

## Huckaby's comments on domestic forms of Artiodactyla

I may have influenced Burgin somewhat with respect to handling domestic versus wild species. Colin Groves was a long-time member of the Mammal Images Committee until the day he died, and he influenced how we handled them in the MIL even before there was a MDD. His views were influenced both by his association with archaeologists and concern for conservation. He wanted to consider domestic forms a separate species from their presumed wild ancestor but only for those species domesticated in prehistoric time. Although these reasons are not really scientific and the time distinction somewhat arbitrary, we went along with it for the MIL. There are 18 mammal species that come under this concept, 19 if Taurine Cattle and Indicine Cattle are considered distinct. Fourteen/fifteen of them are ungulates, and Groves & Grubb (2011) listed their names and those of their wild ancestor on pages 8 and 9.

Earlier, Grubb, in Wilson & Reeder (2005), had lumped each domestic form with its presumed wild ancestor at the species level but arranged most as a subspecies, using the oldest available name. Although Opinion 2027 of the ICZN was published in 2003, there was not enough time to consider it fully, because Wilson & Reeder did not consider much publication from that year. In fact, only two of these wild versus domestic complexes, cats and caviars, were considered separate species in Wilson & Reeder. Following Groves & Grubb and Gentry, et al., (2004), we split all 19 of them, but only after some discussion with Groves.

The one glaring inconsistency in the list in G & G is the bantengs. I discussed them with Groves, and he agreed that they should have separated them as species not subspecies. The fact that no-one had done so in recent times, including Gentry, et al. (2004), probably influenced their decision. This lapsus probably resulted mostly from the fact that the oldest available name for any banteng is supposedly based on a wild animal, and so this complex was not part of Opinion 2027. In addition, Grubb (2005) did not separate the domestics even as a subspecies, and put *domesticus* Wilckens, 1905, as a synonym of *javanicus* d'Alton, 1823. In order to be consistent, we did separate them in the MIL, and I argued to Burgin to do the same in the MDD. Incidentally, G & G listed Gans (1916) as the author of *domesticus* but did not list any such paper in their literature cited. Even if either of these uses of the name *domesticus* is ruled available, they are junior primary homonyms to *domesticus* Erleben, 1777, which is a synonym of *taurus*, not to mention two *domesticus* Fitzinger, 1860, one a synonym of *frontalis*, and the other of *grunniens* (this one a secondary homonym). Putting the Bali Cattle as a subspecies of *javanicus* does not resolve this nomenclature problem.

G & G separated Taurine Cattle and Indicine Cattle as separate species, and they derived them from separate extinct species. If one lumps the two extinct forms into one species, then one could argue to lump the domestics as well; otherwise, one has two extant forms derived from the same extinct one. If one uses the trinomial to distinguish between Taurine Cattle and Indicine Cattle, then one might want to use *africanus* Kerr, 1792, for the African breeds (Sanga Cattle). Grubb (2005) listed this name in the synonymy of *Bos taurus indicus*.

A recent paper on *Bubalus* (Curaudeau, et al., 2021), which is not cited yet by MDD and apparently not yet in Hesperomys, raised the two groups of breeds (River Buffalo of South Asia, *bubalis*, and Swamp Buffalo of Southeastern Asia, *kerabau*) in Water Buffalo to species status. They suggested the wild forms from which the domestics derive might be distinct enough to do so also, under the names *arnee*. (Kerr, 1792) and *theerapati* Groves, 1996. Perhaps, the best solution now is to not split them until someone does more work on the wild forms.

G & G followed Valdez (1982) in arguing that, although *Ovis orientalis* Gmelin, 1774, is available, it is not usable because it is based on a hybrid. I am not sure I understand the code, but it seems to say two different things about holotypes based on hybrids. If the type was based on a hybrid

individual, it cannot be used for either parent taxon (23.8). If, on the other hand, the type came from a population that developed from hybridization, it can be used (17.2). To me, this *orientalis* represents the second situation and is available but only for a taxon that includes both the parent populations. According to Valdez (1982) the type came from an area where the sheep are intermediate between those to its east and west. To me, this means that, if all those populations are part of the same species, then *orientalis* is the oldest available name for that species but cannot be used for any subspecies within it. If the populations west and east of the Alborz mountains are considered different species, as IUCN and the MDD do, then it cannot be used for either. I am not sure of any of these conclusions. G & G discusses this population on page 237. Opinion 2027 put *orientalis* Gmelin, 1774, on the Official List of Specific Names in Zoology.

MDD says it considers both *musimon* and *ophion* to represent ancient introductions of wild sheep and puts them under *gmelini*, but it does not list *musimon* Pallas, 1811, in the nominal names. That needs correction, one way or the other. Grubb (2005) considered both to be . G & G did not list either, as they did not provide any synonymy for domestics. The fact that they did not list either under *gmelini* indicates they considering them as domestics under *aries*. I think that is the best thing to do with them. The Wikipedia article (<https://en.wikipedia.org/wiki/Mouflon>) does that with *musimon* but not *ophion*, which it puts under *gmelini*.

I think I was the one who suggested adding Asian to Mouflon for the English name of *Ovis gmelini*. I did it to distinguish them from European Mouflon, which I considered restricted to the animals on Corsica and Sardinia since ancient times (*musimon*) and since introduced widely around the world. I was considering them as ancient introductions of domestic animals and, so, under *aries*. If MDD retains them under *gmelini*, then omitting Asian makes sense. Otherwise, it does not. If one lumped all these mouflon into one species, the name would be *gmelini*(!), because that is the oldest available name based on a wild form.

G & G put *arabica* Sopin & Harrison, 1986, as a full species within the *vignei* group, so arranging it as a synonym of *vignei* in the six wild species model used by MDD seems appropriate. It could be a subspecies, if they are used. There is also an *arabica* Fisztzinger, 1860, which MDD, following Grubb (2005) lists under *aries*, which would seem to make the former a junior primary homonym of the latter, and so unusable.

G & G lumped *Vicugna* into *Lama* based, apparently, only on their own work. Although they hinted at molecular data supporting this, they did not cite any. It would appear that MDD followed them, which may be the only time it did that.

Both Gentry, et al., (2004), G & G, and Wikipedia ([https://en.wikipedia.org/wiki/Sus\\_\(genus\)](https://en.wikipedia.org/wiki/Sus_(genus))) recognized Domestic Pig as a separate species, under the name *Sus domesticus* Exleben, 1777. Grubb (2005), however, had listed this name as a synonym of *S. scrofa scrofa*. There seems to be as much reason to consider it a separate species as for any of the other ungulates. Again, because *Sus scrofa* Linnaeus, 1758, which is the oldest available name for this complex, was apparently based on a wild animal, Opinion 2027 did not include them in its list.

I asked Groves why he had not included *Rangifer tarandus*, because G & G do not even discuss the domesticated forms in this genus. Unfortunately, I do not remember his answer. Linnaeus apparently meant the domestic stock of the Sámi when he described the species. If so, then this is another case where the oldest available name was based on a domestic animal. Harding (2022) revised the genus and split it into six species. MDD has chosen not to follow this for the present. Harding revised the Wikipedia account (<https://en.wikipedia.org/wiki/Reindeer>) to compare his classification with the earlier one.