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Designation of the type species of *Musaraneus* Pomel, 1848 (Mammalia: Soricomorpha: Soricidae)

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Abstract.—The genus name *Musaraneus* often is attributed to Brisson (1762), however, most of Brisson's names are unavailable. Pomel (1848) subsequently made the name *Musaraneus* available, but did not designate a type species. The 18 species that Pomel listed under *Musaraneus* currently are distributed among five modern genera, two of which (*Cryptotis* Pomel, 1848 and *Diplomesodon* Brandt, 1852) are predated by *Musaraneus.* Because *Cryptotis* and *Diplomesodon* potentially could be considered junior synonyms of *Musaraneus,* I propose *Sorex leucodon* Hermann, 1780 (= *Crocidura leucodon*) as the type species for *Musaraneus,* thereby establishing *Musaraneus* as a junior synonym of *Crocidura* Wagler, 1832.

The generic name *Musaraneus* Pomel, 1848 derives from *mus araneus* ("spider mouse"), one of the terms commonly used alongside *sorex* and *mus caecus* by classical Latin writers (e.g., Plinius n.d.; Columella n.d.; Serenus n.d.) to refer to small mammals now generally interpreted as shrews (family Soricidae). The classical name *mus araneus* has a long history of use in early zoological literature. It was adopted and used widely by Renaissance natural historians and made the transition from a Latin common name to being incorporated into more formal taxonomies. The vernacular *mus araneus* generally was applied to the small mammal called locally by a variety of names that included "*muzeraigne,*" "*spitzmus,*" "shrew," "erd shrew," or "shrew-mouse" (Gesner 1551, 1560, 1602; Marggraf 1648; Jonston 1657; Topsell 1658; Ray 1693). A number of early taxonomists attempted to establish the name as *Mus Araneus* or *Musaraneus* within heirarchical classifications (Charleton 1668; Klein 1751; Brisson 1756, 1762). It is of interest that Gesner (1551, 1560, 1602) and subsequent writers (e.g., Topsell 1658, Charleton 1668) interpreted *sorex* as distinct from *mus araneus,* in some cases as a broader category that might include *mus araneus* (e.g., Klein 1751), or as a separate set of animals, typified by *mus avellanarum,* the "*haselmus*" or "hasel-mouse" (Gesner 1560, Topsell 1658), or by the "rat" (Charleton 1668). Gesner's (1551, 1560, 1602) print of *mus araneus* is an illustration of a soricid (Fig. 1A), possibly a white-toothed shrew of the genus *Crocidura,* whereas his picture of a *sorex* is identifiable as a garden dormouse (*Eliomys quercinus*—Fig. 1B). His illustrations were copied and republished by subsequent writers (e.g., Topsell 1658) and likely influenced later interpretations of the names. In contrast, Linné (1746, 1748, 1758) explicitly and consistently applied *Sorex* to those mammals that previous authors had called *mus araneus* or *Musaraneus,* and *Sorex* Linné, 1758 is the name that survived in the taxonomic literature. *Musaraneus* continues to be reflected in modern words for shrew in a number of romance languages, e.g., *musaraña* (Spanish), *musaraigne* (French), *musaranho* (Portuguese), *musaragno* (Italian). It also survives, in part, in

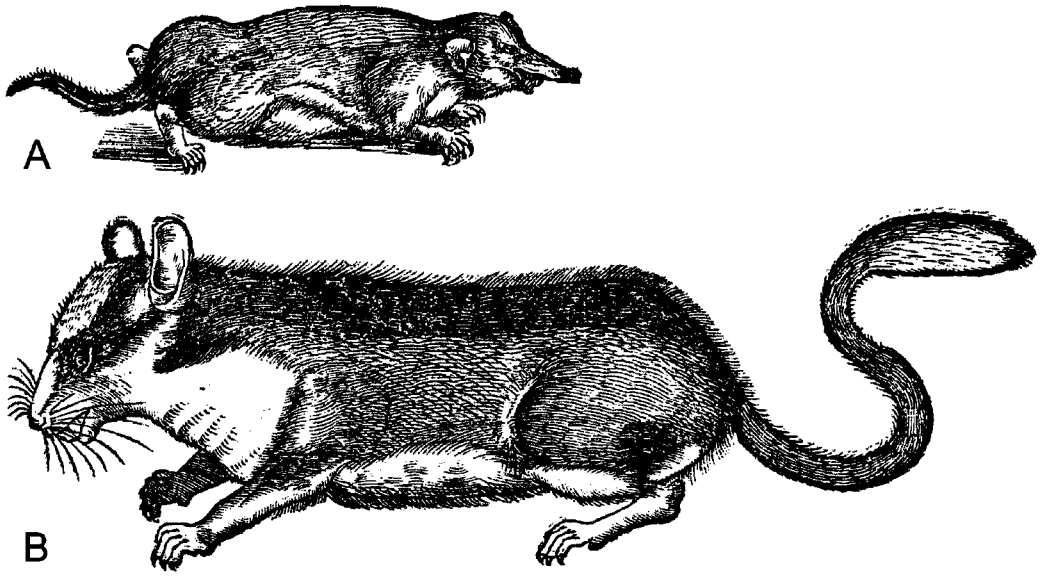

Fig. 1. Gesner's (1602) illustrations of (A) *mus araneus* and (B) *mus avellanarum* from *Historiae Animalium.* Photographs courtesy of the Smithsonian Institution Libraries, Joseph F. Cullman 3rd Library of Natural History, Washington D.C. Reproduced with permission.

the scientific name for the European common shrew, *Sorex araneus* Linné, 1758.

As a genus-level name, *Musaraneus* is often attributed to Brisson (1762; see Pomel 1848, Sherborn 1902, Palmer 1904, McKenna and Bell 1997, Kretzoi and Kretzoi 2000). Because Brisson (1762) did not consistently apply binomial nomenclature in his work, however, most of his names are unavailable in accordance with Article 11.4 of the *International Code of Zoological Nomenclature* (ICZN 1999; but see Hopwood 1947; ICZN 1998). In a subsequent classification of insectivores, Pomel (1848) redescribed Brisson's *Musaraneus* as one of four genera (with *Talposorex* Pomel, *Sorex* Linneus, and *Galemys* Pomel) within the tribe Soriciens in his family Spalacogalae. Pomel (1848) made the name *Musaraneus* available, and therefore, he is the author of this name, as noted by Sherborn (1928). Hopwood (1947) recorded a number of other generic names used by Brisson (1762) that similarly were made available by later authors (see also ICZN 1998).

Pomel's (1848) *Musaraneus* comprised 18 species distributed among three "sections" (subgenera): *Cryptotis,* a new taxon with a single North American species; *Myosorex* Gray, 1838, an existing taxon comprising three African species; and *Crocidura* Wagler, 1832, an existing taxon containing 14 Old World species. Based on the list of included species, the genus *Musaraneus* included representatives from five modern genera. In addition to those genera representing Pomel's (1848) three sections (*Cryptotis, Myosorex, Crocidura*), one species (*Musaraneus puchellus*) represents *Diplomesodon* Brandt, 1852, and three others (*M. crassicaudatus, M. vulgaris, M. Bachmani*) represent *Sorex* Linné, 1758.

Pomel (1848) was uneven in designating species that he considered to be typical of the genera he described. In his classification of insectivores, Pomel noted a "typical species" for his newly-described *Talposorex,* but not for his names *Galemys* or *Musaraneus.* For these latter genera, he provided lists of species divided among several sections (subgenera). Pomel (1848) wrote the latter name as, "Genre *Musaraneus* Briss,

Pom.," clearly indicating the influence of Brisson (1762). It is curious, however, that his version of *Musaraneus* did not explicitly include any of the three "species" (*Musaraneus, Musaraneus aquaticus, M. brasiliensis*) that Brisson (1762) had allocated to his genus *Musaraneus.* Pomel (1848) may have considered Brisson's (1762) uninomial "species" *Musaraneus* to be represented by what Pomel called *Musaraneus* (*Crocidura*) *vulgaris,* which he equated with *araneus* of authors.

The type species of *Musaraneus* Pomel, 1848 is important to modern taxonomists because *Musaraneus* Pomel, 1848 predates *Cryptotis* Pomel, 1848 and *Diplomesodon* Brandt, 1852, and *Musaraneus* could be interpreted as a senior synonym of one of these genera. Kretzoi and Kretzoi (2000: 241) indicated that the type species for *Musaraneus* Pomel is "*Crocidura* (*M.*) *priscus* Pomel" (sic). There are a number of important and confusing errors in their account for this name, however. Both the original description of the genus and the designation of *Crocidura priscus* as the type species are credited by them to "Pomel 1853," which is referenced as "Arch. Sci. Phys. Nat., Bibl. Univ. Genéve, 9: 249," but this reference is a conflation of several different publications. Pomel (1853a, 1853b) are parts of his "Catalogue des Vertébrés Fossiles," which was published in at least three sections in *Annales Scientifiques, Littéraires et Industrielles de L'Auvergne*: the first in October and November of 1852 (Pomel 1852), the second in March and April of 1853 (Pomel 1853a), and the last in May and June of 1853 (Pomel 1853b). Insectivores, including the description of the fossil species *Musaraneus* (*Crocidura*) *priscus,* appear in the first part of this work, and the correct citation for that name is Pomel (1852:351). Pomel's original description of *Musaraneus* is in an earlier publication (Pomel 1848) that was published in Volume 9 of *Archives des Sciences Physiques et Naturelles, Genève.* In order for a species to be designated a type species by a subsequent author, it must have been included in the genus by the original author (ICZN 1999: art. 69.2). However, Pomel (1848) did not include the name *priscus* among the species he listed under *Musaraneus,* as he had not yet described the species. Therefore, the selection by Kretzoi and Kretzoi (2000) is invalid.

Pomel's (1848:249) original description of *Musaraneus* reads:

> Trois intermédiaires en haut, deux en bas, estomac oblong avec poche bien marquée sous le boyau pylorique.

My translation of this description is:

> Three upper intermediary teeth, two lowers, stomach oblong with well-marked pouch below the pyloric constriction.

I interpret Pomel's upper "intermédiaires" to represent the simplified upper dentition between the large, hooked first incisor and the roughly molariform fourth premolar (P4) that commonly are referred to as "unicuspids" (Choate 1970). The lower "intermédiaires" are the teeth designated the lower unicuspid and lower fourth premolar (p4). Among the five modern genera Pomel (1848) included within *Musaraneus,* all but *Myosorex* have a single lower unicuspid and p4; *Myosorex* typically has two lower unicuspids in addition to p4. In the upper dentition, *Sorex* has five unicuspids, *Cryptotis* and *Myosorex* each have four, and *Diplomesodon* has two. Only *Crocidura* has three upper unicuspids in accord with Pomel's (1848) description. Although it is not required that the type species match the original description for a genus, it is highly desirable.

Among the modern species of *Crocidura* that Pomel (1848) included in *Musaraneus,* the majority are African, one is from Japan, and one, *Crocidura leucodon,* is widespread in continental Europe, including France, where Pomel lived. Among the recommendations for selecting a type species for subsequent designation are that the species be common and that it be well known to the

original author (ICZN 1999: Recommendations 69.A1, 69.A7). Therefore, I select *Sorex leucodon* Hermann, 1780, as used in the name combination *Musaraneus* (*Crocidura*) *leucodon* by Pomel (= *Crocidura leucodon*), as the type species of *Musaraneus* Pomel, 1848. By designating this taxon as the type species, *Musaraneus* Pomel, 1848 becomes a junior synonym of *Crocidura* Wagler, 1832, thereby stabilizing the generic names *Cryptotis* and *Diplomesodon* in accordance with their long-established usage.

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