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Eriophyoid Mites (Acari: Trombidiformes) from Orchid Island and Green Island, off the Southeast Coast of Taiwan, with the Description of a New Genus【Research report】

臺灣東南外海的蘭嶼及綠島的節蜱並描述一新屬【研究報告】

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Abstract

This work describes 12 species of eriophyoid mites from Orchid Island (Lanyu) and Green Island (Ludao), including one new genus, seven new species and five new records (to Orchid Island). They are: Aceria noumeae (Keifer, 1978) (infesting Ficus heterapleura and Ficus ampelas), Proartacris melicopae sp. nov. (infesting Melicope triphylla), Proartacris pinnatus sp. nov. (infesting Pometia pinnata), Phaulacus lanyuensis sp. nov. (infesting Syzygium simile), Lanyuii exigus gen. et sp. nov. (infesting Tabernaemontana subglobosa), Latitudo sanasaii Huang, 2001 (infesting Symplocos cochinchinensis philippinensis), Tegonotus similis sp. nov. (infesting Syzygium simile), Tegonotus adamasimilis sp. nov. (infesting Chionanthus ramiflorus), Epitrimerus irisanus Huang and Wang, 2004 (infesting Ficus ampelas), Vasates irisanae Huang 1992 (infesting Ficus ampelas), Tegolophus melicopi Huang and Wang, 2004 (infesting Melicope triphylla) and Neopentamerus decem sp. nov. (infesting Melanolepis multiglandulosa). A key to the families, subfamilies, and species of eriophyoid mites from Orchid Island and Green Island is also provided.

摘要

本文描述12種蘭嶼及綠島的節蜱，包含一新屬、七新種及五種蘭嶼新紀錄種。這12種為：Aceria noumeae (Keifer, 1978) 為害尖尾長葉榕 (Ficus heterapleura) 及菲律賓榕 (Ficus ampelas)，Proartacris melicopae sp. nov. 為害假三腳鱉 (Melicope triphylla)，Proartacris pinnatus sp. nov. 為害番龍眼 (Pometia pinnata)，Phaulacus lanyuensis sp. nov. 為害蘭嶼赤楠 (Syzygium simile)，Lanyuii exigus gen. et sp. nov. 為害蘭嶼山馬茶 (Tabernaemontana subglobosa)，Latitudo sanasaii Huang, 2001為害蘭嶼銹葉灰木 (Symplocos cochinchinensis philippinensis)，Tegonotus similis sp. nov. 為害蘭嶼赤楠 (Syzygium simile)，Tegonotus adamasimilis sp. nov. 為害蘭嶼李欖 (Chionanthus ramiflorus)，Epitrimerus irisanus Huang & Wang, 2004 為害菲律賓榕 (Ficus ampelas)，Vastes irisanae Huang 1992為害菲律賓榕 (Ficus ampelas)，Tegolophus melicopi Huang & Wang, 2004 為害假三腳鱉 (Melicope triphylla) 及Neopentamerus decem sp. nov. 為害蟲屎 (Melanolepis multiglandulosa)。本文並對蘭嶼及綠島上的節蜱做一科、亞科及種的檢索表。

Key words: eriophyoid mites, new genus, Orchid Island, Green Island, Taiwan

關鍵詞: 節蜱、新屬、蘭嶼、綠島、臺灣。

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Eriophyoid Mites (Acari: Trombidiformes) from Orchid Island and Green Island, off the Southeast Coast of Taiwan, with the Description of a New Genus

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ABSTRACT

This work describes 12 species of eriophyoid mites from Orchid Island (Lanyu) and Green Island (Ludao), including one new genus, seven new species and five new records (to Orchid Island). They are: *Aceria noumeae* (Keifer, 1978) (infesting *Ficus heterapleura* and *Ficus ampelas*), *Proartacris melicopae* sp. nov. (infesting *Melicope triphylla*), *Proartacris pinnatus* sp. nov. (infesting *Pometia pinnata*), *Phaulacus lanyuensis* sp. nov. (infesting *Syzygium simile*), *Lanyuii exigus* gen. et sp. nov. (infesting *Tabernaemontana subglobosa*), *Latitudo sanasaii* Huang, 2001 (infesting *Symplocos cochinchinensis philippinensis*), *Tegonotus similis* sp. nov. (infesting *Syzygium simile*), *Tegonotus adamasimilis* sp. nov. (infesting *Chionanthus ramiflorus*), *Epitrimerus irisanus* Huang and Wang, 2004 (infesting *Ficus ampelas*), *Vasates irisanae* Huang 1992 (infesting *Ficus ampelas*), *Tegolophus melicopi* Huang and Wang, 2004 (infesting *Melicope triphylla*) and *Neopentamerus decem* sp. nov. (infesting *Melanolepis multiglandulosa*). A key to the families, subfamilies, and species of eriophyoid mites from Orchid Island and Green Island is also provided.

Key words: eriophyoid mites, new genus, Orchid Island, Green Island, Taiwan

Introduction

Orchid Island and Green Island are two tropical islands located off the southeastern coast of Taiwan. The direct distance to Taitung city is 33 km and 90 km respectively. The flora on Orchid Island and Green Island resemble each other and both are part of the Oriental region. The weather on Orchid Island is an ever-wet climate, close to the weather in Yangmingshan (northern Taiwan), while the weather on Green Island is a summer rain climate, closer to the weather in western Taiwan (Su, 1992). In general, botanists consider the flora of Hengchun

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peninsula (southern Taiwan), Orchid Island and Green Island to belong to the Philippine region, and not to that of main island of Taiwan which belongs to the Palearctic region (Liu & Yang, 1974; Chang, 1986; Hsieh, 2002).

Since the 19th century, biologists have been interested in the biota of Orchid Island due to its location at the boundary between the Oriental and Palearctic biogeographical regions. Investigations have revealed that the biota of Orchid Island is indeed complex and diverse. Green Island did not attract many biologists to investigate its biota due to the fact that its original forestry was destroyed by human activities in the early 20th century (Liu & Yang, 1974). As a result, biologists infer that the biota of Orchid Island and Green Island has the same origin based on the present time flora and the geological data.

To date there are 24 eriophyoid mites recorded from Orchid Island (also called Lanyu) (Huang, 1999a, 2001a, 2008; Wang *et al*., 2011) and 13 species from Green Island (also called Ludao, or Sanasai) (Huang, 2001b; Wang *et al*., 2011). In the present study we have added one new genus, five new species and five new records, of eriophyoid mites to Orchid Island and one new species to Green Island. In other words, there are a total of 46 species of eriophyoid mites on Orchid Island and Green Island, with 35 species on Orchid Island, and 14 species on Green Island, with only three of the species common to both islands (see appendix 1).

Specimens are deposited in the National Museum of Natural Science (NMNS), Taichung, Taiwan. All measurements are in micrometers (μm). The terminology and abbreviations in the diagrams follow those of Lindquist (1996) and Huang (1999b).

The specimens and slides are prepared as per Huang (2008). The illustrations are based mainly on the holotype, while the measurements are based on the holotype, paratypes, and some other non-type specimens.

In the text, the measurement of the oblique distance between tubercles is indicated by a backslash (\), and the straight distance between tubercles is indicated by a dash (-). For example, Dt-Dt means the distance between the scapular tubercles, and Ct1\Ct2 means the oblique distance from the 1st coxal tubercles to the 2nd coxal tubercles.

Taxonomy

Key to families, subfamilies and species of Eriophyoid mites from Orchid Island and Green Island

1. Gnathosoma usually small in comparison with body; chelicerae straight or slightly curved---------- Eriophyidae ---------- 2.
-. Gnathosoma large in comparison with body; chelicerae abruptly curved and bent down near base ---------- Diptilomiopidae ---------- 44.
2. Tibiae reduced or fused with tarsi; tibiae without seta ---------- 3.
-. Tibiae distinct from tarsi, tibial seta usually present ---------- 13.
3. Pedipalp apices with spatulate projections; legs very stout, segments shortened ---------- Aberoptinae -------- *Cisaberoptus celtis* Huang, 2001
-. Spatulate projections absent from pedipalp; legs of average thickness; fore tibial seta absent ---- Nothopodinae ---------- 4.
4. First coxal seta present; fore coxae usually slightly separated; scapular setae (*sc*) ahead of rear shield margin, directed upward and central; fore tibia completely fused with tarsus ---------- ----------Colopodacini … 5.
-. First coxal seta absent; fore coxae either separate or fused across middle; scapular setae (*sc*) and fore tibia variable----------Nothopodini ... 8.
5. Shield design without median line; coxal area with granules ---------- *Colopodacus lanceolatus* Huang, 2001

-. Shield design with median line present; coxal area smooth---------- 6.
6. Shield design with median line and admedian lines complete; scapular setae spine like ----------
-*Colopodacus palanquins* Huang, 2001
-. Shield design with median line and admedian lines incomplete; scapular setae (*sc*) normal ---------- 7.
7. Shield design with median line from anterior 1/6 to 1/3; scapular tubercles set at rear shield margin; genital cover flap with longitudinal ridges at base, two semi-circular ridges at apex ---------
-----*Colopodacus pisoniae* Huang, 2001
-. Shield design with median line and admedian lines parallel, median line from anterior 1/3 to 2/3; scapular tubercles set ahead of rear shield margin; genital cover flap with granules
--- *Colopodacus toddalius* Huang, 2001
8. Scapular setae (*sc*) absent; the second ventral seta absent----------
--------*Surapoda asiaticae* Huang, 2001
-. Scapular setae (*sc*) present; the ventral seta normal ---------- 9.
9. Scapular setae (*sc*) near rear shield margin, directed to rear and divergent, with cylindrical tubercles; fore coxae fused across center line; fore tibia fused with tarsi----------
-----*Floracarus biserratae* Huang, 2001
-. Scapular seta (*sc*) set ahead of rear shield margin, usually directed upward, tubercles plicate; fore coxae fused or with sternal line present; fore tibia slightly discernible on leg underside----
----------10.
10. Fore coxae smooth, separated by a short or moderately long sternal line---
-------*Disella umbelliferae* Huang, 2001
-. Fore coxae fused and more or less fused with subcapitulum ----------
- *Cosella* Newkirk & Keifer, 1975 ... 11.
11. Empodium 3 rayed ----------
------- *Cosella tripinnatiae* Huang, 2001
-. Empodium 4 rayed ----------12.
12. Genital cover flap with granules ---------
---------- *Cosella szygia* Huang, 2001
-. Genital cover flap with granules, a longitudinal ridge at center ----------
---------- *Cosella zeylaniae* Huang, 2001
13. Body wormlike, annuli subequal dorsoventrally, at least on anterior 1/2 to 2/3 of opisthosoma; dorsal shield typically lacking a frontal lobe, or with a slight projection over gnathosoma base; if frontal lobe present over gnathosoma, then lobe is narrow, basely flexible, and combined with narrow opisthosomal annuli ----------
---------- Eriophyinae ... 14.
-. Body usually more fusiform; dorsal shield usually with a broad-based and rigid frontal lobe over gnathosoma; opisthosoma typically divided into broad, heavy dorsal annuli and narrow ventral annuli; if no anterior lobe present, or only a slight one, then some form of dorsoventral differentiation discernible, at least in larger dorsal microtubercles, if no dorsoventral contrast present, then broad shield lobe present --------Phyllocoptinae ... 22.
14. Prodorsal shield tubercles on, or very near, rear shield margin with transverse basal axes, setae directed backward, usually divergently ----------
---- Aceriini (*Aceria* Keifer, 1944) ... 15.
-. Prodorsal shield tubercles and setae more or less ahead of rear shield margin, setae directed forward or up --
---------- Eriophyini ... 19.
15. Prodorsal shield design with median line continuous---------- 16.
-. Prodorsal shield design with median line broken or absent---------- 18.
16. Prodorsal shield design with median line complete---------- 17.
-. Prodorsal shield design with median line from base to basal half----------
----------*Aceria pipturi* Keifer, 1966
17. Prodorsal shield design with submedian lines composed of several short lines---
----------*Aceria lanyuensis* Huang, 2001
-. Prodorsal shield design with submedian lines complete, converging to apex------
-------- *Aceria jasminoidis* Huang, 2001

18. Prodorsal shield design with median line broken----------*Aceria noumeae* (Keifer, 1978)
-. Prodorsal shield design with median line absent --------*Aceria serratifoliae* Huang, 2008
19. Frontal lobe rectangular in shape, with rounded apical protuberances --------20.
-. Frontal lobe triangular, with narrow base ----------21.
20. Shield network design with ellipsoidal, eyelike structure projecting at laterad, empodium 6 rayed----------*Stenacis tanariis* Huang, 2001.
-. Shield network design without ellipsoidal structure; empodium 5 rayed --------*Stenacis biserratae* Huang, 2001
21. Prodorsal shield design with transverse lines between admedian and submedian lines; empodium 4 rayed----------*Proartacris melicopae* sp. nov.
-. Prodorsal shield design without transverse lines between admedian and submedian lines; empodium 5 rayed------ *Proartacris pinnatus* sp. nov.
22. Scapular setae absent or minute on very small tubercles -- Calacarini ... 25.
-. Scapular setae present, tubercles prominent----------23.
23. Opisthosomal annuli, viewed dorsally, with strong lateral lobes or pointed projections, either from each annulus or from a lateral anterior opisthosomal expansion, or both ----- Tegonotini ... 29.
-. Opisthosomal annuli, viewed laterally, evenly down-curved over opisthosomal margins and without lateral extensions; opisthosomal dorsum varying from evenly arched in cross section to flattened, ridged, or furrowed---------24.
24. Scapular setae usually ahead of rear shield margin, directed forward, upward, or diagonally central; if near rear shield margin, then tubercles subcylindrical and bent forward or tubercles plicate with basal axes longitudinal or diagonal ---------- Phyllocoptini ... 33.
-. Scapular setae on or very near rear shield margin, directed posteriorly, usually divergently; tubercles either subcylindrical, or basal axes transverse---------- Anthocoptini ... 39.
25. Some or all dorsal opisthosomal annuli projecting laterally when viewed dorsally ---------- 26.
-. Opisthosoma annuli not projecting laterally ---------- 28.
26. Scapular tubercles very elongate, extending posteriorly, setae (*sc*) absent; opisthosomal setae *d* and *e* absent------ *Hornophyes andamanensis* Moh., 1994
-. Scapular tubercles absent ---------- 27.
27. All opisthosomal setae present---------- *Phaulacus lanyuensis* sp. nov.
28. Opisthosomal lateral tubercle and setae (*c2*) absent---------- *Lanyuii exiguus* gen. et sp. nov.
29. Dorsum with five ridges----------*Neopentamerus decem* sp. nov.
-. Dorsum with three ridges ----------*Latitudo sanasaii* Huang, 2001
30. Coxal setae *1b* absent; opisthosomal setae *e* absent ----------*Subaequalitas sanasaii* Huang, 2001
-. Coxal setae *1b* present; opisthosomal setae normal---------- 31.
31. Scapular setae ahead of rear shield margin---------- 32.
-. Scapular setae on rear shield margin---------- 33.
32. Empodium 7 rayed----------*Tegonotus similis* sp. nov.
-. Empodium 5 rayed--------*Tegonotus adamasimilis* sp. nov.
33. Opisthosomal setae *c2* absent; tarsal seta *u´* unusually long ---------- *Thacra piperasia* Keifer, 1978
-. Opisthosomal setae *c2* present; tarsal seta *u´* normal---------- *Neoshevtchenkella pinnatiae* Huang, 2001
34. First dorsal annulus broad; hind genual seta absent; the second ventral setae (*e*) absent----------*Tumoris sanasaii* Huang, 2001
-. First dorsal annulus not as above; hind genual seta and the second ventral setae present ---------- 35.

35. Coxal setae *1b* absent ----------36.
-. Coxal setae *1b* present ----------37.
36. Genital cover flap with granules at base ----------
---*Neometaculus eppiptus* Huang, 2001
-. Genital cover flap with longitudinal ridges ----------
-*Neometaculus catappiae* Huang, 2001
37. Opisthosoma with ridge ----------38.
-. Opisthosoma evenly rounded dorsally--
---------- *Vasates irisanae* Huang, 1992
38. Dorsum of opisthosoma with a single mid-dorsal ridge----------
----*Neoleipothrix minutae* Huang, 2001
-. Dorsum of opisthosoma with 3 ridges --
----------39.
39. Prodorsal shield design without transverse line between admedian lines; coxal area with granules ----------
------*Epitrimerus lobatiae* Huang, 2001
-. Prodorsal shield design with transverse line between admedian lines; coxal area smooth ----------
Epitrimerus irisanus Huang & Wang, 2004
40. Dorsal opisthosoma evenly rounded ----
----------41.
-. Dorsal opisthosoma with distinct mid-dorsal ridge----------42.
41. Vermiform mites; prodorsal shield frontal lobe elongate and acuminate----
---------- *Aculodes hibisci* Huang, 1992
-. Fusiform mites; dorsal annuli usually wider than ventral annuli----------
----- *Aculops wikstrolmiai* Huang, 2001
42. Mid-dorsal opisthosomal ridge shorter than subdorsal ridges and ending in a dorsal furrow----------43.
-. Mid-dorsal opisthosomal ridge stronger than lateral ridges but fading caudally, not in a furrow----------
Tegolophus melicopi Huang & Wang, 2004
43. Prodorsal shield design with median line complete, arrow-liked at base-------
Abacarus bambusae Kuang & Zhuo, 1987
-. Prodorsal shield design with median line from base to basal 1/4 ----------
---------*Abacarus ellipticae* huang, 2001
44. Scapular setae (*sc*) absent----------45.
-. Scapular setae (*sc*) present ----------
-------*Mediugum sanasaii* Huang, 2001
45. Genua absent from both legs --------- 46.
-. Genua present in both legs----------
---------*Norma lanyuensis* Huang, 2001
46. Prodorsal shield design with 5 cells on the middle shield ----------
-*Diptilomiopus cumingis* Huang, 2001
-. Prodorsal shield design with 3 cells on the middle shield ----------
--- *Diptilomiopus elliptus* Huang, 2001

Aceria noumeae (Keifer, 1978)
(Photos 1, 2, 3, 4)
Eriophyes noumeae Keifer, 1978: 3

Female: Body wormlike, 113.7 long, shield 21.8 long, 25.1 wide; scapular tubercles set on rear shield margin, setae (*sc*) 19.7 long, directed to rear and divergent, Dt-Dt 15.4 apart. Legs: segments and setation normal, fore tibial seta (*l´*) 3.1 long, set in middle; coxal area smooth; 1st coxal setae (*1b*) 2.2 long, Ct1-Ct1 5.5 apart, 2nd coxal setae (*1a*) 7.1 long, Ct2-Ct2 6.7 apart, 3rd coxal setae (*2a*) 13.1 long, Ct3-Ct3 15.8 apart, Ct1\Ct2 7.7, Ct1-Ct2 4.9, Ct2\Ct3 11.6, Ct2-Ct3 5.6; solenidion ending as knob; empodium simple, 4 rayed.
Opisthosoma: evenly arched, with about 61 microtuberculate rings; lateral setae (*c2*) 16.1 long, Lt-Lt 31.2 apart, Lt\Vt1 34.8, Lt-Vt1 16.9; 1st ventral setae (*d*) 24.8 long, Vt1-Vt1 29.3 apart, Vt1\Vt2 31.7, Vt1-Vt2 19.9; 2nd ventral setae (*e*) 4.9 long, Vt2-Vt2 19.6 apart, Vt2\Vt3 34.2, Vt2-Vt3 29.8; 3rd ventral setae (*f*) 7.5 long, Vt3-Vt3 13.8 apart; accessory setae (*h1*) present.
Cover flap: 12.6 wide, 4.6 long, with about 9 longitudinal ridges, genital setae (*3a*) 5.8 long, Gt-Gt 12.1 apart.
Male: Not seen.
Specimens examined: 6♀, Taitung: Orchid Island, 28-May-2008; ex *Ficus heterapleura* Blume; 3♀, 27-May-2008, ex *Ficus ampelas* Burm. f. (Moraceae)
Relationship to host: Makes irregular gall on upper side of leaf (on *Ficus heterapleura*) (Photos 1, 2, 3, 4), and makes round gall on lower side of leaf (on

Photo 1. The upper and lower surface of galls on *Ficus heterapleura* caused by *Aceria noumeae* (Keifer, 1978).

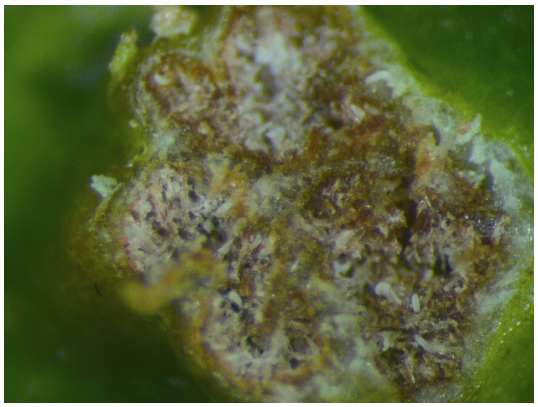

Photo 2. *Aceria noumeae* on the gall of *Ficus heterapleura*.

Photo 3. The gall on the lower leaf surface of *Ficus ampelas* caused by *Aceria noumeae* (Keifer, 1978).

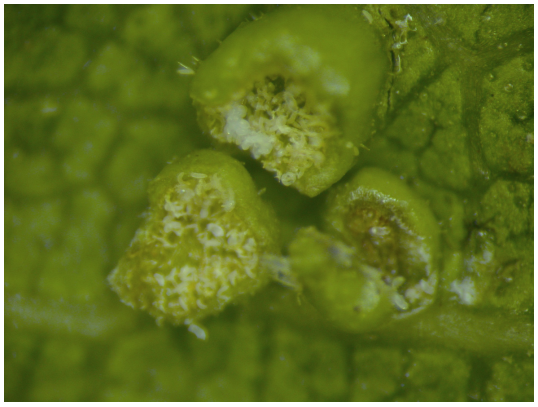

Photo 4. *Aceria noumeae* on the gall of *Ficus ampelas*.

Ficus ampelas).
Distribution: New Caledonia, Taiwan: Orchid Island (new record)
Note: This species was found together with *Vasates irisanae* Huang, 1992 and *Epitrimerus irisanus* Wang & Huang, 2004 on the same host plant, *Ficus ampelas*

***Proartacris pinnatus* sp. nov.**
(Fig. 1; Photos 5, 6)
Female: Body wormlike, 197.9 long; shield 30.0 long, 37.2 wide, anterior lobe present; shield design median line and admedian lines complete, sinuous, with 3 submedian lines; scapular tubercles set near to shield rear margin, setae (*sc*) 22.2 long, directed forward, Dt-Dt 12.3 apart; leg segments normal, fore tibial seta (*l´*) set at basal 1/3, 4.5 long; coxal area with granules, 1st coxal setae (*1b*) 7.3 long, Ct1-Ct1 12.3 apart, 2nd coxal setae (*1a*) 9.0 long, Ct2-Ct2 6.9 apart, 3rd coxal setae (*2a*) 16.0 long, Ct3-Ct3 19.3 apart, Ct1\

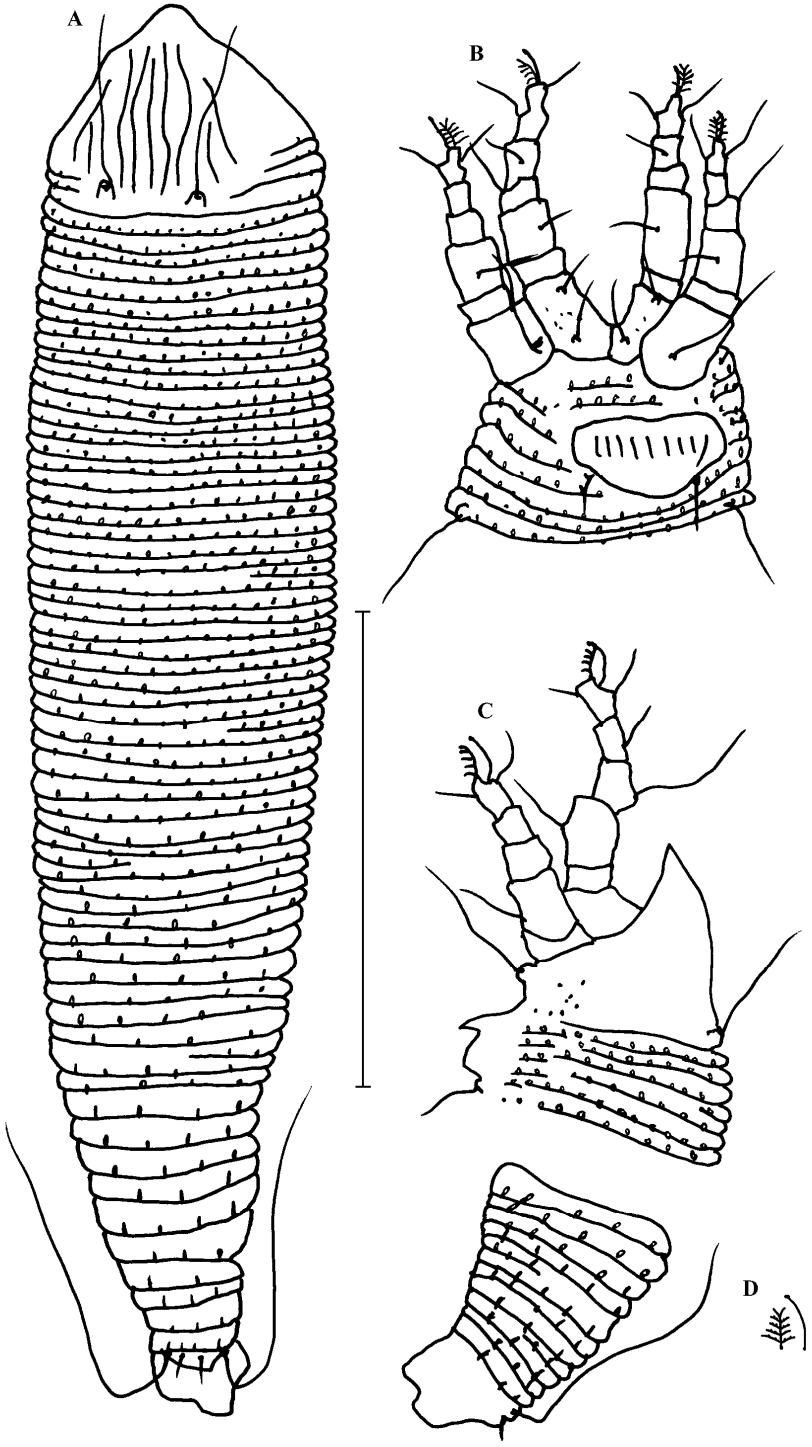

Fig. 1. *Proartacris pinnatus* sp. nov. (♀). A. dorsal view; B. legs and genital region, ventral view; C. anterior area and caudal area, lateral view; D. empodium. (A, B, C = 50 μm; D = 25 μm).

Photo 5. The upper leaf surface view of erinea on *Pometia pinnata* caused by *Proartacris pinnatus* sp. nov.

Photo 6. Erinea on the lower leaf surface of *Pometia pinnata* caused by *Proartacris pinnatus* sp. nov.

Ct2 12.4, Ct1-Ct2 6.7, Ct2\Ct3 12.4, Ct2-Ct3 6.9; solenidion ending as spatula; empodium simple, 5-rayed.

Opisthosoma: with about 64 microtuberculate rings; first 3 dorsal annuli 7.1 long; lateral setae (*c2*) 21.1 long, Lt-Lt 44.7 apart, Lt\Vt1 53.1, Lt-Vt1 32.4; 1st ventral setae (d) 30.8 long, Vt1-Vt1 40.7 apart, Vt1\Vt2 51.4, Vt1-Vt2 39.9; 2nd ventral setae (*e*) 5.8 long, Vt2-Vt2 26.6 apart, Vt2\Vt3 62.5, Vt2-Vt3 58.8; 3rd ventral setae (*f*) 15.9 long, Vt3-Vt3 18.6 apart; accessory setae (*h1*) present.

Cover flap: 20.4 wide, 10.1 long, with about 9 short longitudinal lines, genital setae (*3a*) 4.5 long, Gt-Gt 14.3 apart.

Male: not seen.

Type data: **Holotype,** ♀, Taitung: Orchid Island, 28-May-2008; K. W. Huang; ex *Pometia pinnata* J. R. Forst. & G. Forst. (Moraceae). **Paratypes**, 5♀, data same as for holotype.

Relationship to host: Makes erineum on the lower leaf surface.

Note: This new species is close to *P. pinivagranus* Mohanasundaram, 1984, by the shield design with median line. This new species differs from *P. pinivagranus* by the scapular tubercles set near to shield rear margin, setae directed forward, and the 5-rayed empodium, and differs from *Proartacris taiwanensis* Huang, 2001 by the shield design with median line.

Etymology: The specific designation is derived from the specific name of the host plant.

***Proartacris melicopae* sp. nov.**

(Fig. 2; Photos 7, 8, 9)

Female: Body wormlike, 129.8 long; shield 26.9 long, 32.6 wide, anterior lobe present; shield design median line and admedian lines complete, with 2 submedian lines, admedian line and the 1st submedian lines with 2 transverse lines at basal one- and two-thirds, the 1st and 2nd submedian lines with transverse line at basal one-third, 2nd submedian line with forked line at basal two-thirds, directed to the 1st submedian line; scapular tubercles set near shield rear margin, setae (*sc*) 14.2 long, directed upward, Dt-Dt 15.6 apart; leg segments normal, fore tibial seta (*l´*) set in middle, 4.2 long; coxal area with granules, 1st coxal setae (*1b*) 3.6 long, Ct1-Ct1 6.2 apart, 2nd coxal setae (*1a*) 8.1 long, Ct2-Ct2 9.3 apart, 3rd coxal setae (*2a*) 21.0 long, Ct3-Ct3 16.9 apart, Ct1\Ct2 8.9, Ct1-Ct2 4.5, Ct2\Ct3 13.6, Ct2-Ct3 5.1; solenidion ending as spatula; empodium

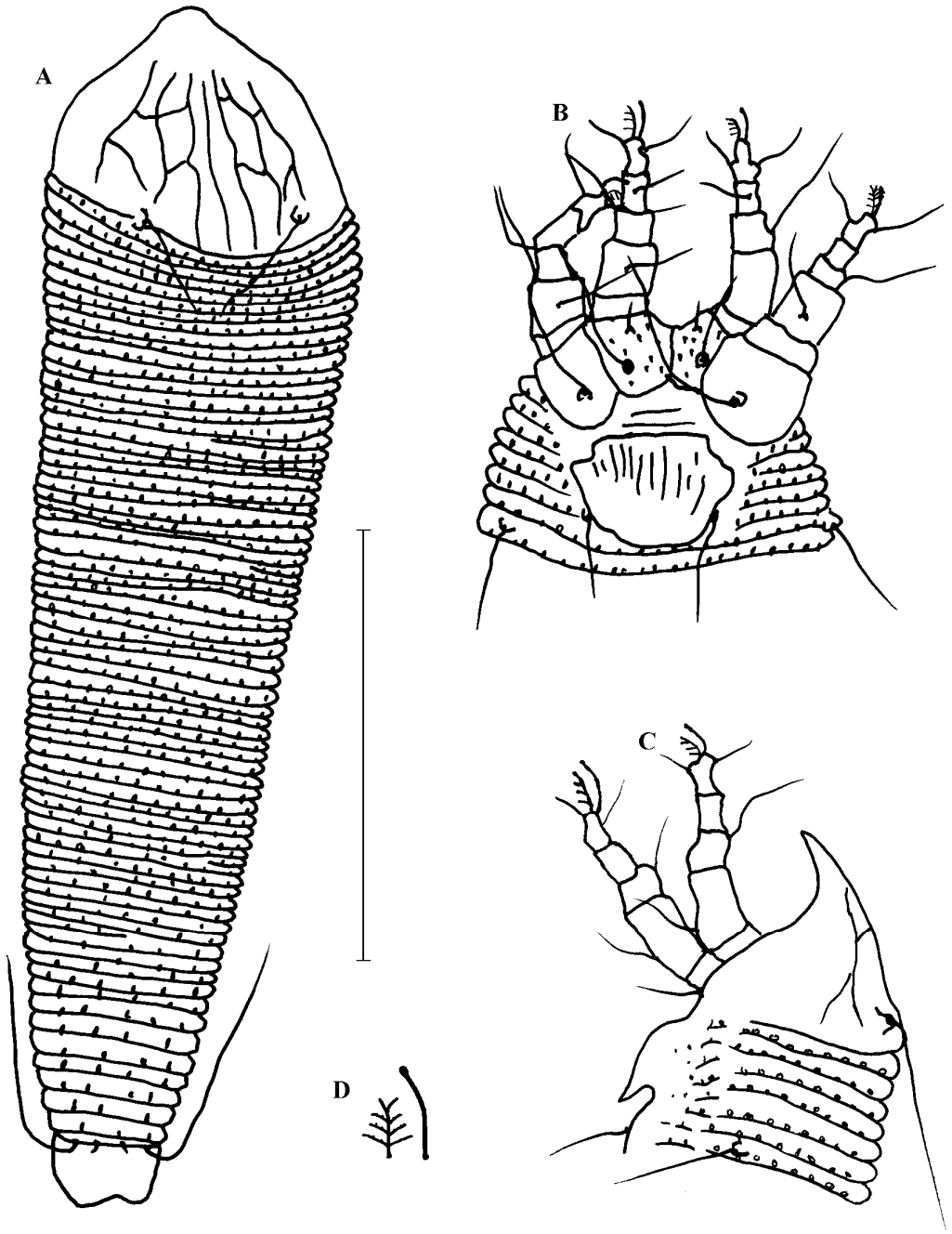

Fig. 2. *Proartacris pinnatus* sp. nov. (♀). A. dorsal view; B. legs and genital region, ventral view; C. anterior area, lateral view; D. empodium. (A, B, C = 50 μm; D = 25 μm).

Photo 7. Erinea on the lower leaf surface of *Melicope triphylla* caused by *Proartacris melicopae* sp. nov.

Photo 8. Erinea on the upper leaf surface of *Melicope triphylla* caused by *Proartacris melicopae* sp. nov.

Photo 9. Close-up of erinea on the lower leaf surface of *Melicope triphylla* caused by *Proartacris melicopae* sp. nov.

simple, 4-rayed.

Opisthosoma: with about 56 microtuberculate rings; first 3 dorsal annuli 3.5 long; lateral setae (*c2*) 13.1 long, Lt-Lt 34.8 apart, Lt\Vt1 38.3, Lt-Vt1 20.5; 1st ventral setae (*d*) 27.7 long, Vt1-Vt1 30.2 apart, Vt1\Vt2 33.3, Vt1-Vt2 24.9; 2nd ventral setae (*e*) 17.6 long, Vt2-Vt2 16.5 apart, Vt2\Vt3 31.9, Vt2-Vt3 29.0; 3rd ventral setae (*f*) 16.5 long, Vt3-Vt3 13.6 apart; accessory setae (*h1*) present.

Cover flap: 17.3 wide, 11.7 long, with about 11 longitudinal lines, genital setae (*3a*) 5.8 long, Gt-Gt 14.6 apart.

Male: not seen.

Type data: **Holotype,** ♀, Taitung: Orchid Island, 29-May-2008; K. W. Huang; ex *Melicope triphylla* (Lamb.) Merr. (Rutaceae). **Paratypes**, 5♀, data same as for holotype.

Relationship to host: Makes erineum on the lower leaf surface.

Note: This new species is close to *P. pinivagranus* Mohanasundaram, 1984, by the shield design with median line. This

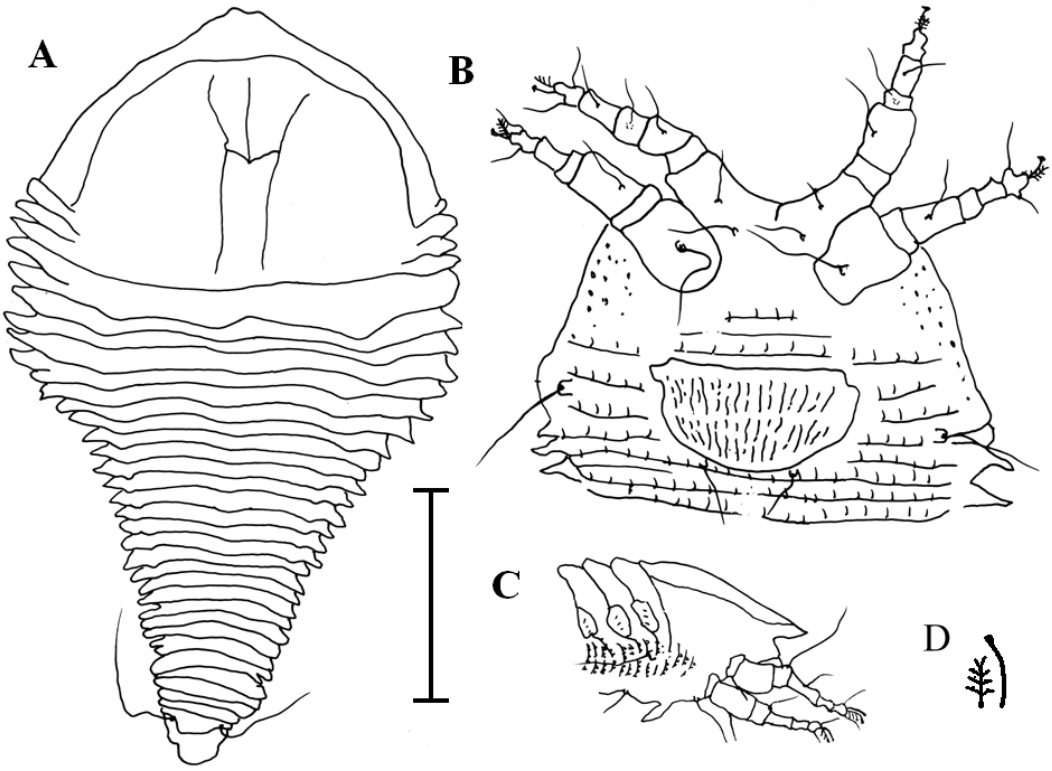

Fig. 3. *Phaulacus lanyuensis* sp. nov. (♀). A. dorsal view; B. legs and genital region, ventral view; C. anterior area, lateral view; D. empodium. (A, B, C = 50 μm; D = 25 μm).

new species differs from *P. pinivagranus* by the scapular tubercles set near to shield rear margin, and with 2 transverse lines between the admedian and 1st submedian lines, and differs from *Proartacris taiwanensis* Huang, 2001 by the shield design with median line.

Etymology: The specific designation is derived from the generic name of the host plant.

***Phaulacus lanyuensis* sp. nov.**

(Fig. 3)

Female: Body spindle-shaped, 165.4 long, shield 59.8 long, 87.5 wide, shield lobe present, shield design with median line from basal 1/3 to apex, admedian line complete, diverging to anterior, with transverse lines connecting to the median line at basal 1/3; scapular tubercle and setae absent; leg segments normal, fore tibial setae set half, 2.2 long, hind genual setae absent; coxal area smooth; 1st coxal setae (*1b*) 8.0 long, Ct1-Ct1 19.7 apart, 2nd coxal setae (*1a*) 11.4 long, Ct2-Ct2 13.3 apart, 3rd coxal setae (*2a*) 18.2 long, Ct3-Ct3 31.6 apart, Ct1\Ct2 17.8, Ct1-Ct2 6.7, Ct2\Ct3 23.1, Ct2-Ct3 10.6; solenidion ending as knob; empodium simple, 4 rayed.

Opisthosoma: dorsum with 3 ridges, median ridge not ending before the lateral ridges, abruptly narrower after 1st ventral tubercles, dorsal annuli 27 rings; first 3 dorsal annuli 9.2 long; ventral annuli 52 ring with spiny microtuberculate; lateral setae (*c2*) 16.4 long, Lt-Lt 74.7 apart, Lt\Vt1 63.7, Lt-Vt1 30.8, 1st ventral setae (*d*) 20.9 long, Vt1-Vt1 42.4 apart, Vt1\Vt2 41.5, Vt1-Vt2 33.1; 2nd ventral setae (*e*) 22.4 long, Vt2-Vt2 14.2 apart, Vt2\Vt3

44.3, Vt2-Vt3 39.1; 3rd ventral setae (*f*) 24.7 long, Vt3-Vt3 25.8 apart; accessory setae (*h1*) absent.
Cover flap: 39.7 wide, 18.8 long, with 3 rows short longitudinal ridges each row with about 16 ridges, genital setae (*3a*) 8.2 long, Gt-Gt 14.6 apart.
Male: not seen.
Type data: **Holotype,** ♀, Taitung: Orchid Island, 30-May-2008, K. W. Huang; ex *Syzygium simile* (Merr.) Merr. (Myrtaceae). **Paratypes**, 2♀, data same as for holotype.
Relationship to host: A vagrant on the lower leaf surface. No apparent damage was observed.
Note: This new species is close to *P. apalachi* Keifer, 1961, by the shield design with admedian lines complete. This new species differs from *P. apalachi* by the shield design with median line, dorsal opisthosoma with 3 ridges and the cover flap with 3 rows of ridges.
Etymology*:* The specific designation is derived from the locality "Orchid Island".

***Lanyuii* gen. nov.**
Type species: *Lanyuii exiguus* gen. et sp. nov.
Body spindle-shaped; shield lobe present, scapular tubercle and setae absent; leg segments and setae normal, coxae with 3 pair of tubercles and setae; empodium simple; opisthosoma annuli projecting laterally, differentiated into broader dorsal annuli and narrower ventral annuli, dorsum with 3 ridges, lateral tubercles and setae (*c2*) absent; cover flap with two lobes at base.
Note: This new genus is close to *Phaulacus* Keifer, 1961, but differs from it by the absence of the lateral tubercle and setae (*c2*), and the cover flap with two lobes at the base.
Etymology: This genus name is neuter gender, with reference to the type locality of this new genus.

***Lanyuii exiguus* sp. nov.**
(Fig. 4)
Female: Body spindle-shaped, 159.7 long, shield 45.9 long, 50.6 wide, shield lobe present, shield design with median line from base to basal 1/5, admedian lines connected at apical 1/5, sinuous, convex at basal 1/3, crown-like at apex, with 2 transverse lines between admedian lines at basal 1/5 and 3/5, with one submedian line; scapular tubercle and setae absent; leg segments normal, fore tibial short, seta set at basal 1/3, 2.5 long; coxal area smooth; 1st coxal setae (*1b*) 4.1 long, Ct1-Ct1 12.0 apart, 2nd coxal setae (*1a*) 8.9 long, Ct2-Ct2 6.8 apart, 3rd coxal setae (2a) 17.4 long, Ct3-Ct3 22.7 apart, Ct1\Ct2 12.2, Ct1-Ct2 8.5, Ct2\Ct3 14.6, Ct2-Ct3 7.9; solenidion ending as knob; empodium simple, 6 rayed.
Opisthosoma: dorsum with median ridge not ending before the lateral ridges, dorsal annuli 21 rings; first 3 dorsal annuli 20.6 long; ventral annuli 61 microtuberculate ring; lateral tubercle and seta absent, 1st ventral setae (*d*) 29.2 long, Vt1-Vt1 29.2 apart, Vt1\Vt2 35.6, Vt1-Vt2 28.9; 2nd ventral setae (*e*) 4.2 long, Vt2-Vt2 15.4 apart, Vt2\Vt3 44.3, Vt2-Vt3 39.1; 3rd ventral setae (*f*) 24.7 long, Vt3-Vt3 25.8 apart; accessory setae (*h1*) absent.
Cover flap: 21.7 wide, 13.3 long, with about 9 longitudinal ridges at apex, with 2 lobes at base, each lobe with about 3 transverse ridges, genital setae (*3a*) 6.9 long, Gt-Gt 13.6 apart.
Male: not seen.
Type data: **Holotype,** ♀, Taitung: Orchid Island, 20-August-1998, K. W. Huang; ex *Tabernaemontana subglobosa* Merr. (Apocynaceae). **Paratypes**, 3♀, data same as for holotype.
Relationship to host: A vagrant on the lower leaf surface. No apparent damage was observed.
Etymology: This new name means "short" in reference to "the leg tibia short".

***Neopentamerus decem* sp. nov.**
(Fig. 5)
Female: Body spindle shaped, 133.9 long,

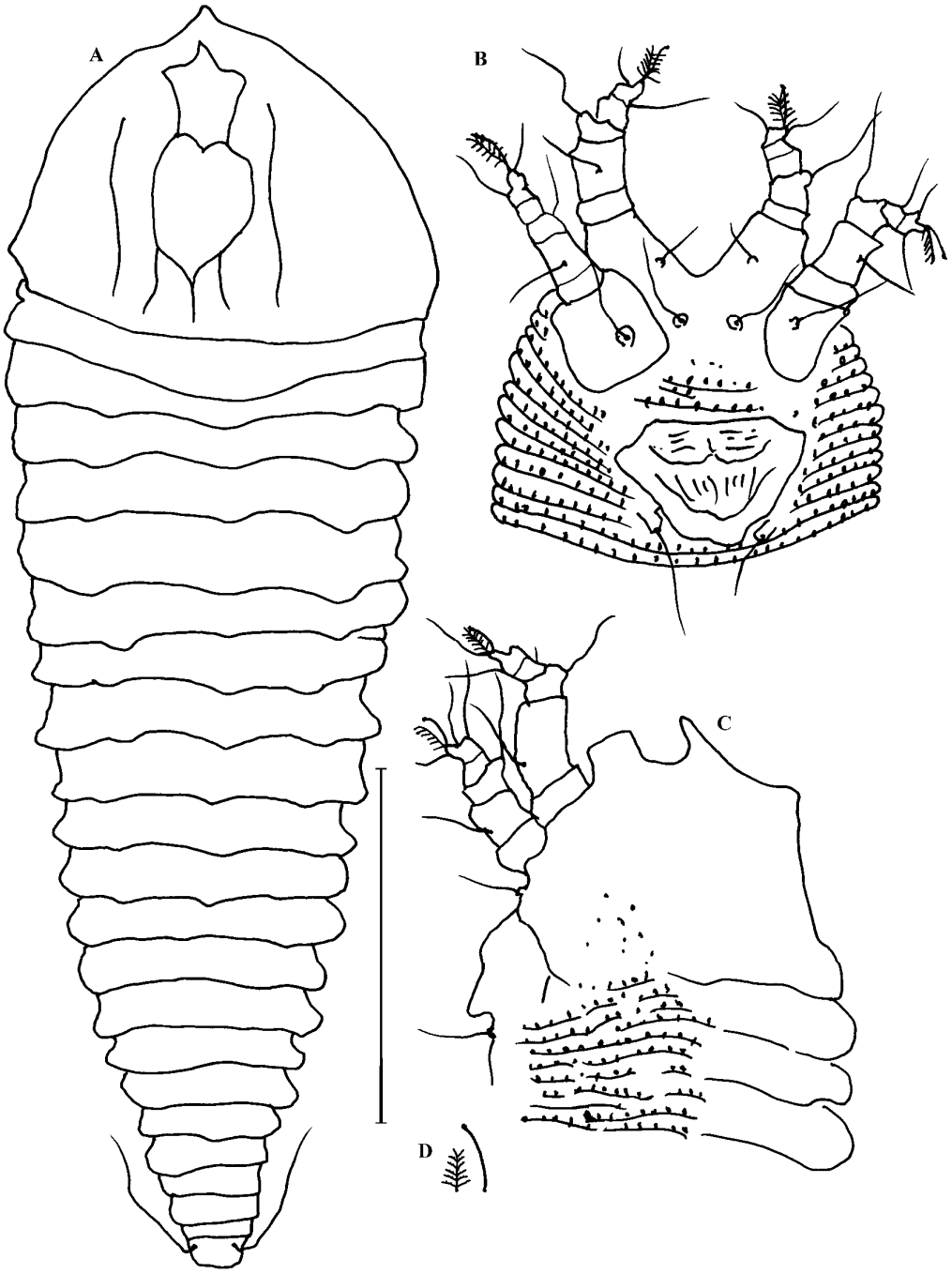

Fig. 4. *Lanyuii exiguus* gen. *et* sp. nov. (♀). A. dorsal view; B. legs and genital region, ventral view; C. anterior area, lateral view; D. empodium. (A, B, C = 50 μm; D = 25 μm).

shield 45.0 long, 43.5 wide, shield lobe present, shield design with median line from basal 3/4 to apex, admedian lines complete, sinuous, concave at middle and basal 3/4, convex at basal 1/3, connected by 2 transverse line at middle and basal 3/4, 2 submedian lines connected by longitudinal lines forming 5 cells on each lateral side; scapular tubercle and setae absent; leg segments normal, fore tibial seta set at basal 1/3,5.3 long, hind genual seta missing, coxal area smooth, 1st coxal setae (*1b*) 8.1 long, Ct1-Ct1 11.1 apart, 2nd coxal setae (*1a*) 9.6 long, Ct2-Ct2 12.1 apart, 3rd coxal setae (*2a*) 32.9 long, Ct3-Ct3 24.2 apart, Ct1\Ct2 14.0, Ct1-Ct2 8.2, Ct2\Ct3 17.9, Ct2-Ct3 7.5; empodium simple, 4-rayed, solenidion ending in a knob.

Opisthosoma: dorsum with 5 ridges extending towards rear, dorsal annuli with 70 rings, first 3 dorsal annuli 3.4 long; ventral annuli with 76 microtubercles rings; lateral setae (*c2*) 30.5 long, Lt-Lt 32.4 apart, Lt\Vt1 34.8, Lt-Vt1 23.9; 1st ventral setae (*d*) 30.5 long, Vt1\Vt2 30.5, Vt1-Vt2 26.5; 2nd ventral setae (*e*) 20.4 long, Vt2-Vt2 13.1 apart; 3rd ventral setae (*f*) 16.8 long, Vt2\Vt3 32.8, Vt2-Vt3 28.9, Vt3-Vt3 17.5 apart; accessory setae (*h1*) absent.

Cover flap: 18.3 wide, 10.2 long, smooth, genital setae (*3a*) 9.6, Gt-Gt 12.6 apart.

Male: 168.7 long, shield 47.9 long, 58.4 wide; genitalia 19.3 wide, 10.9 long; genital setae (*3a*) 9.7, Gt-Gt 14.3 apart.

Type data: **Holotype,** ♀, Taitung: Green Island, 5-June.-2000, Huang; ex *Melanolepis multiglandulosa* (Reinw.) Reich. F & Zoll. (Euphorbiaceae). **Paratypes**, 2♀2♂, data same as for holotype.

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

Note: This new species is close to *N. octcellus* Huang, 2001 by the shield design with admedian lines complete. This new species differs from *N. octcellus* Huang, 2001, by the shield design with median line from basal 3/4 to apex, forming 5 cells on each lateral side, cover flap smooth and 4-rayed empodium.

Etymology: This new name means "ten cells" in reference to the shield design with 5 cells on each lateral side.

Latitudo sanasaii Huang, 2001

Latitudo sanasaii Huang, 2001: 98

Female: Body spindle-shaped, 155.9 long, shield 52.2 long, 60.1 wide, shield lobe present; 1st coxal setae (*1b*) 7.1 long, Ct1-Ct1 10.6 apart, 2nd coxal setae (*1a*) 8.1 long, Ct2-Ct2 8.2 apart, 3rd coxal setae (*2a*) 17.7 long, Ct3-Ct3 24.3 apart, Ct1\Ct2 13.1, Ct1-Ct2 9.1, Ct2\Ct3 16.1, Ct2-Ct3 8.4.

Opisthosoma: lateral setae (*c2*) 21.4 long, Lt-Lt 45.2 apart, Lt\Vt1 44.4, Lt-Vt125.4, 1st ventral setae (*d*) 34.8 long, Vt1-Vt1 29.8 apart, Vt1\Vt2 40.4, Vt1-Vt2 35.8; 2nd ventral setae (*e*) 21.0 long, Vt2-Vt2 12.1 apart, Vt2\Vt3 35.0, Vt2-Vt3 31.4; 3rd ventral setae (*f*) 17.7 long, Vt3-Vt3 16.3 apart; accessory setae (*h1*) absent.

Cover flap: 19.6 wide, 12.9 long, smooth, genital setae (*3a*) 8.1 long, Gt-Gt 13.3 apart.

Male: not seen.

Specimens examined: 5♀, Taitung: Orchid Island, 18-August-1998, K. W. Huang; ex *Symplocos cochinchinensis philippinensis* (Brand) Noot. (Symplocaceae).

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

Distribution: Taiwan: Green Is.; Orchid Island (new record).

***Tegonotus adamasimilis* sp. nov.**

(Fig. 6)

Female: Body fusiform, 171.9 long, shield 64.3 long, 57.5 wide, shield lobe present, shield design lacking median line, admedian lines from basal 1/3 to 4/5, convex at basal 1/4 and concave at half, converge at apex, with one submedian line from basal 1/5 to 3/5; scapular tubercles set at submedian lines, ahead of rear

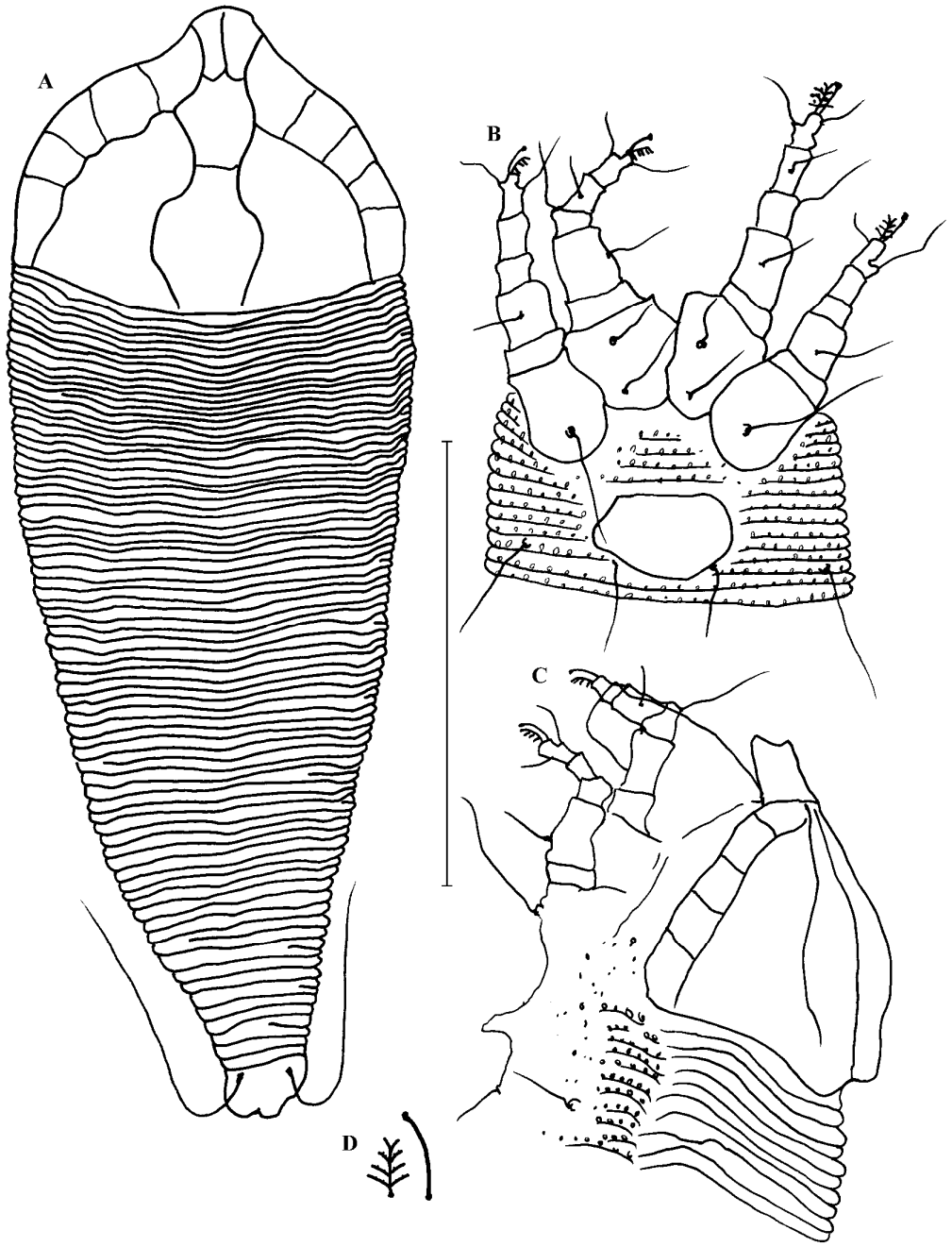

Fig. 5. *Neopentamerus decem* sp. nov. (♀). A. dorsal view; B. legs and genital region, ventral view; C. anterior area, lateral view; D. empodium. (A, B, C = 50 μm; D = 25 μm).

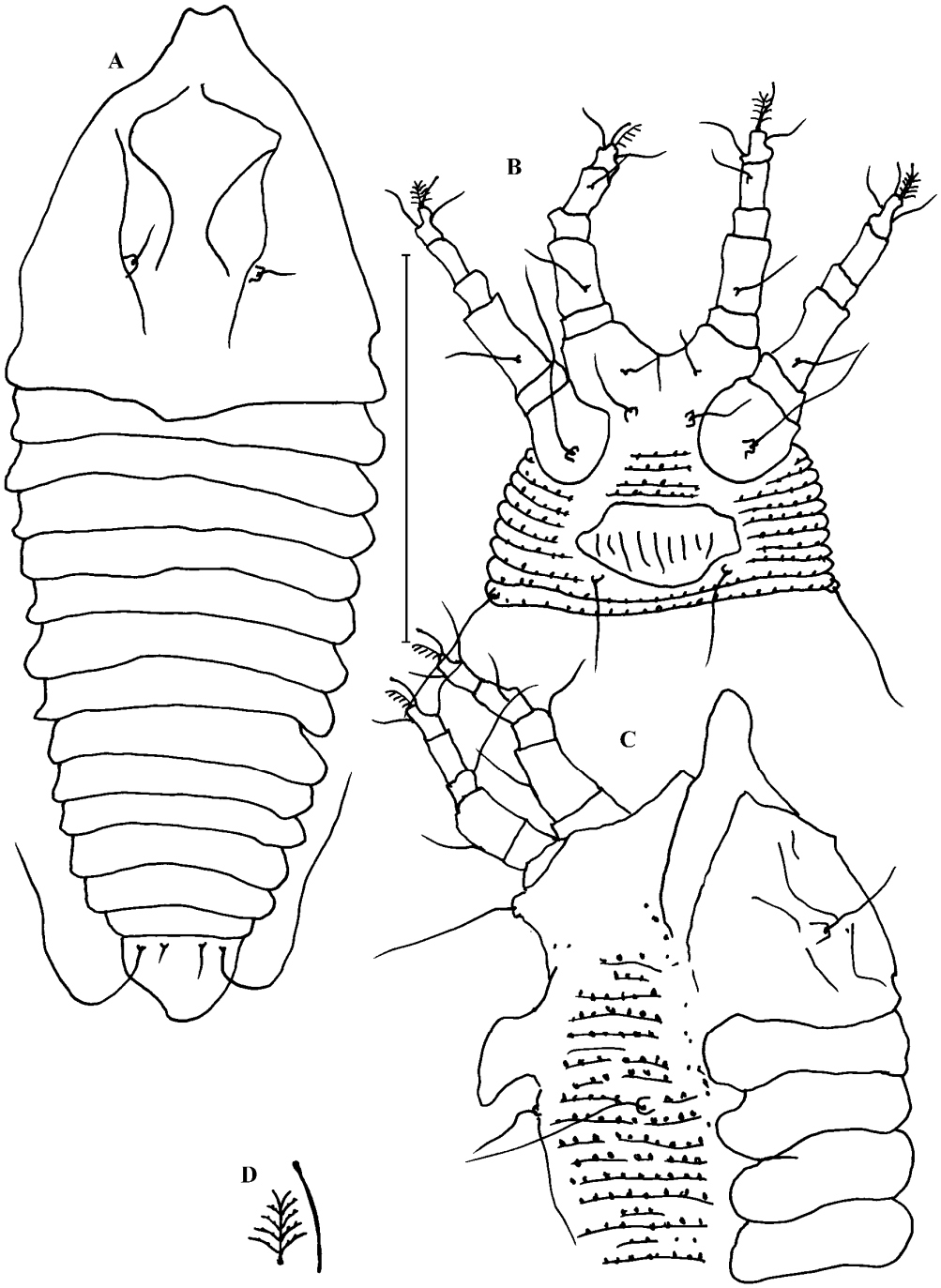

Fig. 6. *Tegonotus adamasimilis* sp. nov. (♀). A. dorsal view; B. legs and genital region, ventral view; C. anterior area, lateral view; D. empodium. (A, B, C = 50 μm; D = 25 μm).

shield margin, setae (*sc*) 2.3 long, directed upward, Dt-Dt 13.6 apart, Dt-Sr 21.1; leg segments normal, fore tibial seta (*l´*) set at middle, 3.2 long; coxal area smooth; 1st coxal setae (*1b*) 4.1 long, Ct1-Ct1 11.1 apart, 2nd coxal setae (*1a*) 7.5 long, Ct2-Ct2 6.3 apart, 3rd coxal setae (*2a*) 13.3 long, Ct3-Ct3 19.7 apart, Ct1\Ct2 10.7, Ct1-Ct2 6.4, Ct2\Ct3 13.6, Ct2-Ct3 9.6; solenidion ending as knob; empodium simple, 5 rayed.

Opisthosoma: flattened, dorsal annuli with about 13 rings, laterally with projecting lobes, first 3 dorsal annuli 17.6 long; ventral annuli with about 58 microtubercles rings; lateral setae (*c2*) 24.0 long, Lt-Lt 56.1 apart, Lt\Vt1 55.2, Lt-Vt1 29.8; 1st ventral setae (*d*) 30.3 long, Vt1-Vt1 39.9 apart, Vt1\Vt2 39.0, Vt1-Vt2 29.7; 2nd ventral setae (*e*) 12.5 long, Vt2-Vt2 17.2 apart, Vt2\Vt3 39.3, Vt2-Vt3 33.3; 3rd ventral setae (*f*) 17.5 long, Vt3-Vt3 23.3 apart; accessory setae (*h1*) present.

Cover flap: 25.6 wide, 13.4 long, with about 9 longitudinal ridges, genital setae (*3a*) 11.2 long, Gt-Gt 18.3 apart.

Male: not seen.

Type data: **Holotype,** ♀, Taitung: Orchid Island, 28-May-2008, K. W. Huang; ex *Chionanthus ramiflorus* Roxb. (Oleaceae). **Paratypes**, 3♀, data same as for holotype.

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

Note: This new species is close to *T. mangiferae* Keifer, 1946 by the diamond-like shield design at apical area. This new species differs from *T. mangiferae* by the shield design with admedian lines, the cover flap with longitudinal ridges, and the empodium with 5 rays.

Etymology: The new name means "diamond-like" in reference to the prodorsal shield design with a diamond-shape at apical area.

***Tegonotus similis* sp. nov.**

(Fig. 7)

Female: Body fusiform, 126.7 long, shield 39.6 long, 38.7 wide, shield lobe present, shield design lacking median line, admedian lines from basal 1/5 to 4/5, convex at basal 1/4 and 2/3, concave at half, converge at apex; scapular tubercles set ahead of rear shield margin, setae (*sc*) 4.0 long, directed upward, Dt-Dt 12.4 apart, Dt-Sr 21.9; leg segments normal, fore tibial seta (*l´*) set at middle, 4.3 long; coxal area smooth; 1st coxal setae (*1b*) 4.3 long, Ct1-Ct1 9.9 apart, 2nd coxal setae (*1a*) 11.4 long, Ct2-Ct2 7.1 apart, 3rd coxal setae (*2a*) 16.8 long, Ct3-Ct3 21.1 apart, Ct1\Ct2 9.9, Ct1-Ct2 5.5, Ct2\Ct3 14.3, Ct2-Ct3 8.2; solenidion ending as knob; empodium simple, 7 rayed.

Opisthosoma: dorsal with middorsal longitudinal furrow, dorsal annuli with about 15 rings, laterally with projecting lobes, first 3 dorsal annuli 15.9 long; ventral annuli with about 41 microtubercles rings; lateral setae (*c2*) 13.2 long, Lt-Lt 47.4 apart, Lt\Vt1 50.6, Lt-Vt1 28.1; 1st ventral setae (*d*) 22.9 long, Vt1-Vt1 37.4 apart, Vt1\Vt2 36.9, Vt1-Vt2 22.0; 2nd ventral setae (*e*) 9.6 long, Vt2-Vt2 19.3 apart, Vt2\Vt3 28.7, Vt2-Vt3 21.5; 3rd ventral setae (f) 15.8 long, Vt3-Vt3 17.6 apart; accessory setae (*h1*) absent.

Cover flap: 17.6 wide, 16.6 long, with about 10 longitudinal ridges, genital setae (*3a*) 10.5 long, Gt-Gt 11.6 apart.

Male: Body 119.4 long, shield 40.7 long, 40.5 wide, scapular setae (*sc*) 4.5 long, Dt-Dt 16.1 apart; genitalia 17.2 wide, 8.1 long, genital setae (*3a*) 9.5 long, Gt-Gt 12.6 apart.

Type data: **Holotype** ♀, Taitung: Orchid Island, 30-May-2008, K. W. Huang; ex *Syzygium simile* (Merr.) Merr. (Myrtaceae). **Paratypes**, 2♀2♂, data same as for holotype.).

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

Note: This new species is close to *T. adamasimilis* sp. nov. by the shield design with a diamond-shaped area at apical area. This new species differs to *T.*

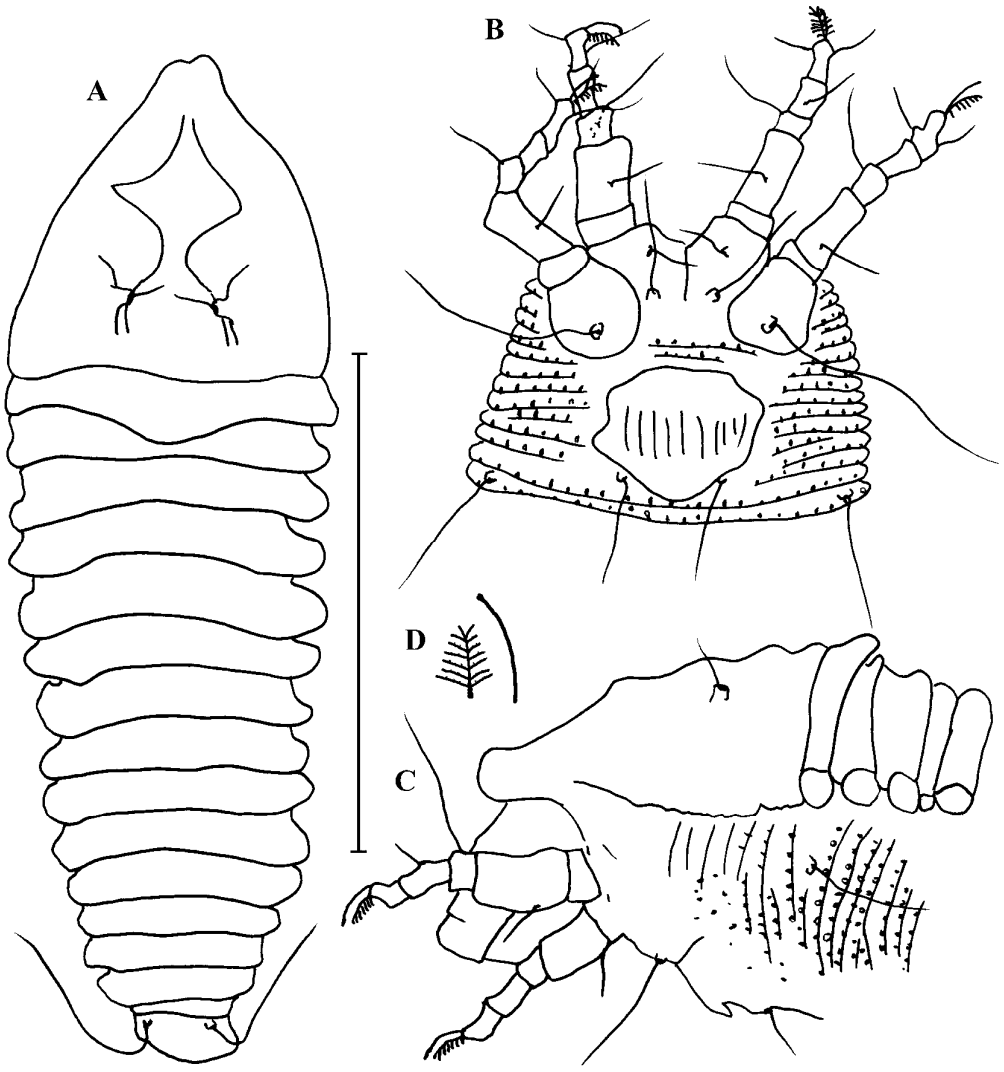

Fig. 7. *Tegonotus similis* sp. nov. (♀). A. dorsal view; B. legs and genital region, ventral view; C. anterior area, lateral view; D. empodium. (A, B, C = 50 μm; D = 25 μm).

adamasimilis sp. nov. by the shield design with admedian lines convex at basal 1/4 and 2/3, and the empodium with 7 rays.

Etymology: This new name means "like" in reference to the same diamond-shaped area at apical area as *T. adamasimilis* sp. nov.

Vasates irisanae Huang, 1992
Vasates irisanae Huang, 1992: 226

Female: Body spindle-shaped, 185.4 long, shield 48.3 long, 68.1 wide, shield lobe present; 1st coxal setae (*1b*) 6.5 long, Ct1-Ct1 11.7 apart, 2nd coxal setae (*1a*) 8.4 long, Ct2-Ct2 11.7 apart, 3rd coxal setae (*2a*) 18.1 long, Ct3-Ct3 28.2 apart, Ct1\Ct2 13.4, Ct1-Ct2 6.5, Ct2\Ct3 20.1, Ct2-Ct3 8.7.

Opisthosoma: lateral setea (*c2*) 13.1 long, Lt-Lt 60.4 apart, Lt\Vt1 59.2, Lt-Vt1 28.9,

1st ventral setae (*d*) 32.5 long, Vt1-Vt1 44.1 apart, Vt1\Vt2 48.1, Vt1-Vt2 33.8; 2nd ventral setae (*e*) 7.4 long, Vt2-Vt2 27.2 apart, Vt2\Vt3 58.2, Vt2-Vt3 52.7; 3rd ventral setae (*f*) 23.2 long, Vt3-Vt3 25.3 apart; accessory setae (*h1*) present.
Cover flap: 24.4 wide, 16.5 long, genital setae (*3a*) 7.4 long, Gt-Gt 20.1 apart.
Male: not seen.
Specimens examined: 17♀, Taitung: Orchid Island, 27-May-2008, K. W. ex *Ficus ampelas* Burm. f. (Moraceae).
Relationship to host: A vagrant on the lower leaf surface. No apparent damage was observed.
Distribution: Taiwan: Nantou; Orchid Island (new record).

Epitrimerus irisanus Huang & Wang, 2004
Epitrimerus irisanus Huang & Wang, 2004: 205
Female: Body spindle-shaped, 136.4 long, shield 44.6 long, 44.3 wide, shield lobe present; 1st coxal setae (*1b*) 4.1 long, Ct1-Ct1 11.1 apart, 2nd coxal setae (*1a*) 7.5 long, Ct2-Ct2 6.3 apart, 3rd coxal setae (*2a*) 13.3 long, Ct3-Ct3 19.7 apart, Ct1\Ct2 10.7, Ct1-Ct2 6.4, Ct2\Ct3 13.6, Ct2-Ct3 7.6.
Opisthosoma: lateral setae (*c2*) 9.8 long, Lt-Lt 39.5 apart, Lt\Vt1 39.3, Lt-Vt123.1, 1st ventral setae (*d*) 20.6 long, Vt1-Vt1 25.6 apart, Vt1\Vt2 30.1, Vt1-Vt2 24.5; 2nd ventral setae (*e*) 3.9 long, Vt2-Vt2 12.1 apart, Vt2\Vt3 31.3, Vt2-Vt3 28.2; 3rd ventral setae (*f*) 13.8 long, Vt3-Vt3 14.4 apart; accessory setae (*h1*) present.
Cover flap: 19.6 wide, 12.1 long, genital setae (*3a*) 9.4 long, Gt-Gt 13.3 apart.
Male: not seen.
Specimens examined: 3♀, Taitung: Orchid Island, 27-May-2008, K. W. ex *Ficus ampelas* Burm. f. (Moraceae).
Relationship to host: A vagrant on the lower leaf surface. No apparent damage was observed.
Distribution: Taiwan: Nantou; Orchid Island (new record).

Tegolophus melicopi Huang & Wang, 2004
Tegolophus melicopi Huang & Wang, 2004: 246
Male: body spindle-shaped, 122.4 long, shield 43.8 long, 43.8 wide, shield lobe present, scapular tubercles set on rear shield margin, setae (*sc*) 7.0 long, directed to rear, tubercles larger, Dt-Dt 28.5 apart; Legs: segments and setation normal, fore tibial seta (*l´*) 3.1 long, set in middle; coxal area smooth; 1st coxal setae (1b) 7.0 long, Ct1-Ct1 9.0 apart, 2nd coxal setae (*1a*) 3.9 long, Ct2-Ct2 6.4 apart, 3rd coxal setae (*2a*) 13.7 long, Ct3-Ct3 17.9 apart, Ct1\Ct2 10.3, Ct1-Ct2 6.7, Ct2\Ct3 12.1, Ct2-Ct3 6.7; empodium simple, 4 rayed.
Opisthosoma: Dorsum with median ridge, dorsal annuli with about 29 spiny microtuberculate rings, lateral setae (*c2*) 13.5 long, Lt-Lt 35.6 apart, Lt\Vt1 31.0, Lt-Vt1 14.6, 1st ventral setae (*d*) 13.5 long, Vt1-Vt1 20.9 apart, Vt1\Vt2 23.3, Vt1-Vt2 16.8; 2nd ventral setae (*e*) 6.5 long, Vt2-Vt2 11.4 apart, Vt2\Vt3 31.2, Vt2-Vt3 28.2; 3rd ventral setae (*f*) 15.8 long, Vt3-Vt3 11.8 apart; accessory setae (*h1*) absent.
Genitalia: 10.6 wide, 6.7 long, genital setae (*3a*) 5.5 long, Gt-Gt 11.2 apart.
Specimens examined: 3♀, Taitung: Orchid Island, 20-August-1998, K. W. ex *Melicope triphylla* (Lamb.) Merr. (Rutaceae).
Relationship to host: A vagrant on the lower leaf surface. No apparent damage was observed.
Distribution: Taiwan: Nantou; Orchid Island (new record).

Conclusion

From the results of this study, it was determined that the eriophyoid-fauna of Orchid Island was unique considering the fact that the proportion of Nothopodinae (30.0%) was markedly higher than that of other subfamilies. The eriophyoid-fauna of Green Island differs from that of Orchid Island by the absence of Nothopodinae, a fact that is counteracted by its high frequency of Phyllocoptinae. On Green

Island, the proportion of eriophyoid mites inhabiting plants is restricted to Hengchun peninsula +Orchid Island + Green Island and amounts to 57.1% (8/14) with Orchid Island containing 28.6% (10/35) (appendix 1). The results are interesting: there are no endemic plants on Green Island while Orchid Island has about 3% endemic plants. Although the origin of the biota of Orchid Island and Green Island may be the same, at present the eriophyoid-fauna is totally different from the flora.

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Appendix 1. The list of eriophyoid mites occur at Orchid Island and Green Island

Species name	Host plant	Locality	Coll. date
Cisaberoptus celtis Huang, 2001	*Celtis philippensis*[2]	Green Is.	19980408
Colopodacus lanceolatus Huang, 2001	*Glochidion lanceolatum*	Orchid Is.	19940902
Colopodacus palaquius Huang, 2001	*Palaquium formosanum*	Orchid Is.	19940831
Colopodacus pisoniae Huang, 2001	*Pisonia umbellifera*[4] and *Syzygium simile*[2]	Orchid Is.	19970823 20080527 20080528 20080530
Colopodacus toddalius Huang, 2001	*Toddalia asiatica*	Orchid Is.	19940902
Surapoda asiaticae Huang, 2001	*Toddalia asiatica*	Orchid Is.	19940902
Floracarus biserratae Huang, 2001	*Nephrolepis biserrata*	Orchid Is.	19970824
Disella umbelliferae Huang, 2001	*Pisonia umbellifera*[4]	Orchid Is.	19970823
Cosella tripinnatiae Huang, 2001	*Syzygium tripinnatum*[3]	Orchid Is.	19970823
Cosella szygia Huang, 2001	*Syzygium formosanum*	Orchid Is.	19940901
Cosella zeylaniae Huang, 2001	*Glochidion zeylanicum*	Orchid Is.	19940902
Aceria lanyuensis Huang, 2001	*Wendlandia luzoniensis*[2]	Orchid Is.	19970824
Aceria jasminoidis Huang, 2001	*Gardenia jasminoides*	Orchid Is.	19940831
Aceria noumeae (Keifer, 1978)	*Ficus heterapleura*[3] and *Ficus ampelas*	Orchid Is.	20080528 20080527
Aceria serratifoliae Huang, 2008	*Premna serratifolia*	Orchid Is.	19980322
Aceria pipturi Keifer, 1966	*Pipturus arborescens*[1]	Green Is.	20020518
Stenacis tanariis Huang, 2001	*Macaranga tanarius*	Orchid Is.	19970829
Stenacis biserrata Huang, 2001	*Nephrolepis biserrata*	Orchid Is.	19970824
Proartacris melicopae sp. nov.	*Melicope triphylla*	Orchid Is.	20080529
Proartacris pinnatus sp. nov.	*Pometia pinnata*[5]	Orchid Is.	20080529
Hornophyes andamanensis Moh., 1994	*Sterculia ceramica*[2] and *Pisonia umbellifera*[4]	Orchid Is.	19880806
Phaulacus lanyuensis sp. nov.	*Syzygium simile*[22]	Orchid Is.	20080530
Lanyuii exigus gen. et sp. nov.	*Tabernaemontana subglobosa*[3]	Orchid Is.	19980820
Neopentamerus decem sp. nov.	*Melanolepis multiglandulosa*	Green Is.	20000605
Latitudo sanasaii Huang, 2001	*Symplocos cochinchinensis philippinensis*[2]	Orchid Is. and Green Is.	19980818 20000604
Subaequalitas sanasaii Huang, 2001	*Semecarpus gigantifolia*[1]	Green Is.	19980409
Tegonotus similis sp. nov.	*Syzygium simile*[2]	Orchid Is.	20080530
Tegonotus adamasimilis sp. nov.	*Chionanthus ramiflorus*[3]	Orchid Is.	20080528
Thacra piperasia Keifer, 1978	*Piper philippinum*[2]	Green Is.	19980409
Neoshevtchenkella pinnatiae Huang, 2001	*Pometia pinnata*[5]	Orchid Is.	19940901 20080529
Tumoris lanyuensis (Huang, 2011)	*Symplocos cochinchinensis philippinensis*[2]	Orchid Is. and Green Is.	19940831 20000604 20080529
Neometaculus eppiptus Huang, 2001	*Ardisia elliptica*[1]	Green Is.	20000604

Appendix 1. (continued)

Species name	Host plant	Locality	Coll. date
Neometaculus catappiae Huang, 2001	*Terminalia catappa*	Orchid Is. and Green Is.	19940902 20080529 20000604
Vasates irisanae Huang, 1992	*Ficus ampelas*	Orchid Is.	20080527
Neoleipothrix minutae Huang, 2001	*Morus australis*	Orchid Is.	19940901
Epitrimerus lobatiae Huang, 2001	*Pueria lobata*	Orchid Is.	19940902
Epitrimerus irisanus Huang & Wang, 2004	*Ficus ampelas*	Orchid Is.	20080527
Aculodes hibisci Huang, 1992	*Hibiscus tiliaceus*	Green Is.	20000604
Aculops wikstrolmiai Huang, 2001	*Wikstrolmia indica*	Green Is.	19970502
Tegolophus melicopi Huang & Wang, 2004	*Melicope triphylla*	Orchid Is.	19980820
Abacarus bambusae Kuang & Zhuo, 1987	*Bambusa atrovirens*	Green Is.	19980409
Abacarus ellipticae Huang, 2001	*Derris elliptica*	Orchid Is.	19940902
Mediugum sanasaii Huang, 2001	*Garcinia subelliptica*[2]	Green Is.	19980409
Norma lanyuensis Huang, 2001	*Pometia pinnata*[5]	Orchid Is.	19940901
Diptilomiopus cumingis Huang, 2001	*Ficus cumingii*[2]	Orchid Is.	19940901
Diptilomiopus elliptus Huang, 2001	*Ardisia elliptica*[1]	Green Is.	20000604

[1] distribute restrict at southeast Taiwan, Green Island and Orchid Island
[2] distribute restrict at Green Island and Orchid Island
[3] endemic species of Orchid Island
[4] distribute restrict at southeast Taiwan and Orchid Island
[5] distribute restrict at Orchid Island, may import from Southeast Asia

臺灣東南外海的蘭嶼及綠島的節蜱並描述一新屬

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摘　要

本文描述 12 種蘭嶼及綠島的節蜱，包含一新屬、七新種及五種蘭嶼新紀錄種。這 12 種為：*Aceria noumeae* (Keifer, 1978) 為害尖尾長葉榕 (*Ficus heterapleura*) 及菲律賓榕 (*Ficus ampelas*)，*Proartacris melicopae* sp. nov. 為害假三腳鱉 (*Melicope triphylla*)，*Proartacris pinnatus* sp. nov. 為害番龍眼 (*Pometia pinnata*)，*Phaulacus lanyuensis* sp. nov. 為害蘭嶼赤楠 (*Syzygium simile*)，*Lanyuii exigus* gen. *et* sp. nov. 為害蘭嶼山馬茶 (*Tabernaemontana subglobosa*)，*Latitudo sanasaii* Huang, 2001 為害蘭嶼銹葉灰木 (*Symplocos cochinchinensis philippinensis*)，*Tegonotus similis* sp. nov. 為害蘭嶼赤楠 (*Syzygium simile*)，*Tegonotus adamasimilis* sp. nov. 為害蘭嶼李欖 (*Chionanthus ramiflorus*)，*Epitrimerus irisanus* Huang & Wang, 2004 為害菲律賓榕 (*Ficus ampelas*)，*Vastes irisanae* Huang 1992 為害菲律賓榕 (*Ficus ampelas*)，*Tegolophus melicopi* Huang & Wang, 2004 為害假三腳鱉 (*Melicope triphylla*) 及 *Neopentamerus decem* sp. nov. 為害蟲屎 (*Melanolepis multiglandulosa*)。本文並對蘭嶼及綠島上的節蜱做一科、亞科及種的檢索表。

關鍵詞：節蜱、新屬、蘭嶼、綠島、臺灣。

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