

- forest, southern Venezuela. Doctoral dissertation, The University of Exeter, Devon, UK.
- Chapman, C. A. 1987. Flexibility in diets of three species of Costa Rican primates. *Folia Primatol.* 49: 90-105.
- Davies, A. G. and Oates, J. F. (eds.). 1994. *Colobine Monkeys: Their Ecology, Behaviour and Evolution*. Cambridge University Press, Cambridge.
- Defler, T. R. and Defler, S. B. 1996. Diet of a group of *Lagothrix lagothricha lagothricha* in southeastern Colombia. *Int. J. Primatol.* 17: 161-189.
- Dew, J. L. 2001. Synecology and seed dispersal in woolly monkeys (*Lagothrix lagothricha poeppigii*) and spider monkeys (*Ateles belzebuth belzebuth*) in Parque Nacional Yasuní, Ecuador. Doctoral dissertation, University of California, Davis, CA.
- Hladik, A. and Hladik, C. M. 1969. Rapports trophiques entre végétation et primates dans la forêt de Barro Colorado (Panama). *La Terre et la Vie* 23: 25-117.
- Izawa, K. 1993. Soil-eating by *Alouatta* and *Ateles*. *Int. J. Primatol.* 14: 229-242.
- Julliot, C. and Sabatier, D. 1993. Diet of the red howler monkey (*Alouatta seniculus*) in French Guiana. *Int. J. Primatol.* 14: 527-550.
- Kimura, K., Nishimura, A., Izawa, K. and Mejía, C. 1994. Annual changes of rainfall and temperature in a tropical seasonal forest at La Macarena field station, Colombia. *Field Studies of New World Monkeys La Macarena Colombia* 9: 1-3.
- Klein, L. L. and Klein, D. J. 1977. Feeding behavior of the Colombian spider monkey. In: *Primate Ecology*, T. H. Clutton-Brock (ed.), pp.153-181. Academic Press, London.
- Milton, K. 1980. *The Foraging Strategy of Howler Monkeys: A Study in Primate Economics*. Columbia University Press, New York.
- Neville, M. K., Glander, K. E., Braza, F. and Rylands, A. B. 1988. The howling monkeys, genus *Alouatta*. In: *Ecology and Behavior of Neotropical Primates*, Vol. 2, R. A. Mittermeier, A. B. Rylands, A. F. Coimbra-Filho and G. A. B. da Fonseca (eds.), pp.349-453. World Wildlife Fund, Washington, DC.
- Nishimura, A., Fonseca, G. A. B. da, Mittermeier, R. A., Young, A. L., Strier, K. B. and Valle, C. M. C. 1988. The miquiqui, genus *Brachyteles*. In: *Ecology and Behavior of Neotropical Primates*, Vol. 2, R. A. Mittermeier, A. B. Rylands, A. F. Coimbra-Filho and G. A. B. da Fonseca (eds.), pp.577-610. World Wildlife Fund, Washington, DC.
- Nunes, A. 1998. Diet and feeding ecology of *Ateles belzebuth belzebuth* at Maracá Ecological Station, Roraima, Brazil. *Folia Primatol.* 69: 61-76.
- Ramírez, M. 1988. The woolly monkeys, genus *Lagothrix*. In: *Ecology and Behavior of Neotropical Primates*, Vol. 2, R. A. Mittermeier, A. B. Rylands, A. F. Coimbra-Filho and G. A. B. da Fonseca (eds.), pp.539-575. World Wildlife Fund, Washington, DC.
- Stevenson, P. R. 2002. Frugivory and seed dispersal by woolly monkeys at Tinigua National Park, Colombia. Doctoral dissertation, State University of New York, Stony Brook.
- Stevenson, P. R., Quiñones, M. J. and Ahumada, J. 1994. Ecological strategies of woolly monkeys (*Lagothrix lagothricha*) at La Macarena, Colombia. *Am. J. Primatol.* 32: 123-140.
- Stevenson, P. R., Quiñones, M. J. and Ahumada, J. 2000. Influence of fruit availability on ecological overlap among four Neotropical primates at Tinigua National Park, Colombia. *Biotropica* 32: 533-544.
- Strier, K. B. 1991. Diet in one group of woolly spider monkeys, or miquiquis (*Brachyteles arachnoides*). *Am. J. Primatol.* 23: 113-126.
- Strier, K. B. 1992. Atelinae adaptations: Behavioral strategies and ecological constraints. *Am. J. Phys. Anthropol.* 88: 515-524.
- Symington, M. M. 1988. Demography, ranging patterns and activity budgets of black spider monkeys (*Ateles paniscus chamek*) in the Manu National Park, Peru. *Am. J. Primatol.* 15: 45-67.
- Van Roosmalen, M. G. M. 1985. Habitat preference, diet, feeding behavior and social organization of the black spider monkey, *Ateles paniscus paniscus*, in Surinam. *Acta Amazonica* 15: 1-238.
- Van Roosmalen, M. G. M. and Klein, L. L. 1988. The spider monkeys, genus *Ateles*. In: *Ecology and Behavior of Neotropical Primates*, Vol. 2, R. A. Mittermeier, A. B. Rylands, A. F. Coimbra-Filho and G. A. B. da Fonseca (eds.), pp.455-537. World Wildlife Fund, Washington, DC.
- Wagner, H. O. 1956. Freilandbeobachtungen an Klammeraffen. *Zeit. für Tierpsychol.* 13: 302-313.
- Wallace, R. B. 1998. The behavioral ecology of black spider monkeys in north-eastern Bolivia. Doctoral dissertation, University of Liverpool, Liverpool, UK.

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**LAGOTHRIX LAGOTHRICA OR LAGOTHRIX LAGOTRICA: WHICH IS IT?**

Thomas R. Defler

When von Humboldt (1812) wrote the holotypic description of Humboldt's woolly monkey, he spelled the species name both *lagothricha* and *lagothricha*. According to some, *lagothricha* (and its variant *lagothricha*) are incorrect Latinizations of the Greek words λάγος(ς) - *lago(s)* (hare) + θρίχον(ς) - *thrico(s)* (hair)<sup>1</sup> because of the preceding vowel, *o*, which would require the form "trichos" rather than "thrichos". The use of the two versions was certainly a *lapsus* on von Humboldt's part. However, when revising the genus, Fooden (1963), under Article 24 (24.2) of the *International Code of Zoological Nomenclature*, chose the variation *lagothricha* as the "correct legal spelling" for *Lagothrix lagothricha*.

**"Article 24: Precedence between simultaneously published names, spellings or acts.**

**24.1. Automatic determination of precedence of names.** When homonyms or synonyms are established

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<sup>1</sup> No pun intended, as von Humboldt was writing in French, not English.

simultaneously, but proposed at different ranks, in the family group, genus group or species group the name proposed at higher rank takes precedence [Arts. 55.5, 56.3, 57.7]. See Article 61.2.1 for the precedence of simultaneous but different type fixations for taxa and their nominotypical subordinate taxa.

## 24.2. Determination by the First Reviser.

**24.2.1. Statement of the Principle of the First Reviser.** When the precedence between names of nomenclatural acts cannot be objectively determined, the precedence is fixed by the action of the first author citing in a published work those names or acts and selecting from them; this author is termed the "First Reviser".

**24.2.2. Determination of precedence of names or acts by the First Reviser.** If two or more names, different or identical, and based on the same or different types, or two or more nomenclatural acts, are published on the same date in the same or different works, the precedence of the names or acts is fixed by the First Reviser unless Article 24.1 applies." (International Commission on Zoological Nomenclature, 1999.)

Thus has the binomial *Lagothrix lagothricha* been spelled by Hershkovitz (1977), Napier and Napier (1967), Napier (1976), Eisenberg (1989), Emmons (1990, 1997), Eisenberg and Redford (1999) and many others, although Mittermeier and Coimbra-Filho's (1981:95) inclusion of a brief comment by R. Thorington Jr. on von Humboldt's original spelling has influenced many primatologists to use the *lagothricha* variant. (Thorington's published comment on p.95 itself is incorrect, since von Humboldt used both spellings.)

Some years ago I asked Philip Hershkovitz what he thought about the legality of all of this. He consulted with Jack Fooden (Field Museum of Natural History, Chicago) and wrote to me that Fooden (1963) had "unfortunately" legalized *lagothricha* under the Code when he chose that variant of the spelling. Thus, they opined, *lagothricha* is legal under the Code, *lagothricha* is not (P. Hershkovitz and J. Fooden, pers. comm. to T. R. Defler). The dilemma is whether to use a legal but perhaps incorrect Latinization, or to use the correctly Latinized (I suppose) but illegal form. Each person makes his own choice whether to respect the Code or not; but by the Code, *lagothricha* is correct.

We all understand there are two (or three) spelling variations for this taxon. Despite my own constant misspelling of the binomial, what is to me far more important is to determine what we shall mean in the future when we refer to *Lagothrix lagothricha*. Should *Lagothrix lagothricha* include *lugens*, *poepigii* and *cana* as subspecies, or are these truly distinct, separate species, as suggested by Groves (2001:190-192)? Urgent chromosomal, molecular and morphological research is needed to resolve these questions. Ruiz and Alvarez (2003) have made a start by identifying separate haplotypes

of mtDNA from individuals of the two taxa *lagothricha* and *lugens*, but in the same study they found different haplotypes of mtDNA in *Saimiri sciureus albigena* and *Saimiri sciureus macrodon*, suggesting that we need yet more molecular information to be able to truly solve the species problem in *Lagothrix*. A difference in haplotypes alone is insufficient for the establishment of a new species name.

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## References

- Eisenberg, J. F. 1989. *Mammals of the Neotropics: The Northern Neotropics: Vol. 1: Panama, Colombia, Venezuela, Guyana, Suriname, French Guiana*. The University of Chicago Press, Chicago.
- Eisenberg, J. F. and Redford, K. H. 1999. *Mammals of the Neotropics: The Central Neotropics: Vol. 3: Ecuador, Peru, Bolivia, Brazil*. The University of Chicago Press, Chicago.
- Emmons, L. H. 1990. *Neotropical Rainforest Mammals: A Field Guide*. The University of Chicago Press, Chicago.
- Emmons, L. H. 1997. *Neotropical Rainforest Mammals: A Field Guide*. Second Edition. The University of Chicago Press, Chicago.
- Fooden, J. 1963. A revision of the woolly monkeys (genus *Lagothrix*). *J. Mammal.* 44: 213-247.
- Groves, C. P. 2001. *Primate Taxonomy*. Smithsonian Institution Press, Washington, DC.
- Hershkovitz, P. 1977. *Living New World Monkeys (Platyrrhini) with an Introduction to Primates, Vol. 1*. The Chicago University Press, Chicago.
- Von Humboldt, A. and Bonpland, A. 1812. *Recueil d'observations de zoologie et d'anatomie comparée faites dans l'océan Atlantique, dans l'intérieur du Nouveau Continent et dans la mer du Sud, pendant les années 1799, 1800, 1801, 1802 et 1803*. Pt. 2, Vol. 1. Paris, viii + 368 pp., 40 pls.
- International Commission on Zoological Nomenclature. 1999. *International Code of Zoological Nomenclature*. Fourth Edition. International Trust for Zoological Nomenclature, British Museum (Natural History), London. (Effective from 1 January 2000.)
- Mittermeier, R. A. and Coimbra-Filho, A. F. 1981. Systematics: Species and subspecies. In: *Ecology and Behavior of Neotropical Primates*, Vol. 1, A. F. Coimbra-Filho and R. A. Mittermeier (eds.), pp.29-109. Academia Brasileira de Ciências, Rio de Janeiro.
- Napier, P. H. 1976. *Catalogue of Primates in the British Museum (Natural History). Part 1: Families Callitrichidae and Cebidae*. British Museum (Natural History), London.
- Napier, J. R. and Napier, P. H. 1967. *A Handbook of Living Primates*. Academic Press, London.
- Ruiz-García, M. and Alvarez, D. 2003. RFLP analysis of mtDNA from six platyrrhine genera: Phylogenetic inferences. *Folia Primatol.* 74:59-70.