

# Scorpions of Europe

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**Abstract:** This brief review summarizes the studies in systematics and zoogeography of European scorpions. The current “splitting” trend in scorpion taxonomy is only a reasonable response to the former “lumping.” Our better understanding of scorpion systematics became possible due to the availability of new morphological characters and molecular techniques, as well as of new material. Many taxa and local faunas are still under revision. The total number of native scorpion species in Europe could easily be over 35 (Buthidae, 8; Euscorpiidae, 22-24; Chactidae, 1; Iuridae, 3) belonging to four families and six genera. The northern limit of natural (non-anthropochoric) scorpion distribution in Europe is in Saratov Province, Russia, at 50°40'54"N, for *Mesobuthus eupeus* (Buthidae).

**Keywords:** Buthidae, Euscorpiidae, Iuridae, Chactidae, *Buthus*, *Mesobuthus*, *Euscorpius*, *Iurus*, *Calchas*, *Belisarius*

One thinks of scorpions primarily as inhabiting deserts, and indeed the rich Palearctic scorpiofaunas of North Africa, Middle East and Central Asia are well known—albeit not always well understood. However, it could be a surprise to many zoologists that many endemic Palearctic scorpion taxa (especially Euscorpiidae and Iuridae) do not in fact live in arid habitats at all but are found in quite temperate and even humid and cold environments, including mountains (Alps, Balkans, Taurus, Caucasus) up to 2500 m.

The latitudinal boundary of scorpions in Europe is not easy to determine since many populations are introduced by humans, e.g. *Euscorpius flavicaudis* in France, *E. tergestinus* in Austria, and *E. italicus* in many areas. The northern boundary of natural (post-glacial dispersal) scorpion distribution in the western Europe is probably marked by the northernmost record of *Euscorpius germanus* in Austria (North Tyrol, 47°39'N; KOMPOSCH *et al.* 2001), but in the eastern Europe (lower Volga in Russia, Saratov Province) *Mesobuthus eupeus* reaches almost 51°N (see below).

Already Aristotle distinguished between toxic European Buthidae and non-dangerous *Euscorpius* (FET *et al.* 2009). Small but interesting scorpiofauna of Europe received a lot of attention starting with Linnaeus himself who in 1767 described *Scorpio carpathicus* (FET, SOLEGLAD 2002). A substantial review on the Aegean region published by KINZELBACH (1975). Our latest reviews (FET *et al.* 2004, KALTSAS *et al.* 2008) address details on taxonomy and distribution of most European taxa; see also VIGNOLI, SALOMONE (2008).

## Family BUTHIDAE

Two most prominent in Europe buthids are *Buthus occitanus* (AMOREUX, 1789) in Spain and France, and *Mesobuthus gibbosus* (BRULLÉ, 1832) in the Balkans. These two species, which occupy xeric habitats, are well-known as the only relatively toxic scorpions in Europe. These two taxa exemplify two routes used by Buthidae (as well as by numerous other xeric elements) in their dispersal to Europe: in *Buthus*, from Africa (via the Iberian

Peninsula), and in *Mesobuthus*, from Asia (via the Balkan Peninsula).

The genus *Buthus* LEACH, 1815 is an African element, with its center of diversity in North Africa. *Buthus occitanus* was described from southern France; it is widespread in Spain, and was also recorded from Portugal (a record from Greece in the *Fauna Europaea* database is clearly erroneous). The same species (with numerous local subspecies) was also traditionally reported for the large part of Africa north of the equator and from the Middle East. Recently, LOURENÇO (2002, 2003) reconsidered many of these populations, elevated subspecies to species rank, described new species, and reduced *Buthus occitanus* to European populations. LOURENÇO (2002) also suggested that the colonization of Europe by *B. occitanus* was rather recent (Quaternary). This species has been an object of detailed genetic studies to evaluate gene flow across the Strait of Gibraltar (GANTENBEIN, LARGIADÈR 2003; GANTENBEIN 2004). CRUCITTI *et al.* (1994) outlined the ecological factors influencing the distribution of *Buthus occitanus* in Europe.

An unexpected discovery of two endemic *Buthus* species in Spain, *Buthus ibericus* LOURENÇO et VACHON, 2004 and *Buthus montanus* LOURENÇO et VACHON, 2004, brings more attention to this genus (TERUEL, PÉREZ-BOTE 2005). A new, endemic species of *Buthus* was also found on Cyprus (LOURENÇO *et al.* in press); we include Cyprus in the account of European fauna due to its coverage in *Fauna Europaea* (CRUCITTI 2004).

The second buthid genus in Europe, *Mesobuthus* Vachon, 1950, is an arid Asian element, with its highest species diversity in Iran. The taxonomy of *Mesobuthus* is in flux; a molecular survey (GANTENBEIN *et al.* 2003) confirms a separate position of Balkan-Anatolian *M. gibbosus*. In Europe, it is found in Albania, SW Bulgaria, Macedonia (Doiran), Greece, Montenegro, and European Turkey. In Bulgaria, it was first reported by TERUEL *et al.* (2004) from Pirin; it is unclear if resident populations exist. An endemic island species *Mesobuthus cyprius* GANTENBEIN et KROPF, 2000, has been recently described from Cyprus (previously treated as *M. gibbosus*).

Biology and ecology of *M. gibbosus* in Greece has been intensively studied (CRUCITTI, MARINI 1987; KALTSAS *et al.* 2006, 2008; KALTSAS, MYLONAS 2007). An impressive phylogeographic study (based on mtDNA markers) was published by PARMAKELIS *et al.* (2006a). The origin of Rhodes population was studied by GANTENBEIN, LARGIADÈR (2002). GANTENBEIN, KEIGHTLEY (2004) used both *M. gibbosus* and *M. cyprius* to assess rates of molecular evolution in scorpions.

In addition, two predominantly Asian species (or most likely complexes of species), *Mesobuthus caucasicus* (NORDMANN, 1840) and *Mesobuthus eupeus* (C.L. KOCH, 1839), are found in the fringes of geographic Europe.

*Mesobuthus caucasicus* was reported from southern Ukraine (Odessa and Kherson Provinces), highly disjunct from its main range; specimens from the Odessa Province exist in collections (FET 1989). The same species is found in the Northern Caucasus areas of Russia (Dagestan, Chechnya) that geographically belong to Europe.

Another widely ranging Asian species, *M. eupeus*, is found in the lower Volga, south of European Russia, where it was reported for Astrakhan Province (FET 1989). These populations were described both as *M. e. bogdoensis* (BIRULA, 1896) and *M. e. volgensis* (BIRULA, 1925); they likely belong to the Central Asian “thersites” complex. Disjunct reproducing populations were recently documented even further north at the right bank of Volga, such as one in the Volgograd Province (SAGALAEV 1997). The Saratov Province record in Krasnoarmeisky District (misidentified as *Buthus occitanus*; ANIKIN, KIREEV 1998; V. ANIKIN, *pers. comm.* 2010), at 50°40’54”N 45°38’36”E, is the northern boundary of natural scorpion distribution in Europe.

Incidentally, *M. eupeus* has been recently also documented in the Orenburg Province of Russia (DAVYGORA, RUSAKOV 2001), which constitutes the northernmost limit of natural scorpion distribution in Asia and the Palearctic. This record in Aituar Steppe of the Orenburg Natural Reserve lies at 51°13’N 57°75’E (S. ESYUNIN, *pers. comm.* 2010); compare with GROMOV (2001). Only some records

of *Paruroctonus boreus* (GIRARD, 1854) in southern Alberta, Canada, lie slightly further north (D. JOHNSON, *pers. comm.* 2010).

In total, eight native buthid species are documented in Europe. Further increase in their number is not expected (but so unexpected were new species discoveries in Spain and Cyprus).

### Family EUSCORPIIDAE

This family is represented in Europe by its unique genus *Euscorpius* Thorell, 1876, a European-Mediterranean endemic, the core and diverse element of European scorpiofauna, found in diverse habitats from sea coast to the high Alps and Balkans. In many areas, two or more congeners (or even “consubgener”) are found sympatrically. Currently, 17 species are valid (see below) but their accepted ranges do not include all known populations of *Euscorpius*. I estimate the total number of *Euscorpius* species in Europe as at least 22-24. Most populations from Greece and the Balkans still require a detailed study.

Although family Euscorpiidae is represented in mountainous Asia (subfamily Scorpiopinae), the closest taxa to *Euscorpius* (also in subfamily Euscorpiinae) are Mexican genera *Megacormus* and *Plesiochactas* (SOLEGLAD, SISSOM 2001). Some species of *Euscorpius* are very clearly defined, but in many other cases traditional morphological criteria have not been sufficient. For recent reviews, see: FET *et al.* (2004); KALTSAS *et al.* (2008), and VIGNOLI, SALOMONE (2008; they also give a good review of known ecology).

### Subgenus *Tetratrachobothrius* BIRULA, 1917

*Euscorpius flavicaudis* (DEGEER, 1778), the only species of this subgenus, is limited to the Western Mediterranean: Spain, Balears, southern France, Corsica, Italy, and Sardinia. It is also found in North Africa, and has introduced populations in England and even Brazil and Uruguay. Its biology and ecology was studied by BENTON (1991, 1992, 1993) in the introduced population in England. High genetic homogeneity (GANTENBEIN *et al.* 2002) between its populations in mainland France and Corsica suggests that *E. flavicaudis* could be a relict that passed through a bottleneck and has been dispersing with humans.

Anthropochory is documented for many populations of *E. flavicaudis* in France (VACHON 1969); a similar trend is observed for other *Euscorpius*.

### Subgenus *Polytrichobothrius* BIRULA, 1917

*Euscorpius italicus* (HERBST, 1800), the largest species in the genus, is found from France to Caucasus (including the Black Sea coast of Turkey, Georgia, and Russia), and also in Northern Africa (Algeria, Morocco, Tunisia). For its distribution in Slovenia, see FET *et al.* (2001); for biology in Italy, see COLOMBO (2006) and CRUCITTI *et al.* (2007). For distribution and biology in Switzerland, see BRAUNWALDER (2001, 2005). A very low genetic divergence was detected by FET *et al.* (2006) between European and Anatolian populations of *E. italicus* (as compared to its sister species *E. naupliensis*). This suggests a recent dispersal from a glacial refugium, possibly even in historical times—which could explain a puzzling absence of *E. italicus* from all Aegean and Mediterranean islands. The species is clearly anthropophilic and anthropochoric; BRAUNWALDER (2001, 2005) notes its predominant occurrence in human habitations. Many of its disjunct populations are clearly introduced (e.g. in Iraq and Yemen), and some probably became extinct, e.g. from the Don River in southern Russia, discovered in the 1920s but never reported again (FET 1989).

For decades, *E. italicus* was considered the only species of its distinct subgenus. However, GANTENBEIN *et al.* (2002), based on both molecular and morphological data, restored *Euscorpius naupliensis* (C.L. KOCH, 1837), an endemic of Greece (Peloponnese and Zakynthos Island), and a senior synonym of *E. italicus zakynthi* CAPORACCO, 1950 from Zakynthos. Its ecology was studied in the Peloponnese (CRUCITTI, BUBBICO, 2001; as *E. italicus*) and on Zakynthos (COLOMBO 2006). Based on the genetic divergence between *E. naupliensis* and *E. italicus*, GANTENBEIN *et al.* (2002) suggested that their split predates the Messinian salinity crisis (5.2 Myrs ago).

### Subgenus *Alpiscorpius* GANTENBEIN *et al.*, 1999

This subgenus was established to accommodate the topology of a pilot 16S mtDNA phylogeny that demonstrated a separate position of a group of spe-

cies previously included in the subgenus *Euscorpius* s. str. Morphology clearly confirms this compact group; a revision is in progress (FET *et al.*). The subgenus ranges from Austria to Caucasus. It includes some high-mountain forms, up to 2170 m in East Tirol (Austria) and 2250 m in Swiss Alps (*E. germanus*), and 2200–2400 m in the Balkans (*E. beroni*). Currently, **five** species are valid; the species-level composition of *Alpiscorpius* is still unclear in the main part of its range, i.e. the Balkans and Anatolia.

***Euscorpius alpha*** Caporiacco, 1950 was elevated to species level from a subspecies of *E. germanus* by GANTENBEIN *et al.* (2000a). It is found in NW Italy (Piedmont, Valle d’Aosta and Lombardy) and Switzerland. *E. germanus* and *E. alpha* are allopatric, sibling Alpine species (FET *et al.* 2004). The degree of molecular divergence suggests that these two species have evolved in the area before the Pleistocene glaciations, maybe since the orogenesis of the Alps (GANTENBEIN *et al.* 2000a). *E. germanus* also has isolated populations in the Apennines; it is not known whether they are relict or introduced (FET *et al.* 2004). For distribution and biology in Switzerland, see BRAUNWALDER (2001, 2005).

***Euscorpius beroni*** FET, 2000, was described from high Prokletije Mountains of Albania. It belongs to the Balkan portion of the “*E. mingrelicus* complex.”

***Euscorpius germanus*** (C. L. KOCH, 1837). This traditional species was restricted by GANTENBEIN *et al.* (2000) only to some populations in Austria, NE Italy, Slovenia (east), and Switzerland. In Slovenia, subspecies *E. g. marcuzzii* CAPORIAMCO, 1950 is found sympatrically with *E. gamma*. Details of distribution are available for Slovenia (FET *et al.* 2001), Austria (KOMPOSCH *et al.* 2001; KOFLER 2002; KOMPOSCH 2004, 2009), and Switzerland (BRAUNWALDER 2001, 2005). The species is included in the Red Data Lists of Austria (KOMPOSCH 2009).

***Euscorpius mingrelicus*** (KESSLER, 1874) was described from Georgia. In Europe it is found, in my opinion, only in the Northern Caucasus of Russia (Krasnodar Province). The Balkan populations, still technically included in *E. mingrelicus* as subspecies, are under revision (see below).

***Euscorpius gamma*** CAPORIAMCO, 1950, described from Slovenia as a subspecies of *E. germanus*, was elevated to species rank by SCHERABON *et al.* (2000). *E. gamma* belongs to the “*E. mingrelicus* complex.” It is confirmed for SE Austria (Carinthia), Croatia, NE Italy (Friuli), and Slovenia. Details of distribution are available for Slovenia (FET *et al.* 2001) and Austria (KOMPOSCH *et al.* 2001; KOMPOSCH 2004, 2009). The species is included in the Red Data Lists of Austria (KOMPOSCH 2009).

In addition to *E. beroni* and *E. gamma*, “*E. mingrelicus* complex” includes a number of Balkan populations, for which species boundaries are not yet clear. Their range includes Croatia, Bosnia and Herzegovina, Montenegro, Kosovo, Serbia, Macedonia, SW Bulgaria (Pirin), and NW Greece (Epiros). Several names are available for these populations, technically still under *E. mingrelicus* subspecies (KALTSAS *et al.* 2008).

#### **Subgenus *Euscorpius* THORELL, 1876**

The nominotypic subgenus, after separation of *Alpiscorpius* (GANTENBEIN *et al.* 1999), corresponds to what is often vaguely named “*E. carpathicus* complex.” For decades, most of its species were classified as subspecies of a (very polytypic) “*E. carpathicus*.” Currently, **nine** species are valid. The subgenus ranges from the Balearics in the west (*E. balearicus*) to the Crimea in the east (*E. tauricus*) and from the Southeast Alps in the north (*E. tergestinus*) to North Arica in the south (*E. sicanus*).

***Euscorpius balearicus*** CAPORIAMCO, 1950, an endemic of the Balearic Islands (Spain), was elevated to species rank, using morphological and molecular data, by GANTENBEIN *et al.* (2001), and redescribed by FET, SOLEGLAD (2002).

***Euscorpius carpathicus*** (LINNAEUS, 1767). FET, SOLEGLAD (2002) studied the existing type of Linnaeus, and limited this traditional species to Romania (Transylvanian Alps). As a result, all taxa formerly classified as *E. carpathicus* or its subspecies, belong to other species (of which some are yet not described). The first mtDNA marker data for the Romanian population were published by FET *et al.* (2002).

*Euscorpium concinnus* (C. L. KOCH, 1837) was restored to species level by VIGNOLI *et al.* (2005), and reported only from Italy. SALOMONE *et al.* (2007), in a large DNA phylogeographic study for Italy, confirmed its separate status as compared to *E. sicanus* and *E. tergestinus*, and discussed a rather high degree of divergence between these species. For biology in Italy, see COLOMBO (2006).

*Euscorpium hadzii* CAPORACCO, 1950 was elevated to species rank and redescribed by FET, SOLEGLAD (2002) (neotype from Albania). This large, dark Balkan species is found from Albania to SW Bulgaria, often in high mountains. It is easily identifiable by its additional neobothriotaxic trichobothria on external aspect of pedipalp patella. A population of small-sized *E. hadzii* (described as *E. carpathicus lagostae* CAPORACCO, 1950 from Lastovo Island) inhabits southern Croatian islands in the Adriatic Sea. In Bulgaria, *E. hadzii* is found only in the southwest (FET, SOLEGLAD 2007) as far north as Zemen, where it apparently is closely allopatric with *Euscorpium* sp. of Stara Planina.

*Euscorpium koschewnikowi* BIRULA, 1900 is known only from Mt Athos in Greece. It was restored to species rank from a subspecies of *E. carpathicus* by FET, SOLEGLAD (2002) who studied the types.

*Euscorpium oglasae* CAPORACCO, 1950 was elevated to species rank from a subspecies of *E. carpathicus* by VIGNOLI *et al.* (2007). The species is endemic to Montecristo Island (Tuscan Archipelago, Italy).

*Euscorpium sicanus* (C. L. KOCH, 1837), described from Sicily, was restored to species rank from a subspecies of *E. carpathicus* by FET *et al.* (2003) who also synonymized with it seven former subspecies, all from Italy. This species absorbed part of the populations listed by earlier authors (KINZELBACH 1975) as “*E. mesotrichus* Hadži” (an invalid name). SALOMONE *et al.* (2007) confirmed a separate status of *E. sicanus* as compared to *E. concinnus* and *E. tergestinus*. It is widespread in central and southern Italy (with Sicily and Sardinia) and Greece (Thessaly, Sporades, Peloponnese), and is also found in Malta, North Africa, and Madeira. For biology in Italy, see COLOMBO (2006), and in Greece, CRUCITTI, BUBBICO (2001).

*Euscorpium tauricus* (C.L. KOCH, 1837) is known only from the southern coast of the Crimea Peninsula in Ukraine; it was restored to species level by FET (2003) based on DNA analysis, morphological investigation pending. For biology observations, see KUKUSHKIN (2004). The species is listed as endemic in the Red Data Book of Ukraine (VERVES *et al.* 1999).

*Euscorpium tergestinus* (C.L. KOCH, 1837) was redescribed by FET, SOLEGLAD (2002). VIGNOLI *et al.* (2005, 2007) separated two Italian species from this taxon, *E. concinnus* and *E. oglasae*. *E. tergestinus* embraces a number of former subspecies from Italy, and is confirmed for Albania, Croatia, Italy, Montenegro, San Marino, and Slovenia. For biology in Italy, see COLOMBO (2006). In a detailed phylogeographic study, SALOMONE *et al.* (2007) confirmed separate status of *E. tergestinus* as compared to *E. sicanus* and *E. concinnus* in Italy. Three disjunct populations in Austria, likely introduced, were studied using mtDNA markers by HUBER *et al.* (2001); they are included in the Red Data Lists of Austria (KOMPOSCH 2004, 2009).

In addition to nine species listed above, placement of many European populations of “*E. carpathicus* complex” remains unclear. VIGNOLI *et al.* (2007) studied populations from Corsica and France listed as *E. carpathicus corsicanus* CAPORACCO, 1950 and *E. c. niciensis* (C.L. KOCH, 1841), respectively, and indicated their differences from known valid species. In a pilot mtDNA phylogeny of GANTENBEIN *et al.* (2001), French (Alpes-Maritimes) populations grouped with those of Tuscany, i.e. *E. concinnus*.

The Balkan and Aegean populations, which are currently under revision (FET *et al.* in progress), include Croatia, Bosnia & Herzegovina, Montenegro, Kosovo, Serbia, Macedonia, Bulgaria, and Greece. Several names are available for some of these populations (i.e. *E. carpathicus candiota* BIRULA, 1903 from Crete), potentially of the species rank; others likely represent undescribed species (for details, see KALTSAS *et al.* 2008). Especially diverse and complicated is Greek fauna, where a pilot DNA phylogeny indicates several species that were previously unrecognized (POULIKARAKOU *et al.* 2009).

## Family IURIDAE

Both genera of Iuridae are recorded in Europe but *Calchas* BIRULA, 1899 is represented only in the easternmost islands of Greece: the recently described *Calchas gruberi* FET *et al.*, 2009 (formerly reported as *C. nordmanni*) is found in the Greek islands Megisti and Samos as well as in Anatolia (FET *et al.* 2009).

The genus *Iurus* THORELL, 1876, taxonomy of which for many years was controversial but neglected, includes the largest of the European scorpions, *Iurus dufourei* (BRULLÉ, 1832). PARMAKELIS *et al.* (2006b) studied phylogeography of *Iurus* using mtDNA markers, and demonstrated that populations of Peloponnese, Kithyra, and Crete formed a well-supported clade as opposed to the Eastern Aegean and Anatolian populations. In an extensive recent revision of *Iurus*, KOVAŘÍK *et al.* (2010) confirmed this conclusion and provided a morphological basis as they limited *I. dufourei* to the “western clade.” The populations of Eastern Aegean Greek islands (Rhodes, Karpathos, Samos) belong to another, possibly new *Iurus* species. Based on sequence divergence, PARMAKELIS *et al.* (2006b) suggested that *Iurus* has been differentiating in the southern region of Agaeis at least since the Miocene (ca. 8 Mya). For details on distribution and morphology of *I. dufourei*, and the genus *Iurus* in general, see KOVAŘÍK *et al.* (2010).

## Family CHACTIDAE

Probably the most unique element of European scorpiofauna is a monotypic genus *Belisarius* SIMON, 1879, with its blind (eyeless) species *B. xambeui* SIMON, 1879, from the Pyrenees of France (Pyrénées-Orientales) and Spain (Catalunya: Girona and Barcelona). Not much study has been done on this enigmatic scorpion since its original description. Its distribution, with a map, has been last summarized by LACROIX (1992), and it seems to be more common in Spanish part of the Pyrenees. *Belisarius xambeui* has been characterized as an endogean, hygrophile lapidicolous species, found in mountain forests (850-1300 m asl) in endogean subterranean habitats. It is the only cave scorpion in Europe, known from three caves in France and 15 caves in Spain (LACROIX 1992).

The family placement of *Belisarius* has been controversial. Early researchers (KINZELBACH 1975), largely by geographic association, suggested a close relationship to *Euscorpius*, which is not confirmed. LOURENÇO (1998) placed *Belisarius* in a new family, Troglotayosicidae. Most recently, *Belisarius* was placed in Chactidae (otherwise limited to the New World) by FET, SOLEGLAD (2003). They provided a justification for its specific placement in a South American subfamily Brotheinae, with a remarkable zoogeographic disjunction. (Even if *Belisarius* is assigned to Troglotayosicidae, the issue of South American relationship, with genus *Troglotayosicus*, still remains.)

This review should further complement and correct the scorpion data available in *Fauna Europaea* (CRUCITTI 2004) database. It reports for Europe two exotic buthid species, *Isometrus maculatus* (DEGEER, 1778) and *Centruroides gracilis* (LATREILLE, 1804). *I. maculatus* is a subcosmopolitan scorpion, introduced across the globe; it was once reported for Spain but no resident population is confirmed. *C. gracilis*, which belongs to a large New World genus, has an introduced population on Tenerife, Canary Islands (also reported as *C. nigrescens*; BÁEZ FUMERO 1984), in the coastal zone of Santa Cruz town. An unidentified species of *Euscorpius* is also known from Tenerife, likely an introduction. Macaronesian fauna is partially covered by the *Fauna Europaea* project (except Cape Verde Islands); however, it does not seem to include any native scorpions. *E. sicanus* record from Madeira (FET *et al.* 2003) could be either introduction from the Mediterranean, or a local relict. No scorpions have been reported from the Azores.

It is remarkable that the “hidden diversity” of European fauna remained unrecognized for over 150 years of intensive arachnological research. The current “splitting” trend in scorpion taxonomy is, however, only a response to former “lumping” trend, and became possible due to availability of new characters and techniques, as well as of new material. Indeed, a bothering taxonomic and zoogeographic puzzle for a long time was *absence* of diversity in European scorpions; now we see that they behave as any normal

fauna, with a realistic combination of local, Asian and African elements, ancient relicts and recent dispersals, sympatric congeners and isolated endemics. The total number of native scorpion species in Europe (excluding Macaronesia but including Cyprus) could be now estimated over 35 (Buthidae, 8; Euscorpiidae, 22-24; Chactidae, 1; Iuridae, 3); the genus *Euscorpius* is still under an intensive revision, especially in the Balkans, and will clearly yield more species.

**Acknowledgements:** I thank dozens of friends and colleagues who, for decades, enjoyably helped me and collaborated in European scorpion studies, including (but not limited to): Vasily

Anikin, Janet Beccaloni, Petar Beron, Gergin Blagoev, Alberto Bonacina, Nikos Botsaris, Matt Braunwalder, Michael Brewer, John Cloudsley-Thompson, Marco Colombo, Pierangelo Crucitti, Hieronymos Dastych, Christo Deltshev, Dobrin Dobrev, Jason Dunlop, Gerard Dupré, Sergey Esyunin, Galina Fet, Elizabeth Fet, Simon Fet, Benjamin Gantenbein, Matt Graham, Alexander Gromov, Jürgen Gruber, Dietmar Huber, Dan Johnson, Dimitris Kaltsas, Ivo Karaman, Ragnar Kinzelbach, Marian Komnenov, Christian Komposch, František Kovařík, Mykola Kovblyuk, Viktor Krivochatsky, Jean-Bernard Lacroix, Wilson Lourenço, Yuri Marusik, Arie van den Meijden, Kirill Mikhailov, Moysis Mylonas, Ivan Pandourski, Aris Parmakelis, Gary Polis, Valentin Popa, Alexi Popov, Jan Ove Rein, Carles Ribera, Vlado Sakalian, Patrick Schembri, Bernhardt Scherabon, Boris Sket, Michael Sogleglad, František Šťahlavský, Iasmi Stathi, Pavel Stoev, Rolando Teruel, Max Vachon, Marco Valle, Milen Vassilev, Valerio Vignoli, and Eric Ythier. I am grateful to Prof. Vassil Golemanski for inviting me to write this brief review.

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Accepted: 12.02.2010

## **Скорпионите в Европа**

***B. Фет***

### **(Резюме)**

This brief review summarizes the studies in systematics and zoogeography of European scorpions. The current “splitting” trend in scorpion taxonomy is only a reasonable response to the former “lumping.” Our better understanding of scorpion systematics became possible due to the availability of new morphological characters and molecular techniques, as well as of new material. Many taxa and local faunas are still under revision. The total number of native scorpion species in Europe could easily be over 35 (Buthidae, 8; Euscorpiidae, 22-24; Chactidae, 1; Iuridae, 3) belonging to four families and six genera. The northern limit of natural (non-anthropochoric) scorpion distribution in Europe is in Saratov Province, Russia, at 50°40'54"N, for *Mesobuthus eupeus* (Buthidae).