

## 臺灣角頂葉蟬亞科四新種記述 (同翅目: 葉蟬科)

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本文描述臺灣產角頂葉蟬亞科昆蟲四新種，分別是黑線闊顏葉蟬 (*Yamatotettix nigrlineus* Li et Dai sp. nov.)，刺突小眼葉蟬 (*Xestocephalus spinestyleus* Li et Dai sp. nov.)，黑脈木葉蟬 (*Phlogotettix nigriveinus* Li et Dai sp. nov.) 和雙斑草葉蟬 (*Sorhoanus binotatus* Li et Dai sp. nov.)。

關鍵詞：同翅目，角頂葉蟬亞科，葉蟬科，新種，臺灣。

## Eriophyoid Mites of Taiwan: Description of Four Species of Acaricalini from Hueysuen (Acari: Eriophyoidea: Phyllooptinae)

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(Received July 25, 2003; Accepted September 30, 2003)

**Abstract.** In this work, the author describes and illustrates four species of Acaricalini in three genera, including three new species and one known species, from Hueysuen (in central Taiwan). They are *Schizacea chinenseae* sp. nov. (infesting *Polygonum chinense*), *Acaphyllisa shinkoensa* sp. nov. (infesting *Rubus shinkoensis*), *Acaphyllisa bracteata* sp. nov. (infesting *Smilax bracteata* and *Schima superba*), and *Pentaconvexus taiwanensis* Huang, 2001 (infesting *Pasania hancei*, *Pasania harlandii*, and *Castanopsis kawakamii*). A key to the genera and species of Acaricalini from Hueysuen is provided.

**Key words:** Acaricalini, Eriophyoid mites, Hueysuen, Taiwan.

### INTRODUCTION

This paper is the third part of a series of taxonomic work on Eriophyoid mites from Hueysuen Experimental Forest, Nantou County, central Taiwan. The mites belong to three genera of Acaricalini. Among them, one species belongs to *Schizacea*, two species to *Acaphyllisa*, and one species to *Pentaconvexus*.

The tribe Acaricalini was established by Amrine and Stasny under the subfamily Phyllooptinae in 1994. The tribe is a medium one of the Phyllooptinae with about 53 species in 15 genera known from different parts of the world and infesting different host plants. They are easy to recognize from all other Phyllooptinae by the divided empodium.

Specimens are deposited in the National Museum of Natural Science (NMNS), Taichung, Taiwan. All measurement units are in micrometers ( $\mu\text{m}$ ). The terminology and abbreviations in the diagrams follow those of Lindquist (1996) and Huang (1999).

In the text, the measurement of the oblique distance between tubercles is indicated by a back slash (\), and that of the straight distance between tubercles is indicated by a dash (-).

Key to Generea and Species of Acaricalini from Hueysuen, Taiwan

(modified from Amrine, 1996)

1. Scapular setae absent; femoral seta and opisthosomal setae d and e absent .....  
..... *Schizacea chinenseae* sp. nov.
- . Scapular setae present; femoral seta and opisthosomal setae d and e present ..... 2.
2. Prodorsal shield pentagonal .....  
..... *Pentaconvexus taiwanensis* Huang, 2001
- . Prodorsal shield normal ..... 3.
3. Shield design median line absent; empodium 4 rayed ..... *Acaphyllisa shinkoensa* sp. nov.
- . Shield design with median line; empodium 5 rayed ..... *Acaphyllisa bracteata* sp. nov.

*Schizacea chinenseae* sp. nov.

(Fig. 1)

*Female:* Body spindle shaped, 146 long, shield 56 long, 66 wide, shield lobe present, shield design median line absent, admedian lines complete, sinuous, submedian line absent; scapular tubercles and setae absent; leg segments normal, femur with granules, fore tibial setae (1') set at 1/2, 17 long; fore coxal area with granules; 1st coxal setae (1b) 9 long, Ct1-Ct1 30 apart, 2nd coxal setae (1a) 12 long, Ct2-Ct2 21 apart, 3rd coxal setae (2a) 27 long, Ct3-Ct3 38 apart, Ct1\Ct2 27, Ct1-Ct2 11, Ct2\Ct3 29, Ct2-Ct3 9; claw ending as small knob; empodium divided, 4 rayed.

*Opisthosoma:* dorsum with a central furrow, dorsally with about 24 rings, ventrally with about 49 microtuberculate rings; 1st 3 dorsal annuli 7

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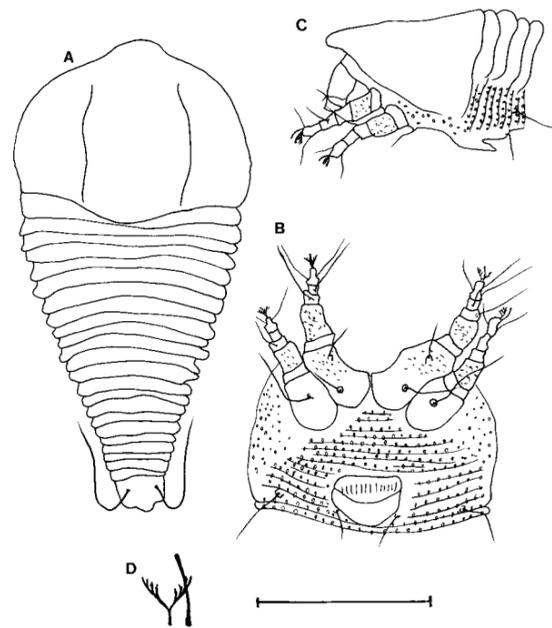


Fig. 1. *Schizacea chinenseae* sp. nov. (♀) A. Dorsal view; B. legs and genital region, ventral view; C. anterior area, lateral view; D. empodium. (scale A, B = 50 µm; C = 40 µm; D = 15 µm).

long; lateral setae (c2) 18 long, Lt-Lt 54 apart; 1st ventral setae (d) and 2nd ventral setae (e) absent; 3rd ventral setae (f) 23 long, Vt3-Vt3 18 apart; accessory setae (h1) absent.

**Coverflap:** 22 wide, 15 long, with about 13 longitudinal ridges, genital setae (3a) 10 long, Gt-Gt 21 apart.

**Male:** not seen.

**Type data:** *Holotype*, ♀, Nantou Co.: Renai; 9 Sept. 1992, Huang et Wang; ex *Polygonum chinense* L. (Polygonaceae). (deposited at NMNS).

**Paratypes**, 2 ♀, data same as for holotype.

**Relation to host:** A vagrant on the lower leaf surface. No apparent damage was observed.

**Note:** This new species is close to *S. gynerii* Keifer, 1977 but differs in the shield design for which the admedian lines lack a transverse line, the femur has granules, and the coverflap has longitudinal ridges.

***Pentaconvexus taiwanensis*** Huang, 2001 (Plate 1)

*Pentaconvexus taiwanensis* Huang, 2001b.

**Specimens examined:** 5 ♀, 1 ♂, Nantou Co.: Renai, 9 Sept. 1992, Huang et Wang; ex *Pasania hancei* (Benth.) Schottky (Fagaceae); 9 ♀, 3 ♂, 6 Oct. 1994, C. F. Wang; ex *Pasania harlandii* (Hance) Oerst; and 6 ♀, 3 ♂, ex *Castanopsis kawakamii* Hay. (Fagaceae).

**Relation to host:** A vagrant on the lower leaf surface. No apparent damage was observed.

**Distribution:** Taiwan.



Plate 1. *Pentaconvexus taiwanensis* Huang, 2001. Dorsal view, short setae type.

***Acaphyllisa shinkoensa*** sp. nov. (Fig. 2)

**Female:** Body spindle shaped, 177 long, shield 51 long, 71 wide, shield lobe present, shield design without median line, admedian lines from base to apical 1/5, diverging to rear, with transverse line on basal 1/4 and 1/2, convex at basal 2/5 and 3/5, forming 2 hexagonal shapes, submedian line from base to 1/2; scapular tubercles set ahead of rear shield margin, setae (sc) 6 long, directed outward and upward, Dt-Sr 12, Dt-Dt 23 apart; leg segments normal, fore tibial setae (1) set at basal 1/3, 4 long; coxal area smooth; 1st coxal setae (1b) 6 long, Ct1-Ct1 14 apart, 2nd coxal setae (1a) 12 long, Ct2-Ct2 11 apart, 3rd coxal setae (2a) 17 long, Ct3-Ct3 25 apart, Ct1\Ct2 13, Ct1-Ct2 5, Ct2\Ct3 19, Ct2-Ct3 9; claw ending as knob;

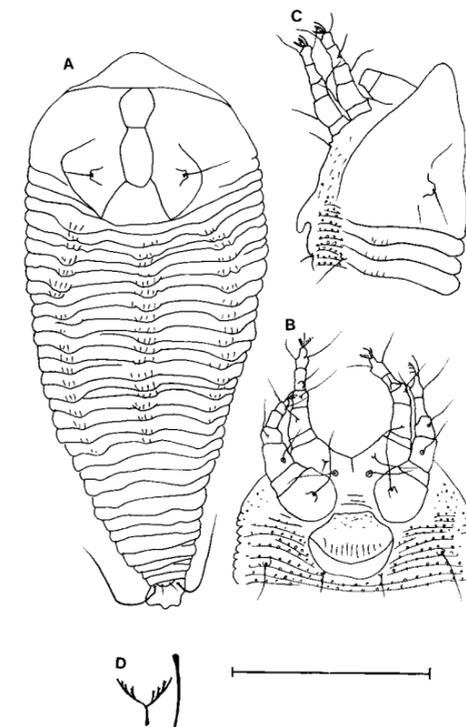


Fig. 2. *Acaphyllisa shinkoensa* sp. nov. (♀) A. Dorsal view; B. legs and genital region, ventral view; C. anterior area, lateral view; D. empodium. (scale A, B = 50 µm; C = 40 µm; D = 15 µm).

empodium divided, 4 rayed.

**Opisthosoma:** dorsum with median ridge shorter than submedian ridges, dorsally with about 34 rings, with dashed line microtuberculate at ridges, ventrally with about 58 microtuberculate rings; 1st 3 dorsal annuli 8 long; lateral setae (c2) 13 long, Lt-Lt 55 apart, Lt\Vt1 52, Lt-Vt1 27; 1st ventral setae (d) 22 long, Vt1-Vt1 33 apart, Vt1\Vt2 43, Vt1-Vt2 37; 2nd ventral setae (e) 10 long, Vt2-Vt2 15 apart, Vt2\Vt3 45, Vt2-Vt3 41; 3rd ventral setae (f) 19 long, Vt3-Vt3 23 apart; accessory setae (h1) present.

**Coverflap:** 23 wide, 15 long, with about 11 longitudinal ridges, genital setae (3a) 8 long, Gt-Gt 13 apart.

**Male:** Body 159 long, shield 48 long, 70 wide, scapular setae (sc) 6 long; genitalia 18 wide, 4 long, setae 6 long, Gt-Gt 12 apart.

**Type data:** *Holotype*, ♀, Nantou Co.: Renai; 6 Oct. 1994, C.F. Wang; ex *Rubus shinkoensis* Hay. (Rosaceae). (deposited at NMNS).

**Paratypes**, 4 ♀, 2 ♂, same data as for holotype.

**Relation to host:** A vagrant on the lower leaf surface. No apparent damage was observed.

**Note:** This new species is close to *A. parindiae* Keifer, 1978 but differs in the shield design with admedian lines from base to apical 1/5, forming 2 hexagonal shapes, coverflap with 1 row of longitudinal ridges.

***Acaphyllisa bracteata*** sp. nov. (Fig. 3)

**Female:** Body fusiform, 150 long, shield 39 long, 52 wide, shield lobe present, shield design with median line and admedian lines complete, admedian lines concave at basal 3/5, with a semicircular line at each admedian line extending to lateral sides, submedian line absent; scapular tubercles set ahead of rear shield margin, located at admedian lines, setae (sc) 3 long, directed centrad and upward, Dt-Sr 12, Dt-Dt 12 apart; leg segments normal, coxa I sternal line absent, fore tibial setae (1) set at 1/2, 7 long; coxal area smooth; 1st coxal setae (1b) 7 long, Ct1-Ct1 9 apart, 2nd coxal setae (1a) 6 long, Ct2-Ct2 7 apart, 3rd coxal setae (2a) 11 long, Ct3-Ct3 20 apart, Ct1\Ct2 11, Ct1-Ct2 7, Ct2\Ct3 14, Ct2-Ct3 7;

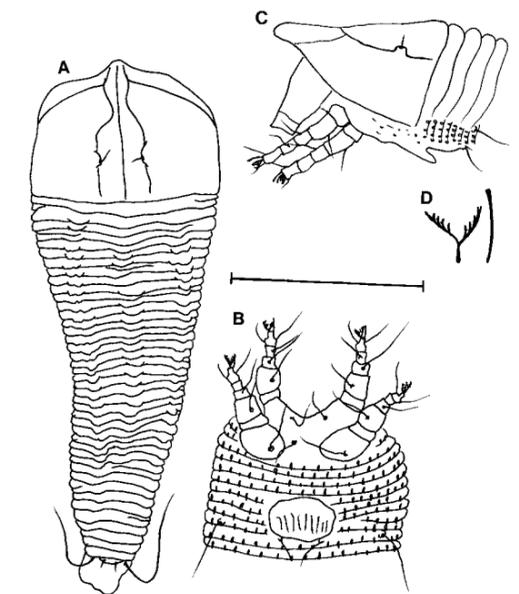


Fig. 3. *Acaphyllisa bracteata* sp. nov. (♀) A. Dorsal view; B. legs and genital region, ventral view; C. anterior area, lateral view; D. empodium. (scale A, B = 50 µm; C = 40 µm; D = 15 µm).

claw ending as knob; empodium divided, 5 rayed.

*Opisthosoma*: dorsum with median ridge shorter than submedian ridges, dorsally with about 51 rings, ventrally with about 53 microtuberculate rings; 1st 3 dorsal annuli 9 long; lateral setae (c2) 10 long, Lt-Lt 44 apart, Lt\Vt1 38, Lt-Vt1 25; 1st ventral setae (d) 17 long, Vt1-Vt1 19 apart, Vt1\Vt2 28, Vt1-Vt2 25; 2nd ventral setae (e) 17 long, Vt2-Vt2 10 apart, Vt2\Vt3 40, Vt2-Vt3 38; 3rd ventral setae (f) 14 long, Vt3-Vt3 16 apart; accessory setae (h1) present.

*Coverflap*: 19 wide, 12 long, with about 9 longitudinal ridges, genital setae (3a) 6 long, Gt-Gt 11 apart.

*Male*: Body 152 long, shield 32 long, 50 wide, scapular setae (sc) 3 long; genitalia 13 wide, 4 long, setae 6 long, Gt-Gt 13 apart.

*Type data*: *Holotype*, ♀, Nantou Co.: Renai; 6 Oct. 1994, C.F. Wang; ex *Smilax bracteata* Presl subsp. *verruculos* (Merr.) T. Koyama (Smilacaceae) (deposited at NMNS). Paratypes, 2 ♀, 2 ♂, ex *Schima superba* Gard. et Champ. var. *superba* (Theaceae).

*Relation to host*: A vagrant on the lower leaf surface. No apparent damage was observed.

*Note*: This new species is close to *A. osmophloea* Huang, 2001a but differs in the shield design

without a short line on each side, admedian lines with a semicircular line extending to lateral sides, and the 5-rayed empodium.

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## 臺灣產節蟬：描述四種惠蓀林場小麗節蟬族 (蟬蟬亞綱：節蟬總科：葉刺節蟬亞科)

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本文描述及繪圖3屬、4種惠蓀林場小麗節蟬族，其中包含3新種及1舊有種。分別為：*Schizacea chinenseae* sp. nov. 為害火炭母草 (*Polygonum chinense*)，*Acaphyllisa shinkoensa* sp. nov. 為害毛茛懸鉤子 (*Rubus shinkoensis*)，*Acaphyllisa bracteatae* sp. nov. 為害糙莖菝葜及木荷 (*Smilax bracteata* var. *verruculosa* 及 *Schima superba* var. *superba*)，*Pentaconvexus taiwanensis* Huang, 2001 為害三斗石櫟、短尾葉石櫟及川上氏櫟 (*Pasania hancei*, *Pasania harlandii* 及 *Castanopsis kawakamii*)。本文並對惠蓀林場產小麗節蟬族的種做一檢索表。

關鍵詞：小麗節蟬族，節蟬，惠蓀，臺灣。

## The Latest Record of the Leatherback Sea Turtle (*Dermochelys coriacea*) from Eastern Taiwan

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(Received June 30, 2003; Accepted September 16, 2003)

**Abstract.** A latest record is described herein of a female leatherback sea turtle, *Dermochelys coriacea*, stranded on the northeast coast of Ilan County, Taiwan, on May 17, 2001. The leatherback sea turtle is the largest species in the world among living sea turtles. However, they rarely appear in the waters around Taiwan. Although the reasons that caused her to be stranded and die still require further investigation, scientists have inferred that it was most likely due to feeding behavior. This giant leatherback sea turtle was a sexually mature female with hundreds of eggs in her abdominal cavity, and those eggs were nearly ready to be laid. Herein we present a report with a detailed characteristic description and morphological measurements from this precious gift from the sea.

**Key words:** *Dermochelys coriacea*, Leatherback sea turtle, Taiwan.

## INTRODUCTION

The leatherback sea turtle, *Dermochelys coriacea*, is the largest species among all living marine turtles. It can grow up to 180 cm in carapace length (Kordikova, 2002). Leatherback sea turtles are the most widely distributed animals of all marine reptiles, and they are found throughout tropical and temperate oceans of the world (Pritchard, 1980). Also, they are known to inhabit warmer seas, especially tropical seas, and females usually come ashore to nest every 2 to 3 years in warm sands of tropical beaches (Pritchard, 1982).

The leatherback sea turtle is the only living species of the Dermochelyidae. The other six extant species of marine turtles belong to the family Cheloniidae. Dermochelyids have a generally neotenic shell (Kordikova, 2002), and they are characterized by a reduction of shell scutes and the presence of a mosaic epithelial layer of small, polygonal, mosaic bones, directly overlain by the epidermis. As to the evolutionary lineage of the Dermochelyidae, it is thought to have diverged from other turtles during the

Cretaceous or Jurassic Period (about 100-150 ma). Compared to the Cheloniidae which is assumed to have evolved from a common ancestor during the Middle Tertiary (about 30-35 ma), the leatherback sea turtle is considered to be primitive or ancestral, but appears to be highly specialized from other closely related true turtles (Zangerl, 1980). However, the evolutionary history of the genus *Dermochelys* is poorly understood because of a lack of fossil material (Wood *et al.*, 1996).

Recent research of the leatherback sea turtle has focused on the study of their global distribution, migration, reproduction, and behavior (Eckert, 1990; Keinath and Musick, 1993; Renous and Bels, 1993; Dutton *et al.*, 1999). These subjects are closely linked to the most pressing issue of turtle conservation. Being one of the most globally endangered species, every possible record of the leatherback sea turtle is crucial to understand their life history and further protecting these giant marine turtles from extinction.

A sexually mature female leatherback sea turtle was found stranded on the coast of Aozaijiao (澳仔角), Suao Township (蘇澳鎮), Ilan County (宜蘭縣) (approximately 24°36'47.8"N, 121°51'39.5"E), northeastern Taiwan. After the turtle was carefully dismembered, the specimen was

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