

***Mammal Species of the World. A taxonomic and geographic reference.* 2005. Don E. Wilson & DeeAnn M. Reeder (Eds.). Ed. 3, 2 vols., 2142 pp. Johns Hopkins University Press, Baltimore. ISBN 0-8018-8221-4**

A nomenclatural review

Anthea Gentry

Littlewood, Copyhold Lane, Cuckfield, Haywards Heath, West Sussex, RH17 5EB, U.K. (e-mail: alantgentry@aol.com)

Publication of the new edition of *Mammal Species of the World* is a considerable achievement and is most welcome. Once again it is edited by Don E. Wilson and DeeAnn M. Reeder. The previous edition was published in 1993 and since then there have been significant changes. The work is now presented in two volumes, the near doubling in size resulting from the inclusion of accepted subspecies, English vernacular names for each recognised species, authorship and dates for all synonyms, and a large increase in the number of bibliographic references (which include publications up to the end of 2003 and some works then in press). There has also been an increase from 4629 recognised species in 1993 to 5416 in the current edition. Volume 1 of the work (pp. i-xxxv, 1-743) contains the list of 26 specialist contributors, preface, acknowledgments, introduction, list of museum abbreviations and all the orders except rodents; volume 2, which is larger, contains the rodents (pp. 745-1600), references (pp. 1601-1944), index of scientific names (pp. 1945-2115) and index of English vernacular names (pp. 2115-2142).

The work covers extant and recently extinct species (those probably alive during the past 500 years). Information now given for each species includes the type locality, distribution, a complete list of synonyms including those for currently recognised subspecies, status in the IUCN *Red list of threatened animals* (2003), CITES appendices (2004) and the U.S. Endangered Species Act (2004), and a record of ICZN rulings. The work reflects the numerous taxonomic changes since the previous edition at both the species and higher levels (the 26 orders in the previous edition have now increased to 29).

During my university studies I specialised in mammalogy and subsequently worked as a mammal palaeontologist. While employed in the ICZN Secretariat (1987-2002) I researched and published a number of mammal nomenclatural applications, sometimes co-authored with colleagues, relating to both Recent and fossil taxa. I also processed other mammal cases submitted by fellow workers. I was interested to see how names approved by the Commission had been treated in the new *Mammal Species of the World*.

A number of applications submitted to the Commission sought to set aside a hitherto overlooked type species designation in order to conserve the current usage of one or more generic names. Such applications included Case 3058 (BZN 56: 136-141, June 1999) on the fur seal names *Arctocephalus* F. Cuvier, 1826 and *Callorhinus* Gray, 1859, and the sea lion names *Otaria* Péron, 1816 and *Eumetopias* Gill, 1866, and Case 3121 (BZN 56: 255-261, December 1999) on the rodent names *Holochilus*

Brandt, 1835, *Proechimys* J.A. Allen, 1899 and *Trinomys* Thomas, 1921. The Commission approved these applications in Opinion 1962 (BZN 57: 193–195, September 2000) and Opinion 1984 (BZN 58: 245–246, September 2001) respectively. The generic names have been included in the new edition of *Mammal Species of the World*, although the compilers of the group which includes *Holochilus* state that they have followed the application, apparently unaware of the definitive Commission ruling.

Other applications sought to ratify the current spelling of a name by amending the originally published name. These included Case 3018 (BZN 56: 262–265, December 1999) for the deer name *Mazama gouazoubira* (Fischer, 1814), Case 3033 (BZN 57: 36–38, March 2000) for the rodent name *Glirulus japonicus* (Schinz, 1845), and Case 3004 (BZN 55: 165–168, September 1998 and 57: 228–231, December 2000) for the primate family-group names LORISIDAE Gray, 1821, GALAGIDAE Gray, 1825 and INDRIIDAE Burnett, 1828. These applications were approved in Opinion 1985 (BZN 58: 247, September 2001), Opinion 1978 (BZN 58: 159–160, June 2001) and Opinion 1995 (BZN 59: 65–67, March 2002) respectively; the corrected spellings have been incorporated in the new checklist.

A number of applications sought to stabilise the usage of names by a ruling on their authorship and date. These included Case 3022 (BZN 58: 41–52, March 2001) for the publication *Catalogue des mammifères du Muséum National d'Histoire Naturelle* by É. Geoffroy Saint-Hilaire (1803) which included the mole name *Scalopus* and 22 specific names in several orders; Case 3178 (BZN 58: 126–132, June 2001) for the artiodactyl generic and family-group names *Hippotragus* and HIPPOTRAGINAE published by Sundevall (1845); and Case 2928 (BZN 51: 135–146, June 1994) for the generic names *Philander* (marsupial), *Pteropus* (bat), *Glis*, *Cuniculus* and *Hydrochoerus* (rodents), *Meles*, *Lutra* and *Hyaena* (carnivores), *Tapirus* (perissodactyl), *Tragulus* and *Giraffa* (artiodactyls) published by Brisson (1762). The Commission took action in Opinion 2005 (BZN 59: 153–154, June 2002), Opinion 2030 (BZN 60: 90–91, March 2003) and Opinion 1894 (BZN 55: 64–71, March 1998); the new edition of *Mammal Species of the World* now lists all the names with the appropriate authorship and date. The ruling on Brisson's (1762) names has been welcomed by some contributors but not by others. The entry for *Cuniculus* records 'The generic name of this taxon has been debated . . . , but the nomenclatural instability of this genus was resolved by the ruling by the International Commission on Zoological Nomenclature (1998) for the conservation of *Cuniculus* Brisson, 1762'. The entry for GLIRIDAE, however, notes 'the unfortunate ruling by the International Commission on Zoological Nomenclature (1998) to conserve *Glis* Brisson' and thereby ignores all the usage of the name and the support received, particularly from Europe-based zoologists (a full discussion on the usage of *Glis* was given in BZN 52: 90–91, March 1995). The long discussion on the identity and use of the name *Tragulus* by authors subsequent to Brisson (1762) is mostly irrelevant.

Two applications, both related to bats, sought to ratify the majority usage of an earlier specific name where there were taxonomic difficulties. Case 3073 (BZN 56: 182–186, September 1999) proposed to establish *Pipistrellus pygmaeus* (Leach, 1825) as the name for a cryptic species confused with *P. pipistrellus* (Schreber, 1774) until 1993. The Commission approved the application in Opinion 2028 (BZN 60: 85–87,

March 2003) and, in *Mammal Species of the World*, *P. mediterraneus* Cabrera, 1904, the name preferred to *P. pygmaeus* by some workers, is listed among the synonyms. Case 3095 (BZN 56: 250–254, December 1999) proposed confirmation of the majority usage of *Mystacina tuberculata* Gray, 1843 and *Chalinobus tuberculatus* (J.R. Forster, 1844). The Commission approved this application in Opinion 1994 (BZN 59: 63–64, March 2002) and in *Mammal Species of the World* both names have been adopted with *M. velutina* Hutton, 1872, the name preferred by a few workers in place of *M. tuberculata*, listed as a synonym.

For many domesticated animals, especially artiodactyls, separate names exist for a wild species and its supposed domestic derivative. Very often the 'domestic' name predates the 'wild' one and, although a majority of writers have preferred to use the 'wild' name for the wild species, there has been some confusion about the application of names and the significance to be read into one usage rather than another. In Case 3010 (BZN 53: 28–37, March 1996) Juliet Clutton-Brock, Colin Groves and I proposed that, where there were traditionally separate names for a wild species and its domestic derivative, the majority usage for the wild species of the first available name based on a wild population should be stabilised. This affected 15 mammals and in these the name of the domesticate had been established by Linnaeus (1758, 1766) and a few other authors and was earlier or contemporary with the name of the wild ancestor. The name for the domesticate had been applied by a few authors to the wild species, thereby increasing the confusion mentioned above.

Over the next six years our application received 28 out of 33 comments and five brief notes in favour of the proposals with considerable support from workers in zoology, archaeozoology, palaeontology, conservation, ecology, ethology and endangered species management. A few commentators were not in favour but this seemed to be because they had misunderstood the intention of the application: they assumed either that earlier names based on domestic forms were going to be discarded or that two alternative names would be adopted as valid for the wild species. We explained in published replies that neither assumption was correct.

In March 2003 the Commission approved the proposals (Opinion 2027, BZN 60: 81–84) and 15 names for wild mammal progenitor species were fixed as those based on wild populations. Names based on domestic forms can now only refer to domesticates.

Despite Opinion 2027 the minority and now incorrect treatment of the names for wild and domestic forms in *Mammal Species of the World* has remained unaltered from the 1993 edition. In the chapters on the Perissodactyla and the Artiodactyla, compiled by Peter Grubb, names based on domestic forms have actually been used for wild species. Thus the Linnaean names *Equus asinus* and *E. caballus*, based on domestic forms, are used for both the wild and domestic ass and the horse respectively with the wild species' names *E. africanus* Heuglin & Fitzinger, 1866 and *E. ferus* Boddaert, 1785 cited as synonyms. Similarly, *Bos taurus* Linnaeus, 1758, based on domestic cattle, is used for the extinct wild aurochs in preference to the almost universally used *B. primigenius* Bojanus, 1827. The Linnaean names *Ovis aries* and *Capra hircus* are still given as the wild progenitors of sheep and goats, which usually appear as *O. orientalis* Gmelin, 1774 and *C. aegagrus* Erxleben, 1777. This erroneous nomenclature has not been followed in other chapters: in the Carnivora *Felis catus* Linnaeus, 1758, the domestic cat, is treated as distinct from *F. silvestris*

Schreber, 1777, the wild cat, and in the Rodentia *Cavia porcellus* Linnaeus, 1758 is restricted to the domestic form of the guinea pig.

In using the Linnaean names *Equus asinus*, *E. caballus*, *Camelus bactrianus* (domestic Bactrian camel), *Bos bubalis* (domestic water buffalo) and *B. grunniens* (domestic yak) for wild species, Grubb notes the Commission ruling and states that it has not been demonstrated that most authors have used the names based on wild taxa for the species. On the contrary, the application (para. 7) cited 15 recent reference works in which the names based on wild populations have been used for the wild species, and noted that there were numerous publications in all fields which had adopted them. Moreover, many published comments supported our proposals, as noted above.

In adopting the names *Equus asinus* and *E. caballus*, Grubb states that Opinion 2027 did not explicitly specify which name was to be assigned to the whole species by those who consider wild and domestic populations to be conspecific. Again, in adopting the names *Camelus bactrianus*, *Bos frontalis* (domestic gaur), *B. bubalis*, *B. grunniens*, *Ovis aries* and *Capra aegagrus*, Grubb states that it might still be valid for those who consider the wild and domestic forms to be conspecific to employ the senior (domestic) name for the name of the species. In support of his statements Grubb cites a 1997 comment by Walter Bock, six years before the Opinion was published. It has to be pointed out that my colleagues and I replied to Bock in the same issue of the *Bulletin* (BZN 54(2), June 1997) and then published two further comments (BZN 58: 233–234, September 2001 and 59: 48–50, March 2002). We set out the situation in the usage of names for wild species with domestic derivatives, how this might be seen to differ from a strict interpretation of the Code, and the consequences that would result from Commission approval of the proposals. Our intentions regarding the names for wild and domestic forms, both when treated as separate species (two names) and when included in one species (one name), were stated in all three comments, and in both the second and third comments we made clear that ‘Approval of our proposals by the Commission will merely ratify the current nomenclatural situation: names based on wild populations will continue to be used for wild species and will include those for domestic forms if these are considered conspecific’. Similar comments were made by Corbet (BZN 53: 193), Kitchener (BZN 53: 194) and Uerpman (BZN 58: 231). Following all this, the outcome was that Opinion 2027 does state explicitly (BZN 60: 83): ‘The names listed [pp. 81–82] in the ruling above, which are the first available names in use based on wild populations, apply to wild species and include those for their domestic derivatives if these are not distinguishable’.

Grubb himself has admitted that *Ovis aries* and *Bos frontalis*, the names for domestic sheep and domestic gaur, have not been used for wild species and, more seriously, that all wild taxa recorded as endangered in IUCN (2003) and CITES (2004) publications have been listed under the names for the wild ancestral species.

Another consideration reveals an unappreciated benefit of the Commission ruling which will eliminate much future confusion. Following publication of Opinion 2027, Gentry, Clutton-Brock & Groves (2004) set out the history and consequences of the ruling. We noted, citing recent papers, that genetic analyses have demonstrated that there are two or more lineages in several domestic animals (including cattle, water buffalo, sheep, goat, pig, horse, llama and alpaca) derived from two or more wild

ancestral species or subspecies from different geographical areas. There is also genetic evidence of hybridisation of domestic animals with wild species and other domestic forms during domestication. Still more recent publications (Dobney & Larson, 2006, and cited references; Zeder, Bradley, Emshwiller & Smith, 2006) have shown that the history of domestication is considerably more complex than originally thought and that the majority of modern domestic animals have multiple ancestors, often in different species. This makes it unsafe to assume a one-to-one equivalence between domesticates and single ancestors and to give it a formal expression in their names.

Under Article 17.2 of the Code the availability of specific names for animals is not affected by hybrid origins, so Gentry et al. (2004) acted legitimately in recommending that names based on domestic forms be adopted for the domestic derivatives. Under Article 23.8, however, a specific name for an animal later found to be hybrid must not be used as the valid name for either, or any, of the parental species even if it is older than all other available names for them. In adopting names based on hybrid domestic animals for wild progenitor species Grubb has ignored this Article of the Code.

To my knowledge the Code and Commission rulings have not hitherto been flouted on such a large scale and on such unsafe grounds. Applications submitted to the Commission to resolve nomenclatural difficulties are made on behalf of the zoological community as a whole. Publication of cases in the BZN and on the ICZN website includes an invitation to zoologists to comment or make alternative suggestions, and a two-thirds majority of those Commissioners voting is needed for approval of proposals. Decisions of the Commission are thus arrived at democratically and, in the interests of universality, clarity and stability, need to be followed.

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