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NATURAL HISTORY NOTE

Nomenclatural unawareness, or on why a recently proposed name for Chiloean populations of *Pudu puda* (Mammalia, Cervidae) is unavailable

Desconocimiento nomenclatorial, o sobre por qué un nombre propuesto recientemente para poblaciones chilotas de *Pudu puda* (Mammalia, Cervidae) no está disponible

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In organismic biology the most relevant unit is the species. The branch of biology dealing with the delimitation of species in nature is Taxonomy, by definition a comparative discipline whose practice today includes a variety of approaches (e.g., phylogeographic) and tools (e.g., genotyping techniques), and is successful if based on natural history collections. The formal naming of biological units falls in the realm of Nomenclature. Nomenclatorial practice on animal taxa up to the family-group rank is regulated by the International Code of Zoological Nomenclature (hereafter The Code; for an alternative rank-free system to name clades, known as the Phylocode, see de Queiroz & Gauthier [1994] and The Phylocode [http://www.ohio.edu/phylocode/index.html]; similarly, for a presumably upcoming rank-using system encompassing all biological diversity, The BioCode, see Greuter et al. [2011] and International Committee on Bionomenclature [http://www.bionomenclature.net/biocode2011.html]). The Code is published by the International Commission of Zoological Nomenclature and fourth and latest edition (ICZN 1999) contains a set of 90 articles that include mandatory provisions, recommendations, and illustrative examples.

Among the most charismatic endemics to the Valdivian ecoregion is the small deer *Pudu puda* (Molina, 1782), vernacularly known as pudú (pudu in English). Originally described by Molina (1782) as *Capra puda*, the generic placement of the form *puda* has fluctuated among genera of the families Bovidae and Cervidae (see taxonomic history in Hershkovitz 1982). Currently, it is placed in the genus *Pudu* Gray, 1850, of which is the type species.

Recently, Fuentes-Hurtado et al. (2011) published a phylogeographic study centered on Chilean populations of *Pudu puda*. These authors found that genetic variants recovered from their Chiloean sample, three specimens collected at one locality, form a clade sister to another composed by all mainland variants gathered from specimens collected at 18 localities. Both clades differ on mitochondrial control region DNA sequences by 2.3 % (the value falls to 0.7 % for the cytochrome-b gene; in addition, the phylogeographic structure seen with the control region is lost when analysing the cytochrome-b gene). Additionally, males from Chiloe are larger and heavier than mainland specimens. Given these results, Fuentes-Hurtado et al. (2011: 32) stated that "...we may suggest two subspecies for pudu: continental pudu (*P. p. puda*) and Chiloé Island pudu (*P. p. chiloensis*)."

The objective of this note is to point out that the attempt of Fuentes-Hurtado et al. (2011) to establish the trinomen *Pudu puda chiloensis* did not meet minimum criteria in The Code for establishing a species-group name. The name has no validity in taxonomy and nomenclature because when proposing the new name, Fuentes-Hurtado et al. (2011: 32) contravened the following provisions: (1) Provide a definition or description of the characters by which the new taxon differs from other closely related taxa (see Art. 13.1.1); (2) Explicitly state that the name is new (e.g., n. spp. or new

subspecies; Art. 16.1 and recommendation 16 A); (3) Explicitly identify a holotype or syntypes for the new taxon (Art. 16.4.1); (4) Provide a statement of where the holotype of syntypes are or will be deposited and the name and location of that repository collection (Art. 16.4.2).

Simply stated, the name *Pudu puda chiloensis* proposed by Fuentes-Hurtado et al. (2011) is an unavailable name. Furthermore, the name "*P. p. chiloensis*," as used in the paper by Silva-Rodríguez et al. (2011: 376) is a *nomen nudum* (literally a naked name) and also has no validity (of course, the latter also applies to the name as used in this note).

The central theme posed in this note may be seemed as just nomenclatorial bookkeeping and not relevant to biological research. I will argue against such a view. Most people visualize the advantages of using proper names to identify individuals in the course of communications. Therefore, the advantages derived from the usage of taxonomic names not need to be listed (for a discussion on the proper name condition of taxonomic names see Jensen 2011). Then, communication in organismal biology works in an effective way if there is, among others, an apt link between taxonomic names and the lineages to which they apply. Name-bearing type specimens allow that connection to be established. Clearly, discussing on the adequacy of keep using a system with a presumable essentialist basis (i.e., previous to the Darwinian populational thinking; but for an emerging alternative view about the non-essentialist condition of pre-Darwinian taxonomy see Winsor 2003, 2006) largely exceeds the goal of this note; but suffices to say that variation, an emerging feature of the population level, has been always considered in taxonomic practice and, as noted by Cracraft (2000), taxonomists were among the first biologists to assess and analyze variability. The point here is noting that without using bearing name types -and the associated diagnosis and comparisons that formal descriptions should include- it would not be possible to unambiguously use taxonomic names to refer to individuals of any species. Taxonomists of course know that in certain cases even when bearing name types exist some ambiguities remain (e.g., due to the variable as well as non-stationary nature of the species; see Hey et al. 2003); but, at least as a final goal, good and exhaustive taxonomic work would almost end those ambiguities. Types are reference standards that provide objectivity in zoological nomenclature. To close this argument, I pose the following questions. How we would determine if previously unstudied populations of pudu, either continental o Chiloean, belong to any of the putative distinct forms recognized by Fuentes-Hurtado et al. (2011) as *P. p. chiloensis* and *P. p. puda*, or to none of these (i.e., a third one not yet discovered), if names are not unambiguously tied to a particular form? Imagine that a new study shows that a continental-like mitochondrial haplotype is borne by a set of specimens from the up to now single studied Chiloean locality: would *P. p. chiloensis* apply also to these specimens (blurring then the distinction between *P. p. chiloensis* and *P. p. puda*, rendering the former as synonym of the later) or not (implying both subspecific taxa are sympatric; here it is not the place to discuss if two subspecies of the same species can occur in sympatry; the issue is to visualize ambiguities arisen from the usage of species level taxonomic names lacking name bearing types)?

I close this discussion by affirming the need to continue conducting high-quality collection-based research towards the characterization of biodiversity at the species level. I invite Fuentes-Hurtado and his colleagues to fully describe and formally name a new taxon to encompass the Chiloean populations of *Pudu puda*, a taxonomic action that, according to them, is needed. If desired, the name *P. p. chiloensis* could be used; if properly named and described it would become a valid name with date and authorship as to those of the up-coming paper.

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