



New taxonomic and nomenclatural data on *Sarcophaga* (*Heteronychia*) (Diptera: Sarcophagidae), with description of six new species

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Abstract

This paper presents new data on *Sarcophaga (Heteronychia)*. Six species are described as new: *Sarcophaga (Heteronychia) anatolica* **sp. nov.** from Asiatic Turkey, *S. (H.) lejlekensis* **sp. nov.** from Kyrgyzstan, *S. (H.) mediterranea* **sp. nov.** from mainland Italy, Sicily and Croatia, *S. (H.) rosellensis* **sp. nov.** from central Italy, *S. (H.) tetrax* **sp. nov.** from Sicily, and *S. (H.) tunisiae* **sp. nov.** from Tunisia.

Two new replacement names are proposed: *Sarcophaga (Heteronychia) hellenica*, **nom. nov.** for *S. (H.) vervesi* (Povolný, 1996) (junior secondary homonym of *Kozlovea vervesi* Nandi, 1993), and *S. (H.) tangerensis*, **nom. nov.** for *S. (H.) amica* (Peris *et al.*, 1998) (junior secondary homonym of *Phallosphaera amica* Ma, 1964).

Sarcophaga (Heteronychia) belanovskyi (Verves, 1973), *S. (H.) helenae* (Trofimov, 1948) and *S. (H.) nanula* (Povolný, 1999) are resurrected as valid, and the last (originally proposed as a subspecies) is given species rank.

Sarcophaga amita Rondani, 1860 and *S. bezziana* Böttcher, 1913 are transferred from subgenus *Discachaeta* Enderlein to subgenus *Heteronychia* Brauer & Bergenstamm, **subg. comb. nov.**

Thirty-nine new synonymies are established: *Shoachaeta* Lehrer, 1997 with *Heteronychia* Brauer & Bergenstamm, 1889, **syn. nov.**; *Ashlaiana* Lehrer, 1998 with *Heteronychia* Brauer & Bergenstamm, 1889, **syn. nov.**; *Heteronychia iubita* Lehrer, 1999 with *Sarcophaga (Heteronychia) ancilla* Rondani, 1865, **syn. nov.**; *Spatulapica lucentina* Lehrer & Martínez-Sánchez, 2001 with *S. (H.) ancilla* Rondani, 1865, **syn. nov.**; *Heteronychia (Heteronychia) povolnyi* Mihályi, 1975 with *S. (H.) belanovskyi* (Verves, 1973), **syn. nov.**; *Sarcophaga benaci* var. *tenuiforceps* Böttcher, 1913 with *S. (H.) benaci* Böttcher, 1913, **syn. nov.**; *Heteronychia (Heteronychia) vachai* Povolný, 1987 with *S. (H.) benaci* Böttcher, 1913, **syn. nov.**; *Shoachaeta cornogranda* Lehrer, 2009 with *S. (H.) bezziana* Böttcher, 1913, **syn. nov.**; *Pierretia (Pandelleola) taurica* Rohdendorf, 1937 with *S. (H.) boettcheri* Villeneuve, 1912, **syn. nov.**; *Heteronychia (Pandelleola) gasparyi* Lehrer, 1977 with *S. (H.) boettcheri* Villeneuve, 1912, **syn. nov.**; *Heteronychia bodediana* Lehrer, 1998 with *S. (H.) boettcheri* Villeneuve, 1912, **syn. nov.**; *Ashlaiana shakrana* Lehrer, 1998 with *S. (H.) boettcheri* Villeneuve, 1912, **syn. nov.**; *Pandelleola caraormana* Lehrer, 2008 with *S. (H.) boettcheri* Villeneuve, 1912, **syn. nov.**; *Heteronychia (Heteronychia) morenita* Peris, González-Mora & Mingo, 1998 with *S. (H.) chiquita* (Peris, González-Mora & Mingo, 1998), **syn. nov.**; *Heteronychia cullottorum* Povolný, 2005 with *S. (H.) consanguinea* Rondani, 1860, **syn. nov.**; *Heteronychia (Eupierretia) spatulifera* Chen & Lu, 1981 with *S. (H.) curvifemoralis* (Li, 1980), **syn. nov.**; *Heteronychia (Spatulapica) kovalae* Verves, 1979 with *S. (H.) depressifrons* Zetterstedt, 1845, **syn. nov.**; *Heteronychia dimioniphalla* Lehrer, 1996 with *S. (H.) dissimilis* Meigen, 1826, **syn. nov.**; *Heteronychia (Eupierretia) macedonica* Povolný, 1996 with *S. (H.) enderleini* Jäcentkovský, 1937, **syn. nov.**; *Devriesia weberi* Lehrer, 1995 with *S. (H.) ferox* Villeneuve, 1908, **syn. nov.**; *Heteronychia (Asceloctis) perplexa* Peris, González-Mora & Mingo, 1996 with *S. (H.) ferox* Villeneuve, 1908, **syn. nov.**; *Pandelleola resnikae* Lehrer, 1996 with *S. (H.) filia* Rondani, 1860, **syn. nov.**; *Heteronychia fugitiva* Povolný, 2001 with *S. (H.) haemorrhoea* Meigen, 1826, **syn. nov.**; *Heteronychia (Spatulapica) fraterna* Lehrer, 1977 with *S. (H.) helenae* (Trofimov, 1948), **syn. nov.**; *Spatulapica delicata* Lehrer, 2000 with *S. (H.) helenae* (Trofimov, 1948), **syn. nov.**; *Heteronychia dayani* Lehrer, 1996 with *S. (H.) kerteszi* Villeneuve, 1912, **syn. nov.**; *Salemea sororia* Povolný, 2004 with *S. (H.) kerteszi* Villeneuve, 1912, **syn. nov.**; *Heteronychia (Eupierretia) helanshanensis* Han, Chao & Ye, 1985 with *S. (H.) kozłovi* (Rohdendorf, 1937), **syn. nov.**; *Sarcophaga thalhammeri* Böttcher, 1913 with *S. (H.) lacrymans* Villeneuve, 1912, **syn. nov.**; *Sarcophaga zhelochovtzevi* Rohdendorf, 1925 with *S. (H.) lacrymans* Villeneuve, 1912, **syn. nov.**; *Heteronychia (Heteronychia) cepelaki* Povolný & Slamečková, 1970 with *S. (H.) lacrymans* Villeneuve, 1912, **syn. nov.**; *Heteronychia histriops* Lehrer, 2008 with *S. (H.) lacrymans* Villeneuve, 1912, **syn. nov.**; *Heteronychia (Eupierretia) brachystylata* Chao & Zhang, 1988 with *S. (H.) plotnikovi* Rohdendorf, 1925, **syn. nov.**; *Heteronychia lednicensis* Povolný in Povolný & Verves, 1986 with *S. (H.) proxima* Rondani, 1860, **syn. nov.**; *Heteronychia (Heteronychia) drenskiana* Lehrer, 1977 with *S. (H.) pseudobenaci* (Baranov, 1942), **syn. nov.**; *Heteronychia (Eupierretia) peckae* Verves, 1977 with *S. (H.) shnitnikovi* (Roh-

dendorf, 1937), **syn. nov.**; *Heteronychia (Eupierretia) tenuipennis* Chao & Zhang, 1988 with *S. (H.) shnitnikovi* (Rohdendorf, 1937), **syn. nov.**; *Heteronychia (Pandelleola) volcanoetnica* Povolný, 2002 with *S. (H.) sicilia* Pape, 1996, **syn. nov.**; *Hartigia anastrenua* Baranov, 1942 with *S. (H.) vagans* Meigen, 1826, **syn. nov.**

Lectotypes are designated for the following nominal taxa: *Mehria pseudobenaci* Baranov, 1942, *Pierretia (Pierretia) boettcheriana* Rohdendorf, 1937, *Pierretia (Pierretia) obscurata* Rohdendorf, 1937, *Sarcophaga benaci* Böttcher, 1913, *Sarcophaga benaci* var. *tenuiforceps* Böttcher, 1913, *Sarcophaga boettcheri* Villeneuve, 1912, *Sarcophaga ferox* Villeneuve, 1908, *Sarcophaga fertoni* Villeneuve, 1911, *Sarcophaga kerteszi* Villeneuve, 1912, *Sarcophaga lacrymans* Villeneuve, 1912, *Sarcophaga metopina* Villeneuve, 1908, *Sarcophaga monspellensia* Böttcher, 1913, *Sarcophaga porrecta* Böttcher, 1913, *Sarcophaga setinervis* var. *mutila* Villeneuve, 1912, *Sarcophaga thalhammeri* Böttcher, 1913 and *Sarcophaga tricolor* Villeneuve, 1908.

Sarcophaga smithiana Pape, 1996 is removed from subgenus *Heteronychia* and considered as *incertae sedis* within *Sarcophaga*.

New country or regional records are provided for *Sarcophaga (H.) benaci* (Spain), *S. (H.) boettcheri* (Serbia), *S. (H.) croca* (Croatia), *S. (H.) depressifrons* (Greece, Spain), *S. (H.) ferox* (Algeria), *S. (H.) filia* (Crete, Macedonia, Morocco, Tunisia), *S. (H.) kataphygonis* (Poland), *S. (H.) kerteszi* (Crete), *S. (H.) minima* (Crete), *S. (H.) monspellensia* (Sicily, Tunisia), *S. (H.) mutila* (Italy), *S. (H.) nanula* (France, Macedonia) and *S. (H.) proxima* (Sicily).

Key words: Flesh flies, lectotype designations, new replacement names, new synonymies, new records

Introduction

Heteronychia Brauer & Bergenstamm, 1889 is a Palaearctic subgenus of *Sarcophaga* Meigen, 1826 with a current tally of 82 valid species (Pape 1996; Whitmore *et al.* 2009; Whitmore 2009b), which can be briefly characterized as follows: body length between 3.5 and 14.5mm; thorax with three postsutural dorsocentral setae; scutellum with or without a pair of apical setae; mid femur with or without a subapical posteroventral comb of spine-like setae; hind trochanter usually with a ventral brush of tightly-spaced, shortened, spine-like setae; hind femur with or without strong anteroventral setae in addition to subapical one; wing vein R₁ often with setulae on dorsal surface; abdominal tergite 3 with or without mediomarginal setae; sternite 5 v-shaped, with modified setae forming a more or less tight brush-like structure at the base of each arm of the V, medianmost setae usually distinctly longer than others; epandrium with a slightly to distinctly elongated ventral margin, variable in colour from light red to shiny black; cercus usually with a preapical dorsal hump or knob, sometimes with a median dorsal saddle or with a deep dorsal excavation; cerci usually entirely covered with setae, sometimes with a more or less conspicuous lateral, dorsal or latero-dorsal glabrous area; pregonite with at least a few long setulae on dorsal surface; basiphallus long; membrane of distiphallus variable from flat to distinctly swollen, in some cases hugely developed in apical direction; vesica usually dorsoventrally flattened and short, never subdivided into two lobes; harpes usually with a well developed apical process; median stylus bifurcate, always short; lateral styli usually reduced in volume, rarely distinctly widening (funnel-shaped) apically; juxta well developed, sometimes conspicuously elongated, with or without basal or lateral processes; median part of juxta usually with lateral and/or median processes, variable in shape and length.

No key to all the species of *Heteronychia* has been published to date, but partial keys can be found in several works on regional faunas (Rohdendorf 1937; Pape 1987; Verves 1993; Povolný & Verves 1997; Whitmore 2009b; Richet *et al.* in press).

In the framework of a wider revisionary project on *Heteronychia* and related subgenera, type material of several species was studied, together with a large number of specimens from various museum and private collections. The goal of this paper is the proposal of new replacement names, new synonymies and new lectotype designations within the subgenus, as well as the description of six new species.

Material and methods

The following specimen depositories are cited in the text:

AMMN Academy of Military Medical Sciences, Ningxia Hui Autonomous Region, China.
CNBFVR Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale “Bosco Fontana”, Verona, Italy.