Species list of the European herpetofauna – a tentative update

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INTRODUCTION

The naming of species and of all systematic entities of living things are dynamic concepts. Through scientific research, changes in the systematics and names of amphibians and reptiles are constantly being proposed, much to the chagrin of many professional and amateur herpetologists. Yet most changes are necessary if taxonomy and systematics are to reflect evolutionary history and phylogeny, rather than letting user–friendliness and conservatism prevail. The European herpetofauna and its taxonomy have received increasing attention through molecular (e.g. DNA) studies. Once most animal groups have been studied in this way, stability may be established.
In the following pages, a concise overview of changes in the taxonomy of European amphibians and reptiles is presented. We have restricted ourselves to the geographical boundaries of Europe, albeit excluding former Soviet states. Thus, politically European areas in Asia (e.g. Cyprus and Greek islands in front of the Aegean Turkish coast) and Africa (e.g. Canary Islands and Madeira) have not been included. For a time frame we have used the species and names as presented in the well–known European field guide by ARNOLD (2002), although numerous changes were proposed and published prior to 2002. We refer to the cited literature for more comprehensive explanations. Only species or higher level changes concerning European taxa are listed. Subspecific changes and intraspecific variability are noted only when contradicting long–established monotypy of a species, or when subspecies are being rejected. Vernacular names are mostly adopted from ARNOLD (2002). Some exogenous species that are well–established and are reproducing on European soil, are included and are listed separately. Species believed to have been introduced to Europe over 100 years ago and persisting until today, have been included in the list of endogenous species. Many other non–native species have, however, been encountered in the wild in Europe.
Final content changes were made on December 1, 2007. This type of update and the proposed species list will most likely be outdated at its date of publication. Further updating by means of a consecutive series of similar papers seems desirable.

CAUDATA – NEWTS AND SALAMANDERS

Newts of the genus *Triturus* Rafinesque, 1820 (note that the usual citation of 'Rafinesque, 1815' refers to a nomen nudum according to SCHMIDTLER (2004)), as traditionally understood, constitute a non–monophyletic group; several lineages currently classified as distinct genera are embedded among them (e.g. STEINFARTZ et al., 2002, 2007; WEISROCK et al., 2006).

Therefore, GARCÍA–PARÍS et al. (2004) proposed to split up *Triturus*, using (for the area considered in this paper) *Lissotriton* Bell, 1839 for the small–bodied species (Smooth Newt *Lissotriton vulgaris*, Palmate Newt *Lissotriton helveticus*, Bosca's Newt *Lissotriton boscai*, Italian Newt *Lissotriton italicus* and Montandon's Newt *Lissotriton montandoni*), *Mesotriton* Bolkay, 1927 for the Alpine Newt (*Mesotriton alpestris*) and restricting *Triturus* to the large–bodied species (*Triturus cristatus* and *T. marmoratus* groups). Despite the fact that these changes were not formally proposed by GARCÍA–PARÍS et al. (2004), they are clearly valuable and therefore deserve implementation, as confirmed by STEINFARTZ et al. (2007) and WEISROCK et al. (2006). LITVINCHUK et al. (2005) proposed *Lophinus* instead of *Lissotriton* and *Ommatotriton* Gray, 1850 for the *Triturus vittatus* (Gray in: Jenyns, 1835) group. However, *Lophinus* Rafinesque, 1815 is a nomen nudum (SCHMIDTLER, 2004) and therefore not an available name, while *Lophinus* Gray, 1850 is younger than *Lissotriton* Bell, 1839, attributing priority to the latter (SCHMIDTLER, 2004; FROST, 2007). SCHMIDTLER (2007) argued that *Proteus tritonius* Laurenti, 1768 is based on larvae of the Alpine Newt and not on Fire Salamander larvae as often understood (e.g. FROST, 2007). If this is indeed the case, then *Ichthyosaura* Sonnini & Latreille, 1801, based on *Proteus tritonius*, is a senior synonym of *Mesotriton* Bolkay, 1927 and would be the valid genus name for the Alpine Newt. While we did not have the opportunity to look into this matter in detail ourselves, Schmidtler (Sept. 2007, pers. comm.) informed the authors that the case is clearly in favour of the use of *Ichthyosaura*.

SOTIROPOULOS et al. (2007) found unexpectedly deep divergence in the mitochondrial DNA of different populations of the Alpine Newt, including a relict lineage from southeastern Serbia, which certainly deserves further attention.

Bosca's Newt, *Lissotriton boscai*, may comprise two species (HERRERO, 1991; MONTORI & LLORENTE, 2005; MARTÍNEZ–SOLANO et al., 2006). For a possible species from the south of Portugal, the name *Lissotriton maltzani* (Boettger, 1879) has already been suggested (MONTORI & LLORENTE, 2005).

As with *Triturus*, comparable changes need to be applied to the genus *Euproctus* Gené, 1839 s.l. (brook newts), since the Pyrenean Brook Newt is more closely related to the

Calotriton arnoldi.

Triturus s.s. newts than to the brook newts of Corsica and Sardinia (CARRANZA & AMAT, 2005). Thus, this species was relocated to the resurrected genus *Calotriton* Gray, 1858 as *Calotriton asper*. In the same paper, a second species was described from the Montseny Mountains near Barcelona, *Calotriton arnoldi*. Corsican and Sardinian Brook Newts remain named *Euproctus montanus* and *E. platycephalus*.

The spectacled salamander was split into two species based on work by two separate research teams (NASCETTI et al., 2005; MATTOCCIA et al., 2005; CANESTRELLI et al., 2006). While the southern half of the Italian peninsula is still inhabited by animals called *Salamandrina terdigitata,* populations of northern and central Italy are now attributed to *Salamandrina perspicillata* (Savi, 1821), with the Volturno river valley as the tentative border between the taxa. Morphological studies are in preparation (Bogaerts, pers. comm.).

Luschan's Salamander was first shown to be more closely related to *Salamandra* species than to *Mertensiella caucasica* (Waga, 1876) (TITUS & LARSON, 1995; VEITH et al., 1998) and, after a proposal to include it in the genus *Salamandra* (WEISROCK et al., 2001), the separate genus *Lyciasalamandra* was put forward for the species (VEITH & STEINFARTZ, 2004). In addition, Luschan's Salamander was shown to be a species complex, rather than a polytypic species (WEISROCK et al., 2001). Hence, European populations now belong to the endemic Karpathos Salamander (*Lyciasalamandra helverseni*) (VEITH & STEINFARTZ, 2004).

The isolated Fire Salamander subspecies *Salamandra salamandra longirostris* Joger & Steinfartz, 1994 from southern Spain represents a divergent lineage which could possibly be ranked as a separate species although this has not yet been formally proposed (STEINFARTZ et al., 2000, GARCÍA–PARÍS et al., 2003a; TEJEDO et al., 2003).

Speleomantes strinatii.

Chioglossa lusitanica, the Golden–striped Salamander, long treated as monotypic, consists of two evolutionary units (ALEXANDRINO et al., 2000). Morphological differences between the northern and southern group have been published (ALEXANDRINO et al., 2005) and a new, northern subspecies, *C. l. longipes*, has been described (ARNTZEN et al., 2007).

The European cave salamanders, if included in a single endemic genus, should be maintained as *Speleomantes* Dubois, 1984, despite the proposal of *Atylodes* Gistel, 1868 (WAKE et al., 2005). The nomenclatural issue of priority of *Speleomantes* over *Atylodes* (reversal of precedence) was settled by CROCHET (2007). There still remains an unsolved taxonomic issue within this grouping, relating to the plausibility of the same genus of salamander inhabiting both Europe and North America. Three possible evolutionary scenarios have been identified: (1) one genus *Hydromantes* Gistel, 1848 with three subgenera: *Hydromantes* for North–American species, *Speleomantes* for all but one European species and *Atylodes* for *Speleomantes genei*; (2) two genera with *Hydromantes* for North–American species and *Speleomantes* for all European species, the latter including two subgenera: *Atylodes* for *Speleomantes genei* and *Speleomantes* for all other European species; (3) three genera with *Hydromantes* for North–American species, *Speleomantes* for all but one European species and *Atylodes genei*. The choice seems a somewhat subjective 'transatlantic dispute', yet within Europe the second option seems to be favoured, while WAKE et al. (2005) proposed the first option because divergence between the three lineages is of similar degree as that observed among species within certain North–American plethodontid genera.

Acceptance of the dark subspecies *parkelj* Sket & Arntzen, 1994 of the Olm (*Proteus anguinus*) seems to be incongruent with the genetic substructuring of the species (GORICKI & TRONTELJ, 2006).

Bombina pachypus.

ANURA – FROGS AND TOADS

The Italian Yellow–bellied Toad is now treated as a separate species, *Bombina pachypus* (Bonaparte, 1838) (NASCETTI et al., 1982; LANZA & VANNI, 1991; FROMHAGE et al., 2004).

After initial confusion, the East–Iberian Painted Frog was accepted as a full species, *Discoglossus jeanneae* Busack, 1986 (GARCÍA–PARÍS & JOCKUSCH, 1999; FROMHAGE et al., 2004). More recent research suggests a rank as subspecies, *Discoglossus galganoi jeanneae*, to be more precise (ZANGARI et al., 2006). The frequently re–occurring name *Discoglossus hispanicus* Lataste, 1879 should not replace *D. galganoi* Capula, Nascetti, Lanza, Bullini & Crespo, 1985 (CROCHET & DUBOIS, 2006).

Following the description of the Iberian Parsley Frog, *Pelodytes ibericus* (SÁNCHEZ–HERRÁIZ et al., 2000), yet another species is said to be expected from the southern and eastern littoral of Portugal (MONTORI & LLORENTE, 2005).

VEITH et al. (2006) suggested that the Eastern Spadefoot (*Pelobates syriacus*) could be a species complex. Their results, however, suggest a very close relationship of *P. syriacus* and *P. fuscus* compared to the other species of *Pelobates*, which contradicts the results of GARCÍA–PARÍS et al. (2003b). Further studies are needed to resolve the matter, and the proposal by VEITH et al. (2006) to split *P. syriacus* into two species (based on allegedly high genetic divergence between *P. s. balcanicus* and *P. s. transcaucasicus*) seems best treated with caution.

The large taxonomic work of FROST et al. (2006) confirmed some proposals made by DUBOIS (e.g. 1992, 2005) and added new ones. Two significant changes at family level: Alytidae Fitzinger, 1843 instead of Discoglossidae Günther, 1858 for painted frogs and midwife toads, and Bombinatoridae Gray, 1825 as a separate family for *Bombina* species. The monster genera *Bufo* Laurenti, 1768 s.l. (true toads) and *Rana* Linnaeus, 1758 s.l. (true frogs), underwent some desirable splitting. Thus, Common Toad remained *Bufo bufo*, whereas Natterjack Toad became *Epidalea calamita* and Green Toad turned into *Pseudepidalea viridis*. FROST et al.'s (2006) proposal to create the new genus *Pseudepidalea* Frost, Grant, Faivovich, Bain, Haas, Haddad, de Sa, Channing, Wilkinson, Donnellan, Rax-

Epidalea viridis.

worthy, Campbell, Blotto, Moler, Drewes, Nussbaum, Lynch, Green & Wheeler, 2007 for the *"Bufo" viridis* group, instead of placing it in *Epidalea* Cope, 1864 with *"Bufo" calamita*, is not based on their own results, but on their interpretation of the results of GRAYBEAL (1997) who did not place *calamita* as a close relative of *viridis*. HARRIS (2001), however, was unable to duplicate GRAYBEAL's (1997) sequences of *calamita*, suggesting sequencing errors. FROST et al. (2006) themselves recognised that they placed these species "in separate genera as an *interim* measure". In contrast, we strongly believe that new genera should be based on hard evidence, not proposed as *interim* measures based on questionable results. Furthermore, some of the results of STÖCK et al. (2006) suggested a close relationship of *calamita* and *viridis*. We thus refrain from adopting *Pseudepidalea* for *viridis*. It seems more appropriate to leave the species within the *"Bufo"* s.l. genus for the time being (e.g. VENCES, 2007), or, as we have done in our list, to include it in *Epidalea*.

Green toads are of complex genetic structure, as highlighted by STÖCK et al. (2006). These latter authors do not (yet?) use the new generic arrangement of FROST et al. (2006), but proposed three species new to the European herpetofauna: *Bufo balearicus* Boettger, 1880 (southern Italy and western Mediterranean islands), *Bufo variabilis* (Pallas, 1769) (Asia Minor but surprisingly also found in parts of Eastern Europe and Sweden and Denmark and parts of western Greece and Germany), and an unnamed taxon from southeastern Sicily. The two former taxa have been treated as valid species (*Pseudepidalea balearica* and *P. variabilis*) by FROST (2007). However, systematics are dealt with insufficiently and, besides our reluctance to adopt their generic allocation, acceptance of all three taxa seems premature. BATISTA et al. (2006) confirmed this and considered the divergence among clades to be not as high as between putative anuran species. BATISTA et al. (2006) additionally suggested that these genetic lineages should not be considered as species without further evidence. Apparently, FROST et al. (2006) used the very weak evidence provided by SCHNEIDER & SINSCH (2004) to elevate *Bufo bufo spinosus* Daudin, 1803 to species status, although this is contradicted by LÜSCHER et al. (2001), KUTRUP et al. (2006), and unpublished data suggesting morphological introgression (pers. obs.). Now, however, FROST (2007) has removed the taxon from species status.

The group of the brown (true) frogs remains in the genus *Rana*, while the water frogs are put in the separate genus *Pelophylax* Fitzinger, 1843 (FROST et al., 2006). Thus, Marsh Frog becomes *Pelophylax ridibundus,* Edible Frog *P.* kl. *esculentus* and Pool Frog *P. lessonae*. The exogenous Bull Frog becomes *Lithobates catesbeianus.* Water frog taxonomy remains problematic. CROCHET & DUBOIS (2004) suggested bringing the Italian Pool Frog (*Rana bergeri* Günther in: Engelmann, Fritzsche, Günther & Obst, 1986) and the associated hemiclone (*Rana* kl. *hispanica* Bonaparte, 1839) to subspecies level of respectively Pool and Edible Frog. The Greek Marsh Frog, *P. kurtmuelleri,* is questioned and might be conspecific with Marsh Frog. Recent work (e.g. PLÖTNER, 2005) suggested that most European populations of Marsh Frogs should be called *Pelophylax fortis* (Boulenger, 1884), restricting *P. ridibundus* (Pallas, 1771) to more eastern populations, but further research is needed prior to implementation of this change.

Finally, some new water frog taxa might be expected, especially from some of the Greek islands; at least the description of the water frog of Milos is being prepared (Ioannidis, pers. comm.).

CHELONII – TURTLES, TERRAPINS AND TORTOISES

The name Bataguridae Gray, 1869 for the family of Old World terrapins (*Mauremys* spp.) has been replaced by Geoemydidae Theobald, 1868 (e.g. SPINKS et al., 2004).
FRITZ et al. (2005a) described the Sicilian Pond Terrapin as *Emys trinacris*. As Sicilian animals differ less in morphology than many other *Emys* taxa, and differ not more or less in mtDNA than other *Emys* taxa, a subspecific status seems more appropriate, at least for the time being, though *trinacris* is slightly more divergent in nuclear DNA than other *Emys* taxa. Further papers, advocating specific status for *Emys trinacris*, have been published by the same authors (FRITZ et al., 2006a, 2007a) but the evidence put forward for reproductive isolation between *trinacris* and the other Italian populations of *Emys* does not comply with the lack of geographic contact between Sicilian and Southern Italian populations, which are separated by the Strait of Messina.
After questions raised by the work of VAN DER KUYL et al. (2002), *Testudo (marginata) weissingeri* Bour, 1995, the dwarf Marginated Tortoise from Taygetos Mountains, seems now to have been permanently (and rightfully) rejected by FRITZ et al. (2005b).
In consequence of the work of PARHAM et al. (2006), Hermann's Tortoise was put in a separate genus by DE LAPPARENT DE BROIN et al. (2006) and called *Eurotestudo hermanni*. However, based on larger taxon sampling and mtDNA and nuclear genes, FRITZ & BININDA–EMONDS (2007) recovered a monophyletic group for the European tortoises and thus advocated a continued usage of the generic name *Testudo* for all five western Palearctic tortoise species. *Testudo hermanni* was found to be the sister species of the Asian *Testudo horsfieldii* Gray, 1844 in the subgenus *Agrionemys* Khozatsky & Młynarski, 1966. Furthermore, they suggest that *Eurotestudo* is a junior synonym of both *Chersine* Merrem, 1820 and *Medaestia* Wussow, 1916, which would thus have priority over the younger name *Eurotestudo*. FRITZ et al. (2006b) argued that this species does not need to be split into the species *hermanni* (Gmelin, 1789), *boettgeri* Mojsisovics, 1889 and/or *hercegovinensis* Werner 1899, as advocated by e.g. BOUR (2004) and PERÄLÄ (2004). The decision seems, however, in part to depend on the applied species concept, as already noted by CROCHET & DUBOIS (2004). Additional research, e.g. a more comprehensive morphological analysis of East–European populations, analysis of nuclear DNA and studies of contact zones, is highly desirable before accepting these taxa at species rank.
A possible split of *Testudo graeca* into at least an eastern (*ibera* Pallas, 1814) and western (*graeca* Linnaeus, 1758) species (e.g. BOUR, 1989; but see PERÄLÄ, 2002), remains disputed (cf. VAN DER KUYL et al., 2002). Regarding them as conspecific has been advocated by FRITZ et al. (2007b).

Testudo graeca.

SAURIA AND AMPHISBAENIA – LIZARDS AND WORM LIZARDS

The often renamed Kotschy's Gecko is now called *Mediodactylus kotschyi* (MACEY et al., 2000). Moorish Geckoes from Zakynthos have been identified as *Tarentola mauritanica fascicularis* (Daudin, 1802), most likely introduced from northern Africa (JOGER, 1984). The results from HARRIS et al. (2004) suggested that this taxon deserves species rank as *Tarentola fascicularis*. This has, however, not yet been formally proposed and requires clarification, as these results are not unambiguous. Populations from the Strofades Islands have also been attributed to this taxon (VALAKOS & MYLONAS, 1992).
Preliminary research on the phylogeography of the Dalmatian Algyroides (*Algyroides*

Darevskia praticola pontica.

Iberolacerta galani.

Podarcis vaucheri.

nigropunctatus) identified some divergent mitochondrial lineages in the southern parts of its range, supporting the recognition of several subspecies (PODNAR & MAYER, 2006).

The former monster genus *Lacerta* Linnaeus, 1758 (true lizards) was split by a number of papers into *Timon* Tschudi, 1836 (Ocellated Lizard, *T. lepidus*), *Darevskia* Arribas, 1997 (Meadow Lizard, *D. praticola*), *Archaeolacerta* Mertens, 1921 (Tyrrhenian Rock Lizard, *A. bedriagae*), *Iberolacerta* Arribas, 1997 (Iberian rock lizards but also *I. horvathi*), *Zootoca* Wagler, 1830 (Viviparous Lizard, *Z. vivipara*), and *Teira*, Gray, 1838 (Moroccan Rock Lizard *T. perspicillata* and Madeiran Wall Lizard *T. dugesii*) (MAYER & BISCHOFF, 1996; FU et al., 1997; ARRIBAS, 1998, 1999; FU 1998, 2000; HARRIS et al., 1998; HARRIS & ARNOLD, 1999; OLIVERIO et al., 2000; HARRIS & CARRETERO 2003; MAYER & ARRIBAS 2003; CARRANZA et al., 2004a). A number of rock lizards remained *incertae sedis* (MAYER & ARRIBAS, 2003) until ARNOLD et al. (2007) most recently attributed them to new genera, i.e. Greek Rock Lizard (*Hellenolacerta graeca*), Mosor Rock Lizard (*Dinarolacerta mosorensis*) and Sharp–snouted Lizard (*Dalmatolacerta oxycephala*), while the same authors moved the Moroccan Rock Lizard into a separate genus, as *Scelarcis perspicillata*. Within *Iberolacerta*, *I. cyreni* (Sierra de Gredos, Sierra de Guadarrama), *I. martinezricai* (Sierra de Peña de Francia) and the most recently described *I. galani* (Montes de León), have been recognised as valid species (ARRIBAS, 1996; MAYER & ARRIBAS 1996; MAYER & ARRIBAS 2003; ARRIBAS & CARRANZA, 2004; CARRANZA et al., 2004a; CROCHET et al., 2004; ARRIBAS et al., 2006). Although more genetic (only a short sequence of mtDNA sampled) and morphological (low amount of divergence in morphology) research seem desirable, a new species of rock lizard, *Dinarolacerta montenegrina*, was described from Montenegro (LJUBISAVLJEVIĆ et al., 2007).

The concept of the green lizards s.s. – presented as Western (*Lacerta bilineata*) and Eastern Green Lizard (*Lacerta viridis*) – seemed unsatisfactory (MAYER & BEYERLEIN, 2002) and in need of further research. The genetic structure of the *Lacerta viridis* complex was investigated by mtDNA in BÖHME et al. (2007). Surprisingly, a new unnamed *bilineata* lineage was discovered in the western Balkans, stretching as far south as western Greece. This discovery helps in the understanding of GODINHO et

al.'s (2005) results, which did not comply with the traditional taxonomy of the complex. More comprehensive sampling, especially in contact zones, and additional nuclear DNA data are desirable to confirm the specific status of *viridis* and *bilineata* and to determine more precisely their distribution.

In an ongoing debate, concerning the gender of the name *Podarcis* Wagler, 1830 a general consensus still seems to be lacking (e.g. BÖHME, 1997; ARNOLD, 2000; LANZA & BOSCHERINI, 2000; CROCHET & DUBOIS, 2004; BÖHME & KÖHLER, 2005). We prefer to accept it to be of male gender, as the International Code of Zoological Nomenclature imposes this choice in cases that are unclear. Any other decision would be a violation of the Code. Furthermore, and more importantly, it was surprisingly overlooked by all authors cited that WAGLER (1830) had fixed the male gender himself – in a footnote on page 155 he wrote: "Ποδαρκης pedibus celer" ("Podarcis, fast on its feet"), whereas the feminine of the Latin adjective would be "celeris" (SCHMIDTLER, pers. comm.).

The Iberian Wall Lizard (*Podarcis hispanicus* s.l.) has been shown to be a superspecies consisting of at least five European species (HARRIS et al., 2002; HARRIS & SÁ–SOUSA, 2002), of which *Podarcis vaucheri* has already been sufficiently substantiated (e.g. OLIVERIO et al., 2000). Apart from the yet unclearly delimited *sensu stricto* species *hispanicus* (Spanish Levante region), further candidate species are indicated as morphotypes 1, 2 and 3. The Columbretes Wall Lizard (*Podarcis atratus* (Boscá, 1916)) is not valid at species level but is conspecific with morphotype 3 (cf. BUSACK et al., 2005), for which the name *Podarcis liolepis* (Boulenger, 1905) would have priority (CROCHET & DUBOIS, 2004; CROCHET et al., in prep.). Names for types 1 and 2 have been noted (MONTORI & LLORENTE, 2005), but have not been formally proposed yet. At least one further mitochondrial lineage has been discovered (PINHO et al., 2006), but its significance remains unclear.

The Glass Lizard, formerly named *Ophisaurus apodus*, has been placed in a separate genus, following the work of KLEMBARA (1979, 1981, 1986). It is now called *Pseudopus apodus*, albeit MACEY et al. (1999) would prefer to place the species, together with some related species, within the same genus as the Slow Worm, *Anguis* Linnaeus, 1758.

BUSACK et al. (2006) treated the European Large Psammodromus (*Psammodromus algirus*) as two new species, *Psammodromus jeanneae* and *P. manuelae*. We refrain from accepting their conclusions for the time being, as genetic divergence among the various lineages is low (CARRANZA et al., 2006b), much lower than among most accepted reptile species and there is no evidence of limitation in gene flow in contact zones. Acceptance of these taxa as new species seems premature. While these lineages certainly warrant naming, the nomenclatural issues regarding older names have been poorly dealt with by BUSACK et al. (2006). On the other hand, CARRANZA et al. (2006b) provided evidence suggesting that subspecies of the Spanish Psammodromus (*Psammodromus hispanicus hispanicus* and *P. h. edwarsianus* (Dugès, 1829)) probably constitute two valid species, although more samples are needed.

Further lizard species splits might lead to *Timon nevadensis* (Buchholz, 1963) and a whole series of new *Podarcis* species like perhaps *P. ionicus* (Lehrs, 1902) (now a subspecies of Balkan Wall Lizard, *P. tauricus*; PODNAR et al., in prep., but see POULAKAKIS et al., 2005), sections of e.g. Erhard's Wall Lizard (*P. erhardii*; POULAKAKIS et al., 2003), Tyrrhenian Wall Lizard (*P. tiliguerta*; HARRIS et al., 2005), and Italian Wall Lizard and Dalmatian Wall Lizard (*P. siculus, P. melisellensis*; PODNAR et al., 2004, 2005, in prep.). The best supported case is clearly *P. erhardii*, as several subspecies currently classified as this species are in fact more closely related to *P. peloponnesiacus*, and at least three lineages ((1) Crete and surrounding islets, (2) Pori islet (near Antikythira), and (3) the Cyclades, Sporades and Dodecanese Islands), which warrant recognition as species were identified among insular subspecies (POULAKAKIS et al., 2003).

ARNOLD (2002) misspelled the taxon's name and suggested that *Chalcides pistaciae* Valverde, 1967 might deserve species rank. However, Bedriaga's Skink (*Chalcides bedriagai* s.l.) is best treated as a single species (CARRANZA, unpubl.).

Montivipera xanthina.

GIOVANNOTTI et al. (2007) studied the phylogeography of the Italian Three–toed Skink (*Chalcides chalcides*), suggesting Sardinian populations to be closer to those from Tunisia than to those from mainland Italy.
Within the Iberian Peninsula, two subgroups have been shown to reside in the Worm Lizard *Blanus cinereus*, with one of them also being found in Morocco and both possibly deserving species status (VACONCELOS et al., 2006).

SERPENTES – SNAKES

A lot of genus splitting has been done in the snakes, especially within the colubrid family. The old genus *Coluber* Linnaeus, 1758 (Whip Snakes) is now represented (within Europe) by the genera *Platyceps* Blyth, 1860 (Dahl's Whip Snake *P. najadum*, and Reddish Whip Snake *P. collaris*), *Hierophis* Fitzinger in Bonaparte, 1834 (Western Whip Snake *H. viridiflavus* and Balkan Whip Snake *H. gemonensis*), *Dolichophis* Gistel, 1868 (Caspian Whip Snake *D. caspius*), and *Hemorrhois* Boie, 1826 (Algerian Whip Snake *H. algirus* and Horseshoe Whip Snake *H. hippocrepis*) (SCHÄTTI & UTIGER, 2001; NAGY et al., 2004a, b). Gyaros Whip Snake (first described as *Coluber gemonensis gyarosensis* Mertens, 1968 and later elevated to species level) has been shown to result from an ancient introduction of Western Whip Snake and, therefore, was synonymised with *H. viridiflavus* (UTIGER & SCHÄTTI, 2004).
The Blotched Snake, *Elaphe sauromates* (Pallas, 1814), is a species distinct from the Four–lined Snake, *E. quatuorlineata*, based on morphological, ecological and molecular data (LENK et al., 2001a).
Rat Snakes (*Elaphe* Fitzinger, 1833 s.l.) were split by UTIGER et al. (2002) in three genera for the European species: *Elaphe* Fitzinger, 1833 (Four–Lined Snake *E. quatuorlineata* and Blotched Snake *E. sauromates*), *Rhinechis* Michahelles, 1833 (Ladder Snake *R. scalaris*), and *Zamenis* Wagler, 1830 (Aesculapian Snake *Z. longissimus,* Italian Aesculapian Snake *Z. lineatus* and Leopard Snake *Z. situla*).
The proposal by RAZZETTI & SINDACO (2006) to use *Rhinechis agassizi* (Michahelles in: Wagler, 1833) for the Ladder Snake was based on a nomenclatural mistake. HALLERMANN (2006) pointed out the nomenclatural and systematic problems. RAZZETTI & CROCHET (in prep.) are working

on a paper dealing with this issue; *Rhinechis scalaris* should be retained.

Molecular data of GUICKING et al. (2002) suggest three evolutionary lineages within the Viperine Snake (*Natrix maura*), with Sardinian populations belonging to a different lineage than all other European populations. In the same paper, Dice Snake (*Natrix tessellata*) is shown to consist of several lineages, including one from Crete and one specifically for specimens from Lake Ioannina (Greece). *Natrix* phylogeny is further discussed by GUICKING et al. (2006) and, in contrast to earlier views, Grass Snake (*Natrix natrix*) and Dice Snake are more closely related to each other than to the Viperine Snake. This paper also suggested that mitochondrial lineages within both *N. tessellata* and *N. maura* fall within boundaries of intraspecific divergence.

As rightfully indicated by CROCHET & DUBOIS (2004), the work of WADE (2001) and CARRANZA et al. (2004b) is most correctly summarised by acceptance of two European species of the genus *Macroprotodon*: the (western) Iberian False Smooth Snake *Macroprotodon brevis* (Günther, 1862) (from Spain and Portugal; or *textilis* (Duméril & Bibron, 1854), as it is not clear to which taxon this name belongs), and the (eastern) *M. cucullatus* s.s. (Geoffroy Saint–Hilaire, 1809) (from the Balearics and Lampedusa). A different species (*Macroprotodon mauritanicus* Guichenot, 1850) has been proposed for the Balearics, restricting *M. cucullatus* s.s. on European soil to Lampedusa (WADE, 2001), but this is, at least for now, not sufficiently substantiated.

CARRANZA et al. (2006a) split the Montpellier Snake into an eastern and a western species. The western one retains the name *Malpolon monspessulanus*. The eastern one becomes *Malpolon insignitus* (Geoffroy Saint–Hilaire, 1827), represented by the subspecies *fuscus* (Fleischmann, 1831) in southeastern Europe, and the nominal form *insignitus* on Lampedusa. The latter has hardly been studied (but see CORTI et al., 2001).

The oriental vipers no longer belong to the genus *Vipera* (LENK et al., 2001b). The Milos Viper has become *Macrovipera schweizeri*; Ottoman Viper can be included in the same genus or, perhaps more appropriately, called *Montivipera xanthina* (NILSON et al., 1999; GARRIGUES et al., 2005).

Macroprotodon brevis.

ZUFFI (2002) proposed raising several Asp Viper (*Vipera aspis*) subspecies to species rank. Genetic data seem to contradict his proposals (cf. GARRIGUES et al., 2005; URSENBACHER et al., 2006b): *atra* (Meisner, 1820) is not even a distinct evolutionary lineage and *zinnikeri* Kramer, 1958 is closely related to *aspis*, while *francisciredi* Laurenti, 1768 (synonymised by ZUFFI, 2002) is a good candidate for species status although, as usual, additional research is still needed.

The Adder (*Vipera berus*) contains several distinct lineages which might correspond to valid species (*V. bosniensis* Boettger in: Mojsisovics, 1889 and an undescribed alpine taxon, see JOGER et al., 2003). This has been further investigated by URSENBACHER et al. (2006a) but a formal taxonomic appraisal is still lacking, as well as any indication on the level of reproductive

Malpolon insignitus.

isolation. This is also the case for taxa within Orsini's or Meadow Viper (*Vipera ursinii*) like *Vipera macrops* Méhely, 1911 (incl. *graeca* Nilson & Andrén, 1988). The vipers from the Danube river delta are the (sub)species *moldavica* Nilson, Andrén & Joger, 1993, the species *Vipera renardi* Christoph, 1861, or a yet to be described taxon (Halpern, pers. comm.). Preliminary mitochondrial DNA results suggest them to be *moldavica* (Gvoždík, pers. comm.), yet, large scale sampling and nuclear gene data are needed to obtain more definite conclusions.
Both the names *Vipera latastei* and *Vipera latasti* appeared in the species' original description. DAVID & INEICH (1999), acting as first revisors, selected the former spelling. Recently, MONTORI & LLORENTE (2005) argued that the use of *latastei* in the original description should be considered as *lapsus calami* and hence an incorrect original spelling, in which case the action of the first revisers would be invalid and *latasti* should be considered as the correct original spelling. Nevertheless, Boscá himself used *latastei* in several subsequent papers, which clearly demonstrates that the use of *latastei* in the original publication cannot be considered a mistake. It seems therefore unavoidable to accept the action of DAVID & INEICH (1999) as first revisors and to use *Vipera latastei*.

EPILOGUE

As taxonomy and systematics are highly dynamic aspects of the biological sciences and taxonomic research on European herpetofauna has had a recent boost, a stable and fixed species list is not to be expected in the near future. Furthermore, ranking of taxa depends partially on subjective interpretation of evidence. Even on a well–studied continent like Europe, discussion will therefore persist between conflicting opinions and views. Despite confusing taxonomy users, this discussion should provide an instrumental basis to obtain more indisputable evidence for certain views and to perfect the systematics of the European herpetofauna. At the species level, many conflicting views arise from the application of different species concepts. Without wanting to address that subject here, it is noted that in this paper a proactive approach of the biological species concept has been attempted. Most of the presented changes for amphibians can also be found in Darrel R. Frost's Amphibian Species of the World online database, version 5.1 (FROST, 2007). Some exceptions are: the use of *Hydromantes* for the entire *sensu lato,* 'transatlantic' concept of the genus (although Frost already noted revalidation of the genus name *Speleomantes* is to be expected), the use of the genus *Pseudepidalea* for the green toad, the acceptance of additional green toad species, and the continuing recognition of *Pelophylax bergeri* as a full species. Remarkably, the database version on the date of writing of our paper seemed to miss *Rana dalmatina* for no obvious reason. Taxonomic differences with the Reptile Database (UETZ et al., 2007) are more numerous, yet both databases are highly valuable tools and they have also proven to be indispensable during the compilation of this review. The first author of this paper maintains the EUROHERP database (SPEYBROECK, 2007), which, among others, tries to provide a sensible and objective up–to–date taxonomy of the European herpetofauna.

While writing this paper, it became clear that much confusion and disagreement exists concerning the authorship and date of publication of names of species and, even more so, of naming higher taxa. As we feel this to fall outside the scope of this species list directed manuscript, we have not investigated all of these matters ourselves as many of them require further research. We have, however, tried to solve many of them, as presented in the species list. The second author of this article intends to deal with the, as of yet unsolved, problems in one or more forthcoming papers in collaboration with additional co-authors. Some of these issues are noted below.
- Should the authorship of a name that was originally in French but became 'latinised' later be attributed to the author of the former (as according to Dubois, pers. comm.) or to the first user of the latter (as according to Frost, pers. comm.)? Examples are Anura Duméril, 1806 vs. Anura Fischer von Waldheim, 1813 and Chelonii Brongniart, 1800 vs. Chelonii Latreille, 1800. In the

current paper, the Latin name date has been chosen (cf. FROST, 2007).
- Is the name *Triturus* Rafinesque, 1815 a *nomen nudum* (SCHMIDTLER, 2004 and this paper), or is it a *nomen novum* for *Triton* Laurenti, 1768 (DUBOIS, 1984)? If it is indeed a *nomen nudum*, should we be using *Triturus* Rafinesque, 1820? And how should we deal with the possible lack of priority of the latter over *Molge* Merrem, 1820 (as argued by Dubois, pers. comm.)?
- What family names should be attributed to Oppel, 1811 and which to Gray, 1825 (doubt has been raised for the Anguidae, Gekkonidae and Scincidae)? For the time being we followed RAZZETTI et al. (2006).
- What is the correct spelling of the authorship for the name Sauria and in what year was it published?
- Is the proper name *Hemidactylus* Oken, 1817 or *Hemidactylus* Gray, 1825?
- Is the authorship for Bosca's Newt Lataste, 1879 or Lataste in: Tourneville, 1879?

To conclude, we here indicate some issues that appear to have been settled, but are still often found to occur erroneously (e.g. in FROST, 2007):
- The date of Gené's publication of the names *Euproctus* and *Euleptes* is 1839 and not 1838 (GENÉ, 1839). RAZZETTI et al. (2006) indicated associated nomenclatural problems for the former.
- The name *Hyla sarda* is from the year 1857 and not 1853 (DE BETTA, 1857).
- The date for the name *Rana dalmatina* is 1838 (Fitzinger in: BONAPARTE, 1838) (Dubois, pers. comm.).
- Alonso-Zarazaga (in: SALVADOR, 1998) established that the name *Emys* was published in September 1805 and not in 1806.
- Although the names Rafinesque and Rafinesque-Schmaltz refer to the same author, the longer version has to be used for his earlier works – RAFINESQUE-SCHMALTZ (1810, 1814a, 1814b) (Dubois, pers. comm.).

Lissotriton montandoni.

SUMMARY

This paper provides an overview of recent changes in the taxonomy of the European herpetofauna. Species or higher level changes concerning European taxa are listed. Subspecific changes and intraspecific variability are noted only when contradicting long–established monotypy of a species, or when one or several subspecies have been rejected. Final content changes to this paper were made on December 1, 2007.

SAMENVATTING

Dit artikel biedt een overzicht van recente wijzigingen in de taxonomie van de Europese herpetofauna. Wijzigingen op soort– en hoger taxonomisch niveau worden samengevat. Wijzigingen op ondersoortniveau en intraspecifieke variabiliteit worden slechts vermeld indien ze de lang gekende monotypie van een soort aanvechten of wanneer een of meerdere ondersoorten worden verworpen. De laatste inhoudelijke wijzigingen aan de tekst werden gemaakt op 1 december 2007.

ACKNOWLEDGEMENTS

We want to thank Nick Arnold, Pim Arntzen, Oscar Arribas, Sergé Bogaerts, Roger Bour, Salvador Carranza, Alain Dubois, Mario García–París, Václav Gvoždík, Bálint Halpern, Yannis Ioannidis, Werner Mayer, Catarina Pinho, Nikos Poulakakis, Edoardo Razzetti, Paulo Sá–Sousa, Josef Schmidtler, Mario Schweiger and Urs Utiger, as well as the acting editor (Herman in den Bosch) for papers, discussion and more.

Systematic species list of the European herpetofauna

* = Vernacular names proposed in this paper.
Names with dotted lines refer to changes in taxonomy or nomenclature, as discussed in the text.

Class Amphibia Gray, 1825 (amphibians)
Order Caudata Fischer von Waldheim, 1813 (salamanders and newts)
Family Salamandridae Goldfuss, 1820 (true salamanders en newts)
- *Calotriton* Gray, 1858
  - *arnoldi* Carranza & Amat, 2005 – Montseny Brook Newt
  - *asper* (Dugès, 1852) – Pyrenean Brook Newt
- *Chioglossa* Bocage, 1864
  - *lusitanica* Bocage, 1864 – Golden–striped Salamander
- *Euproctus* Gené, 1839
  - *montanus* (Savi, 1838) – Corsican Brook Newt
  - *platycephalus* (Gravenhorst, 1829) – Sardinian Brook Newt
- *Ichthyosaura* Sonnini & Latreille, 1801
  - *alpestris* (Laurenti, 1768) – Alpine Newt
- *Lissotriton* Bell, 1839
  - *boscai* (Lataste, 1879) – Bosca's Newt
  - *helveticus* (Razoumowsky, 1789) – Palmate Newt
  - *italicus* (Peracca, 1898) – Italian Newt
  - *montandoni* (Boulenger, 1880) – Montandon's Newt
  - *vulgaris* (Linnaeus, 1758) – Smooth Newt
- *Lyciasalamandra* Veith & Steinfartz, 2004
  - *helverseni* (Pieper, 1963) – Karpathos Salamander *
- *Pleurodeles* Michahelles, 1830
  - *waltl* Michahelles, 1830 – Sharp–ribbed Newt
- *Salamandra* Laurenti, 1768
  - *atra* Laurenti, 1768 – Alpine Salamander
  - *corsica* Savi, 1838 – Corsican Fire Salamander
  - *lanzai* Nascetti, Andreone, Capula & Bullini, 1988 – Lanza's (Alpine) Salamander
  - *salamandra* (Linnaeus, 1758) – Fire Salamander
- *Salamandrina* Fitzinger, 1826
  - *perspicillata* (Savi, 1821) – Northern Spectacled Salamander *
  - *terdigitata* (Bonnaterre, 1789) – Southern Spectacled Salamander *
- *Triturus* Rafinesque, 1820
  - *carnifex* (Laurenti, 1768) – Italian Crested Newt
  - *cristatus* (Laurenti, 1768) – (Great or Northern) Crested Newt
  - *dobrogicus* (Kiritzescu, 1903) – Danube Crested Newt
  - *karelinii* (Strauch, 1870) – Southern Crested Newt
  - *marmoratus* (Latreille, 1800) – Marbled Newt
  - *pygmaeus* (Wolterstorff, 1905) – Southern Marbled Newt

Family Plethodontidae Gray, 1850 (lungless salamanders)
- *Speleomantes* Dubois, 1984
  - *ambrosii* (Lanza, 1955) – Ambrosi's Cave Salamander
  - *flavus* (Stefani, 1969) – Monte Albo Cave Salamander
  - *genei* (Temminck & Schlegel, 1838) – Gené's Cave Salamander *
  - *imperialis* (Stefani, 1969) – Scented Cave Salamander
  - *italicus* (Dunn, 1923) – Italian Cave Salamander
  - *strinatii* (Aellen, 1958) – Strinati's Cave Salamander
  - *supramontis* (Lanza, Nascetti & Bullini, 1986) – Sopramonte Cave Salamander

Speleomantes strinatii.

Family Proteidae Gray, 1825 (olms)
Proteus Laurenti, 1768
anguinus Laurenti, 1768 – Olm

Alytes muletensis.

Order Anura Fischer von Waldheim, 1813 (frogs and toads)
Family Alytidae Fitzinger, 1843 (painted frogs and midwife toads)
Alytes Wagler, 1829
cisternasii Boscá, 1879 – Iberian Midwife Toad
dickhilleni Arntzen & García–París, 1995 – Southern Midwife Toad
muletensis (Sanchíz & Adrover, 1977) – Majorca Midwife Toad
obstetricans (Laurenti, 1768) – Common Midwife Toad
Discoglossus Otth, 1837
galganoi Capula, Nascetti, Lanza, Bullini & Crespo, 1985 – Iberian Painted Frog *
montalentii Lanza, Nascetti, Capula & Bullini, 1984 – Corsican Painted Frog
pictus Otth, 1837 – Painted Frog
sardus Tschudi in: Otth, 1837 – Tyrrhenian Painted Frog
Family Bombinatoridae Gray, 1825 (fire–bellied toads)
Bombina Oken, 1816
bombina (Linnaeus, 1761) – Fire–bellied Toad
pachypus (Bonaparte, 1838) – Italian or Appenine Yellow–bellied Toad *
variegata (Linnaeus, 1758) – Yellow–bellied Toad
Family Pelobatidae Bonaparte, 1850 (spadefoot toads)
Pelobates Wagler, 1830
cultripes (Cuvier, 1829) – Western Spadefoot
fuscus (Laurenti, 1768) – Common Spadefoot
syriacus Boettger, 1889 – Syrian Spadefoot
Family Pelodytidae Bonaparte, 1850 (parsley frogs)
Pelodytes Bonaparte, 1838
ibericus Sánchez–Herráiz, Barbadillo, Machordom & Sanchiz, 2000 – Iberian Parsley Frog
punctatus (Daudin, 1802) – Parsley Frog
Family Bufonidae Gray, 1825 (true toads)
Bufo Laurenti, 1768
bufo (Linnaeus, 1758) – Common Toad
Epidalea Cope, 1864
calamita (Laurenti, 1768) – Natterjack
viridis (Laurenti, 1768) – Green Toad
Family Hylidae Rafinesque, 1815 (tree frogs)
Hyla Laurenti, 1768
arborea (Linnaeus, 1758) – Common Tree Frog
intermedia Boulenger, 1882 – Italian Tree Frog
meridionalis Boettger, 1874 – Stripeless Tree Frog
sarda (De Betta, 1857) – Tyrrhenian Tree Frog

Family Ranidae Rafinesque-Schmaltz, 1814 (true frogs)
Pelophylax Fitzinger, 1843
bedriagae (Camerano, 1882) – Bedriaga's Water Frog
cerigensis (Beerli, Hotz, Tunner, Heppich & Uzzell, 1994) – Karpathos Water Frog
cretensis (Beerli, Hotz, Tunner, Heppich & Uzzell, 1994) – Cretan Water Frog
epeiroticus (Schneider, Sofianidou & Kyriakopoulou–Sklavounou, 1984) – Epirus Water Frog
kl. *esculentus* (Linnaeus, 1758) – Edible Frog
kl. *grafi* (Crochet, Dubois, Ohler & Tunner, 1995) – Graf's Hybrid Frog
kurtmuelleri (Gayda, 1940) – Greek Marsh Frog
lessonae (Camerano, 1882) – Pool Frog
perezi (Seoane, 1885) – Iberian Water Frog
ridibundus (Pallas, 1771) – Marsh Frog
shqipericus (Hotz, Uzzell, Günther, Tunner & Heppich, 1987) – Albanian Pool Frog
Rana Linnaeus, 1758
arvalis Nilsson, 1842 – Moor Frog
dalmatina Fitzinger in: Bonaparte, 1838 – Agile Frog
graeca Boulenger, 1891 – Greek Stream Frog
iberica Boulenger, 1879 – Iberian Stream Frog
italica Dubois, 1987 – Italian Stream Frog
latastei Boulenger, 1879 – Italian Agile Frog
pyrenaica Serra–Cobo, 1993 – Pyrenean Stream Frog
temporaria Linnaeus, 1758 – Grass Frog

Class Reptilia Laurenti, 1768 (reptiles)
Order Chelonii Latreille, 1800 (turtles, tortoises and terrapins)
Family Cheloniidae Oppel, 1811 (sea turtles)
Caretta Rafinesque-Schmaltz, 1814
caretta (Linnaeus, 1758) – Loggerhead ((Sea) Turtle)
Family Dermochelyidae Fitzinger, 1843
Dermochelys Blainville, 1816
coriacea (Vandelli, 1761) – Leatherback or Leathery Turtle
Family Testudinidae Batsch, 1788 (tortoises)
Testudo Linnaeus, 1758
graeca Linnaeus, 1758 – Spur–thighed Tortoise
hermanni Gmelin, 1789 – Hermann's Tortoise
marginata Schoepff, 1792 – Marginated Tortoise
Family Geoemydidae Theobald, 1868 (terrapins of the Old World)
Mauremys Gray, 1869
leprosa (Schweigger, 1812) – Spanish Terrapin
rivulata (Valenciennes, 1833) – Balkan Terrapin
Family Emydidae Rafinesque, 1815 (terrapins of the New World)
Emys Duméril, 1805
orbicularis (Linnaeus, 1758) – European Pond Terrapin
Order Squamata Oppel, 1811
Suborder Sauria MacCarthney, 1802 (lizards)
Family Agamidae Spix, 1825 (agamas)
Laudakia Gray, 1845
stellio (Linnaeus, 1758) – Starred Agama
Family Chamaeleonidae Gray, 1825 (chameleons)
Chamaeleo Laurenti, 1768
africanus Laurenti, 1768 – African Chameleon
chamaeleon (Linnaeus, 1758) – Mediterranean Chameleon
Family Gekkonidae Oppel, 1811 (geckos)
Euleptes Fitzinger, 1843
europaea (Gené, 1839) – European Leaf–toed Gecko
Hemidactylus Oken, 1817
turcicus (Linnaeus, 1758) – Turkish Gecko
Tarentola Gray, 1825
mauritanica (Linnaeus, 1758) – Moorish Gecko
Mediodactylus Szczerbak & Golubev, 1977
kotschyi (Steindachner, 1870) – Kotschy's Gecko

Family Lacertidae Oppel, 1811 (true lizards)
- *Acanthodactylus* Wiegmann, 1834
  - *erythrurus* (Schinz, 1833) – Spiny–footed Lizard
- *Algyroides* Bibron & Bory de Saint–Vincent, 1833
  - *fitzingeri* (Wiegmann, 1834) – Pygmy Algyroides
  - *marchi* Valverde, 1958 – Spanish Algyroides
  - *moreoticus* Bibron & Bory de Saint–Vincent, 1833 – Greek Algyroides
  - *nigropunctatus* (Duméril & Bibron, 1839) – Dalmatian Algyroides
- *Archaeolacerta* Mertens, 1921
  - *bedriagae* (Camerano, 1885) – Bedriaga's Rock Lizard
- *Dalmatolacerta* Arnold, Arribas & Carranza, 2007
  - *oxycephala* Duméril & Bibron, 1839 – Sharp–snouted Rock Lizard
- *Darevskia* Arribas, 1997
  - *praticola* (Eversmann, 1834) – Meadow Lizard
- *Dinarolacerta* Arnold, Arribas & Carranza, 2007
  - *montenegrina* Ljubisavljević, Arribas, Džukić & Carranza, 2007
  - *mosorensis* Kolombatović, 1886 – Mosor Rock Lizard
- *Eremias* Fitzinger in: Wiegmann, 1834
  - *arguta* (Pallas, 1773) – Steppe Runner
- *Hellenolacerta* Arnold, Arribas & Carranza, 2007
  - *graeca* Bedriaga, 1886 – Greek Rock Lizard
- *Iberolacerta* Arribas, 1997
  - *aranica* (Arribas, 1993) – Aran Rock Lizard
  - *aurelioi* (Arribas, 1994) – Aurelio's Rock Lizard
  - *bonnali* (Lantz, 1927) – Pyrenean Rock Lizard
  - *cyreni* (Müller & Hellmich, 1937) – Cyren's Rock Lizard *
  - *galani* Arribas, Carranza & Odierna, 2006 – Galan's Rock Lizard *
  - *horvathi* (Méhely, 1904) – Horvath's Rock Lizard
  - *martinezricai* (Arribas, 1996) – Martinez–Rica's Rock Lizard *
  - *monticola* (Boulenger, 1905) – Iberian Rock Lizard, West–Iberian Rock Lizard *

Lacerta viridis.

- *Lacerta* Linnaeus, 1758
  - *agilis* Linnaeus, 1758 – Sand Lizard
  - *bilineata* Daudin, 1802 – Western Green Lizard
  - *schreiberi* Bedriaga, 1878 – Schreiber's Green Lizard
  - *trilineata* Bedriaga, 1886 – Balkan Green Lizard
  - *viridis* (Laurenti, 1768) – Eastern Green Lizard
- *Ophisops* Ménétriés, 1832
  - *elegans* Ménétriés, 1832 – Snake–eyed Lacertid

Podarcis Wagler, 1830
bocagei (Seoane, 1884) – Bocage's Wall Lizard
carbonelli Pérez–Mellado, 1981 – Carbonell's Wall Lizard
erhardii (Bedriaga, 1876) – Erhard's Wall Lizard
filfolensis (Bedriaga, 1876) – Maltese Wall Lizard
gaigeae (Werner, 1930) – Skyros Wall Lizard
hispanicus (Steindachner, 1870) s.s. – Iberian Wall Lizard (partim)
hispanicus (Steindachner, 1870) "morphotype 1" – Iberian Wall Lizard (partim)
hispanicus (Steindachner, 1870) "morphotype 2" – Iberian Wall Lizard (partim)
lilfordi (Günther, 1874) – Lilford's Wall Lizard
liolepis (Boulenger, 1905) (= *hispanicus* "morphotype 3") – Catalonian Wall Lizard *
melisellensis (Braun, 1877) – Dalmatian Wall Lizard
milensis (Bedriaga, 1882) – Milos Wall Lizard
muralis (Laurenti, 1768) – Common Wall Lizard
peloponnesiacus (Bibron & Bory de Saint–Vincent, 1833) – Peloponnese Wall Lizard
pityusensis (Boscá, 1883) – Ibiza Wall Lizard
raffonei (Mertens, 1952) – Aeolian Wall Lizard
siculus (Rafinesque-Schmaltz, 1810) – Italian Wall Lizard
taurica (Pallas, 1814) – Balkan Wall Lizard
tiliguerta (Gmelin, 1789) – Tyrrhenian Wall Lizard
vaucheri (Boulenger, 1905) – Vaucher's Wall Lizard *
waglerianus Gistel, 1868 – Sicilian Wall Lizard
Psammodromus Fitzinger, 1826
algirus (Linnaeus, 1758) – Large Psammodromus
hispanicus Fitzinger, 1826 – Spanish Psammodromus

Psammodromus hispanicus.

Scelarcis Fitzinger, 1843
perspicillata (Duméril & Bibron, 1839) – Moroccan Rock Lizard
Timon Tschudi, 1836
lepidus (Daudin, 1802) – Ocellated Lizard
Zootoca Wagler, 1830
vivipara (Jacquin, 1787) – Viviparous Lizard
Family Scincidae Oppel, 1811 (skinks)
Ablepharus Fitzinger in: Eversmann, 1823
kitaibelii Bibron & Bory de Saint–Vincent, 1833 – Snake–eyed Skink
Chalcides Laurenti, 1768
bedriagai (Boscá, 1880) – Bedriaga's Skink
chalcides (Linnaeus, 1758) – Italian Three–toed Skink
ocellatus (Forskål, 1775) – Ocellated Skink
striatus (Cuvier, 1829) – Iberian Three–toed Skink
Ophiomorus Duméril & Bibron, 1839
punctatissimus (Bibron & Bory de Saint–Vincent, 1833) – Limbless Skink
Family Anguidae Gray, 1825 (slow worms)
Anguis Linnaeus, 1758
cephallonica Werner, 1894 – Peloponnese Slow Worm
fragilis Linnaeus, 1758 – Slow Worm
Pseudopus Merrem, 1820
apodus (Pallas, 1775) – Glass Lizard

Suborder Amphisbaenia Gray, 1844 (worm lizards)
Family Amphisbaenidae Gray, 1825 (worm lizards s.s.)
Blanus Wagler, 1830
cinereus (Vandelli, 1797) – Iberian Worm Lizard
Suborder Serpentes Linnaeus, 1758 (snakes)
Family Typhlopidae Merrem, 1820 (worm snakes)
Typhlops Schneider in: Oppel, 1811
vermicularis Merrem, 1820 – Worm Snake
Family Boidae Gray, 1825 (boas)
Eryx Daudin, 1803
jaculus (Linnaeus, 1758) – Sand Boa
Family Colubridae Oppel, 1811 (colubrids)
Coronella Laurenti, 1768
austriaca Laurenti, 1768 – Smooth Snake
girondica (Daudin, 1803) – Southern Smooth Snake
Dolichophis Gistel, 1868
caspius (Gmelin, 1789) – Caspian Whip Snake
Eirenis Jan, 1863
modestus (Martin, 1838) – Dwarf Snake
Elaphe Fitzinger, 1833
quatuorlineata (Bonnaterre, 1790) – Four–lined Snake
sauromates (Pallas, 1814) – Blotched Snake
Hemorrhois Boie, 1826
algirus (Jan, 1863) – Algerian Whip Snake
hippocrepis (Linnaeus, 1758) – Horseshoe Whip Snake
Hierophis Fitzinger in: Bonaparte, 1834
gemonensis (Laurenti, 1768) – Balkan Whip Snake
viridiflavus (Lacepède, 1789) – Western Whip Snake
Macroprotodon Guichenot, 1850
brevis (Günther, 1862) – Western or Iberian False Smooth Snake *
cucullatus (Geoffroy Saint–Hilaire, 1809) – Eastern or African False Smooth Snake *
Malpolon Fitzinger, 1826
insignitus (Geoffroy Saint–Hilaire, 1827) – Eastern Montpellier Snake *
monspessulanus (Hermann, 1804) – Western Montpellier Snake *
Natrix Laurenti, 1768
maura (Linnaeus, 1758) – Viperine Snake
natrix (Linnaeus, 1758) – Grass Snake
tessellata (Laurenti, 1768) – Dice Snake

Natrix natrix.

Platyceps Blyth, 1860
collaris (Müller, 1878) – Reddish Whip Snake
najadum (Eichwald, 1831) – Dahl's Whip Snake
Rhinechis Michahelles in: Wagler, 1833
scalaris (Schinz, 1822) – Ladder Snake
Telescopus Wagler, 1830
fallax (Fleischmann, 1831) – Cat Snake
Zamenis Wagler, 1830
lineatus (Camerano, 1891) – Italian Aesculapian Snake
longissimus (Laurenti, 1768) – Aesculapian Snake
situla (Linnaeus, 1758) – Leopard Snake
Family Viperidae Oppel, 1811 (true vipers)
Macrovipera Reuss, 1927
schweizeri (Werner, 1935) – Milos Viper
Montivipera Nilson, Tuniyev, Andrén, Orlov, Joger & Herrmann, 1999
xanthina (Gray, 1849) – Ottoman Viper
Vipera Laurenti, 1768
ammodytes (Linnaeus, 1758) – Nose–horned Viper
aspis (Linnaeus, 1758) – Asp Viper
berus (Linnaeus, 1758) – Adder
latastei Boscá, 1878 – Lataste's Viper
(*renardi* (Christoph, 1861) – Steppe Viper – the incertae sedis populations of the Romanian Danube delta might belong to this taxon, thus necessitating its addition to the list)
seoanei Lataste, 1879 – Seoane's Viper
ursinii (Bonaparte, 1835) – Orsini's or Meadow Viper

Exogenous species well–established on European soil

Class Amphibia Gray, 1825 (amphibians)
Order Anura Fischer von Waldheim, 1813 (frogs and toads)
Family Pipidae Gray, 1825 (clawed toads and pipa toads)
Xenopus Wagler, 1827
laevis (Daudin, 1802) – Clawed Toad - exogenous
Family Ranidae Rafinesque-Schmaltz, 1814 (true frogs)
Lithobates Fitzinger, 1843
catesbeianus (Shaw, 1802) – Bull Frog - exogenous

Class Reptilia Laurenti, 1768 (reptiles)
Order Chelonii Latreille, 1800 (turtles, tortoises and terrapins)
Family Emydidae Rafinesque, 1815 (terrapins of the New World)
Trachemys Agassiz, 1857
scripta (Schoepff, 1792) – Red-eared Terrapin (ssp. *elegans* Wied-Neuwied, 1838) - exogenous
Order Squamata Oppel, 1811
Suborder Sauria MacCarthney, 1802 (lizards)
Family Lacertidae Oppel, 1811 (true lizards)
Teira Gray, 1838
dugesii (Milne-Edwards, 1829) – Madeiran Wall Lizard - introduced to Lisbon from Madeira

Elaphe sauromates.

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