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LEPTOCORISA LATREILLE IN INDONESIA (HETEROPTERA, COREIDAE, ALYDINAE)

by

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and

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Siwi, Sri Suharni & P. H. van Doesburg: *Leptocorisa* Latreille in Indonesia (Heteroptera: Coreidae: Alydinae).

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Key words: Coreidae; *Leptocorisa*; taxonomy; checklist; key; distribution; Indonesia.

A review is given of the taxonomy and distribution of the *Leptocorisa* species in the Indonesian archipelago, primarily based on the material present in the Dutch museums, and on data from the literature. Thirteen species are found to be present in Indonesia: *L. acuta* (Thunberg), *L. ayamaruensis* Doesburg & Siwi, *L. biguttata* Walker, *L. chinensis* Dallas, *L. costalis* (Herrich-Schäffer), *L. discoidalis* Walker, *L. luzonica* Ahmad, *L. oratorius* (Fabricius), *L. pseudolepida* Ahmad, *L. sakdapolrakae* Ahmad, *L. solomonensis* Ahmad, *L. tagalica* Ahmad and *L. timorensis* Doesburg & Siwi.

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INTRODUCTION

Leptocorisa species or slender rice bugs, in Indonesia known as "walang sangit", have for long been one of the major pests of rice in the Indo-Australian region including Japan and the Fiji Islands. Adults and nymphs suck out the developing rice grains in the milky stage, and in cases of severe infestation these bugs may cause heavy damage or even almost complete loss of the crop.

Although this pest is well-known and has been the subject of many investigations in the past (Koningsberger, Zehntner, Van der Goot, etc.), their taxonomy remained in a state of confusion for a long time, until Ahmad in 1965

published his excellent revision of the Leptocorisinae of the World. In this study, however, the rather rich Indonesian material of the Dutch museums was not taken into consideration. Because in Indonesia there is a need for a survey of the Indonesian species of these economically important insects, the present authors try to fill this void.

MATERIAL AND METHODS

The specimens studied for this paper are in the collections of the Rijksmuseum van Natuurlijke Historie, Leiden, the Instituut voor Taxonomische Zoölogie, Amsterdam, Laboratorium voor Entomologie, Wageningen, and Museum für Naturkunde, Berlin, DDR. In total, almost 1300 specimens were studied. Identifications were made according to the key as proposed by Ahmad in his paper. Two undescribed species were found whose descriptions are being published elsewhere (Van Doesburg & Siwi, 1983). To facilitate the identification of the species treated in this paper, emphasis is laid on the form of the male parameres, especially their aspect *in situ*. Determination of the females of several of the species could be difficult. To improve the correlation between the sexes, it is therefore recommended to collect, if possible, fair series from each population; pairs caught *in copula* are, of course, especially useful.

HISTORY

Thunberg in 1783 was the first to describe a coreid rice bug as *Cimex acutus*. Fabricius thereafter described three other species: *Cimex angustatus* in 1787, *Gerris oratorius* in 1794, and *Gerris varicornis* in 1803. Because in the meantime the genus *Gerris* was already reserved for the species of the pondskaters, Latreille (1825) established a new genus to house the slender rice bugs; however, he used the invalid French vernacular Leptocorise. This name was thereafter validated by Bertholdt (1827) by latinising this name to *Leptocorixa*. Latreille himself (in Cuvier's Règnum Animale) latinised the name to *Leptocorisa* in 1829. And although Bertholdt's name is valid and antedates *Leptocorisa* Latreille, 1829, *Leptocorixa* was suppressed by the International Commission on Zoological Nomenclature in 1967 in favour of *Leptocorisa* on rather unconvincing grounds. The type species is *Cimex acutus* Thunberg, 1783.

During the following hundred years about a dozen other species were des-

cribed by several authors (see list below) but then it became clear that much confusion remained. This was due to the general similarity of several of the species and the brevity of the original descriptions. China (1924) made the first attempt, in his preliminary revision of the Oriental species of *Leptocorisa*, to study the male parameres. But he did not study the type specimens of the earlier authors so that the true identity of several of the species remained obscure. He recognised seven species, five of them listed from Indonesia.

Blöte (1934) mentioned in his Catalogue of the Coreidae six species (as *Leptocorixa*!) from Indonesia but they were not mentioned by Ahmad in his synonymy.

In 1949, Van der Goot reported 8 species of the genus *Leptocorisa* (determined by Blöte) to be present in Indonesia. Of these, however, two do not belong to this genus, viz. *L. longirostris* Dallas and *L. tagalica* Burmeister; actüally they belong to the genus *Leptocoris*. Of the remaining six species he claimed that only *L. acuta* (= *oratorius* Fabricius, see later) was of economic importance.

A more thorough revision was made by Ahmad in 1965 who worked out in an exemplary way the Leptocorisinae of the World. He also studied all available type specimens and designated three neotypes. However, the validity of the neotype designation of *Cimes acutus* Thunberg of which a mutilated holotype is still present in the Zoological Institute at Uppsala, is questionable (see Art. 75 of the International Code of Zoological Nomenclature, second edition, 1964). As a result, Ahmad established the identity of several confused species. The economically most important two species, hitherto usually named by authors *L. acuta* and *L. varicornis* must now be named respectively *L. oratorius* (Fabricius) and *L. acuta* (Thunberg), while *varicornis* Fabricius proved to be a junior synonym of *acuta* Thunberg. Ahmad described six *Leptocorisa* species as new, renamed one and recognised in total 14 species, 9 of which he mentioned as occurring in Indonesia.

Recently, two more species, *L. timorensis* and *L. ayamaruensis* have been described by Van Doesburg and Siwi (1983).

The following list gives a review of the species of *Leptocorisa* described so far, and the existing synonymy. The valid names are printed in bold type.

1783 **Cimex acutus** Thunberg
1787 *Cimex angustatus* Fabricius (= *acutus* Thunberg)
1794 **Gerris oratorius** Fabricius
1803 *Gerris varicornis* Fabricius (= *acutus* Thunberg)
1830 *Leptocorisa flavida* Guérin Méneville (= *acuta* Thunberg)
1842 *Leptocorisa bengalensis* Westwood (= *oratorius* Fabricius)
1845 *Rhabdocoris arcuata* Kolenati (= *oratorius* Fabricius)

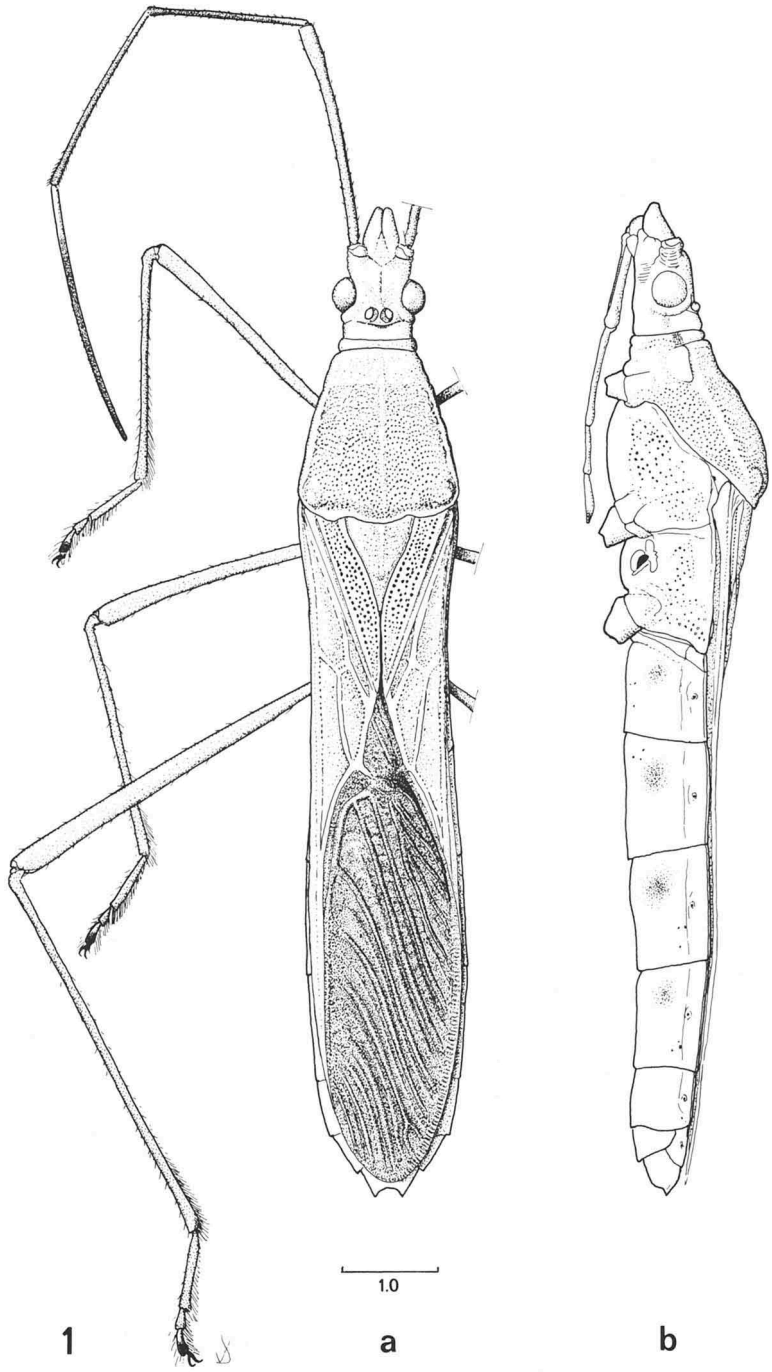


Fig. 1. *Leptocorisa oratorius* (Fabricius) female from Java; a, dorsal and b, lateral aspect. The scale represents one millimeter.

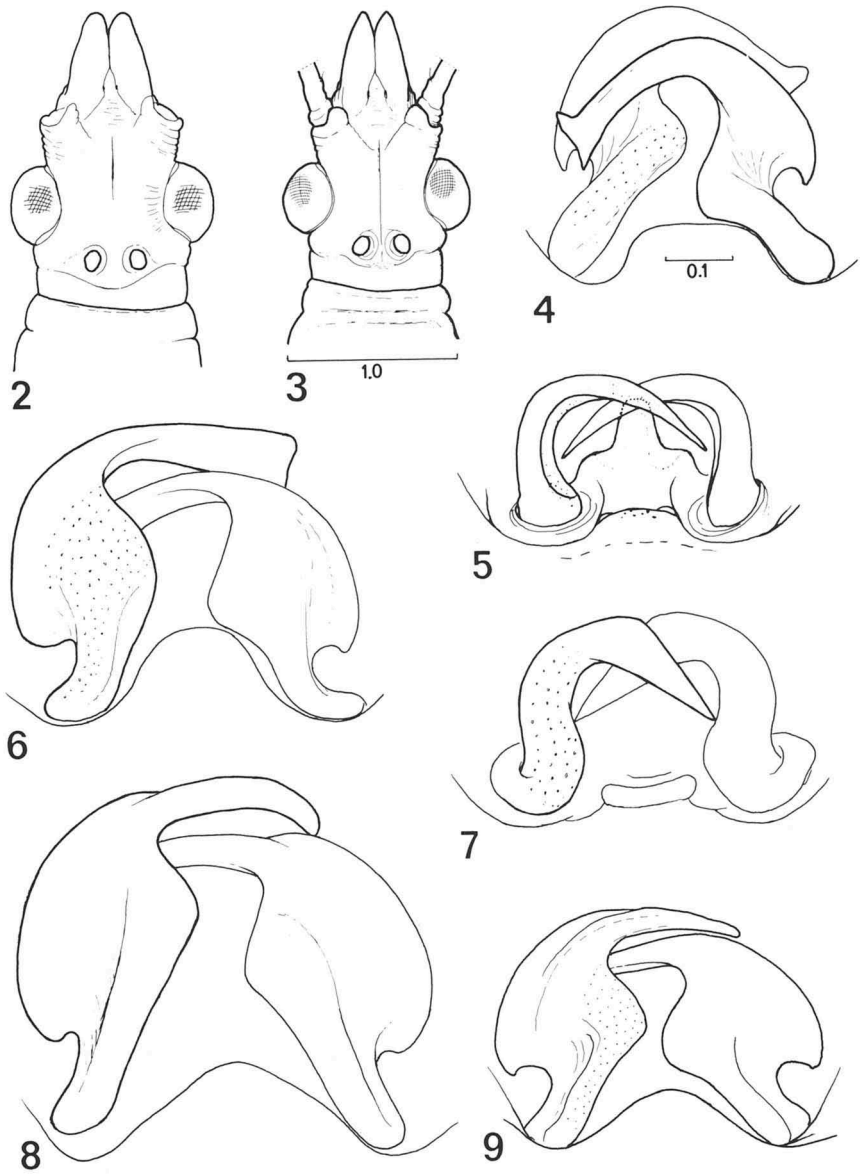
1848 **Myodochus costalis** Herrich-Schäffer
1848 *Myodochus trinotata* Herrich-Schäffer (= *oratorius* Fabricius)
1852 *Leptocorisa maculiventris* Dallas (= *oratorius* Fabricius)
1852 **Leptocorisa chinensis** Dallas
1863 *Leptocorisa bipunctata* Costa (identity obscure)
1865 *Leptocorisa burmeisteri* Montrouzier (= *acuta* Thunberg)
1871 **Leptocorisa biguttata** Walker
1871 **Leptocorisa discoidalis** Walker
1909 *Leptocorisa lepida Breddin*
1912 *Leptocorisa nitidula* Breddin (= *chinensis* Dallas)
1924 *Leptocorisa corbetti* China (= *chinensis* Dallas)
1924 *Leptocorisa geniculata* China (= *tagalica* Ahmad)
1965 **Leptocorisa luzonensis** Ahmad
1965 **Leptocorisa luzonica** Ahmad
1965 **Leptocorisa palawanensis** Ahmad
1965 **Leptocorisa pseudolepida** Ahmad
1965 **Leptocorisa sakdapolrakae** Ahmad
1965 **Leptocorisa solomonensis** Ahmad
1965 **Leptocorisa tagalica** Ahmad
1983 **Leptocorisa timorensis** Van Doesburg & Siwi
1983 **Leptocorisa ayamaruensis** Van Doesburg & Siwi

Although somewhat outside the scope of this paper, some of the most important non taxonomic papers on *Leptocorisa* published since Ahmad's study are here referred to briefly.

Rothschild (1970) studied the biology, ecology and population dynamics of *Leptocorisa* in Sarawak and mentioned seven species of this genus to be occurring in that area. Of these, *L. oratorius* (Fabr.) is the dominant species in wet rice areas but is less common in dry rice fields. *L. luzonica* Ahmad is also very common in wet rice fields, but is primarily associated with weed grasses, particularly *Isachne globosa* (Thunberg). *L. biguttata* Walker is often the commonest species in hill rice fields where it often occurs together with *L. acuta* (Thunberg). Less common species found in rice fields are *L. pseudolepida* Ahmad, *L. costalis* (H.-S.) and *L. tagalica* Ahmad.

Hasegawa (1971) listed eight species of *Leptocorisa* in Southeast Asia "which cause injury on rice plants", mainly based on Rothschild's data. He only added *L. chinensis* Dallas being recorded as a pest on rice plants in Malaya, China and Japan, while, as he stated, it often occurs also on maize and soybean.

Sands (1977) investigated the five species present in Papua New Guinea, and found three of them to be of economic importance: "*L. oratorius* (Fab.),

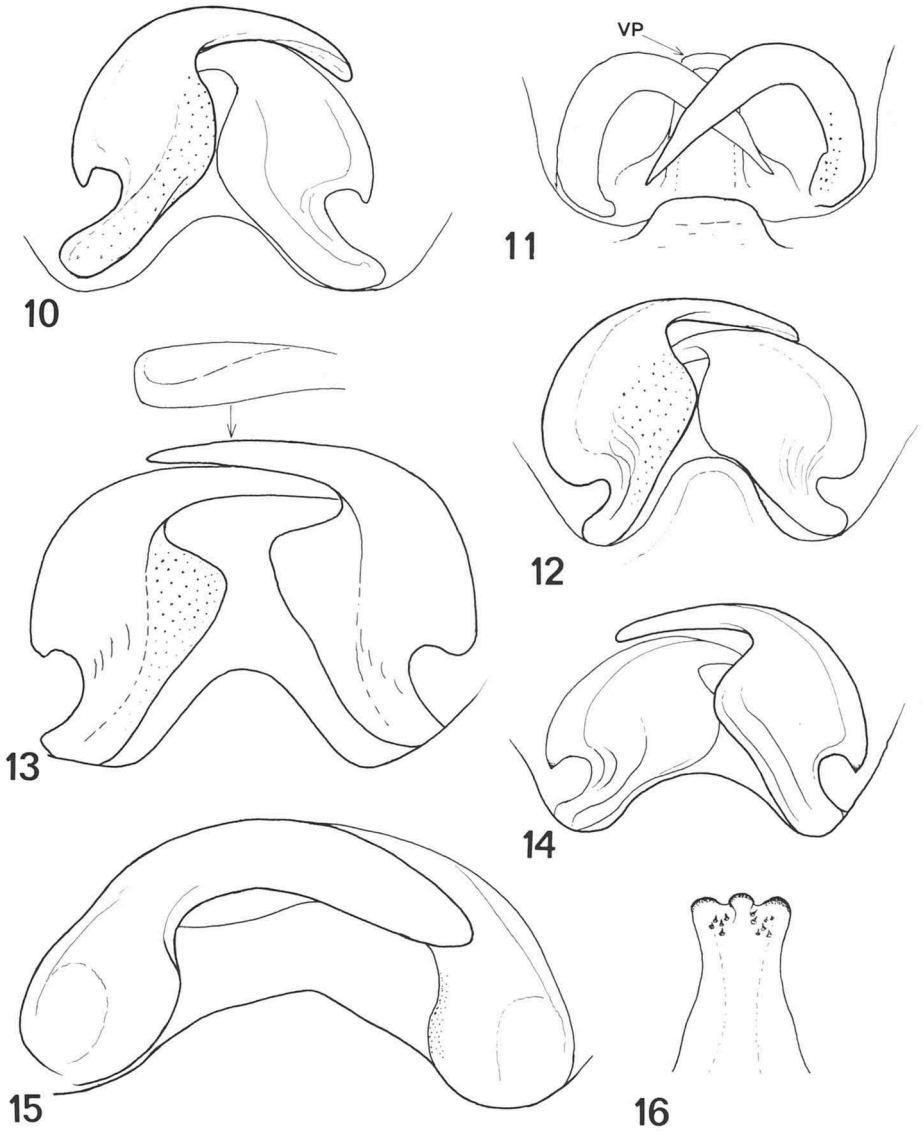


Figs 2. and 3. Heads of *Leptocorisa* spp. shown in dorsal aspect and drawn to the same scale: line represents 1 mm. Fig. 2, *L. luzonica* Ahmad, male paratype from Luzon, Philippines; fig. 3, *L. ayamaruensis* Doesburg & Siwi, male paratype from Irian Jaya. Figs. 4–9. Parameres of *Leptocorisa* spp. as seen in situ from behind. Fig. 4, *L. acuta* (Thunberg) from Java; fig. 5, *L. ayamaruensis* Doesburg & Siwi from Irian Jaya; fig. 6, *L. biguttata* Walker from Celebes; fig. 7, *L. costalis* (Herrich-Schäffer) from Java; fig. 8, *L. chinensis* Dallas from Sumatra; fig. 9, *L. discoidalis* Walker from Buru. All parameres are drawn to the same scale indicated in fig. 4 by a line of 0.1 mm in length.

L. acuta (Thunb.) and *L. solomonensis* Ahmad at times damaged rice, but *L. oratorius* was the most important economic species", and "*L. discoidalis* Walker was not associated with rice, and occurred in bushland or rainforest. *L. palawanensis* Ahmad was a rare species associated with grasses only".

KEY TO THE INDONESIAN SPECIES OF *LEPTOCORISA* LATREILLE

1. Clavus and endocorium black 2
— Clavus and endocorium pale 3
2. Abdominal tergites 5–7 blackish; male parameres fig. 7 ..... *costalis* (Herrich-Schäffer)
— Abdominal tergites unicolorous; male parameres fig. 6. *biguttata* Walker
3. Total length more than 12.5 mm; vertical process of male genital capsule apically tripartite (fig. 16) 4
— Small species, under 12.5 mm; vertical process apically undivided (fig. 11, vp) 11
4. Rostrum long, extending beyond apex of second coxae 5
— Rostrum shorter 7
5. Lateral dark line on head and thorax hardly developed, restricted to some dots only; length under 15 mm; male parameres fig. 12. ..... *sakdapolrakae* Ahmad
— Lateral dark line well-developed; length over 15 mm 6
6. Venter with a median dark streak; rostrum not reaching 3rd coxae; parameres large (fig. 13) ..... *solomonensis* Ahmad
— Venter entirely pale; rostrum reaching 3rd coxae; parameres small (fig. 9) ..... *discoidalis* Walker
7. Venter with a series of lateral dark spots on ventrites 3–6 (fig. 1b); parameres tapering to a flat point (fig. 10) ..... *oratorius* (Fabricius)
— Venter entirely pale 8
8. First antennal segment longer than three times the length of first rostral segment; male parameres with very long blades (fig. 15) . *tagalica* Ahmad
— First antennal segment shorter; parameres different 9
9. Callosities near pronotal posterior angles small and pale; parameres with bi-acuminate apices (fig. 4) ..... *acuta* (Thunberg)
— Callosities large and dark 10
10. Medium sized species, under 15 mm; 1st antennal segment pale; parameres fig. 14; Timor only ..... *timorensis* Van Doesburg & Siwi
— Larger, about 17 mm; first antennal segment black; parameres fig. 8 ..... *chinensis* Dallas



Figs. 10–15. Parameres of *Leptocorisa* spp. as seen in situ from behind. Fig. 10, *L. oratorius* (Fabricius) from Java; fig. 11, *L. pseudolepida* Ahmad from Sumatra; fig. 12, *L. sakdapolrakae* Ahmad from Sumatra; fig. 13, *L. solomonensis* Ahmad from Irian Jaya; fig. 14, *L. timorensis* Doesburg & Siwi, holotype from Timor; fig. 15, *L. tagalica* Ahmad from Borneo. Fig. 16, Vertical process of *L. oratorius*. All figures are to the same scale (see fig. 4).

11. Paraclypei long, pointed (fig. 3); length 9.8–11.3 mm; parameres fig. 5 ..... *ayamaruensis* Van Doesburg & Siwi
— Paraclypei shorter, blunt at apex (as in fig. 2); length 11.5–12 mm 12
12. Antennae and tibiae dark; apices of parameres in resting position pointing to each other's base (fig. 11) ..... *pseudolepida* Ahmad
— Antennae and tibiae pale; apices of parameres in resting position pointing to above each other's base (as in fig. 5) ..... *luzonica* Ahmad

ENUMERATION OF SPECIES

Alphabetical enumeration, diagnosis and distribution of the species of *Leptocorisa* known from Indonesia. After the area of distribution, between brackets, the total number of specimens studied and the initials of the museum(s), in whose collection these specimens were found: A = Instituut voor Taxonomische Zoologie, Amsterdam, B = Museum für Naturkunde, Berlin, L = Rijksmuseum van Natuurlijke Historie, Leiden, and W = Laboratorium voor Entomologie, Wageningen. For a more extensive description of the species see Ahmad (1965) and Van Doesburg & Siwi (1983).

Leptocorisa acuta (Thunberg)

A moderately large and slender, pale species (15–16 mm) with long and pointed paraclypei, short rostrum and small and pale humeral calli. The male parameres are slender and almost bifurcated at their apices (fig. 4). Antennae and legs are usually pale.

This species is considered a second major pest of (upland) rice and is found in almost all rice growing areas in the Far East.

Distribution in Indonesia: Sumatra (74,ABLW); Banka (17,L); Kalimantan (3,LW); Java (46,ABLW); Lombok (1,L); Sumbawa (1,B); Flores (>100, AB); Timor (9,L); Sulawesi (9,L); Sanghi (2,L); Talaud (1,L); Buru (6,A); Maluku (3,LW); Ambon (22,W); Irian Jaya (50,ALW).

Leptocorisa ayamaruensis Doesburg & Siwi

Smallest species, 9.8–11.3 mm, light yellowish brown (greenish in life?) with long and pointed paraclypei, pale antennae and legs and in the male with long and slender hooked parameres which, in resting position, point to above each other's base (fig. 5).

Distribution in Indonesia: Only known from Irian Jaya, Vogelkop area (14, L, type series).

Leptocorisa biguttata Walker

Large species, 16–17 mm, with black clavus and endocorium of fore wings,

with unicolorous (yellowish to reddish brown) abdominal tergites, a blackish line on the sides of head and pronotum, and parameres with long hooks which are truncate at their apices (fig. 6).

Distribution in Indonesia: Sulawesi (11,BLW), Halmahera (1,B). Also known from Malaya, Philippines and Sarawak.

Leptocorisa chinensis Dallas

Large robust species, 17–18 mm, characterized by the blackish outer side of the first antennal segment, large and dark humeral callosities, short rostrum and entirely pale venter; parameres as in fig. 8, their apices flat and rounded.

Distribution in Indonesia: Sumatra (220, ABLW); Nias (6 L); Riouw (1 L); Kalimantan (18 ABL); Sulawesi (3 L). Further distribution: China, Taiwan, Vietnam, Thailand, Bhutan, Malaya, Philippines, Bonin, Palau.

Leptocorisa costalis (Herrich-Schäffer)

Medium sized species, 14.7–15.2 mm, characterized by the black abdominal tergites 5–7 (not basal third as in Ahmad, 1965: 85) while the foregoing tergites are yellow to red; the black hemelytra, except the costal margins; paraclypei pointed; antennae (except base and apex of last segment), tibiae, tarsi, and humeral callosities blackish. Male parameres very characteristic (fig. 7).

Distribution in Indonesia: Sumatra (36,ALW); Kalimantan (23,ABL); Java (24,ABL); Sepanjang (2,L); Timor (?) (1,L). Also known from Vietnam, Malaya, (Sarawak, N. Borneo), Thailand, Philippines.

Leptocorisa discoidalis Walker

Species with the rostrum reaching 3rd coxae, a well developed blackish streak on the sides of head and thorax and an entirely pale venter. Length 15.5–16.5 mm, paraclypei short with rounded apices; posterior part of pronotal dorsum and fore wings, except costal margins, darkened (especially along the claval commissure). Male parameres small (fig. 9) with apices flattened and rounded.

Distribution in Indonesia: Buru (25,A); Ambon (3,W); Ceram (Ahmad); Halmahera (Ahmad); Kei (1,L); Irian Jaya (2,W). Also known from Philippines, Papua New Guinea, Solomon Isls., and New Hebrides.

Leptocorisa luzonica Ahmad

Small species, 11–11.5 mm, unicolorous pale yellowish with rather short, straight and blunt paraclypei; Male parameres with longer and stronger curved hooks than in *ayamaruensis.*

Distribution in Indonesia: Only one female specimen, unicolorous reddish-yellow, Borneo Exped. Poetoes Sibau [= Putussibau], 30 Nov. 1893. Further known distribution: Philippines (type locality), Sarawak (Ahmad), and Vietnam.

Leptocorisa oratorius (Fabricius) (fig. 1, habitus)

Large robust pale species with small and pale humeral callosities and with a series of brown to blackish spots on the sides of the ventral sternites 3–6. Male parameres tapering to a flat point at apex (fig. 10). Length 17–18.5 mm. This species is by far the most serious rice pest in the low wet rice areas and was usually referred as *L. acuta* by authors before Ahmad's 1965 paper came out.

Distribution in Indonesia: Sumatra (61,ABLW); Banka (1,L); Kalimantan (25,ABL); Java (324,ABLW); Sepanjang (12,L); Bali (6,A) Lombok (2,B); Sumbawa (2,B); Flores (2,B); Timor (19,L) Sulawesi (21,BL); Buru (3,A); Ambon (4,W); Irian Jaya (67,LW). Further distribution: Oriental region, from Pakistan to the Solomon's Islands, including the North of Australia.

Leptocorisa pseudolepida Ahmad

Small species, 11.5–12 mm, pale coloured with blackened antennae and apices of tibiae and tarsi. Paraclypei moderately pointed. Parameres with a characteristic curved hook, in resting position pointing to each other's base (fig. 11).

Distribution in Indonesia: Sumatra (9,ABLW); Kalimantan (13,BL). Further distribution: Malaya, Ceylon (?), Sabah (11,L).

Leptocorisa sakdapolrakae Ahmad

Medium sized species, 13–15 mm, with a long rostrum extending well beyond apices of second coxae; without a blackish streak on sides of head and thorax; dark antennae with the base of the segments pale; legs blackish. Parameres with a thick medial part and rather short apical part with rounded and truncate apex (fig. 12). The species is much like *L. chinensis*, but has a much longer rostrum.

Distribution in Indonesia: Sumatra (14,AL); Kalimantan (?)(1,L); Java (30,L); Sepanjang (1,L); Lombok (20,B); Flores (7,B); Sulawesi (6,L); Buru (2,A); Ambon (4,W). Further distribution: Thailand, Malaya (2,L).

Leptocorisa solomonensis Ahmad

Medium sized to large species, 16–16.5 mm, characterized by a well-developed blackish streak along the sides of head and thorax, and a more or less dark line along the median of the abdominal sternites. Rostrum long, reaching beyond the second coxae but not reaching the third. Humeral callosities large and dark. Parameres large, with strongly pronounced lateral flanges and long and slender blades, truncate at apex (fig. 13).

Distribution in Indonesia: Buru (2,A); Ambon (1,W); Ceram (2,A); Irian Jaya (44,ALW). Further distribution: Papua New Guinea, New Ireland.

Leptocorisa tagalica Ahmad

Large species, 17–17.5 mm, with short rostrum and very long first antennal

segment, more than three times the length of first rostral segment. General colour pale with a dark lateral line on sides of head and thorax. Male parameres rather aberrant with very large and long blades (fig. 15).

Distribution in Indonesia: Kalimantan (4,AL); Sulawesi (1,L); Buru (4,A); Ambon (3,LW). Further distribution: Philippines (2 paratypes of *L. geniculata* China, L), Serawak, Halmahera.

Leptocorisa timorensis Doesburg & Siwi

Medium sized, 13–15 mm, pale, humeral callosities large and dark; rostrum short, not passing apices of second coxae; paraclypei short and blunt. Parameres: fig. 14.

Distribution in Indonesia: Only known from the island of Timor (15,L, type series).

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