

13. DISTRIBUTION AND TAXONOMY OF RICE BUGS IN SOUTHEAST ASIA

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Introduction

There are many species of bugs gathering to rice plants causing more or less injury to the rice plants. In Japan, *Scotinophara lurida* and *Lagynotomus elongatus* had been the most important species before World War II, but *Nezara viridula* which had not appeared in paddy field came to occur largely after the War since the rice cultivation changed and early planting became into practice. Further, those species which used to live on wild grass began to attack rice plants and two species mentioned above have become minor pests.

Various species are recorded under such families as Pentatomidae, Coreidae, Lygaeidae etc., as pests causing spots discolouration on brown rice. These species migrate over to the paddy field from wild grass at the milky stage of rice and it has been a big problem in our country at present. These discoloured rice grains caused by rice bugs have been known as "Pecky rice" in the United States for a long time, and several species of fungi have relation with this damage. Such a fact may naturally become a problem in Southeast Asia regions in the future, and therefore the accurate identification of species has become indispensable.

Taxonomy of Heteroptera in Southeast Asia, India and the Philippines has been carried out for a long time and many species are recorded, but there are not a few species which have been reexamined in modern means and rearranged.

I would like to relate on some of the genus and species which need to be re-examined, and I hope it will be of help to you. Of course these genus or species should be in the future compared with such type-specimens at the museums in the United States or Great Britain to give an accurate specific name.

List of Heteroptera Occurrence on Rice Plant in Japan and Ryukyu Islands

Pentatomidae

1. *Scotinophara lurida* (Burmeister)
2. *Lagynotomus elongatus* (Dallas)
3. *Aelia fieberi* Scott
- * 4. *Eysarcoris fallax* Breddin
- * 5. *E. guttiger* (Thunberg)
- * 6. *E. lewisi* (Distant)
- * 7. *E. parvus* (Uhler)
- * 8. *E. ventralis* (Westwood)
- * 9. *Dolycoris baccarum* (Linné)
- *10. *Palomena angulosa* (Motschulsky)
11. *Starioides degenerus* (Walker) (in Ryukyu Islands)
- *12. *Nezara antennata* Scott

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- *13. *N. viridula* (Linné)
 14. *Pygomenida bengalensis* (Westwood) (in Ryukyu Islands)
- Coreidae
- *15. *Cletus pugnator* (Fabricius)
 *16. *C. punctiger* (Dallas)
 *17. *C. trigonus* (Thunberg)
- Alydidae
- *18. *Leptocoris acuta* (Thunberg) (in Ryukyu Islands)
 *19. *L. chinensis* (Dallas)
 *20. *L. oratorius* (Fabricius) (in Ryukyu Islands)
 *21. *Riptortus clavatus* (Thunberg)
- Rhopalidae
- *22. *Aeschyntelus maculatus* (Fieber)
 23. *Rhopalus sapporensis* (Matsumura)
 24. *Stictopleurus punctatonervosus* (Goeze)
- Lygaeidae
- *25. *Nysius plebejus* Distant, complex
 *26. *Cymus tabidus* Stål, complex
 27. *Dimolpopterus pallipes* (Distant)
 28. *Pachybrachius lateralis* (Scott)
 *29. *P. luridus* (Hahn)
 *30. *Togo hemipterus* (Scott)
 31. *Graptopeltus albomaculatus* (Scott)
 32. *G. angustatus* (Montandon)
 *33. *Neolethaeus dallasi* (Scott)
- Pyrrhocoridae
34. *Pyrrhocoris tibialis* Stål
- Miridae
35. *Adelphocoris suturalis* (Jakovlev)
 36. *Creontiades pallidifer* (Walker)
 37. *Lygus (Apolygus) nigronasutus* Stål
 38. *Lygus (Orthops) disponi* Linnavuori
 39. *Stenotus rubrovittatus* (Matsumura)
 40. *Trigonotylus ruficornis* (Geoffroy)

Note: * are the species causing Pecky rice.

Genus *Scotinophara* Stål

At present twenty five species of the genus *Scotinophara* are known, in India the Philippines and Southeast Asia.

These species of this genus are so much alike one another in their external characters. Therefore, correct identification of these species is important because of the economic significance.

For the sake of convenience, it is desirable to divide this genus into several groups in order to classify each species. I will, however, state only *lurida* group which has the body length of 9–10 mm, and a character of anterior pronotal spine more or less horizontally extended.

Diagnosis and distribution of the *Scotinophara lurida* group.

1. *Scotinophara lurida* (Burmeister)

This black rice bug is common in China, Korea, Formosa and Japan, and it is also present in Assam and India, where, however, it is regarded as a rare species (Distant, 1902).

In 1940 it suddenly occurred in a very large number in the paddy areas of the southern province in Ceylon (De Alwis, 1941).

Fernando, H. E. (1960, 1961) has recorded many interesting similarities and also difference in behaviour between *S. lurida* in Japan and in Ceylon.

Recently by examining these species, I could find that the Ceylonese species is distinctly different from that of Japanese and Chinese species.

Distribution: China, Korea, Formosa, Ryukyu Islands, Japan (I have never seen the specimens from Assam and India).

2. *Scotinophara obscura* (Dallas)

According to Distant's description "This species is closely allied to the preceding species (*S. lurida*), but smaller generally paler in hue, the transverse impression to the pronotum less profound". I have many Ceylonese specimens which are dull coloured and dark brownish, but Thailand and Malaysian species are sometimes pitchy black and lateral margins of the corium narrowly brownish, though no difference in character of genital clasper.

Distribution: Assam, Ceylon, Burma, Vietnam, Thailand, Malaysia (incl. Sabah), Borneo, Indonesia.

3. *Scotinophara cinerea* (Le Guillou)

This species is very closely allied to *S. obscura*, but body size is small and male genital clasper is different, from *S. obscura* so that it can easily be distinguished by a following key.

Distribution: Indonesia, and the Philippines.

I think it is necessary to determine the specific name of three species mentioned above as soon as possible by examining the type specimen.

Key to the species of *Scotinophara lurida* group.

- I Anterior pronotal spines acute, extended a little beyond outer margin of eyes, lateral margins of pronotum almost straight *S. lurida* (Burmeister)
- Anterior pronotal spines subacute, smaller scarcely extended beyond outer margin of eyes, lateral margins of pronotum convexly sinuate II
- II Lateral margins of pronotum narrowly reflexed, completely margined. third antennal segment distinctly longer than first and second together ... *S. cinerea* (Le Guillou)
- Lateral margins of pronotum not reflexed, rarely with a distinct lateral carina posteriorly, third antennal segment shorter than first and second together *S. obscura* (Dallas)

Genus *Starioides* Matsumura

Starioides degenerus (Walker) comb. nov.

- 1867 *Pentatoma degenera* Walker, Cat. Hem. II: 304
- 1870 *Antestia angulosa* Stål, Öfv. Vet. Ak. Forth. XXVII: 630
- 1892 *Antestia punctatissima* Kirby, J. Linn. Soc. Zool. London XXIV: 83
- 1902 *Antestia degenera* Distant, Faun. Brit. Ind. Rhynch. I: 186
- 1913 *Starioides iwasaki* Matsumura, Ill. Thousand Ins. Japan I: 17, syn. nov.
- 1958 *Plautia degenera* Walker, Carayon, (in Vayssuri, J. Agr. Trop. Paris 5: 719–731)
- 1963 *Antestia degenera* (Walker), Ruckes, Ins. Micronesia 7(7): 352

This species is originally described from Borneo, as a minor pest of rice plant. I have studied the type of *Starioides iwasaki* Matsumura of Ryukyu Islands and compared the genital segments of specimens from many localities, and concluded that *S. iwasaki* Matsumura is the synonym of this species. It is a small brown species with a conspicuous ivory-yellow apex to the scutellum and subcalloused ivory-yellow to ochraceous, feebly sinuate, antero-lateral pronotal margins.

Body length: 7.0 mm.

Distribution: Ceylon, Burma, Malaysia, Indonesia, the Philippines, Caroline Is., Formosa, Ryukyu Islands.

Genus *Menida* Motschulsky

This is a widespread genus containing many species, but has usually been considered to include *Pygomenida* Breddin, sometimes *Eurymenida* Bergroth and also *Apines* Dallas.

For instance, eleven species of genus *Menida* described by Distant (Fauna of British India, Rhynchota I, 1902) are classified as follows at present according to recent knowledge.

Menida formosa Westwood

M. apicalis (Dallas) (= *M. distincta* Distant)

Pygomenida varipennis (Westwood)

P. bengalensis (Westwood) (= *M. histrio* Fabricius, nom. preoc.)

Eurymenida labecula (Distant)

E. flavovaria (Dallas)

Apines bisignata (Walker) (= *M. elongata* Distant)

A. atkinsoni (Distant)

* *Anchesmus ruficornis* Stål (= *M. rubriplaga* Walker)

Note: * This genus does not resemble *Menida*. Scutellum long, apical area of which distinctly narrowed, the apex distinctly centrally sulcated, connexivum exposed.

Key to genera allied to *Menida*.

- I Body oval, abdominal segment III underneath with a forward pointing long process, reaching the middle coxae II
- Body long-oval, abdominal segment III underneath without long process, with only short tubercle..... *Apines* Dalls
- II Last male ventral segment very large, and bell-shaped, sixth abdominal segment contracted at middle..... *Pygomenida* Breddin
- Last male ventral segment moderately, and evenly convex, the segments not contracted III
- III Body broadly oval, scutellum reaching far beyond the middle of the abdomen, apex very broadly rounded, frena scarcely reaching the middle of scutellum *Eurymenida* Bergroth
- Body more or less oval, scutellum reaching fifth abdominal segment, apex narrow, frena reaching near the apex..... *Menida* Motschulsky

Genus *Leptocoris* Latreille

This genus consists of many species, and classification of each species is very difficult because they resemble each other. Until the excellent revision work of this genus was published by Dr. I. Ahmad in 1965, we were unable to determine the correct specific name of the both male and female specimens of this genus.

Among 14 species of this genus, simple characteristics and distribution of 8 species which cause injury on rice plant are described below for reference, and detailed inves-

tigations are expected in each country concerned.

List of *Leptocorisa* species as a pest of rice plant, with diagnosis and distribution.

1. *Leptocorisa oratorius* (Fabricius) (= *L. acuta* Distant, miss identification)

This species is a serious rice pest in Southeast Asian countries. This is close to *L. acuta* and *L. chinensis* but can easily be separated by a series of ventro-lateral brown dots on abdomen.

Body length: 18.0–18.5 mm.

Distribution: India, Ceylon, Nicobar Is., Pakistan, Bhutan, Burma, Thailand, Vietnam, Malaysia (incl. Sarawak and Sabah), Indonesia (Sumatra), Singapore, Burnei, China, Formosa, Ryukyu Is., Celebes, the Philippines, Australia, Solomon Is.

2. *Leptocorisa acuta* (Thunberg) (= *L. varicornis* F.)

This is also a famous major pest of rice plant in the Far East. This species is close to the preceding and the following species, but can easily be separated from them. This species, in fact, is different from all other species of *Leptocorisa*, in the case of the male by the claspers which are bifurcated at apices and in the case of the female by a very small median triangular projection of the seventh abdominal sternum.

Body length: 15–16 mm.

Distribution: India, Pakistan, Burma, Bhutan, Vietnam, Thailand, Malaysia (incl. Sarawak and Sabah), Burnei, Indonesia (Sumatra, Hongkong, China, Formosa, Ryukyu Islands, the Philippines, New Britain, New Ireland, Australia, Solomon Islands, New Hebrides, Fiji Island, Samoa Island.

3. *Leptocorisa chinensis* Dallas (= *L. nitidula* Breddin, *L. corbetti* China)

This species has also been recorded as a pest of rice plant in Malaysia, China and Japan, and often occurs on maize and soybean. This is very close to preceding two species, but can easily be separated from them by the lateral black line, which is represented by two brownish black dots on the sides of head and pronotal collar. The outer side of basal antennal segment is usually black, and the clasper are truncated at apices. In *acuta* the lateral black line is represented by a black dots on the sides of collar but lateral black line is absent in *oratorius*.

Body length: 17.3–17.8 mm

Distribution: Bhutan, Malaysia, Thailand, Vietnam, Indonesia (Sumatra), China, Korea, Formosa, Ryukyu Is. Japan, the Philippines, Palau Is., Bonin Is.

4. *Leptocorisa biguttata* Walker

This species is the commonest one in upland rice field in Sarawak (Rothschild, 1970). I have also collected many specimens on upland paddy and *Panicum* sp. in Sarawak, Sabah and Burnei. This is very close to *L. costalis*, but can easily be separated from *L. costalis* by the apical antennal segments, which are pale only at bases, by the dorsum of abdomen which is yellow brown, unicolourous (posterior one-third black in *costalis*).

Body length: 16.0–17.0 mm

Distribution: Malaysia (incl. Sarawak and Sabah), Burnei, the Philippines, Celebes, Halmahera.

5. *Leptocorisa tagalica* Ahmad (= *L. geniculata* China)

This species has also been found on rice plant in Sarawak (Rothschild, 1970). This is very close to the following species and shares the characters of the black colour of the apices of femora and bases of tibiae and two brownish black spots behind ocelli, but can easily be separated from *L. luzonica* by the pale ochraceous colour of the body by

the dusty grey colour of the venter of abdomen and short apical antennal segment.

Body length: 17.0–17.5 mm.

Distribution: Malaysia (Sarawak), Halmahera Is., the Philippines.

6. *Leptocoris* *luzonica* Ahmad

This is often found in wet paddy field in Sarawak but it is primarily found on *Isachne globos* (Thunberg) (Rothschild, 1970) and have also collected this species probably on the same grass in Sarawak. This species is close to next species, its allopatric allies, having small size of body, but can easily be separated from them by the shape of paraclypeae, which are straight, thick in the middle and rounded at the apices.

Body length: 11.3–11.5 mm.

Distribution: Vietnam, Malaysia (Sarawak), the Philippines.

7. *Leptocoris* *pseudolepida* Ahmad

This species is also found in rice field. This is close to preceding species and *L. lepida*, but can easily be separated from them by its short, thick curved and pointed paraclypeae.

Body length: 11.5–12.0 mm.

Distribution: Malaysia (incl. Sarawak), Burnei, India, Ceylon, Indonesia (Morneo).

8. *Leptocoris* *costalis* (Herrich-Schäffer)

This has also been recorded from rice field and maize field. This species is a completely isolated species in the genus on the basis of the aedeagus. However, it is close to *L. biguttata* in colouration of the hemielytra, but the two can easily be separated by pale apical antenna segment (both at bases and at apices) and shape of claspers.

Body length: 14.7–15.2 mm.

Distribution: Indonesia (Java, Sumatra), Vietnam, Malaysia (incl. Sarawak and Sabah), Burnei, Thailand, Singapore, the Philippines.

Discussion

Soenardi, Indonesia: The brown rice bug occurring in Indonesia is so far known as *Scotinophara vermiculata*. To which species you mentioned is that species identic?

Answer: According to G. W. Kirkaldy (1909), *Scotinophara vermiculata* is a synonym of *S. cinerea*. Therefore, I have described *S. vermiculata* as *S. cinerea* in my paper. However, I am not confident whether it is a synonym. I would like to observe specimens of Indonesia, and I hope you will sent me some of your specimens.

References

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