



## First record of the genus *Leofa* Distant (Hemiptera: Cicadellidae: Deltocephalinae) from Pakistan

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**ABSTRACT:** The leafhopper genus *Leofa* Distant is newly reported from Pakistan. Three species of the subgenus *Leofa* Distant, *Leofa (Leofa) mysorensis* Distant, *Leofa (Leofa) naga* Viraktamath and Viraktamath and *Leofa (Leofa) truncata* Viraktamath and Viraktamath are recorded. It's another subgenus *Leofa (Prasutagus)* is also reported for the first time with *Leofa (Prasutagus) pulchellus* (Distant) from Pakistan. A key is given to distinguish the two subgenera.

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**KEY WORDS:** *Leofa* Distant, Cicadellidae, Deltocephalinae, new report

### INTRODUCTION

The grass feeding leafhopper genus *Leofa* was established by Distant (1918) with *Leofa mysorensis* Distant as its type species along with another four brachypterous species. Pruthi (1930) added one new macropterous species. Viraktamath and Viraktamath (1992) revised and redescribed the genus, designated lectotypes for Distant's and Pruthi's species and considered them as junior synonyms of *L. mysorensis*, in addition to describing four new species from peninsular India. Chalam and Rao (2005) subsequently added one more species to this genus. The grassland leafhopper genus *Prasutagus* was established by Distant (1918) for *Prasutagus pulchellus* Distant, 1918 and Vilbaste (1975) described the genus *Oneratulus* for *Jassus? curtulus* Motschulsky from Sri Lanka.

The genus *Leofa* was placed earlier in the tribe Stenometopiini but subsequently transferred to Chiasmini by Zahniser (2008). He also synonymised *Oneratulus* Vilbaste, 1975, *Prasutagus* Distant, 1918, and *Tortotettix* Theron, 1982 with *Leofa* Distant 1918 and considered *Prasutagus* as one of the four genera he recognised. Duan *et al.* (2009) reviewed the subgenus *Leofa (Prasutagus)* Distant and described two new species from China and recently (Duan *et al.*, 2012) described another new species from Thailand and provided a checklist to the genus *Leofa* Distant.

The genus *Leofa* is characterized by having the forewing brachypterous to macropterous, ocelli close to eye, pygofer devoid of modified or macrosetae and connective V-shaped, with a very short stem or stem absent.

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In a recent collection of leafhopper fauna of Pakistan, three species in the subgenus *Leofa* (*Leofa*) Distant and one species in *Leofa* (*Prasutagus*) Distant represent new records to Pakistan. The material examined is deposited in the Entomological Museum of Northwest A&F University (NWAUFU), Yangling, Shaanxi, China.

### ***Leofa* Distant, 1918**

*Leofa* Distant, 1918: 86; Zahniser, 2008: 8, 10 Type species: *Leofa mysorensis* Distant, 1918.

*Oneratulus* Vilbaste, 1975: 233. Type species: *Jassus?* (sic!) *curtulus* Motschulsky, 1863: 98. Synonymy by Zhaniser, 2008: 8.

*Prasutagus* Distant, 1918: 53; Zahniser, 2008: 8. Type species: *Prasutagus pulchellus* Distant, 1918. Synonymy by Zhaniser, 2008:8.

*Tortotettix* Theron, 1982: 27. Type species: *Tortotettix dispar* Theron, 1982. Synonymy by Zahniser, 2008: 8.

**Remarks:** Zahniser (2008) gave description of the genus including a key for the four included subgenera.

### **Key to subgenera of *Leofa* from Pakistan**

1. Submacropterous; pygofer with a well developed dorsal appendage .....*Leofa* (*Prasutagus*)
- Brachypterous; pygofer without dorsal appendage.....*Leofa* (*Leofa*)

### ***Leofa* (*Prasutagus*) *pulchellus* Distant (Figs. 1-4)**

*Prasutagus pulchellus* Distant, 1918: 53-54, fig. 57. India.

*Leofa*(*Prasutagus*) *pulchellus*, Zahniser, 2008: 18; Duan *et al.*, 2012: 39.

**Material examined:** Pakistan: Punjab: 2♂, 2♀, Kallar Kahar, 11 .vii. 2017, coll. Hassan Naveed.

**Remarks:** This species closely resembles *L. (P) curtulus* (Motchulsky) (= *Deltocephalus oneratus*

Melichar, 1903) according to figures of Vilbaste (1975). The syntypes of *D. oneratus* were examined by M. Webb and C. Viraktamath and Zahniser (2008) confirmed that these two are different. Furthermore, Duan *et al.* (2012) provided detailed information on the syntypes. This is the first record of the species from Pakistan.

### ***Leofa mysorensis* Distant, New record to Pakistan (Figs. 5-8)**

*Leofa mysorensis* Distant, 1918: 86; Viraktamath and Viraktamath, 1992: 5, figs. 10-19. India

*Leofa affinis* Distant, 1918: 87. Synonymy by Viraktamath and Viraktamath, 1992: 5.India.

*Leofa sanguinalis* Distant, 1918: 87. Synonymy by Viraktamath and Viraktamath, 1992: 5. India.

*Leofa unicolor* Distant, 1918: 88. Synonymy by Viraktamath and Viraktamath, 1992: 5. India.

*Leofa pedestris* Distant, 1918: 88. Synonymy by Viraktamath and Viraktamath, 1992: 5. India.

*Leofa parwala* Pruthi, 1930: 26. Synonymy by Viraktamath and Viraktamath, 1992: 5. India.

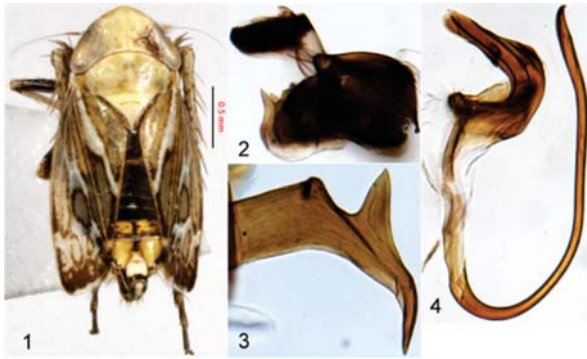
**Material examined:** Pakistan: Punjab: 2♂, 1♀, Piplan, 26 .vi. 2016, coll. Hassan Naveed; 1♂, 1♀, Kallar Kahar, 11 .vii. 2017, coll. Hassan Naveed.

**Remarks:** This species was described by Distant (1918) from India as the type species for the genus *Leofa*. Although the species is variable in colour pattern, there is little variation in the male genitalia and the female seventh sternite is usually bisinuate at the posterior margin. The aedeagal shaft of this species is rather slender and sinuate with an asymmetrically placed gonopore. This is the first record of the species from Pakistan.

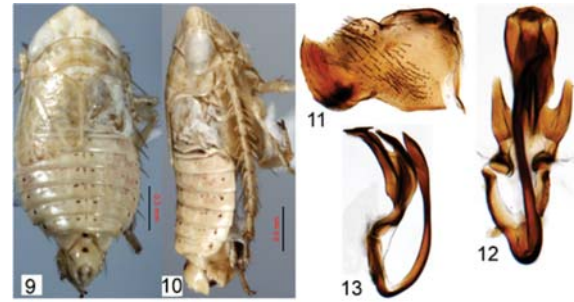
### ***Leofa naga* Viraktamath and Viraktamath (Figs. 9-13)**

*Leofa naga* Viraktamath and Viraktamath, 1992: 9-10, figs 31-40.

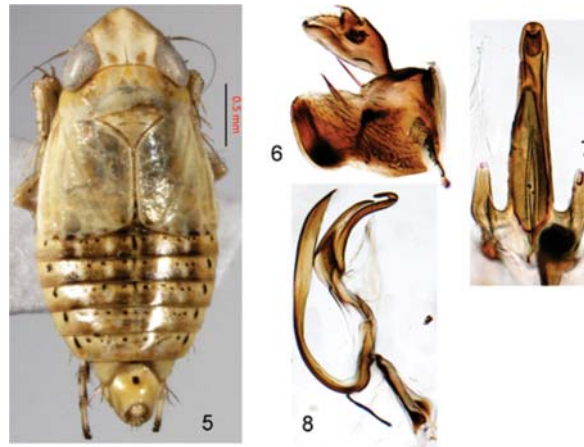
**Material examined:** 2♂, 2♀, Pakistan: Bhakkar City, 20 .vi. 2016, coll. Hassan Naveed; 1♀, Piplan, 22 .vi.2016, coll. Hassan Naveed; 2♂, 4♀, Chiniot,



**Figs. 1-4. *Leofa (Prasutaga) pulchella* Distant**  
1. Habitus, dorsal view; 2. Pygofer lobe, lateral view;  
3. Pygofer process, lateral view; 4. Aedeagus, lateral view



**Figs. 9-13. *Leofa naga* Viraktamath and Viraktamath**  
9, 10. Habitus, dorsal & lateral view; 11. Pygofer lobe,  
lateral view; 12. Aedeagus, ventrocaudal view;  
13. Aedeagus, lateral view



**Figs. 5-8. *Leofa mysorensis* Distant**  
5. Habitus, dorsal view; 6. Pygofer lobe, lateral view; 7. Aedeagus, caudal view;  
8. Aedeagus and connective, lateral view

27 .v. 2016, coll. Hassan Naveed; 2♂, 2♀, Kallar Kahar, 10 .vii.2017, coll. Hassan Naveed.

**Remarks:** This species closely resembles *L. mysorensis* but can be differentiated by the aedeagus with well-developed caudal hood and laminate lateral expansion of the aedeagal shaft. This is the first record of the species from Pakistan.

***Leofa truncata* Viraktamath and Viraktamath (Figs. 14-19)**

*Leofa truncata* Viraktamath and Viraktamath, 1992: 4, figs. 1-9. India.

**Material examined:** Pakistan: Punjab: 2♂, Piplan, 24 .vi. 2016, coll. Hassan Naveed; 1♂, 1♀, Kallar Kahar, 11 .vii.2017, coll. Hassan Naveed.

**Remarks:** This species is considerably different from other known species of the genus *Leofa* Distant in the shape of the pygofer and subgenital plates. The species epithet 'truncata' indicates the truncate apex of subgenital plates. It also differs in the pygofer having a deep groove and a distinctive aedeagus shape. This is the first record of the species from Pakistan.

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**Figs. 14 - 19. *Leofa truncate* Viraktamath and Viraktamath;**

14. Habitus, dorsal view; 15. Pygofer lobe, lateral view; 16. Aedeagus, caudal view; 17. Aedeagus and connective, lateral view; 18. Style; 19. Subgenital plate, ventral view

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