Inf.EUROBATS.MoP7.48

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Review of Species to be listed on the Annex to the Agreement

(Compiled by A.M. Hutson)

With reference to Resolution 3.7 (Doc.EUROBATS.MoP3.12.Rev.4), the attention of the Advisory Committee is drawn to the following matters, which may affect the Annex of bat species occurring in Europe to which the Agreement applies. The Advisory Committee may wish to propose amendments to the Annex at the next MoP. This updates similar documents produced for MoP5

(Doc.EUROBATS.MoP5.9, Inf.EUROBATS.MoP5.9, EUROBATS.MoP5.Record. Annex6) and MoP6 (Doc.EUROBATS.MoP6.10, Inf.EUROBATS.MoP6.45, EUROBATS.MoP6.Record.Annex5).

EUROBATS.MoP6.Record.Annex5 presents a list of species revised in accordance with amendments adopted at MoP6 (Prague, 2010). This report includes recommendations for further changes to the Annex of species to which the Agreement applies.

This report represents the opinions of members of an 'Advisory Panel' established for the purpose of assessing potential changes to the Annex of species. The panel comprises Stéphane Aulagnier (France), Petr Benda (Czech Republic), Gabor Csorba (Hungary), Sergei Kruskop (Russian Federation) and Friederike Spitzenberger (Austria) and, and co-ordinated by Tony Hutson (UK). This panel has no 'official' nomenclatural status. As 'ex-officio', Peter Lina (chairman of EUROBATS Advisory Committee) and Andreas Streit (Secretariat to EUROBATS) are also circulated for information and comment.

Mammal Species of the World is regarded by the International Union for the Conservation of Nature and Natural Resources (IUCN) and CMS as the standard list of mammals (see UNEP/CMS/Recommendation 9.4). A revised (3rd) edition (with the bats compiled by Nancy Simmons of the American Museum of Natural History) was published in early 2006 (Simmons, 2005). It is recommended that unless there is over-riding reason, the Agreement should (in line with the policy of IUCN, CMS and others)

adopt at least the generic (and higher) classification proposed in this work, but may adopt changes to the species list as appropriate. However, Simmons (op. cit.) recognised that the higher classification of bats is in a state of flux, and refrained from presenting a new higher-level classification. Further, it should be noted that this list is now nine years old and will be 13 years old by the time of the next Eurobats MoP. It is therefore considered that well-supported revision of higher classification should be considered in maintaining the Annex of species.

1. *Miniopterus schreibersii* (Kuhl, 1817) and *Miniopterus pallidus* Thomas, 1907.

Genetic studies based on mtDNA showed that *M. schreibersii* in Anatolia consists of two genetically distinct lineages and they were regarded as subspecies: *M. s. schreibersii* inhabiting Europe and the coastal regions of Anatolia and *M. s. pallidus* inhabiting Central Anatolia and the Middle East (Bilgin *et al*., 2006; Furman *et al*., 2009). Furman *et al*. (2010a) compared the level of their genetic divergence with reference to other *Miniopterus* species and suggested that they might be distinct biological species. Later , Furman *et al*. (2010b) showed that these genetically diverged lineages are also distinct on nuclear markers, indicating that they are reproductively isolated. They also showed that the lineages differ slightly in their size, wing shape, and echolocation call parameters. Although, the differences were not sufficient to fully diagnose individuals, they were discriminative between the lineages. Bilgin et al. (2012) further found these lineages together in three caves in the Eastern Mediterranean coast of Anatolia and by using mitochondrial and nuclear DNA, confirmed their reproductive isolation.

Thomas (1907) originally described *pallidus* as a subspecies of *Miniopterus schreibersii*, with the type locality being the 'southern shore of Caspian Sea, northern Persia' (Iran). Apart from the above discussions on its occurrence in Anatolian Turkey, recently Benda et al. (2011) and Šrámek et al. (2013) showed that *M. pallidus* is also distributed in Armenia, Azerbaijan, Iran, Jordan, southern Afghanistan and Turkmenistan.

Recommendation. The subspecies *Miniopterus schreibersii pallidus* Thomas 1907 should be recognized as a full species, *Miniopterus pallidus* Thomas, 1907, and added to the Annex.

2. Family Miniopteridae

The bent-winged bats or long-fingered bats (genus *Miniopterus*) occur throughout most of the Old World and have been considered the sole members of the subfamily Miniopterinae (one of five subfamilies within the Vespertilionidae) according to authors

such as Miller (1907), or of the family Miniopteridae according to authors such as Mein & Tupinier (1977). Despite numerous differences in aspects of morphology (including absence of a baculum, very reduced P^2, male genital tract, spermatozoa, embryology and immunology), all earlier phylogenetic studies on morphology and caryology have supported the subfamily level, recognising the separation of the Miniopterinae from the rest of the Vespertilionidae (Novacek 1991, Volleth & Heller 1994, Simmons 1998, Gunnell & Simmons 1995, Jones *et al.* 2002), except Hermsen & Hendricks (2008) who combined morphological and molecular sequence data. Based on upper molar morphology, Fracasso *et al*. (2011) consider Vespertilionidae as a poorly supported monophyletic group, including Myotinae, Miniopterinae, Kerivoulinae, and Murininae.

Kawai *et al*. (2002) obtained conflicting genetic results and concluded that additional studies were needed. Recent molecular studies based upon mitochondrial and nuclear DNA (Hoofer & Van den Bussche 2003, Van Den Bussche & Hoofer 2004 (contrary to Gu *et al.* 2008 for the same genes), Eick *et al.* 2005, Miller-Butterworth *et al*. 2007, Lack & Van den Bussche 2010, Yu *et al.* 2010), as well as DNA hybridisation (Hutcheon & Kirsch 2004), support a full familial status. The Miniopteridae is the sister-group of Vespertilionidae in the clade Vespertilionoidea that also includes Molossidae and Natalidae. Miniopteridae diverged from Vespertilionidae 49-38 mya, which is comparable to many other bat families (Furipteridae - Noctilionidae 41-30 mya, Phyllostomidae - Mormoopidae 41-31 mya, Miller-Butterworth *et al*. 2007). In their study on rolling-circle transposons (Helitrons), Thomas *et al.* (2010) found none of these in the Miniopteridae, indicating that these Helitrons colonized the Vespertilionidae some 36-30 Mya, which is much later than the split between Vespertilionidae and Miniopteridae.

In the most recent literature both taxonomic levels are reported, but with Miniopteridae for the majority of scientific authors, as well as in most textbooks and field guides. A much more detailed bibliography has been provided by S. Aulagnier to support the separation of the family Miniopteridae. In Inf.EUROBATS.MoP6.45 it was recommended to retain Miniopterinae, but it is now considered appropriate to raise it to family level.

Recommendation. The Family Miniopteridae should be recognised for the genus *Miniopterus*.

3. *Myotis escalerai* Cabrera, 1904

In accordance with the International Code of Zoological Nomenclature (ICZN, 1999), Article 51.3 states that when a species-group name is combined with a generic name

other than the original one, the name of the author of the species–group name, if cited, is to be enclosed in parentheses (with the date, if cited).

Cabrera originally described *escalerai* in the genus *Myotis*.

Recommendation. Parentheses should be removed from *Myotis escalerai* Cabrera, 1904 in the published Annex.

4. Other potential changes

A number of other potential changes were discussed in Inf.EUROBATS.MoP6.45. None of these has yet developed to the point where changes are recommended.

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