



***Brachysomus (Hippomias) samos* sp. n. from Greece—first island endemism in the genus (Coleoptera: Curculionidae: Entiminae)**

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Abstract

Brachysomus (Hippomias) samos sp. n. is described from the Oros Ambelos mountains on Samos Island (Greece). The hygrophilous and detritivorous new species is endemic to a very restricted area. *Brachysomus samos* is close to *B. pelex* Yunakov, 2006, *B. moczarskii* Penecke, 1924 and *B. armatus* Yunakov, 2006 based on characteristics of the median lobe of the aedeagus, and on the conspicuously long apodemes. *Brachysomus samos* furthermore strongly resembles *B. armatus* and *B. curvimanus* Yunakov, 2006 in the characteristic shape of the head capsule and epifrons.

Key words: North Aegean Islands, Samos Island, endemism, taxonomy, new species, weevil

Introduction

The genus *Brachysomus* Schönherr, 1823 comprises at present 55 described species. During the last 20 years the number of species has risen significantly with 36 recently described species (Benedikt 2001, 2009; Białooki 2007; Košťál 1991a, 1991b, 1992; Wanat & Mazur 2005; Yunakov 1999, 2006).

Due to comprehensive exploration of leaf litter weevils using Winkler/Moczarski and Berlese funnels and Winkler sifters (Holdhaus 1910) in hot spots of *Brachysomus* diversity in the Balkans, Crimea, Caucasus, and Asia Minor, the number of species will certainly continue to rise. Ten species are known from Greece, and eight of them belong to the subgenus *Hippomias* Yunakov, 2006.

The new species we describe below is the first member of the genus *Brachysomus* that represents an exclusive island endemism.

Material and methods

All outline illustrations of the genital structures were drawn from objects in glycerine using a grid-ocular. Photographs were taken with a 5-megapixel digital camera (Leica DFC 420). Series of images were captured through a binocular (Leica MZ16) and processed by an Auto-Montage software (Imagic Image Access, Version 8).

All measurements were taken with an ocular-micrometer. Body length was measured from the anterior margin of the eye to the apex of the elytra, and the length of the rostrum from the apex of the rostrum to the anterior edge of the eyes. Width of the rostrum is the maximum distance between the lateral edges of the pterygia. A set of standard ratios was employed to describe the shape of body parts: ratio between vertex width and longitudinal eye diameter (FW/ELD), between pronotum length and pronotum width (PL/PW), and between length and width of elytra (EL/EW). Further abbreviations used: BL—length of body; BW—width of body; BH—height of body; RL—length of rostrum; RWA—rostrum width at apex; FW—width of vertex (distance between interior margins of

eyes); ELD—longitudinal diameter of eye; EL—length of elytra; EW—width of elytra; PL—length of pronotum; PW—width of pronotum.

The following terms were used and measurements were taken: Epistome: plate between frons and clypeus (absent in most weevils). Frons: small area between epifrons and epistome, situated rather anteriorly of the eyes (Oberprieler 1988). In *Brachysomus*, the frons appears as a glabrous and transverse bar between the epistomal carina and epifrons. Epifrons: dorsal portion of rostrum between the anterior margin of the eyes and antennal sockets (DuPorte 1960; Oberprieler 1988) corresponds to the “rostral dorsum”. Vertex: area between the eyes (DuPorte 1960), which is often mistakenly termed as “frons”; this term is more widespread but morphologically wrong.

Type material is deposited in the Natural History Museum of the Burgergemeinde Bern (NMBE), the Zoological Museum, University of Oslo (ZMUN), and in the second author's collection (CCG).

Description

Brachysomus (Hippomias) samos Yunakov & Germann sp. n.

(Figs 1–6, 8–16, 20, 21, 23)

Holotype: ♂ “099_10.6 GREECE, Samos Isl., Oros Ambelos, Lazarou, N-Seite Felswand, N37°45'27"/E26°50'36", 860m, GS Moos, Laubstreu, Polsterpflanzen, 1.4.2010, leg. Ch. Germann.”. Red label: Holotype *Brachysomus (Hippomias) samos* sp. n. Yunakov & Germann des. 2012 (NMBE).

Paratypes: (63 specimens; 36 ♀, 27 ♂), all additionally labeled (red label): Paratype *Brachysomus (Hippomias) samos* sp. n. Yunakov & Germann des. 2012. 35 ♀, 19 ♂ same data as holotype (NMBE, ZMUN, CCG). 1 ♀ “099_10.5 GREECE, Samos Isl., Oros Ambelos, W-Mytilini, N37°46'18"/E26°51'16", 490m, GS Laubstreu (Quercus, Cistus, Ginster), Polsterpflanzen, 1.4.2010, leg. Ch. Germann” (NMBE). 8 ♂ “099_10.9 GREECE, Samos Isl., Oros Ambelos, Lazarou, N-Seite Felswand, N37°45'28"/E26°50'50", 920m, GS Moos, Polsterpflanzen, 2.4.2010, leg. Ch. Germann” (NMBE).

Remark. One female specimen is conserved in 90 % alcohol for possible future DNA extraction.

Etymology. The specific name is a noun in apposition and refers to Samos Island, where the new species was discovered.

Measurements. BL 2.20–2.57 (2.37) mm, BW 1.20–1.32 (1.24) mm, BH 0.87–1.00 (0.96) mm; in holotype: 2.56 mm, 1.32 mm, and 1.00 mm respectively.

Colour. Body integument deep-brown, antennae brown, legs reddish-brown. Background scales grey-brown; elytra with unclear transverse and oblique deep-brown bandings usually separated into several spots.

Vestiture. Body and head (except frons, genae, and ventral side of rostrum) densely covered with minute, slightly excised grey scales. Tips of scales extremely thin, acute. Vertex near eyes covered with dense erect spatulate setae. Vestiture of uncleaned specimens coated with soil particles. Interstriae of elytra, antennal scape and legs with shorter evenly widened, rounded, apically erect setae. Setae two times shorter than width of interstriae. Funicular segments with fine dark hairs, club with fine light pubescence. Ventral side of pronotum squamulate, postcoxal bridge with a bunch of erect setae. Meso-metaventral process of mesoventrite, metaventricle, meso- and metapleura densely covered with grey scales. Ventrites pilose, without scales (Fig. 5).

Head (Figs 3–4). Rostrum weakly conically narrowing to middle, weakly transverse or as long as wide (RL/RWA = 0.909–1.045 (0.998)). Pterygia clearly visible in dorsal view, projecting, but not from lateral contour of rostrum. Epifrons parallel sided, almost flat, with median sulcus, without transverse depression. Frons shallowly depressed, almost bare, without scales. Epistome surrounded by thin U-shaped carina. Eyes small (FW/ELD = 2.22–2.40 (2.32)), weakly convex, situated noticeably close to level of vertex. Vertex flat, distinctly, finely, longitudinally punctuate (under vestiture). Frontal fovea distinctly visible, weakly elongate. Antennae thick, scape weakly curved, evenly widened distally. 1st and 2nd funicular segments strongly elongate, 1st longer or as long as 2nd; 3rd–6th segments as long as wide, 7th transverse; club egg-shaped.

Pronotum transverse (PL/PW = 0.76–0.80 (0.78)), weakly constricted at apex, weakly evenly convex at sides and disc, very densely, finely, shallowly punctuate.

Elytra oblong-oval (EL/EW = 1.25–1.32 (1.29)), slightly convex at sides and disc. Base of elytra as wide as base of pronotum. Striae linear. Punctures deep, narrowly separated. Interstriae noticeably convex, bright, twice as wide as striae. Base of 10th male elytral interval strongly depressed.

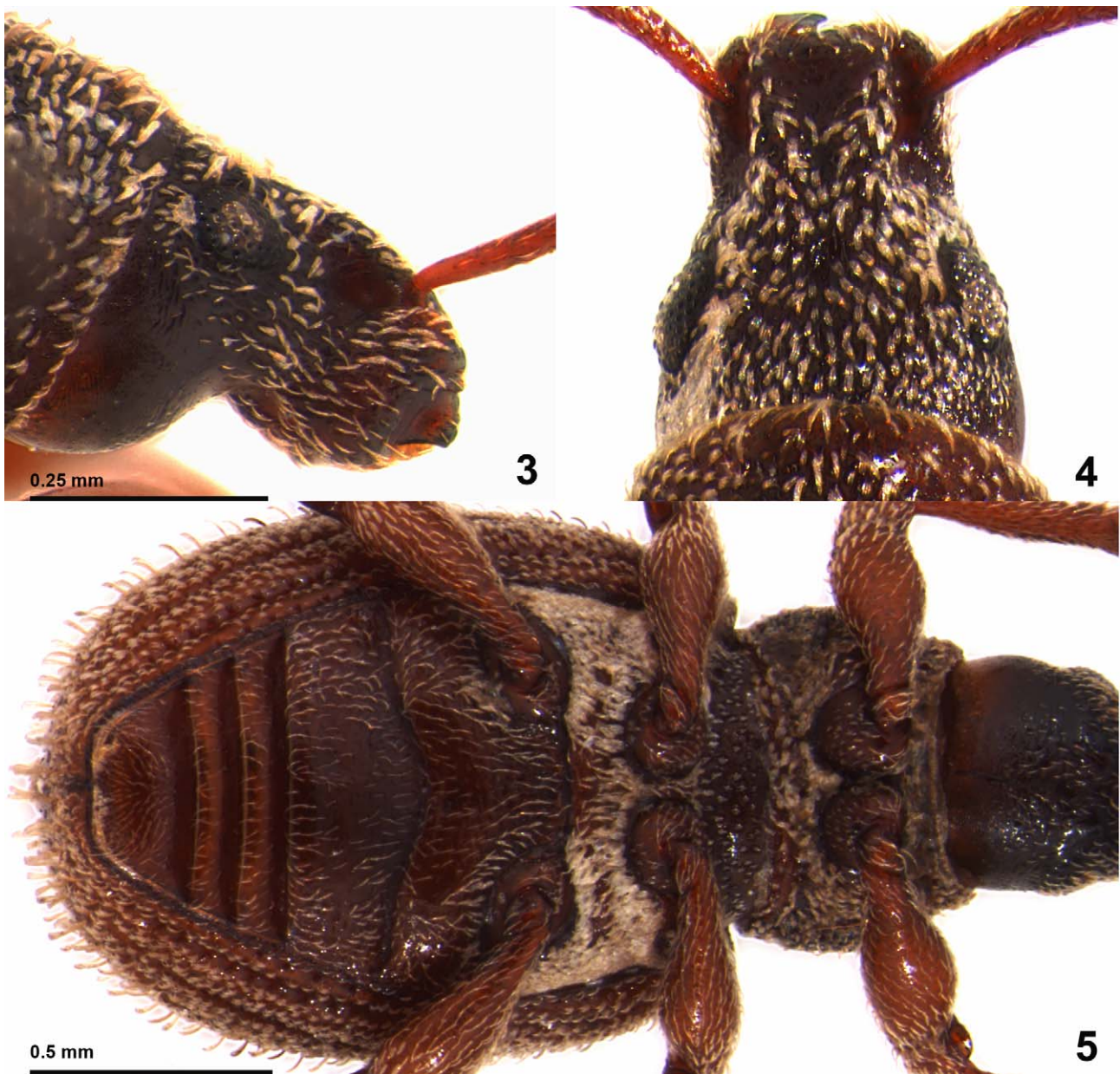


FIGURES 1–2. Habitus of *Brachysomus samos* sp. n. **1)** dorsal; **2)** lateral view (photos: C. Germann).

Legs. Femora unarmed, clavate, moderately swollen in middle part. Tibiae slender, straight, with weakly S-shaped inner side. Protibiae not widened at apex. Metatibiae in male slightly mucronate. 1st segment of tarsus triangular, 2nd segment weakly transverse. 5th tarsomere of fore tarsus extending beyond apical lobes of 3rd by length of the last.

Abdomen (Fig. 5). Male 5th ventrite evenly strongly convex, with weak depression at apical part. Apical edge of male 5th ventrite almost straight, in females half-round.

Subgenital segments of male (Fig. 20). Anterior edge of 8th tergite straight, without depression. 8th sternite divided into two plates. 9th sternite with robust apodeme carrying a massive curved caput.

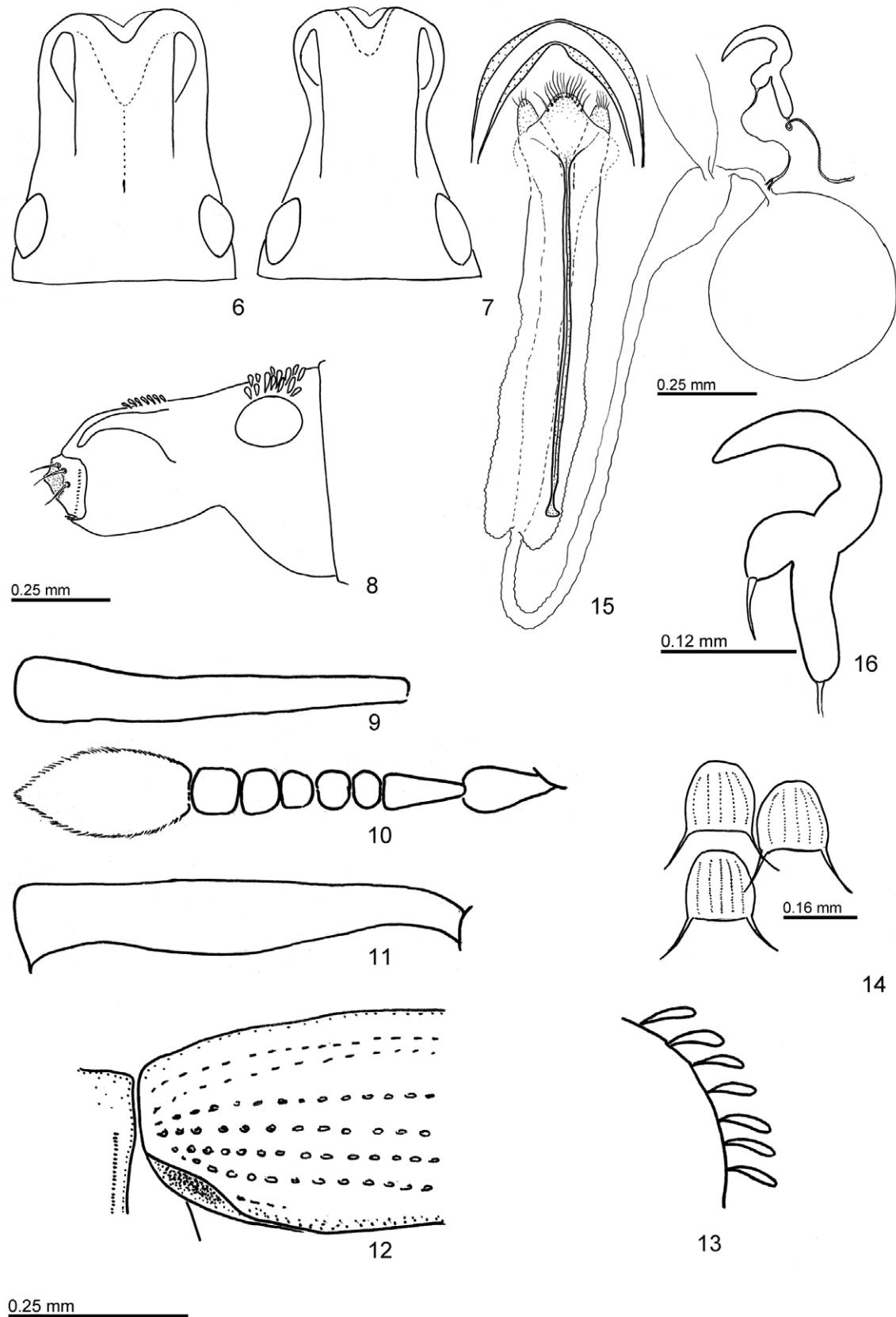


FIGURES 3–5. Head capsule and ventral view of the abdomen of *Brachysomus samos* **sp. n.** **3)** lateral, **4)** dorsal view, **5)** ventrites of the male, note that the meso-metaventral process of mesoventrite, metaventrite, meso- and metapleura are densely covered with grey scales (photos: C. Germann).

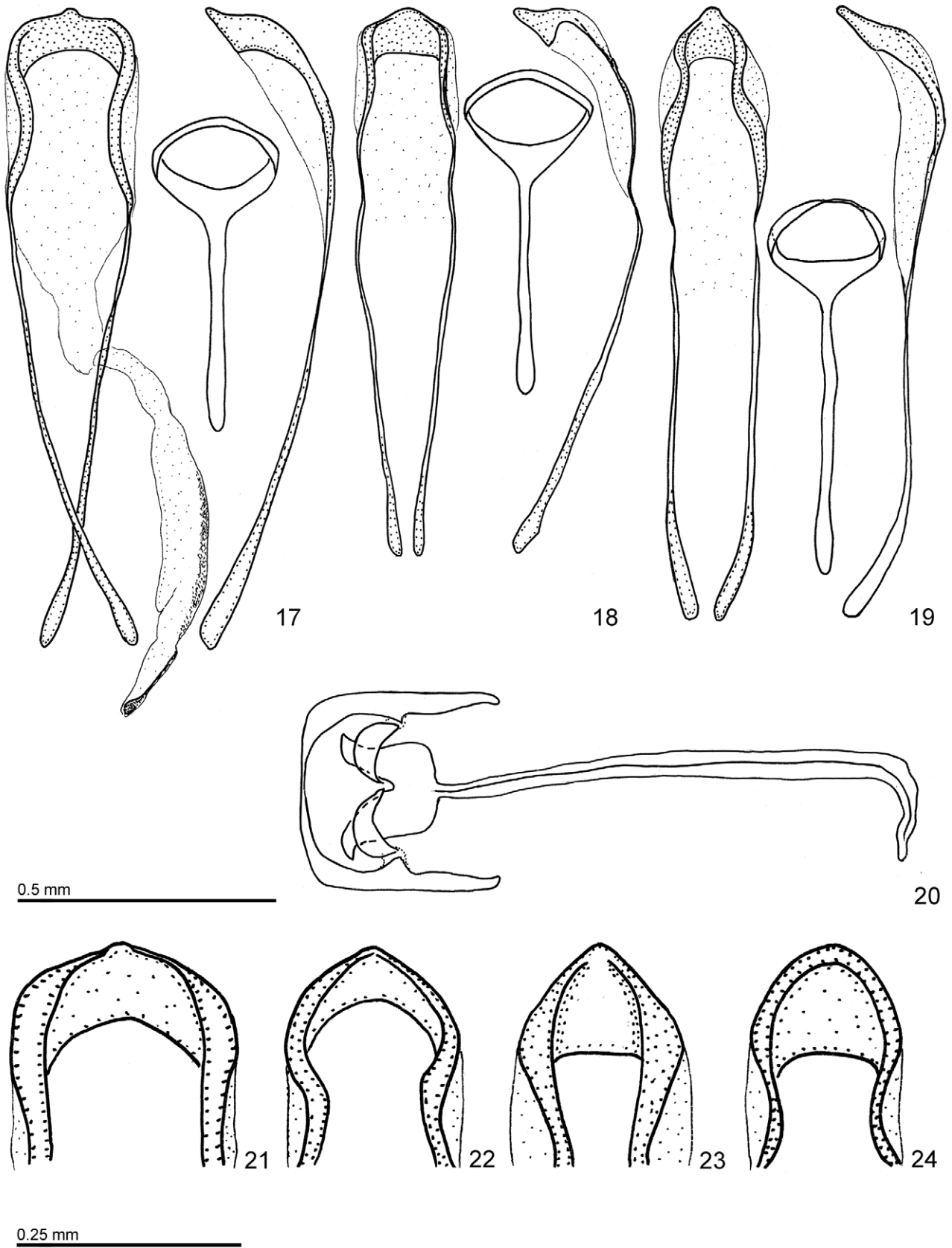
Male genitalia (Figs 21, 23). Median lobe 2 times shorter than apodeme; apex and lateral edges heavily narrowly sclerotized, ventral wall membranous. Internal sac poorly armed, distal portion with thin oblong spiculate field; aggonoporiun armed with needle-shaped sclerite. Tegmen without parameres, basal piece of tegmen narrow; tegminal apodeme straight, twice shorter than apodeme of aedeagus.

Female genitalia (Figs 15, 16). Coxites slightly sclerotized, with numerous sensillae. Styli reduced. Spermatheca with large ramus and short straight collum. Bursa copulatrix spherical, unarmed. 8th sternite thick. Lamella arcuate, densely setose at the anterior edge, slightly sclerotized; apodeme thin, caput small.

Diagnosis. (see also Table 1.) In general the appearance of *Brachysomus samos* **sp. n.** includes characters of both, the *B. ponticus* Apfelbeck, 1899 and the *B. transsylvanicus* (Seidlitz, 1868) species groups. *B. samos* **sp. n.** is similar to *B. moczariskii* Penecke, 1924, *B. pelex* Yunakov, 2006, in respect of body and head shape, and the structure of the median lobe (Figs. 17, 19). The new species is also very similar to *B. curvimanus* Yunakov, 2006 and *B. armatus* Yunakov, 2006 in the structure of the epifrons. It differs from these species by a depressed base of the 10th elytral interval in male specimens (Fig. 12).



FIGURES 6–16. *Brachysomus* Schönherr, 1823, morphological structures. **6, 8–16:** *Brachysomus samos* sp. n., **7:** *B. pelex* Yunakov, 2006, holotype. **6, 7)** head capsule, dorsal view; **8)** head capsule, lateral view; **9)** antennal scape; **10)** antennal funicle and club; **11)** male right protibia; **12)** base of elytra, lateral view, showing depressed 10th interval; **13)** declivial setae of elytra; **14)** scales of elytra; **15)** female reproductive system; **16)** spermatheca (illustrations: N. Yunakov).



FIGURES 17–24. *Brachysomus* Schönherr, 1823, male genital structures. **17–19:** median lobe dorsal and lateral view, and tegmen, **20:** male subgenital segments, **21–24:** median lobe apex. **17)** *Brachysomus samos* sp. n., holotype; **18)** *B. armatus* Yunakov, 2006, holotype; **19)** *B. moczarskii* Penecke, 1924; **20, 21)** *B. samos* sp. n., holotype; **22)** *B. pelex* Yunakov, 2006, holotype; **23)** *B. moczarskii*; **24)** *B. armatus*, holotype (illustrations: N. Yunakov).

TABLE 1. Diagnostic morphological characters of *Brachysomus samos* sp. n. in comparison with related species (trans. depr. = transverse depression; d = developed; sd = strongly developed; a = absent; setae vs. interval width = setae shorter than elytral interval width).

species	size (mm)	spotty pattern	pterygia	median sulcus of epifrons	trans. depr.
samos	2.20–2.57	±d	projecting	±d	a
armatus	1.8	a	projecting	a	a
curvimanus	2.30–2.85	a	projecting	sd	a
pelex	2.25–2.30	a	strongly projecting	a	d
moczarskii	2.07–2.65	±d	strongly projecting	a	d

continued.

species	funicular segments 3rd–6th	inner edge of male metatibiae	male protibia	base of 10th male elytral interval	setae vs. interval width
samos	as long as wide	obtuse	straight	strongly depressed	2x
armatus	transverse	sharpened	straight	flat	2x
curvimanus	as long as wide	obtuse	curved inwards	flat	2x
pelex	as long as wide	obtuse	straight	flat	2.5x
moczarskii	transverse (♂)/as long as wide (♀)	obtuse	straight	flat	2x



FIGURE 25. Habitat of *Brachysomus samos* sp. n. in the eastern Oros Ambelos at 900 m a.s.l. in leaf litter, mosses and under cushion plants along rocks facing north (photo: C. Germann).



FIGURE 26. Microhabitat (rocks with mosses, flowering *Draba* sp., *Aubrieta deltoidea* and *Muscari* sp.) in spring (April) where *Brachysomus samos* sp. n. was discovered (photo: C. Germann).

From *B. moczarskii* and *B. pelex* it differs by the vertex, which is densely covered with erect spatulate setae above the eyes. The rostrum is weakly conically narrowing to its middle, and weakly transverse or as long as wide. Pterygia are slightly projecting from the lateral contour of the rostrum. The epifrons is almost flat, with more or less developed median sulcus, without a transverse depression. The frons is depressed, the 1st elytral interval in males is strongly depressed near the base. The 5th tarsomere of the fore tarsus extends at least beyond the apical lobes of the 3rd by length. The apex of the median lobe is broadly rounded, with a tiny protruding tip (Figs 21–23). From *B. pelex*, *B. samos* sp. n. also differs by the erect setae, which are twice shorter than the elytral interval width (Fig. 13). From *B. armatus*, *B. samos* sp. n. differs by its larger size, the moderately developed median sulcus of the epifrons, the obtuse inner edge of the male metatibiae, the 3rd–6th funicular segments which are as long as wide (Fig. 10), and the shape of the median lobe apex with protruding tip (in *B. armatus* the apex is evenly rounded, without protruding tip) (Figs 17, 18, 21, 24). From *B. curvimanus* it differs by the straight fore tibiae (Fig. 11), the median lobe with lateral edges narrowly sclerotized, its apex broadly rounded (in *B. curvimanus* the median lobe is heavily sclerotized, with a strongly acute apex).

Distribution and Bionomy. All specimens of *Brachysomus samos* sp. n. were collected, apart from a single specimen near Mytilini at 490 m a.s.l., at elevations between 860–920 m a.s.l. in spring (April) by sifting leaf litter (*Quercus ilex*), mosses and cushion plants from rocks facing north in the eastern Oros Ambelos mountains (Figs 25, 26). No specimens were found either in litter samples taken from slopes facing south in the Oros Ambelos area, or from 12 other localities sampled on Samos island, including the Oros Kerkis mountains in the West (Fig. 27). Seven individuals of *B. samos* sp. n. were kept alive for two weeks for observations of their feeding behavior. Feeding activity was observed on mosses, and on withered and dried leaves of herbaceous plants (Asteraceae, Ranunculaceae and Brassicaceae).

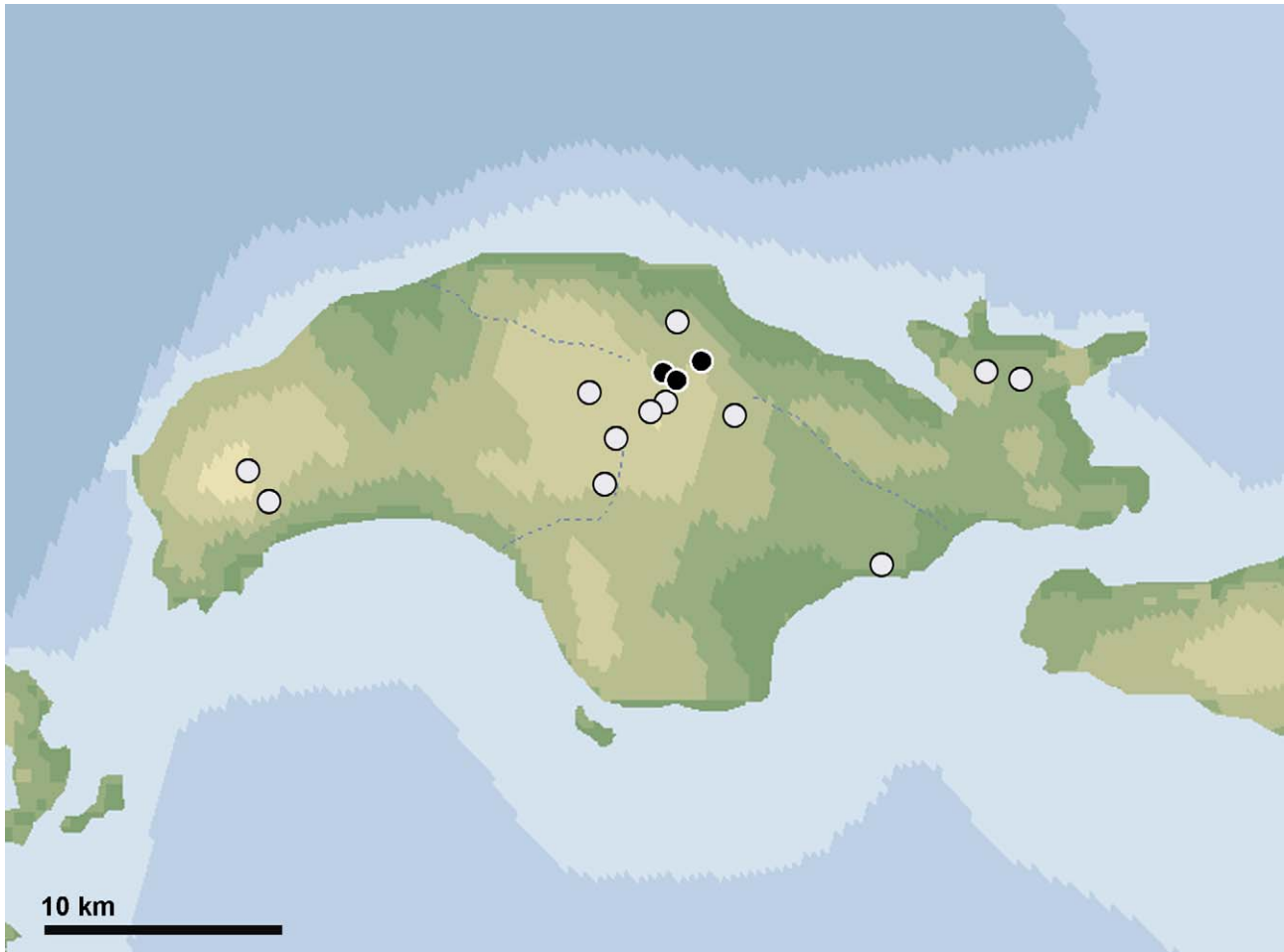


FIGURE 27. Map showing all litter samples taken on Samos Island; three filled circles in the Oros Ambelos mountains indicate the presence of *Brachysomus samos* **sp. n.**

Brachysomus samos **sp. n.** can be characterized as a highly endemic, hygrophilous and detritivorous species. The new species was collected together with an undescribed *Echinodera* sp. (Germann, in preparation) an undetermined *Entomoderus* sp., *Otiorhynchus* cf. *magnicollis* Stierlin, 1888, and *Omius sandneri* (Reitter, 1906).

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