Case 3121

Holochilus Brandt, 1835, *Proechimys* J.A. Allen, 1899 and *Trinomys* Thomas, 1921 (Mammalia, Rodentia): proposed conservation by the designation of *H. sciureus* Wagner, 1842 as the type species of *Holochilus*

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Abstract. The purpose of this application is to conserve the name *Holochilus* Brandt, 1835 for a genus of myomorphous neotropical marsh rats (family MURIDAE), and the names *Proechimys* J.A. Allen, 1899 and *Trinomys* Thomas, 1921 for hystricomorphous neotropical spiny rats (family ECHIMYIDAE). At present the type species of *Holochilus* is *H. leucogaster* Brandt, 1835, a species now known to be hystricomorphous and referable to the subgenus *Trinomys* of the genus *Proechimys*, thus rendering the names *Proechimys* and *Trinomys* junior synonyms of *Holochilus*. It is proposed that the myomorphous species *H. sciureus* Wagner, 1842 be designated as the type species of *Holochilus*, thus allowing the wide and extensive current usages of *Holochilus*, *Proechimys* and *Trinomys* to continue.

Keywords. Nomenclature; taxonomy; Mammalia; Rodentia; MURIDAE; ECHIMYIDAE; *Holochilus*; *Proechimys*; *Trinomys*; *Holochilus leucogaster*; *Holochilus sciureus*; marsh rats; spiny rats; Central America; South America; neotropics.

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1. For over 150 years the generic name *Holochilus* Brandt, 1835 has been used consistently for South American marsh rats, semiaquatic myomorphous rodents that are currently placed (see Musser & Carleton, 1993) in the family MURIDAE (subfamily SIGMODONTINAE). Broadly distributed from northern Argentina to Venezuela, these animals are well known as agricultural pests (see, for example, Massoia, 1974; Martino & Aguilera, 1989) and have recently been the subject of intensive cytogenetic research due to their unusual karyotypic variability (for example, Freitas et al., 1983; Aguilera & Perez-Zapata, 1989; Nachman & Myers, 1989; Sangines & Aguilera, 1991; Nachman, 1992a, 1992b). Descriptions of fossil murids referred to the genus *Holochilus* are increasingly common in the paleontological literature (for example, Steppan, 1996; Pardiñas & Galliari, 1998), and current usage is therefore entrenched in several research disciplines.

2. Usage is similarly well established for *Proechimys* J.A. Allen, 1899 (p. 264) and *Trinomys* Thomas, 1921 (p. 140), hystricomorphous neotropical spiny rats in the

family ECHIMYIDAE (subfamily EUMYSOPINAE). Species of *Proechimys*, which has traditionally included *Trinomys* as a subgenus (see Thomas, 1921; Moojen, 1948), are ubiquitous in the moist lowland forests of eastern Central America and tropical South America, where they have been the focus of numerous ecological and evolutionary studies (for example, Fleming, 1971; Benado, Aguilera, Reig & Ayala, 1979; Emmons, 1982; Forget, 1991; Aguilera & Corti, 1994; Janos, Sahley & Emmons, 1995; Garagna et al., 1997; Adler, 1998). A burgeoning literature on the taxonomy of *Proechimys* species (for example, Patton & Gardner, 1972; Gardner & Emmons, 1984; Patton, 1987; Pessôa, Oliveira & dos Reis, 1992; da Rocha, 1995; da Silva, 1998) has hitherto been unencumbered by problems of generic nomenclature.

3. Despite such widespread consensus, recent study of some long-neglected types in the zoological collections of the Russian Academy of Sciences has revealed that current usage of *Holochilus*, *Proechimys* and *Trinomys* cannot be maintained under provisions of the Code. The essential facts of this case are as follows.

4. Brandt (1835, p. 428) originally proposed *Holochilus* as a subgenus of *Mus* to contain his new species *Mus* (*Holochilus*) *leucogaster*, together with another species that he identified as *Mus* (*Holochilus*) *anguya* (a misspelling of *M. angouya* Desmarest, 1819). *Holochilus* was diagnosed in an accompanying footnote, wherein *Mus leucogaster* and *M. anguya* were both given as types of the new subgenus without making any distinction regarding their status as name-bearers. It is significant that Brandt had only a single stuffed specimen each of *M. leucogaster* and *M. anguya*, and that his descriptions and measurements were limited to external characters. Accompanying color plates (1835, pls. 12 and 13) of both species depicted rat-like animals with brownish upperparts, pale venters, small ears, large hindfeet and naked tails.

5. Brandt's material of *Mus leucogaster* and *M. anguya* had been collected (by Georg Heinrich Langsdorff) in Brazil, so Brandt cited published descriptions and illustrations of other rat- or mouse-like rodents then known from South America to support his identifications. His comparisons eloquently depict the widespread uncertainty about neotropical rodent identifications in the early 19th century: *Mus leucogaster* was compared to Azara's (1801) 'Rat à Tarse Noir', which is now recognized (see Myers & Carleton, 1981) as the diminutive scansorial mouse *Oligoryzomys nigripes* (Olfers, 1818), and to *Mus vulpinus* Brants, 1827, which is currently regarded (see Hershkovitz, 1955) as a junior synonym of the large marsh rat *Holochilus brasiliensis* (Desmarest, 1819). Brandt's identification of his *M. anguya* was justified by citation of Azara's (1801) description of the 'Rat Angouya', which is now recognized (see Musser, Carleton, Brothers & Gardner, 1998, pp. 300–319) as *Oryzomys angouya* (Fischer, 1814). What is consistent about these otherwise disparate comparisons is that they all involve myomorphs. Clearly, Brandt never suspected in 1835 that his two *Holochilus* species might be more closely allied with agoutis, guinea pigs, capybaras and other hystricomorphs. Indeed, the crucial distinction between myomorphs and hystricomorphs was not recognized until the publication of Brandt's own monographic description of the major variants of rodent jaw anatomy in 1855.

6. In the meantime, Wagner (1842a, 1842b, 1843) and Burmeister (1854) used *Holochilus* to contain several additional neotropical rodent species. Because Brandt's original material in St Petersburg was not available for direct comparisons,

Wagner and Burmeister based their taxonomic assignments on his (1835) published descriptions and illustrations of *H. leucogaster* and *H. anguya*. All of the additional taxa that Wagner and Burmeister referred to *Holochilus* were muroids, including three nominal species of marsh rats: *Mus brasiliensis* Desmarest, 1819, *Mus vulpinus* Brants, 1827, and *Holochilus sciureus* Wagner, 1842a. Based on readily accessible types in western European museums, these three species formed the core of subsequent usage for *Holochilus* as ultimately refined by Thomas (1897) and perpetuated by all 20th century students of the South American rodent fauna (for example, Gyldenstolpe, 1932; Tate, 1932; Ellerman, 1941; Hershkovitz, 1955; Cabrera, 1961; Massoia, 1981; Voss & Carleton, 1993).

7. Wagner's and Burmeister's assumptions about the identity of *Holochilus* were mistaken, however, as Brandt himself soon discovered. In two footnotes to his classic monograph on rodent classification, Brandt (1855, pp. 304, 315) explained that he had extracted the crania from the specimens described in 1835 (presumably mounted for exhibition with the skulls inside, a common 19th century practice) and found that they were of the 'hystricine' (hystricomorphous) type. Recognizing his own mistake concerning the identity of Desmarest's *Mus angouya* (a myomorph), Brandt proposed the name *H. langsdorffii* for the taxon that he had previously called *H. 'anguya'*, and classified *Holochilus* in the family Spalacopodoides of his suborder Hystrichomorphi. To contain the myomorphous species referred to *Holochilus* by Wagner (1842a, 1842b, 1843) and Burmeister (1854), Brandt proposed the new genus *Holochilomys*, which he placed in the family Myoides of his suborder Myomorphi.

8. Unfortunately, Brandt's timely and appropriate nomenclatural action was overlooked by almost all of his mammalogical contemporaries. As far as we are aware, only Peters (1861) ever used the name *Holochilomys* as Brandt intended (i.e. for a myomorphous genus), but he cited no bibliographic source for the name. Thomas (1897, p. 496, footnote) puzzled over Peters's (p. 151) unsupported reference to '*Holochilomys* (*Holochilus* Wagn. nec Brandt)', but dismissed the implied discrepancy in usage, declaring that 'Wagner's *Holochilus* ... is unquestionably identical with Brandt's ...'. Palmer (1904, p. 329) was also baffled, and suggested that '*Holochilomys* Peters' might have been an 'emendation' of *Holochilus* Brandt. Probably because *Holochilomys* seemed to be a nomen nudum coined by Peters (1861) for no clearly explained reason, the name was not subsequently mentioned for decades (for example, by Tate, 1932; Gyldenstolpe, 1932; Ellerman, 1941; Hershkovitz, 1955). To the best of our knowledge, the last reference to this forgotten name in the mammalogical literature was by Cabrera (1961, p. 503), who listed without comment '*Holochilomys* Peters, 1861' as a junior synonym of *Holochilus*.

9. The type species of *Holochilus* remained unfixed until 1902, when Miller & Rehn (p. 89) so designated *Mus* (*Holochilus*) *leucogaster* Brandt, 1835. There is no evidence, however, that either author had ever seen Brandt's material, and their fixation of the type species was apparently uninformed by any special knowledge of nomenclatural consequences.

10. We recently examined the types of Brandt's neotropical rodents, which are currently housed in the Zoological Institute of the Russian Academy of Sciences (ZINRAS). The holotype of *Holochilus leucogaster* consists of a skin and skull with mandibles catalogued as ZINRAS 219 in the Department of Mammalogy. The

holotype of *H. langsdorffii* likewise consists of a skin and skull (ZINRAS 218), but lacks mandibles. Both skins correspond exactly with Brandt's (1835) illustrations and descriptions of external morphology (with the exception of their obviously faded colors), and the morphology of both skulls is consistent with Brandt's (1855) remarks concerning zygomasseteric structure.

11. In fact, the type specimens of *Holochilus leucogaster* and *H. langsdorffii* are both terrestrial spiny rats referable to the echimyid genus *Proechimys* J.A. Allen, 1899, but current usage would assign these specimens to different subgenera. Whereas the holotype of *H. langsdorffii* exhibits all of the diagnostic external and craniodental characters of the nominotypical subgenus of *Proechimys*, the holotype of *H. leucogaster* exhibits the diagnostic attributes of the subgenus *Trinomys* Thomas, 1921 (see Moojen, 1948, for subgeneric diagnoses). Therefore, if the Code is followed, the species of spiny rats now placed in the subgenus *Trinomys* of *Proechimys* should henceforth be placed in the nominotypical subgenus of *Holochilus*, and the species of spiny rats now placed in the nominotypical subgenus of *Proechimys* should henceforth be placed in the subgenus *Proechimys* of *Holochilus*. For the marsh rats currently known as *Holochilus*, the only available generic name would then be *Holochilomys*. For reasons explained in paras. 1 and 2 above, these nomenclatural changes would be most unfortunate.

12. To preserve current usage, it is necessary to set aside *H. leucogaster* Brandt as the type species of *Holochilus* and to select a new type species. *Holochilus sciureus* Wagner, 1842a (p. 17) is an appropriate choice for the type species because: (a) it was the first species of South American marsh rat to be referred to *Holochilus*; (b) the holotype is still extant in the Zoologische Staatssammlung, Munich (letter from M. Hiermeier to G.G. Musser, February 1996); (c) the locality where the type specimen was collected (Rio São Francisco, Brazil) is known; and (d) an illustration of the occlusal morphology of the upper molars of the holotype has been published (Massoia, 1981, fig. 1). We propose that *H. sciureus* Wagner, 1842 be designated the type species of *Holochilus* Brandt, 1835. This action will remove *Proechimys* J.A. Allen, 1899 and *Trinomys* Thomas, 1921 from the synonymy of *Holochilus*, thus allowing the wide and extensive current usages of all three names to continue.

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

(1) to use its plenary powers to set aside all previous fixations of type species for the nominal genus *Holochilus* Brandt, 1835 and to designate *Holochilus sciureus* Wagner, 1842 as the type species;

(2) to place on the Official List of Generic Names in Zoology the following names:
   (a) *Holochilus* Brandt, 1835 (gender: masculine), type species by designation under the plenary powers in (1) above *Holochilus sciureus* Wagner, 1842;
   (b) *Proechimys* J.A. Allen, 1899 (gender: masculine), type species by original designation *Echimys trinitatis* J.A. Allen & Chapman, 1893;
   (c) *Trinomys* Thomas, 1921 (gender: masculine), type species by original designation *Echimys albispinus* I. Geoffroy Saint-Hilaire, 1838;

(3) to place on the Official List of Specific Names in Zoology the following names:
   (a) *sciureus* Wagner, 1842, as published in the binomen *Holochilus sciureus* (specific name of the type species of *Holochilus* Brandt, 1835);

(b) *trinitatis* J.A. Allen & Chapman, 1893 (p. 223), as published in the binomen *Echimys trinitatis* (specific name of the type species of *Proechimys* J.A. Allen, 1899);

(c) *albispinus* I. Geoffroy Saint-Hilaire, 1838 (p. 886), as published in the binomen *Echimys albispinus* (specific name of the type species of *Trinomys* Thomas, 1921).

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