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Systematic Studies of Oryzomyine Rodents (Muridae): the Identity of *Oecomys phelpsi* Tate

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ABSTRACT

The holotype of *Oecomys phelpsi*, collected from the southern slopes of Auyan-Tepui in southeastern Venezuela, is a composite, consisting of an *Oecomys* skin and mandible mixed with an *Akodon* cranium. The mismatch probably occurred when the specimens were processed at the mu-

seum. The nature of the mismatch is discussed and the problem is resolved by restricting the name *phelpsi* to the *Oecomys* mandible, thus retaining the association of *phelpsi* with a specimen of *Oecomys* rather than *Akodon*.

INTRODUCTION

On November 30, 1937, the first planeload of men and supplies of the Phelps Venezuelan Expedition landed on the Camarata Savanna in southeastern Venezuela. The landscape was impressive: "Auyantepui, rising in a series of huge steps to a line of towering cliffs nearly a thousand feet high, dominated the scene. Wisps of mist, alternately revealing and hiding the bold features of the mountain, drifted across its face, till late in the afternoon it was

completely blotted out by a heavy rainstorm, to emerge with giant waterfalls spurting from several levels of its red walls" (Tate, 1938: 452). The expedition remained in the area approximately three months, until the middle of March, 1938, and established camps at altitudes that extended from the Camarata Valley at 460 m to the top of the plateau at about 2200 m (Tate, 1938: 474). Working from those different camps, members of the

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expedition obtained about 750 specimens of mammals, many of them series of muroid rodents never collected before in that part of Venezuela. Tate (1939) later reported the specimens as part of a larger study on "The Mammals of the Guiana Region." Among the accounts of species were descriptions of six new taxa based on animals collected in the Auyan-Tepui region. *Oecomys phelpsi* was one of those newly described forms and what was set down in print about it came from study of only one specimen, the holotype (Tate, 1939: 194). Unfortunately, Tate (1945) later learned that the holotype was a composite and thought that he had corrected the error by restricting the name *phelpsi* to the cranium. However, the mixup of skin and skull is different than Tate realized. Our purposes here are to identify the elements constituting Tate's holotype and to correct his allocation of the name *phelpsi*. The solution to the mismatch is important to any systematic revision of the species of *Oecomys*, especially if the sample linked to *phelpsi* proves to have been drawn from a distinctive population that should be identified by a scientific name.

MATERIALS AND METHODS

Specimens studied and referred to by catalog number in this report are in the collections of the Department of Mammalogy at the American Museum of Natural History (AMNH) and the Department of Zoology (Mammals) at the British Museum (Natural History) (BMNH). Measurements are in millimeters. Those taken on the cranium are greatest length of skull (GLS) and crown length of maxillary molar row (CLM1-3). Values for total length and length of tail were recorded by the collector on the label attached to the skin; length of head and body was obtained by subtracting tail from total length.

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MIXUP AND RESOLUTION

Among the specimens of mammals collected on the lower southern slopes of Auyan-Tepui near 1100 m was a small mouse trapped by Tate (original number 5692) on February 10, 1938. It became the holotype of *Oecomys phelpsi* (AMNH 131164) and consists of a museum study skin and skull (figs. 1 and 2). Patches of fur are gone from the back but otherwise the specimen, including the skull, is intact.

Oecomys phelpsi was characterized by Tate (1938: 194) "as a peculiarly aberrant mouse with external features, except the mark on the dorsum of foot, common in *Rhipidomys*. Tail with distinct pencil. Skull, however, with rostrum and portion between zygomatic plates much narrowed; toothrows convergent posteriorly; m3 reduced; supra-orbital region with weak, though divergent ridges, as in *Oecomys*; braincase large." He went on to describe *phelpsi* as being "*Rhipidomys*-like" and possessing reddish dorsal fur, white underparts, small ears, small feet without dorsal markings, and a dark brown penicillate tail. In addition to the cranial and dental features already presented, he noted that the interparietal was greatly reduced in area; the zygomatic plates were broad, their anterior margins thrown forward; the palatal (incisive) foramina long and narrow; palatal pits were present between second upper molars; posterior pits were not present; the anterior lamina of each first lower molar was narrower than the middle and posterior laminae, the posterior margin of the dentary was moderately concave, and the coronoid process "falcate." Tate lamented that it "is unfortunate that his unusual mouse is founded upon a single individual. It was trapped in heavy forest."

The peculiar nature of *phelpsi* was explained by Tate in 1945 (p. 316) in a note reporting that Dr. W. H. Osgood had pointed out to him that *Oecomys phelpsi* was composed of a mismatched skin and skull. "The skin," wrote Tate, "matches *Oecomys guianae* . . . very closely indeed; the skull is that of the local *Akodon (Chalcomys)* found at Mt. Auyantepui, Venezuela. A check of the remaining *Akodon* procured at the same time reveals one specimen associated with a wrong skull. That skull is not an *Oecomys*, as was

to be expected, but a skull of *Thomasomys macconnelli*, which further complicates the matter. The divergence in the collecting data (Dec. 20 and Feb. 10) effectively precludes a mistake in the field." Tate regretted the situation and corrected it by restricting "the name *phelpsi* to the skull. *Oecomys phelpsi* then falls as a pure synonym of my *Akodon* (*Chalcomys*) *aerosus* near *chapmani*. . . . The skin reverts to the status of an unidentified *Oecomys* (or *Rhipidomys*?) without skull."

In the catalog of type specimens of recent mammals in the American Museum of Natural History, Goodwin (1953) listed *Oecomys phelpsi*, indicated that it was a synonym of the form of *Akodon* with which Tate had associated it, and noted that "The skin with this skull was mismatched and proves to be *Oryzomys guianae*" (p. 319).

The mismatch was overlooked by Cabrera (1961: 405), who listed "*?Oecomys phelpsi*" as a synonym of *Oryzomys marmosurus guianae* in his catalog of South American mammals.

Tate's action in 1945 effectively cemented the name *phelpsi* to a form of *Akodon* but left the skin unidentified, to be ignored by subsequent workers dealing with the Venezuelan fauna. The skin, for example, was not mentioned by Hershkovitz (1960) in his systematic revision of *Oecomys*. The identity of *Oecomys phelpsi* has taken on renewed significance because of recent species-level revisions being carried out for *Akodon* (Patton and Dr. P. Myers of the University of Michigan) and *Oecomys* (Musser and Dr. M. D. Carleton of the National Museum of Natural History). In the course of these pursuits we examined the holotype of *Oecomys phelpsi* as well as the series of *Akodon* that were trapped at the same camp as the holotype, but during the period December 17, 1937 to February 1, 1938, and that were originally reported by Tate (1939: 187) as "*Chalcomys aerosus* near *chapmani*" (AMNH 130824, 130830, 130831, 131105, 131107, 131109, 131117, and 131118).

The cranium of *phelpsi* is certainly that of an *Akodon* (fig. 2), as Tate tardily discovered, which accounts for the cranial characters described for *phelpsi* that seemed to be so peculiar for a species of *Oecomys*. The reduced interparietal, wide zygomatic plates with prominent anterior projections, long and nar-



Fig. 1. Study skin of the holotype of *Oecomys phelpsi*. Length of head and body = 90 mm; length of tail = 123 mm; length of hind foot (measured by us, includes claws) = 23 mm.



Fig. 2. Cranium and mandible (left dentary is shown) of the holotype of *Oecomys phelpsi* that were originally associated with the skin shown in figure 1. The cranium is from a specimen of *Akodon*, the mandible is that of an *Oecomys*.

row incisive foramina, lack of posterior palatal pits, and molar conformation noted by Tate are *Akodon* characteristics, not *Oecomys*. Tate was also correct in his identification of the *phelpsi* cranium as being an example of what he had reported as "*Chalcomys aerosus* near *chapmani*" for its craniodental morphology fits nicely with the series of *Akodon* that was obtained at the 1100 m camp.

Among the series of *Akodon* from 1100 m we found one skin matched with an *Akodon* mandible but with a cranium of *Rhipidomys* (or *Thomasomys*) *macconnelli*, no doubt the specimen mentioned by Tate in 1945. In the series of *macconnelli* from Auyan-Tepui at the American Museum, we located a specimen matched with a mandible of *macconnelli* but with a cranium of *Akodon*; the *Akodon* cranium fits perfectly with the mandible associated with the *Akodon* skin, and the *macconnelli* cranium that was found with the *Akodon* skin belongs to the mandible with the *macconnelli* skull. The parts of these two specimens have now been correctly reassociated and renumbered, which removes the complication mentioned by Tate (1945). These reassociations, however, do not resolve the composite nature of *Oecomys phelpsi*.

Yet among the series of *Akodon* from 1100 m on the south slope of Auyan-Tepui, we also found one *Akodon* skin (AMNH 131117), collected December 28, 1937, that was associated with a mandible from a young adult

Akodon and the cranium of a young adult *Oecomys* (fig. 3). We fitted the *Akodon* mandible from AMNH 131117 to the *Akodon* cranium of the holotype of *phelpsi* and the occlusal match was perfect, as was the fit between the mandible of the holotype and the *Oecomys* cranium that had been associated with *Akodon* skin 131117. It is clear to us that sometime during processing of the specimens at the Museum, the *Oecomys* and *Akodon* crania were switched and placed with the wrong skin and mandibles. We have corrected this mistake by reassociating the cranium of each specimen with its proper mandible and skin, and renumbering the crania (crania in figures 2 and 3 were photographed before this alteration).

These reassociations reveal that Tate's (1945) attempt to stabilize the name *Oecomys phelpsi* is inadequate. After he had become aware of the mismatch, he thought that (p. 316) "the simplest way to correct it, I believe, is for me to restrict the name *phelpsi* to the skull." We assume that by "skull" Tate must have meant both the cranium and the mandible, which, as we have argued, are themselves a composite. In the original description of *Oecomys phelpsi*, Tate devoted much of the characterization and general description to the stuffed skin and cranium, but also included aspects of the dentition and the mandible. Furthermore, when he designated the skull as the basis for *phelpsi*, he noted that (p. 316) "The skin reverts to the status



Fig. 3. Cranium and mandible (left dentary is shown) that were associated with the skin of an *Akodon* from the camp at 1100 m on the lower southern flanks of Auyan-Tepui. The cranium is that of an *Oecomys* and goes with the mandible shown in figure 2 that was originally matched with the skin of the holotype of *phelpsi*. The mandible of AMNH 131117 fits the cranium shown in figure 1 that had been associated with the skin of AMNH 131164 and characterized in the original published description of *Oecomys phelpsi*. $\times 2$.

of an unidentified *Oecomys* without skull," and made no mention of the mandible.

Because *phelpsi* was described as a species of *Oecomys*, we believe it should retain that association. Therefore, we further restrict the name *phelpsi* to the mandible of AMNH 131164, an action that ties the name to the skin of that specimen as well as the rematched cranium.

Our findings again link the name *phelpsi* to a specimen of *Oecomys* rather than *Akodon*. Whether *phelpsi* identifies a population of *Oecomys* distinctive in morphology and other attributes or is simply one of several names that has been applied to a species already described and named before 1939 can only be satisfactorily determined after resolution of the morphological and geographic limits of species in *Oecomys*, a task yet to be completed. Results of our study of specimens, including holotypes, of *Oecomys* that are housed in several museums indicate that the holotype of *phelpsi* is not a sample of *guianae* as suggested by Tate (1945) and Goodwin (1953). Specimens of *guianae* represent a species of much larger body size (table 1) with darker upperparts and grayish white underparts.

The holotype of *phelpsi* is a sample of some other species. The specimen has a moderately long, brownish red dorsal coat; white under-

parts; dorsal surfaces of the feet that are pale buff without darker patterns; a dark brown, monocolored tail with a short tuft of hairs at the end; a short and wide rostrum; wide interorbit; conspicuous supraorbital ridging; short molar rows; and other conformations of the cranium and mandible that are evident in figures 2 and 3.

The holotype of *phelpsi* also represents a species other than *Oecomys auyantepui* (Tate, 1939), which is based on the holotype (AMNH 131156) and two other examples (AMNH 131155 and 131108) collected during December, 1937, and February, 1938, at the 1100 m camp on the south slopes of Auyan-Tepui. Adult specimens of *O. auyantepui* are larger than the holotype of *phelpsi* (table 1), have upperparts covered with much longer and denser fur, grayish white underparts, and dark brown metacarpal and metatarsal surfaces.

Features of the skin, cranium, and mandible of *phelpsi* are those which are common to *Oecomys bicolor* (for example, Hershkovitz, 1960, as *Oryzomys bicolor*), a small, bright, reddish brown mouse with underparts that are usually white (buffy in a few samples) and a moderately long and tufted tail. Size of the cranium of *phelpsi*, as indicated by greatest length, and length of the maxillary molar row are similar to the holotype of *O. bicolor*

TABLE 1
 Contrasts Among Some Holotypes of *Oecomys*
 (See discussion in text)

Taxon	Musum	Age	Locality	GLS	CLM1-3
<i>phelpsi</i> Tate	AMNH 131164	young adult	Venezuela, Auyan-Tepui	25.9	3.7
<i>bicolor</i> Thomas	BMNH 7.1.1.96	young adult	Ecuador, Gualaquiza	27.0	3.7
<i>rosilla</i> Thomas	BMNH 4.5.7.37	old adult	Venezuela, Lower Orinoco	27.9	3.8
<i>nitedulus</i> Thomas	BMNH 6.4.8.31	adult	Guyana, Essequibo River	28.8	3.7
<i>rutilus</i> Anthony	AMNH 42910	adult	Guyana, Kartabo	23.9	3.2
<i>ayantepui</i> Tate	AMNH 131156	adult	Venezuela, Auyan-Tepui	30.3	4.4
<i>guianae</i> Thomas	BMNH 10.5.4.23	adult	Guyana, Supinaam River	32.4	4.5

from Ecuador and the holotypes of *rosilla* and *nitedulus* from Venezuela and Guyana (table 1), which are currently listed as either synonyms (Hershkovitz, 1960) or as subspecies of *O. bicolor* (Cabrera, 1961).

Another small-bodied *Oecomys* that is usually relegated to *O. bicolor* is *rutilus* from Guyana. The holotype is much smaller than the specimen of *phelpsi* and the two cannot be considered as representing the same species. For the present, we provisionally regard the holotype of *phelpsi* to be an example of *O. bicolor*; *phelpsi* is available as a subspecific name should the Auyan-Tepui population prove to be distinctive.

The *Akodon* cranium that had been matched with the skin of *phelpsi* is now reassociated with AMNH 131117, which is part of the series of *Akodon* caught at 1100 m. That specimen and the others are all samples of the same species, a mouse of moderate body size with yellowish brown or dark brown upperparts and dark, buffy gray underparts. The form is represented in collections of museums by large series and is usually identified as *Akodon urichi* (Cabrera, 1961), which is often the only species of the genus listed from Venezuela (Handley, 1976, for example). The question of whether the series from 1100 m is really *urichi* (the type locality is on Trinidad) or whether it and the sample described as *saturatus* (Tate, 1939) from the top of Au-

yan-Tepui represent the same or different species remains to be answered by a species-level taxonomic revisionary study of the *Akodon* in northern South America.

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