Acarologia is proudly non-profit, with no page charges and free open access

Please help us maintain this system by encouraging your institutes to subscribe to the print version of the journal and by sending us your high quality research on the Acari.

Subscriptions: Year 2020 (Volume 60): 450 €
http://www1.montpellier.inra.fr/CBGP/acarologia/subscribe.php
Previous volumes (2010-2018): 250 € / year (4 issues)
Acarologia, CBGP, CS 30016, 34988 MONTFERRIER-sur-LEZ Cedex, France
ISSN 0044-586X (print), ISSN 2107-7207 (electronic)

The digitalization of Acarologia papers prior to 2000 was supported by Agropolis Fondation under the reference ID 1500-024 through the « Investissements d’avenir » programme (Labex Agro: ANR-10-LABX-0001-01)

Acarologia is under free license and distributed under the terms of the Creative Commons-BY-NC-ND which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original author and source are credited.
SOME ERIOPHYOID MITES ON CONIFEROUS PLANTS FROM HIGH MOUNTAINS IN TAIWAN (ACARI: ERIOPHYOIDEA)

by Kun-Wei HUANG* and Jan BOCZEK**

ABSTRACT: This article describes and illustrates eight species of eriophyoid mites, including one new genus, one new subgenus and seven new species, from four species of coniferous plants in Taiwan: *Phyllocoptes limsamus* sp. nov. (infesting *Abies kawakamii* and *Picea morrisonicola*), *Epitrimerus yunbimus* sp. nov. (infesting *Juniperus chinensis* and *Tsuga chinensis*), *Pentaporca taiwanensis* gen. et sp. nov. (infesting *Tsuga chinensis*), *Nalepella tisamae* sp. nov., *Setoptus (Orientis) inaequalis* subgen. et sp. nov., *Setoptus (Orientis) inusitatus* sp. nov., *Setoptus (Orientis) undatus* sp. nov. (infesting *Tsuga chinensis*) and *Trisetacus distinctus* Smith, 1978 (infesting *Juniperus chinensis*).

RéSUMÉ: Cet article décrit et illustre huit espèces d'eriophyoides, y compris un nouveau genre, un nouveau sous-genre et sept nouvelles espèces, provenant de quatre espèces de conifères de Taiwan: *Phyllocoptes limsamus* sp. nov. (sur *Abies kawakamii* et *Picea morrisonicola*), *Epitrimerus yunbimus* sp. nov. (sur *Juniperus chinensis* et *Tsuga chinensis*), *Pentaporca taiwanensis* gen. et sp. nov. (sur *Tsuga chinensis*), *Nalepella tisamae* sp. nov., *Setoptus (Orientis) inaequalis* subgen. et sp. nov., *Setoptus (Orientis) inusitatus* sp. nov., *Setoptus (Orientis) undatus* sp. nov. (sur *Tsuga chinensis*), et *Trisetacus distinctus* Smith, 1978 (sur *Juniperus chinensis*).

This is the first report about Nalepellidae and Eriophyidae from coniferous plants in Taiwan. There are about 50 species of coniferous plants in Taiwan. All mite specimens were collected from high mountain (above 2500 m). In this study, there are five species belonging to three genera of eriophyid mites on *Tsuga chinensis*.

The materials are deposited at the Division of Collection & Research, National Museum of Natural Science, Taichung, Taiwan; and the Department of Applied Entomology, Agricultural University of Warsaw, Poland. All measurements are in micrometers (μm).

* Pentaporca Huang, gen. nov.

Type species: *Pentaporca taiwanensis* Huang sp. nov.

Body fusiform, with shield lobe; rostrum small, evenly bent down; leg segments normal; coxal I separated; featherclaw simple; abdomen with all setae present; accessory setae present; opisthosomal rings differentiated into broader tergites and narrower sternites; dorsum with 5 ridges, middle one ends at half; sternites with oval microtubercles; coverflap smooth.

Etymology: The genus name is feminine gender, referring to the dorsum with five ridges.
Note: This genus is close to Nalepella Keifer, 1944, but differs in having five longitudinal ridges on the tergites.

**Pentaporca taiwanensis** Huang, sp. nov. (Fig. 1)

**Female:** Body spindleform, 179–222 long; shield 72–75 long, 88–97 wide; shield design median line straight from base to half, diverging from half to anterior region, admedian line forms cells with median line at basal third, submedian line absent; dorsal tubercles 18–24 from rear shield margin, 40–62 apart, setae 70–76 long, projecting anteriorly, frontal seta 48–51 long; coxae unornamented, 1st setiferous coxal setae 12 long, tubercles (CI) 20 apart, 2nd setiferous coxal setae 19 long, tubercles (CII) 24 apart, 3rd setiferous coxal setae 43 long, tubercles (CIII) 50 apart, sternum line absent; claw ending as a knob, claw I 14 long, claw II 14 long; fore-tibial 19 long, setae at apex, 10 long; featherclaw simple, 7 rayed.

Opisthosoma: about 33–44 tergites and 68–96 sternites; with oval microtubercles on sternites, the first 3 tergites long; abdomen with all setae present; lateral seta 16–32 long, L 63–86 apart, L–VI 52–73, 1st ventral seta 23–36 long, VI 37–47 apart, VI–VII 34–45, 2nd ventral seta 21–33 long, VII 21–33 apart, II–VIII 58–71, 3rd ventral seta 26–35 long, VIII 28–37 apart; caudal setae 10–13 long, accessory setae present.


**Male:** not seen.

**Holotype:** female, collected from Tsuga chinensis Pritz.; Alishan (2800 m), Chiai, 17 May 1991, K. W. HUANG.

**Paratypes:** 3 females, same data as holotype. A vagrant living on the twigs. No damage observed.

**Nalepella tisamae** Huang, sp. nov. (Fig. 2)

**Male:** Body spindleform, 182–216 long; shield 53–64 long, 76–94 wide; shield design obscure, with dash like markings; dorsal tubercles 16–26 from rear shield margin, 37–56 apart, setae thick, 52–70 long, projecting anteriorly, anterior seta 12 long; coxae I with many spines, 1st coxal setae 13 long, CI 18 apart, 2nd coxal setae 26 long, CII 17 apart, 3rd coxal setae 54 long, CIII 33 apart, sternum 6 long; claw knobbed, claw I 7 long, claw II 7 long; fore-tibia 10 long, with spines on ventral side, spur at apex, setae claw-like ending as a knob at apex, 8 long; featherclaw simple, 7 rayed.

Opisthosoma: about 34–44 tergites and 68–96 sternites; dorsum with spine microtubercles, with oval microtubercles on sternites, the first 3 tergites 6 long; abdomen with all setae present; lateral seta 16–32 long, L 63–86 apart, L–VI 52–73, 1st ventral seta 23–36 long, VI 37–47 apart, VI–VII 34–45, 2nd ventral seta 21–33 long, VII 21–33 apart, II–VIII 58–71, 3rd ventral seta 26–35 long, VIII 28–37 apart; caudal setae 10–13 long, accessory setae present.

Coverflap: 22–29 wide, 11–18 long; G 19–26 apart, genital seta 18–32 long; spermathecal tube long.

**Female:** not seen.

**Holotype:** male, collected from Tsuga chinensis Pritz.; Alishan (2800 m), Chiai, 17 May 1991, by K. W. HUANG.

**Paratypes:** 3 males, same data as holotype. A vagrant living on the twigs. No damage observed.

**Etymology:** The species name is derived from the Taiwanese name of the host plant.

Note: *N. tisamae* differs from *N. tsugifoliae* Keifer, 1953 by the lower number of body rings, longer tibiae and foretibiae with long, knobbed setae. This species coexists with *Pentaporca taiwanensis* on *Tsuga chinensis*.

**Setoptus (Orientis)** Huang, subgen. nov.

**Type species:** Setoptus (Orientis) inaequalis Huang, sp. nov.
FIG. 1: *Pentaporeca taiwanensis* gen. et sp. nov. (female).

A. — Shield; B. — Genital and coxal area; C. — Anterior area, lateral view; D. — Anal area, lateral view; E. — Internal apodeme; F. — Featherclaw and claw.
General morphology as in *Setoptus (Setoptus)* Keifer, 1944. Cephalothoracic shield wider than long. Opisthosoma: completely microtuberculate; dorsum wavy or not; each tergite with posterior part somewhat longer than anterior and without microtubercles.

**Etymology:** The subgenus name is feminine and means “Orient”, with reference to the locality.

**Note:** This new subgenus differs from *Setoptus (Setoptus)* by having each tergites on posterior part longer than the anterior part.

*Setoptus (Orientis) inaequalis* Huang, sp. nov.

(Fig. 3)

**Female:** Body worm-like, 182–206 long; shield 50–51 long, 69–71 wide; smooth; dorsal tubercles 16–17 from rear shield margin, 41–46 apart, setae thick, 44–61 long, projecting anteriorly, anterior seta 12 long; coxae I with many spines, 1st coxae setae 10 long, CI 17 apart, 2nd coxal setae 22 long, CII 18 apart, 3rd coxal setae 41 long, CIII 35 apart, sternum 5 long; claw knobbed, claw I 7 long, claw II 7 long; foretibia 10 long, with spines on ventral side, spur at apex, setae claw like ending...
FIG. 3: Setoptus (Orientis) inaequalis subgen. et sp. nov. (female).
A. — Dorsal view; — B. Genital and coxal area; C. — Anterior area, lateral view; D. — Anal area, lateral view; E. — Internal apodeme; F. — Featherclaw and claw.
as knob, at apex, 8 long; featherclaw simple, 7 rayed.

Opisthosoma: About 45–52 tergites and 66–70 sternites, with oval microtubercles on sternites and first two-thirds of tergites, the wider tergites 0.38–0.48 times length of body length; abdomen with all setae present; lateral seta 16–21 long, L 67–68 apart, L–VI 56–64, 1st ventral setae 15 long, VI 46 apart, VI–VII 46–49, and ventral seta 14–16 long, VII 23–28 apart, VII–VIII 62–74, 3rd ventral seta 19–26 long, VIII 27–33 apart; caudal setae 11 long; accessory setae present.

Coverflap: 25 wide, 16–18 long, smooth; G 19–22 apart, genital seta 21 long; spermathecal tube long.

Male: not seen.

Holotype: female, collected from Tsuga chinensis Pritz.; Alishan (2800 m), Chiai, 17 May 1991, by K. W. HUANG.

Paratypes: 1 female, same data as holotype.

A vagrant living on the twigs. No damage observed.

Etymology: The species epithet is an adjective meaning “unequal”, in reference to the unequal width of tergites.

Setoptus (Orientis) undatus Boczek, sp. nov. (Fig. 4 C, D)

Female: Body worm-like, 141–148 long; shield 44–46 long, 52–54 wide; smooth; dorsal tubercles 14–16 from rear shield margin, 24–33 apart, setae thick, 57–59 long, projecting anteriorly, anterior seta 10 long; coxae I with many spines, 1st coxae setae 11 long, CI 14 apart, 2nd coxal setae 31 long, CII 17 apart, 3rd coxal setae 58 long, CIII 31 apart, sternum 5 long; claw knobbed, claw I 5 long, claw II 6 long; foretibia 8 long, with spines on ventral side, spur at apex, setae claw-like, ending as knob, at apex, 7 long; featherclaw simple, 7 rayed.

Opisthosoma: About 42–44 tergites and 68–74 sternites; with oval microtubercles on sternites and anteriorly tergites, wider tergites irregular, 0.51–0.55 times length of body length; abdomen with all setae present; lateral seta 18–21 long, L 65–68 apart, L–VI 59–62, 1st ventral seta 13–18 long, VI 44 apart, VI–VII 42–50, 2nd ventral seta 17 long, VII 21–27 apart, VII–VIII 74–81, 3rd ventral seta 29 long, VIII 33–35 apart; caudal setae 16 long; accessory setae present.

Coverflap: 25–27 wide, 16–18 long, smooth; G 19–22 apart, genital seta 21 long; spermathecal tube long.

Male: not seen.

Holotype: female, collected from Tsuga chinensis Pritz.; Alishan (2800 m), Chiai, 17 May 1991, by K. W. HUANG.

Paratypes: 1 female, same data as holotype.

A vagrant living on the twigs. No damage observed.

Etymology: The species epithet is an adjective meaning “uneusual”, in reference to the irregular tergites on posterior part.

Note: S. (O.) undatus differs from S. (O.) inaequalis Huang by the ratio of wider tergites to length of body, and the wider tergites irregular.
Fig. 4: Setoptus (Orientis) imusitatus sp. nov. (female). A. — Dorsal view; B. — Anal area, lateral view; Setoptus (Orientis) undatus (female) sp. nov. C. — Dorsal view; D. — Anal area, lateral view.
ventral seta 30 long, VIII 25–26 apart; caudal setae 11 long; accessory setae present.

Cover flap: 24–25 wide, 12–15 long, smooth; G 14–15 apart, genital seta 15 long; spermathecal tube long.

Male: 132 long, shield 40 long, 54 wide; genitalia 21 wide, 11 long.

Holotype: female, collected from Tsuga chinensis Pritz.; Alishan (2800 m), Chiai, 17 May 1991, by K. W. Huang.

Paratypes: 1 female, 1 male, same data as holotype.

A vagrant living on the twigs. No damage observed.

Etymology: The species epithet is an adjective meaning “wavy”, in reference to the wavy tergites.

Note: *S. (O.) undatus* differs from other species of this subgenus by the wavy dorsum.

**Epitrimerus yunbimus** Huang, sp. nov.

(Fig. 5)

Female: Body spindleform, 171–193 long; shield 53–62 long, 79–91 wide; shield design with many
Phyllocoptes limsamus Boczek, sp. nov.  (Fig. 6)

**Female:** Body spindleform, 164–169 long; chelicerae 33 long; shield 46–48 long, 73–82 wide; shield design with median line absent, admedian lines from apical third to basal third, submedian lines present, the inner ones sinuous, from apical third to rear, the outer ones connecting anteriorly; dorsal tubercles 9–12 from rear shield margin, 19–21 apart, setae 6–9 long, projecting to upward; coxae unornamented, 1st coxal setae 6 long, CI 16 apart, 2nd coxal setae 11 long, CII 11 apart, 3rd coxal setae 27 long, CIII 32 apart, sternum present; claw ending as a knob, claw I 6 long, claw II 5 long; foreetibia 11 long, setae at apical third, 21 long; featherclaw simple, 7–rayed.

Opisthosoma: about 36–40 tergites and 52–64 sternites; dorsum with central ridge from the basal one-third to near end, the first 3 tergites 12 long; with oval microtubercles on sternites; opisthosoma with all setae; lateral seta 12–14 long, L 54–69 apart, L–VI 50–62, 1st ventral seta 23–37 long, VI 26–35 apart, VI–VII 30–43, 2nd ventral seta 15–27 long, VII 14–20 apart, VII–VIII 44–51, 3rd ventral seta 15–21 long, VIII 21–26 apart; caudal setae 10–12, accessory setae present.

Coverflap: 23–28 wide, 12–19 long, with about 11 longitudinal ridges, the outer ones connecting; G 16–19 apart, genital seta 11–15 long.

**Male:** 154 long, shield 52–54 long, 77–79 wide; genitalia 19–21 wide, 8–10 long, G 15–18 apart.

**Holotype:** female, collected from Juniperus chinensis Linn., Alishan (3520 m), Chiai, 15 May 1991, by K. W. HUANG.

**Paratypes:** 4 females, 2 males, from Juniperus chinensis Linn. data same as holotype; 2 males, collected from Tsuga chinensis; Alishan (3200 m), Chiai, 17 May 1991, by K. W. HUANG.

A vagrant living on the twigs. No damage observed.

**Etymology:** The species name is derived from the Taiwanese name of the host plant.

**Note:** This new species is similar to *E. phoeniceae* Keifer, 1962 but differs by the dorsal ridges with middle lobes; coverflap ridges and granular marking on genital basal area. This new species coexists with *Trisetacus distinctus* Smith, 1978 on *Juniperus chinensis*.

---

Phyllocoptes limsamus Boczek, sp. nov.  (Fig. 6)

**Female:** Body spindleform, 164–169 long; chelicerae 33 long; shield 46–48 long, 73–82 wide; shield design with median line absent, admedian lines from apical third to basal third, submedian lines present, the inner ones sinuous, from apical third to rear, the outer ones connecting anteriorly; dorsal tubercles 9–12 from rear shield margin, 19–21 apart, setae 6–9 long, projecting to upward; coxae unornamented, 1st coxal setae 10 long, CI 14 apart, 2nd coxal setae 12 long, CII 13 apart, 3rd coxal setae 25 long, CIII 35 apart, sternum line present; claw ending as a knob, claw I 7 long, claw II 5 long; foreetibia 10 long, setae at apical one-third, 16 long; featherclaw simple, 6 rayed.

Opisthosoma: about 33–36 tergites and 46–58 sternites; dorsum arch, the first 3 tergites 12 long; with oval microtubercles on sternites; abdomen with all setae present; lateral seta 11–16 long, L 60–61 apart, L–VI 54, 1st ventral seta 32–43 long, VI 32–34 apart, VI–VII 43, 2nd ventral seta 30 long, VII 16 apart, VII–VIII 51–55, 3rd ventral seta 18–24 long, VIII 27–31 apart; caudal setae 16 long, accessory setae present.

Coverflap: 24–26 wide, 15–16 long, with about 10 longitudinal striae, obscure; G 15 apart, genital seta 11–17 long.

**Male:** 140 long, shield 45 long, 55 wide; genitalia 19 wide, 8 long, G 15 apart.

**Holotype:** female, collected from Abies kawakamii (Hay.); Alishan (3650 m), Chiai, 15 May 1991, by K. W. HUANG.

**Paratypes:** 1 female, 1 male, collected from Abies kawakamii (Hay.) data same as holotype; 1 female, collected from Picea morrisonicola.

A vagrant living on the twigs. No damage observed.

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

**Note:** This new species is similar to *P. rufoclivus* Keifer, 1969 but differs at the tergites without microtubercles and the structure of network.
**Trisetacus distinctus** Smith, 1978

*Trisetacus distinctus* Smith, 1978: 1161.

**Female:** Body worm-like, 216 long; shield 35 long, 59 wide; dorsal tubercles 13 from rear shield margin, 34 apart, setae 38 long, anterior setae 9 long; coxae ornamented with dash lines, 1st coxal setae 11 long, CI 15 apart, 2nd coxal setae 19 long, CII 20 apart, 3rd coxal setae 39 long, CIII 41 apart, claw I 8 long, claw II 10 long; foretibia 9 long, setae at half, 7 long.

Opisthosoma: about 52 tergites and 78 sternites; the first 3 tergites 10 long; abdomen with subdorsal setae, 15 long; lateral seta 23 long, L 64 apart, L—VI 59, 1st ventral seta 33 long, VI 44 apart, VI—VII 47, 2nd ventral seta 15 long, VII 28 apart, VII—VIII 90, 3rd ventral seta 15 long, VIII 34 apart; accessory setae 20 long.

Cover flap 27 wide, 14 long; G 16 apart, genital seta 14 long.

**Male:** not seen.

Specimens examined: 3 females, collected from *Juniperus chinensis* Linn.; Alishan (3520 m), Chiai, 15 May 1991, K. W. Huang. A vagrant living on twig. No damage observed.
REFERENCES


