Kaimana 40 km E, Triton bay, Lobo village environs, 03°45'00"S, 134°05'33"E, 700–900 m, primeval rainforest on limestone
11. Kaimana 47 km E, Triton bay, Kamaka (former Warika) village environs, lake Kamakawalar and surroundings, 03°46'22"S, 134°12'02"E, 60–310 m, primeval lowland rainforest on limestone
12. Kaimana 47 km E, Triton bay, Kamaka (former Warika) village environs, lake Kamakawalar, 03°46'21"S, 134°12'11"E, 30 m, peninsula with shrubs

Papua New Guinea, Western Province, West Sepik District:
13. Mt. Fugilil, 2700–3150 m
14. Bahman Mts., from Finim Tel Plateau to the pass, 2260–2600 m

Papua New Guinea, Madang Province, Madang District:
15. near town of Madang, village Baita-Bag (Baitabag)
16. environs of Madang, (village?) Nagada

Papua New Guinea, Islands Region of Papua New Guinea, Bismarck Archipelago, New Britain Island:
17. East New Britain Province, Rabaul, under bark
18. West New Britain Province, Kimbe Bay

APPENDIX 4. Additional material used for morphological comparison.

Scolopocryptops melanostoma Newport, 1845
1 sad, Dominican Republic, St. Cristobal, No. 7075; 2 ad + 2 sad + 2 juv, Venezuela, Aragua and Miranda Provinces, No. 7169-7172

Scolopendra subspinipes Leach, 1815
Vietnam: 2 ad, Guang Binh Province, No. 6756; 5 ad + 2 juv, Gialai Contum Province, No. 6292; 1 ad + 2 juv, Lam Dong Province, No. 7224

Otostigmus (O.) astenus (Kohlrausch, 1881)
2 ad, Niuafo’ou Island, Tonga, No. 6351; 1 sad, Hawaii Islands, No. 6352; 9 juv, Tam Dao Island, Vietnam, No. 6390; 5 ad, India, Himachal Pradesh, Khoti village, No. 7009
**Otostigmus (O.) multidens** Haase, 1887
   1 sad, W Malaysia, Pahang, No. 6458; 1 ad + 4 sad, Vietnam, No. 6398, 6400, 6405, 6740; 1 ad, Indonesia, Sumatra Isl., Tahura Natnl. Park, No. 7099

**Rhysida immarginata immarginata** (Porat, 1876)
   1 ad, Central Nepal, No. 7005; 1 ad, Indonesia, Sumatra, No. 7126

**Rhysida longipes longipes** (Newport, 1845)
   1 juv, Vietnam, Dong Nai Province, Ma Da, No. 6633; 1 ad [largest spm, about 63 mm], Peru, Loreto Region, Iquitos, No. 6683; 1 ad, Cambodia, Ratanakiri Province, Banlung, No. 7003; 1 ad, Pakistan [Iran?], Makran Coast, No. 7068; 1 sad, Philippines, Cebu Island, Santader, No. 7163; 1 ad, Sri Lanka, Sabaragamuwa Province, Millennium Foundation Orphanage, No. 7455

**Ethmostigmus rubripes platycephalus** (Newport, 1845)
   1 sad, Vietnam, Dong Nai, Ma Da, No. 6553

**Ethmostigmus rubripes rubripes** (Brandt, 1840)
   Fig. 38
   1 ad, SW Australia, No. 6334; 1 sad, “Scolopendra perfida L.Koch n.s[p]., Lagos [Laos?], col. Godefroy”, No. 7023

**Ethmostigmus rubripes spinosus** (Newport, 1845)
   Fig. 39
   1 sad, Vietnam, Dong Nai Province, Ma Da, No. 6534

**Cryptops (Cryptops) doriae** Pocock, 1891
   1 ad, Tonga Islands, Niuafo’ou Island, No. 6507; 1 ad, Malaysia, Tanah Rata, No. 7124; 1 sad, The Philippines, Luzon Island, Batad, No. 7493; 1 ad, SW Australia, Collie, 26.08.1905, Hamb. S.W. Austral. Exp[edition], No. 137 in NHMW

**Cryptops (C.) nepalensis** Lewis, 1999
   2 ad [spm 26, 27; paratypes], Nepal, Sankhwa Sabha District, Arun valley, No. 7488

**Cryptops (C.) anomalans** Newport, 1844
   Figs 48, 49
   15 specimens, Russia, Rostov Province, No. 7450; 7 ad, Krim peninsula, No. 7472, 7473, 7477; 1 ad [dissected] Ukraine, Kherson Province, No. 7476

**Cryptops (Trigonocryptops) iheringi** (Brölemann, 1902)
   1 ad [macerated+compressed], Argentina, Buenos Aires, Sierra de la Ventana Pcia, Cueva [cave] del Torro, No. 7315

**Cryptops (T) sarasini** Ribaut, 1923
   1 ad, Brazil, Sao Paolo, Butantan, No. 7502