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On the live holotype of the Galápagos pink land Iguana, *Conolophus marthae* Gentile & Snell, 2009 (Squamata: Iguanidae): is it an acceptable exception?

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Abstract

The Galápagos pink land iguana, *Conolophus marthae* Gentile & Snell, 2009 (Squamata: Iguanidae) is the latest example of a species being described without the proper deposition of a preserved onomatophore (name-bearing type specimen) in a taxonomic collection. Differently from other recent similar descriptions, the holotype of *Conolophus marthae* was marked with a Passive Integrated Transponder, allegedly allowing it to be tracked and found after its death, when it would be deposited at the Governmental Galápagos collection. Although apparently fulfilling the criteria of the International Code of Zoological Nomenclature, I here argue that this practice should not be followed and that the International Commission on Zoological Nomenclature should urgently act to standardize criteria that should be met by those describing species found at the brink of extinction.

Key words: International Code of Zoological Nomenclature, Nomenclature, taxonomy

Introduction

The recent description of some animal species without the proper deposition of preserved specimens as onomatophores (name-bearing type specimens) has caused an intense debate on the availability of these nomina under the International Code of Zoological Nomenclature (hereafter referred to as the *Code*). This recent "fashion" of describing species without the deposition of preserved onomatophores was started by Smith *et al.* (1991) and followed by Jones *et al.* (2005), Athreya (2006), Mendes Pontes *et al.* (2006), among others, and, now, by Gentile and Snell (2009). All species described by the above mentioned authors are vertebrates (two bird, two mammal, and one iguana species) and their authors argued, at the time of description, that known populations were very small and that taking a single individual to be the onomatophore could directly contribute to make those species extinct. Strong reaction against this *modus operandi* of describing species without the deposition of onomatophores in collections was immediately seen, starting by Banks *et al.* (1993) and followed by Landry (2005), Moser (2005), Timm *et al.* (2005), Naish (2006), and Oliveira & Langguth (2006). On the other hand, three former secretaries of the International Commission on Zoological Nomenclature (hereafter referred to as ICZN) co-authored articles supporting the point of view that the *Code* allows such descriptions without the deposition of preserved onomatophores (Wakeham-Dawson *et al.* 2002, Polaszek *et al.* 2005). Dubois & Nemésio (2007) and Nemésio (2009) deeply discussed the argumentation provided by both sides of the debate, showed that the opinions provided by the former ICZN secretaries in Wakeham-Dawson *et al.* (2002) and Polaszek *et al.* (2005) were personal opinions, not a formal decision, and suggested an amendment of the *Code* to make it clear, and explicit, what some apparent ambiguous and contradictory articles of the *Code* did stand for. Dubois & Nemésio's (2007) suggestion to rephrase articles 16.4 and 73.1.4 of the *Code*, even including an article numbered 16.4.3, went in the direction of making it explicit that deposition of preserved onomatophores should be obligatory to make a

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nomen of a new species or subspecies available, a point of view contrary to that of three former secretaries of the ICZN, as shown above, but supported by many zoologists and zoological societies over the world, as demonstrated by Banks *et al.* (2003—many ornithologists subscribed to this article), Remsen (1995), Patterson (2002), Landry (2005), Moser (2005), Timm *et al.* (2005—The Nomenclature Committee of the American Society of Mammalogists is a co-author of this article), Naish (2006). Details and discussion on the apparent contradictory articles of the *Code* can be found in Dubois & Nemésio (2007), Donegan (2008) and Nemésio (2009) and in the references cited in those papers.

Whereas the vertebrate species described by Smith *et al.* (1991), Jones *et al.* (2005), Athreya (2006), and Mendes Pontes *et al.* (2006) had their holotypes photographed and subsequently released in the wild, without any special markings, Gentile and Snell (2009) introduced a new practice which supposedly allows tracking the live specimen and recover it at a later stage or after his death. This "new practice" is the insertion of a Passive Integrated Transponder hypodermically in one of the posterior legs (see Gentile & Snell 2009). The specimen was also photographed (as happened with the other vertebrate species described without the preservation of holotypes), which gave the authors the opportunity to invoke the so disputable article 73.1.4 of the *Code*, which states that the holotype is the specimen illustrated, not the illustration itself [this argument has been rejected by those who think that a preserved onomatophore is needed to validate a species description and was emphatically shown by Moser (2005) and Nemésio (2009: 8–9) to have been misunderstood by those who use it as a support for such a practice].

The "Notes added in proofs" by Gentile and Snell (2009) added another feature, not emphasized by those authors, that are also one step forward when compared to the other four vertebrate species described without the deposition of onomatophores cited above. When stating that "Upon the Holotype's natural death, it will be preserved and deposited in the Governmental Galápagos collection, maintained by the Charles Darwin Foundation, Puerto Ayora, Galápagos", Gentile and Snell (2009) apparently met all the criteria established in article 16.4.2 of the *Code* as it is written:

Article 16.4. **Species-group names: fixation of name-bearing types to be explicit.** Every new specific and subspecific name published after 1999, except a new replacement name (a nomen novum), for which the name-bearing type of the nominal taxon it denotes is fixed automatically, must be accompanied in the original publication

16.4.1. by the explicit fixation of a holotype, or syntypes, for the nominal taxon, and,

16.4.2. where the holotype or syntypes are extant specimens, by a statement of intent that they will be (or are) deposited in a collection and a statement indicating the name and location of that collection.

Gentile and Snell (2009) not only demonstrated their intention of depositing the onomatophore in a collection (explicitly named), but also were consistent with their intention by marking the specimen with a transponder which, supposedly, will allow its location and recovery. It is very different from the practice adopted by Smith *et al.* (1991), Jones *et al.* (2005), Athreya (2006), and Mende Pontes *et al.* (2006), who photographed the specimens and released them unmarked in the wild, making it virtually impossible to recognize them again among other wild specimens, and made no statement of intent that the specimen would be deposited in a collection in the future. Gentile and Snell's (2009) practice, then, introduced new questions: is this practice acceptable? Should it be a "model" for future descriptions of threatened species?

Live onomatophores are not the best choice

First of all, this practice is not entirely new: Böhme and Ziegler (1997), for example, had already described a reptile, *Varanus melinus* (Squamata: Varanidae), designated a live captive specimen as the holotype, stating that it would be preserved after its death, and even given it a collection number. Favourable and unfavourable arguments regarding the selection of a live specimen to be an onomatophore were deeply discussed in Dubois

and Nemésio (2007) and all arguments listed there are fully applicable to the present situation, including and especially the practical difficulties of making the intention (the live specimen become a preserved specimen in a collection after its natural death) to become reality (see Dubois & Nemésio 2009: 13). As Dubois and Nemésio (2007) stated, "even if the 'intention' to fix and keep the specimen in a museum collection after its death is announced (…), this intention may not be fulfilled later on". Although the arguments used in Dubois and Nemésio (2007) referred to live onomatophores kept in captivity (and the example of the holotype of the *Varanus melinus* Böhme and Ziegler 1997 was explicitly invoked)—a possible situation antecipated by Gentile and Snell (2009) for the pink iguana—the argumentation presented there equally applies to animals marked and released in the wild, even those land and slow animals confined to a small geographic area, as is the case of the pink iguana. As pointed out by Dubois and Nemésio (2007: 13), "its death may not be noticed immediately by the responsibles of its keeping: it may then be eaten, entirely or partly (…), it may desiccate or putrefy, etc. Even if found rapidly, in many cases, such a holotype will often not be as well fixed as a specimen killed and fixed carefully for proper subsequent study". In the case of a wild animal, hunting, predation, interspecific fights (for territory, females, etc) may also be added to the list of risks a given specimen will face and all these facts are beyond our capabilities to ensure that the selected live holotype will be effectively preserved in a scientific collection after its death.

The *Code* does not deal with live specimens

More important, one can find nowhere in the *Code*, neither in the current nor in past editions, even in the introductory remarks, any subtle mention to live specimens to be selected as onomatophores. The fact that by marking an animal, both in captivity or in the wild, and by making a statement of intent that it will be deposited in a collection (after its death) fulfills the requirements of the *Code*, is another proof that article 16.4 of the *Code* must be urgently rephrased and amended, because the absence of any mention of live specimens in the *Code* is an obvious indication that article 16.4.2 was not written to cover such a situation.

It does not mean that I do not recognize the fact that some species have been (and will continue to be) discovered with very small populations, and that taking one specimen may have negative impacts on the species survival. Nevertheless, this situation must be formally recognized by the ICZN and adequately covered in the *Code*. If not, and if the nomina recently erected without the proper deposition of preserved onomatophores in collections are validated, it will be a stimulus to a larger and larger number of species being described without preserved onomatophores, for any subjective reason, even the so-called "ethical" objections to the sacrifice of onomatophores.

The pink iguana is a good example for such a discussion. All members of the team who studied the land iguanas in Galápagos (see Tzika *et al.* 2008 and Gentile *et al.* 2009) pointed out that the pink iguana population, "based on currently available data, would be assigned to the 'critically endangered' category by meeting criteria B and C of the IUCN" (Gentile *et al.* 2009: 509). In a previous paper (Nemésio 2009), I pointed out that "unfortunately, these 'currently available data' were made public neither in Tzika *et al.* (2008) nor in Gentile *et al.* (2009) and it is impossible to evaluate the authors' statements". Only in the "notes added in proofs" have Gentile and Snell (2009) slightly addressed this matter, stating that "the area inhabited by pink iguanas is limited to about 25 km^2 and based on extensive searches during three prolonged visits the adult population currently appears unlikely to exceed 200 animals". That is, there is no precise information concerning its population size and status, but the authors anticipated that it should be assigned to the critically endangered IUCN category. This same situation is found in both works dealing with the alleged new primate species (Jones *et al.* 2005, Mendes Pontes *et al.* 2006) recently described without the deposition of preserved onomatophores (the Brazilian species was later shown to be no new species at all, but a junior synonym of a species described in the eighteenth century—see Oliveira & Langguth 2006). There is no objective data showing that the populations are so threatened that the preservation of a single specimen could push the species to extinction. I cannot agree that in a population of *ca.* of 200 adult specimens, as suggested by Gentile

and Snell (2009), the preservation of a single specimen would have so strong negative effects on the future of the species. An old, non-reproductive specimen (or one which had produced a large offspring, shown by DNA of many specimens) could easily be found in such a population. It is difficult to imagine why some researchers are so rapid in arguing that a given population is under immediate threat but cannot provide detailed information to support it (approximate number of specimens, number of reproductive males and females, mate system—how many males do mate—etc. In small populations it would be quite easy to recover many useful information through DNA studies, in order to establish which adults left the highest number of offsprings, how closely related members of a population are, etc). It is very important, thus, that the ICZN regulates these "exceptional situations" as soon as possible. The suggestion presented by Dubois and Nemésio (2007) and reinforced by Nemésio (2009) of adding an article 16.4.3 to the *Code*, giving the ICZN power to decide if a species can or cannot be described without the proper deposition of an onomatophore in a collection in very specific situations (this power is currently scattered on the hands of the editors of lots of journals all over the world), should be considered by the ICZN as soon as possible.

The ICZN does not need to be explicitly provoked concerning this issue, before a formal consultation. This specific debate is public and has been provoking public comments for almost 20 years. The ICZN has been acting on other issues (such as a proposal of amendment to the *Code* concerning electronic publications—see International Commission on Zoological Nomenclature 2008) without being explicitly provoked as well, acting in the interest of the zoological nomenclature. The existence of onomatophores is essential for the development of a good practice in zoology, as argued by the authors of most works cited in the "References" section of this paper. At this stage of biological crisis, with so many natural areas in the planet being vanished due to anthropogenic direct and indirect actions, it is natural that scientists, zoologists included, tend to be more cautious concerning taking specimens. The ICZN has a valuable opportunity to lead the way, to establish objective criteria concerning the deposition of preserved onomatophores, a fundamental stone for the zoological knowledge.

A last word on the "holotype" of the pink iguana

Although I do not consider that the specific situation of the pink iguana is an example of an exception in which the holotype should not be taken (as mentioned above, it is not reasonable to suppose that in a population of 200 adult individuals the taking off of a single, old specimen would affect the survival of the species), the use of a transponder is the kind of practice that should be adopted in future situations when collecting a single specimen could really have strong negative effects on the population survival chances (although it may work differently among taxa). Although, as argued by Dubois and Nemésio (2007: 13), there are very good chances that the live holotype may not be recovered later on, at least in a good state to be preserved, there is at least a chance that it can be. A chance is better than no chance (as happens with the "holotypes" of the primate and bird species mentioned above in this paper).

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References

Athreya, R. (2006) A new species of *Liocichla* (Aves: Timaliidae) from Eaglenest Wildlife Sanctuary, Arunachal Pradesh, India. *Indian Birds*, 2, 82–94.

Banks, R.C., Goodman, S.M., Lanyon, S.M. & Schulenberg, T.S. (1993) Type specimens and basic principles of avian taxonomy. *Auk*, 110, 413–414.

Donegan, T.M. (2008) Nomenclatural availability of nomina of new species or subspecies does not and should not require the deposition of dead specimens in collections. *Zootaxa*, 1761, 37–48.
Dubois, A. & Nemésio, A. (2007) Does nomenclatural availability of nomina of new species or subspecies require the deposition of vouchers in collections? *Zootaxa*, 1409, 1–22.
Gentile, G., Fabiani, A., Marquez, C., Snell, H.L., Snell, H.M., Tapia, W. & Sbordoni, V. (2009) An overlooked pink species of land iguana in the Galápagos. *Proceedings of the National Academy of Sciences of the USA*, 104, 507–511.
Gentile, G. & Snell, H. (2009) *Conolophus marthae* sp. nov. (Squamata, Iguanidae), a new species of land iguana from the Galápagos archipelago. *Zootaxa*, 2201, 1–10.
International Commission on Zoological Nomenclature. (2008) Proposed amendment of the *International Code of Zoological Nomenclature* to expand and refine methods of publication. *Zootaxa*, 1908, 57–67.
Jones, T., Ehardt, C.L., Butynski, T.M., Davenport, T.R.B., Mpunga, N.E., Machaga, S.J. & De Luca, D.W. (2005) The highland mangabey *Lophocebus kipunji*: a new species of African monkey. *Science*, 308, 1161–1164.
Landry, S.O. (2005) What constitutes a proper description? *Science*, 309, 2164.
Mendes Pontes, A.R., Malta, A. & Asfora, P.H. (2006) A new species of capuchin monkey, genus *Cebus* Erxleben (Cebidae, Primates): found at the very brink of extinction in the Pernambuco Endemism Centre. *Zootaxa*, 1200, 1–12.
Moser, M. (2005) Holotypic Ink. *Science On Line*. Available from: http://www.sciencemag.org/cgi/eletters/309/5744/2163c [accessed on 15.X.2007].
Naish, D. (2006) The interesting and contentious discovery of the kipunji. Available from: http://darrennaish.blogspot.com/2006/06/interesting-and-contentious-discovery.html [accessed on 15.X.2007].
Nemésio, A. (2009) Nomenclatural availability of nomina of new species should always require the deposition of preserved specimens in collections: a rebuttal to Donegan (2008). *Zootaxa*, 2045, 1–16.
Oliveira, M.M. & Langguth, A. (2006) Rediscovery of Marcgrave's Capuchin Monkey and designation of a neotype for *Simia flavia* Schreber, 1774 (Primates, Cebidae). *Boletim do Museu Nacional*, Rio de Janeiro, (n.s.), 523, 1–16.
Patterson, B.D. (2002) On the continuing need for scientific collecting of mammals. *Journal of Neotropical Mammalogy*, 9, 253–262.
Polaszek, A., Grubb, P., Groves, C., Ehardt, C.L. & Butynski, T.M. (2005) What constitutes a proper description? Response. *Science*, 309, 2164–2166.
Remsen Jr., J.V. (1995) The importance of continued collecting of bird specimens to ornithology and bird conservation. *Bird Conservation International*, 5, 145–180.
Smith, E.F.G., Arctander, P., Fjeldså, J. & Amir, O.G. (1991) A new species of shrike (Laniidae: *Laniarius*) from Somalia, verified by DNA sequence data from the only known individual. *Ibis*, 133, 227–235.
Timm, R.M., Ramey, R.R. II & The Nomenclature Committee of the American Society of Mammalogists. (2005) What constitutes a proper description? *Science*, 309, 2163–2164.
Tzika, A.C., Rosa, S.F.P., Fabiani, A., Snell, H.L., Snell, H.M., Marquez, C., Tapia, W., Rassmann, K., Gentile, G. & Milinkovitch, M.C. (2008) Population genetics of Galápagos land iguana (genus *Conolophus*) remnant populations. *Molecular Ecology*, 17, 4943–4952.
Wakeham-Dawson, A., Morris, S. & Tubbs, P. (2002) Type specimens: dead or alive? *Bulletin of Zoological Nomenclature*, 59, 282–284.