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On the taxonomic status of the water mite genus *Spongibates* Wainstein, 1978 (Acari, Hydrachnidia, Hygrobatidae)

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Short note

ABSTRACT

The identity of the water mite genus *Spongibates* Wainstein, 1978 has been examined. After examination of the holotype, we conclude that Wainstein described an aberrant *Hygrobat* species, very likely *H. nigromaculatus*. Therefore, *Spongibates* should be considered a junior synonym of *Hygrobat*.

Keywords Hydrachnidia; taxonomy; systematics; *Spongibates*; *Hygrobat*

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Introduction

The water mite genus *Spongibates* has been described from Russia by Wainstein (1978). We noted some errors and discrepancies in the original publication. The aim of this paper is, therefore, to give a correct description of the genus and type species *S. globosus* Wainstein, 1978, and to discuss its taxonomic status.

Materials and methods

The terminology of idiosomal setae follows Tuzovskij (1987). The following abbreviations are used: P-1-5, pedipalp segments (trochanter, femur, genu, tibia and tarsus); I-Leg-1-6, first leg, segments 1-6 (trochanter, basifemur, telofemur, genu, tibia and tarsus) i.e. III-Leg-4 = genu of third leg; L – length, W – width; *ll* – leaf-like projection; n = number of specimens measured; all measurements are given in µm.

Systematics

Genus *Spongibates* Wainstein, 1978

Spongibates Wainstein, Zoologicheskij Zhurnal, 57: 787. [In Russian] Type species: *Spongibates globosus* Wainstein, 1978

Material examined — Holotype, slide 16260, deposited in the collection of Papanin Institute for Biology of Inland Waters (Borok, Russia).

Description — Idiosoma round, almost spherical, with five pairs of slit organs (Fig 1A-B). Integument finely striated. Lateral eyes beneath the integument. Setae *Fch* thicker than other idiosomal setae. Idiosomal setae associated with glandularia except for trichobothria *Fp* and *Oi* and setae *Pi*. Coxal plates I fused medially and with the capitulum to a large anteroventral

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plate. Posteromedial margin of Cx-I rounded, Cx-IV subtriangular in shape, with a nose-like protruding medial margin. Genital field with three pairs of acetabula. Coxal plates and genital field cover nearly all of the ventral surface. Capitulum with a short rostrum and several minute, leaf-like anterior projections on each side. Pedipalp large (Fig. 1C): P-1 with a single short dorsodistal seta, P-2 with six thick setae and without ventrodistal projection, P-3 with four thick setae and one thin seta, P-2 and P-3 with denticulate ventral margin, P-4 ventral setae on the same level near middle of segment. Legs long, thin without swimming setae. First pair of legs 1.5 times, posterior pair of legs 2.6 times longer than idiosoma. Leg claws with long external clawlet and short internal one, lamella with concave ventral margin (Fig. 1D).

Measurements (n=1) — Idiosoma L 585, W 520; pedipalp segments (P-1-5) L: 35, 115, 100, 160, 60; legs segments L: I-Leg-1-6: 70, 95, 130, 190, 215, 200; II-Leg-1-6: 75, 105, 145, 230, 260, 240; III-Leg-1-6: 80, 120, 210, 285, 315, 275; IV-Leg-1-6: 140, 160, 240, 340, 355, 300.

Distribution — Europe, Russia, Yaroslavl Province, Nekouz District, littoral zone of Rybinsk reservoir near settlement of Borok (Wainstein 1978).

Habitat — The species has been found in a fresh-water sponge of the family Spongillidae.

Remarks — The idiosoma shape, unusual length of legs, structure of capitulum and genital plates are considered as diagnostic characteristics of the genus *Spongibates* by Wainstein (1978). In fact, the coxal plates and genital field in the female *S. globosus* cover nearly all the ventral surface (Fig. 1B). However, such a shape of the ventral surface is characteristic for juvenile adults and deutonymphs (Fig. 2A) of the genus *Hygrobates*, while in mature specimens of this genus the coxal plates occupy about half or less than one half of the ventral surface (Figs. 2B-3A). For instance, the idiosoma length differs strongly between a juvenile (180-200) and a mature deutonymph (480-550) of *H. nigromaculatus* Lebert, 1879. In juvenile deutonymphs of this species the fourth legs are 2-3 times longer than the idiosoma, while in mature specimens

Figure 1 *Spongibates globosus* Wainstein, 1978, female: A – idiosoma, dorsal view; B – idiosoma, ventral view; C – pedipalp, ventral view; D – leg claw, lateral view; ll – leaf-like projection (redrawn from Wainstein 1978).

the fourth legs are equal or only a little longer than the idiosoma. In mature *Hygrobates* females the coxal plates occupy less than one half of the ventral surface (Fig. 3A). The genital field of the female *S. globosus* (Fig. 1B) is similar to the genital field of *H. nigromaculatus* (Fig. 3B) and some other species of the genus (Gerecke et al. 2016). Also the leg claws of *S. globosus* (Fig. 1D) are similar to those of *H. nigromaculatus* (Fig. 3C).

Thus, based on the idiosoma shape, the unusual relative length of the legs and the structure of the genital plates, it is clear that Wainstein (1978) described a juvenile specimen of *Hygrobates*, very likely *H. nigromaculatus* (see below). Therefore, the genus *Spongibates* should be considered as a junior synonym of the genus *Hygrobates*.

Three species of the genus *Hygrobates* have been found in Rybinsk reservoir (Tuzovskij 1974, 1996), i.e. *H. longipalpis* (Hermann, 1804), *H. nigromaculatus* and *H. trigonicus* Koenike, 1895. The female of *Spongibates globosus* (Wainstein, 1978) is most similar to the female *H. nigromaculatus*.

Measurements of female *H. nigromaculatus* (n=10) are as follows (Tuzovskij 2017): Idiosoma L 1000–1450; pedipalp segments (P–1–5) L: 30–42, 108–115, 85–90, 145–165, 40–48; legs segments L: I-Leg-1–6: 62–75, 90–115, 110–140, 160–210, 185–215, 165–205; II-Leg-1–6: 65–90, 100–115, 135–155, 210–240, 225–250, 195–240; III-Leg-1–6: 70–90, 100–150, 160–190, 260–290, 280–315, 245–275; IV-Leg-1–6: 130–165, 135–165, 220–250, 305–350, 310–350, 275–330. The length of the pedipalps and legs is without essential differences between *S. globosus* and *H. nigromaculatus*.

Figure 2 *Hygrobates nigromaculatus* Lebert, 1879, deutonymph: A-B, idiosoma, ventral view, A – juvenile, B – mature; idiosoma anterior outline (A) and setae *Fch* are shown by a dashed line (Scale bars: A=50 µm, B=100 µm).

Figure 3 *Hygrobatas nigromaculatus* Lebert, 1879, female: A – ventral view, B – genital field; C – leg claw (Scale bars: A=200 μm, B=100 μm, C=50 μm).

The unique character which distinguishes *Spongibates* is, according to Wainstein (1978), the presence of several minute leaf-like anterior projections on each side of the capitulum in the female of *S. globosus*, a feature not reported in other taxa of the family Hygrobatidae (Cook 1974, Gerecke et al. 2016). We suppose that Wainstein (1978) possibly described a juvenile aberrant female of *H. nigromaculatus*.

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