

Schizoprorereus vulcanus, a new species of earwig (Dermaptera: Chelisochidae) from Sulawesi and a checklist of Sulawesian Dermaptera

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Abstract. A new species of Dermaptera, *Schizoprorereus vulcanus* sp. nov. (Chelisochidae) from Sulawesi (Indonesia) is described. A checklist with 52 species of Sulawesian Dermaptera is given.

Keywords. Dermaptera, Chelisochidae, *Schizoprorereus vulcanus*, new species, check list, Indonesia, Sulawesi.

Zusammenfassung. Eine neue Art der Dermaptera von Sulawesi, *Schizoprorereus vulcanus* sp. nov. (Chelisochidae) wird beschrieben. Weiterhin wird eine Checkliste für die aus Sulawesi bekannten 52 Dermaptera-Arten zusammengestellt.

lar than triangular; coronal sutures distinct; antenna up to 18 annuli, annuli cylindrical; first annulus about as long as the distance between antennal bases; 2nd very short, ring shaped; 3rd and 4th short but of equal length, 5th and following increasingly long and slender. Eyes small, in lateral view only about half the length of the malar space. There is only little sexual dimorphism in this dermapteran species. The female are somewhat smaller and have shorter (3 mm) cerci without tooth (Figs 3, 4).

Introduction

A recent travel of D. MATZKE to Sulawesi was taken as occasion to collect Dermaptera (earwigs). Amongst these specimens we found a species yet unknown to science, which we describe herein. The new species is put into context by a review of the previous taxonomic literature describing species from the far east Indonesian island of Sulawesi (formerly also called Celebes). The data on the distribution of the collected Dermaptera are available on <http://www.earwigs-online.de>.

Material and Methods

The specimens of the new species were collected manually. The genitalia were removed, dehydrated, transferred to Euparal on a microscopic slide and photographed with a digital Polaroid IMCe camera on a Zeiss Axiophot microscope. Other photographs were taken with a Nikon SMZ-2T stereomicroscope with a Nikon Coolpix 950 attached.

Abbreviations

- BMNH The Natural History Museum, London, UK
MNHN Muséum national d'Histoire naturelle, Paris, France
MTD Museum für Tierkunde Dresden, Germany
SMNS Staatliches Museum für Naturkunde Stuttgart, Germany

ZMUC Zoological Museum University Copenhagen, Denmark

Description of *Schizoprorereus vulcanus* sp. nov.

Holotype. ♀ (Fig. 1) Indonesia, Sulawesi (Celebes), Tomohon volcano, Mt. Lokon, N 01.358° N 124.792° E, 900–1000 m, 25.I.2001. MTD.

Paratypes. Five specimens, same data as holotype.

The paratypes are deposited in different collections: Each one ♂ in the MTD, SMNS, Naturkundemuseum Leipzig and 1 ♂ and 1 ♀ in the collection of the Phylldrom Entomological Club in Leipzig, Germany (http://www.phylldrom.de/index_e.htm).

Derivatio nominis. The species name refers to the Tomohon volcano, Mt. Lokon, an extinct volcano.

Description. Coloration. Uniformly light brown to yellow, but antennae somewhat darker; antennal annuli 13–15 almost white, tegmina and wings darker and brown, glandular folds on segments 2–3, posterior margin of ultimate segment and denticles of cerci light brown.

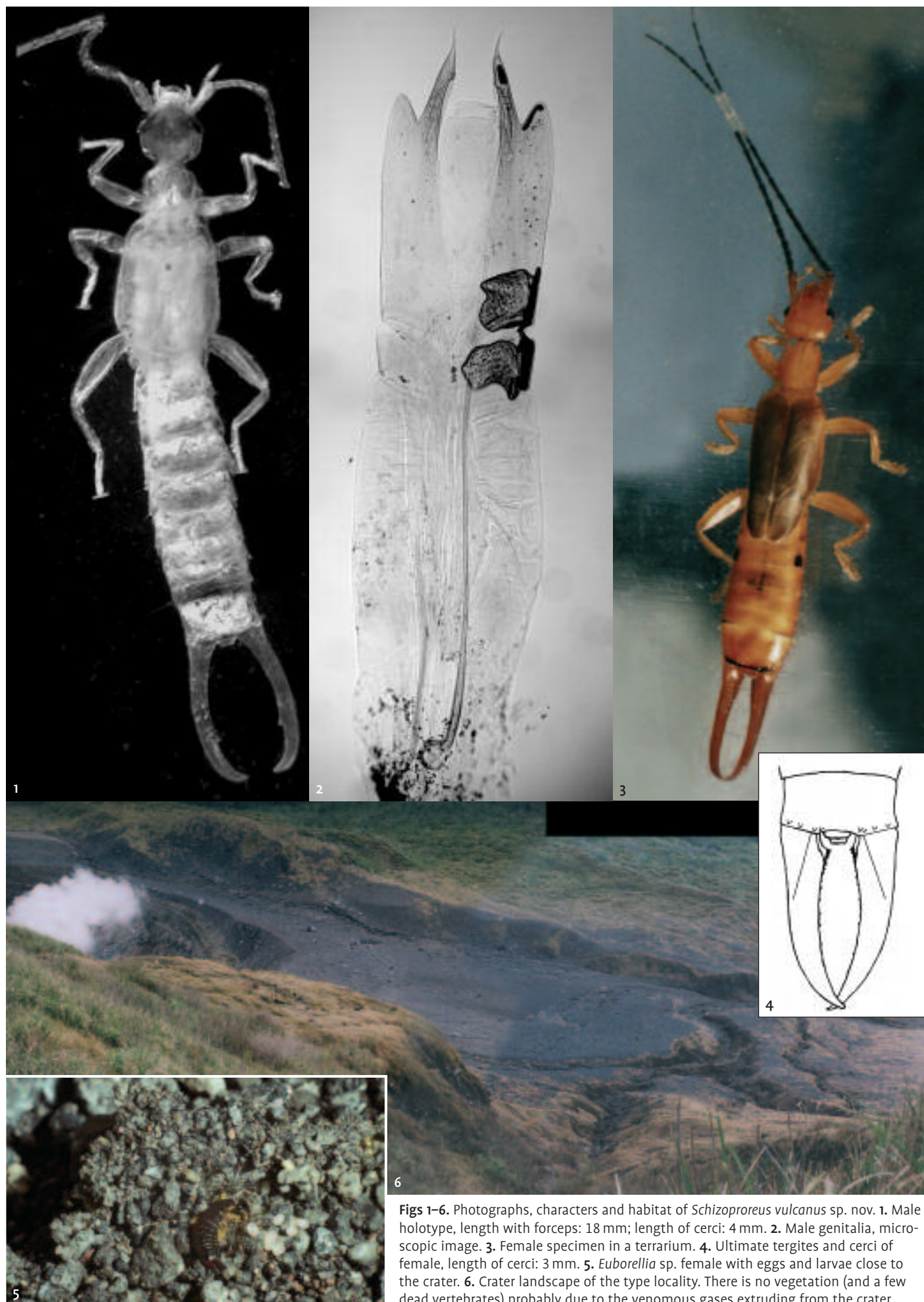
Habitus. The whole body is distinctly flat, as in the other species of *Schizoprorereus* STEINMANN, 1987. Head rather rectangu-

Head. Wider than pronotum. Pronotum longer than wide; lateral margins straight, posterior margin broadly rounded. Mesonotum completely covered by the pronotum. Tegmina long and well developed; no lateral keels; posterior margins concave, forming a small median tip.

Legs. Short, hind legs reaching at maximum the 5th abdominal segment, tarsi simple with the chelisochid elongation of the ventral part of the second tarsomere; 1st tarsomere somewhat shorter than 3rd; 2nd ring-like in dorsal view; arolium absent.

Abdomen. Parallel-sided. Lateral tubercles (glandular folds) on 2nd and 3rd tergite weak; abdominal tergite lateral without carina. Pygidium of male trapezoid with two small tubercles in dorsal view. Cerci of male (female cerci see Figs 3, 4) gently arched with tubercles on inner margin in their basal half; a larger, medially directed tooth on inner margin of each cercus.

Male genitalia (Fig. 2). Long and slender; a single, almost straight virga is visible, bearing a so called basal vesicle at its very base. Each paramere is apically deeply cleft, thus forming two unequal lobes. The outer, lateral lobe has a rounded apex, the inner median lobe is much longer and thinner than the lateral one, and is spike-like.



Figs 1–6. Photographs, characters and habitat of *Schizoporeus vulcanus* sp. nov. **1.** Male holotype, length with forceps: 18 mm; length of cerci: 4 mm. **2.** Male genitalia, microscopic image. **3.** Female specimen in a terrarium. **4.** Ultimate tergites and cerci of female, length of cerci: 3 mm. **5.** *Euborellia* sp. female with eggs and larvae close to the crater. **6.** Crater landscape of the type locality. There is no vegetation (and a few dead vertebrates) probably due to the venomous gases extruding from the crater.

Table 1. Checklist of the Sulawesi Dermaptera in alphabetic order according to family. TL: Sulawesi is type locality.

Systematic position and Species	TL; extralimital distribution and remarks	Systematic position and Species	TL; extralimital distribution and remarks
Anisolabididae		Pygidicranidae	
Carcinophorinae		Echinosomatinae	
1 <i>Euborellia annulipes</i> (LUCAS, 1847)	cosmopolitan	27 <i>Echinosoma celebense</i> HINCKS, 1959	TL; endemic
2 <i>Euborellia plebeja</i> (DOHRN, 1863)	wider oriental	28 <i>Echinosoma sumatranum</i> (HAAN, 1842)	Wider oriental
3 <i>Gonolabis javana</i> (BORMANS, 1883)	Java, Sulawesi	Pygidicraninae	
Platylabiinae		29 <i>Cranopygia celebensis</i> (BORMANS, 1903)	TL; Borneo, Myanmar (Burma)
4 <i>Platylabia major</i> DOHRN, 1867	TL; Java, Myanmar, Thailand, Vietnam	30 <i>Cranopygia guttata</i> (KIRBY, 1903)	TL; endemic
Chelisochoidea		31 <i>Epicranopygia picta</i> (GUÉRIN-MENEVILLE, 1838)	India, Sri Lanka, Thailand, Vietnam
Chelisochoellinae		32 <i>Tagalina grandiventris</i> (BLANCHARD, 1853)	wider Oriental & Australian
5 <i>Kinesis punctulata</i> (BURR, 1897)	TL; endemic	33 <i>Tagalina lyrata</i> HINCKS, 1955	TL; endemic
6 <i>Kinesis significans</i> Steinmann, 1993	TL; endemic	Spongiphoridae	
Chelisochinae		Labiinae	
7 <i>Chelisoche annulatus</i> BURR, 1906	New Guinea	34 <i>Paralabella fruehstorferi</i> (BURR, 1897)	TL; Philippines, Sri Lanka
8 <i>Chelisoche morio</i> (FABRICIUS, 1775)	cosmopolitan	35 <i>Spirolabia alpha</i> STEINMANN, 1987	TL; endemic
9 <i>Hamaxas crassus</i> (BORELLI, 1929)	Sulawesi, Philippine Islands	Nesogastrinae	
10 <i>Hamaxas dohertyi</i> (BURR, 1899)	TL; endemic	36 <i>Nesogaster amoenus</i> (STAL, 1855)	Java, Sumatra, wider Oriental & Australian
11 <i>Hamaxas varicornis</i> (BORMANS, 1903)	TL; endemic	37 <i>Nesogaster dolichus</i> (BURR, 1897)	TL; endemic
12 <i>Proreus fuscipennis</i> (HAAN, 1842)	Java, Sumatra, Malaysia, Philippines,	38 <i>Nesogaster wallacei</i> BURR, 1908	TL; endemic
13 <i>Proreus laetior</i> (DOHRN, 1865)	New Guinea, Bismarck Islands, Borneo, Solomon Islands	39 <i>Nesogaster aculeatus</i> (BORMANS, 1900)	Sulawesi, from Philippine Islands to Micronesia
14 <i>Schizoporeus vulcanus</i> n. sp.	TL; endemic	Sparattinae	
Diplatyidae		40 <i>Auchenomus angusticollis</i> (DUBRONY, 1879)	Borneo, Java
15 <i>Schizodiplatys bellus</i> STEINMANN, 1982	TL? This species is listed in Sakai & Syamsudin-Subahar (1994) but we were unable to find any further information or the original description. It is not registered in the Zoological Record	41 <i>Auchenomus javanus</i> (BORMANS, 1883)	Java, Philippines, Sumatra
Forficulidae		42 <i>Chaetospania aculeata</i> (BORMANS, 1903)	TL; New Guinea
Opisthocosminae		43 <i>Chaetospania borneensis</i> (DUBRONY, 1879)	Borneo, Java, Menatwei, Philippines, Papua-New Guinea, Solomon Islands
16 <i>Cordax armatus</i> (HAAN, 1842)	Borneo, Java, Myanmar (Burma), Sumatra	44 <i>Chaetospania dexter</i> STEINMANN, 1984	TL; endemic
17 <i>Eparchus burri</i> (BORMANS, 1903)	TL; endemic	45 <i>Chaetospania nigriceps</i> KIRBY, 1891	TL; Myanmar (Burma), Papua-New Guinea, Solomon Islands
18 <i>Eparchus insignis</i> (HAAN, 1842)	Australia, China, India, Myanmar (Burma), Nepal, Taiwan, Thailand	46 <i>Chaetospania thoracica</i> (BORMANS, 1894)	Sulawesi, Sumatra, Java, India, China
19 <i>Eparchus cruentatus</i> BURR, 1909	Philippines	47 <i>Paralabella curvicauda</i> (MOTSCHULSKY, 1793)	Sulawesi, cosmopolitan
20 <i>Eparchus forcipatus</i> (HAAN, 1842)	Nepal, Taiwan	48 <i>Sphingolabis hawaiiensis</i> (BORMANS, 1882)	Sulawesi, from Philippine to Hawaii
21 <i>Eparchus tenellus</i> (HAAN, 1842)	Myanmar (Burma), Philippines	49 <i>Irdex litus</i> (HEBARD, 1927)	Sulawesi, Sumatra
Labiduridae		50 <i>Spirolabia pilicornis</i> (MOTSCHULSKY, 1863)	Sulawesi; cosmopolitan
Allostethinae		Spongiphorinae	
22 <i>Allostethus admiralis</i> STEINMANN, 1985	TL; endemic	51 <i>Marava arachidis</i> (YERSIN, 1860)	Cosmopolitan
23 <i>Allostethus celebense</i> BURR, 1911	TL; endemic	<i>Marava luzonica</i> (DOHRN, 1884)	Sulawesi, Oriental and Indo-Australian Region
24 <i>Gonolabidura boschmai</i> BOESEMAN, 1954	TL; endemic	52 <i>Spongovostox guttulatus</i> (BURR, 1897)	Malaysia, Java, Philippines, Sumatra
Labidurinae			
25 <i>Labidura riparia</i> (PALLAS, 1773)	Cosmopolitan		
Nalinae			
26 <i>Nala timorensis</i> (BRINDLE, 1967)	Timor		

Measures of holotype. Length of body with cerci: 18 mm; length of head: 1.7 mm; length of pronotum: 1.8 mm; width of pronotum: 1.4 mm; length of tegmina: 3 mm; length of visible part of wing: 1.2 mm; length of cerci: 4 mm in male, 2–3 mm in females.

Diagnosis. *Schizoporeus vulcanus* sp. nov. belongs to the Chelisochidae (ca. 100 species in 16 genera worldwide) since its 2nd tarsomere is narrow and elongated. It is characterized as a representative of the Chelisochinae (ca. 80 species in 13 genera worldwide) by the fully developed tegmina and wings, and

the absence of lateral keels on the tegmina. Within the Chelisochinae, the distinctly flat body and the unique shape of the genitalia with a deep cleft in the parameres (Fig. 2) is shaping two (in this species unequal) lobes characterises this species as a representative of the genus *Schizoporeus* STEINMANN, 1987, which

Table 2. List of Dermaptera specimens, location and data found in 2001. For maps of Indonesia see <http://www.fallingrain.com/world/ID/index.html>. All specimens were collected by D. Matzke.

Systematic position and Species	Location/Altitude	Date	Habitat
Anisolabididae			
Carcinophorinae			
1 <i>Euborellia plebeja</i> (DOHRN, 1863)	Tomohon, Mt. Lokon, 1.358°N / 124.792°E / 1000 m	25.1. 2001	under stones and bark
Chelisochidae			
Chelisochinae			
2 <i>Chelisoches morio</i> (FABRICIUS, 1775)	Ujung pandang (Makassar), Bandimurung	9–10.1. 2001	in banana shrubs
3 <i>Chelisoches morio</i> (FABRICIUS, 1775)	Tomohon, 1.30869°N / 124.79215°E / 676 m	13–14.1. 2001	in banana shrubs
4 <i>Chelisoches morio</i> (FABRICIUS, 1775)	Tomohon-2, 1.28117°N / 124.84042°E / 900 m	24.1. 2001	in banana shrubs
5 <i>Chelisoches morio</i> (FABRICIUS, 1775)	Kotamobagu, Modolingding, 0.86308°N / 124.44708°E / 820 m	15–16.1. 2001	in banana shrubs
6 <i>Chelisoches morio</i> (FABRICIUS, 1775)	Kotamobagu (forest felling), Modolingding, 0.86002°N / 124.44065°E / 850 m	19 und 22.1. 2001	in banana shrubs
7 <i>Chelisoches morio</i> (FABRICIUS, 1775)	Tomohon, sulfur lake near Lahendong, 1.26910°N / 124.82355°E / 812 m	28.1. 2001	in banana shrubs
8 <i>Chelisoches morio</i> (FABRICIUS, 1775)	Duasudara Tangkoko Park, 1.52120°N / 125.13750°E / 415 m	26–27.1. 2001	in banana shrubs
9 <i>Hamaxas varicornis</i> (BORMANS, 1903)	Tomohon, 1.30869°N / 124.79215°E / 676 m	13–14.1. 2001	in banana shrubs
10 <i>Hamaxas varicornis</i> (BORMANS, 1903)	Tomohon-2, 1.28117°N / 124.84042°E / 900 m	24.1. 2001	in banana shrubs and under bomboo leaf
11 <i>Hamaxas crassus</i> (BORELLI, 1929)	Ujung pandang (Makassar), Bandimurung	9–10.1. 2001	in banana shrubs
12 <i>Schizoporeus vulcanus</i> n. sp.	Tomohon, Mt. Lokon, 1.358°N / 124.792°E / 1000 m	25.1. 2001	under stone and bark
Forficulidae			
Opisthocosminae			
13 <i>Eparchus insignis</i> (HAAN, 1842)	Tomohon, 1.30869°N / 124.79215°E / 900 m	13–14.1. 2001	at light
Labiduridae			
Allostethinae			
14 <i>Allostethus celebense</i> BURR, 1911	Tomohon-2, 1.28117°N / 124.84042°E / 900 m	24.1. 2001	in banana shrubs
15 <i>Allostethus celebense</i> BURR, 1911	Kotamobagu (forest felling), Modolingding, 0.86002°N / 124.44065°E / 850 m	19 and 22.1. 2001	in wood duff and banana shrubs
16 <i>Allostethus celebense</i> BURR, 1911	Tomohon, sulfur lake near Lahendong, 1.26910°N / 124.82355°E / 812 m	28.1. 2001	in banana shrubs
Pygidicranidae			
Pygidicraninae			
17 <i>Paracranopygia siamensis</i> (DOHRN, 1863)	Kotamobagu (forest felling), Modolingding, 0.86002°N / 124.44065°E / 850 m	19 and 22.1. 2001	in banana shrubs
Spongiphoridae			
Nesogasterinae			
18 <i>Nesogaster wallacei</i> BURR, 1908	Kotamobagu, Modolingding, 0.86308°N / 124.44708°E / 820 m	15–16.1. 2001	in banana shrubs and under timber
19 <i>Nesogaster wallacei</i> BURR, 1908	Street to Molibagu, Duloduo, 0.44430°N / 123.96781°E / 250 m	17–18.1. 2001	under bark
20 <i>Nesogaster wallacei</i> BURR, 1908	Duasudara Tangkoko Park, 1.52120°N / 125.13750°E / 415 m	26–27.1. 2001	in banana shrubs

already has five species known to science. Within the genus *Schizoprorus* the genitalia are closest to those of *Schizoprorus delicatulus* (BURR, 1911), but they are significantly longer and lack the basal tooth on the male inner cercus.

As in almost all Dermaptera, the females of the genus *Schizoprorus* cannot be identified with certainty because the male genitalia provide that main characters for differentiations.

Habitat. *Schizoprorus vulcanus* sp. nov. was found together with few specimens of *Euborellia* sp. (Fig. 5) under stones close to the crater margin (Fig. 6). Details of the locations are given in Table 2. The new species was only found here and in a close by forest under bark (one L4 nymph) but not in other regions. Interestingly, no plants were growing in the vicinity and several dead vertebrates like a snake and frogs were found. We assume that leaking hydrogen sulphide and carbon dioxide kill many larger animals and damages the plants. The area is uncovered and so the sun is heating the black lava sand. Humidity is added through rain or leaking water vapour.

Composition of Sulawesian Fauna

A survey of the literature data (DOHRN 1867, BORMANS 1888, BURR 1911, 1912, HINCKS 1959, REHN 1946, SAKAI & SYAMSUDIN-SUBAHAR 1994, CASSIS 1998, MATZKE 2002), as well as data which could be gathered in the BMNH, MNHN, SMNS and ZMUC resulted in the following checklist of Dermaptera from Sulawesi (Table 1, available online on <http://www.earwigs-online.de>). To this known data, the new records of the excursion in 2002 are added (Table 2). The Dermapteran fauna of Sulawesi is very diverse with altogether 52 species known. For comparison, the central European fauna has about ten species in four families (Anisolabididae, Labiduridae, Spongiphoridae and Forficulidae) on a much larger area, and 83 species have been recorded in Europe (sensu Fauna Europaea, <http://www.faunaeur.org>). The Sulawesian fauna comprises many of the basal taxa of the Dermaptera (Diplatyidae, Pygidicranidae; HAAS & KUKALOVÁ-PECK, 2001) and many species of Labiduridae, which are typical for tropical areas worldwide. The diverse relief of flat areas and many, high moun-

tains (up to 3500 m) in Sulawesi is closely linked to this diversity.

Sulawesi is the type locality for 22 species, and 17 species appear to be endemic on this island. However, we caution that this might be a significant sampling artefact because many of the adjacent island were not well sampled at all, or Dermaptera, not being very popular, were simply not collected. More collection efforts are needed to draw a more complete image of the distribution of earwigs in this region.

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