

Book Review

Authors: Suchomel, Josef, Hrabina, Petr, Lupták, Peter, and Robovský, Jan

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Wilson D.E. & Mittermeier R.A.: Handbook of the mammals of the world – vol. 2, Hoofed mammals. Lynx, Barcelona, 2011, 885 p. ISBN: 978-84-96553-77-4.

The second part of this impressive encyclopaedia, with 160 extra pages compared with the previous volume, presents the wealth of ungulate diversity (aardvarks, hyraxes and proboscideans from Afrotheria, and odd- and even-toed ungulates from Laurasiatheria) and the considerable sum of knowledge gathered on these animals. The amount of information, high-quality photographs and attractive plates are undoubtedly astounding. However, unlike the first volume this work has provoked a much wider discussion. There are two principal reasons: 1) taxa (order) sampling – while nobody probably objects to the fact that mutually unrelated ungulate mammals are included (Afrotheria x Laurasiatheria), yet sirenians were omitted (as they will feature in the following volume focusing on sea mammals), and the authors surprisingly added pangolins which lack hooves altogether and are not related to ungulates in any way; 2) different taxonomic understanding of species: while the biological species concept is applied on some groups (e.g. giraffids, equids), other families are treated with the help of the phylogenetic species concept (hereinafter PSC – bovids, chevrotains, musk deer, proboscideans), yet other groups are treated “halfway through” (pigs, cervids), while camelids are viewed in a highly peculiar manner with respect to their domestic forms. The approach associated with the genera is not unified either (e.g. the Malayan tapir is not presented as *Acrocodia indica* in the book, while both lesser kudus are deservedly listed under a separate genus *Ammelaphus*). The book thus contradicts itself in many conspicuous ways and some authors, probably in order to be consistent with their favourite concept, sometimes manipulated their notes to be compatible with their subjective understanding of a given group (e.g. employing the biological species concept in giraffes is in stark contrast with the objective congruence of morphological and molecular-genetic revisions conducted in the recent years). The application of PSC manifests itself particularly in the increased number of bovid species (from the considered 143 to 279!). These changes are

so significant that they may be perceived as surprising, although the principle of such changes is not surprising at all (PSC has been known and well argued for some time). The reasons for elevating some populations/subspecies are listed in the book *Ungulate Taxonomy* (2011, by Colin P. Groves and Peter Grubb). Unlike the Handbook, it revises ungulates in a unified manner by using the PSC, which makes it more useful and authoritative with regard to taxonomy. Our point 2 is therefore a clear editor’s failure, as the application of the PSC on all groups could have made the book even more valuable.

Voices can be heard saying that “there are simply too many new species”. This remark or even reproach can be answered by noting that taxonomy studies nature’s evolutionary structure and that nature certainly does not produce species which are easily remembered and determined. Not everybody understands that revisions, apart from elevating certain forms, also “abolish” a number of other taxa created incorrectly by us. When applying the PSC, the book brought to light a number of endangered/critically endangered taxa which had been frequently neglected (e.g. *Syncerus mathewsi*, *Ovis arabica*, *Gazella acaciae*). These taxa are little known and, what is worse, are threatened by extinction in a matter of several years. The book therefore provides a rare opportunity to put this right – even if some of its readers refused the elevation of some subspecies into species, they are given the chance to see that the taxa actually represent real and mutually different animals which should not definitely be forgotten. With this in mind, one should endeavour to remain open to new findings and to be aware of the fact that taxonomy does not and probably for some time will not give definite answers with respect to some mammals.

Added to this, another thing which is missing in the species accounts are taxa which became extinct in the recent history – e.g. the tarpan (*Equus ferus*), bluebuck (*Hippotragus leucophaeus*), red gazelle (*Eudorcas rufina*) or bubal hartebeest (*Alcelaphus buselaphus*). Also synopsis regarding the fossil record in some chapters are sketchy even in well-documented families (elephants, tapirs, bovids) otherwise phylogenetic relations within recent taxa are presented correctly and aptly.

The book contains some contradictory sections, e. g. p. 453 lists the western Derby eland as a subspecies (*Taurotragus derbianus derbianus*), while p. 617–618

present the species as a monotypic, and p. 111 contains a photo commentary which mentions that both mountain zebra subspecies (the Cape mountain zebra and Hartmann's mountain zebra) have been proposed for full species status. This fact does not appear in the text part at all. The latest revision of all zebra species dated 2004 has pointed out this possibility but its conclusions are not mentioned in the relevant species accounts where the author offers a peculiar but unsupported solution to the issue which, among other things, disregards the valid subspecies of *Equus quagga borensis*, yet acknowledges the validity of subspecies status for the Selous' zebra (*E. q. selousi*). Considering some errors in taxa determinations of the pictures, p. 82 depicts *Manis temminckii* not *M. gigantea*, p. 381 *Mazama temama* not *M. americana*, p. 468 *Connocchaetes johnstoni* not *C. albojubata* and the determination on p. 402 is uncertain, but it should not represent *Mazama rufina* (the Cundinamarca locality in Columbia is situated outside the known distribution range of this species).

There are also inaccuracies in taxa names – it should list *Equus africanus somaliensis* (Noack, 1884) not „*Equus africanus somalicus* Sclater, 1884“, *Mazama nana* not *M. nanus*, *Ceratotherium simum cottoni* not *Rhinoceros simum cottoni* (p. 174). The introduced four subspecies of the black rhinoceros in the species account are a purely artificial construct which defies scientific evidence. Another curiosity the monotypic status of the dromedary represents an unorthodox taxonomic perspective, to say the least.

The plates drawn by Toni Llobet are exceptionally beautiful with usually accurately depicted colouring of the given taxa and their relative sizes, yet exceptions to this rule can be found as well. Generally, the illustrator has certain difficulties depicting long-haired animals, to a lesser degree also depicting the traditionally

problematic horns, antlers and pig tusks. Sizes of *Mazama nemorivaga* and *M. rufina* (Table 21) do not correspond to the scale. The plains zebra subspecies (Table 5) shows uncharacteristic specimens with untypical striping patterns which lack any definite characteristics (in the subspecies *E. q. burchelli* and *E. q. chapmani* the patterns are virtually identical, regardless of the fact that the former subspecies is characteristic of lacking stripes on its legs and possibly on its belly as well). Both wildebeest and buffalo (Table 43 and 24) have deformed heads, while buffalos (*Syncerus brachyceros* and *S. mathewsi*) have deformed horns as well. In bovids of the genus *Bos* (Table 23) only the bull and cow of the plains bison are depicted realistically, and the shapes of both depicted sexes of the wild yak reveal that the drawing is based on a domestic yak. Another thing to add is that the *yesoensis* subspecies of the sika deer would be better characterized by an end crown on its antlers (or at least an indication of a crown in the form of a two-tine fork), which is frequently its characteristic feature, unlike in sikas occurring in the southern regions of its distribution range, which never form it. Both the cow and bull of the Kouprey should have tails reaching to the ground. The depicted Tora hartebeest has uncharacteristically dark stripe on the front legs. On the other hand, the Lichtenstein's hartebeest lacks a typical dark strip on both its front and hind legs. Moreover, the dibatag has a tail which is entirely black, not only half-way so.

We believe that despite partial inconsistencies and errors the reviewed book represents a major challenge in the research and protection of ungulates. Will we be able to take advantage of it?

Josef Suchomel, Petr Hrabina,
Peter Lupták, Jan Robovský