

**MALE GENITALIA ILLUSTRATIONS FOR GENUS
CHREMISTICA STAL (HOMOPTERA: CICADIDAE)
FROM MALAYSIA**

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ABSTRACT

The male genitalia of four species of *Chremistica* Stal (Homoptera: Cicadidae), namely *Chremistica bimaculata* (Olivier), *Chremistica pontianaka* (Distant), *Chremistica nesioties* Breddin and *Chremistica germana* Distant are illustrated based on the type specimens.

ABSTRAK

Genitalia jantan bagi empat spesies *Chremistica* Stal (Homoptera: Cicadidae), iaitu *Chremistica bimaculata* (Olivier), *Chremistica pontianaka* (Distant), *Chremistica nesioties* Breddin dan *Chremistica germana* Distant dilukis berdasarkan beberapa spesimen tip.

INTRODUCTION

A total of 13 species of *Chremistica* Stal were recorded from Malaysia (Bregman 1985; Duffels & van der Laan 1985; Metcalf 1963; Salmah and Zaidi 2002). They are *Chremistica pontianaka* (Distant), *Chremistica guamusangensis* Salmah & Zaidi, *Chremistica nesiotes* Bredin, *Chremistica kecil* Salmah & Zaidi, *Chremistica germana* (Distant), *Chremistica viridis* (Fabricius), *Chremistica ochracea* Walker, *Chremistica bimaculata* (Olivier), *Chremistica siamensis* Bregman, *Chremistica tridentigera* Bredin, *Chremistica biloba* Bregman, *Chremistica umbrosa* (Distant) and *Chremistica minor* Bregman.

The first person who provided the morphology and male genitalia illustrations of the genus *Chremistica*, which was identified as *Cicada pontinaka* at that time, was Singh Pruthi. In Singh Pruthi (1925), however, only some basic parts of the genitalia, namely the aedeagus and phygofer were illustrated. Furthermore, the illustrations was very simple and thus insufficiency for a taxonomic study that utilizes male genitalia as the basis of identification. Nevertheless, some species of *Chremistica* Stal from the *tridentigera* group were completely drew by Bregman (1985), such as *C. tridentigera*, *C. biloba*, *C. siamensis* and *C. minor*, while *C. guamusangensis* and *C. kecil* by Salmah & Zaidi (2002).

The male genitalia is the most important part for identification especially for cicada species (Mayr & Ashlock 1991). Every species could be distinguished from other species based on the male genitalia. So, illustrations for the male genitalia must be included in taxonomy as well as the description of external morphology. Although, each species can be differentiated based on the acoustic method, meaning that different species will produce different song patterns and characteristics, this method however needs more specific time and must be conducted in the field. As a conclusion, the male genitalia illustration could be considered as indispensable in the identification of cicada species.

According to Moulton (1923), *C. viridis* that originated from Indo-China, Siam and Peninsular Malaysia (Kedah) was changed to *Rihana bimaculata* without examined the type specimen of *C.*

viridis. The identification was done based on the similarity on the external morphology characters (short rostrum and small white patches on the lateral abdomen). So, the existence of *C. viridis* in Malaysia might be was doubtful.

In this paper, out of the 13 species of *Chremistica*, only four species were illustrated (Figs. 1-4). A total of four species were illustrated. Another two species (*C. ochracea* and *C. viridis*) were not illustrated because the type or paratype specimens were not available on loan. Furthermore, complete illustrations for five other species (*C. tridentigera*, *C. biloba*, *C. umbrosa*, *C. minor* and *C. siamensis*) can be referred to Bregman (1985), while Salmah & Zaidi (2002) for *C. guamusangensis* and *C. kecil*.

The process of identification for these four species will be made easier based on the complete illustration of the male genitalia presented here. However, it is noted here that a complete description is still need for species identification. Descriptions of *Chremistica* species can be referred to Breddin 1905; Bregman 1985; Distant 1888a, 1888b, 1904, 1906b; Moulton 1923; Salmah & Zaidi 2002). Table 1 shows a list of the types specimens studied and their repositories.

Table 1 The repositories listed below are the depositories for the type specimens

TYPE SPECIMEN	REPOSITORY
1. <i>Chremistica pontianaka</i> Distant	KBIN
2. <i>Chremistica nesiotis</i> Breddin	ZMH
3. <i>Chremistica germana</i> Distant	MCSN
4. <i>Chremistica bimaculata</i> (Olivier)	ZMA

Note: Abbreviations given are used in this paper;

KBIN Koninklijk Belgisch Instituut voor
Natuurwetenschappen, Brussel

ZMH Zoologisches Institut und Zoologisches Museum,
Hamburg

MCSN Museo Civico di Storia Naturale, Italy
 ZMA Zoologisch Museum, Universiteit van Amsterdam,
 Amsterdam

TAXONOMY

Chremistica pontianaka (Distant)

(Fig. 1)

Cicada pontianaka Distant, 1888. Ann. Mag. Nat. His., 6(1): 298
 [West Borneo] type, male].- Distant, 1892, Oriental Cicad.,
 5-7: 97 (Malay Peninsula; Sumatra; Java; Borneo; Sulu).

Rihana pontianaka: Distant, 1906, Cat. Homoptera 1:33
 (Malaya).- Moulton, 1923, J. Fed. Mal. St. Mus., 11:130
 (Malay Peninsula; Borneo; Banguay; Sumatra; Java; Sulu
 Islands; Philippines; New Guinea).

Chremistica pontianaka; Kilkardy, 1907, Ann. Soc. Ent. Belgique,
 51: 305 (Malay Peninsula; Sumatra; Java; Borneo; Sulu).-
 Bregman, 1985, Beaufortia, 35(4): 39 (S.E. Asia).-Zaidi &
 Hamid, 1996, Serangga 1(1): 53 [Sarawak (males)].- Zaidi
 & Ruslan, 1997, Serangga 2(20): 220 [Peninsular Malaysia
 (male, female); Singapore (females, NUS)].- Zaidi & Ruslan,
 1998a, Serangga 3(2): 347 [Sarawak (males & females)].-
 Zaidi et al. 1999, Serangga, 4(2): 302 [Sabah (females)].

Chremistica nesiotas Breddin

(Fig. 2)

Chremistica nesiotas Breddin, 1905, Breddin, G., 1905. Mt. Mus.
 Hamburg. 22: 220, 221 (Banguay, Ins. Nordl. Borneo (type,
 male, ZHM)].- Metcalf 1963, Cat. Homop. Cicad. 1: 174
 (Banguay, Banggi).- Weidner & Wagner 1968, Zool. Mus.
 Inst. 65: 142 (Banguay).- Bregman 1985, Beaufortia 35(40):
 39 (S. E. Asia).

***Chremistica germana* (Distant)**

(Fig. 3)

Cicada germana Distant, Ann. Mus. Civ. Genova, 2(6): 457 (Burma).

Cicada germana: Distant, 1906, fauna British India, Rhynchota 3:80 (Penang, Malay Peninsula: Burma).- Moulton 1923, J. Fed. Mal. St. Mus., 11: 130 (Burma: Siam: Malay Peninsula: Borneo: Java: Sumatra).

Chremistica germana: Metcalf, 1963, Cat. Homop. Cicad. 1:172 (S.E. Asia: India).-Bregman, 1985, Beaufortia, 35(4): 39(S.E. Asia).-Zaidi et. al., 1996, Serangga 1(1): 60 [Peninsular Malaysia (males, females)].- Zaidi & Ruslan, 1998a, Serangga 3(2): 346 [Sarawak (females)].

***Chremistica bimaculata* (Olivier)**

(Fig. 4)

Cicada bimaculata Olivier, 1791, Encycl. Method. Hist. Nat. Inst., 5:756 (Java).

Rihana bimaculata: Distant, 1906, Cat. Homop., 1: 33 Malaya).- Moulton, 1923 J. Fed. Mal. St. Mus., 11:132 (Java, Borneo, Cambodia, Tonkin)

Chremistica bimaculata: Kirkaldy, 1907, Ann. Soc. Ent. Belgique, 51:305 (Java, Philippine Islands).- Zaidi, 1996, Serangga 1(2): 101 [Sarawak (female)].- Zaidi et al., 1999, Serangga, 4(2): 301 [Sabah (females)].



1



2



3



4

Figs. 1-4 Phygofer of *Chremistica* from ventral view. 1, *C. pontianaka* (Distant); 2, *C. nesiotes* Breddin; 3, *C. germana* (Distant); 4, *C. bimaculata* (Olivier).

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