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THE TARDIGRADA FAUNA OF HAINAN ISLAND (ASIA: CHINA) WITH DESCRIPTIONS OF TWO NEW SPECIES

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***ABSTRACT.* –** A checklist of 26 species of tardigrades from Hainan Island is given in this paper. They belong to two classes, three orders, four families and fifteen genera. Twenty-three species of tardigrades were found in this present study. Twenty of them are new records for Hainan including seven new records for China and two new to science. *Calcarobiotus hainanensis*, new species, differs from *Calcarobiotus* (*Calcarobiotus*) *digeronimoi* Pilato, Binda & Lisi, 2004, by the presence of dentate lunulae on hind legs, first macroplacoid drop-shaped instead of rod-shaped and first macroplacoid shorter than the third. It differs from *Calcarobiotus imperialis* Abe & Takeda, 2000, mainly by lacking lateral spurs on claw basal portion of the hind legs. *Minibiotus wuzhishanensis*, new species, differs from species with two macroplacoids in the genus *Minibiotus* mainly by the cuticular sculpture on dorsal side of the body.

***KEY WORDS.* –** Tardigrada fauna, taxonomy, Macrobiotidae, *Calcarobiotus hainanensis*, new species, *Minibiotus wuzhishanensis*, new species, new record.

INTRODUCTION

Hainan Island, the second largest island of China, is located in the northern part of the South China Sea (Fig. 1). The investigation of tardigrade of Hainan Island has a long history. In 1937, Rahm reported *Minibiotus intermedius* (Plate, 1889) and *Diphascon* (*D.*) *chilenense* Plate, 1888, from Hainan Island, but without any detailed locality (Rahm, 1936–1937a). Another two species, *Macrobiotus terricola* Mihelčič, 1949, and *Isohypsibius tuberculatus* (Plate, 1889), were reported from Jianfengling, Hainan by Yang in 1999. In this paper authors report 23 species of Tardigrada (including seven new records for China and two species new to science). All species are listed here and a full list of all known species from Hainan Island is also given. The two new species are also described and figured in this paper.

MATERIALS AND METHODS

In the spring and early summer of 2007, the authors collected over three hundreds moss samples from two localities in Hainan Island (Mumianshan Mountain, Baisha County and Five-Finger Mountain) (Fig. 1). Among these mosses, twenty-three tardigrade species were found. All specimens of these species are deposited at the College of Life Sciences of Shaanxi Normal University, Xian, China.

Tardigrades were extracted from moss and mounted in Hoyer's medium. All measurements are given in micrometers (μm). Structures were measured only if their orientation was suitable. Body length was measured from the anterior end to the terminal end of the body not including of hind legs. Buccal tube length and level of the stylet support insertion point were measured according to Pilato (1981). The internal diameter of the buccal tube near the level of the stylet support insertion point were measured. Pt is the percent ratio of the length of a given structure to the length of the buccal tube measured from the mediodorsal transversal ridge of the buccal armature to the base of the pharyngeal apophyses (Pilato, 1981). Observation and measurements were made using phase contrast microscopy (PCM) (Leica DM LB2) and an eyepiece micrometer. Photomicrographs and drawings were made using PCM associated with a digital camera (Leica

DFC Twain 6.1.1). A full list of 26 species of tardigrades reported from Hainan Island is presented in Table 1.

Other abbreviations used in this paper are: PBL, primary branch length; SBL, secondary branch length.

TAXONOMIC ACCOUNTS

HETEROTARDIGRADA Marcus, 1927

ECHINISCOIDEA Marcus, 1927

ECHINISCIDAE Thulin, 1928

Pseudechiniscus Thulin, 1911

Pseudechiniscus facettalis Petersen, 1951

Material examined. – Two specimens were collected from Mumianshan Mountain, Baisha County.

Remarks. – This species was reported as a new record for China from Yunnan Province (Yang, 2002). This is the first report of this species from Hainan Island.

Pseudechiniscus suillus (Ehrenberg, 1853)

Material examined. – Nine specimens were collected from Five-Finger Mountain and Mumianshan Mountain, Baisha County.

Remarks. – This species was reported as a new record for China from Beijing Municipality, Hebei Province and Guangdong Province (Rahm, 1936–1937a, b; 1937). This is the first report of this species from Hainan Island.

Echiniscus Schultze, 1840

Echiniscus clevelandi Beasley, 1999

Material examined. – Ten specimens were collected from Five-Finger Mountain and Mumianshan Mountain, Baisha County.

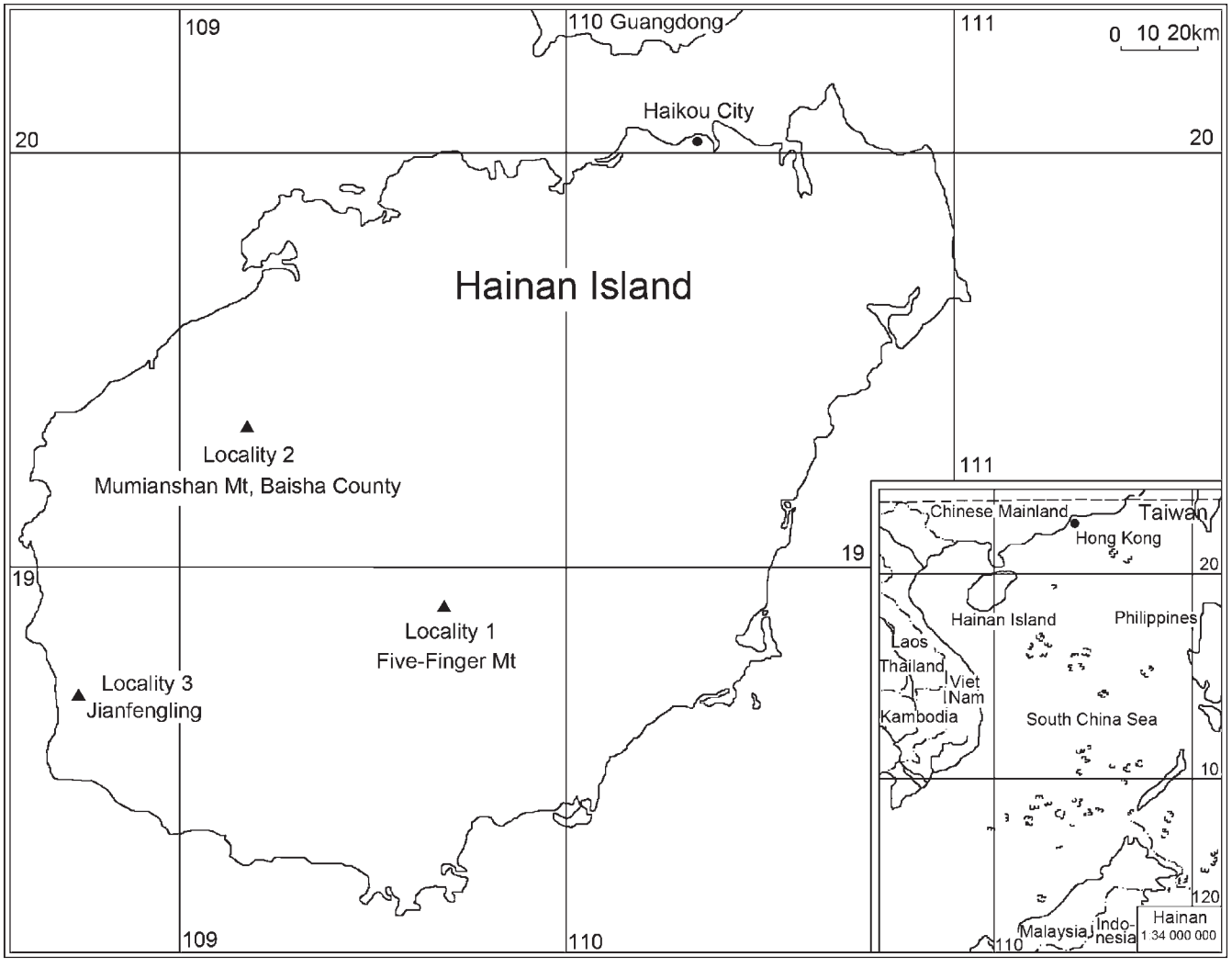


Fig. 1. Localities of collecting samples in Hainan Island, Southern China.

Table 1. Checklist of tardigrades from Hainan Island.

Taxa	Locality	Number
Heterotardigrada Marcus, 1927		
Arthrotardigrada Marcus, 1927		
Echiniscidae Thulin, 1928		
Echiniscus Schultze, 1840		
Echiniscus clevelandi Beasley, 1999*	1, 2	10
Echiniscus duboisi Richters, 1902**	2	5
Echiniscus limai da Cunha & do Nascimento Ribeiro, 1964*	1	2
Echiniscus perviridis Ramazzotti, 1959**	1	2
Echiniscus tessellatus Murray, 1910**	1, 2	31
Echiniscus wendti Richters, 1903*	1	3
Pseudechiniscus Thulin, 1911		
Pseudechiniscus suillus (Ehrenberg, 1853)*	1, 2	9
Pseudechiniscus facettalis Petersen, 1951*	2	2
Bryodelphax Thulin, 1928		
Bryodelphax sinensis Pilato, 1974*	1	3
Eutardigrada Richters 1926		
Apochela Schuster, Nelson, Grigarick & Christenberry, 1980		
Milnesiidae Ramazzotti, 1962		
Milnesium Doyère, 1840		
Mil. katarzynae Kaczmarek, Michalczyk & Beasley, 2004*	1, 2	3
Mil. tardigradum Doyère, 1840*	1, 2	5
Parachela Schuster, Nelson Grigarick & Christenberry, 1980		
Macrobiotidae Thulin, 1928		
Calcarobiotus (*Calcarobiotus*) Dastych, 1993		
Calcarobiotus digernimoi Pilato, Bind & Lisi, 2004**	1	3
Calcarobiotus (*Calcarobiotus*) *hainanensis*, new species	1	4
Macrobiotus Schultze, 1834		
Macrobiotus terricola Mihelčič, 1949	3***	?
Minibiotus Schuster, 1980		
Minibiotus fallax Pilato, Claxton & Binda, 1989**	1	1
Minibiotus intermedius (Plate, 1889)	1, 2	67
Minibiotus wuzhishanensis, new species	1, 2	5
Hypsibiidae Pilato, 1969		
Doryphoribius Pilato, 1969		
Doryphoribius flavus (Iharos, 1966)*	1, 2	19
Doryphoribius doryphorus (Binda & Pilato, 1969)**	1	2
Biserovus Guidetti & Pilato, 2002		
Biserovus xiae Li, Su & Yu, 2004*	1	4
Platicrista Pilato, 1987		
Platicrista angustata (Murray, 1905)*	1	7
Itaquascon De Barros, 1939		
Itaquascon umbellinae (De Barros, 1939)**	1	1
Hypsibius Ehrenberg, 1848		
Hypsibius cf. *dujardini* (Doyère, 1840)*	1	3
Isohypsibius Thulin, 1928		
Isohypsibius tuberculatus (Plate, 1889)	3***	?
Diphascon (*Diphascon*) Plate, 1889		
Diphascon (*Diphascon*) *chilenense* Plate, 1888	?	?
Diphascon (*Adropion*) Pilato, 1987		
Diphascon (*Adropion*) *scoticum* Murray, 1905*	1	2

*New record for Hainan Island, **New record for China, ***Data from Yang (1999).

***Remarks.* –** This species was reported as a new species from Yunnan Province (Beasley, 1999). Cirrus B was sometimes absent in specimens from Hainan but other characters correspond well to the original description. This is a first report of *E. clevelandi* beyond of its type locality.

Echiniscus duboisi Richters, 1902

***Material examined.* –** Five specimens were collected from Mumianshan Mountain, Baisha County.

***Remarks.* –** This is a new record for China.

Echiniscus limai da Cunha & do Nascimento Ribeiro, 1964

***Material examined.* –** Two specimens were collected from Five-Finger Mountain.

***Remarks.* –** This species was reported as a new record for China from Yunnan Province (Beasley & Cleveland, 1996). This is the first report of this species from Hainan Island.

Echiniscus perviridis Ramazzotti, 1959

***Material examined.* –** Two specimens were collected from Five-Finger Mountain.

***Remarks.* –** This species is a new record for China.

Echiniscus tessellatus Murray, 1910

***Material examined.* –** Thirty-one specimens were collected from Five-Finger Mountain and Mumianshan Mountain, Baisha County.

***Remarks.* –** This is a new record for China

Echiniscus wendti Richters, 1903

***Material examined.* –** Three specimens were collected from Five-Finger Mountain.

***Remarks.* –** This species was reported as a new record for China from Inner Mongolia (Rahm, 1936–1937a). This is the first report of this species from Hainan Island.

Bryodelphax Thulin, 1928

Bryodelphax sinensis Pilato, 1974

***Material examined.* –** Three specimens were collected from Five-Finger Mountain.

***Remarks.* –** This species was described from Guangdong Province by Pilato (1974). This is the first report of this species from Hainan Island.

EUTARDIGRADA Richters, 1926

APOCHELA Schuster, Nelson, Grigarick & Christenberry, 1980

MILNESIIDAE Ramazzotti, 1962

Milnesium Doyère, 1840

Milnesium katarzynae Kaczmarek, Michalczyk & Beasley, 2004

***Material examined.* –** Three specimens were collected from Five-Finger Mountain and Mumianshan Mountain, Baisha County.

***Remarks.* –** This species was reported as a new species from Kangding, Sichuan Province. This is a first report of *M. katarzynae* beyond of their type locality.

Milnesium tardigradum Doyère, 1840

***Material examined.* –** Five specimens were collected from Five-Finger Mountain and Mumianshan Mountain, Baisha County.

***Remarks.* –** This species was reported as a new record for China from Beijing Municipality, Shanghai Municipality, Tianjin Municipality, Hebei Province and Shanxi Province (Rahm, 1936–1937a, b; 1937). Next it was reported from Sichuan Province and Yunnan Province (Beasley & Cleveland, 1996) and from Sichuan Province again (Beasley et al., 2006). This is the first report of this species from Hainan Island.

PARACHELA Schuster, Nelson, Grigarick & Christenberry, 1980

MACROBIOTIDAE Thulin, 1928

Calcarobiotus Dastych, 1993

Calcarobiotus digernimoi Pilato, Binda & Lisi, 2004

***Material examined.* –** Three specimens were collected from Five-Finger Mountain.

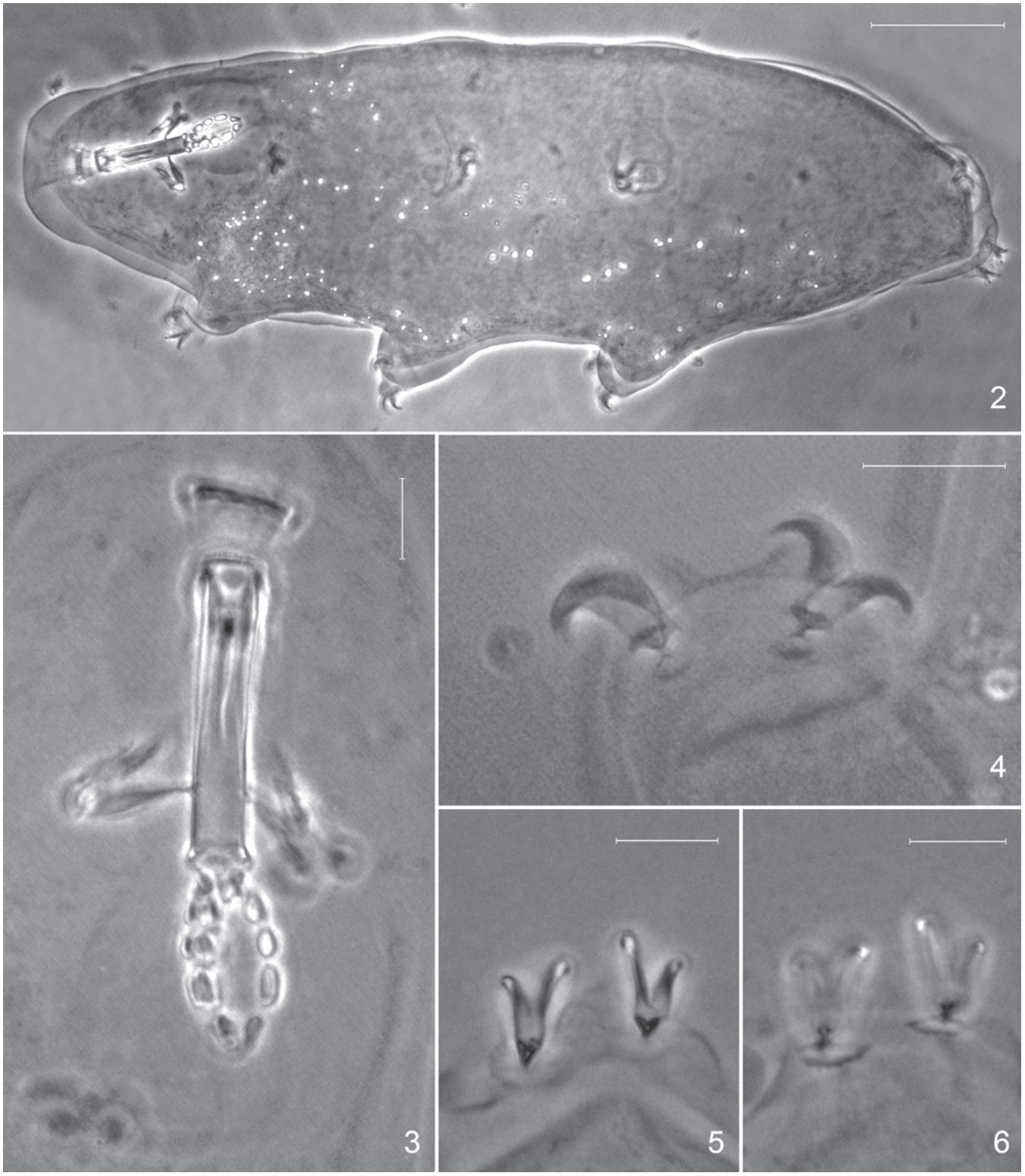
***Remarks.* –** This species is a new record for China.

Calcarobiotus hainanensis, new species
(Figs. 2–10, Table 2)

***Material examined.* –** Holotype (Slide number: Hi0704001) and 3 paratypes (Slide numbers: Hi0704001–004) from Five-Finger

Mountain (18°52.920'N 109°39.698'E) at 1,200 m a.s.l., coll. Xiao-Chen Li, Da-Yong Wang & Li-Zhi Wang, 16 Apr.2007. All specimens were mounted in Hoyer's medium.

***Description of holotype.* –** Colourless. Eyes present. Cuticle smooth without pores (Fig. 2). Bucco-pharyngeal apparatus of *Macrobiotus* type (Figs. 3, 8). Buccal tube with well-developed bend in anterior portion. Mouth antero-ventral with 10 peribuccal lamellae. Oral cavity armature well developed and composed of three bands of teeth. First band of teeth near the peribuccal lamellae in irregular granules. Second band of teeth in shape of a row of small ridges parallel to the main axis of the buccal tube. Third band of teeth in transversal crests. Pharyngeal bulb spherical (Table 2) with apophyses,



Figs. 2–6. *Calcarobiotus hainanensis*, new species (holotype): 2, habitus; 3, buccal apparatus; 4, claws on third pair of legs; 5, claws on fourth pair of legs focused to show the branches; 6, claws on fourth pair of legs focused to show the dentate lunules. Fig. 2: scale bar = 50μm; Figs. 3–6: scale bars = 10 μm.

Table 2. Measurements of *Calcarobiotus hainanensis*, new species.

Character	Paratype 1 Hi0704002		Holotype Hi0704001		Paratype 2 Hi0704003		Paratype 3 Hi0704004	
	μm	pt	μm	pt	μm	pt	μm	pt
Body length	370.0		360.0		310.0		280.0	
Buccal tube length	36.4		36.4		36.4		28.6	
Buccal tube width	5.2	14.29	7.3	20.05	5.2	14.29	4.4	15.38
Stylet support insertion point	28.6	78.57	28.1	77.14	28.6	78.57	23.4	81.82
First macroplacoid length	4.9	13.46	3.4	9.34	3.4	9.34	2.9	10.14
Second macroplacoid length	3.1	8.52	2.6	7.14	2.6	7.14	2.3	8.04
Third macroplacoid length	5.2	14.29	4.4	12.09	4.9	13.46	3.9	13.64
Macroplacoid row length	15.6	42.86	13.0	35.71	14.3	39.29	11.7	40.91
Microplacoid length	5.2	14.29	4.2	11.54	4.2	11.54	3.4	11.89
Placoid row length	21.6	59.29	20.3	55.71	19.5	53.57	15.6	54.55
Pharyngeal bulb length	41.6	114.29	36.4	100.0	?	?	?	?
Pharyngeal bulb width	41.6	114.29	36.4	100.0	?	?	?	?
Leg 1 external claw PBL	8.8	24.18	10.4	28.57	?	?	?	?
Leg 1 external claw SBL	?	?	?	?	?	?	?	?
Leg 1 internal claw PBL	?	?	?	?	?	?	?	?
Leg 1 internal claw SBL	?	?	?	?	?	?	?	?
Leg 2 external claw PBL	11.7	32.14	10.4	28.57	10.4	28.57	7.8	27.27
Leg 2 external claw SBL	?	?	?	?	?	?	7.8	27.27
Leg 2 internal claw PBL	10.4	28.57	?	?	?	?	?	?
Leg 2 internal claw SBL	10.4	28.57	?	?	?	?	?	?
Leg 3 external claw PBL	11.7	32.14	?	?	?	?	7.8	27.27
Leg 3 external claw SBL	?	?	?	?	?	?	?	?
Leg 3 internal claw PBL	10.4	28.57	10.4	28.57	?	?	?	?
Leg 3 internal claw SBL	10.4	28.57	10.4	28.57	?	?	?	?
Hind leg posterior claw PBL	?	?	10.4	28.57	10.4	28.57	8.3	29.02
Hind leg posterior claw SBL	?	?	?	?	?	?	?	?
Hind leg anterior claw PBL	?	?	10.4	28.57	?	?	?	?
Hind leg anterior claw SBL	?	?	?	?	?	?	?	?

Abbreviations: PBL, primary branch length; SBL, secondary branch length.

three macroplacoids and large microplacoid. Pharyngeal apophyses upside-down triangle-shaped. First macroplacoid, drop-shaped, longer than the second one, becomes narrower in anterior part; second oval; third rod-shaped, the longest, with subterminal constriction (Figs. 3, 8).

Claws of *Calcarobiotus* type (according to Guidetti & Bertolani, 2001), well-developed on all legs. Lateral spurs on claw basal portion present on the first three pair of legs. Primary branches with strong accessory points. Lunules smooth on first three pair of legs but distinctly dentate on leg IV (each lunulae with 7–8 teeth). Long transversal cuticular bars present below claws of legs I–III (Figs. 4–6, 9–10).

Eggs unknown.

Etymology. – The name *hainanensis* refers to Hainan Province where this species has been found.

Remarks. – Measurements of all found specimens are given in Table 2.

Differential diagnosis. – This new species belongs to the subgenus *Calcarobiotus*. It is similar to *Calcarobiotus* (*Calcarobiotus*) *digeronimoi* Pilato, Binda & Lisi, 2004, but differs from the latter by having dentate lunules of the claws on hind legs, by the first macroplacoid being drop-shaped instead of rod-shaped, by the first macroplacoid being shorter than the third, by larger body size, and by relatively shorter buccal tube length. It differs from *Calcarobiotus imperialis* Abe & Takeda, 2000, mainly by lacking the lateral spurs on claw basal portion of the hind legs, by longer third macroplacoid, and by rounded pharynx instead of elliptical.

Minibiotus Schuster, Nelson, Grigarick & Christenberry, 1980

Minibiotus fallax Pilato, Claxton & Binda, 1989

Material examined. – Only one specimen was collected from Five-Finger Mountain.

Remarks. **–** Our specimen corresponds perfect to the original description (Pilato et al., 1989) except for the lack of microplacoid thickening, but cuticular thickening present in its place. This species is a new record for China.

Minibiotus intermedius (Plate, 1889)

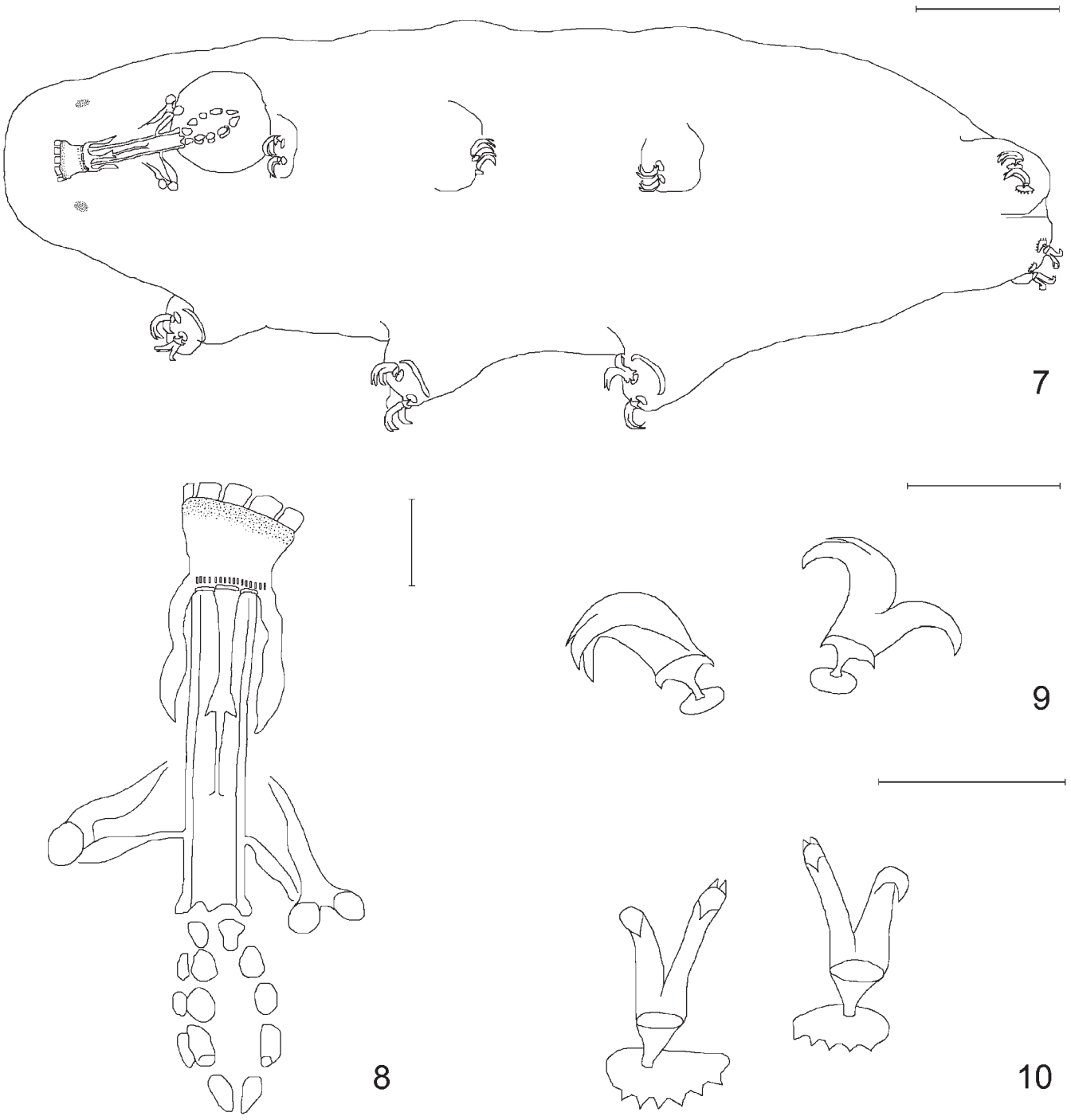
Material examined. **–** Sixty-seven specimens were collected from Five-Finger Mountain and Mumianshan Mountain, Baisha County.

Remarks. **–** This species was reported as a new record for China from Hainan Island and Hebei Province (Rahm, 1936–1937a; 1937). Next it was reported from Sichuan Province and Yunnan Province (Beasley et al., 2006).

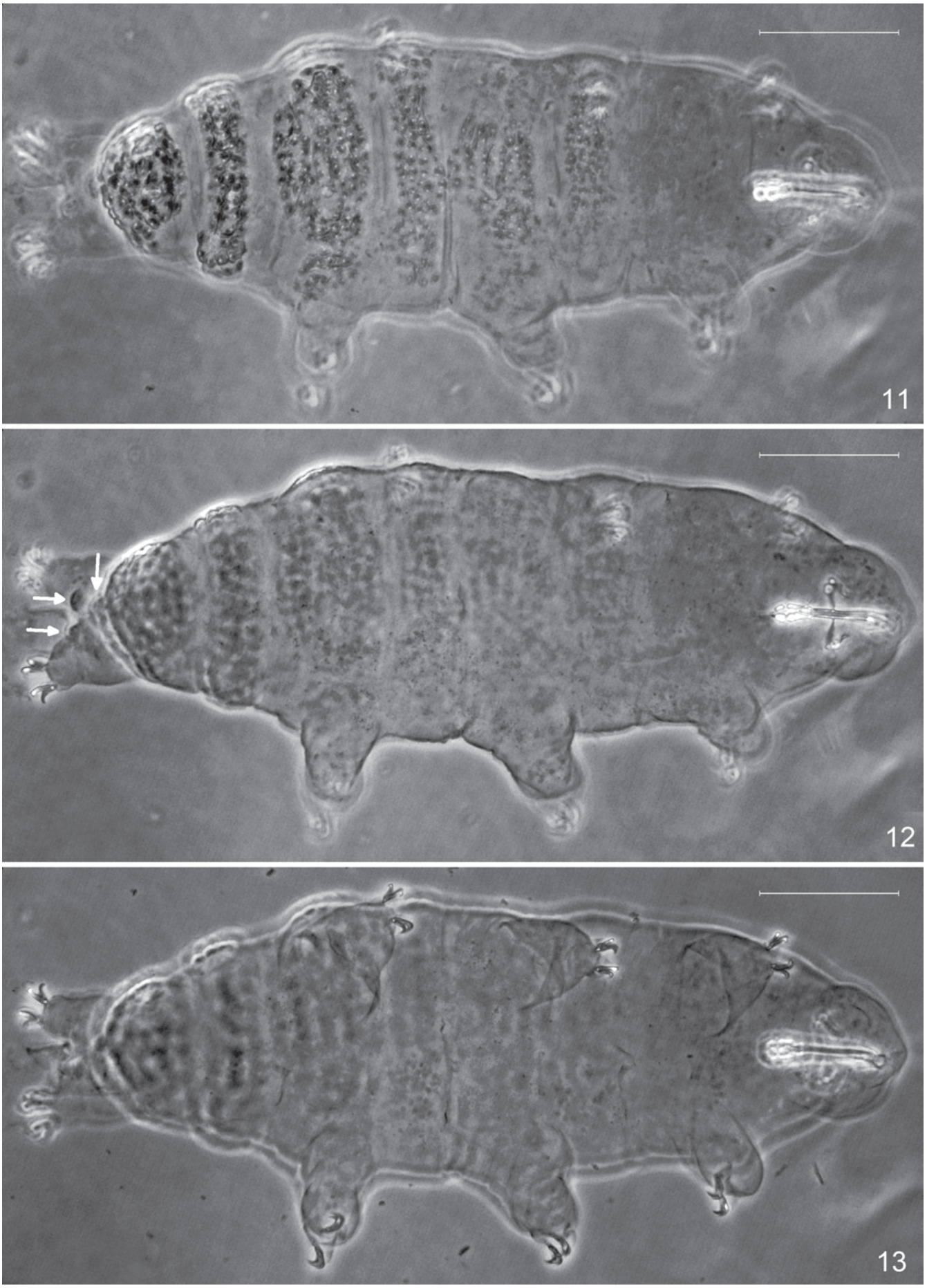
Minibiotus wuzhishanensis, new species

(Figs. 11–20, Table 3)

Material examined. **–** Holotype (Slide number: Hi0704040), 2 paratypes (Slide numbers: Hi0704050, Hi0704041) from Five-



Figs. 7–10. *Calcarobiotus hainanensis*, new species (holotype): 7, habitus; 8, buccal apparatus; 9, claws on third pair of legs; 10, claws on fourth pair of legs. Fig. 7: scale bar = 50μm; Figs. 8–10: scale bars = 10 μm.



Figs. 11–13. *Minibiotus wuzhishanensis*, new species (holotype): 11, habitus focused to show the cuticular sculpture; 12, habitus focused to show the gibbosities in terminal end of the body; 13, habitus focused to show the claws. Figs. 11–13: scale bars = 50 μm.

Table 3. Measurements of *Minibiotus wuzhishanensis*, new species.

Character	Hi0704050		Him0704001		Him0704002		Hi0704040		Hi0704041	
	µm	pt	µm	pt	µm	pt	µm	pt	µm	pt
Body length	210.0		270.0		280.0		300.0		320.0	
Buccal tube length	23.4		26.0		26.0		28.6		29.9	
Buccal tube width	2.1	8.97	2.3	8.85	2.1	8.08	2.6	9.09	2.6	8.7
Stylet support insertion point	15.6	66.67	16.9	65.0	15.6	60.0	20.0	70.0	20.8	69.57
First macroplacoid length	5.2	22.22	5.2	20.0	5.2	20.0	5.2	18.18	7.8	26.09
Second macroplacoid length	2.8	11.97	4.2	16.15	3.1	11.92	3.1	10.84	3.4	11.37
Macroplacoid row length	8.3	35.47	10.4	40.0	8.6	33.08	10.4	36.36	13.0	43.48
Microplacoid length			1.0	3.85	1.0	3.85	1.0	3.64	1.2	3.91
Placoid row length			11.7	45.0	9.9	38.0	11.7	40.91	14.6	48.7
Leg 1 external claw PBL	6.5	27.78	7.8	30.0	7.8	30.0	?	?	7.8	26.09
Leg 1 external claw SBL	?	?	5.7	21.92	6.5	25.0	?	?	?	?
Leg 1 internal claw PBL	?	?	?	?	?	?	7.8	27.27	7.8	26.09
Leg 1 internal claw SBL	?	?	?	?	?	?	7.3	25.52	?	?
Leg 2 external claw PBL	?	?	7.8	30.0	?	?	7.8	27.27	8.3	27.76
Leg 2 external claw SBL	?	?	6.5	25.0	?	?	7.3	25.52	?	?
Leg 2 internal claw PBL	?	?	?	?	7.8	30.0	?	?	?	?
Leg 2 internal claw SBL	?	?	?	?	6.5	25.0	?	?	?	?
Leg 3 external claw PBL	7.5	32.05	?	?	8.1	31.15	7.8	27.27	8.6	2 8.76
Leg 3 external claw SBL	6.5	27.78	?	?	7.3	28.08	7.3	25.52	?	?
Leg 3 internal claw PBL	?	?	8.3	31.92	?	?	?	?	?	?
Leg 3 internal claw SBL	?	?	7.3	28.08	?	?	?	?	?	?
Posterior claw 4 PBL	7.8	33.33	9.1	35.0	10.4	40.0	8.6	30.07	9.6	32.11
Posterior claw 4 SBL	5.2	22.22	7.8	30.0	8.6	33.08	7.3	25.52	7.8	26.09
Anterior claw 4 PBL	7.3	31.2	?	?	?	?	8.6	30.07	9.1	30.34
Anterior claw 4 SBL	5.2	22.22	?	?	?	?	7.3	25.52	7.5	25.08

Abbreviations: PBL, primary branch length; SBL, secondary branch length.

Finger Mountain (18°52.920'N 109°39.698'E) at 1,200 m a.s.l. Two additional specimens (Slide numbers: Him0704001, Him0704002) from Mumianshan Mountain (19°15'N 109°20'E) at 300 m a.s.l., coll. Xiao-Chen Li, Da-Yong Wang & Li-Zhi Wang, 20 Apr.2007. All specimens were mounted in Hoyer's medium.

***Description.* –** Colourless. Eyes present. Cuticular sculpture composed of many knob-shaped cuticular thickenings different in size and shape better-developed in the posterior part of the body (1.5–6.0 µm). Thickenings irregularly distributed and arranged in 7 transverse bands on dorsal and lateral side of the body. In some specimens, three short longitudinal smooth bands present on the posterior margin of the last band of the cuticular thickenings, making an appearance of four gibbosities along the posterior edge; while in other bands, two short longitudinal smooth bands present on dorsolateral sides of the bands, divide each band into three parts (Figs. 11, 17). Above of each hind leg, one gibbosite present. The third gibbosite present at the terminal end of the body (Fig. 12).

Bucco-pharyngeal apparatus of *Minibiotus* type with 10 peribuccal papillae, buccal tube rigid with ventral lamina. Buccal tube wide. Pharynx oval with apophyses and two rod-shaped macroplacoids. The first macroplacoid with middle constriction much longer than the second one. The first macroplacoid narrower at the anteiror part. The second macroplacoid with subterminal constriction. Microplacoid usually present but very small, sometimes absent, septulum absent (Figs. 14, 18).

Claws of *hufelandi* type. All claws with smooth lunules. Primary branches of all claws with well-developed accessory points. Cuticular bars absent (Figs. 13, 15–16, 19–20).

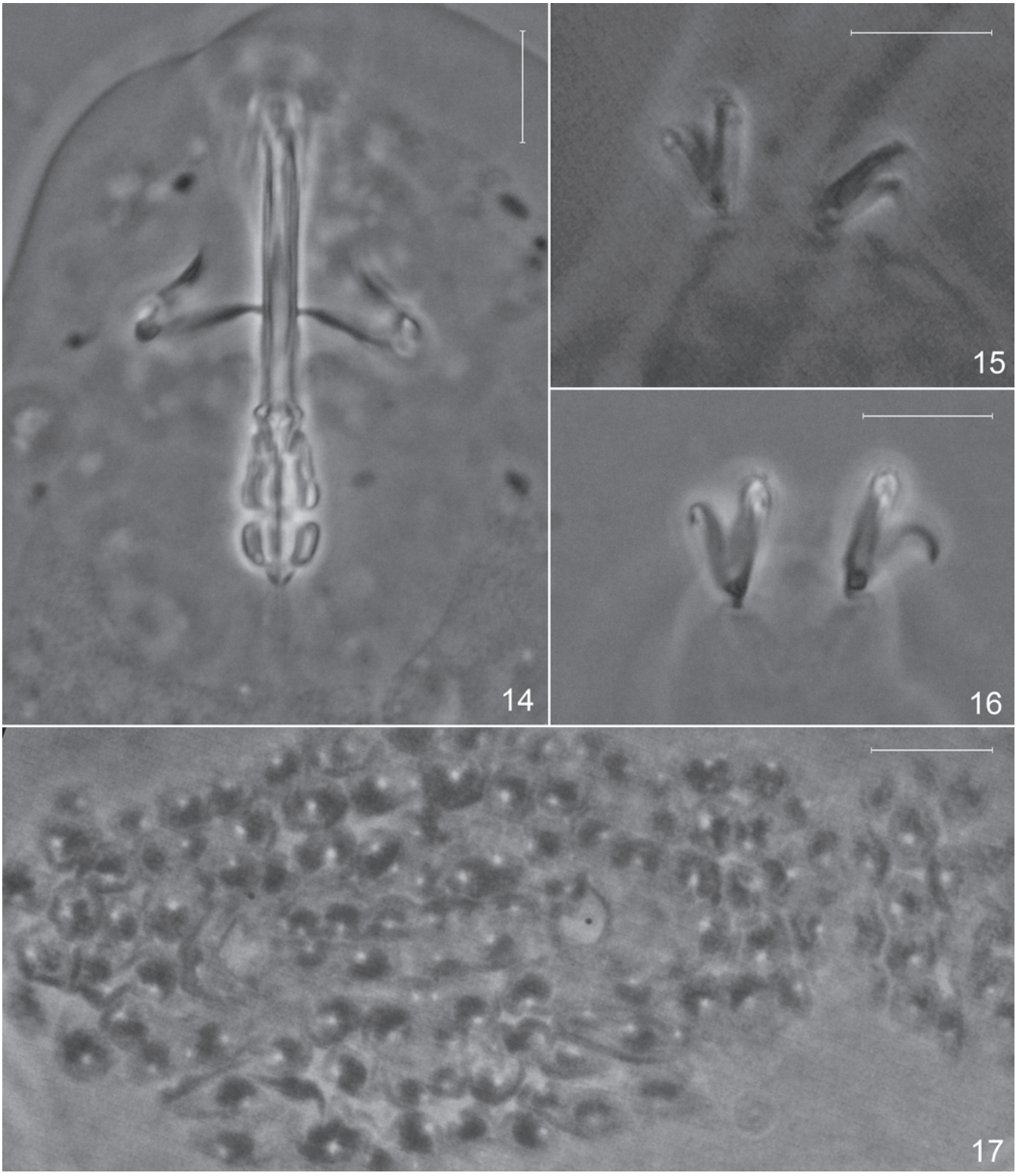
Eggs unknown.

***Etymology.* –** This species is named after the type locality (Five-Finger Mountain is spelled as wuzhishan in Chinese phonetic writing).

***Remarks.* –** Measurements of all found specimens are given in Table 3

***Differential diagnosis.* –** Up until now only three species of the genus *Minibiotus* with two macroplacoids have been described: *Minibiotus africanus* Binda & Pilato, 1995, *M. fallax* Pilato, Claxton & Binda, 1989, and *M. scopulus* Claxton, 1998. *Minibiotus wuzhishanensis*, new species, differs from *M. africanus* (Binda & Pilato, 1995) in having

cuticular thickenings on dorsal and lateral side of the body instead of little circular and a little bigger elliptical pearls on dorsal and ventral sides. This new species also differs from *Minibiotus africanus* by a wider buccal tube (buccal tube width of the holotype of *M. africanus* is 1.48 μm, while the average buccal tube width of the new species is 2.3 μm). This new species differs from *M. fallax* (Pilato et al., 1989) by: lacking of cuticular pores, pearls, gibbosities on dorsal side of the body, having cuticular thickenings on dorsal and lateral side of the body instead of gibbosities and having three gibbosities at posterior end of the body. The new species is smaller than *M. fallax* (The body length of the largest specimen of the new species is 320 μm, while the body length of *M. fallax* is up to 395 μm). *Minibiotus wuzhishanensis*,



Figs. 14–17. *Minibiotus wuzhishanensis*, new species: 14, buccal apparatus (paratype, slide number Hi0704041); 15, claws on the second pair of legs (holotype); 16, claws on the hind legs (paratype, slide number Hi0704041); 17, cuticular sculpture (holotype). Figs. 14–17 scale bars = 10 μm.

new species, differs from *M. scopulus* (Claxton, 1998) by having cuticle with knob-shaped thickenings and without pores. The new species is smaller in body size and shorter in buccal tube length than *M. scopulus* (The average body length of the new species is 276 µm, while 328.9 µm in *M. scopulus*; the average buccal tube length of the new species is 26.8 µm, while 30.9 µm in *M. scopulus*).

HYPSIBIIDAE Pilato, 1969

***Doryphoribius* Pilato, 1969**

***Doryphoribius flavus* (Iharos, 1966)**

***Material examined.* –** Nineteen specimens were collected from Five-Finger Mountain and Mumianshan Mountain, Baisha County.

***Remarks.* –** This species was reported as a new record for China from Guangdong Province (Pilato, 1974). It was also reported from Yunnan Province (Beasley et al., 2006). This is the first report of this species from Hainan Island.

***Doryphoribius doryphorus* (Binda & Pilato, 1969)**

***Material examined.* –** Two specimens were collected from Five-Finger Mountain.

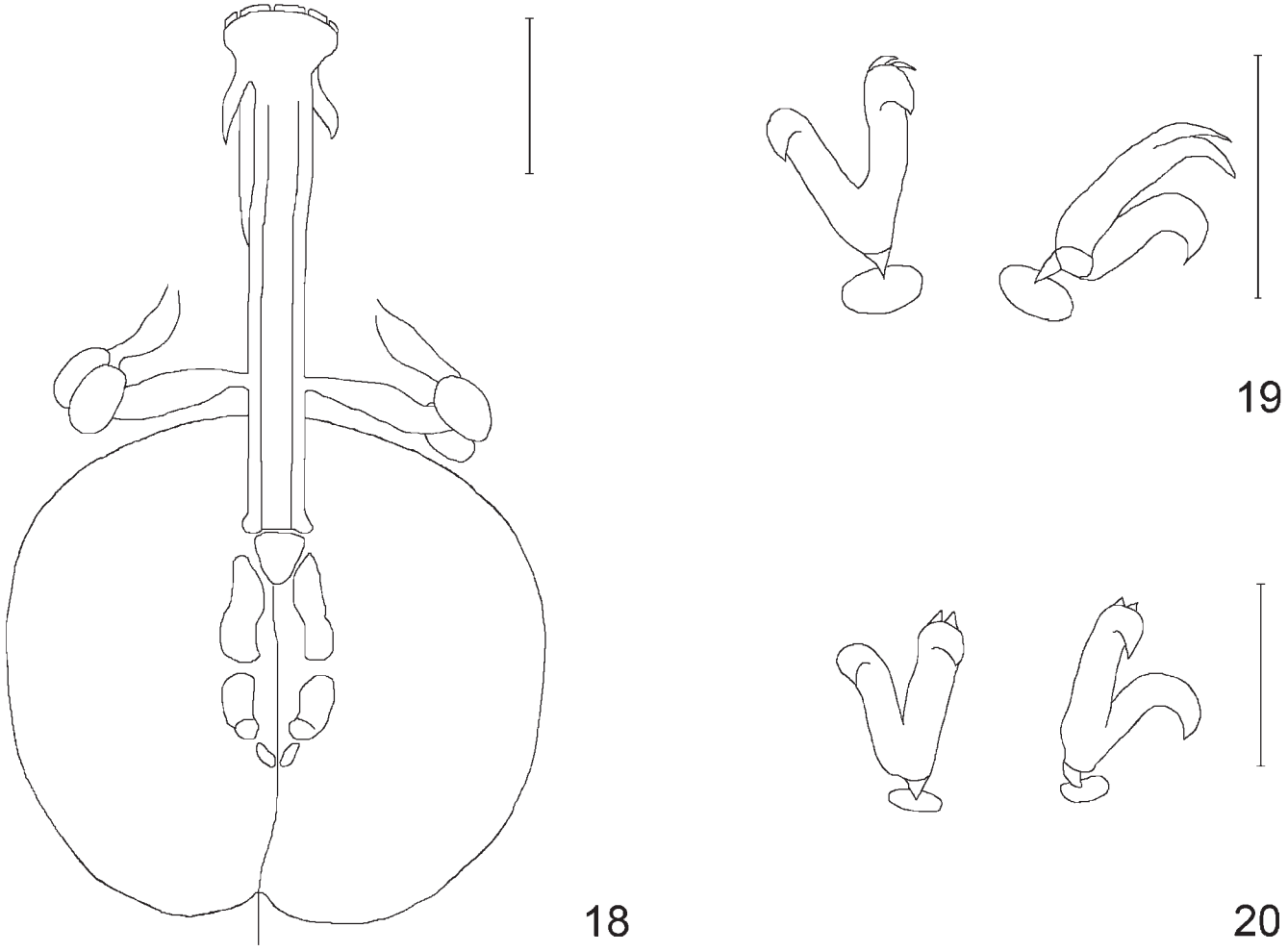
***Remarks.* –** This species is a new record for China.

***Biserovus* Guidetti & Pilato, 2003**

***Biserovus xiae* Li, Su & Yu, 2004**

***Material examined.* –** Four specimens were collected from Five-Finger Mountain.

***Remarks.* –** This species was described by the first author of this article based a single specimen from Zhejiang Province, China (Li et al., 2004). Four specimens were collected from Hainan Island, Hainan is the second locality of this species. The new specimens provide some new important characters for this species. A detailed redescription with photos and measurements of this species will be given in another paper.



Figs. 18–20. *Minibiotus wuzhishanensis*, new species: 18, buccal apparatus (paratype, slide number Hi0704041); 19, claws on the second pair of legs (holotype); 20, claws on the hind legs (paratype, slide number Hi0704041). Figs. 18–20 scale bars = 10 µm.

Platicrista Pilato, 1987

Platicrista angustata (Murray, 1905)

***Material examined.* –** Seven specimens were collected from Five-Finger Mountain.

***Remarks.* –** This species was reported as a new record for China from Yunnan Province (Beasley et al., 2006). This is the first report of this species from Hainan Island.

Itaquascon Barros, 1939

Itaquascon umbellinae De Barros, 1939

***Material examined.* –** Only one specimen was collected from Five-Finger Mountain.

***Remarks.* –** This species is a new record for China.

Hypsibius Thulin, 1928

Hypsibius cf. *dujardini* (Doyère, 1840)

***Material examined.* –** Three specimens were collected from Five-Finger Mountain.

***Remarks.* –** This species was reported as a new record for China from Hebei Province (Mathews, 1937). This is the first report of this species from Hainan Island.

Diphascon Thulin, 1889

D. (*Adropion*) *scoticum* Murray, 1905

***Material examined.* –** Two specimens were collected from Five-Finger Mountain.

***Remarks.* –** This species was reported as a new record for China from Shaanxi Province (Li & Liu, 2005). This is the first report of this species from Hainan Island.

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