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Water mites of the genus *Atractides* Koch, 1837 (Acari: Hydrachnidia: Hygrobatidae) from Ghana

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Abstract

New records of water mites of the genus *Atractides* Koch, 1837 (Acari: Hydrachnidia: Hygrobatidae) from streams in Ghana are presented. Six species are reported, one of these, *Atractides* (*Atractides*) *ghanaensis* n. sp., is described as new for science. First records for Ghana are given for *A.* (*Atractides*) *damkoehleri* (K. Viets, 1916), *A.* (*A.*) *latisetus* (K. Viets, 1916), *A.* (*Polymegapus*) *kuehnei* (K. Viets, 1911) and *A*. (*Tympanomegapus*) *tuberipalpis* (K. Viets, 1913).

Key words: Water mites, systematics, new species, Ghana, West Africa

Introduction

The water mite fauna of Ghana has been treated by Cook (1979), Smit (2012a, b), Pešić *et al*. (2013), and Pešić & Smit (2014). For a full bibliography on water mite research in West Africa see Pešić & Smit (2014).

Water mites of the genus *Atractides* Koch, 1837 are presently known from all continents except Australasia and Antarctica. Almost 300 species have been described up to now (Pešić & Smit 2011), 52 of them from continental Africa south of the Sahara (Pešić & Smit 2011, see there for a discussion on the diversity patterns of the genus within different regions of sub-Saharan Africa). Eleven *Atractides* species (two *Atractides* s.str., three of the subgenus *Polymegapus* and six of the subgenus *Tympanomegapus*) were described from West Africa. However, no species are known from Ghana.

The present study is based on material collected by the junior author in 2011 and 2013. Six species are identified of which one is new to science.

Material and methods

Water mites were collected by hand netting, sorted on the spot from the living material, preserved in Koenike's fluid and dissected as described elsewhere (e.g. Gerecke *et al*. 2007). All material has been collected by the junior author. Coordinates were obtained with a GPS. All material is deposited in the Naturalis Biodiversity Center in Leiden (RMNH).

The composition of the material is given as: males/females/deutonymphs or adults/deutonymphs. All measurements are given in µm. For a detailed description and discussion of the characteristics of the genus *Atractides* and a detailed methodological introduction, see Gerecke (2003). The following abbreviations are used: Ac-1 = first acetabulum; alt. = altitude; asl = above sea level. Cx-I = first coxae; D = dorsale; Dgl-1 = dorsoglandularia 1; Lgl-1 = lateroglandularia 1; I-L-4–6 = fourth-sixth segments of first leg; n = number of specimens examined; P-1– P–5 = palp segment 1–5; pregen = pregenital sclerite, postoc = postocular sclerite, prefr = prefrontal sclerite; RMNH = Naturalis Biodiversity Center, Leiden; S-1 = proximal large ventral seta at I-leg-5; S-2 = distal large ventral seta at I-leg-5; V = ventrale; Vgl-1 = ventroglandularia 1; NP = National park.

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excretory pore and Vgl-1+2 (Fig. 7B). Palp: ventral margin of P-2 and P-3 straight, P-4 sword seta pointed, little enlarged, but not hair-like, inserting distal to distoventral seta, P-5 without "cheeks" (Fig. 7C). Legs: I-L-5 S-1 and -2 closely together; I-L-6 strong and thick, weakly curved, narrowed in the centre of the segment, maximum height at base of claw furrow (Fig. 7D); claws with ventral and dorsal clawlets.

Measurements. Idiosoma length/width 406/341; large dorsal anteromedial plate length/width 274/225, maximum diameter of dorsal posterior plate 165; ventral shield length/width 378/311; Cx-III width 234; genital field: width between most lateral pair of Ac 87; length Ac 1–3: 15–16, 19, 18–19.

Palp: Total length 176, dorsal length/height, dorsal length/height ratio: P-1, 17/14, 1.2; P-2, 38/25, 1.53; P-3, 39/20, 1.93; P-4, 56/14, 4.1; P-5, 26/9, 2.8; length P-2/P-4 ratio 0.67. Capitulum ventral length 101; chelicera total length 139, claw length 46, basal segment length 115, length basal segment/claw ratio 2.5.

Legs: I-L-5 dorsal length 72, ventral length 55, dorsal length/ventral length ratio 1.31, maximum height 25, dorsal length/maximum height 2.94, S-1 length 29, length/width ratio 9.4, S-2 length 32, length/width ratio 8.1, distance S-1-2, 4, length ratio S-1/2, 0.9; I-L-6 length 62, central height 17, proximal height (HA *sensu* Gerecke 2003) 23, length/central height ratio 3.58, length/proximal height ratio 2.65; length I-L-5/6 ratio 1.18.

Remarks. The single male examined from Ghana shares with *A. tuberipalpis* (K. Viets. 1913) the similar formation of the ventral shield, including excretory pore and all Vgl, but not incorporating Lgl-4. The latter species clearly differs in the arrangement and size of dorsal sclerites (compare Figs. 5A and 7A). However, as mentioned above, in males, this character may show considerable age-dependent variation. Since further material is not available, and a revision of *A. testudo*-group is required (see above under *A.* cf. *tuberipalpis*) a final decision on the question if this specimen represents an undescribed species can not be made.

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