

## Mites of *Schizotetranychus* (Acari: Tetranychidae) from moso bamboo in Fujian, China

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### Abstract

Three species of the genus *Schizotetranychus* (Acari: Tetranychidae) are recorded and described from the leaves of the moso bamboo (*Phyllostachys pubescens*) in Fujian, China. They are *Schizotetranychus nanjingensis* Ma & Yuan, *S. bambusae* Reck and *S. tenuinidus* Zhang & Zhang **sp. nov.** A key for separating the females of these three species is given. Notes on the biology of these mites are also provided.

**Key words:** Spider mites, *Schizotetranychus*, new species, bamboo, China

### Introduction

In southern China, the moso bamboo (*Phyllostachys pubescens*) is a forestry crop. Each year, the forestry industry based on this crop in China generates 17 billion Yuan and earns US\$500 million from export. The bamboo forests in Fujian province, the largest bamboo growing area in China, have recently been damaged by phytophagous mites to various extents (Zhang *et al.* 1998). Extensive surveys were carried out during 1997-1999, and collected mites of different families were identified. This paper reports on three species of *Schizotetranychus* Trägårdh collected from the leaves of the moso bamboo.

### Materials and methods

Specimens of *Schizotetranychus* were collected from leaves of the moso bamboo in 1997 and 1998 in various forests in Fujian, China. Branches were cut and stored in plastic bags during transport to the laboratory. Leaves were then examined under a dissecting microscope. Mites were mounted in Hoyer's medium on slides and dried in an oven at 60°C for two weeks. The specimens were studied using a Nikon E800 microscope. Line drawings were prepared with the aid of a drawing tube attached to the microscope. Measurements were made in micrometers ( $\mu\text{m}$ ). Terminology follows that of Lindquist (1985).

### Notes on *Schizotetranychus* from bamboo in China

A total of 134 species of *Schizotetranychus* have been described from around the world, 21 of them from China, including Hong Kong and Taiwan (Bolland *et al.* 1998). A few Chinese species were reported generally from Bambusaceae with no generic or specific information of the hosts: *S. bambusae* Reck from Beijing, Shaanxi, Jiangsu, Guangxi and Guangdong (Wang 1981; Ma *et al.* 1984), *S. emaiensis* Wang from Sichuan, *S. minutes* Wang from Fujian, and *S. elongatus* Wang & Cui from Yunnan (Wang 1983; Wang *et al.* 1985; Wang & Cui 1991). *S. nanjinensis* is the only species specifically reported to be present on the moso bamboo and other bamboo plants (Yu & Shi 1991). *S. celarius* (Banks) has been recorded on various species of bamboo and reported to occur in Fujian and other provinces (Wang 1981; Wang *et al.* 1985; Wang *et al.* 1994). Whether the specimens studied by Wang (1981) are truly *S. celarius* cannot be determined until we have seen them, but our study of type specimens of *S. celarius* and specimens studied by Pritchard and Baker (1955) from the United States National Museum showed that data provided in Wang (1981) indicate that these specimens differ from *S. celarius* by (1) the lack of a solenidion on tibia II (Wang 1981 herself noted this difference), and (2) subequal distances of  $c_1-c_1$ ,  $d_1-d_1$  and  $e_1-e_1$ . In *S. celarius*, tibia I has one solenidion and the distances of setae  $c_1-c_1$ ,  $d_1-d_1$  and  $e_1-e_1$  are succes-

sively smaller. Whether the specimens studied by Wang *et al.* (1994) are *S. celarius* can also not be confirmed without studying them. These specimens clearly differ from those of Wang (1981) by the distance  $e_1-e_1$ . However, no details of the specimens studied by Wang *et al.* (1994) are known to determine whether they are *S. celarius* or *S. tenuinidus* **sp. nov.**

### ***Schizotetranychus bambusae* Reck**

*Schizotetranychus bambusae* Reck, 1941: 449-453; Pritchard & Baker, 1955: 251; Wang, 1981: 65; Ma *et al.* 1984: 126.

*Female.* Body 365 long including gnathosoma, 205 wide. Setae  $c_1$ ,  $d_1$ ,  $e_1$  and  $f_1$  subequal (about 80) and longer than distances between their bases. Terminal eupathidium of palptarsus ( $su\zeta$ ) cylindrical with rounded tip, twice as long (6) as wide (3); two lateral eupathidia ( $ul'\zeta$  and  $ul''\zeta$ ), 7 and 9 long respectively; solenidion ( $\omega$ ) 3 long, about 4 times as long as wide. Numbers of normal setae on leg segments: trochanters 1-1-1-1; femora 10-7-4-2; genua 5-5-4-4; tibiae 9-8-6-7; tarsi 13-11-10-10. Numbers of solenidia on leg segments: tibiae 1-0-0-0; tarsi 3-2-1-1. Numbers of eupathidia on leg segments: tarsi 3-3-0-0.

*Male.* Body 300 long including gnathosoma, 155 wide. Dorsal setae  $c_1$ ,  $d_1$ ,  $e_1$  and  $f_1$  subequal (about 60) and longer than distances between their own bases. Terminal eupathidium of palptarsus ( $su\zeta$ ) conical, 3 long and 1 in diameter at base; two lateral eupathidia ( $ul'\zeta$  and  $ul''\zeta$ ), 7 and 8 long respectively; solenidion ( $\omega$ ) 2 long, about 3 times as long as wide. Numbers of normal setae on leg segments: trochanters 1-1-1-1; femora 10-7-4-2; genua 5-5-4-4; tibiae 9-8-6-7; tarsi 12-11-10-10. Numbers of solenidia on leg segments: tibiae 3-0-0-0; tarsi 5-2-1-1. Numbers of eupathidia on leg segments: tarsi 3-3-0-0. Aedeagus broad basally, gradually curved dorsally with a blunt tip.

*Materials examined:* 3 VII 1997, 1 male and 1 female, Hongtian, Yongan County, Fujian, China, Y.-X. Zhang, 18 VII 1997. One female, Shangping, Yongan, Fujian., China, Y.-X. Zhang.

*Remarks.* Wang (1981) recorded this species on bamboo in Beijing, Shaanxi, Jiangsu and Guangxi. Ma *et al.* (1984) recorded it from bamboos in Hainan and Guangxi. Wang *et al.* (1994) also found it in Anhui. The descriptions of Wang (1981) and Ma *et al.* (1984) are similar except for tibia I of the male: Wang (1981) noted 9 setae and 3 solenidia on the segment, whereas Ma *et al.* (1984) noted 9 setae and 4 solenidia. Our result agrees with that of Wang (1981).

*Biology.* Wang (1981) noted that this species sometimes causes leaves to fall from seriously damaged bamboo, especially during dry seasons. Sun *et al.* (1997) reported that this species caused serious damages to bamboo in Shandong, and described the biology of this species, especially the effects of temperature on development and reproduction. In Fujian, this species is concentrated in a few locations and can cause some damage. In Zhouning county, a large proportion of leaves were infested, and many leaves were covered with brownish spots, which resulted from mite feeding. Mite numbers varied between 35 to 133 per leaf and damage index reached III or IV on a scale of 0 to V (Table 1).

**TABLE 1.** Damage index (DI on a scale of 0 to V) and density (per leaf) of *Schizotetranychus bambusae* on *Phyllostachys pubescens* in Zhouning county, Fujian, China (7 July 1997).

Leaf	DI	Egg	Larva	Nymph	Female	Male	Total
1	IV	20	8	0	7	0	35
2	IV	27	11	0	11	0	49
3	IV	25	11	7	5	0	48
4	III	87	15	21	15	5	133
5	IV	25	11	17	8	1	62
6	III	30	5	5	1	0	41
7	III	11	7	5	8	1	42
8	III	30	5	7	19	5	66
9	III	27	11	2	21	5	66
10	III	24	20	5	1	1	51

Although the data in the above table are limited, the following observations can be made about *S. bambusae*: (1) leaves were initially colonized by one or several females and males developed from eggs laid by this first generation of females (comparing leaves 1-2 without males and nymphs and other leaves with nymphs and/or males) and (2) several males can share one leaf (leaves 4, 8 and 9). Leaves with only a single male (leaves 5, 7 and 10) might indicate that some males were still immature.

*Schizotetranychus bambusae* females spin very loose webbings, which are quite different from the tight silky webbings produced by *S. nanjingensis*. This loose webbing provides less protection for eggs and other immatures than the webnests built by *S. nanjingensis*.

### ***Schizotetranychus nanjingensis* Ma & Yuan**

*Schizotetranychus nanjingensis* Ma & Yuan, 1980: 42; Ma *et al.*, 1984: 125.

*Female.* Body 500-620 long including gnathosoma, 240-310 wide. Setae  $c_1$  less than  $1/3$  of  $d_1$ . Distance  $d_1-d_1$  equal to or less than  $e_1-e_1$ . Comparisons of lengths of dorsal setae for specimens from different locations in Fujian are presented in Table 2, and distances of setal bases in Table 3. Terminal eupathidium of palptarsus ( $su\zeta$ ) conical, 4 long and 3 diameter at base; two lateral eupathidia ( $ul'\zeta$  and  $ul''\zeta$ ) 5 long; solenidion ( $\omega$ ) 4 long, about 3 times as long as wide. Numbers of normal setae on leg segments: trochanters 1-1-1-1; femora 9-5-3-3; genua 5-4-3-3; tibiae 7-5-5-5; tarsi 9-7-8-8. Numbers of solenidia on leg segments: tibiae 1-0-0-0; tarsi 3-1-1-1. Numbers of eupathidia on leg segments: tarsi 3-3-0-0.

*Male.* Body 410 long including gnathosoma, 210 wide. Terminal eupathidium of palptarsus ( $su\zeta$ ) conical, 2.5 long and 2.5 in diameter at base; 2 lateral eupathidia ( $ul'\zeta$  and  $ul''\zeta$ ), 5 long; solenidion ( $\omega$ ) 4 long, about 3 times as long as wide. Numbers of normal setae on leg segments: trochanters 1-1-1-1; femora 9-5-3-3; genua 5-4-3-3; tibiae 7-5-5-5; tarsi 9-7-8-8. Numbers of solenidia on leg segments: tibiae 2-0-0-0; tarsi 4-2-1-1. Numbers of eupathidia on leg segments: tarsi 3-3-0-0.

Aedeagus gradually narrowing and slightly bent distally to form a sigmoid shape.

**TABLE 2.** *Schizotetranychus nanjingensis* Ma & Yuan. Comparisons of dorsal setal lengths in specimens from Fujian Province, China.

Location	$c_1$	$c_2$	$c_3$	$d_1$	$e_1$	$f_1$
Shenqin, Yongan	36	42-52	90	132-138	96-100	48-58
Ansha, Yongan	36	50	88	130	96	60
Lingtou, Fuzhou	34-40	44-54	100-110	122-130	92-100	60-62
Shibi, Ninghua	38-40	50-56	90-100	126-136	98-104	56-68
Chankang, Nanping	36-46	52-60	92-106	140-142	102-112	60-68
Chimen, Nanping	36	44	88	128	100	60
Dahu, Minhou	40	55	96	124	100	64
Xiaochi, Rongyan	32-36	40-46	110	124-134	100-104	60
Pengkou, Liancheng	40	44	110-112	120-136	106-108	60-64
Lanxia, Sunchang	44	50	106	130	102	?
Baziqiao, Youxi	40	52	106	142	112	68
Nanjing Jiansu*	35	47		143		

\*Ma *et al.* (1984)

**TABLE 3.** *Schizotetranychus nanjingensis* Ma & Yuan. Comparisons of dorsal setal distances in specimens from Fujian Province, China

Location	$c_1-c_1$	$d_1-d_1$	$e_1-e_1$	$f_1-f_1$
Shenqin, Yongan	130-143	106-112	114-120	58-64
Ansha, Yongan	120	110	112	56
Lingtou, Fuzhou	122-132	112-114	118-124	63-72
Shibi, Ninghua	132-140	110-118	116-124	60-70
Chankang, Nanping	132-138	108-120	120-128	58-64
Chimen, Nanping	126	104	106	56
Dahu, Minhou	118	116	126	66
Xiaochi, Rongyan	132-134	112-120	114-124	60-62
Pengkou, Liancheng	134-146	114-124	120-124	64
Lanxia, Sunchang	140	120	128	?
Baziqiao, Youxi	148	117	118	61

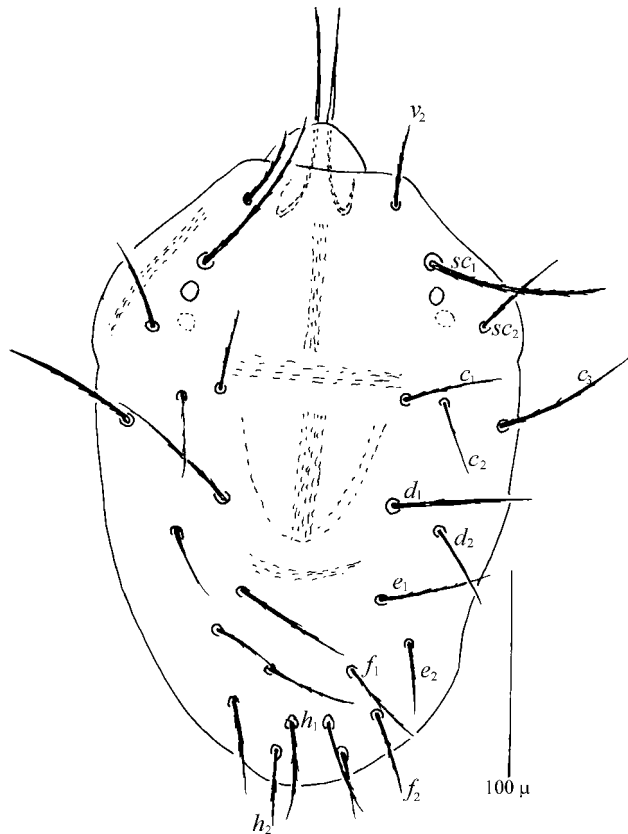
*Remarks.* This species was first described from bamboo leaves in Nanjing, China (Ma & Yuan 1980). Ma *et al.* (1984) provided a more detailed description of males and females. Yu and Shi (1991) recorded this species from the moso bamboo in Zhejiang, China and noted that it frequently caused damage to the bamboo. In Fujian, this species is a major pest on the moso bamboo. It is much more common and widespread than other species of *Schizotetranychus*.

*Materials examined:* Specimens examined: 50 females, Pengkou, Liancheng, Fujian, China, J.-W. Fu, 8 II 1998; 5 females, Lanxia, Sunchang, Fujian, China, collected by Q.-Y. Liu, 14 IV 1998; 10 females, Changkeng, Nanping, Fujian, China, 27 VIII 1998, Y.-X. Zhang; 3 females, Xibing, Fuan, Fujian, China, Q.-Y. Liu, 16 XII 1997; 2 females, Lianhu, Yongcun, Fujian, China, 8 I 1998; 1 female, Jianyang, Jianou, Fujian, China, Y.-X. Zhang, 26 IX 1997; 5 females, Nanya, Jianou, Fujian, China, Y.-X. Zhang, 21 VII 1997; 4 females, Bazhiqiao, Youxi, Fujian, China, Q.-Y. Liu, 20 XII 1996; 1 female, Shengqing, Yongan, Fujian, China, Y.-X. Zhang, 20 VIII 1997, 3 females and 1 male 30 X 1998; 1 female, Hongtian, Yongan, Fujian, China, 18 VII 1997, 2 females 20 VIII 1997 & 2 females 26 IX 1998, all by Y.-X. Zhang; 1 deutonymph, Xiaotao, Yongan, Fujian, China, Y.-X. Zhang, 4 X 1997; 1 female & 1 deutonymph, Dahu, Minhou, Fujian, China, Y.-X. Zhang, 24 X 1996; 10 females, Guiyang, Lingtuo, Fuzhou, Fujian, China, Y.-X. Zhang, 17 X 1997; 8 females, Xiaochi, Longyan Fujian, China, Y.-X. Zhang, 4 X 1997.

*Biology.* Yu and Shi (1991) gave a preliminary account of the life history and biology of this species in Zhejiang province. Zhang *et al.* (1999) gave more biology data on this species in Fujian, and more data on the ecology and control of this species in Fujian will be presented in forthcoming papers.

***Schizotetranychus tenuinidus* Zhang & Zhang sp. nov.**  
**(Figures 1-6)**

*Female.* Body length including gnathosoma 490-540. Idiosoma 360-370 long, 220-270 wide. Colour in life greenish-yellow.

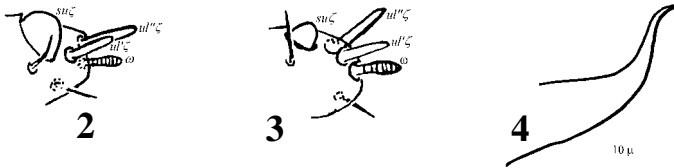


**FIGURE 1.** *Schizotetranychus tenuinidus* Zhang & Zhang **sp.nov.** (female). Dorsal view of idiosoma.

Prodorsal striae longitudinal medially. Lengths of prodorsal setae:  $v_2$  39-45,  $sc_1$  83-99,  $sc_2$  40-54. Distance between setae:  $v_2$ - $v_2$  80-90,  $sc_1$ - $sc_1$  123-135. Peritreme slightly expanded distally.

Hysterosoma with 10 pairs of setae dorsally ( $c_{1-3}$ ,  $d_{1-2}$ ,  $e_{1-2}$ ,  $f_{1-2}$ ,  $h_1$ ; Fig. 1). Para-anal setae  $h_{2-3}$  located ventrally. Setae  $d_1$  less than twice as long as setae  $c_1$ ; length of setae:  $c_1$  40-52,  $c_2$  36-40,  $c_3$  74-82,  $d_1$  70-86,  $d_2$  36-40,  $e_1$  64-76,  $e_2$  36-39,  $f_1$  44-50,  $f_2$  40-47,  $h_1$  46-55,  $h_2$  35-44,  $h_3$  36-39. All dorsal setae finely barbed. Distance  $d_1-d_1$  greater than  $e_1-e_1$ ; distances between setae:  $c_1-c_1$  92-108,  $d_1-d_1$  88-100,  $e_1-e_1$  68-80,  $f_1-f_1$  40-48. Striae similar to those in *S. celarius*. Anal setae (*ps*) 2 pairs, nude, subequal, 16-18 long. Genital setae 2 pairs;  $g_1$  and  $g_2$ , subequal, 20-25 long. Pregenital setae (*ag*) 20-28 long.

*Palptarsus*. Terminal eupathidium ( $su\zeta$ ) conical, 3 long and 3 in diameter at base. Two lateral eupathidia ( $ul'\zeta$  and  $ul''\zeta$ ), 4 and 5-6 long respectively. Solenidion ( $\omega$ ) 4 long, about 3 times as long as wide.



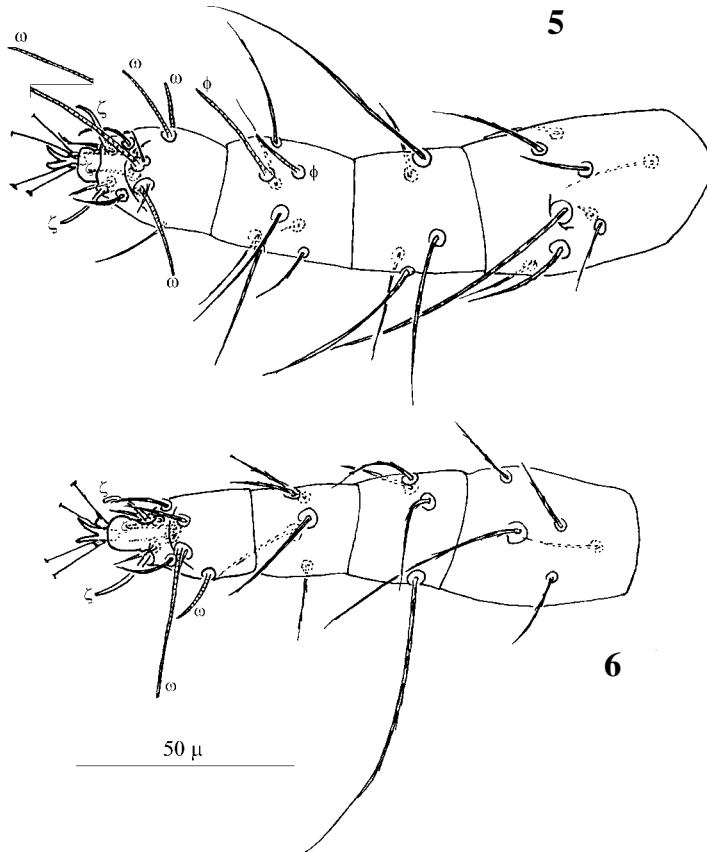
**FIGURES 2-4.** *Schizotetranychus tenuinidus* Zhang & Zhang **sp.nov.** 2, palptarsus of female; 3, palptarsus of male; 4, aedeagus of male, lateral view.

Numbers of normal setae on leg segments: trochanters 1-1-1-1; femora 8-5-3-3; genua 5-4-3-3; tibiae 7-5-5-5; tarsi 9-7-8-8. Numbers of solenidia on leg segments: tibiae 1-0-0-0; tarsi 3-2-1-1. Numbers of eupathidia on leg segments: tarsi 3-3-0-0.

Claw-like empodia without dorsal or ventral hairs.

*Male*. Body length including gnathosoma 390. Idiosoma 300 long, 200 wide.

Lengths of dorsal setae:  $v_2$  39,  $sc_1$  70,  $sc_2$  31,  $c_1$  33,  $c_2$  25,  $c_3$  53,  $d_1$  56,  $d_2$  40,  $e_1$  33,  $e_2$  30,  $f_1$  30,  $f_2$  30,  $h_1$  29,  $h_2$  20,  $h_3$  22. Setae  $sc_1$  twice as thick as setae  $v_2$  and  $sc_2$ . Distances between setae:  $v_2-v_2$  63,  $sc_1-sc_1$  88,  $c_1-c_1$  80,  $d_1-d_1$  60,  $e_1-e_1$  29. Peritreme terminally expanded.



**FIGURES 5-6.** *Schizotetranychus tenuinidus* Zhang & Zhang **sp.nov.** (male) 5, leg I; 6, leg II.

Anal setae (*ps*) 2 pairs, nude, 12 long. Genital setae 2 pairs, nude, 8 long. Pregential setae (*ag*) nude, 20 long. Aedeagus gradually narrowing and slightly bent distally to form a sigmoid shape.

*Palptarsus*. Terminal eupathidium ( $su\zeta$ ) conical, 2 long and 2 diameter at base. Two lateral eupathidia ( $ul'\zeta$  and  $ul''\zeta$ ) 3 and 5 long respectively. Solenidion ( $\omega$ ) 3 long, about 3 times as long as wide.

Numbers of normal setae on leg segments: trochanters 1-1-1-1; femora 9-5-3-3; genua 5-4-3-3; tibiae 7-5-5-5; tarsi 9-7-8-8. Numbers of solenidia on leg segments: tibiae 2-0-0-0; tarsi 4-2-1-1. Numbers of eupathidia on leg segments: tarsi 3-3-0-0.

Each prong of claw-like empodia without dorsal or ventral hairs.

*Etymology*: Named for its slender, narrow (*tenui-*) nest (*nidus*).

*Remarks*: This species is most similar to *S. celarius*, but can be easily distinguished from the latter because it has 3 setae on genu IV (*S. celarius* has 2). The females of this species can also be separated from those of *S. celarius* by the relative lengths of setae in comparison with the distances between their bases:  $c_1$  is near 1/2 of  $c_1-c_1$  in the new species whereas  $c_1$  is about 1/3 of  $c_1-c_1$  in *S. celarius*. The ratio between  $c_1-c_1$  and  $v_2-v_2$  is about 1.2 in the new species, but it is about 1.5 in *S. celarius*.

*Materials examined*: Holotype female (ZQZ971017-1b), Q.-Y Liu, 17 X 1997 on bamboo leaves in Nanyang, Souning, Fujian China. Paratype male (ZQZ971017-1a) and four females, same data as holotype. Other materials examined: 4 females, 1 male and 1 nymph (ZQZ970926-1), Dahu, Yongan, Fujian, China; 3 females (ZQZ970428-2a,b,c), Shaowu, Fujian, China; 1 female (ZQZ971004-1a), Xiaotao, Yongan, Fujian, China; 3 females, Dingdang, Fangdao, Jianou, Fujian, China (ZQZ 9804281ab & 2ab). All types deposited in Institute of Plant Protection, Fujian Academy of Agricultural Sciences, Fuzhou, China.

*Biology*. This species is not as widely distributed as *S. nanjingensis*. It also does not cause obvious damage to bamboo in the three forests studied (Shaowu, Dingdang and Nanyang). The webnests are slender (length 7-15 mm and width 1-4 mm) and are much narrower than those of *S. nanjingensis* (which are normally subrectangular or sub-oval in shape, with average lengths of 4.5-7.5 mm and widths of 2.5-3.5 mm). A leaf might have up to five nests of *S. tenuinidus* and densities averaged 14 mites per leaf with a range of 5 to 61 in Shaowu, and 17.6 mites per leaf with a range of 0 to 48 in Nanyang. These were

much lower than the densities of *S. bambusae* (Table 1) and *S. nanjingensis* (Zhang *et al.* 1999). An average of 1.3 predatory mites per leaf was also found in samples from Shaowu. A fully developed nest that was not affected by predators usually contained some 20-30 individuals packed in a nest of 30-60 mm<sup>2</sup>.

It should be noted that samples from Shaowu and Nanyang revealed that each leaf on average had one male of *S. tenuinidus* and the male:female ratio was about 1: 1.6 (Table 4), whereas each leaf from Zhouning county had 1.8 males: 9.6 females of *S. bambusae*.

**TABLE 4.** Densities (per leaf) of *Schizotetranychus tenuinidus* Zhang & Zhang **sp. nov.** on *Phyllostachys pubescens* in Shaowu, Fujian (30 April 1997) and Nanyang, Shouning, Fujian (17 October 1997).

Leaf	Egg	Immature	Female	Male	Total
Shaowu					
1	5	2	0	0	7
2	2	4	0	0	6
3	2	2	0	0	4
4	2	4	1	0	7
5	2	2	1	0	5
6	8	2	1	1	12
7	37	10	8	6	61
8	5	10	2	1	18
9	2	2	1	1	6
<b>Average</b>	<b>7.2</b>	<b>4.2</b>	<b>1.6</b>	<b>1</b>	<b>14.0</b>
Nanyang					
1	20	12	2	1	35
2	0	0	0	0	0
3	0	0	0	0	0
4	4	4	2	1	11
5	0	0	0	0	0
6	0	0	0	0	0
7	14	16	2	4	36
8	13	29	2	1	45
9	22	17	7	2	48
10	0	0	1	0	1
<b>Average</b>	<b>7.3</b>	<b>7.8</b>	<b>1.6</b>	<b>0.9</b>	<b>17.6</b>

**Key to *Schizotetranychus* females from moso bamboo in Fujian**

- 1 First dorsocentral setae ( $c_1$ ) and second dorsocentral setae ( $d_1$ ) sub-equal in length; femora II-IV with 7-4-2 setae, respectively; genua II-III with 5-4 setae, respectively; tibiae II-IV with 8-6-7 setae, respectively; terminal eupathidium of palptarsus cylindrical, twice as long as wide (diameter)..... *bambusae* Reck
  - Setae  $c_1$  less than 1/3 of setae  $d_1$ ; femora II-IV with 5-3-3 setae, respectively; genua II-III with 4-3 setae, respectively; tibiae II-IV each with 5 setae; terminal eupathidium of palptarsus conical, not longer than wide (diameter at base)..... 2
- 2 Setae  $d_1$  more than three times as long as setae  $c_1$ ; distance  $d_1-d_1$  equal to or less than  $e_1-e_1$ ; femur I with 9 setae; tibia I without a solenidion proximal to coupled setae ..... *nanjingensis* Ma & Yuan
  - Setae  $d_1$  less than twice as long as setae  $c_1$ ; distance  $d_1-d_1$  greater than  $e_1-e_1$ ; femur I with 8 setae; tibia I with a solenidion proximal to coupled setae ..... *tenuinidus* Zhang & Zhang **sp. nov**

**Notes on chaetotaxy of *Schizotetranychus* from moso bamboo**

Variation in both the number and size of setae was observed among species and between sexes.

The number of dorsal setae on the idiosoma is consistent among the three species ( $v_2$ ,  $sc_1$ ,  $sc_2$ ,  $c_{1-3}$ ,  $d_{1-2}$ ,  $e_{1-2}$ ,  $f_{1-2}$ ,  $h_{1-3}$ ). The lengths of these setae and their relationships to the distances between setal bases, however, vary significantly among species and sexes, and are useful for separating species. Likewise, Saito (1990) showed the usefulness of the relative lengths and distances of dorsal idiosomal setae in separating three *Schizotetranychus* species of the “*celarius*” complex. Relative idiosomal setal lengths were also frequently used by Pritchard and Baker (1955) in their key to species of *Schizotetranychus*.

The shape and size of specialized setae on the palptarsi also vary among species and between sexes in the three species studied here. The terminal eupathidium ( $su\zeta$ ) was rod-like in *S. bambusae*, but it was cone-shaped in *S. nanjingensis* and *S. tenuinidus*; it is also conical in the so-called *S. celarius* complex (Pritchard & Baker 1955, Saito 1990). In all three species, seta  $su\zeta$  is much smaller in males than in females. Setae  $su\zeta$  in females are used to weave webbings; the reduction of its size is possibly correlated with the loss of this function in males.

Variation in leg chaetotaxy is evident on the femur-tarsus among species and between sexes. *S. bambusae* has more normal setae (femora 10-7-4-2; genua 5-5-4-4; tibiae 9-8-6-7; tarsi 12 or 13-11-10-10) than *S. nanjingensis* and *S. tenuinidus* (femora 9 or 8-5-3-3; genua 5-4-3-3; tibiae 7-5-5-5; tarsi 9-7-8-8). Female tibiae of all three species have 1-0-0-0 solenidia on legs I-IV; one more solenidium is added to tibiae I in males of *S. nanjingensis* and *tenuinidus*, whereas two more are added to tibiae I in male *S. bambusae*. Female tarsi of the three species have 3-2-1-1 solenidia on legs I-IV except for *S. nanjingensis* which has only one solenidium on tarsus II; one more solenidium is added to tarsi I in males of *S. nanjingensis* and *tenuinidus*, whereas two more are added to tarsi I in male *S. bambusae*; one more solenidium is added to tarsi II of *S. nanjingensis*. Eupathidial numbers on tarsi I-II are consistent (i.e. 3 per segment) in all three species studied.

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Abstract in Chinese

**福建毛竹上的裂爪螨  
(蜱螨亚纲：叶螨科)**

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**摘要:** 本文描述福建毛竹 3 种裂爪螨: 南京裂爪螨 *Schizotetranychus nanjingensis* Ma & Yuan, 竹裂爪螨 *S. bambusae* Reck 和 1 新种: 细巢裂爪螨 *S. tenuinidus* Zhang & Zhang sp. nov., 文中列出 3 种裂爪螨的雌螨检索表, 并提供这些螨的生物学信息。

**关键词:** 叶螨, 裂爪螨属, 新种, 毛竹, 中国

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