

Article

Oribatid mites (Acari: Oribatida) of fungi from Dong Nai Biosphere Reserve, Southern Vietnam

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Abstract

The present study is based on oribatid mite material collected from fungi during the Russian-Vietnamese expedition in July 2012 in Dong Nai Biosphere Reserve of Southern Vietnam. An annotated checklist of oribatid mite taxa is presented. It includes 61 species and one subspecies, 44 genera and 27 families. Nine species (*Allonothrus russeolus*, *Basilobelba retiaria*, *Acroppia processigera*, *Dolicheremaeus junichiaokii*, *Basiceramerus igorotus*, *Zetorchella reticulata*, *Tuberemaeus singularis*, *Nesopelops intermedius*, *Notogalumna foveolata*), one subspecies (*Schelorbitates praeincisus interruptus*), five genera (*Allonothrus*, *Acroppia*, *Basiceramerus*, *Nesopelops*, *Notogalumna*) are first records for Vietnam. A new oribatid mite species, *Carabodes (Klapperiches) mikhaetandreorum* **sp. nov.** (Carabodidae), is described. The new species is very similar morphologically to *C. (K.) atrichosus* Mahunka, 1984 and *C. (K.) problematicus* Mahunka, 1985, however, it clearly differs from both by the absence of the translamella and the position of the adanal setae *ad*₁. *Basiceramerus igorotus* Corpuz-Raros and Gruèzo, 2011 (Otocephelidae) is redescribed, based on the Vietnamese specimens.

Key words: oribatid mites, new species, *Carabodes (Klapperiches)*, redescription, *Basiceramerus*, fauna, fungi, new record, checklist, Vietnam

Introduction

This paper is part of our continuing studies on South Vietnamese oribatid mite fauna (Ermilov & Anichkin 2010, 2011; Ermilov *et al.* 2012). It includes data on oribatids found in fungi from Dong Nai Biosphere Reserve. Oribatid mites from fungi have not been studied in Vietnam until now. An annotated checklist of identified oribatid mite taxa is presented below, and new records for the Vietnamese fauna are reported. In the course of our studies, we found a new species of the subgenus *Carabodes (Klapperiches)* Mahunka, 1978 (Carabodidae). It is described by us as *Carabodes (Klapperiches) mikhaetandreorum* **sp. nov.** We also redescribed *Basiceramerus*

igorotus Corpuz-Raros and Gruèzo, 2011 (Otocepheidae), based on the Vietnamese specimens.

The subgenus *Carabodes* (*Klapperiches*) was proposed by Mahunka (1978) with *Klapperiches nigrisetosus* Mahunka, 1978 as type species. It comprises 43 species with a cosmopolitan distribution, excepting the Antarctic region (Subías 2004, online version 2012). So far, only one species of this genus, *Carabodes* (*Klapperiches*) *samoensis* J. Balogh and P. Balogh, 1986, have been recorded in Vietnam (personal data of authors).

The genus *Basiceramerus* was proposed by Corpuz-Raros (1979) with *Basiceramerus upelbensis* Corpuz-Raros, 1979 as type species. It comprises six species; five species (including *Basiceramerus igorotus* Corpuz-Raros and Gruèzo, 2011) are known from Philippines, and one species known from Bangladesh (Subías 2004, online version 2012).

Materials and methods

All specimens of oribatid mites reported here were collected by A.E. Anichkin and S.G. Ermilov in July 2012 from fungi samples of Dong Nai Biosphere Reserve (Dong Nai Province, Southern Vietnam). Earlier we presented a brief geographical and floristic description of this reserve (Ermilov & Anichkin, 2010). List of fungi samples:

Fg-1: 01.07.12, 11°25'N 107°25'E, a lowland *Lagerstroemia*-dominated forest on dark loamy soil, samples of bird's nest fungi *Cyathus* sp. on decaying twigs.

Fg-2: 01.07.12, 11°25'N 107°25'E, a lowland *Lagerstroemia*-dominated forest on dark loamy soil, samples of wood-decaying fungi *Stereum* sp. on bark of dead fallen tree.

Fg-3: 01.07.12, 11°26'N 107°25'E, a lowland *Lagerstroemia*-dominated forest on dark loamy soil, samples of wood-decay fungus *Cymatoderma elegans* var. *lamellatum* (Berk. & M.A. Curtis) D.A. Reid on fallen tree.

Fg-4: 01.07.12, 11°25'N 107°25'E, a lowland *Lagerstroemia*-dominated forest on dark loamy soil, fruiting bodies of wood decaying fungi *Phellius* sp. on remains of tree stump (Dipterocarpaceae).

Fg-5: 04.07.12, 11°25'N 107°25'E, bamboo forest on dark loamy soils, samples of cup fungi *Cookeina speciosa* (Fr.) Dennis.

Fg-6: 03.07.12, 11°25'N 107°25'E, Headquarters area of Dong Nai Biosphere Reserve, samples of young coral fungus *Clavulina* sp.

Fg-7: 03.07.12, 11°25'N 107°25'E, Headquarters area of Dong Nai Biosphere Reserve, samples of old coral fungus *Clavulina* sp.

Fg-8: 05.07.12, 11°25'N 107°25'E, a lowland *Lagerstroemia*-dominated forest on dark loamy soils, fruiting bodies of wood decaying fungi *Pycnoporus sanguineus* (L.) Murrill on remains of a tree trunk.

Fg-9: 06.07.12, 11°26'N 107°26'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, fruiting bodies of wood decaying fungi *Trogia* sp. on remains of branches.

Fg-10: 06.07.12, 11°26'N 107°26'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, fruiting bodies of wood decaying fungi *Pleurotus* sp. on remains of a tree trunk.

Fg-11: 06.07.12, 11°26'N 107°26'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, fruiting bodies of bamboo fungus *Phallus indusiatus* Vent.

Fg-12: 07.07.12, 11°26'N 107°26'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, fruiting bodies of wood decaying fungi *Daedalea flavida* Lév on remains of a tree trunk.

Fg-13: 07.07.12, 11°26'N 107°26'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, fruiting bodies of wood decaying fungi *Stereum lobatum* (Kunze ex Fr.) Fr. on bark of a tree trunk.

Fg-14: 07.07.12, 11°25'N 107°25'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, samples of fruiting bodies of fungi *Marasmius* sp. on soil surface.

Fg-15: 08.07.12, 11°26'N 107°26'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, samples of wood decaying fungi *Lentinus crinitus* var. *subcervinus* (Berk. & M.A. Curtis) Pilát on remains of bark.

Fg-16: 08.07.12, 11°27'N 107°26'E, a lowland dipterocarp forest on dark loamy soil, samples of fruiting bodies of wood decaying fungi *Cymatoderma elegans* var. *lamellatum* (Berk. & M.A. Curtis) D.A. Reid on remains of tree trunk.

Fg-17: 06.07.12, 11°26'N 107°26'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, fruiting bodies of fungi *Onnia* sp.

Fg-18: 05.07.12, 11°25'N 107°25'E, a lowland *Lagerstroemia*-dominated forest on dark loamy soils, fruiting bodies of wood decaying fungi *Stereum lobatum* (Kunze ex Fr.) Fr. on remains of a tree trunk.

Fg-19: 08.07.12, 11°27'N 107°26'E, a lowland dipterocarp forest on dark loamy soil, samples of wood decaying fungi on dead tree trunk.

Fg-20: 07.07.12, 11°26'N 107°26'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, fruiting bodies of wood decaying fungi *Ganoderma australe* (Fr.) Pat. on remains of a tree trunk.

Fg-21: 06.07.12, 11°26'N 107°25'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, sample of hyphae of *Marasmius* sp. with remains of leaves.

Fg-22: 06.07.12, 11°26'N 107°25'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, samples of corticoid fungi on remains of a tree trunk.

Fg-23: 06.07.12, 11°26'N 107°26'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, fruiting bodies of wood decaying fungi *Ganoderma australe* (Fr.) Pat. on remains of a tree trunk.

Fg-24: 06.07.12, 11°26'N 107°26'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, fruiting bodies of wood decaying fungi *Ganoderma* sp. on remains of a tree trunk.

Fg-25: 08.07.12, 11°27'N 107°26'E, a lowland dipterocarp forest on dark loamy soil, samples of wood decaying fungi on dead tree trunk.

Fg-26: 08.07.12, 11°26'N 107°26'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, samples of coral fungus *Clavulina* sp.

Fg-27: 08.07.12, 11°26'N 107°26'E, a lowland dipterocarp forest on sandy soils near Dong Nai river, fruiting bodies of wood decaying fungi *Phellinus* sp. on remains of tree trunk.

Fg-28: 08.07.12, 11°27'N 107°26'E, a lowland dipterocarp forest on dark loamy soil, samples of wood decaying fungi on dead tree trunk.

Fg-29: 08.07.12, 11°27'N 107°26'E, a lowland dipterocarp forest on dark loamy soil samples of wood decaying fungi on dead tree trunk.

Fg-30: 05.07.12, 11°25'N 107°25'E, a lowland *Lagerstroemia*-dominated forest on dark loamy soils, samples of corticoid fungi on a tree trunk.

Oribatid mites were extracted from fungi into 75% ethanol using Berlese's funnels with electric lamps (40 W) for five days.

The specimens were mounted in lactic acid on temporary cavity slides for measurement and illustration. All body measurements are presented in micrometers. Body length was measured in lateral view, from the tip of the rostrum to the posterior edge of the ventral plate to avoid discrepancies caused by different degrees of notogastral distortion. Notogastral width refers to the maximum width in dorsal aspect. Lengths of body setae were measured in lateral aspect. General terminology used in this paper follows that summarized by Norton and Behan-Pelletier (2009).

Results

Checklist of identified oribatid mite taxa¹

Hypochthoniidae

— *Eohypochthonius crassisetiger* Aoki, 1959. Locality: Fg-7

Lohmanniidae

— *Meristacarus sundensis* Hammer, 1979. Locality: Fg-1, Fg-4, Fg-7, Fg-10, Fg-14, Fg-16, Fg-18, Fg-21, Fg-24, Fg-26, Fg-29

Trhypochthoniidae

— *Archegozetes longisetosus* Aoki, 1965. Locality: Fg-4

— *Allonothrus russeolus* Wallwork, 1960. The genus and species are recorded for the first time from Vietnam. Locality: Fg-14

Nanhermanniidae

— *Cosmohermannia robusta* (Aoki, 1994). Locality: Fg-14, Fg-16

Hermanniidae

— *Phyllhermannia gladiata* Aoki, 1965. Locality: Fg-1, Fg-4, Fg-8, Fg-11, Fg-13, Fg-15, Fg-16, Fg-27, Fg-29, Fg-30

Neoliodidae

— *Neoliodes* sp. Locality: Fg-1, Fg-5, Fg-8, Fg-13, Fg-14, Fg-26

Zetorchestidae

— *Zetorchestes saltator* Oudemans, 1915. Locality: Fg-13, Fg-15, Fg-17, Fg-26

Eremulidae

— *Eremulus avenifer* Berlese, 1913. Locality: Fg-23

Damaeolidae

— *Fosseremus laciniatus* (Berlese, 1905). Locality: Fg-29

Basilobelbidae

— *Basilobelba parmata* Okayama, 1980. Locality: Fg-4

— *Basilobelba retiaria* (Warburton, 1912). The species is recorded for the first time from Vietnam. Locality: Fg-7

Oppiidae

— *Acroppia processigera* (Balogh and Mahunka, 1967). The genus and species are recorded for the first time from Vietnam. Locality: Fg-22, Fg-24, Fg-25

— *Arcoppia arcualis* (Berlese, 1913). Locality: Fg-7

— *Neoamerioppia vietnamica* (Mahunka, 1988). Locality: Fg-1, Fg-4, Fg-14, Fg-21, Fg-22, Fg-23, Fg-24, Fg-26, Fg-29

— *Oppiella (Oppiella) nova* (Oudemans, 1902). Locality: Fg-7, Fg-26, Fg-29

¹ Except ptyctimous mites.

— *Taiwanoppia hungarorum* (Mahunka, 1988). Locality: Fg-21, Fg-23

Tetracondylidae

— *Dolicheremaeus bugiamapensis* Ermilov and Anichkin, 2012. Locality: Fg-8, Fg-13, Fg-20, Fg-21

— *Dolicheremaeus junichiaokii* Subías, 2010 (= *Dolicheremaeus magnus* Aoki, 2006). The species is recorded for the first time from Vietnam. Locality: Fg-13, Fg-21, Fg-29, Fg-30

— *Pseudotocepheus setiger* (Hammer, 1972). Locality: Fg-21

Otocepheidae

— *Basiceramerus igorotus* Corpuz-Raros and Gruèzo, 2011. The genus and species are recorded for the first time from Vietnam. Locality: Fg-3, Fg-21

— *Otocepheus (Acrotocepheus) excelsus* Aoki, 1965. Locality: Fg-14

— *Otocepheus (Acrotocepheus) vietnamicus* Ermilov and Anichkin, 2011. Locality: Fg-8, Fg-16

— *Otocepheus (Otocepheus) spatulatus* Mahunka, 2000. Locality: Fg-24

Tectocepheidae

— *Tectocepheus velatus* (Michael, 1880). Locality: Fg-5, Fg-10, Fg-14, Fg-23, Fg-24

— *Tegezotes tunicatus* Berlese, 1913. Locality: Fg-3, Fg-16, Fg-27

Carabodidae

— *Austrocarabodes (Austrocarabodes) szentivanyi* (Balogh and Mahunka, 1967). Locality: Fg-24

— *Carabodes (Klapperiches) mikhaetandreorum* **sp. nov.** Locality: Fg-4

— *Chistyakovella insolita* Ermilov, Aoki and Anichkin, 2013. Locality: Fg-1, Fg-2, Fg-3, Fg-4, Fg-8, Fg-18, Fg-23, Fg-28, Fg-29

— *Yoshiobodes aokii* Mahunka, 1987. Locality: Fg-1, Fg-2, Fg-3, Fg-7, Fg-24

Microtegeidae

— *Microtegeus reticulatus* Aoki, 1965. Locality: Fg-4, Fg-16, Fg-21, Fg-28, Fg-29

Cymbaeremaeidae

— *Scapheremaeus foveolatus* Mahunka, 1987. Locality: Fg-21

Microzetidae

— *Berlesezetes ornatissimus* (Berlese, 1913). Locality: Fg-16

Mycobatidae

— *Allozetes pusillus* (Berlese, 1913). Locality: Fg-2, Fg-3, Fg-4, Fg-5, Fg-28

— *Lamellobates molecula* (Berlese, 1916). Locality: Fg-1, Fg-2, Fg-3, Fg-4, Fg-6, Fg-7, Fg-8, Fg-9, Fg-13, Fg-14, Fg-15, Fg-16, Fg-17, Fg-19, Fg-21, Fg-22, Fg-23, Fg-24, Fg-26, Fg-28

— *Paralamellobates misella* (Berlese, 1910). Locality: Fg-21, Fg-26

Mochlozetidae

— *Unguizetes cattienensis* Ermilov and Anichkin, 2011. Locality: Fg-7, Fg-21, Fg-24, Fg-29

Caloppiidae

— *Zetorchella reticulata* (Willmann, 1933). The species is recorded for the first time from Vietnam. Locality: Fg-21

Scheloribatidae

— *Scheloribates praeincisus praeincisus* (Berlese, 1910). Locality: Fg-1, Fg-2, Fg-6, Fg-7, Fg-8, Fg-12, Fg-13, Fg-15, Fg-16, Fg-18, Fg-19, Fg-21, Fg-23

— *Scheloribates praeincisus interruptus* (Berlese, 1916). The subspecies is recorded for the first time from Vietnam. Locality: Fg-25

- *Scheloribates (Bischeloribates) mahunkai* (Subías, 2010). Locality: Fg-26
- *Tuberemaeus perforatoides* Hammer, 1979. Locality: Fg-1, Fg-30
- *Tuberemaeus singularis* Sellnick, 1930. The species is recorded for the first time from Vietnam. Locality: Fg-4

Oripodidae

- *Truncopes moderatus variabilis* Aoki and Yamamoto, 2007. Locality: Fg-22

Haplozetidae

- *Peloribates rangiroaensis* Hammer, 1972. Locality: Fg-11, Fg-21, Fg-24
- *Trachyoribates ovulum* Berlese, 1908. Locality: Fg-1, Fg-2, Fg-14, Fg-17, Fg-24, Fg-29

Phenopelopidae

- *Nesopelops intermedius* Hammer, 1979. The genus and species are recorded for the first time from Vietnam. Locality: Fg-26

Parakalummidae

- *Neoribates jacoti* (Balogh and Mahunka, 1967). Locality: Fg-4, Fg-5, Fg-15, Fg-16, Fg-17, Fg-30

Galumnidae

- *Galumna (Galumna) acutirostrum* Ermilov and Anichkin, 2010. Locality: Fg-1, Fg-3, Fg-7
- *Galumna (Galumna) flabellifera* Hammer, 1958. Locality: Fg-7
- *Galumna (Galumna) khoii* Mahunka, 1989. Locality: Fg-6, Fg-7, Fg-8, Fg-23
- *Galumna (Galumna) levisensilla* Ermilov and Anichkin, 2010. Locality: Fg-10, Fg-19
- *Galumna (Galumna) pseudokhoii* Ermilov and Anichkin, 2011. Locality: Fg-16, Fg-21, Fg-26, Fg-29
- *Galumna (Cosmogalumna) dongnaiensis* Ermilov and Anichkin, 2013. Locality: Fg-4, Fg-21
- *Notogalumna foveolata* Balakrishnan, 1989. The genus and species are recorded for the first time from Vietnam. Locality: Fg-22
- *Pergalumna hauseri* Mahunka, 1995. Locality: Fg-15, Fg-17
- *Pergalumna indistincta* Ermilov and Anichkin, 2011. Locality: Fg-4
- *Pergalumna kotschyi* Mahunka 1989. Locality: Fg-4, Fg-15, Fg-26
- *Pergalumna margaritata* Mahunka, 1989. Locality: Fg-4, Fg-7, Fg-21
- *Pergalumna pseudosejugalis* Ermilov and Anichkin, 2012. Locality: Fg-8, Fg-13, Fg-17
- *Pergalumna punctulata* Balogh and Mahunka, 1967. Locality: Fg-13
- *Trichogalumna nipponica* (Aoki, 1966). Locality: Fg-21, Fg-22, Fg-23, Fg-24, Fg-26, Fg-29

Thus from fungi of Dong Nai Biosphere Reserve we have registered 61 species and one subspecies from 44 genera and 27 families. Nine species (*Allonothrus russeolus*, *Basilobelba retiaria*, *Acroppia processigera*, *Dolicheremaeus junichiaokii*, *Basiceramerus igorotus*, *Zetorchella reticulata*, *Tuberemaeus singularis*, *Nesopelops intermedius*, *Notogalumna foveolata*), one subspecies (*Scheloribates praeincisus interruptus*), and five genera (*Allonothrus* Hammen, 1953, *Acroppia* Balogh, 1983, *Basiceramerus* Corpuz-Raros, 1979, *Nesopelops* Hammer, 1973, *Notogalumna* Sellnick, 1959) are first records for Vietnam.

Description of new species

Carabodes (Klapperiches) mikhaetandreorum sp. nov. (Figs. 1–5)

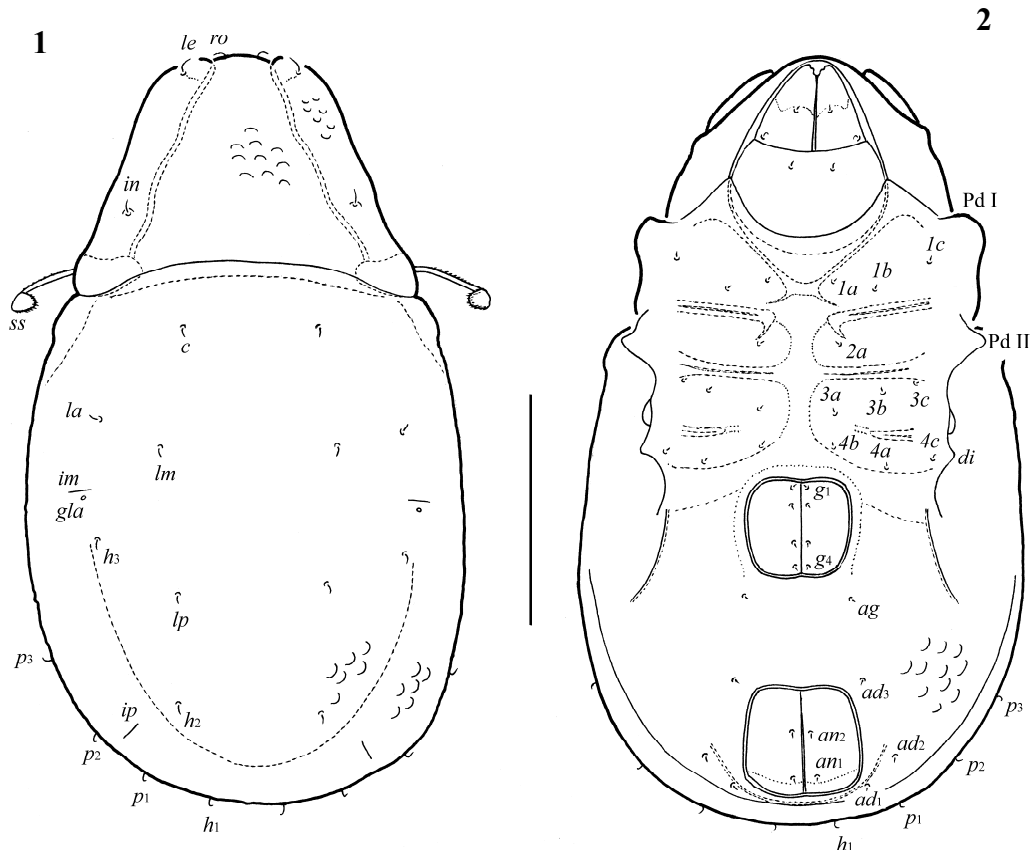
Diagnosis

Body size 328–360 × 172–192. Surface of prodorsum, notogaster and anogenital region tuberculate. Translamella absent. Prodorsal setae short, thin; rostral setae inserted on prodorsum, lamellar setae and interlamellar setae inserted on dorsal side of lamellae. Sensilli clavate, with spines. Notogastral, epimeral and anogenital setae short, thin. Adanal setae ad_1 inserted postero-laterally to the anal plates.

Measurements: Body length 328 (holotype, female), 328–360 (mean 340; four paratypes, all females); body width 184 (holotype), 172–192 (mean 183; four paratypes).

Integument (Figs. 1–3): Body color yellowish-brown. Surface of prodorsum, notogaster and anogenital region with tubercles (diameter of tubercles up to 10). Surface of lamellae and lateral sides of prodorsum with foveolae (diameter of foveolae up to 8).

Prodorsum (Figs. 1–4): Rostrum rounded. Translamella absent. Rostral setae (*ro*) short (4), thin, smooth, inserted on prodorsum. Lamellar setae (*le*) and interlamellar (*in*) setae morphologically similar to rostral setae, but longer (6) and inserted on dorsal side of lamellae. Sensilli (*ss*, 45–53) longest setae on prodorsum, clavate. Sensillar stalk long, with thin spines unilaterally; head shorter than stalk, with spines, which are inserted in two rows dorso-laterally, forming the oval form. Exobothridial setae and their alveoli absent. Tutoria (*tu*) long, lineate.



Figures 1–2. *Carabodes (Klapperiches) mikhaetandreorum* sp. nov., adult. 1. Dorsal view of body; 2. Ventral view of body, legs not shown. Scale bar 100 μ m.

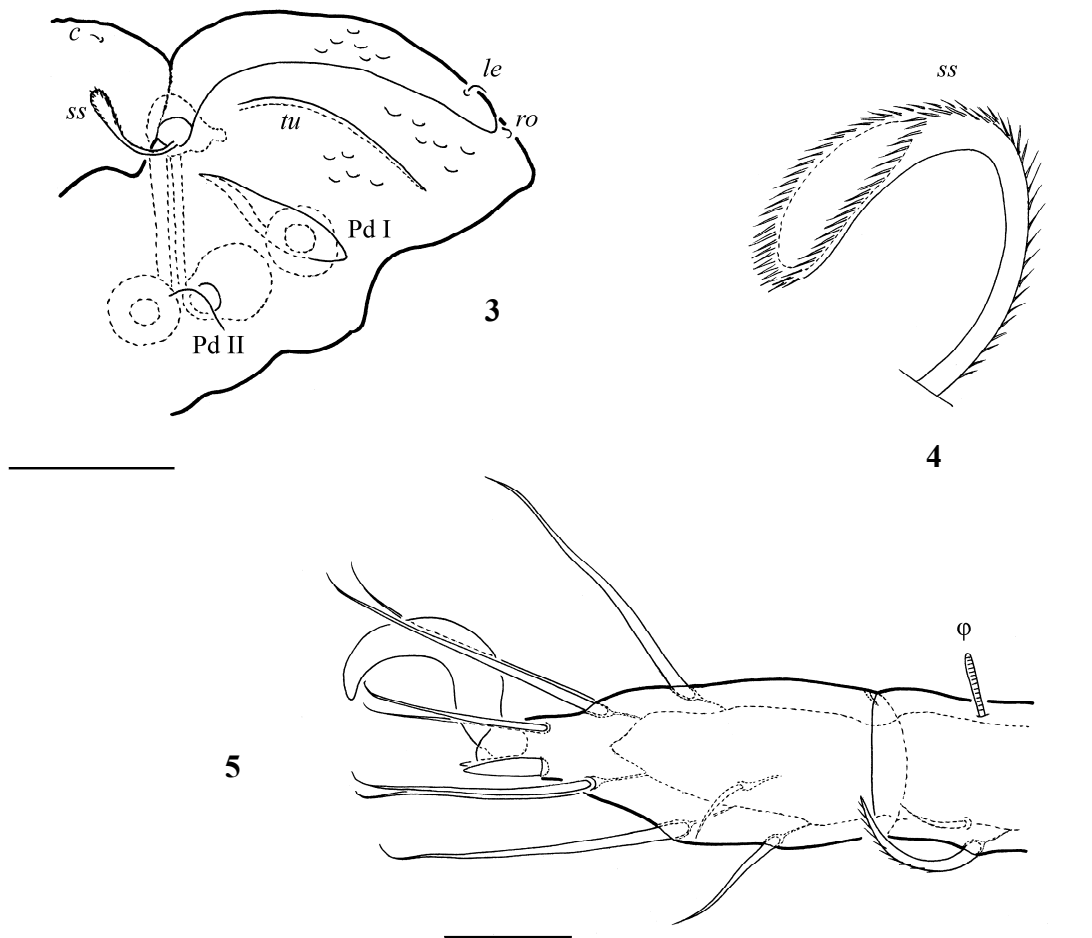
Notogaster (Fig. 1): Anterior notogastral margin weakly convex. Ten pairs of notogastral setae very short (4), thin, smooth. Lyrifissures *ia* not evident, lyrifissures *im*, *ip* and opisthonotal gland openings (*gla*) visible dorsally, *ih* and *ips* visible in lateral view; *im* and *gla* are located very close to each other.

Gnathosoma: Typical for Carabodidae (Ermilov *et al.* 2010a, b).

Epimeral and lateral podosomal regions (Figs. 2 & 3) – Epimeral setal formula: 3–1–3–3. Epimeral setae short (4), thin, smooth. Pedotecta I (Pd I) convex; pedotecta II (Pd II) widely triangular. Discidia (*di*) triangular, distally blunt.

Anogenital region (Fig. 2): Four pairs of genital (g_1 – g_4), one pair of aggenital (*ag*), two pairs of anal (an_1 , an_2) and three pairs of adanal setae (ad_1 – ad_3) similar morphologically, very short (4), thin, smooth. Adanal setae ad_1 inserted posterolaterally to the anal plates. Lyrifissures *iad* not evident.

Legs (Fig. 5): Typical for Carabodidae (Ermilov *et al.* 2010a, b). Leg claws smooth. Formulae of leg setation and solenidia: I (1–4–3–4–16) [1–2–2], II (1–4–3–3–15) [1–1–2], III (2–3–1–2–15) [1–1–0], IV (1–2–2–2–12) [0–1–0]; homology of setae and solenidia indicated in Table 1.



Figures 3–5. *Carabodes (Klapperiches) mikhaetandreorum* sp. nov., adult. 3. Lateral view of prodorsum; 4. Sensillus; 5. Tarsus and anterior part of tibia of leg IV, left, paraxial view. Scale bar 50 μ m (Fig. 3), 20 μ m (Figs. 4 & 5).

Table 1. Leg setation and solenidia of *Carabodes (Klapperiches) mikhaetandreorum* **sp. nov.** (same for *Basiceramerus igorotus* Corpuz-Raros and Gruèzo, 2011).

Leg	Trochanter	Femur	Genu	Tibia	Tarsus
I	v'	$d, (l), bv''$	$(l), v', \sigma$	$(l), (v), \varphi_1, \varphi_2$	$(ft), (tc), (it), (p), (u), (a), s, (pv), e, \omega_1, \omega_2$
II	v'	$d, (l), bv''$	$(l), v', \sigma$	$l', (v), \varphi$	$(ft), (tc), (it), (p), (u), (a), s, (pv), \omega_1, \omega_2$
III	l', v'	d, l', ev'	l', σ	$(v), \varphi$	$(ft), (tc), (it), (p), (u), (a), s, (pv)$
IV	v'	d, ev'	d, l'	$(v), \varphi$	$ft'', (tc), (p), (u), (a), s, (pv)$

Roman letters refer to normal setae (e to famulus), Greek letters to Solenidia. Single prime ($'$) marks setae on anterior and double prime ($''$) setae on posterior side of the given leg segment. Parentheses refer to a pair of setae.

Type deposition

The holotype (alcohol) is deposited in the collection of the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia; two paratypes (alcohol) are deposited in the collection of the Siberian Zoological Museum, Novosibirsk, Russia; two paratypes (alcohol) are in the personal collection of the senior author.

Etymology

The species is named in honor of Dr. Mikhail V. Mokrousov (Center of Independent Examinations–NN, Nizhniy Novgorod, Russia) and Andrey L. Novosadov (Nizhniy Novgorod Referral Center of the Federal Service for Veterinary and Phytosanitary Inspection, Nizhniy Novgorod, Russia) for the long-time support of pedobiological investigations of the senior author.

Remarks

In having the very small, thin notogastral setae, tuberculate body surface, clavate sensilli and position of interlamellar setae on lamellae, *Carabodes (Klapperiches) mikhaetandreorum* **sp. nov.** is very similar to *C. (K.) atrichosus* Mahunka, 1984 (see Mahunka 1984) from the Neotropical region and *C. (K.) problematicus* Mahunka, 1985 (see Mahunka 1985) from South Africa. However, the new species clearly differs from both species by absence of translamella (versus present) and position of adanal setae ad_1 (postero-laterally to the anal plates versus posteriorly).

Redescription of species (based on Vietnamese specimens)

Basiceramerus igorotus Corpuz-Raros and Gruèzo, 2011 (Figs. 6–13)

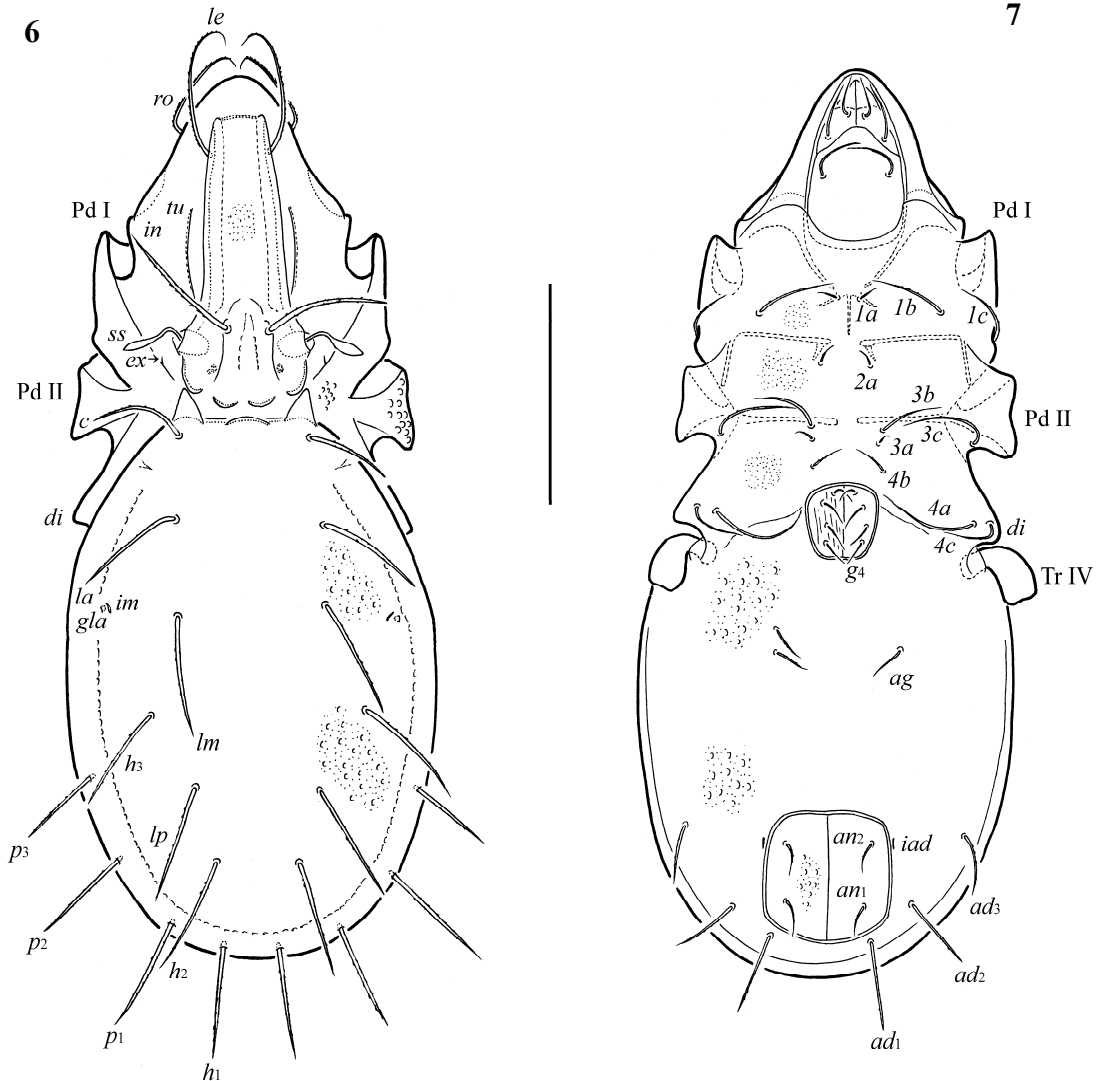
Diagnosis

Body size 863–1012 × 332–415. Prodorsal setae long, barbed. Sensilli clavate, with slightly pointed, smooth head. Translamellar line present. Lateral and medial prodorsal condyles rounded distally, single medial notogastral condyle broadly rounded, lateral notogastral condyles triangular. Tutoria present. Ten pairs of notogastral setae

long, straight, barbed. Genital plates striate. Lyrifissures *iad* located in paraanal position. Leg setae *u* setiform on tarsi I and thorn-like on tarsi II–IV.

Measurements: Body length 863–1012 (mean 913; three specimens); body width 332–415 (mean 360; three specimens).

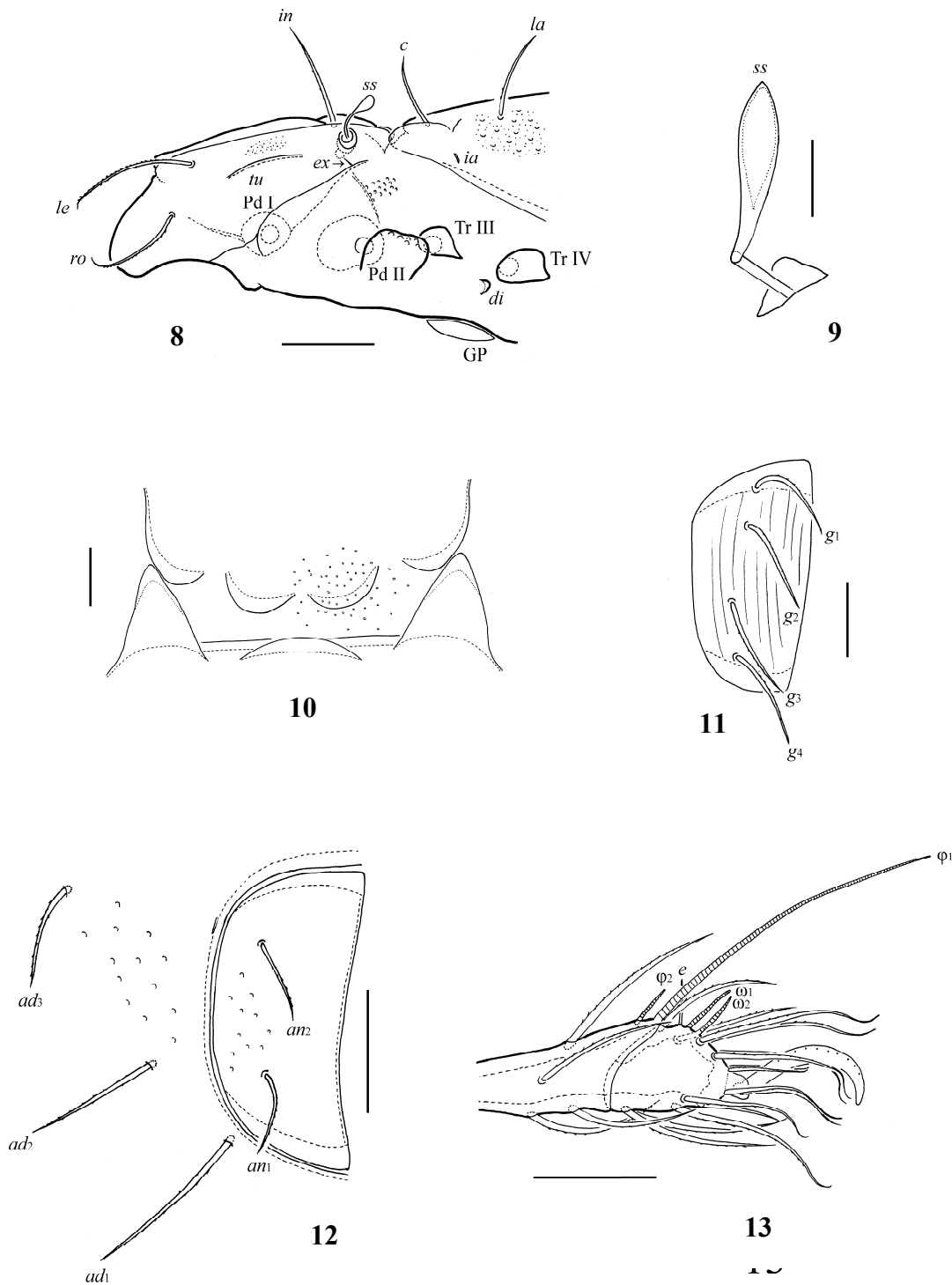
Integument (Figs. 6–8, 11 & 12): Body color yellowish-brown. Surface of body with dense microfoveolae (diameter of foveolae up to 1). Basal and lateral parts of prodorsum, notogaster, anogenital region and anal plates foveolate (diameter of foveolae up to 8). Lateral region of body tuberculate (diameter of tubercles up to 8). Genital plates striate.



Figures 6–7. *Basiceramerus igorotus* Corpuz-Raros and Gruèzo, 2011, adult. 6. Dorsal view; 7. Ventral view, legs not shown except trochanters IV. Scale bar 200 μ m.

Prodorsum (Figs. 6–10): Rostrum simple, broadly rounded. Rostral (102–114) and lamellar (147–176) setae setiform, densely barbed. Interlamellar (123–135) setae setiform, slightly thickened, straight, sparsely barbed, inserted dorso-medially to the bothridia openings. Translamellar line present. Sensilli (73–82) clavate, smooth. Sensillar head slightly pointed. Exobothridial setae (*ex*) short (8–12) short, thin, smooth.

Lateral and medial prodorsal condyles rounded distally, located separately or very close to each other. Tutoria present, distinct.



Figures 8–13. *Basiceramerus igorotus* Corpuz-Raros and Gruèzo, 2011, adult: 8. Lateral view of prodorsum; 9. Sensillus; 10. Condyles; 11. Right genital plate and genital setae; 12. Right anal plate and anal and adanal setae; 13. Tarsus and anterior part of tibia of leg I, right, antiaxial view. Scale bar 100 μm (Fig. 8), 20 μm (Figs. 9–11), 50 μm (Figs. 12 & 13).

Notogaster (Figs. 6, 8, 10): Single medial condyle broadly rounded. Lateral condyles triangular. Ten pairs of notogastral setae slightly thickened, straight, barbed; c (102–110) and p_3 (86–94) shorter than others (123–139). All lyrifissures and opisthonotal gland openings are located typical for Otocepheidae (Aoki 1965).

Gnathosoma: Typical for Otocepheidae and Tetracondylidae (Aoki 1965; Ermilov *et al.* 2010c).

Epimeral and lateral podosomal regions (Figs. 7 & 8) – Epimeral setal formula: 3–1–3–3. All setae setiform, slightly barbed; $1a$, $2a$, $3a$ (24–28) shorter than others: $1b$ (69–82), $1c$ (45–53), $3b$, $4b$, $4c$ (41–45), $3c$ (69–73), $4a$ (90–97). Discidia (di) triangular, blunt-ended. Pedotecta typical for *Basiceramerus*.

Anogenital region (Figs. 7, 11 & 12): Four pairs of genital setae (24–36) setiform, smooth. One pair of aggenital (41–61), three pairs of adanal (ad_1 90–98, ad_2 77–90, ad_3 61–69) and two pairs of anal (an_1 , an_2 49–69) setae setiform, slightly barbed. All adanal setae inserted near to margin of the ventral plate. One specimen with one additional aggenital seta on right side. One specimen with one additional anal seta on right anal plate. Lyrifissures iad short, located in paraanal position, close to the anal aperture.

Legs (Fig. 13): Typical for Otocepheidae and Tetracondylidae (Aoki 1965; Ermilov *et al.* 2010c). Claw of each tarsus with small barbs on dorsal side. Tarsi without teeth. Formulae of leg setation and solenidia: I (1–4–3–4–16) [1–2–2], II (1–4–3–3–15) [1–1–2], III (2–3–1–2–15) [1–1–0], IV (1–2–2–2–12) [0–1–0]; homology of setae and solenidia indicated in Table 1. Leg setae u setiform on tarsi I and thorn-like on tarsi II–IV.

Remarks

Adults of *Basiceramerus igorotus* from Vietnam and Philippines (see Corpuz-Raros & Gruèzo 2011) are similar in general appearance, but there are some morphometrical differences. Body size larger and more elongate, interlamellar setae more short, lamellar setae longer, lateral notogastral condyles narrower in the Vietnamese specimens. We believe this difference represents intraspecific (perhaps geographical) variability.

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کنه‌های اریباتید (Acari: Oribatida) قارچ‌های دونگ‌نای بیوسفر رزرو، ویتنام جنوبی

سرگی جی. ارمیلو و الکساندر ای. انیچکین

چکیده

مطالعه حاضر بر اساس نمونه‌های جمع‌آوری شده از قارچ‌ها در طی سفر هیئت روسی - ویتنامی در جولای سال ۲۰۱۲ در دونگ‌نای بیوسفر رزرو ویتنام جنوبی صورت گرفت. فهرست مشروح کنه‌های اریباتید ارائه می‌شود. این فهرست شامل ۶۱ گونه و یک زیرگونه، ۴۴ جنس و ۲۷ خانواده است. نه گونه (*Acropia processigera*، *Basilobelba retiaris*، *Allonothrus russeolus*، *Zetorchella reticulate*، *Basiceramerus igorotus*، *Dolicheremaeus junichiaokii*، *Tuberemaeus singularis*، *Nesopelops intermedius*، *Notogalumna foveolata*)، یک زیرگونه (*Schelorbates praeincisus interruptus*)، پنج جنس (*Acropia*، *Allonothrus*)، *Basiceramerus*، *Nesopelops*، *Notogalumna*) برای نخستین بار از ویتنام گزارش می‌شوند. گونه جدیدی از کنه‌های اریباتید با نام *Carabodes (Klapperiches) mikhaetandreorum sp. nov.* از خانواده Carabodidae توصیف می‌شود. از نظر ریخت‌شناسی گونه جدید بسیار شبیه به *C. (K.) atrichosus* Mahunka, 1984 و *C. (K.) problematicus* Mahunka, 1985 است، اما به علت نداشتن ترانس‌لاملا و محل قرارگیری موی ad_1 به روشنی با هر دو گونه متفاوت است. گونه *Basiceramerus igorotus* Corpuz-Raros and Gruèzo, 2011 از خانواده Otocephelidae بر اساس نمونه‌های ویتنام بازتوصیف می‌شود.

واژگان کلیدی: کنه‌های اریباتید، گونه جدید، *Carabodes (Klapperiches)*، بازتوصیف، *Basiceramerus*، فون، قارچ‌ها، گزارش جدید، فهرست، ویتنام

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