

Taxonomic notes on *Stylophoronychus* (Acari: Tetranychidae) with new data for *S. baghensis* infesting moso bamboo in Fujian, China

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Abstract

The taxonomy of the genus *Stylophoronychus* (Acari: Tetranychidae) is reviewed. The synonymy of *Stylophoronychus* Prasad, 1975 and *Sinotetranychus* Ma & Yuan, 1980 is accepted and the former has priority. As a result, the following new combinations are noted: *Stylophoronychus guangzhouensis* (Ma & Yuan) and *Stylophoronychus insularis* (Flechtmann). *S. baghensis* (Prasad) is newly recorded from the moso bamboo (*Phyllostachys pubescens*) in Fujian, China, and additional data on its morphology are also provided. A key to females of six known species of *Stylophoronychus* is provided.

Key words: Tetranychidae, *Stylophoronychus*, *Sinotetranychus*, taxonomy, host, bamboo.

Introduction

Prasad (1975a) erected the subgenus *Aponychus* (*Stylophoronychus*) for *A. (S.) baghensis* collected from bamboo leaves in India. He divided the genus *Aponychus* Rimando into the subgenera *Aponychus s.s.* and *Stylophoronychus* based on the fact that the stylophore of the new subgenus bears two anterior horn-like projections. Prasad (1975a)

included five other *Aponychus* species (all with 10 pairs of dorsal setae on the hysterosoma) in the subgenus *Stylophoronychus*, along with the type species *baghensis* (with 9 dorsal setae on the hysterosoma). Prasad (1975b) described another species *A. (S.) lalli*, which also has 9 dorsal setae on the hysterosoma.

The genus *Sinotetranychus* was erected by Ma and Yuan (1980) for *S. guangzhouensis* collected from bamboo plants in southern China (Guangzhou). It was a monobasic genus. Ma and Yuan (1980) considered it to be closely related to *Aponychus* but did not compare it with *Aponychus (Stylophoronychus)*, presumably because they had not seen Prasad's paper.

Meyer (1987) elevated *Aponychus (Stylophoronychus)* to the generic level and revised the concept of the genus. She considers the presence of 9 pairs of dorsal setae on the hysterosoma as a key character. In doing so, she included two more species in *Stylophoronychus*: *nakaoui* (Ehara & Wongsiri, 1975) and *vannus* (Rimando, 1968), both transferred from *Aponychus*. They excluded the five species with 10 dorsal setae on the hysterosoma originally placed in *Stylophoronychus* by Prasad (1975a). Meyer (1987) did not include in this genus *A. (S.) lalli* which also has 9 pairs of dorsal setae on the hysterosoma.

In his review of the systematics of the Tetranychidae, Gutierrez (1985: 83) considered *Sinotetranychus* a synonym of *Aponychus*. Meyer (1987), however, reinstated *Sinotetranychus* and included a second species: *S. insularis* (Flechtmann), transferred from the genus *Aponychus*.

Rimando and Corpuz-Raros (1996) revised the taxonomy of Eurytetranychini Reck and reconsidered the importance of dorsal chaetotaxy in the generic classification of this tribe: *Stylophoronychus* was synonymised with *Aponychus s. lat.* and *Sinotetranychus* with *Paraponychus* Gonzalez & Flechtmann. These revisions, however, were not followed by Bolland *et al.* (1998), who synonymised *Stylophoronychus* with *Sinotetranychus*, which is considered to be different from *Paraponychus* in that setae f_1 are absent in *Sinotetranychus* whereas setae c_3 are absent in *Paraponychus*, although both have 9

pairs of dorsal setae on the hysterosoma. Bolland *et al.* (1998) included in the expanded *Sinotetranychus* two species previously assigned by Meyer (1987) and three species previously assigned to *Stylophoronychus* by Meyer (1987).

In a recent survey of phytophagous mites associated with the moso bamboo (*Phyllostachys pubescens*) in Fujian, China, we discovered a new record of *Stylophoronychus baghensis*. Our study of the literature and our specimens convinced us that *Stylophoronychus* and *Sinotetranychus* are synonyms (as considered by Bolland *et al.* 1998) and that *Sinotetranychus guangzhouensis* differs only slightly from *Stylophoronychus lalli* (see the key below). We disagree with Bolland *et al.* (1998) in their disregard of the Principle of Priority (ICZN 1985: 47; article 23) in the use of generic names. Herein we reinstate *Stylophoronychus* with a taxonomic catalogue of and key to world species.

Genus *Stylophoronychus* Prasad

Aponychus (*Stylophoronychus*) Prasad, 1975. *International Journal of Acarology*, 1: 1 (Type species by original designation *Aponychus baghensis* Prasad, 1975).

Sinotetranychus Ma & Yuan, 1980. *Acta Entomologica Sinica*, 23: 441 (Type species by original designation *Sinotetranychus guangzhouensis* Ma & Yuan, 1980).

Sinotetranychus: Meyer, 1987. *Republic of South Africa Department of Agriculture and Water Supply Entomology Memoir*, 69: 87 (Diagnosis and key to species).

Stylophoronychus: Meyer, 1987. *Republic of South Africa Department of Agriculture and Water Supply Entomology Memoir*, 69: 88 (Change of status to full generic level, diagnosis and key to species).

Sinotetranychus: Bolland *et al.*, 1998. *World Catalogue of the Spider Mite Family* (*Acari: Tetranychidae*): 173 (Recombination; host; distribution).

Key to species of *Stylophoronychus* (females)

- 1 All dorsal setae club-like; c_1 elongate, extending beyond bases of c_3 and e_1 *insularis* (Flechtmann) **comb. nov.**
- Most dorsal setae spatulate or palmate; c_1 relatively short, not reaching the bases of c_3 and e_1 2
- 2 Setae c_1 reaching beyond bases of c_2 and d_1 3
- Setae c_1 not reaching the bases of c_2 and d_1 5
- 3 Length of e_1 and distance between their bases subequal ; setae h palmate, their maximum width and length subequal
..... *vannus* (Rimando)
- Length of e_1 less than distance between their bases; setae h spatulate, their length about twice the maximum width 4
- 4 Setae c_1 club-like, not expanded medially
..... *guangzhouensis* (Ma & Yuan) **comb. nov.**
- Setae c_1 spatulate, enlarged medially *lalli* (Prasad)
- 5 Setae c_1 , d_1 and e_1 decreasing in size successively
..... *nakaoui* (Ehara & Wongsiri)
- Setae c_1 , d_1 and e_1 subequal in length *baghensis* (Prasad)

***Stylophoronychus baghensis* (Prasad)**

Aponychus (*Stylophoronychus*) *baghensis* Prasad, 1975. *International Journal of Acarology*, 1: 2 (Holotype female, Lal Bagh, Bangalore City, Karnataka State, India, 19 III 1973, from bamboo leaf; type in U.S. National Museum of Natural History housed at USDA, Beltsville, Maryland, USA).

Stylophoronychus baghensis: Meyer, 1987. *Republic of South Africa Department of Agriculture and Water Supply Entomology Memoir*, 69: 88 (In key).

Sinotetranychus baghensis: Bolland *et al.*, 1998. *World Catalogue of the Spider Mite Family (Acari: Tetranychidae)*: 173 (New combination; host; distribution).

Notes. This species is previously only known from India. This is a new record of this species from the moso bamboo (*Phyllostachys pubescens*) in Fujian, China. Table 1 presents comparisons of measurements of idiosoma, legs and dorsal setae among specimens from Sanmin and Yongan, Fujian and India.

Materials examined: Four females, 30 X 1997, Sanmin City, Fujian, China, collected by D. Chen from moso bamboo; one female from the same host, 4 X 1997, Yongan county, Fujian, China.

Table 1. Comparison of metric data (μm) for *Stylophoronychus baghensis* from Fujian, China and India (Prasad 1975b).

Locations	Sanmin	Yongan	India
Idiosoma			
Length	350-459	260	342
Width	260-390	285	240
Leg length			
I	264-294	261	330
II	219-255	219	270
III	213-249	216	250
IV	251-319	261	315
Dorsal setae			
v_2	23-28	23	21-25
sc_1	9-12	9	10-15
sc_2	50-56	45	48-55
c_1	23-28	21	20-28
c_2	9-10	8	11-18
c_3	47-60	47	55-58
d_1	25-30	24	20-27
d_2	25-30	24	20-28
e	24-28	28	19-30
f_1	49-56	46	45-53
f_2	49-56	46	52-58
h_1	50-56	49	53-63

***Stylophoronychus guangzhouensis* (Ma & Yuan) comb. nov.**

Sinotetranychus guangzhouensis Ma & Yuan, 1980. *Acta Entomologica Sinica*, 23: 441 (Holotype female, paratype female, 18 XII 1977, from bamboo leaf; type specimens in Museum of Natural History, Shanghai, China).

Sinotetranychus guangzhouensis Ma *et al.*, 1984. In Jiangxi University (ed.) *Chinese Agricultural Acari*: 111 (Description with figures).

Sinotetranychus guangzhouensis: Meyer, 1987. *Republic of South Africa Department of Agriculture and Water Supply Entomology Memoir*, 69: 87 (In key).

Paraponychus guangzhouensis: Rimando & Corpuz-Ramos, 1996. *The Philippine Entomologist*, 10: 13 (New combination).

Sinotetranychus guangzhouensis: Bolland *et al.*, 1998. *World Catalogue of the Spider Mite Family (Acari: Tetranychidae)*: 173 (In catalogue; host; distribution).

Notes. This species is closely related to *S. lalli* in idiosomal and leg chaetotaxy and can barely be separated from the latter based on relative lengths of dorsal setae. It is known only from bamboo in Guangzhou, China.

***Stylophoronychus insularis* (Flechtmann) comb. nov.**

Aponychus insularis Flechtmann, 1981. *International Journal of Acarology*, 7: 87 (Holotype female, Jaguanum Island, Rio de Janeiro, Brazil, 12 I 1979, collected by C.H.W. Flechtmann from undetermined ivy; type in Collection of Department of Zoology, ESALQ, University of São Paulo, Piracicaba, São Paulo, Brazil).

Sinotetranychus insularis: Meyer, 1987. *Republic of South Africa Department of Agriculture and Water Supply Entomology Memoir*, 69: 87 (New combination).

Paraponychus insularis: Rimando & Corpuz-Ramos, 1996. *The Philippine Entomologist*, 10: 13 (New combination).

Sinotetranychus insularis: Bolland *et al.*, 1998. *World Catalogue of the Spider Mite Family (Acari: Tetranychidae)*: 173 (Distribution).

Notes: This species is obviously different from other members of the genus in having club-like dorsal setae that are elongated, except setae v_2 , c_2 and h_1 . Setae c_1 , for example, are so long that they extend beyond the bases of c_3 and e_1 . The other species of this genus have at least some setae that are spatulate. The leg chaetotaxy of this species is also drastically different to those of others. The female of *S. insularis* has the following setae on legs I-IV: femora 7-6-3-2, genua 3-3-2-1 and tibiae 7-5-4-4; those of other species for which leg chaetotaxy was reported (i.e. *baghensis*, *guangzhouensis*, *lalli*, and *nakaoui*) are: femora 6-5-3-1, genua 2-1-1-1 or 1-1-1-1 and tibiae 4-1-1-1 or 4-2-1-1. Most species of *Stylophoronychus* are restricted to Asia, whereas *S. insularis* is known only from Brazil. Most species of *Stylophoronychus* are associated with bamboo leaves (monocotyledons), whereas the host of *S. insularis* is a dicotyledon (Flechtmann, personal communication). Considering these differences, one may argue whether *S. insularis* shares a common ancestor with other species of the genus.

***Stylophoronychus lalli* (Prasad)**

Aponychus (Stylophoronychus) lalli Prasad, 1975b. *International Journal of Acarology*, 1: 8 (Holotype female and 1 paratype females, Bihar Agriculture College, Sabour, Bhagalpur District, Bihar, India, 24 I 1973, collected by V. Prasad from bamboo leaves; Holotype in USNM).

Aponychus lalli: Rimando & Corpuz-Ramos, 1996. *The Philippine Entomologist*, 10: 12 (Listed).

Aponychus lalli: Bolland *et al.*, 1998. *World Catalogue of the Spider Mite Family (Acari: Tetranychidae)*: 20 (Host and distribution).

Notes. This species was not mentioned by Meyer (1987), and was listed in *Aponychus s.s.* by Bolland *et al.* (1998). Its morphology suggests that it is closely related to *S. guangzhouensis*, as the two species show remarkable similarity.

***Stylophoronychus nakaoui* (Ehara & Wongsiri)**

Aponychus nakaoui Ehara & Wongsiri, 1975. *Mushi*, 48: 153 (Holotype female and 5 paratype females, Ban Kad near Chiangmai, Thailand, 30 X 1970, collected by S. Ehara from bamboo; types in Biological Institute, Faculty of Education, Tottori University, Japan).

Stylophoronychus nakaoui: Meyer, 1987. *Republic of South Africa Department of Agriculture and Water Supply Entomology Memoir*, 69: 88 (Recombination).

Aponychus nakaoui: Rimando & Corpuz-Ramos, 1996. *The Philippine Entomologist*, 10: 12 (Recombination).

Sinotetranychus nakaoui: Bolland *et al.*, 1998. *World Catalogue of the Spider Mite Family (Acari: Tetranychidae)*: 174 (Recombination; host; distribution).

Notes. This species is only known from Thailand. Ehara and Wongsiri (1975) provided a detailed description of this species, including leg chaetotaxy.

***Stylophoronychus vannus* (Rimando)**

Aponychus vannus Rimando, 1968. *The Philippine Entomologist*, 1: 8 (Holotype female, collected by P. de Guzman from variegated *Bambusa* sp., 25 I 1967, Laguna, Philippines; 18 female and 45 male paratypes same locality, host and date; all type specimens in Department of Entomology, University of Philippine, Laguna).

Stylophoronychus vannus: Meyer, 1987. *Republic of South Africa Department of Agriculture and Water Supply Entomology Memoir*, 69: 88 (Recombination).

Sinotetranychus vannus: Bolland *et al.*, 1998. *World Catalogue of the Spider Mite Family (Acari: Tetranychidae)*: 174 (Recombination; host; distribution).

Notes. This species is only known from the Philippines with a brief description by Rimando (1968); leg chaetotaxy was not studied.

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Abstract in Chinese

**突爪螨属 *Stylophoronychus* Prasad 分类学考证
附巴格突爪螨 *S. baghensis* 为害福建毛竹新记录
(蜱螨亚纲: 叶螨科)**

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摘要: 本文回顾突爪螨属 *Stylophoronychus* Prasad, 1975 和华叶螨属 *Sinotetranychus* Ma & Yuan, 1980 存在同名, 前者优先, 新结合如下: 广州突爪螨 *Stylophoronychus guangzhouensis* (Ma & Yuan), 岛屿突爪螨 *Stylophoronychus insularis* (Flechtmann), 和巴格突爪螨 *Stylophoronychus baghensis* (Prasad), 后者采自毛竹, 为福建省新纪录, 附形态学信息, 也提供突爪螨属 6 个已知种检索表。

关键词: 叶螨科, 突爪螨属, 华叶螨属, 分类学, 毛竹

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