

**Case 3672*****Anolis chlorocyanus* Duméril & Bibron, 1837 and *Anolis coelestinus* Cope, 1862 (Reptilia, Squamata): proposed conservation of the specific names and designation of a neotype for *A. chlorocyanus***

Gunther Köhler

*Forschungsinstitut und Naturmuseum Senckenberg, Sektion Herpetologie,  
Senckenberganlage 25, D-60325 Frankfurt a.M., Germany.  
(e-mail: gkoehler@senckenberg.de)*

S. Blair Hedges

*Center for Biodiversity, 1925 N 12th Street, Temple University,  
Philadelphia, PA 19122, U.S.A. (e-mail: sbh@temple.edu)*

**Abstract.** The purpose of this application, under Article 75.6 of the Code, is to conserve the specific names of *Anolis chlorocyanus* Duméril & Bibron, 1837 and *Anolis coelestinus* Cope, 1862 in their accustomed usages. The syntypes of the former species are conspecific with the only available syntype of the latter; however, for about 85 years the name *A. coelestinus* has been applied to the species represented by these types. For the same period of time the name *A. chlorocyanus* has been consistently applied to another equally well-known taxonomic species. It is proposed that the Commission use its plenary power to set aside the type status of the syntypes of *A. chlorocyanus* in order to stabilize the current and long-established usage of the names *A. chlorocyanus* and *A. coelestinus*. It is further proposed that the specimen SMF 97845 be designated as the neotype of *A. chlorocyanus* Duméril & Bibron 1837. SMF 97845 is an adult male from El Limón, Province Samaná, Dominican Republic, that represents the taxonomic species traditionally referred to as *A. chlorocyanus*.

**Keywords.** Nomenclature; taxonomy; Reptilia; Squamata; DACTYLOIDAE; *Anolis*; *Anolis chlorocyanus*; *Anolis coelestinus*; Hispaniolan green anoles; Greater Antilles; Hispaniola.

---

1. Duméril & Bibron (1837, p. 117) described *Anolis chlorocyanus* (as *Anolis chlorocyanus*) based on six syntypes, MNHN 785, 787, 2007.2066–09, in the Muséum National d’Histoire Naturelle, Paris, from ‘Martinique and St.-Domingue’. As pointed out by Mertens (1939, p. 63), this species does not occur on the island of Martinique, and ‘St.-Domingue’ at that time did not refer to the town of Santo Domingo but to the whole island Hispaniola.

2. Cope (1862, p. 177) introduced the new species *Anolis* (*Ctenocercus*) *coelestinus* from ‘Western Hayti. . . near Jérémie’. He used the plural form ‘specimens’ although he reported the measurements and meristic data only for a single male specimen—as judged by the description of a well-developed dewlap (‘goitre large’) in the original publication—and provided ‘No. 1500 Mus., Compar. Zool.’ as the museum number

for his material. In 1914, Barbour mentioned that he had examined ‘the types of *A. coelestinus* (M. C. Z., No. 2,347)’, supporting the presumption that the original type material consisted of more than a single specimen. We obtained on loan a female specimen (MCZ 3347) labeled ‘syntype’ in the MCZ (Museum of Comparative Zoology) catalogue. According to the notes in the MCZ entry book (MCZ website; [http://mczbase.mcz.harvard.edu/guid/MCZ: Herp:R-3347](http://mczbase.mcz.harvard.edu/guid/MCZ:Herp:R-3347); accessed 22 January 2015), MCZ 3347 was collected by ‘Dr. Weinland’ in ‘Hayti, near Jérémie’ (original number ‘695’). This referred to David Friedrich Weinland, who spent six months in Jérémie, Haiti, in 1857–1858, and collected specimens of amphibians and reptiles later donated to the MCZ (Hedges & Conn 2012). Ramos & Powell (2001:729.3) reported upon ‘a cryptic note in EEW’s [E.E. Williams]’ hand’ noting that it [MCZ-R 3347] could not be a syntype since it was received after Cope’s description. However, they pointed out that, because no collection dates were entered, a syntype could have been received after its description.

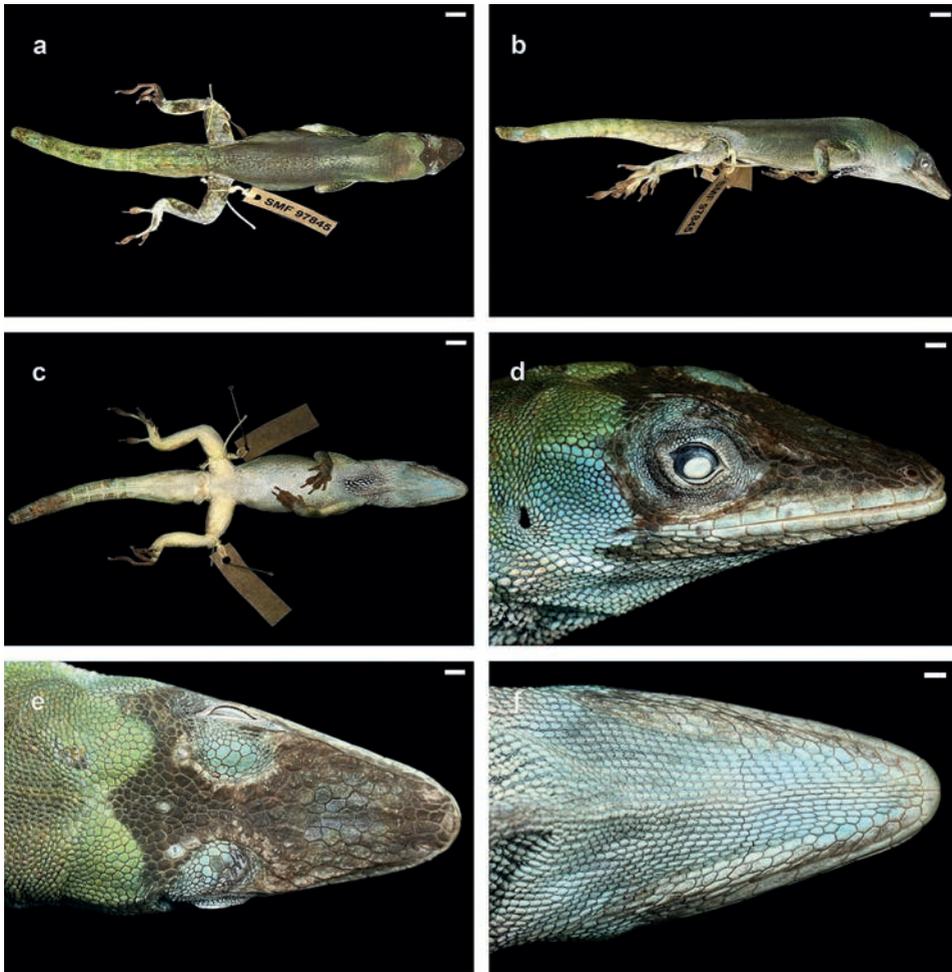
3. Boulenger (1885, p. 44) listed *A. coelestinus* as a synonym of *A. chlorocyanus*, a view shared by Barbour (1914, p. 295). Barbour (1930, p. 119) resurrected *A. coelestinus* from the synonymy of *A. chlorocyanus*, stating that the latter has a ‘greater number of loreal rows’ and ‘smaller scales on the back, very fine scales on the dewlap, a different habit and coloration.’ Since that time this two-species concept and the respective assignments of names have remained unchanged (e.g. Mertens, 1939; Williams, 1965; Ramos & Powell, 2001).

4. One of us (G.K.) has examined the six syntypes of *Anolis chlorocyanus* (MNHN 785, 787, 2007.2066–09) as well as the only available syntype of *A. coelestinus* (MCZ 3347). The syntypes of *A. chlorocyanus* have dewlaps of double rows of small scales with no indication of a suffusion of black pigment on the posterior portion; a more or less distinct white subocular stripe; and 34–45 loreal scales arranged in 5–6 rows. Thus, the syntypes of *A. chlorocyanus* have the diagnostic traits of the taxonomic species *A. coelestinus* of current usage.

5. The name *Anolis chlorocyanus* has been used consistently for a well-known, predominantly North Island Hispaniolan anole species since the early 1930s (e.g. Barbour, 1930; Mertens, 1939; Williams 1965; Schwartz & Henderson, 1991; Ramos & Powell, 2001a; Henderson & Powell, 2009). Ramos & Powell (2001a) provided a comprehensive list of references in which the name *A. chlorocyanus* is used.

6. The name *A. coelestinus* has been applied consistently to a well-known, predominantly South Island Hispaniolan anole species since the early 1930s (e.g. Barbour, 1930, 1935, 1937; Cochran, 1941; Williams, 1965; Schwartz, 1969; Schwartz & Thomas 1975; Schwartz & Henderson, 1988, 1991; Powell et al., 1996; Ramos & Powell, 2001b; Henderson & Powell, 2009). Ramos & Powell (2001b) provided a comprehensive list of references in which this name is used.

7. Strict application of the Principle of Priority would require the replacement of *A. coelestinus* Cope, 1862 with *A. chlorocyanus* Duméril & Bibron, 1837. The species currently known as *Anolis chlorocyanus*, since Dunn (1930), would likewise be renamed; since no name is available for this taxonomic species as currently used, a new species would have to be described. According to our unpublished data, neither *A. peynadoi* Mertens, 1939 nor *A. cyanostictus* Mertens, 1939 represents the taxonomic species *A. chlorocyanus* of current usage. Replacing the name *Anolis coelestinus* by *A. chlorocyanus* would not be in the interest of stability of



**Fig. 1.** Proposed neotype of *Anolis chlorocyanus* (SMF 97845): (a) dorsal view; (b) lateral view; (c) ventral view; (d) lateral view of head; (e) dorsal view of head; (f) ventral view of head. Scale bars equal 5.0 mm in (a–c) and 1.0 mm in (d–f).

nomenclature and would cause considerable confusion. This is especially so given the widespread use of *Anolis* spp. as model organisms in a variety of biological investigations (Huey et al., 1983), and the frequent use of these particular names in recent literature (e.g. Losos, 2009; Hedges, 2010; Glor & Warren, 2011; Kolbe et al., 2011).

8. We propose, in accordance with Article 75.6 of the Code, to avoid this confusion by setting aside the syntypes of *chlorocyanus* Duméril & Bibron, 1837 and conserving the specific name in accordance with prevailing usage by designating SMF 97845 (Fig. 1) as the neotype of *A. chlorocyanus*; SMF 97845 represents the taxonomic species *A. chlorocyanus* of current usage. SMF 97845 is an adult male from El Limón, Province Samaná, Dominican Republic, collected 21 October 2013 by Gunther Köhler and deposited in the permanent collection of the Forschungsinstitut Senckenberg, Frankfurt, Germany; Field tag number GK-4718. Tissue samples of SMF

97845 were taken from the tail tip, stored in an Eppendorf tube, filled with 96% ethanol, and stored at -20 °C at the tissue collection so that sequence data can be obtained in the future. This action would also conserve the name *Anolis coelestinus* Cope, 1862. The result of this application will be an integral part of an impending monograph on the green anoles of Hispaniola by the authors of this application. We herewith designate the only available syntype of *A. coelestinus* (MCZ 3347) as the lectotype of this nominal species.

9. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to set aside all previous type fixations for *Anolis chlorocyanus* Duméril & Bibron, 1837 and to designate SMF 97845 as the neotype;
- (2) to place on the Official List of Specific Names in Zoology the following names:
  - (a) *chlorocyanus* Duméril & Bibron, 1837, as published in the binomen *Anolis chlorocyanus* and as defined by the neotype designated in (1) above;
  - (b) *coelestinus* Cope, 1862, as published in the binomen *Anolis coelestinus* and as defined by the lectotype of *A. coelestinus* (MCZ 3347) designated in para. (8) above.

## References

- Barbour, T.** 1914. A contribution to the zoögeography of the West Indies, with special reference to amphibians and reptiles. *Memoirs of the Museum of Comparative Zoology at Harvard College*, **44**(2): 209–359.
- Barbour, T.** 1930. The anoles. I. The forms known to occur on the Neotropical islands. *Bulletin of the Museum of Comparative Zoology*, **70**: 105–144.
- Barbour, T.** 1935. A second list of Antillean reptiles and amphibians. *Zoologica*, **19**(3): 77–142.
- Barbour, T.** 1937. Third list of Antillean reptiles and amphibians. *Bulletin of the Museum of Comparative Zoology*, **82**(2): 77–166.
- Boulenger, G.A.** 1885. *Catalogue of the lizards in the British Museum (Natural History)*, Ed. 2, vol. 2. 497 pp. Trustees of the British Museum, London.
- Cochran, D.M.** 1941. The herpetology of Hispaniola. *United States National Museum Bulletin*, **177**: 1–398.
- Cope, E.D.** 1862. Contributions to Neotropical saurology. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **1862**: 176–188.
- Duméril, A.M.C. & Bibron, G.** 1837. *Erpétologie générale ou histoire naturelle complète des reptiles*, vol. 4. 570 pp. Encyclopédique Roret, Paris.
- Glor, R.E. & Warren, D.** 2011. Testing ecological explanations for biogeographic boundaries. *Evolution*, **68**: 673–683.
- Hedges, S.B.** 2010. *Anolis coelestinus* (Southern Green Anole). Distribution. *Caribbean Herpetology*, **7**: 1.
- Hedges, S.B. & Conn, C.E.** 2012. A new skink fauna from Caribbean islands (Squamata, Mabuyidae, Mabuyinae). *Zootaxa*, **3288**, 1–244.
- Henderson, R.W. & Powell, R.** 2009. *Natural history of West Indian reptiles and amphibians*. 495 pp. University Press of Florida, Gainesville.
- Huey, R.B., Pianka, E.R., & Schoener, T.W.** (Eds.). 1983. *Lizard ecology, studies of a model organism*. 501 pp. Harvard University Press, Cambridge.
- Kolbe, J.J., Revell, L.J., Szekely, B., Brodie, E.D. III. & Losos, J.B.** 2011. Convergent evolution of phenotypic integration and its alignment with morphological diversification in Caribbean *Anolis* ecomorphs. *Evolution*, **65**(12): 3608–3624.
- Losos, J.B.** 2009. *Lizards in an evolutionary tree: ecology and adaptive radiation of anoles*. 528 pp. University of California Press, Berkeley.

- Mertens, R.** 1939. Herpetologische Ergebnisse einer Reise nach der Insel Hispaniola, Westindien. *Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft*, **449**: 1–84.
- Ramos, Y.M. & Powell, R.** 2001a. *Anolis chlorocyanus* Duméril and Bibron. *Catalogue of American Amphibians and Reptiles*, **728**: 1–6.
- Ramos, Y.M. & Powell, R.** 2001b. *Anolis coelestinus* Cope. *Catalogue of American Amphibians and Reptiles*, **729**: 1–5.
- Schwartz, A.** 1969. A review of the Hispaniolan lizard *Anolis coelestinus* Cope. *Caribbean Journal of Science*, **9**: 33–38.
- Schwartz, A. & Henderson, R.W.** 1988. West Indian amphibians and reptiles: A check-list. *Contributions in Biology and Geology Milwaukee Public Museum*, **74**: 1–264.
- Schwartz, A. & Henderson, R.W.** 1991. *Amphibians and reptiles of the West Indies*. 720 pp. University of Florida Press, Gainesville.
- Schwartz, A. & Thomas, R.** 1975. A checklist of West Indian amphibians and reptiles. *Carnegie Museum of Natural History Special Publication*, **1**: 1–216.
- Williams, E.E.** 1965. The species of Hispaniolan green anoles (Sauria, Iguanidae). *Breviora*, **227**: 1–16.

Acknowledgement of receipt of this application was published in *BZN* **71**: 215.

---

Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to I.C.Z.N., Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: [iczn@nhm.ac.uk](mailto:iczn@nhm.ac.uk)).