

## NOTES ON THE TAXONOMY OF SOME OLD WORLD SCORPIONS (SCORPIONES: BUTHIDAE, CHACTIDAE, ISCHNURIDAE, SCORPIONIDAE)

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**ABSTRACT.** The following new synonymies are found among the scorpions of the Old World: *Buthoscorpio* Werner 1936 = *Pocockius* Francke 1985, NEW SYNONYMY; *Androctonus* (*Leiurus*) *quinquestriatus* Ehrenberg 1828 = *Androctonus* (*Liurus*) *quinquestriatus aculeatus* Ehrenberg 1831, NEW SYNONYMY; *Euscorpius* *mingrelicus* *gamma* (Caporiacco 1950) (in part), NEW COMBINATION = *Euscorpius* *mingrelicus* *caprai* Bonacina 1980, NEW SYNONYMY. The following new homonymies are published: *Buthus* (*Hottentotta*) *hebraeus* Werner 1935, NEW HOMONYMY; *Buthus* *acuteacarinatus* *judaicus* Birula 1905, NEW HOMONYMY; *Euscorpius* *germanus* *polytrichus* Hadzi 1929, NEW HOMONYMY; *Euscorpius* *germanus* *oligotrichus* Hadzi 1929, NEW HOMONYMY; *Euscorpius* *carpathicus* *oligotrichus* Hadzi 1929, NEW HOMONYMY; *Scorpio* *maurus* *subtypicus* Birula 1910, NEW HOMONYMY. The following new replacement names are introduced to replace junior homonyms: *Androctonus amoreuxii levyi* Fet, NOMEN NOVUM = *Buthus* (*Hottentotta*) *hebraeus* Werner 1935, NEW SYNONYMY; *Lychas marmoreus lucienkochi* Fet, NOMEN NOVUM = *Lychas marmoreus obscurus* Kraepelin 1916, NEW SYNONYMY; *Uroplectes fischeri caporiaccoi* Fet, NOMEN NOVUM = *Uroplectes fischeri intermedius* Caporiacco 1941, NEW SYNONYMY; *Hadogenes trichiurus werneri* Fet, NOMEN NOVUM = *Hadogenes trichiurus paucidens* Werner 1939, NEW SYNONYMY; *Scorpio maurus birulai* Fet, NOMEN NOVUM = *Scorpio maurus subtypicus* Birula 1910, NEW SYNONYMY. Type species are designated for *Pilumnus* C.L. Koch 1837, *Repucha* as proposed by Francke (1985); and two subgenera of *Pandinus* Thorell as proposed by Vachon (1974). An incorrect original spelling *Trichobuthus grubleri* Vachon 1941 is corrected to *T. guebleri* (a junior synonym of *Buthiscus bicalcaratus* Birula 1905). The correct date of the description for *Pectinibuthus* Fet is 1984, but not 1987. The name *Euscorpius carpathicus mesotrichus* Hadzi 1929 is a junior homonym and cannot be used.

These notes discuss some taxonomic problems within the Old World scorpiofauna. This fauna, especially in the Mediterranean area and Middle East, has been described intensively since the 18th century, often creating multiple synonymies and homonymies. A considerable effort of many generations of scorpion taxonomists (including such prominent names as T. Thorell, R.I. Pocock, E. Simon, K. Kraepelin, A. Birula, M. Vachon, O. Francke, W.R. Lourenço) led to the clarification of many nomenclatural problems; however, a number of situations exist which do not comply with the International Code of Zoological Nomenclature (ICZN 1985; further quoted as separate Articles). Below, I attempted to analyze those situations.

### FAMILY BUTHIDAE C.L. KOCH 1837

Genus *Androctonus* Ehrenberg 1828

*Buthus* (*Hottentotta*) *hebraeus* Werner 1935, NEW HOMONYMY (currently *Androctonus*

*amoreuxii hebraeus*) is found to be a primary junior homonym of *Buthus quinquestriatus hebraeus* Birula 1908 (currently *Leiurus quinquestriatus hebraeus*) (Article 53 of the Code), and thus is permanently invalid (Article 52) and has to be replaced. A new replacement name is introduced, *Androctonus amoreuxii levyi* Fet, NOMEN NOVUM = *Buthus* (*Hottentotta*) *hebraeus* Werner 1935, NEW SYNONYMY. Etymology: a patronym honoring the Israeli arachnologist Dr. Gershon Levy.

### Genus *Buthiscus* Birula 1905

Vachon (1941) described *Trichobuthus grubleri* from Algeria. Later (Vachon 1942) he found this species to be a junior synonym of *Buthiscus bicalcaratus* Birula 1905. The original patronym *grubleri* was supposed to be formed from the collector's name, M. Gübler, and is therefore an incorrect original spelling [Article 32(c)]. Vachon (1952) admitted

clear evidence of an inadvertent error (*lapsus calami*). It is here corrected to *Trichobuthus guebleri* Vachon 1941; following Article 32(d)(i)(2), the letter "e" is inserted after the vowel.

#### Genus *Buthoscorpio* Werner 1936

This genus was originally described in the family Scorpionidae, with a single (type by monotypy) species *Buthoscorpio laevicauda* Werner 1936, from India. Vachon (1961) found this species to be a buthid, and a junior synonym of *Stenochirus politus* Pocock 1899 (Buthidae). Thus, the name *Buthoscorpio* Werner 1936 became a junior synonym of *Stenochirus* Karsch 1892 (type species by original designation *Stenochirus sarasinorum* Karsch 1892, from Sri Lanka).

Later, Francke (1985) discovered that Karsch's name was a junior homonym of *Stenochirus* Oppel 1862 (Crustacea). A replacement name, *Pocockius* Francke 1985, was introduced as a *nomen novum* for *Stenochirus* Karsch 1892. However, the name *Buthoscorpio* Werner 1936 is an available synonym [Article 60(b)]. Therefore, *Buthoscorpio* Werner 1936 = *Pocockius* Francke 1985, NEW SYNONYMY. This genus includes two species: *Buthoscorpio politus* (Pocock 1899), NEW COMBINATION (the type species) and *B. sarasinorum* (Karsch 1892), NEW COMBINATION.

#### Genus *Compsobuthus* Vachon 1949

Two taxa, originally described as *Buthus acutecarinatus judaicus* Birula 1905 (Middle East; type locality: Jordan and Lebanon) and *Buthus acutecarinatus wernerii* Birula 1908 (Africa, Middle East; type locality: Sudan), were treated for a long time as two separate species of the genus *Compsobuthus* Vachon 1949. Levy & Amitai (1980) demonstrated that these two forms are subspecies of the same species (with an intergradation zone in Israel), assigned both subspecies to *Compsobuthus wernerii* as *C. wernerii wernerii* and *C. wernerii judaicus*. Recently, Sissom (1994) confirmed and redescribed *C. wernerii wernerii*.

It can be observed that *Buthus acutecarinatus judaicus* Birula 1905 is a senior synonym of *Buthus acutecarinatus wernerii* Birula 1908. The situation is complicated by the fact that *Buthus judaicus* Simon 1872 (currently

*Hottentotta judaicus*) is found to be a primary senior homonym of *Buthus acutecarinatus judaicus* Birula 1905, NEW HOMONYMY (Article 53 of the Code). Therefore, the name *Buthus acutecarinatus judaicus* Birula 1905 is permanently invalid (Article 52b) and has to be replaced by the next available junior synonym which is *Buthus acutecarinatus wernerii* Birula 1908 (currently *Compsobuthus wernerii*). At the same time, the subspecies inhabiting Israel, Jordan, and Lebanon should be called *Compsobuthus wernerii schmiedeknechti* Vachon 1949 which is the next available junior synonym based on this population (type locality: Nazareth, Israel; originally described as *Compsobuthus schmiedeknechti* Vachon 1949).

#### Genus *Leiurus* Ehrenberg 1828

The description of subspecies *Androctonus (Liurus) quinquestriatus aculeatus* Ehrenberg 1831 (as "forma  $\alpha$  aculeata") was based on the same type specimens and locality (Egypt and Sudan) as that of *Androctonus (Leiurus) quinquestriatus* Ehrenberg 1828 (currently *Leiurus quinquestriatus*). Therefore, *Androctonus (Leiurus) quinquestriatus* Ehrenberg 1828 = *Androctonus (Liurus) quinquestriatus aculeatus* Ehrenberg 1831, NEW SYNONYMY.

#### Genus *Lychas* C.L. Koch 1845

C.L. Koch (1837) described the genus *Pilumnus* without designating a type species or listing any species under this name. Later he (C.L. Koch 1850) found this name to be a junior homonym of *Pilumnus* Leach 1815 (Crustacea) and proposed to use instead the name *Lychas*. This was not, however, a new replacement name, since C.L. Koch (1845) described four species listed under the genus *Lychas* but did not give a separate description of this genus. This, according to Article 12(b)(5), constitutes an indication; therefore the correct date of the generic name *Lychas* is 1845, as correctly suggested by Vachon (1985) but not 1850, as used by Kraepelin (1899) and L.E. Koch (1977).

Of the four species described in 1845 (and listed also in C.L. Koch 1850), only one, *Lychas scutilus* C.L. Koch 1845, currently is included in genus *Lychas*; all three other species are synonyms of *Isometrus maculatus* (De Geer 1778). On this basis, Pocock (1899)

fixed the type species for the genus *Lychas* C.L. Koch 1845 as *Lychas scutilus* C.L. Koch 1845. I designate here the type species for *Pilumnus* C.L. Koch 1837, also as *Lychas scutilus* C.L. Koch 1845, which follows the requirements of Article 13(a).

Francke (1985) introduced *Repucha* as a replacement name for *Pilumnus* C.L. Koch 1837, and synonymized it with *Lychas*. However, since the type species of *Pilumnus* C.L. Koch was not originally designated, *Repucha* Francke also does not have a type species and therefore (being created after 1930) is not available under Francke's authorship [Article 13(b)]. I designate here the type species for *Repucha* as *Lychas scutilus* C.L. Koch 1845, which makes this generic name available as *Repucha* Fet 1997, and a junior synonym of *Lychas* C.L. Koch 1845.

*Lychas marmoreus obscurus* Kraepelin 1916, NEW HOMONYMY, from Australia, is found to be a primary junior homonym (Article 57) of *Lychas asper obscurus* Kraepelin 1913 from Africa. A new replacement name is introduced, *Lychas marmoreus lucienkochi* Fet, NOMEN NOVUM = *Lychas marmoreus obscurus* Kraepelin 1916, NEW SYNONYMY. Etymology: a patronym honoring Dr. Lucien E. Koch, the author of a revision of Australian scorpiofauna (L.E. Koch 1977); a composite word is constructed to avoid confusion with the names of two other prominent scorpion taxonomists, Carl L. Koch and his son Ludwig Koch. This subspecies is listed by L.E. Koch (1977) as a valid form.

#### Genus *Pectinibuthus* Fet 1984

Orlov & Vasilyev (1984) published Fet's description of the new genus (*Pectinibuthus*) and its only species (as "Pectinibuthus birulai" Fet 1983") from Turkmenistan without the author's permission, without information on type material, and with several mistakes. Fet (1989) treated these names as *nomina nuda*, since the extended correct description with the information on type material was published separately (Fet 1987). However, the 1984 date satisfies all requirements for the publication, availability of both genus and species names (Articles 11, 13), and fixation of the type species by indication (by monotypy) [Article 68(d)]. It appeared in a numerous-copy brochure (Orlov & Vasilyev 1984) published by the Gorky State University (Gorky, USSR);

300 copies of it were simultaneously obtainable free of charge. The brochure is dated 1983 on the cover but was approved for print only in January 1984 (information on the back side of the cover page). Therefore, the correct date of publication for *Pectinibuthus* Fet and *P. birulai* Fet is 1984, and the correct reference to the original description is "Fet in Orlov et Vasilyev 1984".

#### Genus *Uroplectes* Peters 1862

*Uroplectes fischeri intermedius* Caporiacco 1941, NEW HOMONYMY, is found to be a primary junior homonym (Article 57) of *Uroplectes intermedius* Tullgren 1907 (which is a junior synonym of *Uroplectes xanthogrammus* Pocock 1897) (both from Africa). A new replacement name is introduced, *Uroplectes fischeri caporiacoi* Fet, NOMEN NOVUM = *Uroplectes fischeri intermedius* Caporiacco 1941, NEW SYNONYMY. Etymology: a patronym honoring Dr. Lodovico di Caporiacco, the well-known Italian arachnologist.

#### FAMILY CHACTIDAE POCOCK 1893

##### Genus *Euscorpius* Thorell 1876

Hadzi (1929) studied three European species, *E. italicus* (Herbst 1800), *E. carpathicus* (Linnaeus 1767), and *E. germanus* (C.L. Koch 1837) from the former Yugoslavia and adjacent areas. Within each of those species, Hadzi described three "forms" which were given names *oligotrichus*, *mesotrichus* and *polytrichus*. These forms have status of subspecies [Article 45(f)]. Capra (1939) correctly recognized *E. italicus mesotrichus* Hadzi 1929 as a (primary) senior homonym of *E. germanus mesotrichus* Hadzi 1929 and *E. carpathicus mesotrichus* Hadzi 1929 [Article 52(a)]. Capra did not introduce any replacement names. None of the three subspecies described by Hadzi (1929) within *E. italicus* is currently recognized as valid; however, these names remain available junior synonyms of *E. italicus*.

All six subspecies described by Hadzi (1929) within *E. germanus* and *E. carpathicus* are primary junior homonyms. Most of these forms do not have originally designated type specimens and/or localities. Type material of Hadzi, formerly in the Slovenian Academy of Sciences in Ljubljana, is considered lost (M. Kuntner pers. comm.). For *E. carpathicus polytrichus* Hadzi 1929 (type locality unknown), Caporiacco (1950) published a replacement

name, *E. carpathicus hadzii*. The following observations can be made regarding the remaining five subspecies. *E. carpathicus oligotrichus* Hadzi 1929, NEW HOMONYMY (type locality unknown) and *E. germanus polytrichus* Hadzi 1929, NEW HOMONYMY (type locality unknown) are not diagnosable at the subspecies level and are both synonyms of *Euscorpius carpathicus* (L. 1767) (Caporiacco 1950).

*E. germanus oligotrichus* Hadzi 1929, NEW HOMONYMY (type locality unknown) and *E. germanus mesotrichus* Hadzi 1929 (type locality: Kranjska, now Slovenia) are also not diagnosable (Caporiacco 1950). Both forms were synonymized with *E. germanus* by Kinzelbach (1975). According to current division (Bonacina 1980), they may belong either to *E. germanus* (C.L. Koch 1837) or to *E. mingrelicus* (Kessler 1874).

The validity and rank of *Euscorpius carpathicus mesotrichus* Hadzi 1929 (type locality: southern Slovenia) remains unclear. Caporiacco (1950) synonymized it with *E. carpathicus tergestinus* (C.L. Koch 1837) (type locality: Trieste, Italy). Kinzelbach (1975) did not accept this synonymy and elevated Hadzi's subspecies to the species status as *Euscorpius mesotrichus* Hadzi 1929, significantly increasing its scope and range. A number of authors (e.g., Michalis & Dolkeras 1989; Lacroix 1991; Krtscher 1993) followed Kinzelbach (1975) in using the name *E. mesotrichus*, although it is a primary junior homonym and cannot be used. If this form is considered a valid species, it currently should be called *Euscorpius tergestinus* (C.L. Koch).

The subspecies *Euscorpius germanus gamma* Caporiacco 1950 was based on a series of syntypes from northeastern Italy and Slovenia. This subspecies was revised by Bonacina (1980) who synonymized part of it with the nominotypical subspecies *E. germanus germanus* (C.L. Koch), while transferring another part as a subspecies to *Euscorpius mingrelicus* (Kessler). For this latter subspecies, Bonacina (1980) introduced a replacement name, *E. mingrelicus caprai*. However, Caporiacco's name remains available even if it denotes more than one taxon (Article 17). Therefore, the correct name for this subspecies is *Euscorpius mingrelicus gamma* (Caporiacco 1950) (in part), NEW COMBINATION =

*Euscorpius mingrelicus caprai* Bonacina 1980, NEW SYNONYMY.

## FAMILY ISCHNURIDAE SIMON 1879

### Genus *Hadogenes* Kraepelin 1894

*Hadogenes trichiurus paucidens* Werner 1939, NEW HOMONYMY, is a primary junior homonym of *Hadogenes paucidens* Pocock 1896 (both from South Africa). A new replacement name is introduced, *Hadogenes trichiurus wernerii* Fet, NOMEN NOVUM = *Hadogenes trichiurus paucidens* Werner 1939, NEW SYNONYMY. Etymology: a patronym honoring Dr. Franz Werner who made extensive contributions to scorpion taxonomy in the 1900s–1930s. The validity of this form was never challenged probably because it was forgotten; it was neither listed by Lamoral & Reynders (1975) nor discussed in the recent revision of *Hadogenes* (Newlands & Cantrell 1986).

## FAMILY SCORPIONIDAE LATREILLE 1802

### Genus *Pandinus* Thorell 1876

Two taxa, *Pandinoides* Vachon 1974 and *Pandinurus* Vachon 1974, were described (Vachon 1974) as subgenera of *Pandinus*; however, type species were not designated or indicated for these (non-monotypic) taxa. According to Article 13(b) of the Code, these names are not available under Vachon's authorship. I designate here their type species and retain the generic names (as described by Vachon 1974): *Pandinoides* Fet 1997 (type species *Scorpio exitialis* Pocock 1888); and *Pandinurus* Fet 1997 (type species *Pandinus militaris* Pocock 1900).

Three other valid subgenera of *Pandinus* are: the nominotypical subgenus (type species by original designation *Buthus imperator* C.L. Koch 1841), *Pandinops* Birula 1913 (type species by indication *Pandinus peeli* Pocock 1900), and *Pandinopsis* Vachon 1974 (type species by monotypy *Scorpio dictator* Pocock 1888).

### Genus *Scorpio* Linnaeus 1758

The species *Scorpio maurus subtypicus* Birula 1910, NEW HOMONYMY (from Morocco) is found to be a primary junior homonym of *Scorpio africanus subtypicus* Kraepelin 1894 (from Sudan; currently *Pan-*

*dinus imperator subtypicus*), and therefore is a permanently invalid name (Article 52 of the Code). A new replacement name is introduced, *Scorpio maurus birulai* Fet, NOMEN NOVUM = *Scorpio maurus subtypicus* Birula 1910, NEW SYNONYMY. Etymology: a patronym honoring the famous Russian scorpionologist Dr. Alexei A. Birula (Byalynitsky-Birula).

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