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Supplement of Nirvanini of Taiwan (Homoptera : Cicadellidae : Nirvaninae) 【Research report】

臺灣產隱脈葉蟬族之補述 (同翅目：葉蟬科：隱脈葉蟬亞科) 【研究報告】

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Abstract

Thirteen species belonging to 5 genera of Nirvanini were recorded from Taiwan previously. In this paper, a new nirvanid, *Kana lanyuensis* sp. nov. is added and the female of *Aequoreus difasciatus* is described. Revision of some species of Nirvanini in Taiwan and a new key are also presented. Therefore, the actually results of Nirvanini species in Taiwan is 10 species under 5 genera.

摘要

臺灣產隱脈葉蟬族之種類至1993年前，共有五屬十三種，本文增加一新隱脈葉蟬，*Kana lanyuensis* sp. nov. 並描述 *Aequoreus difasciatus* Huang 之雌蟲。文中對臺灣隱脈葉蟬族再做審訂，並附臺灣隱脈葉蟬族種類檢索表。經審訂去除同種異名後，現今臺灣隱脈葉蟬族之種類共有五屬十種。

Key words: Nirvanini, Taiwan, new species.

關鍵詞: 隱脈葉蟬族、臺灣、新種。

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ABSTRACT

Thirteen species belonging to 5 genera of Nirvanini were recorded from Taiwan previously. In this paper, a new nirvanid, *Kana lanyuensis* sp. nov. is added and the female of *Aequores difasciatus* is described. Revision of some species of Nirvanini in Taiwan and a new key are also presented. Therefore, the acutually results of Nirvanini species in Taiwan is 10 species under 5 genera.

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摘 要

臺灣隱脈葉蟬族之種類至1993年前，共有五屬十三種，本文增加一新隱脈葉蟬，*Kana lanyuensis* sp. nov. 並描述 *Aequoreus difasciatus* Huang 之雌蟲。文中對臺

灣隱脈葉蟬族再做審訂，並附臺灣隱脈葉蟬族種類檢索表。經審訂去除同種異名後，現今臺灣隱脈葉蟬族之種類共有五屬十種。

關鍵詞：隱脈葉蟬族，臺灣，新種。

Introduction

In recent years, the study on Nirvaninae of Taiwan has been made mainly by author (1989a). In that paper, I reviewed the tribe Nirvanini with 12 species in 5 genera. Male genital characters of *Ophiuchus basilanus* Baker were reported in another paper of author (1989b). Two years later, a new species, *Aequoreus huangi*, was described by Chiang (1991). From that time, it was 13 species and 5 genera nirvanids have been reported from Taiwan. They are: *Nirvana placida*, *N. orientalis*, *N. suturalis*, *N. pallida*, *Sophonia fluctuosa*, *S. rubrolimbata*, *S. rufofascia*, *Aequoreus difasciatus*, *A. huangi*, *Ophiuchus basilanus*, *O. trifasciatus*, *Extensus collectivus*, and *E. latus*. In examining Nirvanini in Taiwan, the author detected some nomenclature errors. Nevertheless, the inventory of Nirvanid fauna of Taiwan is by no means complete. After a study of the specimens from insect collection of Taiwan Agricultural Research Institute, one new species is reported in this paper. The author now concludes 10 species and 5 genera of Nirvanini in Taiwan. Also a key to species of Nirvanini of Taiwan is presented.

The specimens were deposited at Insect Collection, Taiwan Agricultural Research Institute (TARI), Wufeng, Taichung and the Division of Collection & Research, National Museum of Natural Science (NMNS), Taichung.

Key to the Nirvanini of Taiwan (modify from Baker, 1923)

1. Vertex usually somewhat longer than

- anterocular width; median line of vertex 1.4 times or more longer than pronotum in male.....2
- Vertex usually equal to or shorter than anterocular width; median line of vertex 1.3 times or less longer than pronotum in male.....6
- 2. Vertex subtriangular with more or less strongly curved side, narrowing cephalad from very near eyes.....*Nirvana* Kirkaldy...3
- Vertex broadly elliptical, usually equally broad for some distance in front of eyes.....*Ophiuchus* Distant...5
- 3. Vertex with a median ivory white line.....*N. placida* Stal
- Vertex and pronotum with black band...4
- 4. Vertex with black band dichotomizes from apical fourth to base of vertex, some specimens bordered with red band.....*N. orientalis* Matsumura
- Vertex with sinuous black band.....*N. suturalis* Melichar
- 5. Vertex, pronotum and scutellum with two orange bands.....*O. basilanus* Baker
- Vertex and pronotum with three orange bands.....*O. trifasciatus* Huang
- 6. Face as long as wide; pygofer without long process.....*Aequoreus* Huang...7
- Face longer than wide; pygofer with long processes.....8
- 7. Forewing with dark brown spot and stripes.....*A. difasciatus* Huang
- Forewing without dark brown spot and stripes.....*A. huangi* Chiang
- 8. Vertex with black band.....*Extensus* Huang...9
- Vertex without black band, but with a orange mark at middle, orange band along anterior, milky along each lateral

- side, and milky band along posterior margin.....*Kana lanyuensis* sp. nov.
9. Vertex with black band contracts at apical third and then expand to anterior*E. collectivus* Huang
- Vertex with broad black band throughout.....*E. latus* Huang

***Nirvana* Stål, 1859**

- Nirvana* Stål, 1859, Vetensk Adad, Zool. 4: 295
- Quercinirvana* Ahmed & Mahmood, 1970, Pakistan J. Sci. Ind. Res. 12: 260-263. (**syn. nov.**)

***Nirvana placida* (Stål, 1859)**

- Jassus* (*Deltocephalus* (?) *placidus* Stal, 1859, Vetensk. Adad. Zool. 4: 295.
- Nirvana pallida* Melichar, 1903, Homopteren-Fauna von Ceylon. 166. (**syn. nov.**)
- Nirvana placida* Baker, 1923, Philippine Jour. Sci. 23: 385
- Quercinirvana bengalensis* Ahmed & Mahmood, 1970, Pakistan J. Sci. Ind. Res. 12: 260-263. (**syn. nov.**)
- Pseudonirvana rubrolimbata* Kuoh, 1983, Acta Entomol. Sinica. 26 (3): 318-319. (**syn. nov.**)
- Sophonia rubrolimbata* Huang, 1989a, Bull. Soc. Entomol., NCHU. 21: 63. (**syn. nov.**)

Specimens examined: 3 females, Is. Penang, Malaysia by Baker; male, female, Singapore by Baker; Sylhert, E. Pakistan: 2 females, 25-III-1963 by M. Ahmed; male, 26-III-1966 by M. Razi; Ctg. Hilltracts, E. Pakistan: 2 females, 21-III-1966; female, 25-III-1963; female, 22-XII-1963 M. Ahmed; female, Abbotabad, W. Pakistan, 19-V-1964 by M. Ahmed; Male, Comilia, E. Pakistan, 13-III-1966 by M Razi.

Note: Although Ahmed & Mahmood (1970) reported a new genus *Quercinirvana* according to its appendix in forewing and the submarginal vein in hindwing

confluent with vein R, I do not agree it because all of the *Nirvana* with such characters. With careful investigation on the male genitalia of *Q. bengalensis*, *Sophonia rubrolimbata*, *Nirvana placida* and *N. pallida*, they are undoubtedly the same species.

***Nirvana orientalis* Matsumura, 1912**

- Nirvana orientalis* Matsumura 1912, Sapporo Coll. Agr. J. 4(7): 282.
- Quercinirvana longicephala* Ahmed & Mahmood, 1970, Pakistan J. Sci. Ind. Res. 12: 260-263. (**syn. nov.**)
- Pseudonirvana rufofascia* Kuoh, 1983, Acta Entomol. Sinica 26 (3): 316-17. (**syn. nov.**)
- Sophonia rufofascia* Huang, 1989a, Bull. Soc. Entomol., NCHU. 21: 64-65. (**syn. nov.**)

Specimens examined: male, 4 females, Abbotabad, W. Pakistan, 19-VI-1964 by M. Ahmed; female, Singopare, by Baker.

Note: The author examined the male genitalia of *N. orientalis*, *quercinirvan longicephala*, *Pseudonirvana rufofascia* and *Sophonia rufofascia*, they are undoubtedly the same species.

***Nirvana suturalis* Melichar, 1903**

- Nirvana suturalis* Melichar, 1903, Homopteran-Fauna von Ceylon. 166. -Kato, 1933, Three Colour Illustrated Insects of Japan. Fasc. III. Homoptera.
- Sophonia fluctuosa* Huang, 1989a, Bull. Soc. Entomol., NCHU. 21: 66-67. (**syn. nov.**)

Note: Although the author did not examine the specimens of *N. suturalis*. The *S. fluctuosa* Huang, 1989 and *N. suturalis* Melichar, 1903 should be the same species according to the figures of external morphology of Kato, 1933.

Kana Distant, 1908

Kana Distant, 1908, Rhynchota-Homoptera: pp. 282. -Baker, 1923, Philipp. J. Sci. 23: 345-405. -Merino, 1936, Philipp. J. Sci. 61: 307-400.

***Kana lanyuensis* sp. nov.** (Fig. 1)

Body length (excluding tegmen): 4.0-4.3 mm in male, 5.6 mm in female.

Tegmen length: 3.2-2.4 mm in male, 4.0 mm in female.

General color black, vertex with milky band along each lateral and posterior margins, orange along anterior margin, with a orange mark on centre, some sperimens milky, and divided into two parts; pronotum with an orange transverse mark on centre, some specimens divided into two parts; scutellum orange onmedian part, some specimens with longitudinal black band on centre; face with milky band along each lateral sides to anterior side; eyes black; tegmina: black on apical and basal part to median part, two black strips along cross veins of

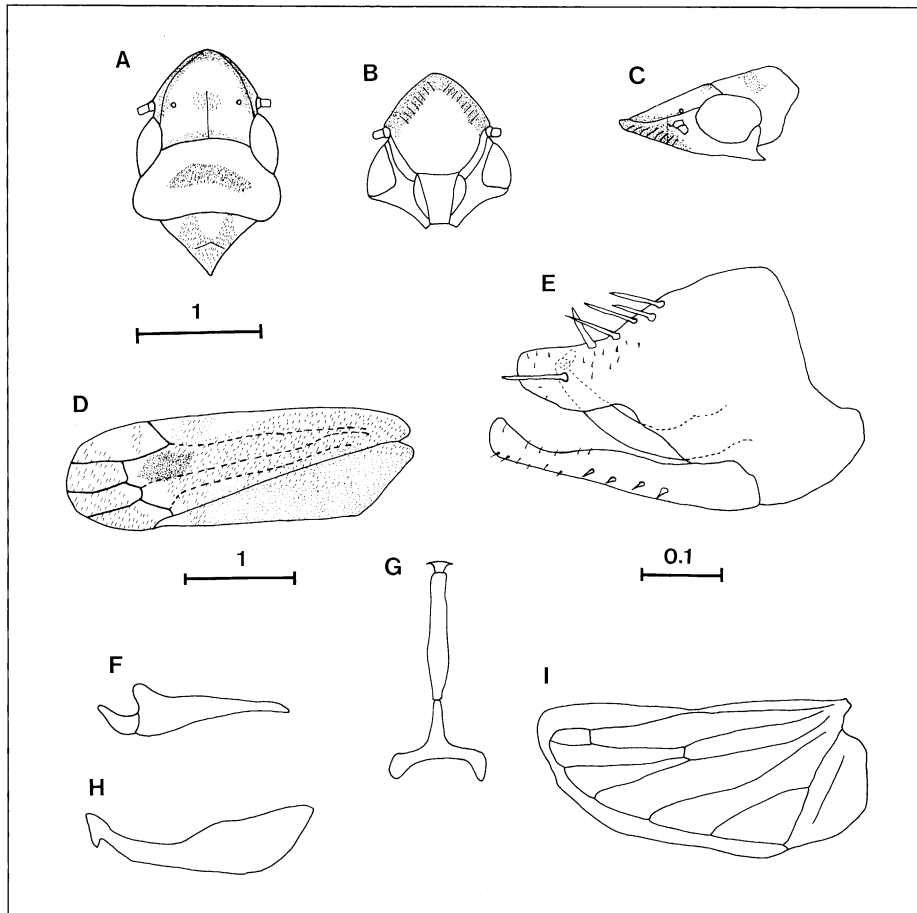


Fig. 1. *Kana lanyuensis* sp. nov. (Male) A, Vertex, pronotum and scutellum; B, Face; C, Head, lateral view; D, Tegmen; E, Genital capsule, lateral view; F, Style, ventral view; G, Aedeagus and connective, ventral view; H, Aedeagus, lateral view; I, Hindwing (A B, C: same scale; D, I: same scale; E, F, G, H: same scale. unit=mm).

costal cell, orange on claval area, a deep orange mark on outer anteapical area; hindwing brown; addomen orange on terminal segment; legs yellow, tarsus black at apex.

Head short and flat, median coronal suture run from base to middle, lateral coronal suture on margin; median length of vertex 0.83–0.90 times longer than anterocular width in male and 0.95 in female; median length of vertex 1.25–1.32 times longer than pronotum in male and 1.46 in female; median length of vertex 1.19–1.50 times longer than scutellum in male and 1.67 in female; distance between ocelli 0.72–0.74 times longer than interocular space in male and 0.8 in female; clypeus with several strongly sinuous sutures on margin, tumid on median part; clypellus long; lorum large; gena broad at apex; tegmina: 1st, 2nd and 3rd apical cells rectangular, 4th apical cell acute at base, broad at antero-apical part; hindwing submarginal vein not extending beyond R vein and confluent with it.

Male genitalia: pygofer in profile rectangular with caudal upper portion produced caudally bluntly, dorsal margin concave at apical third, ventral margin oblique, concave at middle, with six long macrosetae and several setae on upper portion, with a pair of slender processes acute at apex directed dorsal, with a produce near apex; plate thick, blunt at apex, concave at apical third, with several short macrosetae and many short setae on outer side; style acute at apex, with fold at apical fourth which convex at apex; aedeagus simple, tubular-like, with acute produce near apex; connective shorter than aedeagus, T-shape.

Holotype: male, Lanyu, Taitung, 4–9–V–1982, K. S. Lin, K. C. Chou, S. C. Lin and C. C. Pan. (in NMNS)

Paratypes: 2 males, 1 female, data same as holotype. (1 males and 1 female in TARI)

Note: This unique species is easily distinguished from other species of *Kana*

Distant by its colorful body. The biota of Lanyu (Orchid island) is closer to northern Philippine than to Taiwan island. This species may relate to Philippine species, such as *K. anomala* Baker. I think Lanyu may be the northern limit of distribution of *Kana*.

***Aequoreus* Huang, 1989**

Aequoreus Huang, 1989, Bull. Soc. Entomol. (NCHU): 61–76.

***Aequoreus difasciatus* Huang, 1989** (Fig. 2)

Aequoreus difasciatus Huang, 1989a, Bull. Soc. Entomol. (NCHU) 21: 67–68.

Female: Body length (excluding tegmen): 5.7 mm.

Tegmen length: 4.6 mm.

Shape and color similar to the original description of the male of Huang (1989a). The median length of vertex 0.76 times longer than anterocular width; median length of vertex equal to length of pronotum; median length of vertex 1.11 times longer than scutellum; the length of pronotum 0.55 times longer than width; scutellum 1.28 times wider than length; distance between ocelli 0.86 times longer than interocular space.

Specimens examined: female, Piluchi, Jenai, Nantou, 4–XII–1991, Y. C. Shiau. (in NMNS)

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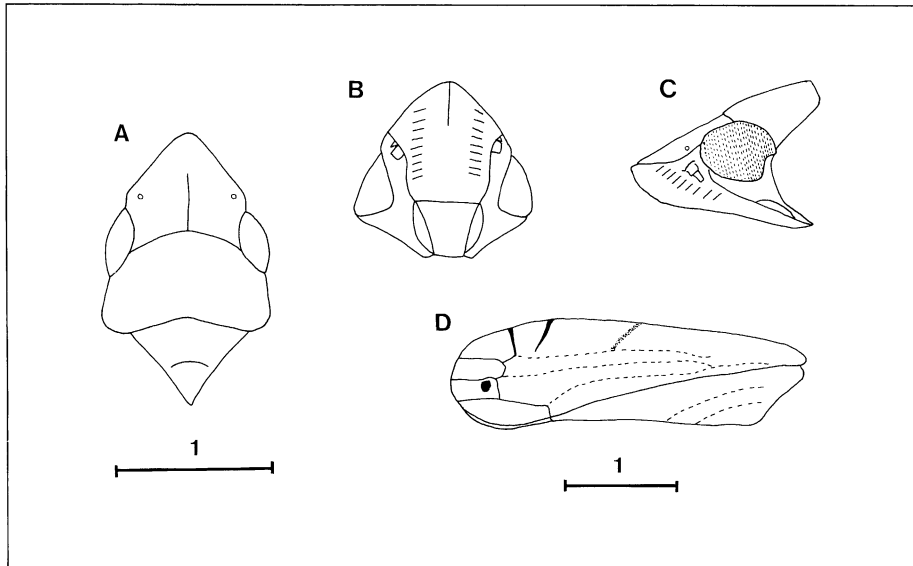


Fig. 2. *Aequoreus difasciatus* Huang (Female). A, Vertex, pronotum and scutellum; B, Face; C, Head, lateral view; D, Tegmen. (A, B, C: same scale. unit=mm).

loaned the specimens for study.

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