

TAXONOMIC STUDY ON SOME RICE PLANTHOPPERS OF THE FAMILY  
DELPHACIDAE IN THAILAND

WAREE HONGSAPRUG<sup>1</sup>

ABSTRACT

This first step of taxonomic study of rice planthoppers in Thailand is confined to some species of the family Delphacidae that are commonly found in around rice fields. Specimens were collected by light traps and sweep nets. Twelve species of which belong to seven genera were studied as follows:

*Nilaparvata lugens* (Stål); *N. bakeri* (Muir); *Sogatella furcifera* (Horvath); *S. longifurcifera* (Esaki and Ishihara); *S. kolophon* (Kirkaldy); *Sogatodes geranor* (Kirkaldy); *S. pusanus* (Distant); *Sardia rostrata* Melichar; *Cemes pulchella* (Distant); *Perkinsiella* sp. nr. *insignis* Distant; *P. saccharicida* Kirkaldy and *Harmalia* sp.

INTRODUCTION

So far only brown planthopper, *Nilaparvata lugens* (Stål) and white back planthopper, *Sogatella furcifera* (Horvath) are considered to be major rice pests in Thailand.

Although several species of the superfamily Fulgoroidea are often observed in paddy fields, no taxonomic study have been made before.

However this study is confined to some species of Delphacidae, the majority of rice pests, which are collected in rice fields and adjacent areas by sweep nets and light traps.

---

<sup>1</sup>Entomology and Zoology Division  
Department of Agriculture, Bangkok, Bangkok, Thailand

Twelve species of Delphacid planthoppers in rice fields have been studied as followed: two species of *Nilaparvata*, three species of *Sogatella*, two species of *Sogatodes*, one species of *Sardia*, and one of *Cemus*, two species of *Perkinsiella* and one species of *Harmalia*.

Genus *Nilaparvata* Distant 1906.

Faun. Brit. Ind. Rhync. 3 : 473.

The species of this genus are usually brownish to blackish brown. The most important character of the genus is the presence of one or more lateral spines on the basal segment of the hind tarsi (Fig.5). The other characteristics are given in Okada (1977).

*Nilaparvata lugens* (Stål, 1854), Figs.1-6, 1-2, Head; 3-4 male & female, genitalia; 5 hind tibia; 6 wings

*Delphax lugens* Stal, 1854, Ofvers. K. Vetensk Akad. Forh. Stockh. 11 : 246.

The most important planthopper pest of rice in Asia and in Thailand as well. The description of this species is given in Okada (1977). However the most noticeable characteristics are as follows:

General colour is yellowish brown. Carina of vertex relatively less obvious, faintly prominent. Frons normal not excavated centrally, with a distinct median carina which is not cut short. Genital style peculiar. Aedeagus slender, tapering apically, with teeth on the caudal margin, broad medianly. Apex of aedeagus usually upturned left (Fig.3). Inner margin of the female first valvifer considerably produced (Fig.4).

*Nilaparvata bakeri* (Muir, 1917)

*Delphacodes bakeri*, Muir, 1917, Proc. Hawaii, ent. Soc. 3 : 336.

Slightly larger and darker species than *N. lugens*, distinguished by the excavation near the center of frons which intercepts median carina (Fig.7). Genital style shortly bifurcated especially in caudal aspect. Aedeagus peculiar (Fig.8). Inner margin

of female first valvifer excavated near the base (Fig.9).

This species is rare in rice fields.

Genus *Sogatella* Fennah and *Sogadotes* Fennah

Small and slender species, mostly recognized by the procession of pale stripe extending from the vertex posteriorly on to the mesonotum. Vertex longer than broad at base. Submedian carina arising from lateral margins near middle and converging distad, meeting in basal part of frons. Frons longer than broad, and can be separated from the allied genera by the shape of face, which is widest not in the middle but at the apex or nearly so. Lateral carinae of pronotum clearly vanish before reaching the hind margin.

*Sogatella furcifera* (Horvath, 1899) Figs,10-14.

*Delphax furcifera*, Horvath, 1899, Term. Fuzetek 22 : 372.

Species well known as white back planthopper (WBH) very common and one of the most serious pests of rices in Thailand as well as other rice growing regions in Asia.

Vertex yellowish white, slightly longer than wide, both sides of mediolateral carinae black (Fig.10) frons, clypeus and genae blackish, carinae whitish yellow, frons widest near posterior margin (Fig.11).

Pronotum yellowish white laterally darkened, with lateral carinae not reaching posterior margin. Mesonotum yellowish white; both outsides of lateral black. Forewings almost hyaline, with black pterostigmas, apical vein brownish, anterior pale yellow (Fig.14). Genital style peculiar, broad basally, bifurcated apically (Fig.12), inner margin of female first valvifer rounded at base (Fig.13).

*Sogatella kolophon* (Kirkaldy) Figs.23-26; 23-24, Head; 25, male genitalia; 26, forewing.

*Delphax kolophon*, Kirkaldy, 1907, Bull. Hawaiian. Sug. Pls. Ass. Exp. Sta. Ent. Ser.  
3 : 157.

This species generally resembles *S. longifurcifera*, and *S. geranor*. In *longifurcifera* the forewings are hyaline, without any conspicuous pigmentation, while both *kolophon* and *geranor* have a distinct pale brown suffusion of pigment along the inner part of the forewings.

The facial coloration also serves to separate them, *longifurcifera* being without the brown infuscation present between the lateral carinae as *kolophon* and *geranor*. *S. kolophon* has much strongly marked genae, black in *longifurcifera*, brownish in *kolophon* and *geranor*. The male genitalia differ in each species.

*S. kolophon* appears to be less common in rice fields than *S. geranor*.

*Sogatella longifurcifera* (Esaki and Ishihara)

*Delphacodes longifurcifera* Esaki and Ishihara 1917, Mushi 17 : 41.

The male of this species possesses dark genae with pale frons (Fig.20) female is much paler. Forewing without any suffusion or any conspicuous pigmentation (Fig.22). The style of male genitalia with the inner apical process blunt. The outer margin of the lateral process is rather concave (Fig.21).

*Sogatodes pusanus* (Distant) Figs.15-18. 15-16, Head; 17 male genitalia; 18 forewing.

*Sogata pusanus* 1912, Ann. Mag. Nat. Hist. (8) 9 : 191.

Vertex pale yellow, lateral side subparallel, carina pale yellow, outer part from medio-lateral carina dark brown. Frons dark brown, carinae pale yellow, clypeus dark brown.

Pronotum and mesonotum with pale yellow carinae, pale yellow medially, with pair of dark impressions laterally dark brown, posterior margin paler. Macropters easily distinguished from other species by distinctive forewing patterns (Fig.18). Male genitalias as in figure 17.

Commonly found in rice fields.

*Sogatodes geranor* (Kirkaldy) Figs.27-30.

*Delphax geranor*, Kirkaldy, 1907, Bull. Hawaiian Sugar Pls. Ass. Exp. Sta. Ent. Series  
3 : 157.

Closely resembles *S. kolophon*. Differences between these species are best shown by the male genitalia and less reliable by other characters (Fig.29).

Genus *Sardia* Melichar 1903, Figs.31-34. 31-32 Head;  
33, male genitalia; 34 forewing.  
*Sardia rostrata* Melichar, 1903, Homopt; Fauna von Ceylon : 96

Vertex long, more than twice the width, comparatively acutely and more produced in front of eyes, subparallel sided; mediolateral carinae occurring from lateral carinae, conspicuously convergent anteriorly, meeting each other at apex and continued on to face as a single carina.

Face long more than three times the apical width, conspicuously narrowed between eyes and broad at apex. Clypeus fairly long, narrow from the middle towards apex. Scutellum nearly as long as vertex and pronotum placed together. Forewing much protruding abdominal apex.

Only one species, *Sardia rostrata* Melichar have been found in Thailand so far.

This species is often found in rice field in low numbers.

Genus *Perkinsiella* Kirkaldy.  
*Perkinsiella saccharicida* Kirkaldy, 1903. Figs.35-38, 35-36,  
head 37, male genitalia,  
38, forewing.  
*Perkinsiella saccharicida* Kirkaldy, 1903. Entomologist, 36 : 179  
(Hawaii-Honolulu on  
sugarcane)  
*Perkinsiella saccharicida* Kirkaldy, Ishihara 1949. Revision of  
the Araeopidae of Japan,  
Ryukyu Islands and Formosa :  
18-19.

This species is an injurious species which is worldwide known as important sugarcane pest. Not known to attack rice, but occasionally found in rice fields in low numbers.

*Perkinsiella* sp. very nr. *insignis* (Distant)

*Pundaluoya insignis* 1916. Faun Brit. Ind. Rhyn. Hom. 6 : 135.

Resembles the above species, differs slightly in the characters of male genitalia. Often found in rice fields in low number.

Genus *Harmalia* Fennah

*Harmalia* sp. nr. *sirokata* (Matsumura & Ishihara 1945) Figs. 39-41, 39-40, Head; 41, male genitalia.

This species is often collected by sweeping rice plants and very common in light trap samples. Closely resembles *Harmalia sirokata* (Matsumura et Ishihara, 1945) but slightly differs in the characters of male genitalia (Fig. 41).

Genus *Cemus* Fennah

*Cemus pulchella* (Distant.) Figs. 42-44. 42-43, Head; 44 forewing.

*Pundaluoya pulchella* Distant. 1916. Fauna of British India.  
Rhync. Vol. 61 : 153.

Body above blackish brown; vertex much suffused with ochraceous; ridge to pro- and mesonota ochraceous; body beneath and legs black; face more or less speckled with ochraceous, the central and lateral carinations, the apex and genae also ochraceous; basal margin of clypeus ochraceous; forewing hyaline, veins rather thickly speckled with fuscous granules, a curved fascia extending from stigma to posterior angle and then upwardly recurved to near apex of clavus, fuscous; hind wing hyaline, the vein darker, face with the central carinae bifurcating at a little beyond middle.

Often found in rice fields in low numbers.

#### References

Claridge, M.F. 1981. Taxonomic support for COPR/SEACAR/IRRI.

Project on brown planthopper ecology. COPR research project No. 5. First Report 1979/80.

Distant, W.L. 1916. The fauna of British India. Rhync.

Vol. 6 : 1-248 pp.

- Fennah, R.G. 1969. Fulgoroidea (Homoptera) from New Caledonia and the Loyalty Islands. Pacific Insects Monographs. 21 : 1-116.
- Fennah, R.G. 1975. Homoptera : Fulgoroidea Delphacidae from Ceylon. Entomological Scandinavica Supplement. 4 : 79-136.
- Fennah, R.G. 1978. Fulgoroidea (Homoptera) from Viet-nam. Annales Zoologici 34 No.9 : 209-279.
- Ishihara, T. 1949. Sci. Rept. Matsuyama Agric. Coll. 2 : 1-102 (17 pls.)
- Kirkaldy, G.W. 1907. Bull. Hawaiian/Sugar/pls. Ass. Exp. Sta. Ent. Series 3 : 1-186.
- Muir, F. 1917. Proc. Hawaii ent. Soc. 3 : 331-338.
- Okada, T. 1977. Taxonomic characters for identification of the rice brown planthopper (*Nilaparvata lugens*) and its related species in the Asian and Pacific Region. pp.1-25. in The rice brown planthopper. Food and Fertilizer Technology Center for the Asian and Pacific Region, Taipei, Taiwan.

Plate 1.

Figs. 1-6 Nilaparvata lugens (Stål)

1-2 head, dorsal and ventral aspects;

3-4 male and female genitalia;

5 hind tibia 6 wings.

Figs. 7-9 N. bakeri Muir : 7 head ventral aspects

8 male genitalia; 9 female genitalia.

Plate 2.

Figs. 10-14 Sogatella furcifera (Horvath)

10-11 head, dorsal and ventral aspects;

12-13 male and female genitalia

14 forewing.

Figs. 15-18 Sogatodes pusanus (Distant)

15-16 head dorsal and ventral aspects;

17 male genitalia; 18 forewing.

Plate 3.

Figs. 19-22 S. longifurcifera Esaki et. Ishihara

19-20 head, dorsal and ventral aspects;

21 male genitalia; 22 forewing.

Figs. 23-26 S. kolophon (Kirkaldy)

23-24 head, dorsal and ventral aspects;

25 male genitalia ; 26 forewing.

Figs. 27-30 Sogatodes geranor (Kirkaldy)

27-28 head, dorsal and ventral aspects;

29 male genitalia; 30 forewing.



Plate 4

Figs. 31-34 Sardia rostrata Melichar

31-32 head, dorsal and ventral aspects;

33 male genitalia : 34 forewing.

Figs 35-38 Perkinsiella saccharicida Kirkaldy

35-36 head, dorsal and ventral aspects;

37 male genitalia: 38 forewing.

Plate 5.

Figs. 39-41 Harmalia sp.

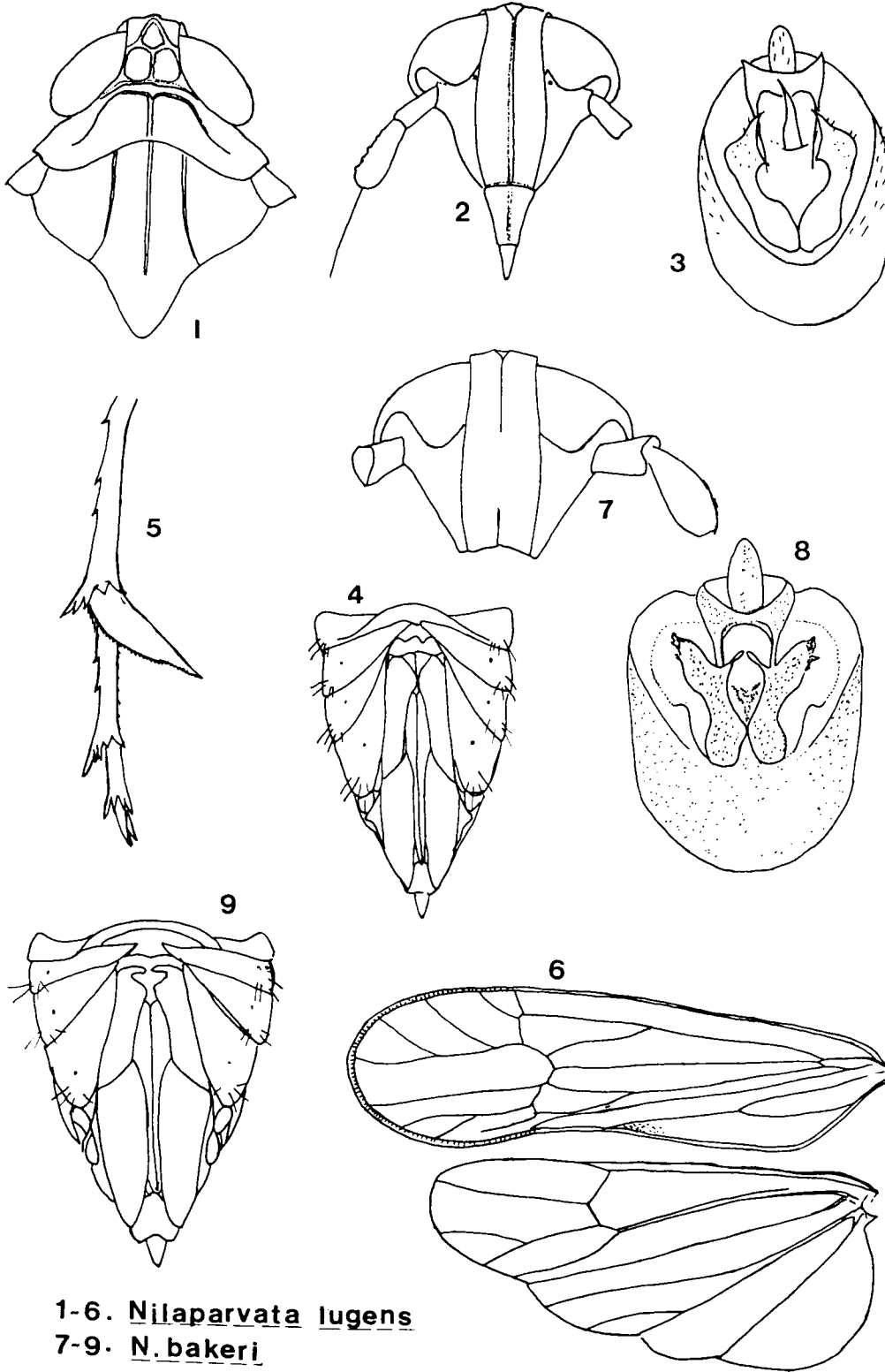
39-40 head, dorsal and ventral aspects;

41 male genitalia

Figs. 42-44 Cemus pulchella Distant:

42-43 head, dorsal and ventral aspects;

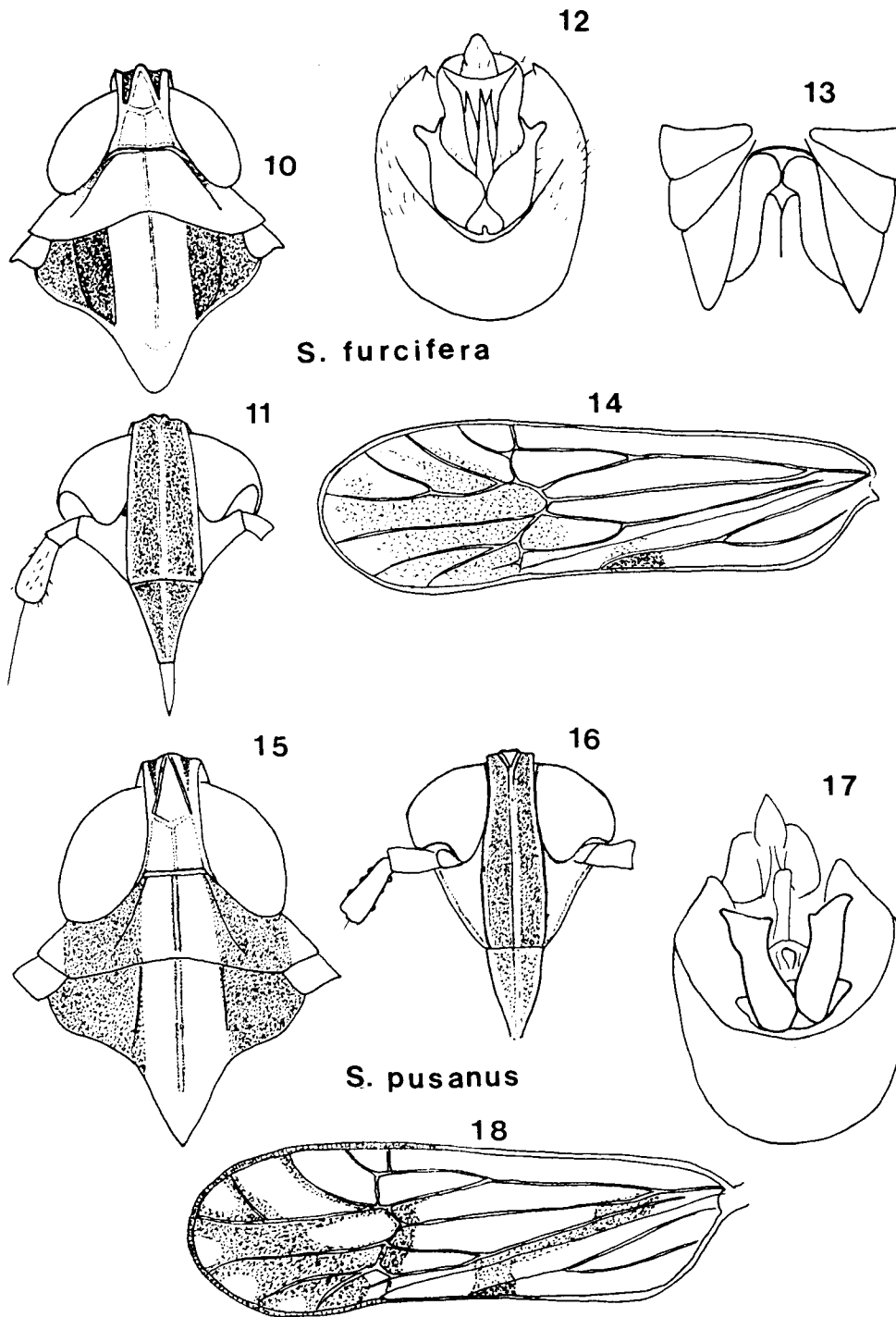
44 forewing.



1-6. *Nilaparvata lugens*  
7-9. *N. bakeri*

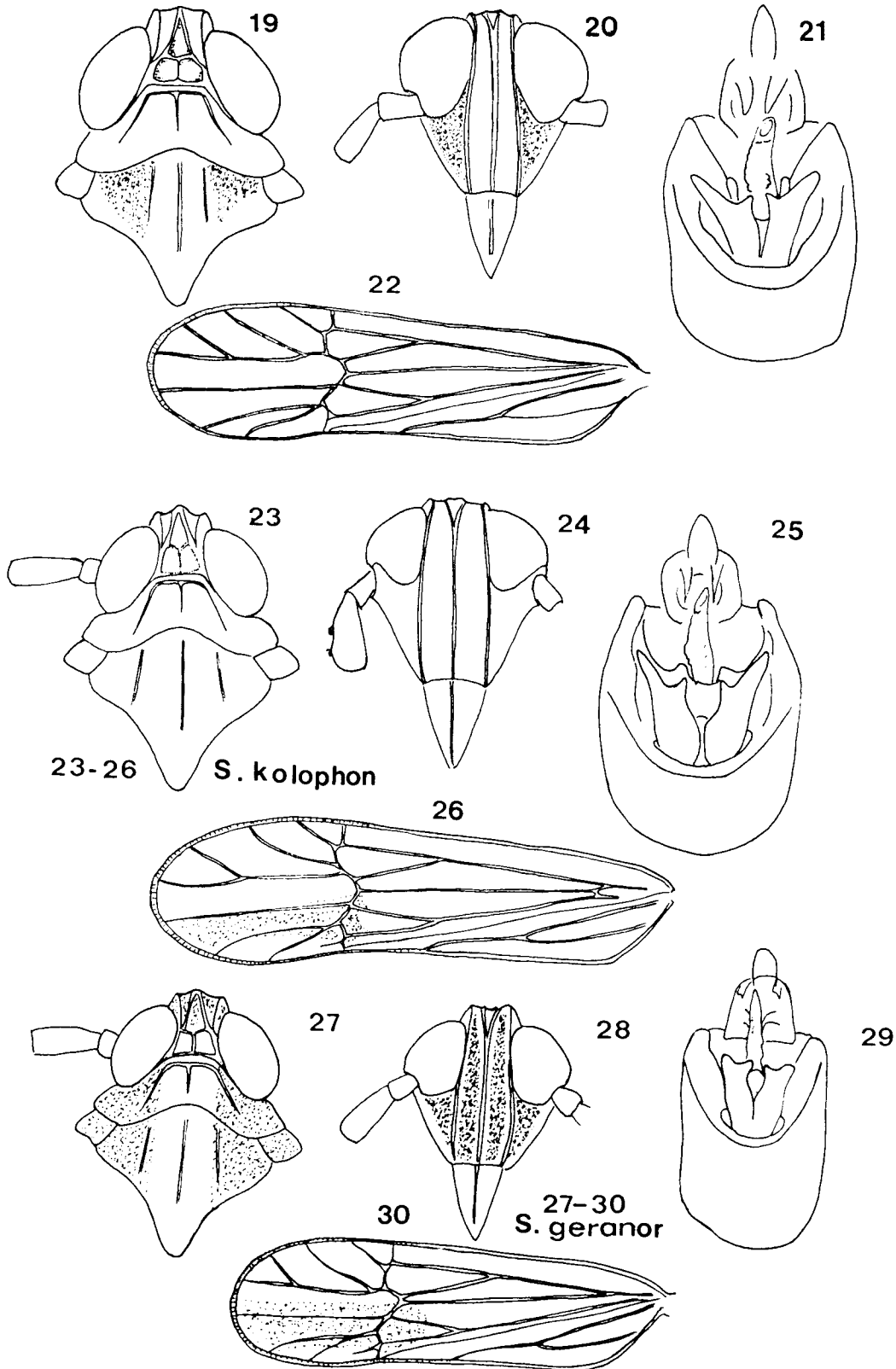
Fig. 10-14, *Sogatella furcifera*  
15-18, *S. pusanus*

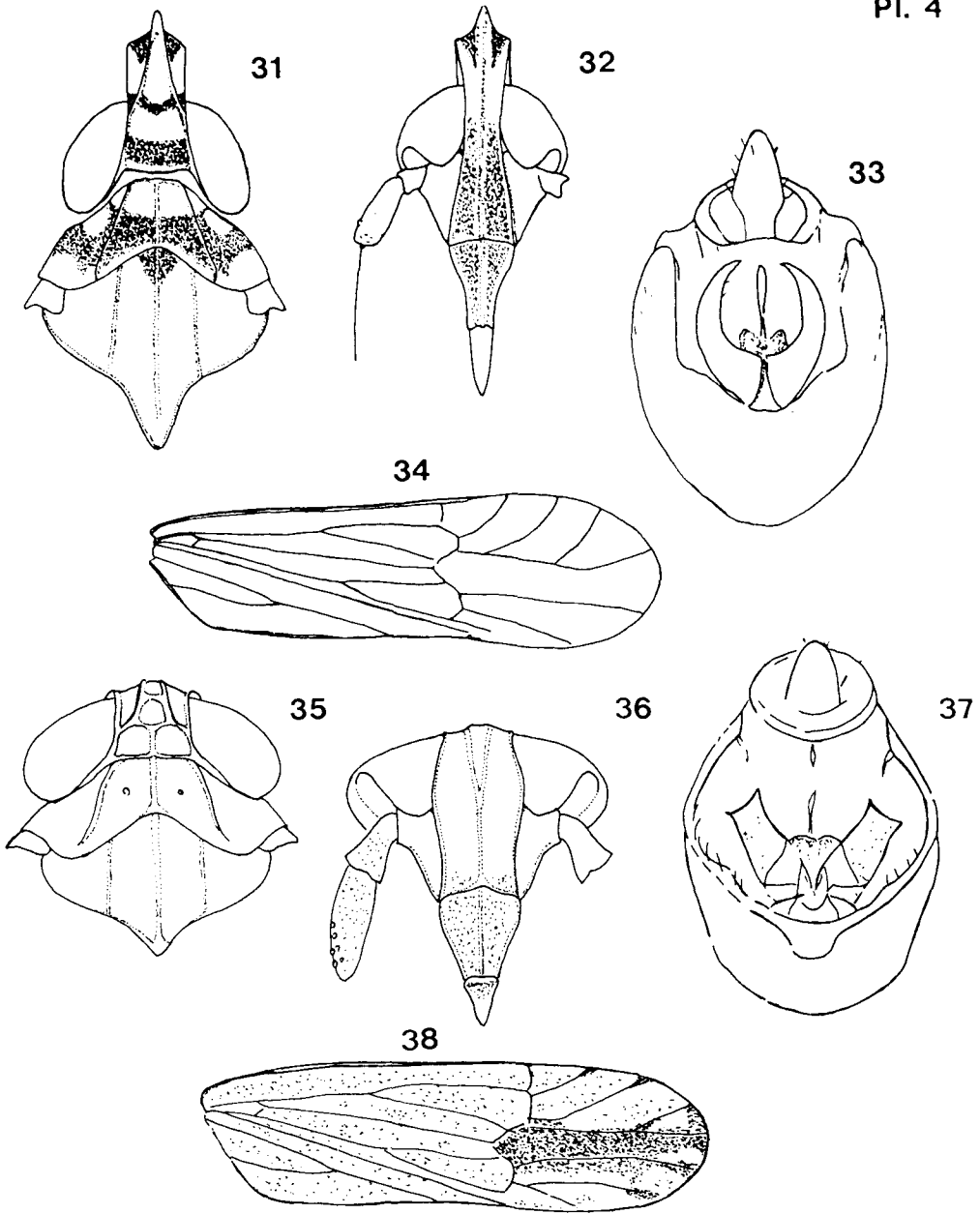
Pl. 2



**Figs. 19-22, *Sogatella longifurcifera***

**Pl. 3**





**Figs.31-34, *Sardia rostrata***

**35-38, *Perkinsiella saccharicida***

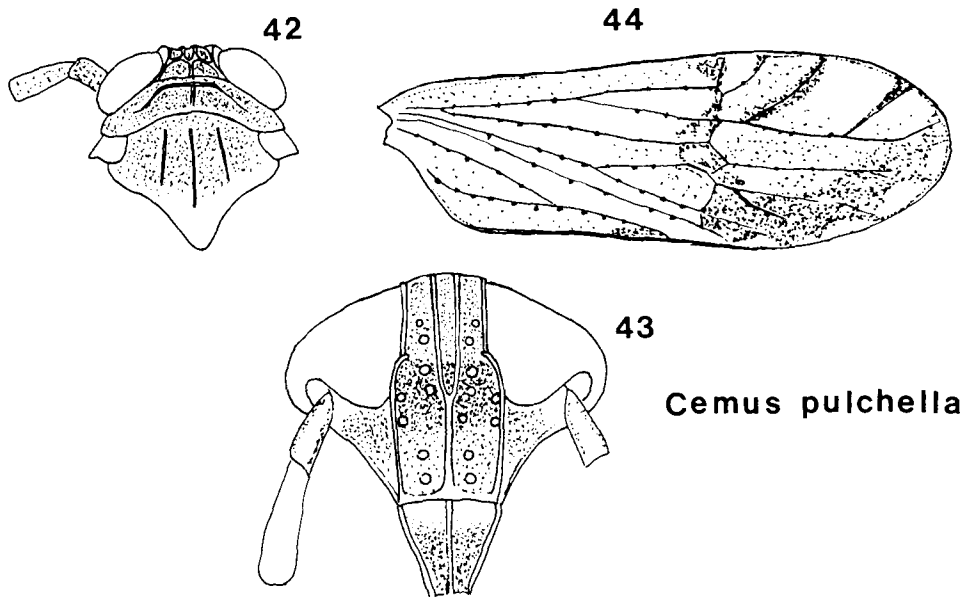
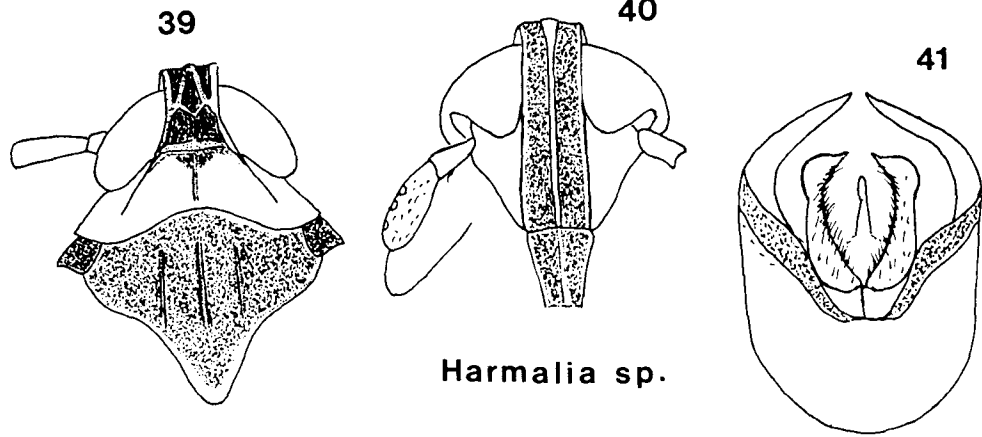


Fig. 39-41, Harmalia sp.

Fig. 42-44, Cemus pulchella