

Short Communication

**OCCURRENCE OF *LEPTOCORISA ACUTA* (THUNBERG)  
(HEMIPTERA: ALYDIDAE) IN SRI LANKA**

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**INTRODUCTION**

*Leptocorisa* species commonly called as paddy bugs have been identified as a major pest of rice in Sri Lanka (Nugaliyadda *et al.*, 2000). Adults and nymphs of paddy bugs suck out the sap from developing rice grains which become emptied. All soft milky grain is susceptible to attack. They usually attracted to the young crop with the early rains and feed on succulent young shoots and leaves until the grain formation (Pathak and Khan, 1994). Injury during the milk stage causes yield loss; damage during the dough stage impairs grain quality. In Sri Lanka, yield loss of rice due to *Leptocorisa* spp. could be as high as 5-60 % (Nugaliyadda and Dissanayake, 2000).

There are six *Leptocorisa* species: *Leptocorisa acuta* (Thunberg), *L. biguttata* (Walker), *L. Chinensis* (Dallas), *L. palawanensis* (Ahmad), *L. oratorius* (Fabricius) and *L. solomonensis* (Ahmad), which are considered as pests on rice in the world. Although, this pest is well-known in Sri Lanka, their species composition remained in a state of confusion. *Leptocorisa oratorius* is one of the most common and important *Leptocorisa* species damage the rice of Sri Lanka (Morita and Danapala, 1990) and rest of the Asia. This species has been misidentified at many instances as *L. acuta* (Thunberg), owing to close resemblances among the two species (Jahn *et al.*, 2004). *Leptocorisa acuta* has been reported from many Asian countries including Sri Lanka (Ahmed, 1965; Grist and Lever, 1969; Gunawardena and Ranatunga, 1989); however, in subsequent collections this species was not reported. Several researchers, therefore, assumed that *L. acuta* does not exist in Sri Lanka (De Datta, 1981; Nugaliyadda *et al.*, 2000; Schaefer and Panizzi, 2000). This paper described the results of the taxonomic study of an un usual type of paddy bug collected from recent field survey.

**MATERIAL AND METHODS**

The specimens studied for this paper was first collected from rice fields at Madatugama area in Anuradhapura district (7° 56' 38" N, 80° 37' 44" E; 161 m amsl)

during *maha* 2012/2013 season. Samples collected from the rice field and adjacent weeds were identified at the Department of Agricultural Biology, Faculty of Agriculture, University of Peradeniya and the Department of Natural Sciences, National Museum of Wales Cardiff, United Kingdom. External morphology of the collected specimens was observed under dissection microscope (x 30) and the genitalia were dissected (Borror *et al.*, 1989). Identifications were made according to the keys in Siwi and van Doesburg (1984) and Heinrichs (1994). *Leptocorisa oratorius* specimens used for this study was taken from the insect collection at Rice Research and Development Institute (RRDI), Bathalagoda. The voucher specimens of the studied species were deposited in the insect collection at the Department of Agricultural Biology, University of Peradeniya and the RRDI.

## RESULTS AND DISCUSSION

The recently collected paddy bug specimen was identified as *Leptocorosa acuta* (Thunberg). With these results, confusion on the existence of *L. acuta* in Sri Lanka would be apparently solved. This species was reported from the Madatugama area of the Anuradhapura district during *maha* 2012/2013 season and later it was found in the rice fields at Pelwehera (7° 21' 0" N, 80° 22' 0" E) and Pallekele (7° 17' 0" N, 80° 42' 0" E) areas.

### Nature of Damage

The damage caused by *L. acuta* (Thunberg), infestation was similar to that caused by *L. oratorius*, empty grains being produced. Yellow spots appeared on the leaves due to excessive sucking. The empty grains turned whitish and showing a puncture mark. Infested spikelet and grains were found, where the infestation was severe. The pest was much preferred to attack Pokuru samba, weedy rice and also associated with the weed Maruk (*Echinochloa glabrescens* (Munro) ex. Hook.f.). Moreover, it was reported that, *L. acuta* could survive on other host plants during the off season.

### Specific features of *Leptocorisa acuta* (Thunberg)

A moderately large and slender, pale species. Male (13-15 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 (see Siwi and van Doesburg, 1984). Antennae and legs are pale. Venter is without a serious of black spots. Pronotal disc black spot in the posterior angle, with multicolored, white margins.

*Leptocorisa acuta* is considered as the second major pest in rice and is found in almost all rice growing areas of the East Asia (Siwi and Doesburg, 1984). In Malaysia,

complete loss of the crop is reported from the areas where control measures are not applied. In the Philippines, up to 70% of the season's crop could be lost due to *L. acuta* attack (Lim, 1971). Currently, this species occurs throughout the Asia up to New Guinea and northern Australia. It was observed that the strategies employed to control *L. oratorius* were effective against the *L. acuta* as well. However, resistant rice varieties developed against, *L. oratorius* needed to re-test against *L. acuta* to validate their resistance.

**Key to the Sri Lankan species of *Leptocorisa* Latreille**

1 (0) Total length more than 18 mm; dark spot behind the compound eye; venter with a series of lateral dark spots on ventrites 3-6; Seventh abdominal tergum of male medially convex; parameres large rectangular curved and tapered along apices  
 .....*L. oratorius* (Fabricius) (Figure 1)

Total length under 18 mm; dark spot behind the compound eye absent; venter without a series of lateral dark spots; Seventh abdominal tergum of male truncate; parameres small rounded bifid at apices  
 ..... *L. acuta* (Fabricius) (Figure 1)

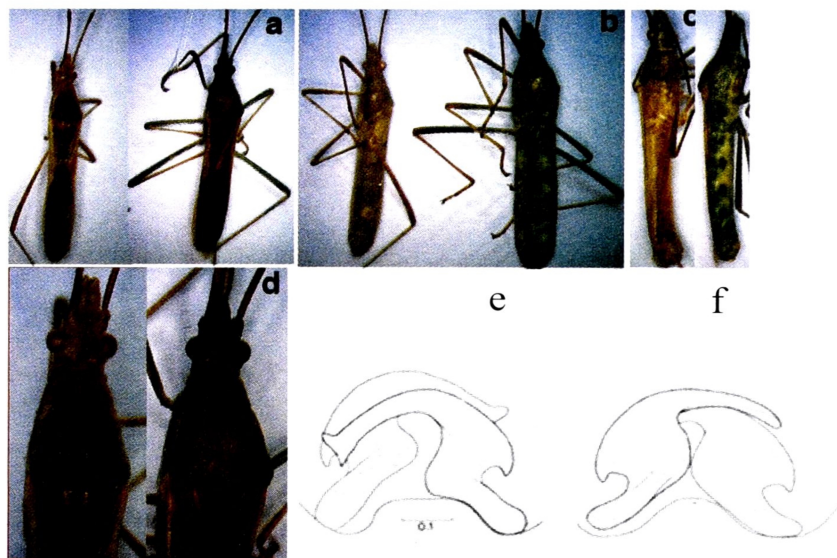


Figure 1. Dorsal and ventral views, pronotal disc and parameres of *Leptocorisa acuta* and *Leptocorisa oratorius*.

Note: (a) Dorsal view *L. acuta* (left) and *L. oratorius* (right); (b) Ventral view *L. acuta* (left) and *L. oratorius* (right); (c) Lateral view of *L. acuta* (left) and *L. oratorius* (right); (d) Pronotal disc of *L. acuta* (left) and *L. oratorius* (right); \*Parameres of *L. acuta* (e) and *L. oratorius* (f).

\* extracted from Siwi and Doesburg (1984).

## CONCLUSIONS

Two species of *Leptocorisa*, *L. acuta* and *L. oratorius* are exist in Sri Lanka and the former species is extending its geographical distribution within the country, while the latter species is the most common in almost all rice growing areas. Island-wide surveys need to be conducted to ascertain, whether any other species of *Leptocorisa* are prevailing in the country.

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## REFERENCES

- Ahmed, I. (1965). The Leptocorisinae (Heteroptera: Alydidae) of the world. Bulletin of British Museum of Natural History. Entomology Supplement, 5: 3-156.
- Borror, D.J., C.A. Triplehorn and N.F. Johnson. (1989). An introduction to the study of insects. Saunders College Publishing, Rinehart and Winson Inc., Orlando, Florida.
- De Datta, S.K., (1981). Principles and practices of rice production. International Rice Research Institute, Manila, Phillipines. Pp. 618.
- Grist, D.H. and R.J.A.W. Lever. (1969). Pests of rice. Tropical rice science series. Longmans Publications.
- Gunawardena, N.E. and P.R. Ranatunga. (1989). Laboratory and field studies of a natural attractant of the rice pest, *Leptocorisa acuta* (Hemiptera: Coreidae). Tropical Pest Management, 35: 212-213.
- Heinrichs, E.A. (1994). Biology and management of rice insects. International Rice Research Institute, Wiley Eastern Limited, India.
- Jahn, G.C., I. Domingo, M. Liberty, P. Almazan and I. Pacia. (2004). Effect of rice bug *Leptocorisa oratorius* (Hemiptera: Alydidae) on rice yield, grain quality, and seed viability. Journal of Economic Entomology, 97(6): 1923-1927.
- Morita, H. and M.P. Dhanapala. (1990). So-called grain sterility of rice in Sri Lanka in 1985 *Yala* and 1985/86 *Maha* cropping seasons. Japanese Journal of Tropical Agriculture, 34:20-26.
- Nugaliyadda, L., J.P. Edirisinghe and T. Hidaka. (2000), Role of weed hosts on the survival of paddy bug, *Leptocorisa oratorius* (Hemiptera Alydidae). Annual Symposium of Department of Agriculture.
- Nugaliyadda, L. and N. Dissanayake. (2000), Advance in pest and disease management of rice in Sri Lanka: a review. Annual Symposium of Department of Agriculture.
- Pathak, M.D and Z.R. Khan: (1994). Insect pest of rice. International Rice Research Institute. Manila, Phillipines.
- Schaefer, C.W. and A.R. Panizzi. ( 2000). Heteroptera of economic importance. CRC Press. Science. 856.
- Siwi, S.S. and P.H. Doesburg. (1984). *Leptocorisa* Latreille in Indonesia (Heteroptera: Coreidae: Alydinae) Zoölogische mededelingen, 7: 117-129.