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American Recent Eulipotyphla

Nesophontids, Solenodons, Moles,
and Shrews in the New World

Neal Woodman

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ABSTRACT

Woodman, Neal. American Recent Eulipotyphla: Nesophontids, Solenodons, Moles, and Shrews in the New World. *Smithsonian Contributions to Zoology*, number 650, vi + 107 pages, 27 figures, 1 table, 4 appendixes, 2 indexes, 2018. — The mammalian taxonomic order Eulipotyphla comprises the living families Erinaceidae (gymnures, hedgehogs, and moonrats), Solenodontidae (solenodons), Soricidae (shrews), and Talpidae (desmans and moles), as well as the recently extinct Nesophontidae (nesophontids). Morphological and molecular studies continue to alter our view of relationships within and among these families, and this research has added considerably to our understanding of the diversity, distributions, and relationships of many of the New World (i.e., North and South America and associated islands) species that comprise them. Currently, there are more than 450 recognized living species worldwide, making the Eulipotyphla the third most speciose order of mammals. In this work, I attempt to summarize the taxonomic results of recent studies, provide a guide to the most appropriate current applications of New World taxonomic names and their synonyms, and indicate current understanding of their distributions. The eulipotyphlans of this region currently include 111 recognized species of shrews, seven species of moles, and both living species of solenodons.

Cover images, from left to right: *Solenodon cubanus* (Figure 7, top), *Neurotrichus gibbsii* (Figure 12), *Sorex brevicaudatus* (detail from Figure 17).

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American Recent Eulipotyphla: Nesophontids, Solenodonts, Moles, and Shrews in the New World

Neal Woodman

INTRODUCTION

This work summarizes the taxonomic status of Recent Eulipotyphla inhabiting North and South America, including the Caribbean region, up to approximately 1 January 2018. The name Eulipotyphla Waddell et al., 1999 refers to the mammalian order-level clade that includes the living families Erinaceidae G. Fischer, 1814 (gymnures, hedgehogs, and moonrats), Solenodontidae Gill, 1872 (solenodonts), Soricidae G. Fischer, 1814 (shrews), and Talpidae G. Fischer, 1814 (desmans and moles). By extension, the order also includes the recently extinct Nesophontidae, which forms a natural grouping with the Solenodontidae that Brace et al. (2016) termed the Solenodontata. My original intent was to provide an updated accounting of the taxonomy of North American and Caribbean Eulipotyphla using Miller and Kellogg's (1955) section on the order Insectivora as a model and guide. However, only a single eulipotyphlan genus, the soricid *Cryptotis* Pomel, 1848, occurs on continental regions south of Honduras, making it logical and useful to expand geographical coverage to provide a comprehensive overview of all New World (i.e., North and South America and associated islands) Eulipotyphla. The extinct family Nesophontidae is included because this taxon was covered by Miller and Kellogg (1955) and because many nesophontids are now known to have survived into the post-Columbian era (Miller, 1930; MacPhee et al., 1999; Brace et al., 2016).

With more than 500 living species worldwide, Eulipotyphla includes approximately 8% of all living mammals, making it the third most speciose order of Recent Mammalia after Rodentia (rodents) and Chiroptera (bats). Within the order, Soricidae is the largest family, with nearly 85% of living eulipotyphlan species, followed by Talpidae (10%), Erinaceidae (<5%), and Solenodontidae (<0.5%; Wilson and Reeder, 2005; Burgin et al., 2018). The Pan-American contribution to Eulipotyphla currently includes 111 species of shrews, eight species of moles, both living species of solenodonts, and no erinaceids. This enumeration of species reflects considerable change in our understanding of the diversity of New World Eulipotyphla since Miller and Kellogg (1955; plus Tate, 1932 for South American shrews), who recognized 77 soricids, seven talpids, and three solenodontids (in two genera). That our varying view of the diversity of this group has not been linear can be seen in Figure 1. This plot tallies recognized species of soricids through time since the publication of the 10th edition of *Systema Naturae* (Linnaeus, 1758), which serves as a

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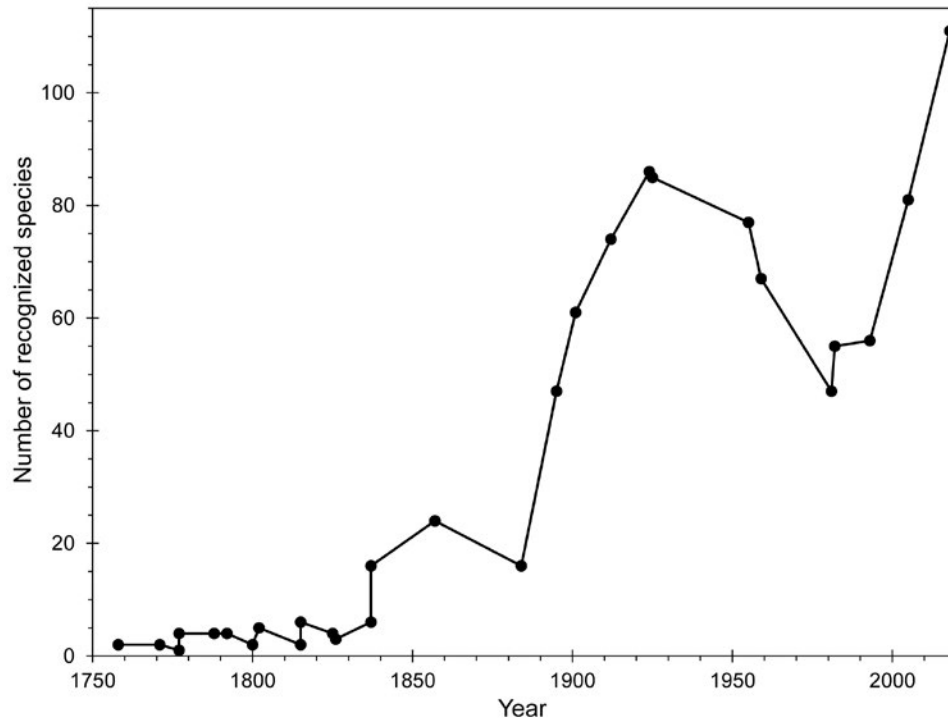


FIGURE 1. Graph of the numbers of recognized species of New World Soricidae through time. Sources: Linnaeus, 1758; Pennant, 1771; Erxleben, 1777; Zimmermann, 1777; Gmelin, 1788; Kerr, 1792; Shaw, 1800; Turton, 1802; Illiger, 1815; Ord, 1815; Harlan, 1825; Godman, 1826; Richardson, 1837; Bachman, 1837; Baird, 1857; True, 1884; Merriam, 1895a, 1895b; Miller and Rehn, 1901 (+Thomas, 1898); Miller, 1912a (+Thomas, 1898); Miller, 1924 (+Thomas, 1921); Cabrera, 1925; Miller and Kellogg, 1955 (+Tate, 1932); Hall and Kelson, 1959 (+Cabrera, 1958); Hall, 1981 (+Cabrera, 1958); Honacki et al., 1982; Hutterer, 1993, 2005; this work.

convenient, if artificial, starting point for modern biological taxonomy. Linnaeus (1758) recognized only two New World species—identified by him as belonging to the genus *Sorex* but both later recognized as talpids—of a worldwide total of five known eulipotyphlan species. From there, the number of New World species generally trends upward as new species were discovered and described. The strong downward trend from the 1950s until about 1980, followed by a strong upsurge represents, in part, changing philosophies regarding concepts of species and the practical application of those concepts to living organisms.

PHYLOGENETIC RELATIONSHIPS OF THE EULIPOTYPHILA

Molecular analyses indicate that Eulipotyphla represents the earliest branch within the Laurasiatheria clade of mammals (Figure 2), making it the sister to all other laurasiatherian orders (Chiroptera, Cetartiodactyla, Perissodactyla, Carnivora, Pholidota; Tarver et al., 2016). Molecular clock model estimates generally place the divergence of the Eulipotyphla from the rest

of the Laurasiatheria in the Late Cretaceous (Douady and Douzery, 2003: 94–75 million years ago [MYA]; Springer et al., 2003: 95–76 MYA; Bininda-Emonds et al., 2007: 94.4–89.2 MYA; Tarver et al., 2016: 73.75–81.96 MYA). In contrast, phenotypic analysis indicates a later origin that contributed to an early Paleocene radiation of mammals (O’Leary et al., 2013: 58.9–57.8 MYA).

Various calibrated molecular models of the timings of lineage divergences within Eulipotyphla were summarized recently by Springer et al. (2018: table 1). The majority of these models indicate that the most basal branch of Recent Eulipotyphla, the Solenodontata clade (Solenodontidae + Nesophontidae), most likely diverged from other Eulipotyphla in the Late Cretaceous about 86–66 MYA and certainly before the end of the Paleocene (Sato et al., 2016: 60.8–57.3 MYA; Brandt et al., 2017: 98.6–62.1 MYA). Among the remaining eulipotyphlans, the Talpidae was the next Recent family to branch off, at about 85–61 MYA or possibly later (dos Reis et al., 2012: 62.0–60.9 MYA; Sato et al., 2016: 60.8–57.3 MYA). This left the Soricidae and Erinaceidae, which diverged an estimated 71–61 MYA (Sato et al., 2016: 60.4–57.3

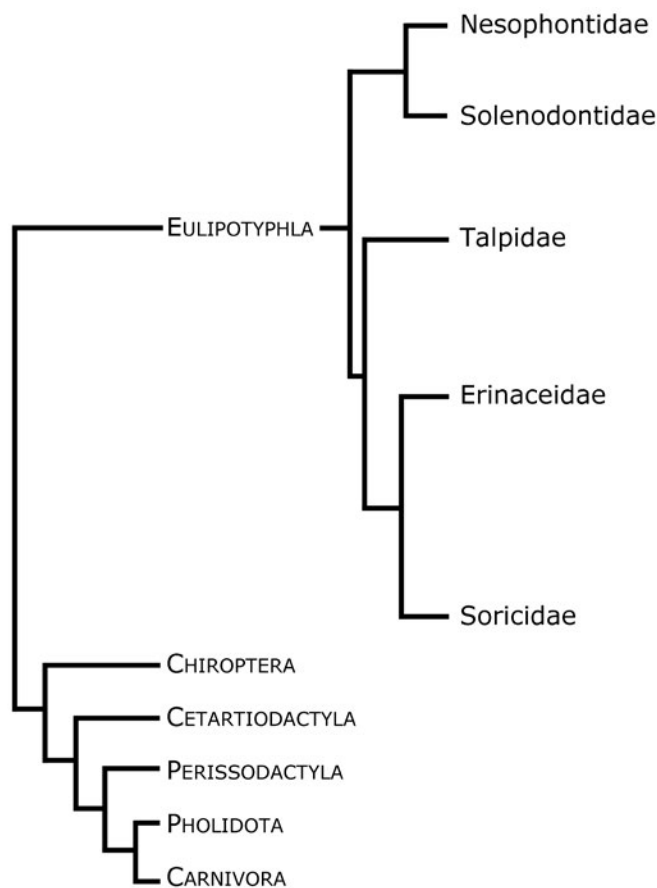


FIGURE 2. Phylogenetic relationships of the families of Eulipotyphla (based on Douady and Douzery, 2003; Springer et al., 2003; Brace et al., 2016).

MYA). The separation of Nesophontidae from Solenodontidae may have been the last major branching event among the Recent families, occurring 68.6–43.6 MYA (Brace et al., 2016). The topology and timing are obviously simplified because they ignore relevant diverse fossil clades, such as Proscalopidae Reed, 1961 and Heterosoricidae Viret and Zapfe, 1951.

Relationships within Nesophontidae and within Solenodontidae remain unresolved, whereas those within Soricidae and Talpidae continue to be modified as additional taxa and characters are added to phylogenetic analyses. Integration of genetic and morphological analyses continues to be a goal (He et al., 2015; Schwermann and Thompson, 2015). Among talpids, tribal groupings used herein follow Hutterer (2005), but I ignore the subfamily group because inferred tree topologies vary with the analytical methods used, resulting in continued uncertainty about relationships among tribes and the composition of subfamilies (Shinohara et al., 2003; Crumpton and Thompson, 2013; Piras et al., 2015; Schwermann and Thompson, 2015; He et al., 2016). Divergence time estimates from He et al. (2016)

indicate that the Talpidae lineage split from other eulipotyphlans in the Late Cretaceous, which is in agreement with Brace et al.'s (2016: 75.6–65.2 MYA) and Springer et al.'s (2018: 74.0–63.9 MYA) time frames. He et al. (2016) dated the most recent common ancestor of the modern members of the family to near the Eocene boundary (57–42 MYA), when the ancestor of *Uropsilus* diverged from the rest of the family. Other tribal divergences began in the late Eocene (39.5–35.3 MYA), when the Scalopini split from the rest of the moles, and continued through the Oligocene (28.1–23.0 MYA), when the Neurotrichini and Urotrichini diverged. For a different view of the timing of divergences, see Piras et al. (2015).

Of the three living subfamilies of the Soricidae (Crocidurinae, Myosoricinae, Soricinae), only members of the Soricinae occur in the Western Hemisphere. My definition of tribes within the subfamily follows Hutterer (2005). Divergence time estimates indicate separation of the tribal lineages took place before the end of the middle Miocene, commencing 20.5–12.5 MYA and finishing by 17.4–10.2 MYA (Dubey et al., 2007).

WHAT HAPPENED TO THE “INSECTIVORA”?

I have been queried by a number of colleagues regarding the use of the name Eulipotyphla (Waddell et al., 1999) instead of the other names that have been applied to the ordinal grouping that includes the Soricidae. These include Lipotyphla Haeckel, 1866, Soricomorpha Gregory, 1910, and the traditional Insectivora Bowdich, 1821. The International Code of Zoological Nomenclature (International Commission on Zoological Nomenclature [ICZN], 1999) does not specifically address standards for the use of names higher than the family level, and in the absence of such formal guidance, I use the name whose original composition most closely matches the monophyletic extant group that is currently deemed to comprise the lineages within the order. In this case, it is the ordinal grouping that includes Erinaceidae, Solenodontidae, Soricidae, and Talpidae and that excludes other families that would render the order polyphyletic.

Insectivora Bowdich, 1821 was originally proposed as a family in the order Sarcophaga (Table 1). This name may have been derived from the Insectivores of Blainville (1816a, 1816b) and Cuvier (1816), a subdivision of their order Carnassiers. The full content of Blainville's Insectivores is uncertain, but it did not include talpids, which he placed in the separate suborder Anomaux, rather than with the Insectivores in suborder Normaux. Bowdich's (1821) Insectivora more closely matched Cuvier's (1816) Insectivores in content. On the basis of the list of genera Bowdich (1821) assigned to Insectivora, the original grouping included Erinaceidae, Soricidae, and Talpidae but also Chrysochloridae (golden moles) and Tenrecidae (tenrecs), which now comprise the separate group Afrosoricida (Gatesy et al., 2017), thereby making the Insectivora polyphyletic. The first solenodon, *Solenodon paradoxus* Brandt, 1833, was not yet known to natural historians, so the absence of the Solenodontidae at that time is irrelevant. Through time, additional families—the Macroscelididae

TABLE 1. Overview of changes in taxonomy of eulipotyphlans (Erinaceidae, Solenodontidae, Soricidae, Talpidae) through time. Names in bold type are groups names that have been used for the taxonomic order that includes the Soricidae. See Gregory (1910) and McKenna and Bell (1997) for a more complete review of Mammalia.

Taxonomy	Current family
Bowdich, 1821:24, 31–32	
Order Sarcophaga	
Family Insectivora	
<i>Erinaceus</i>	Erinaceidae
<i>Sorex</i>	Soricidae
<i>Mygale, Scalops, Talpa</i>	Talpidae
<i>Chrysochloris</i>	Chrysochloridae
<i>Centenes [sic]</i>	Tenrecidae
Haeckel, 1866: clx	
Order Insectivora	
Suborder Menotyphla	
Family Macroscelidia	Macroscelididae
Family Cladobatida	Tupaiidae
Suborder Lipotiphla	
Family Erinaceida	Erinaceidae
Family Soricida	Soricidae
Family Talpida	Talpidae and Chrysochloridae
Family Centetida	Tenrecidae and Solenodontidae
Gregory, 1910	
Order Insectivora	
Suborder Lipotyphla	
Section Zalambdodonta	
Family Centetidae	Tenrecidae
Family Potamogalidae	Tenrecidae
Family Solenodontidae	Solenodontidae
Family Chrysochloridae	Chrysochloridae
Section Erinaceomorpha	
Family Erinaceidae	Erinaceidae
Section Soricomorpha	
Family Soricidae	Soricidae
Family Talpidae	Talpidae
Waddell et al., 1999	
Order Eulipotyphla ^a	
“Hedgehogs”	Erinaceidae
“Shrews”	Soricidae
“Solenodon”	Solenodontidae
“Moles”	Talpidae

^a Waddell et al. (1999) used nonspecific common names to designate the contents of their order Eulipotyphla, rather than using defined family names. The quotation marks indicate that these are the actual terms they used and they communicate the rather loose definition those names provide.

(elephant shrews) and Tupaiidae (treeshrews)—were added to the Insectivora (Gregory, 1910). The order gained the reputation among many taxonomists as a “wastebasket” group composed of families of uncertain relationships whose members were often considered “primitive” in general nature relative to other Eutherians.

Haeckel (1866) erected Lipotyphla and Menotyphla as the two suborders of the order Insectivora (Table 1). Lipotyphla originally included genera that today are distributed among six different families: Chrysochloridae, Erinaceidae, Solenodontidae, Soricidae, Talpidae, and Tenrecidae. The suborder Menotyphla contained the Macroscelididae and Tupaiidae. The inclusion of the Afrosoricidae (Chrysochloridae and Tenrecidae) in the Lipotyphla makes that original group polyphyletic.

Soricomorpha Gregory, 1910 originated as one of three “sections” of the suborder Lipotyphla within the order Insectivora (Table 1). Soricomorpha included only the two families Soricidae and Talpidae. Section Erinaceomorpha was erected for the single family Erinaceidae, whereas the Solenodontidae, Chrysochloridae, and Tenrecidae together formed the section Zalambdodonta (Gregory, 1910). This classification separated Erinaceidae and Soricidae, which molecular studies indicate are sister taxa, thus making Soricomorpha paraphyletic (Douady et al., 2002; Douady and Douzery, 2003; Gatesy et al., 2017).

Waddell et al. (1999) coined Eulipotyphla as an ordinal-level grouping specifically for the clade containing “hedgehogs, shrews, solenodon, and moles” (Waddell et al., 1999:1). Although the use of undefined English common names lacks the specificity preferable in the naming of a new taxonomic grouping in the late twentieth century, the content can be interpreted to include the Erinaceidae, Solenodontidae, Soricidae, and Talpidae (Table 1). This is the only one of the four ordinal names whose original content is neither polyphyletic nor paraphyletic under our current understanding of mammalian relationships (Asher, 2007; Bininda-Emonds et al., 2007; O’Leary et al., 2013; Brace et al., 2016; Sato et al., 2016; Gatesy et al., 2017). Given this criterion, Eulipotyphla is the only acceptable name for the order.

ORGANIZATION OF THE LIST

In the following list, the sequence of the families within the order Eulipotyphla is phylogenetic (Figure 2). To ease the location of a particular taxon, however, the sequences of tribes and genera within a family, species within a genus, and subspecies within a species are alphabetical. A phylogenetic listing of eulipotyphlan taxa is presented in Appendix A.

Synonymies for genera and species-level groups (i.e., species and subspecies) follow the format and recommendations outlined in Gardner and Hayssen (2004). For species with recognized subspecies, the synonymy is placed with the nominate subspecies. Synonymies cite the original description and the first use of each name or name combination (synonyms) that are associated with a

currently valid taxon and note the current status of the name. The name of an original describer or author of a unique taxon name (including an incorrect subsequent spelling) is directly associated with the taxon name as originally proposed with no intervening punctuation. The names of subsequent authors (e.g., authors of unique name combinations) are separated from the taxon name by a colon. A list of abbreviations used for literature citations in the synonymies can be found in Appendix B. References forming part of a synonymy are not included in the References unless they are also cited in the text. Where type specimens (i.e., holotypes, lectotypes, neotypes) are known, I provide the institutional abbreviation (explained in Appendix C) and catalog number for the type specimens. Type localities in quotation marks are given as originally published, with additional or clarifying information provided afterward. Additions may be included in brackets within quotes, but I generally attempted to avoid this except when filling out abbreviations in the original. The distribution of type localities is provided in Appendix D. Additional useful information on type specimens of eulipotyphlans can be found in Sanborn (1947), Jones and Genoways (1969), Youngman (1973), Koopman (1976), Baranova et al. (1981), Hafner (1993), Lawrence (1993), Helgen and McFadden (2001), Turni et al. (2007), Fisher and Ludwig (2015), and similar published catalogs.

Date of publication can be critical to determining the priority of a particular taxonomic name, but printed dates on journals and books often do not accurately reflect their public availability (e.g., Duncan, 1937; Woodman, 2010, 2013, 2017). I attempted to provide the most accurate date that I could determine for publications in which new taxa are described. Meisel (1924–1929) is particularly useful for determining correct dates of publication for some older North American publications.

EARLY NAMES FOR NORTH AMERICAN EULIPOTYPHLANS

The first comprehensive systematic accounting of the terrestrial vertebrates of the New World by an American natural historian was published anonymously by the Philadelphia naturalist George Ord in the second volume of the 1815 American edition of “*Guthrie’s Geography*” (Guthrie, 1815; Woodman, 2013). At that time, Ord (1815) recognized two species of moles and six species of shrews (Soricidae) inhabiting the Western Hemisphere (Figure 1). Prior to that time, lists of New World vertebrates were generally limited to regional faunas (e.g., Hernandez, 1651; Pennant, 1784) or were enveloped within more comprehensive systematic treatises (e.g., Seba, 1734; Schreber, 1778). One exception is Forster’s (1771) *A Catalogue of the Animals of North America*, for which the mammals were derived from Pennant’s (1771) *Synopsis of Quadrupeds*, but Forster’s list is an incomplete representation even of the latter work.

Ord’s (1815) list appeared in an era when the community of naturalists in North America was just beginning to reach the

critical mass necessary to organize scientific societies, found journals, and transition individual cabinets of curiosities into scientifically useful collections. Early American naturalists were anxious to earn the respect of their European counterparts, but they had the added onus of establishing that the local fauna and flora were worthy of serious study (Semonin, 2000). Buffon’s (1761) theory of New World degeneracy had argued that the inferior climate and soils of the New World resulted in a depleted American biota of plants, animals, and humans that were smaller, less vigorous, less fertile versions of Old World species. Although Buffon (1780) later repudiated his theory, its effects lingered, as did notions of a shared, if impoverished, European fauna in the Americas. Partly for this reason, early lists of American mammals often include European species (Ord, 1815; Harlan, 1825). At the same time, new species unique to the New World were being noticed. Efforts to document diversity here and elsewhere were hampered by the dearth of adequate libraries, the paucity of publication outlets, the slow speed of communication, and the lack of widely accepted standards for naming and classifying taxa. Many species were described on the basis of published accounts and/or images provided by explorers and travelers, the describer never having seen the animal either alive or as a specimen. It was not uncommon for the same traveler’s account to be used by as the basis for multiple new species by different authors.

Ultimately, not all new species names maintained currency, and a number no longer appear in standard synonymies, making it difficult to trace their origins or understand their historical or biological context. To assist with understanding early names potentially referring to eulipotyphlans, I compiled the following alphabetical listing of taxonomic names that may be encountered in the early literature. The following accounts also provide an object lesson regarding the value of requiring a physical holotype for describing a new species or subspecies and the continuing usefulness of preserving type specimens.

Blarina pyrrhonota Jentinck, 1910.

1888. *Blarina pyrrhonota* Jentinck, *Catalogue systématique des mammifères*, p. 131 (*nomen nudum*).

1910. *Blarina pyrrhonota* Jentinck, *Notes from the Leyden Museum* 32:167.

1925. *Cryptotis pyrrhonota*: Cabrera, *Gen. Mamm. Insect. Galeop.*, p. 135; 29 November. Incorrect subsequent spelling of *Blarina pyrrhonota* Jentinck, 1910.

1958. *Cryptotis surinamensis*: Cabrera, *Rev. Mus. Argentino* 4(1):47 (not *Sorex surinamensis* Gmelin, 1788).

1963. *Sorex araneus*: Husson, *Studies on the Fauna of Suriname and Other Guyanas* 5(13):336; January.

Type Locality: “Suriname.”

Comments: The name *Blarina pyrrhonota* first appeared in the published catalog of the Muséum d’Histoire Naturelle des Pays-Bas (Jentinck, 1888:131), in which a specimen is listed as the type of the species. The species was not described, however, relegating the name to the status of *nomen*

nudum. The name was subsequently made available when Jentink (1910) formally described *B. pyrrhonota*. Cabrera (1958:47) treated the name as a junior synonym of *Sorex surinamensis* Gmelin, 1788, which he referred to the genus *Cryptotis*. After study of the holotype and its history, Husson (1963) concluded that the holotype of *B. pyrrhonota* is a common European shrew, *Sorex araneus* Linnaeus, 1758, that was mislabeled as to its origin.

Condylura fissipes

1815. *Condylura fissipes*: Illiger, *Abhand. Physik. Klasse*, p. 70.

1821. [*Talpasorex*] *fissipes*: Schinz, *Das Tierreich*, p. 191.

1821. [*Talpa*] *fissipes*: Schinz, *Das Tierreich*, p. 191.

1821. *Codylura fissipes*: Schinz, *Das Tierreich*, p. 191.

Comments: The origin of the name *Condylura fissipes* remains obscure; neither True (1896) nor Jackson (1915) could determine its author. The earliest mention that I discovered was Illiger (1815:70), who included the name *C. fissipes* (but lacking description or synonymy) in his list of mammal species indigenous to North America. The name is lacking from an earlier taxonomic classification (Illiger, 1811:125–126), indicating it came to his attention between 1811 and 1815. Schinz (1821:191) and Minding (1829:64) referred the taxon to the genus *Talpasorex*, and the name has generally been treated as a junior synonym of *Condylura cristata* (Linnaeus, 1758). If the name proves to be other than a *nomen nudum*, however, it is more likely to refer to one of the other species of northeastern North American moles.

Musaraneus brasiliensis

(see *Sorex americanus*)

Sorex americanus Müller, 1776

1648. *Mus araneus* Marcgrave, in Piso, *Historia Naturalis Brasiliae*, p. 229 (pre-Linnaean work).

1756. *Musaraneus brasiliensis* Brisson, *Regnum animale*, p. 180 (pre-Linnaean work).

1762. *Musaraneus brasiliensis* Brisson, *Regnum animale*, p. 127 (excluded work).

1776. *Sorex americanus* Müller, *Voll. Natursyst. Suppl.*, p. 36.

1777. [*Sorex*] *brasiliensis*: Erxleben, *Syst. Reg. Anim.*, p. 127.

1777. *Sorex Brasiliensis*: Zimmermann, *Spec. Zool. Geog.*, p. 502.

Type Locality: “Brasilien.” Thomas (1911:124) noted that Marcgrave stayed at Moritzstadt (Mauritsstad, Stadt Mauritius, or Cidade Maurícia; now Recife) in the state of Pernambuco most of the time he was in Brazil (1640–1644), and this should be taken as the central locality for most of his specimens.

Comments: *Sorex americanus* was based on the “Musaraigne du Bresil” of Buffon (1767:160) and the “Brasiliaansche Spitsmuis” of Boddaert (1772:52), which in turn were based on the earlier description of what Marcgrave (1648:229)

called *Mus araneus*. This name is of interest because *Mus araneus* (“spider mouse”) is a classical Latin term for “shrew,” and it is clear from later authors’ referral of the animal to the genus *Sorex* that they considered it a soricid. *Musaraneus brasiliensis*, however, was an animal from Brazil, where soricids are not known to occur. Marcgrave’s (1648) original description is now recognized as referring to the South American didelphid marsupial, *Monodelphis americana* (Müller, 1776). For the complete synonymy for that species, see Pine and Handley (2008).

Sorex avellanarum É. Geoffroy Saint-Hilaire, 1803

FIGURE 3

1734. *Glis, seu Mus avellanarum* Seba, *Thesaurus*, vol. 1, p. 50, tab. 31: fig. 7 (pre-Linnaean work).

1803. *Sorex avellanarum* É. Geoffroy Saint-Hilaire, *Cat. Mamm. Mus. Natl. Hist. Nat.*, p. 74.

Holotype: “No. CLXVI. Cet individu très-précieux est conservé dans la liqueur; il a été donné par M. Van-Marum, qui l’avait acquis à la vente du cabinet de Meyer: c’est sans doute l’original de la figure qu’en a donnée Seba” (No. CLXVI. This very precious individual is preserved in fluid; it was donated by M. Van-Marum, who had acquired it at the sale of Meyer’s cabinet; it is doubtless the original of the figure given by Seba).

Type Locality: “L’Amérique, selon Seba.”

Comments: É. Geoffroy Saint-Hilaire (1803) named “la musaraigne blanche” (the white shrew) based on Seba’s (1734:50) description and illustration (Figure 3) of *Glis, seu Mus Avellanarum* (*Glis* or *Mus Avellanarum*) and a specimen in the Muséum National d’Histoire Naturelle of Paris upon which Geoffroy Saint-Hilaire thought Seba had based his account. The illustration shows a somewhat stocky animal with relatively large (for a soricine) ears and eyes and a robust, tapering tail that, in overall appearance, looks very much like a very pale, leucistic, or albinistic crocidurine shrew. If so, it could not be from the New World. The Latin name *Mus avellanarum* was earlier applied to certain dormice (Gliridae: Gesner, 1560:115; Ray, 1693:219), particularly the hazel dormouse, *Muscardinus avellanarius* (Linnaeus, 1758:62).

Sorex cerulescens Rafinesque, 1818

1818. *Sorex cerulescens* Rafinesque, *Am. Month. Mag.* 3:446.

Type Locality: USA: “The western states” [Kentucky].

Comments: The “bluish shrew mouse” is one of 10 species of mammals (and 20 other animals) that were invented by John James Audubon and described to Constantine S. Rafinesque as a prank during the latter’s visit to Audubon’s home in Henderson, Kentucky, in 1818. Unfortunately, Rafinesque naively took Audubon at his word and subsequently described the faux animals as new species (Woodman, 2016).



FIGURE 3. *Sorex avellanarum* É. Geoffroy-Saint-Hilaire, 1803, from Seba (1734: pl. 31, fig. 7). Image courtesy of Biodiversity Heritage Library (<https://www.biodiversitylibrary.org/>), contributed by Smithsonian Institution Libraries, Washington.

***Sorex constrictus* Hermann, 1780.**

1780. *Sorex constrictus* Hermann, in Zimmermann, *Geog. Gesch. Mensch. Vierf. Thiere* 2:383.

Comments: *Sorex constrictus* is a junior synonym of the western European and north African species *Sorex russula* Hermann, 1780 (see Hutterer, 2005). On the basis of a specimen (PM 895) in Peale's Philadelphia Museum that had been obtained near Philadelphia, Harlan (1825) indicated that *S. constrictus* occurred in North America as well as in Europe. Unfortunately, no Philadelphia Museum specimens of mammals are known to have survived (Woodman, 2009), so it is now impossible to know the true identity of the animal.

***Sorex dichrurus* Rafinesque, 1833**

1833. *Sorex dichrurus* Rafinesque, *Atlantic J.* 1(6):175, summer.
1840. *Sorex dicrurus* Rafinesque, *The Good Book and Amenities of Nature*, p. 68. Incorrect subsequent spelling of *Sorex dichrurus* Rafinesque, 1833.

Holotype: A specimen, now probably lost, then in the Niagara Falls Museum (Woodman, 2012b).

Type Locality: USA: "the falls of Niagara; . . . Goat Island in the middle of the falls," Niagara Co., New York.

Remarks: This "shrew" is a misidentified meadow jumping mouse, *Dipus hudsonius* Zimmermann, 1780:358 (= *Zapus hudsonius*) (Woodman, 2012b).

***Sorex exilis* Gmelin, 1788**

1788. [*Sorex*] *exilis* Gmelin, *Systema Naturae*, 13th ed., p. 115.

Type Locality: Russia: "Sibiria, ad fluvium Jenisei" (Siberia, at the Yenisei River).

Comments: A junior synonym of the Eurasian pygmy shrew, *Sorex minutus* Linnaeus, 1766, Ord (1815) listed *S. exilis* as part of the North America vertebrate fauna.

***Sorex fimbripes* Bachman, 1837**

FIGURE 4

1837. *Sorex fimbripes* Bachman, *J. Acad. Nat. Sci. Phila.* 7(2):391.
1863. *Neosorex*(?) *fimbripes*: Verrill, *Proc. Boston Soc. Nat. Hist.* 9:167; February.
1868. *Crossopus fimbripes*: Fitzinger, *Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.* 57(1):631.
1868. *Crocidura fimbripes*: Fitzinger, *Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.* 57(1):631 (in synonymy).
1868. *Croscopus*? *fimbripes*: Fitzinger, *Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.* 57(1):632 (in synonymy).
1877. *Sorex fimbriata* Holder et al., *Hist. Am. Fauna*, vol. 3, p. xxxii. Incorrect subsequent spelling of *Sorex fimbripes* Bachman, 1837.
1877. *Sorex fimbriata* Richardson et al., *Mus. Nat. Hist.*, vol. 3, p. xxxii. Incorrect subsequent spelling of *Sorex fimbripes* Bachman, 1837.
1930. *Sorex palustris fimbriata*: Green, *Contr. Mamm. N. Mtn. Reg.*, p. 11 (31 March).

Holotype: None known to exist. Baird (1861:55–56) stated that he inspected "the type of *fimbripes*" in the Academy of Natural Sciences of Philadelphia (ANSP) in 1861. Unfortunately, any such specimen of *S. fimbripes* no longer exists there (Ned Gilmore, Academy of Natural Sciences of Drexel University, Philadelphia, email communication,

14 February 2018; see also Koopman, 1976). Lyon and Osgood (1909:243) reported the supposed rediscovery of the “type” of *S. fimbripes* (USNM 84556) in the collection of the National Museum of Natural History, Washington, D.C. (see also Poole and Schantz, “1942:185; Fisher and Ludwig, 2015:43). However, the only information associated with this specimen was an old label of unknown original bearing the handwritten words “*Sorex fimbripes*. Type.” Although it is possible that Bachman’s original holotype was returned to ANSP, from which it was subsequently loaned to Baird at the USNM, there is no known correspondence or other record that supports this scenario. Hollister (1911:381) subsequently identified USNM 84556 as *Sorex fumeus* Miller, 1895, an identification with which I concur. He discounted that this specimen was the holotype, as it did not, in his estimation, match Bachman’s (1837) description. Hollister (1911) further noted that in the time of Baird, the word *type* could simply refer to an *example* of a species, and Baird (1857) himself did not designate holotypes. Moreover, my comparison of external measurements of USNM 84556 with those reported by Bachman (1837) for the holotype and Baird (1861) for the ANSP “type” suggests that none are from the same specimen. It seems more likely that the “types” of *S. fimbripes* in both ANSP and USNM were simply the examples each institution had of that species. The holotype was probably destroyed during the American Civil War.

Type Locality: USA: “high table-land on a branch of Drury’s Run, a tributary of the west branch of the Susquehannah river,” Clinton County, Pennsylvania.

Remarks: John Bachman described *S. fimbripes* from a specimen sent to him from the ANSP. Bachman’s (1837:393) characterization of the “fringe-footed shrew” as having feet whose “edges on the lower surface are fringed considerably” and fore feet that bear “some resemblance to the fins of a turtle” strongly suggests the animal was a water shrew (*Sorex palustris* group). This impression is further substantiated by Bachman’s statement that the species bore some resemblance to “the Genus *Mygale* of Cuvier,” an aquatic desman (*Mygale* Cuvier, 1800 = *Desmana* G黚lenstaedt, 1777). However, Bachman’s (1837:392, pl. 24, fig.8) description also stated that the body of *S. fimbripes* was “a little less in size than that of Forster’s Shrew,” *Sorex forsteri* Richardson, 1828 (= *S. cinereus* Kerr, 1792), much too small for any known species of North American semi-aquatic shrew, and his illustration of the animal suggests a small-sized terrestrial species (Figure 4). Since then, *Sorex fimbripes* has been treated variably as a species of semi-aquatic shrew (Pomel, 1848; Baird, 1857; Fitzinger, 1858); a species of ambulatory shrew (Baird, 1861); an eastern subspecies of the water shrew, *Sorex palustris* Richardson, 1828 (Green, 1930); a synonym of *S. personatus* I. Geoffroy Saint-Hilaire, 1827 (= *S. cinereus* Kerr, 1792) (Miller,

1895); a synonym of *S. c. cinereus* Kerr, 1792 (Jackson, 1928; Hall, 1981; Hutterer, 2005); and entirely unidentifiable (Hollister, 1911; Handley and Varn, 1994). Lacking a clear holotype, the last option is the most appropriate for this species.

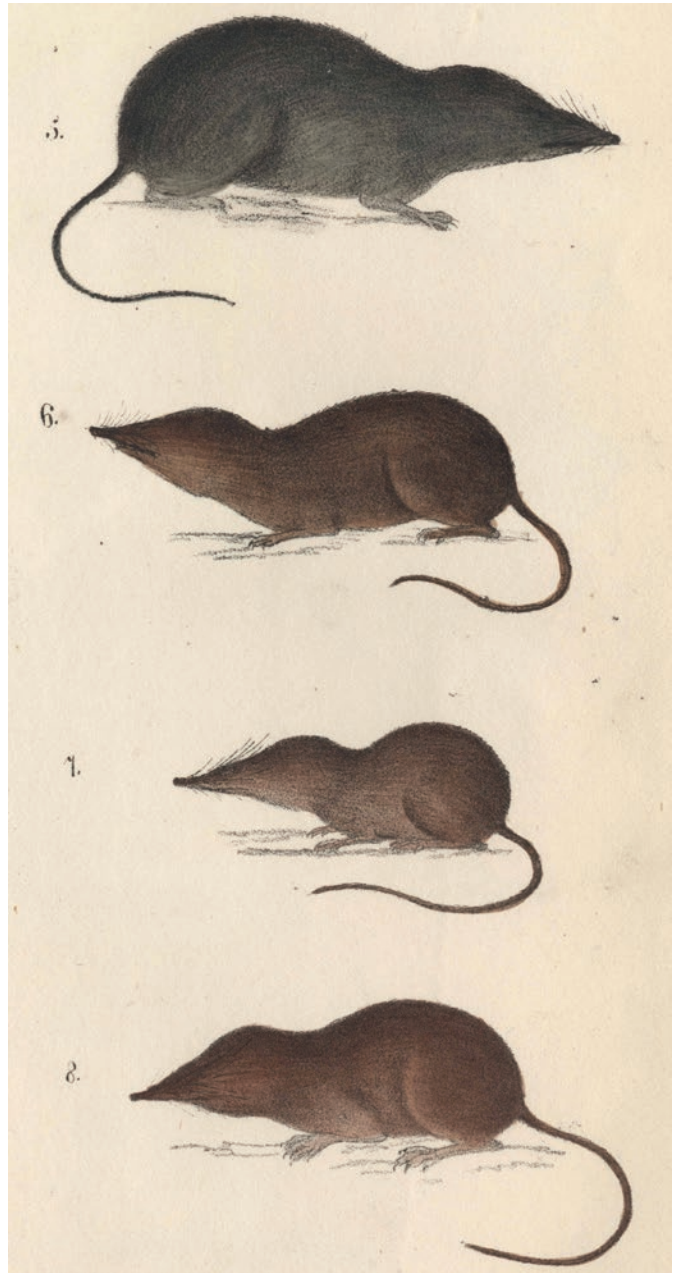


FIGURE 4. John Bachman’s (1837) shrews: from top to bottom, *Sorex richardsonii* Bachman, 1837 (= *Sorex arcticus* Kerr, 1792); *Sorex forsteri* Richardson, 1828 (= *Sorex cinereus* Kerr, 1792); *Sorex cooperi* Bachman, 1837 (= *Sorex cinereus* Kerr, 1792); *Sorex fimbripes* Bachman, 1837. Image from Bachman (1837: pl. 24).

Sorex melanotis Rafinesque, 1818

FIGURE 5

1818. *Sorex melanotis* Rafinesque, *Am. Month. Mag.* 3:446.

Type Locality: USA: “The western states.” [Kentucky].

Comments: The “black-eared shrew” or “corn mouse” is a species that was invented by John James Audubon and described to Constantine S. Rafinesque as a prank during the latter’s 1818 visit to Audubon’s home in Henderson, Kentucky. Unfortunately, the naïve Rafinesque took Audubon at his word and described the animal as new species (Woodman, 2016).

Sorex mexicanus Kerr, 17921792. *Sorex mexicanus* Kerr, *Animal Kingdom*, p. 207.

Type Locality: “Mexico and New Spain.”

Comments: Ord (1815) included the “Mexican shrew,” *Sorex mexicanus*, in his comprehensive listing of the North American terrestrial vertebrate fauna on the basis of Turton (1802:72). Turton probably based his description on the work of Kerr (1792), who referenced the “Mexican shrew” of Pennant (1771:309), an account by Buffon (1767:159), and the original account of the “tucan” by Hernandez (1651: book 1, tract 1, p. 7, chapter XXIV). Hernandez considered the animal to be a kind of mole, and Buffon thought it might be the same as Seba’s (1734) “red mole.” More likely, as noted by Rhoads (1894a, 1894b: Appendix, p. 15), the species described by Hernandez was a pocket gopher (Geomyidae). Alfred L. Gardner (U. S. Geological Survey, Biological Survey Unit, personal communication,

16 October 2017) pointed out that “tucan” is likely a variant or misunderstanding of *tuza*, a local common name for the pocket gopher in much of Mexico and Central America. Lichtenstein (1830:113) thought “tucan” derived from “der entstellte spanische des Maulwurfs Tuçe oder Toço” (the distorted Spanish for the mole, *Tuçe* or *Toço*). There may be an additional etymological connection to *tuco-tuco*, a local common name for a southern South American burrowing rodent (Ctenomyidae: *Ctenomys* Blainville, 1826).

Sorex surinamensis Gmelin, 17881788. [*Sorex*] *surinamensis* Gmelin, *Systema Naturae*, 13th ed., p. 114.1868. *Crocidura surinamensis*: Fitzinger, *Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.* 57(1):633 (in synonymy).1888. *Didelphys brevicaudata*: Thomas, *Cat. Marsup. Monotrem.*, p. 357.1919. *Peramys brevicaudatus*: Cabrera, *Gen. Mamm. Monot. Marsup.*, p. 42.1958. *Cryptotis surinamensis*: Cabrera, *Rev. Mus. Argentino* 4(1):47.

Type Locality: “Suriname.”

Comments: Relying on Gmelin’s (1788) description, Thomas (1888:357) and Cabrera (1919:42) believed that *Sorex surinamensis* represented the didelphid mouse opossum, *Monodelphis brevicaudata* (Erxleben, 1777). In contrast, Tate (1932:223) thought Gmelin’s description could “apply only to a shrew,” but “the description is too general for specific recognition to be possible.” He entertained the possibility that *S. surinamensis* and *Blarina pyrrhonota* Jentink, 1910 were based on the same specimen because both were thought to be shrews found in Suriname, although he also cast doubt on their provenances. Cabrera (1958) also subsequently treated *S. surinamensis* as a shrew. Husson (1963:35) was



FIGURE 5. Pen-over-pencil sketch of the “black-eared shrew” or “corn mouse,” *Sorex melanotis* Rafinesque, 1818b from Rafinesque’s field notebook 17. Image SIA 2012-6096, courtesy of Smithsonian Institution Archives, Washington, D.C.

the first to study the holotype of *B. pyrrhonota* since Jentink (1910) described the species, and he wrote that there is no evidence supporting the supposition that the holotype of *B. pyrrhonota* is also the holotype of *S. surinamensis*. The holotype of *S. surinamensis* is lost, but no species of soricids are known from Suriname, and the description is almost certainly that of a mouse opossum.

Talpa rubra Erxleben, 1777

FIGURE 6

1734. *Talpa, rubra, Americana* Seba, *Thesaurus*, vol. 1, tab. XXXII, no. 2 (pre-Linnaean work).

1777. [*Talpa*] *rubra* Erxleben, *Syst. Reg. Anim.*, p. 119.

1800. *Talpa rufa* Shaw, *Gen. Zool.* 1(2):522 (replacement name for *Talpa rubra* Erxleben, 1777).

1820. *Chrysochloris rufa*: Desmarest, *Mammalogie* 1:156.

Type Locality: “America.”

Comments: Ord (1815) included *Talpa rubra* in his list of North American terrestrial vertebrates. *Talpa rubra* Erxleben, 1777 is based on the “red mole” of Pennant (1771:315) and “Roode Mol” of Boddaert (1772:51). It originated in the *Talpa, rubra, Americana* of Seba (1734), which was described as having three toes on the fore feet and four toes on

the hind feet (Figure 6). Buffon (1767) conflated this with Hernandez’s (1651) “tucan” (see *Sorex mexicanus* Kerr, 1792); hence, it may also be based partly on the description of a geomyid (Rhoads, 1894a, 1894b). *Talpa rubra* was justifiably considered unidentifiable by Rhoads (1894b).

RECENT AMERICAN EULIPOTYPHILA

ORDER EULIPOTYPHILA WADDELL, OKADA, AND HASEGAWA, 1999

1999. EULIPOTYPHILA Waddell, Okada, and Hasegawa, *Syst. Biol.* 48(1):1–5; March.

FAMILY NESOPHONTIDAE ANTHONY, 1916

1916. NESOPHONTIDAE Anthony, *Bull. Am. Mus. Nat. Hist.* 35:728; 16 November.

Genus *Nesophontes* Anthony, 1916

1916. *Nesophontes* Anthony, *Bull. Am. Mus. Nat. Hist.* 35:725; 16 November.

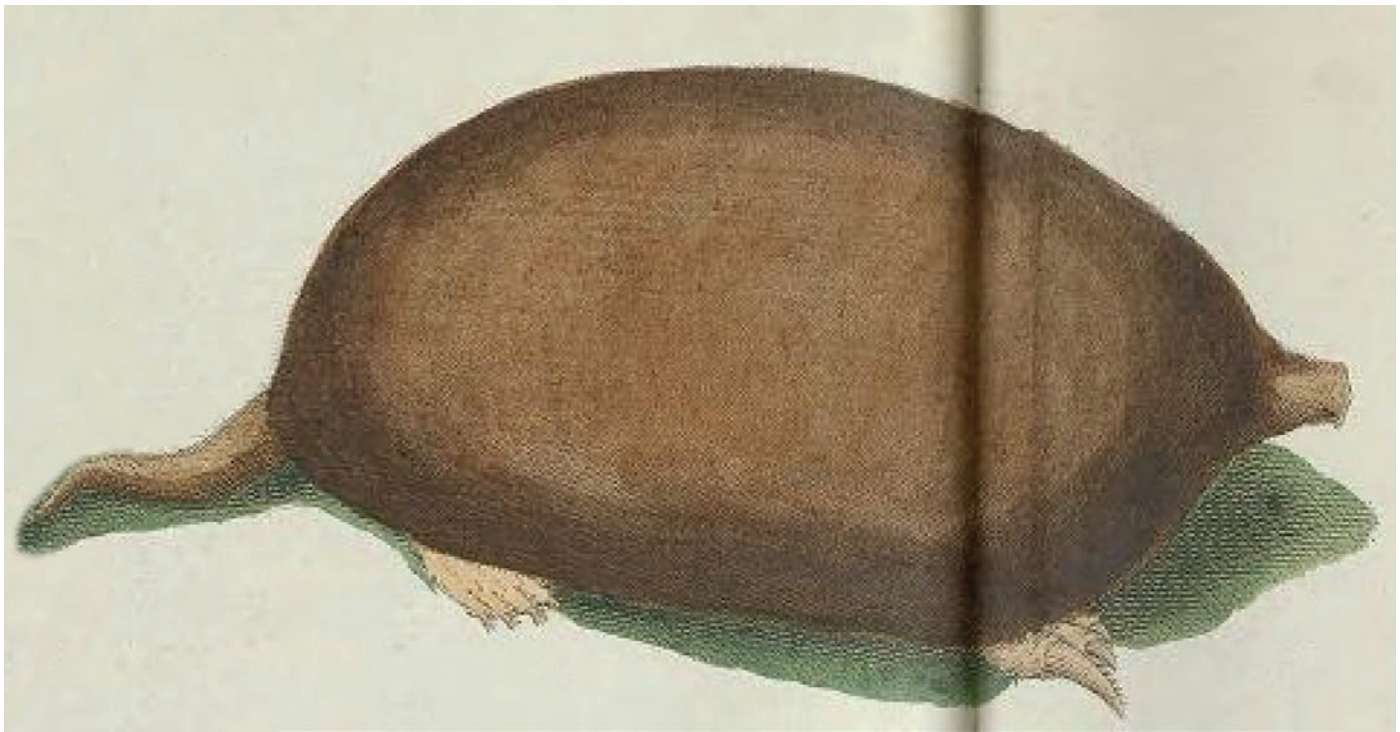


FIGURE 6. The “red mole,” Seba’s (1734: pl. 32, fig. 2) *Talpa, rubra, Americana*. Image courtesy of Biodiversity Heritage Library (<https://www.biodiversitylibrary.org/>), contributed by Smithsonian Institution Libraries, Washington, D.C.

Type Species: *Nesophontes edithae* Anthony, 1916 (by original designation).

Remarks: The genus *Nesophontes* includes six described species and possibly two undescribed species (one from Grand Cayman, the other from Cayman Brac; Morgan, 1994; MacPhee et al., 1999). Known primarily from skeletal remains, these species are all extinct, although stratigraphic associations with introduced exotic species and evidence from radiocarbon dating indicate that at least four species (*Nesophontes hypomicrus*, *N. micrus*, *N. paramicrus*, *N. zamiricus*) survived into post-Columbian time (Miller, 1929, 1930; MacPhee et al., 1999; Brace et al., 2016). The genus was reviewed by Hall (1981) and the Cuban species were revised by Condis Fernández et al. (2005).

***Nesophontes edithae* Anthony, 1916**

1916. *Nesophontes edithae* Anthony, *Bull. Am. Mus. Nat. Hist.* 35:725; 16 November.

Holotype: AMNH VP 14174.

Type Locality: Puerto Rico: “Cueva Catedral, near Morovis, Porto Rico.”

Distribution: Puerto Rico, Vieques, St. Johns, St. Thomas (MacPhee et al., 1999).

Remarks: This is the type species of the genus *Nesophontes* Anthony, 1916. *Nesophontes edithae* is extinct and known only from skeletal remains.

***Nesophontes hypomicrus* Miller, 1929**

1929. *Nesophontes hypomicrus* Miller, *Smithson. Misc. Coll.* 81(9):4; 30 March.

Holotype: USNM PAL 367223 (previously USNM 253077).

Type Locality: Haiti: “the deep cave near the Atalaye plantation, Haiti.” Miller and Kellogg (1955:53) amended the type locality to “cave near Atalaye plantation, about 4 miles east of St. Michel.”

Distribution: Hispaniola and Gonâve Island (Miller, 1930; MacPhee et al., 1999).

Remarks: *Nesophontes hypomicrus* is extinct and known only from skeletal remains, although there is evidence the species survived into post-Columbian time. Remains of *Nesophontes hypomicrus*, *N. paramicrus*, and *N. zamiricus* were found mixed with those of the introduced rodents *Rattus rattus* and *Mus musculus* in seemingly undisturbed cave sediments on Haiti (Miller, 1929). Bones of these three species of *Nesophontes*, together with those of *R. rattus*, were also discovered in a dried mass of partly disintegrated owl pellets in a shelter on the north flank of Monte Culo de Maco, about 10 km southwest of Constanza, Dominican Republic (Miller, 1930). A skull of *N. hypomicrus* from Cueva de Bosque Humedo, Dominican Republic, was accelerator mass spectrometry (AMS) radiocarbon dated to 734 ± 24

calendar years before present (cal ybp; circa AD 1247–1294; Brace et al., 2016).

***Nesophontes major* Arredondo, 1970**

1970. *Nesophontes major* Arredondo, *Mem. Soc. Cienc. Nat. La Salle* 30(86):126; August.

Holotype: GEC P682.

Type Locality: Cuba: “Cueva de La Santa, Bacuranao, provincia de La Habana.”

Distribution: Cuba (MacPhee et al., 1999).

Remarks: This species is extinct and is known only from skeletal remains.

***Nesophontes micrus* G. M. Allen, 1917**

1917. *Nesophontes micrus* G. M. Allen, *Bull. Mus. Comp. Zool.* 61:5; January.

1919. *Nesophontes longirostris* Anthony, *Bull. Am. Mus. Nat. Hist.* 41:633; 30 December. Holotype: AMNH VP 17626, from “a cave near the beach at Daiquiri, Cuba.”

1970. *Nesophontes submicrus* Arredondo, *Mem. Soc. Cienc. Nat. La Salle* 30(86):137; August. Holotype: GEC 740, from “Cueva de La Santa, Bacuranao, provincia de La Habana,” Cuba.

1977. *Nesophontes superstes* K. Fischer, *Zeit. Geol. Wiss.* 5(2):221; February. Holotype: MB Ma. 1967/258/1, from “Cueva de la Ventana, über der Pio Domingo-Höhle gelegen, Sumerido, Provinz Pinar del Rio,” Cuba.

Holotype: MCZ 9600.

Type Locality: Cuba: “cavern in the Sierra of Hato-Nuevo, Province of Matanzas.”

Distribution: Cuba, Hispaniola, and the Isle of Pines (MacPhee et al., 1999).

Remarks: This species is extinct and is known only from skeletal remains. Remains from Cuba dated to as late as 590 ± 50 cal ybp (circa AD 1400), indicating that it survived into the late Holocene (MacPhee et al., 1999). *Nesophontes longirostris*, *N. submicrus*, and *N. superstes* were synonymized with *N. micrus* by Condis Fernández et al. (2005).

***Nesophontes paramicrus* Miller, 1929**

1929. *Nesophontes paramicrus* Miller, *Smithson. Misc. Coll.* 81(9):3; 30 March.

Holotype: USNM PAL 367224 [previously USNM 253063].

Type Locality: Haiti: “front of large cave near St. Michel, Haiti.” Miller and Kellogg (1955:53) amended the type locality to “cave near Atalaye plantation, about 4 miles east of St. Michel.”

Distribution: Hispaniola (MacPhee et al., 1999).

Remarks: *Nesophontes paramicrus* is extinct and is known only from skeletal remains, although there is evidence it survived into post-Columbian time. Remains of this species,

N. hypomicrus, and *N. zamicrosus* were found mixed with those of the introduced rodents *Rattus rattus* and *Mus musculus* in seemingly undisturbed cave sediments on Haiti (Miller, 1929). Bones of the three species of *Nesophontes*, together with those of *R. rattus*, were also discovered in a dried mass of partly disintegrated owl pellets in a shelter on the north flank of Monte Culo de Maco, about 10 km southwest of Constanza, Dominican Republic (Miller, 1930). Remains of *N. paramicrosus* were AMS radiocarbon dated to as late as 680 ± 50 cal ybp (circa AD 1295; MacPhee et al., 1999).

***Nesophontes zamicrosus* Miller, 1929**

1929. *Nesophontes zamicrosus* Miller, *Smithson. Misc. Coll.* 81(9):7; 30 March.

Holotype: USNM PAL 367225 [previously USNM 253090].

Type Locality: Haiti: “large cave near St. Michel, Haiti.” Miller and Kellogg (1955:53) amended the type locality to “cave near Atalaye plantation, about 4 miles east of St. Michel.”

Distribution: Hispaniola (MacPhee et al., 1999).

Remarks: This species is extinct and known only from skeletal remains, although it appears to have survived into post-Columbian time. Remains of *Nesophontes hypomicrus*, *N. paramicrosus*, and *N. zamicrosus* were found mixed with those of the introduced rodents *Rattus rattus* and *Mus musculus* in seemingly undisturbed cave sediments on Haiti (Miller, 1929). Bones of the three species of *Nesophontes*, together with those of *R. rattus*, were also discovered in a dried mass of partly disintegrated owl pellets in a shelter on the north flank of Monte Culo de Maco, about 10 km southwest of Constanza, Dominican Republic (Miller, 1930).

FAMILY SOLENODONTIDAE GILL, 1872

1872. SOLENODONTINAE Gill, *Smithson. Misc. Coll.* 11(1):19; November. Proposed as a subfamily.

Genus *Solenodon* Brandt, 1833

1833. *Solenodon* Brandt, *Mém. Acad. Imp. Sci. St. Petersbourg*, ser. 6, *Sci. Math. Phys. et Nat.* 2:459, tabs. 1–2.

1925. *Atopogale* Cabrera, *Gen. Mamm. Insect. Galeop.*, p. 177; 29 November. Type species: *Solenodon cubanus* Peters, 1861, by original designation.

1962. *Antillogale* Patterson, *Breviora* 165:2; 22 August. Type species: *Antillogale marcanoi* Patterson, 1962, by original designation.

Type Species: *Solenodon paradoxus* Brandt, 1833 (by monotypy).

Remarks: The genus includes four described species, two of which are extinct. It was reviewed by Hall and Kelson (1959), Hall (1981), and Ottenwalder (2001).

***Solenodon arredondoii* Morgan and Ottenwalder, 1993**

1993. *Solenodon arredondoii* Morgan and Ottenwalder, *Ann. Carnegie Mus.* 62(2):154; 28 May.

Holotype: MNHNC 421/123.

Type Locality: Cuba: “Cueva Paredones, 3 km SW Ceiba del Agua San Antonio de los Baños, La Habana Province, Cuba.”

Distribution: Western Cuba: known only from La Habana and Pinar del Río provinces (Ottenwalder, 2001).

Remarks: *Solenodon arredondoii* is extinct. It is known only from skeletal remains that are considered to be late Pleistocene in age (Ottenwalder, 2001).

***Solenodon cubanus* Peters, 1861**

FIGURE 7

1861. *Solenodon cubanus* Peters, *Monatsb. Preuss. Akad. Wiss. Berlin* 1862:169.

1925. *Atopogale cubana*: Cabrera, *Gen. Mamm. Insect. Galeop.*, p. 177; 29 November.

1944. *Solenodon poeyanus* Barbour, *Proc. New Engl. Zool. Club* 23:6; 7 March. Holotype: MCZ 6957, from “vicinity of Nipe Bay,” northeastern Cuba.

Lectotype: ZMB 2761, designated by Turni et al. (2007).

Type Locality: Cuba: “Aguilera, am Abhänge der Sierra Maestra, zwischen Cap Maisi und Cap Cruz.”

Distribution: Southeastern Cuba.

Remarks: Peters’s (1861) original description of *Solenodon cubanus* was rather cursory. He subsequently provided a more complete account with figures (Peters, 1863). This is the type species of *Atopogale* Cabrera, 1925.

***Solenodon marcanoi* (Patterson, 1962)**

1962. *Antillogale marcanoi* Patterson, *Breviora* 165:3; 22 August.

Holotype: MCZ 7261.

Type Locality: Dominican Republic: “unnamed cave 2 kilometers SE of Rancho La Guardia, Municipio de Hondo Valle, Provincia de San Rafael.”

Distribution: Southern Hispaniola: known from La Hotte and La Selle massifs, Haiti, and Sierra de Neiba, Dominican Republic (Ottenwalder, 2001).

Remarks: This is the type species for *Antillogale* Patterson, 1962. The species is extinct, although well-preserved remains were found together with those of the introduced rodent *Rattus*, indicating that it survived into post-Columbian times (Ottenwalder, 2001).

***Solenodon paradoxus* Brandt, 1833**

FIGURE 8

Remarks: This is the type species for *Solenodon* Brandt, 1833.

Ottenwalder (2001) showed that *S. paradoxus* comprised two distinct allopatric subspecies, *S. p. paradoxus* north of the Neiba Valley and *S. p. woodi* south of that valley. This division is provisionally supported by mitogenomic data (Brandt et al., 2017). A combined morphological and molecular study by Turvey et al. (2016) purported to show a similar deep division within *S. p. woodi* that further

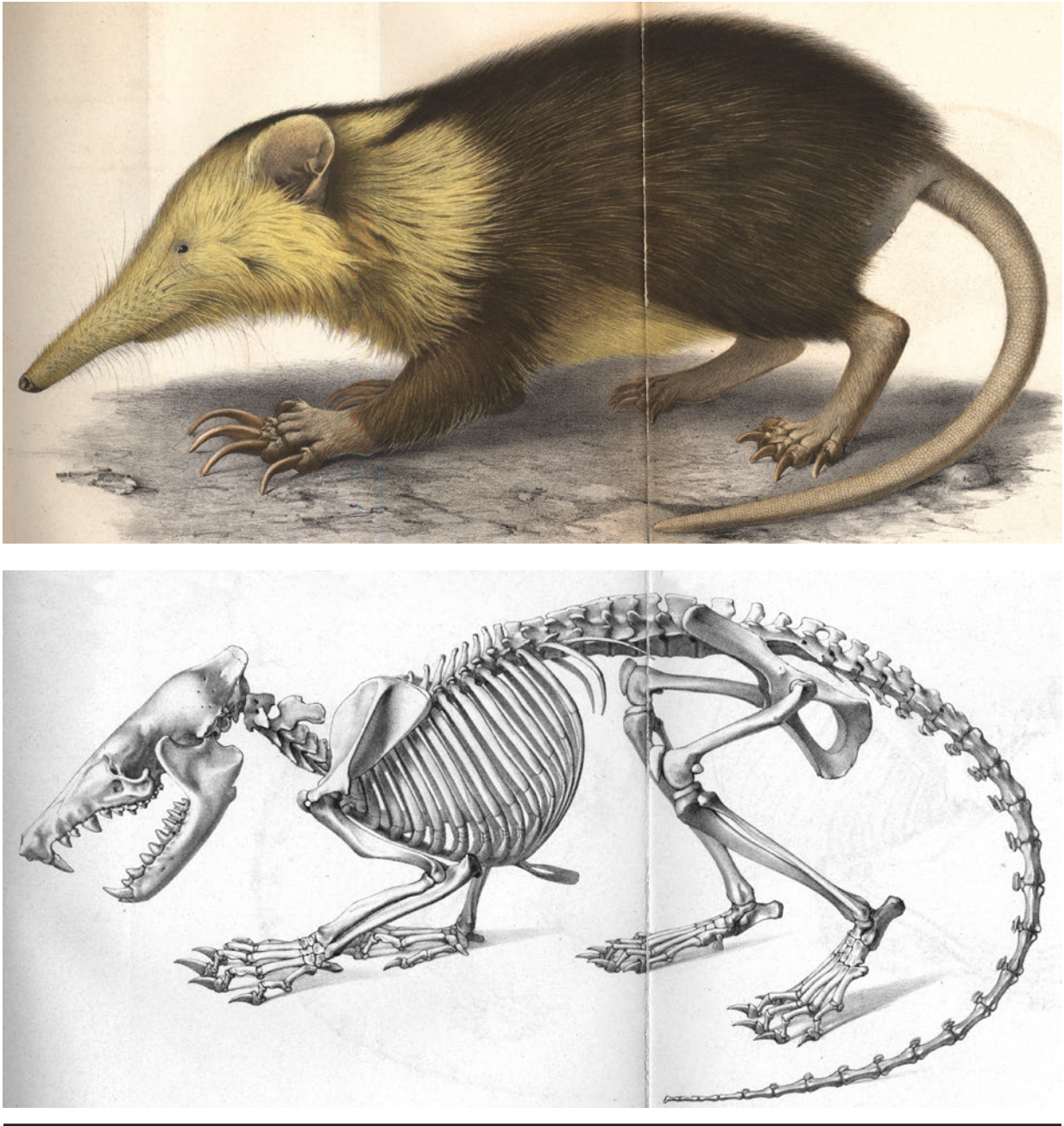


FIGURE 7. External view (top) and skeleton (bottom) of the Cuban solenodon, *Solenodon cubanus* Peters, 1861. Images from Peters (1861: pls. 1, 3).

differentiated a population restricted to La Hotte massif in southwestern Haiti. They called this population *S. p. haitiensis* but failed to publish the distinguishing morphological or molecular characters, to designate a holotype, or to otherwise describe the new taxon, rendering the name unavailable. Notwithstanding the lack of adequate methodology, it is possible that *S. p. woodi* may be divisible into two genetically distinctive populations.

Solenodon paradoxus paradoxus Brandt, 1933

FIGURE 8

1833. *Solenodon paradoxus* Brandt, *Mém. Acad. Imp. Sci. St. Petersbourg*, ser. 6, *Sci. Math. Phys. et Nat.* 2:459.

2001. *Solenodon paradoxus paradoxus*: Ottenwalder, in Woods and Sergile, *Biogeography of the West Indies*, p. 301.

Holotype: RAS 982 (Baranova et al., 1981).

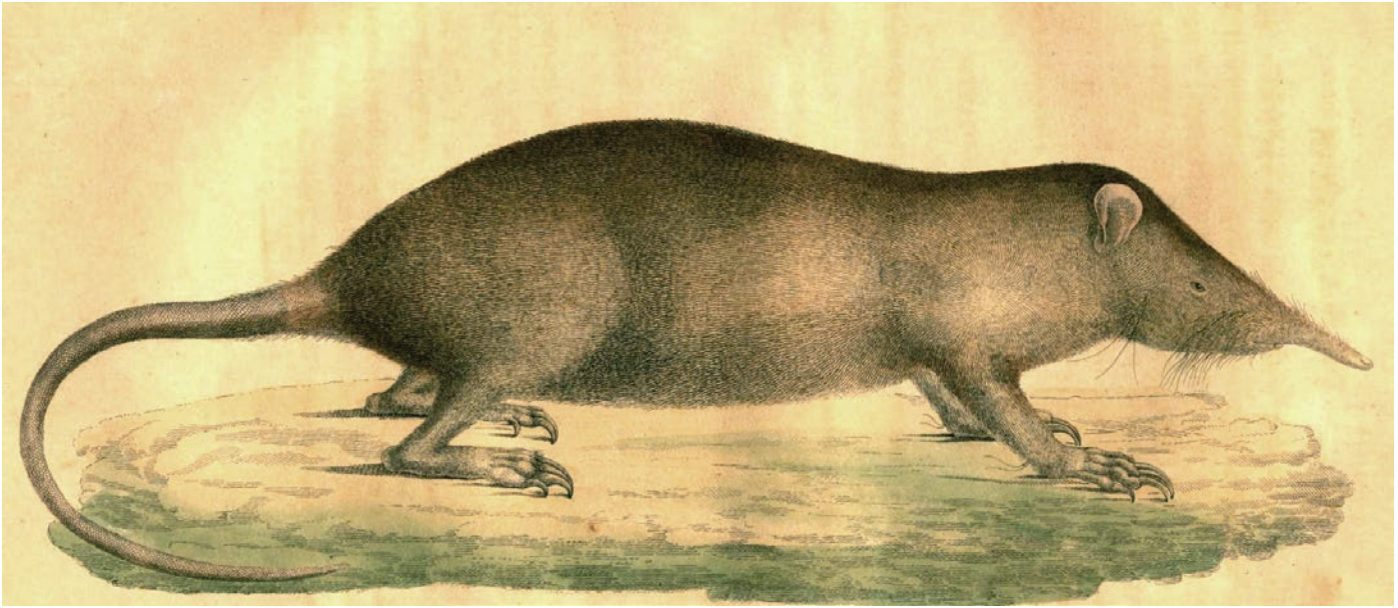


FIGURE 8. The Hispaniolan solenodon, *Solenodon paradoxus* Brandt, 1833. Image from Brandt (1833: tab. 1).

Type Locality: “Insula Hispaniola.”

Distribution: Hispaniola: populations north of the Neiba Valley (Ottewalder, 2001).

Solenodon paradoxus woodi Ottewalder, 2001

2001. *Solenodon paradoxus woodi* Ottewalder, in Woods and Sergile, *Biogeography of the West Indies*, p. 299.

2016. *Solenodon paradoxus haitiensis* Turvey et al., *Diver. Distr.* 22:597 (unavailable name).

Holotype: UF 30135.

Type Locality: Dominican Republic: “Bucan de Tuí, S. Oviedo, Península de Barahona, Provincia Pedernales.”

Distribution: Hispaniola: south of the Neiba Valley (Ottewalder, 2001; Turvey et al., 2016).

FAMILY TALPIDAE G. FISCHER, 1814

1814. TALPIDAE G. Fischer, *Zoognosia* 3:x.

Remarks: North American talpids were revised by True (1896) and Jackson (1915). On the basis of the molecular phylogenetic study by Shinohara et al. (2003), Hutterer (2005) recognized three subfamilies within the Talpidae: Scalopininae (*Condylura*, *Parascalops*, *Scalopus*, *Scapanulus*, *Scapanus*), Talpinae (*Desmana*, *Dymecodon*, *Euroscaptor*, *Galemys*, *Mogera*, *Neurotrichus*, *Parascaptor*, *Scaptochirus*, *Scaptonyx*, *Talpa*, *Urotrichus*), and Uropsilinae (*Uropsilus*). Subsequent studies have shown different arrangements of tribes and genera within the Talpidae that generally render

this concept of the Scalopininae and Talpinae polyphyletic (Schwermann and Thompson, 2015; He et al., 2016; Hooker, 2016). Because the relationships among the tribes and genera remain uncertain, I do not recognize subfamilies here.

TRIBE CONDYLURINI GILL, 1875

1875. CONDYLURAE Gill, *Synop. Insectiv. Mamm.*, p. 110; 14 May. Proposed as a suprageneric taxon of unidentified rank.

Genus *Condylura* Illiger, 1811

1811. *Condylura* Illiger, *Prodr. Syst. Mamm. Avium*, p. 125.

1821. *Talpasorex* Schinz, *Theirreich* 1:191 (not *Talpasorex* Lesson, 1827). Type species: *Sorex cristatus* Linnaeus, 1758.

1821. *Codylura* Schinz, *Theirreich* 1:191. Incorrect subsequent spelling of *Condylura* Illiger, 1811.

1825. *Astromycter* Harris, *East. Star* 2(24 or 25):??; May. Type species: *Condylura prasinata* Harris, 1825 (= *Sorex cristatus* Linnaeus, 1758). A summary notice by Benjamin Silliman in the June 1825 issue of *American Journal of Science* (Harris, 1825c) is typically cited as the original description of *Astromycter*, but Harris (1825a) published a more complete description in May.

1830. *Rhinaster* Wagler, *Natürl. Syst.* p. 14. Type species: *Sorex cristatus* Linnaeus, 1758.

1838. *Condylurus*: Blainville, *Ann. Franç. Anat. Phys.* 2:219. Unjustified emendation of *Condylura* Illiger, 1811. Proposed as a subgenus of *Talpa* Linnaeus, 1758.

1839. *Condytura* Bell, *Cyclop. Anat. Phys.* 2:994. Incorrect subsequent spelling of *Condylura* Illiger, 1811.



FIGURE 9. “La Taupe du Canada,” *Talpa canadensis* De la Faille, 1769 (= *Condylura cristata* (Linnaeus, 1758)). Image from De la Faille (1778), courtesy of the Joseph F. Cullman 3rd Library of Natural History, Smithsonian Institution Libraries.

1843. *Astromyctes* Gray, *Spec. Mamm. Brit. Mus.*, p. 76. Incorrect subsequent spelling of *Astromycter* Harris, 1825.
1863. *Astromydes* Blyth, *Cat. Mamm. Asia. Soc. Mus.*, p. 87. Incorrect subsequent spelling of *Astromycter* Harris, 1825.
1913. *Condylus* Van Hyning, *Science* 38(972):243; 15 August. Incorrect subsequent spelling of *Condylura* Illiger, 1811.

Type Species: *Sorex cristatus* Linnaeus, 1758. Illiger (1811) included two species in his new genus *Condylura*: *Sorex cristatus* Linnaeus, 1758 and *Talpa longicaudata* Erxleben, 1777 (= *Scalops breweri* Bachman, 1841).

Remarks: *Condylura* was revised by True (1896) and Jackson (1915). It was reviewed by Hall and Kelson (1959), Petersen and Yates (1980), and Hall (1981). Sansalone et al. (2016b) reviewed fossil *Condylura*, including a middle Miocene specimen from Kazakhstan that supports a Eurasian, rather than North American, origin for the genus. The genus has also been recorded from the Plio-Pleistocene of Poland (Skoczeń, 1993; Sansalone et al., 2016a).

Condylura cristata (Linnaeus, 1758)

FIGURES 9, 10

Remarks: This is the type species for the genus *Condylura* Illiger, 1811.

Condylura cristata cristata (Linnaeus, 1758)

1758. [*Sorex*] *cristatus* Linnaeus, *Systema Naturae*, 10th ed., 1:53.
1769. *Talpa Canadensis* De la Faille, *Essai Hist. Nat. Taupe*, p. 40, pl. 1. Holotype: a dried specimen (probably no longer extant) in De la Faille's collection, obtained from M. Dabbadie, governor of Louisiana from “Canada.”
1777. *Talpa Cristata*: Zimmermann, *Spec. Zool. Geog.*, p. 496.
1800. *Talpa radiata* Shaw, *Gen. Zool.* 1(2):523; based on Pennant's (1771) radiated mole and *Sorex cristatus* Linnaeus, 1758.
1800. *Sorex radiatus* Shaw, *Gen. Zool.* 1(2):531; based on the description and figure of *Talpa canadensis* De La Faille, 1778 from Canada (Figure 9).
1803. *Scalopus cristatus*: É. Geoffroy Saint-Hilaire, *Cat. Mamm. Mus. Natl. Hist. Nat.*, p. 77.
1814. [*Scalops*] *cristatus*: G. Fischer, *Zoognosia* 3:156.
1819. *Condylura cristata*: Desmarest, *J. Phys. Chim. Hist. Nat. Arts* 89:230, pl. 2; September (first use of current name combination for the species).
1821. [*Talpa*] *cristata*: Schinz, *Thierreich* 1:191.
1821. *Talpa flava*: Schinz, *Thierreich* 1:191. Part; not *Talpa flava* Zimmermann, 1777 = *Sorex aquaticus* Linnaeus, 1758 (= *Scalopus aquaticus*).
1821. [*Talpa*] *purpurascens*: Schinz, *Thierreich* 1:191. Part; not *Talpa purpurascens* Shaw, 1800 = *Sorex aquaticus* Linnaeus, 1758 = *Scalopus aquaticus*.
1825. *Condylura macroura* Harlan, *Fauna Am.*, p. 39. Holotype: PM 866 (lost or destroyed: Woodman, 2009), from “the United States, abound in New Jersey.”



FIGURE 10. *Condylura macroura* Harlan, 1825 (= *Condylura cristata* (Linnaeus, 1758)). Image from Wagner (1855: pl. 156A), courtesy of Biodiversity Heritage Library (<https://www.biodiversitylibrary.org/>), contributed by Ernst Mayer Library, Harvard University, Cambridge.

1825. *Astromycter prasinatus*: Harris, *East. Star* 2(24 or 25):??; May. Type locality: "Machias, in the state of Maine." A summary notice by Benjamin Silliman in the *American Journal of Science* for June 1825 (Harris, 1825c) is typically cited as the original description of Harris' green mole, but Harris (1825a, 1825b) published more complete descriptions under the names *Astromycter prasinatus* and *Condylura prasinata*, respectively, in May 1825.

1825. [*Condylura*] *prasinata* Harris, *Boston J. Philos. Arts* 2(6):582; May.

1832. *astromycter prarinatus* Rafinesque, *Atlantic J.* 1:61; summer. Incorrect subsequent spelling of *Astromycter prasinatus* Harris, 1825.

1839. *Condytura cristata*: Bell, *Cyclop. Anat. Phys.* 2:994.

1841. *Rh[inaster]. cristatus*: Wagner, *Die Säugthiere Suppl.* 2:114.

1841. *Rh[inaster]. macrurus* Wagner, *Die Säugthiere Suppl.* 2:115. Incorrect subsequent spelling of *C. macroura* Harlan, 1825.

1841. *Rh[inaster]. macroura*: Wagner, *Die Säugthiere Suppl.* 2:117.

1841. *Condylura macrura* Wagner, *Die Säugthiere Suppl.* 2: pl. 156A. Incorrect subsequent spelling of *C. macroura* Harlan, 1825.

1863. *Astromydes cristatus*: Blyth, *Cat. Mamm. Asia. Soc. Mus.*, p. 87.

1863. *Condylura Christata* Gilpin, *Proc. Trans. Nova Scot. Inst. Nat. Sci.* 1(2):4. Incorrect subsequent spelling of *Sorex cristatus* Linnaeus, 1758 (= *Condylura cristata*).

1913. *Condylus cristata*: Van Hyning, *Science* 38(972):243; 15 August.

1940. *Condylura cristata nigra* R. W. Smith, *Am. Midl. Nat.* 24(1):218; 31 July. Holotype: MVZ 86603, from "Wolfville, Kings County, Nova Scotia," Canada.

1940. *Condylura cristata cristata* R. W. Smith, *Am. Midl. Nat.* 24(1):218; 31 July. First use of current name combination.

Holotype: None known to exist (Wallin, 2001). In describing the species, Linnaeus (1758:53) referenced Pehr Kalm, a Swedish-Finnish explorer, who visited what is now the eastern United States and probably provided him with a description of the species.

Type Locality: USA: "Pensylvania"; restricted to "Eastern Pennsylvania" by Jackson (1915:87). If this is the animal described by Kalm (1753–1756, 2:310–312; 1770–1771, 1:190–191) in his journal for 12 October 1748, the type locality can be further restricted to the Schuylkill River valley near Philadelphia. However, Linnaeus (1758) also referenced Kalm for *Sorex aquaticus* Linnaeus, 1758.

Distribution: Canada and USA: from the Atlantic coast of Labrador to east central Manitoba and south to southeastern North

Dakota, central Wisconsin, southern Indiana, northeastern Ohio, central West Virginia, and central Virginia (Hall, 1981).

Remarks: Although Hall (1981) recognized *C. cristata nigra* as a distinct form, Petersen and Yates (1980) considered it a synonym of *C. c. cristata*.

Condylura cristata parva Paradiso, 1959

1959. *Condylura cristata parva* Paradiso, *Proc. Biol. Soc. Wash.* 72:103; 24 July.

Holotype: USNM 293291.

Type Locality: USA: “5 mi. NW. of Stuart, Patrick Co., Virginia.”

Distribution: USA: central West Virginia and central Virginia south to eastern Tennessee and western South Carolina and south along the coast to the southeastern corner of Georgia (Hall, 1981).

Remarks: Jackson (1915) and Petersen and Yates (1980) noted that *C. cristata* is generally larger in the northern part of its geographical distribution and smaller to the south. The subspecies *C. cristata parva* represents the smaller southern individuals in what may be a gradual north–south size cline. If this proves to be correct, the separation of *C. cristata* into subspecies is probably unwarranted.

Hartman (1999) stated that *C. cristata nigra* is a synonym of *C. cristata parva*, in which case the former name would have priority (see Hutterer, 2005:301). However, the type localities of the two taxa are >1,600 km apart, and nowhere would their proposed distributions come into contact (see Paradiso, 1959:105; Hall, 1981:76, map 44).

TRIBE NEUROTRICHINI HUTTERER, 2005

2005. NEUROTRICHINI Hutterer, in *MSW3*, p. 303.

Genus *Neurotrichus* Günther, 1880

1857. *Urotrichus*: Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):76, pl. 28 (not *Urotrichus* Temminck, 1841).

1880. *Neurotrichus* Günther, *Proc. Zool. Soc. Lond.* 1880(3):441; October.

1880. *Neurotrichus*: Günther, *Proc. Zool. Soc. Lond.* 1880(3): pl. 42; October. Incorrect subsequent spelling of *Neurotrichus* Günther, 1880.

1881. *Neurotrichus*: Rye, *Zool. Record* 17: index, p. 8; October. Incorrect subsequent spelling of *Neurotrichus* Günther, 1880.

1881. *Neurotrichus*: Forbes, *Zool. Record* 17: Mammalia, p. 14. Justified emendation of *Neurotrichus* Günther, 1880.

Type Species: *Urotrichus gibbsii* Baird, 1857, by monotypy.

Remarks: *Neurotrichus* was revised by True (1896) and Jackson (1915) and reviewed by Hall and Kelson (1959), Hall (1981), Carraway and Verts (1991), and Yates (1999). Two Plio-Pleistocene species of talpids from Poland that had been referred to *Neurotrichus* were recently recognized as belonging to a distinct fossil genus, *Rzebikia* Sansalone, Kotsakis, and Piras, 2016 (Sansalone et al., 2016a).

Neurotrichus gibbsii (Baird, 1857)

FIGURES 11, 12

Remarks: *Neurotrichus gibbsii* is the type species for the genus *Neurotrichus* Günther, 1880.

Neurotrichus gibbsii gibbsii (Baird, 1857)

1857. *Urotrichus gibbsii* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):76, pl. 28.

1866. *Urotrichus Gibsii* Lord, *Naturalist in Vancouver Island and British Columbia*, p. 338. Incorrect subsequent spelling of *Urotrichus gibbsii* Baird, 1857.

1880. [*Neurotrichus*] *gibbsii*: Günther, *Proc. Zool. Soc. Lond.* 1880(3):441; October.

1880. *Neurotrichus gibbsii*: Günther, *Proc. Zool. Soc. Lond.* 1880(3): pl. 42; October.

1891. *Neurotrichus gibbsii*: Bryant, *Zoe* 1(12):359; February.

1899. *Neurotrichus gibbsii major* Merriam, *N. Am. Fauna* 16:88; 28 October. Holotype: USNM 65321, from “Carberry Ranch, Shasta County, Calif. (alt. 4,100 ft., between Mts. Shasta and Lassen).”

1912. *Neurotrichus gibbsii gibbsii*: Miller, *Bull. U.S. Natl. Mus.* 79:11; December. First use of current name combination.

1978. *Neurotrichus gibbsii destructionensis* Yates, Ph.D. dissertation, Texas Tech Univ., p. 267. Holotype: USNM 273081 (determined by me from reported measurements), from “Destruction Island, Jefferson County, Washington.”

Holotype: USNM 662/1843.

Type Locality: USA: “White River, Cascade Mountains, W[estern]. T[erritories]”; restricted to “Naches Pass, 4,500 foot elevation, Pierce County, Washington,” by Dalquest and Burgner (1941:12).

Distribution: Canada and USA: southwestern British Columbia, across west central Washington to coastal western Oregon and coastal northwestern California; elevational distribution: from near sea level to 2,075 m (Grinnell, 1933; Hall, 1981).

Neurotrichus gibbsii hyacinthinus Bangs, 1897

1897. *Neurotrichus gibbsii hyacinthinus* Bangs, *Am. Nat.* 31:240; March.

1901. *Neurotrichus gibbsii hyacinthinus*: Miller and Rehn, *Proc. Boston Soc. Nat. Hist.* 30:254; 27 December (first correctly spelled use of current name combination).

1905. *Neurotrichus gibbsii hyacinthinus*: Elliot, *Field Col. Mus. Publ.* 105, *Zool. Ser.* 6:467.

1978. *Neurotrichus gibbsii intermedius* Yates, Ph.D. dissertation, Texas Tech Univ., p. 273. Holotype: USNM 160900 (not 130217 as reported by Yates, 1978), from “5 mi. S Aptos, Santa Cruz County, California.”

1978. [*Urotrichus*]. *gibbsii*. *intermedius* Yates, Ph.D. dissertation, Texas Tech Univ., p. 274. Incorrect subsequent spelling of *Neurotrichus gibbsii intermedius* Yates, 1978.

Holotype: MCZ BANGS-1240.

Type Locality: USA: “Nicasio, Marin Co., Cal[ifornia].”

Distribution: USA: Narrow humid coastal belt from about central Humboldt County south to northern Monterey County,

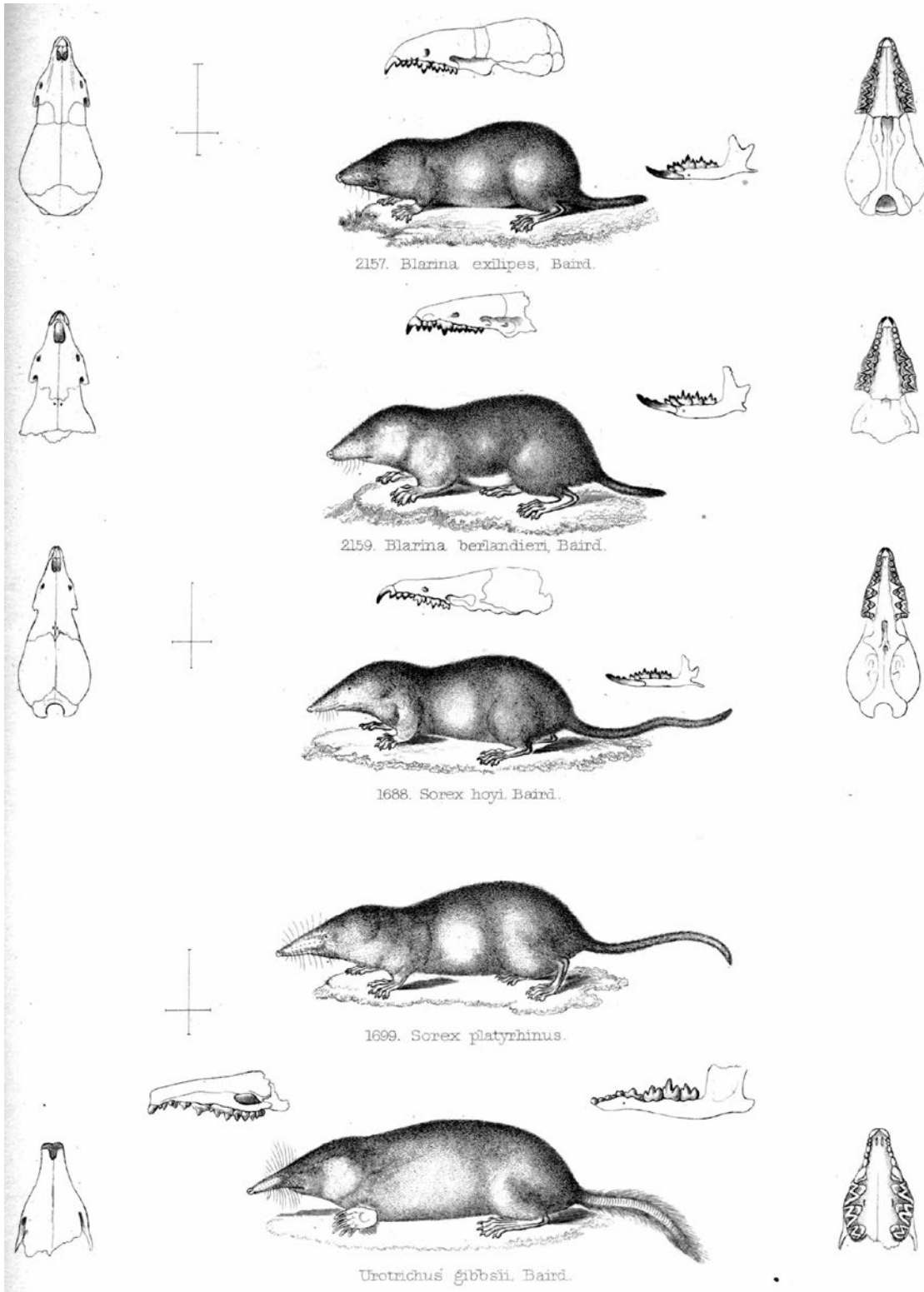


FIGURE 11. Spencer Baird's shrews and mole: from top to bottom, USNM 2157, *Blarina exilipes* Baird, 1857 (= *Sorex parvus* Say, 1822 = *Cryptotis parvus*); USNM 2159, *Blarina berlandieri* Baird, 1857 (= *Cryptotis berlandieri*); USNM 1688, *Sorex hoyi* Baird, 1857; USNM 1699, *Sorex platyrhinus* De Kay, 1842 (= *Sorex cinereus* Kerr, 1792); *Urotrichus gibbsii* Baird, 1857 (= *Neurotrichus gibbsii*). Image from Baird (1857: pl. 18).



FIGURE 12. *Neurotrichus gibbsii* (Baird, 1857) from Günther (1880: pl. 42, fig. A). Image courtesy of Biodiversity Heritage Library (<https://www.biodiversitylibrary.org/>), contributed by The Natural History Museum Library, London.

California; elevational distribution: below 245 m (Miller and Kellogg, 1955; Carraway and Verts, 1991).

Neurotrichus gibbsii minor Dalquest and Burgner, 1941

1941. *Neurotrichus gibbsii minor* Dalquest and Burgner, *Murrelet* 22(1):12; 30 April.

Holotype: MVZ 94857.

Type Locality: USA: “the University of Washington Campus, Seattle, Washington”; King County.

Distribution: Canada and USA: Lowlands of western Washington and southwesternmost corner of British Columbia (Dalquest and Burgner, 1941; Hall, 1981).

TRIBE SCALOPINI GILL, 1875

1875. SCALOPES Gill, *Synop. Insectiv. Mamm.*, p. 110; 14 May. Proposed as a suprageneric taxon of unidentified rank.

Genus *Parascalops* True, 1894

1894. *Parascalops* True, *Diagnoses of New North American Mammals*, p. 2; 26 April (preprint of *Proc. U.S. Natl. Mus.* 17:242; 15 November).

1902. *Perascalops* Beddard, *Cambr. Nat. Hist.*, p. 518. Incorrect subsequent spelling of *Parascalops* True, 1894.

Type Species: *Scalops breweri* Bachman, 1842 (by original designation).

Remarks: *Parascalops* was revised by True (1896) and Jackson (1915) and reviewed by Hall and Kelson (1959), Hallett (1978), and Hall (1981). A Plio-Pleistocene species of

Parascalops has been reported from Poland (Skoczeń, 1993; Sansalone et al., 2016a).

Parascalops breweri (Bachman, 1841)

FIGURE 13

1777. *Talpa longicaudata* Erxleben, *Syst. Reg. Anim.*, p. 118. Based on Pennant’s (1771:314; pl. 28, fig. 2) “long-tailed mole” from “New York.”

1777. *Talpa Caudata* Zimmermann, *Spec. Zool. Geog.*, p. 497. Based on Pennant’s (1771:314; pl. 28, fig. 2) “long-tailed mole” from “New York.” Part; not *T. caudata* Linnaeus, 1740.

1784. *Talpa longicauda* Boddaert, *Elenchus animalium* 1:126. Unjustified emendation of *T. longicaudata* Erxleben, 1777.

1819. *Condylura longicaudata*: Desmarest, *J. Phys. Chim. Hist. Nat. Arts* 89:232; September.

1825. *Talpasor[ex]. longicaudata*: Schinz, *Thierreich* 4:312.

1825. *Talpa Europea*: Harlan, *Fauna Am.*, p. 43. Part; not *T. europaea* Linnaeus, 1758.

1825. *Talpa americana* Harlan, *Fauna Am.*, p. 43. *Nomen nudum*; a manuscript name for the “black mole” mentioned in an unpublished diary by William Bartram and listed in Harlan’s (1825:43) synonymy for *Talpa europaea*:

That venerable naturalist, the late Mr. William Bartram, was accustomed to keep a diary, or “A calendar of natural history,” in which he carefully noted his daily observations, almost up to the hour of his death; these were never intended for publication, but since this work went to press, his relative, Maj. Robert Carr (the present proprietor of the Gardens,) has politely favoured me with a perusal of them.

I have not seen these notes personally, so I do not know whether the name *Talpa americana* originated with Bartram, but Harlan (1825) was the first to publish it.

1841. *S[calops]. Breweri* Bachman, *Proc. Boston Soc. Nat. Hist.* 1:41. Bachman (1842) typically is given incorrectly as the original description.
1841. *Rh[inaster]. longicaudatus*: Wagner, *Die Säugthiere Suppl.* 2:115.
1842. *Scalops breweri*: Bachman, *Boston J. Nat. Hist.* 4(1):32; January.
1848. [*Scapanus*] *breweri*: Pomel, *Arch. Sci. Phys. Nat.* 9:247.
1854. *T[alpa]. reposta* Le Conte, *Proc. Acad. Nat. Sci. Phila.* 6:327. Holotype: "There is in the Academy a specimen labelled 'Scalops Breweri' . . . Locality unknown." The ANSP type is now lost or destroyed (Koopman, 1976).
1854. *T[alpa]. Breweri*: Le Conte, *Proc. Acad. Nat. Sci. Phila.* 6:327.
1879. *Scapanus americanus*: Coues, *Am. Nat.* 13(3):190; March.
1884. *Scapanus breweri*: True, *U.S. Natl. Mus. Circ.* 29:22; 29 November.
1892. *Scaphanus breweri*: Herrick, *Bull. Geol. Nat. Hist. Surv. Minn.* 7:55.
1894. *Parascalops breweri*: True, *Proc. U.S. Natl. Mus.* 17:242; 26 April. First use of current name combination.

Holotype: "None known to exist" (Jackson, 1915:80).

Type Locality: USA: eastern North America. The type was supposed by Bachman to have been taken on the island of Martha's Vineyard, Massachusetts, where the species is not known to occur.

Distribution: Canada and USA: southern Ontario, southern Quebec, and central Maine, south along the East Coast to eastern Massachusetts, central Connecticut, southeastern Pennsylvania, and along the Appalachians to northern South Carolina, and north through central Ohio (Hall, 1981).

Remarks: This is the type species of the monotypic genus *Parascalops* True, 1894. The original description of the species is typically cited as an article by Bachman (1842) in the *Boston Journal of Natural History*, but that work is preceded by an earlier description in the *Proceedings of the Boston Society of Natural History* (Bachman, 1841).

Both *Talpa longicaudata* Erxleben, 1777 and *Talpa caudata* Zimmermann, 1777 were based on Pennant's (1771) "long-tailed mole" (Figure 13), a species that has been equated alternatively with the modern species *Scalopus aquaticus* (Linnaeus, 1758) by Allen (1902) and *Condylura cristata* (Linnaeus, 1758) by Jackson (1915). According to Jackson (1915:89), Pennant (1771) described the long-tailed mole "as a mole with a radiated nose and a tail two inches long," and Jackson therefore placed *T. longicaudata* and *T. caudata* in synonymy with *Condylura cristata* (Linnaeus, 1758). In fact, Pennant's (1771:313) description of "nose long; the edges beset with radiated tendrils" refers to his "radiated mole." His description of the long-tailed mole never mentions a radiated nose but does state "tail covered with short hair; the length two inches" (Pennant, 1771:314). An accompanying illustration figured both species (Pennant, 1771: pl. 28, fig. 2), clearly showing the radiated nose of the radiated mole and the prominent hairy tail of the long-tailed mole, thereby indicating that the latter animal was the hairy-tailed mole, *Parascalops breweri* (Figure 13).

Genus *Scalopus* É. Geoffroy Saint-Hilaire, 1803

1776. *Talpa* Müller, *Voll. Natursyst. Suppl.*, p. 35. Incorrect subsequent spelling of *Talpa* Linnaeus, 1758.
1789. *Talpa*: Müller, *Voll. Natursyst. Suppl.*, p. 35.
1800. *Scalops* Cuvier, *Leçons d'anatomie comparée*, Vol. 1: tab. 1: Classification des mammifères. *Nomen nudum*.
1803. *Scalopus* É. Geoffroy Saint-Hilaire, *Cat. Mamm. Mus. Natl. Hist. Nat.*, p. 77.
1811. *Scalops* Illiger, *Prodr. Syst. Mamm. Avium*, p. 126. Type species: *Sorex aquaticus* Linnaeus, 1758, by original designation.
1827. *Talpasorex* Lesson, *Manuel de mammalogie*, p. 124. Type species: *Scalops pennsylvanica* Harlan, 1825 (= *Sorex aquaticus* Linnaeus, 1758) (not *Talpasorex* Schinz, 1821).
1911. *Scalpos* Brooks, *Rep. W. Va. Board Agric.*, p. 28. Incorrect subsequent spelling of *Scalops* Illiger, 1811.
1941. *Hesperoscalops* Hibbard, *Am. Midl. Nat.* 26(2):337. Type species: *Hesperoscalops rexroadi* Hibbard, 1941 from the Pliocene of Kansas.

Type Species: *Scalopus virginianus* É. Geoffroy Saint-Hilaire, 1803 (= *Sorex aquaticus* Linnaeus, 1758), designated by Palmer (1904:621).

Remarks: The genus was revised by True (1896), Jackson (1915), and Yates and Schmidly (1977) and reviewed by Hall and Kelson (1959), Yates and Schmidly (1978), and Hall (1981). The genus contains a single species with 16 subspecies.

Scalopus aquaticus (Linnaeus, 1758)

Remarks: This is the type species for the genus *Scalopus* É. Geoffroy Saint-Hilaire, 1803.

Scalopus aquaticus aereus (Bangs, 1896)

1896. *Scalops texanus aereus* Bangs, *Proc. Biol. Soc. Wash.* 10:138; 28 December.
1899. *Scalops machrinus intermedius* Elliot, *Field Col. Mus. Publ.* 37, *Zool. Ser.* 1(14):280; 9 May. Holotype: FMNH 6829 (not FMNH 6832, as suggested by Jackson, 1915:49), from "Alva, Oklahoma Territory"; Woods County, Oklahoma, USA. There was some question regarding which of two FMNH specimens represents the holotype of *Scalops machrinus intermedius*. Elliot (1899a:280) did not designate the holotype by number in his original description but stated that it was a male collected 23 February 1899 by Thaddeus Surber at Alva. It appears that Elliot incorrectly reported the date of collection (A. Ferguson, FMNH, email communication, 24 April 2017).
1901. [*Scalops*] *aereus*: Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):390.
1901. *Scalops aquaticus aereus*: Miller and Rehn, *Proc. Boston Soc. Nat. Hist.* 30:250; 27 December.
1901. [*Scalops aquaticus*] *intermedius*: Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):390.
1905. *Scalopus aquaticus intermedius*: Bailey, *N. Am. Fauna* 25:207; 24 October.
1905. *Scalopus aereus*: Elliot, *Field Col. Mus. Publ.* 105, *Zool. Ser.* 6:471.

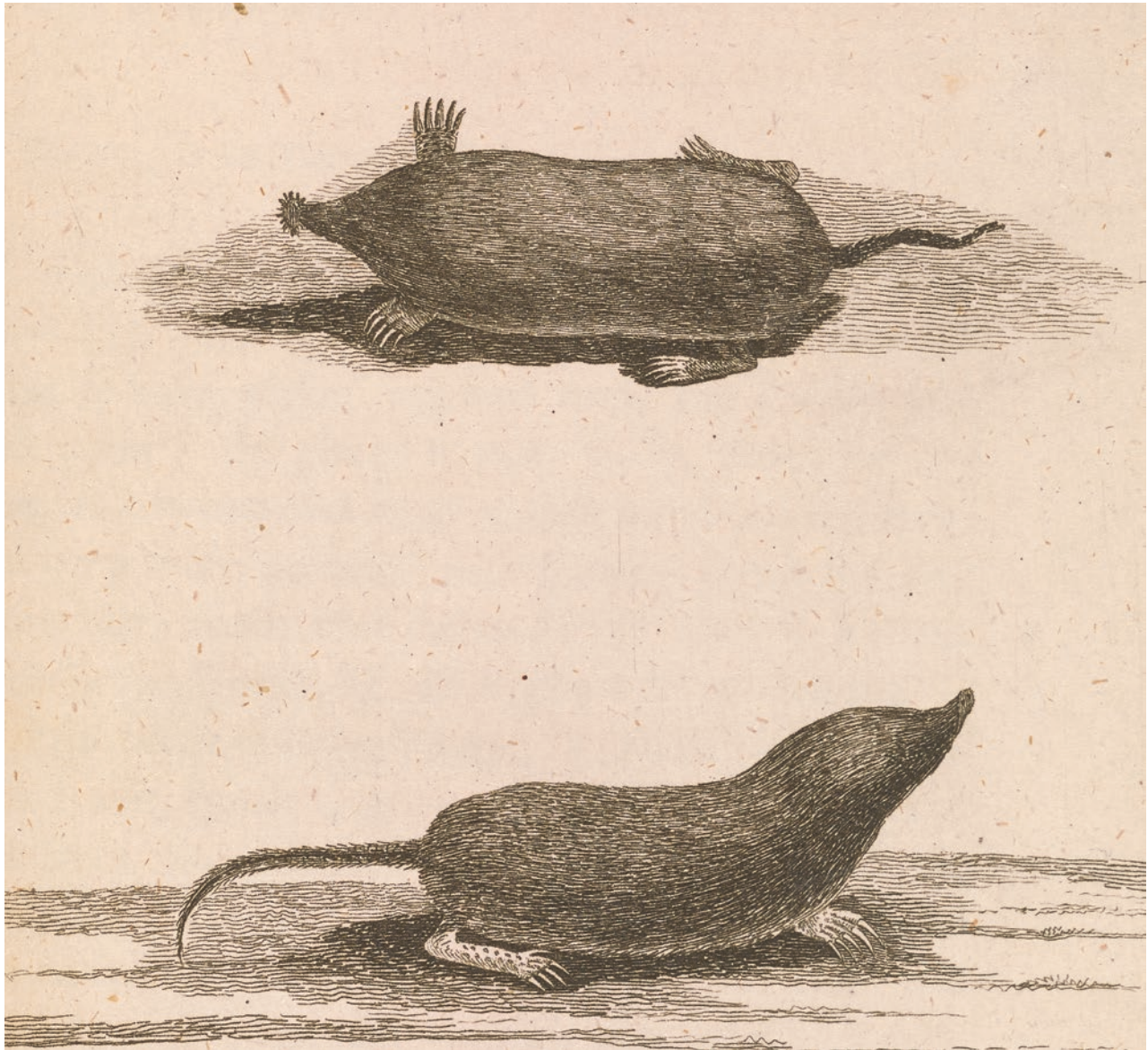


FIGURE 13. Thomas Pennant's (1771) "radiated mole" (= *Sorex cristatus* Linnaeus, 1758 = *Condylura cristata*) (top) and "long-tailed mole" (= *Scalops breweri* Bachman, 1841 = *Parascalops breweri*) (bottom).

1914. *Scalopus aquaticus pulcher* Jackson, *Proc. Biol. Soc. Wash.* 27:20; 2 February. Holotype: USNM 170698, from "Delight, Arkansas"; Pike County.

1912. *Scalopus aquaticus aereus*: Miller, *Bull. U.S. Natl. Mus.* 79:8; 31 December. First use of current name combination.

Holotype: MCZ BANGS-5475.

Type Locality: USA: "Stilwell, I[ndian]. T[erritory]."; Adair County, Oklahoma, USA.

Distribution: USA: southeastern corner of Colorado to south central Kansas to northeastern Arkansas and south to

southern Louisiana and portions of eastern and north central Texas, including the panhandle (Hall, 1981).

Scalopus aquaticus alleni R. H. Baker, 1951

1951. *Scalopus aquaticus alleni* R. H. Baker, *Univ. Kansas Publ. Mus. Nat. Hist.* 5(2):22; 28 February.

Holotype: AMNH 7189/5788.

Type Locality: USA: "Rockport, Aransas County, Texas."

Distribution: USA: portions of southeastern and south central Texas (Hall, 1981).

Scalopus aquaticus anastasae (Bangs, 1898)

1898. *Scalops anastasae* Bangs, *Proc. Boston Soc. Nat. Hist.* 28(7):212; March.
1901. [*Scalops*] *anastasiae* Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):391; 6 March. Incorrect subsequent spelling of *Scalops anastasae* Bangs, 1898.
1912. *Scalopus anastasae*: Cory, *Field Mus. Nat. Hist. publ.* 153, *Zool. Ser.* 11:438; June.
1915. *Scalopus aquaticus anastasae*: Jackson, *N. Am. Fauna* 38:39; 30 September. First use of current name combination.

Holotype: MCZ 7192.

Type Locality: USA: "Point Romo, Anastasia Island, Florida"; St. Johns County.

Distribution: USA: known only from Anastasia Island.

Scalopus aquaticus aquaticus (Linnaeus, 1758)

FIGURES 14, 15

1734. *Talpa, Virginianus, niger* Seba, *Thesaurus*, p. 51, tab. XXXII: fig. 3 (pre-Linnaean work).
1758. [*Sorex*] *aquaticus* Linnaeus, *Systema Naturae*, 10th ed., 1:53.
1776. *Talva virginea* Müller, *Voll. Natursyst. Suppl.*, p. 35. Based on Seba's (1734) *Talpa, Virginianus, niger* from "Virginien."
1777. *Talpa europea flavescens* Erxleben, *Syst. Reg. Anim.*, p. 118; based on Pennant's (1771) "yellow mole" from "New York" (see Pennant, 1771:314); see also Allen (1902:16).
1777. *Talpa Flava* Zimmermann, *Spec. Zool. Geog.*, p. 496; based on Pennant's (1771:312) "yellow mole" from "New York" (see Pennant, 1771: 314); see also Allen (1902:16) and Jackson (1915:89).
1777. *Talpa fusca* Zimmermann, *Spec. Zool. Geog.*, p. 497; based on Pennant's (1771:314) "brown mole" from "New York" (see Pennant, 1771:314); see also Allen (1902:16).
1788. [*Talpa europaea*] *flava*: Gmelin, *Systema Naturae*, 13th ed., p. 110.
1789. *Talpa virginea*: Müller, *Voll. Natursyst. Suppl.*, p. 35.
1800. *Talpa purpurascens* Shaw, *Gen. Zool.* 1(2):521; based on *Talpa, Virginianus, niger* Seba, 1734 (not *Talpa purpurascens* Schinz, 1821 = *Sorex cristatus* Linnaeus, 1758).
1803. *Scalopus virginianus* É. Geoffroy Saint-Hilaire, *Cat. Mamm. Mus. Natl. Hist. Nat.*, p. 78. Based on Seba's (1734) *Talpa, Virginianus, niger* (Figure 14) and *Sorex aquaticus* Linnaeus, 1758.
1814. *Talpa cupreata* Rafinesque, *Précis découv.*, p. 14. Type locality: "Amer[ica]. septentrionale"; restricted to "the Atlantic States" by Rafinesque (1832:61).
1820. *Scalops canadensis* Desmarest, *Mammalogie* 1:155; based on *Sorex aquaticus* Linnaeus, 1758.
1825. *Scalops pennsylvanica* Harlan, *Fauna Am.*, p. 33. Holotype in Harlan's personal collection (Harlan, 1825:33), now lost or destroyed; presumably from southeastern Pennsylvania (see Jackson, 1915).
1825. *Talpa europea*: Harlan, *Fauna Am.*, p. 43 (not *Talpa europea* Linnaeus, 1758).
1827. *Talpasorex pensylvanica*: Lesson, *Manuel de mammalogie*, p. 124. Incorrect subsequent spelling of *S. pennsylvanica* Harlan, 1825.
1829. *Sc[alops]. aquaticus*: J. B. Fischer, *Synopsis mammalium*, p. 249.
1838. *Talpa virginiana*: Blainville, *Ann. Franç. Anat. Phys.* 2:219.

1838. *Talpa sorex pensylvanicus*: Blainville, *Ann. Franç. Anat. Phys.* 2:219. Incorrect subsequent spelling of *Talpasorex pensylvanica* Lesson, 1827.
1854. [*Talpa*] *aquatica*: Le Conte, *Proc. Acad. Nat. Sci. Phila.* 6:327.
1884. *Scalops aquaticus aquaticus*: True, *U.S. Natl. Mus. Circ.* 29:22; 29 November.
1905. *Scalopus aquaticus*: Oberholser, *Notes on the Mammals and Summer Birds of Western North Carolina* (Biltmore, N.C.: Biltmore Forest School), p. 8; 30 September.
1911. *Scalops aquaticus*: Brooks, *Rep. W. Va. Board Agric.*, p. 28.
1912. *Scalopus aquaticus aquaticus*: Miller, *Bull. U.S. Natl. Mus.* 79:7. First use of current name combination.
1978. *Scalopus aquaticus davisi* Yates, Ph.D. dissertation, Texas Tech Univ., p. 229. Holotype: CM 18444, from "Yarmouth, Barnstable Co., Massachusetts."

Holotype: None known to exist (Wallin, 2001). Linnaeus (1758:53) references Pehr Kalm, a Swedish-Finnish explorer, who probably provided him with a description of the species.

Type Locality: "America septentrionali" (North America); restricted to "Philadelphia, Pennsylvania," USA, by Jackson (1915:33). This species (or *Sorex cristatus* Linnaeus, 1758) may be the animal described by Kalm (1753–1756, 2:310–312; 1770–1771, 1:190–191) in his published journal for 12 October 1748.

Distribution: USA: eastern states from eastern and southern Massachusetts, southeastern New York, southeastern Pennsylvania, and northeastern West Virginia, south through Virginia, and in Appalachian Mountains south through western North Carolina and eastern Tennessee (Hall, 1981); elevational distribution from near sea level to 1,220 m (USNM specimens; Oberholser, 1905).

Scalopus aquaticus australis (Chapman, 1893)

1893. *Scalops aquaticus australis* Chapman, *Bull. Am. Mus. Nat. Hist.* 5(21):339; 22 December.
1905. *Scalopus aquaticus australis*: Elliot, *Field Col. Mus. Publ.* 105, *Zool. Ser.* 6:470. First use of current name combination.

Holotype: AMNH 3916/2990.

Type Locality: USA: "Gainesville, Florida"; Alachua County.

Distribution: USA: southeastern Georgia and eastern portion of peninsular Florida south to Hypoluxo, Palm Beach County (Hall, 1981).

Scalopus aquaticus bassi A. H. Howell, 1939

1939. *Scalopus aquaticus bassi* A. H. Howell, *J. Mamm.* 20(3):363; 14 August.

Holotype: FMNH 43968.

Type Locality: USA: "Engelwood, Sarasota County, Florida."

Distribution: USA: known only from the type locality.

Scalopus aquaticus caryi Jackson, 1914

1914. *Scalopus aquaticus caryi* Jackson, *Proc. Biol. Soc. Wash.* 27:20; 2 February.



FIGURE 14. Ventral view of the “purple mole,” Seba’s (1734: pl. 32, fig. 3) *Talpa, Virginianus, niger, supinus* (= *Sorex aquaticus* Linnaeus, 1758 = *Scalopus aquaticus*). Image courtesy of Biodiversity Heritage Library (<https://www.biodiversitylibrary.org/>), contributed by Smithsonian Institution Libraries, Washington, D.C.



FIGURE 15. *Sorex aquaticus* Linnaeus, 1758 (= *Scalopus aquaticus*). Image from Wagner (1855: pl. 158), courtesy of Biodiversity Heritage Library (<https://www.biodiversitylibrary.org/>), contributed by the Ernst Mayer Library, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1978. *Scalopus aquaticus nebrascensis* Yates, Ph.D. dissertation, Texas Tech Univ., p. 239. Holotype: KU 50129, from "5 mi. N, 2 mi. W Parks, Dundy Co., Nebraska."

Holotype: USNM 116799.

Type Locality: USA: "Neligh, Nebraska"; Antelope County.

Distribution: USA: Arid and semiarid Great Plains region from southeastern Wyoming, central and western Nebraska, north-eastern Colorado, and northwestern Kansas (Hall, 1981).

Scalopus aquaticus cryptus W. B. Davis, 1942

1942. *Scalopus aquaticus nanus* W. B. Davis, *Am. Midl. Nat.* 27(2):383; March. Holotype: TCWC 1785, from "13 miles east of Centerville, Leon County, Texas."

1942. *Scalopus aquaticus cryptus* W. B. Davis, *Am. Midl. Nat.* 27(2):384; March.

Holotype: TCWC 1454.

Type Locality: USA: "College Station, Brazos County, Texas."

Distribution: USA: portions of eastern Texas (Hall, 1981).

Remarks: Yates and Schmidly (1977) considered the names *Scalopus aquaticus nanus* and *S. a. cryptus* to represent a single entity, which, as first revisers, they called *S. a. cryptus*. Citing that work, Hall (1981) also treated the two names as representing a single population, but under the name *S. a. nanus*, possibly because *S. a. nanus* appears before *S. a. cryptus* in Davis (1942). However, because both names were published at the same time, neither has strict priority, and the name chosen by the first reviser (ICZN, 1999:24.2), in this case by Yates and Schmidly (1977), becomes the available name.

Scalopus aquaticus howelli Jackson, 1914

1914. *Scalopus aquaticus howelli* Jackson, *Proc. Biol. Soc. Wash.* 27:19; 2 February.

Holotype: USNM 177931.

Type Locality: USA: "Autaugaville, Alabama"; Autauga County.

Distribution: USA: North Carolina (except in Appalachian Mountains), South Carolina, northern and western Georgia, the panhandle of Florida, Alabama, Mississippi, and Louisiana east of the Mississippi River (Hall, 1981).

Scalopus aquaticus inflatus Jackson, 1914

1914. *Scalopus inflatus* Jackson, *Proc. Biol. Soc. Wash.* 27:21; 2 February.

1977. *Scalopus aquaticus inflatus*: Yates and Schmidly, *Occ. Pap. Mus. Texas Tech Univ.* 45:28; 3 June. First use of current name combination.

Holotype: USNM 52709.

Type Locality: Mexico: "state of Tamaulipas, Mexico (45 miles from Brownsville, Texas)."

Distribution: USA and Mexico: southeastern tip of Texas to the type locality in Tamaulipas (Hall, 1981).

Scalopus aquaticus machrinoides Jackson, 1914

1914. *Scalopus aquaticus machrinoides* Jackson, *Proc. Biol. Soc. Wash.* 27:19; 2 February.

Holotype: USNM 169717.

Type Locality: USA: "Manhattan, Kansas"; Riley County.

Distribution: USA: west of the Mississippi River, from central Minnesota, the southeastern corner of South Dakota, and eastern Nebraska, south through eastern Kansas to extreme northern Arkansas (Hall, 1981).

Scalopus aquaticus machrinus (Rafinesque, 1832)

1832. *Talpa machrina* Rafinesque, *Atlantic J.* 1:61.

1832. *Talpa sericea* Rafinesque, *Atlantic J.* 1:62. Type locality: "woods near Nicholasville and Harrodsburg," Jessamine and Mercer Counties, Kentucky, respectively. True (1896:20) noted that Rafinesque's description was of a young individual, and Jackson (1915:43) stated that this "species is clearly the young of . . . *Talpa machrina*."

1842. *Scalops argentatus* Audubon and Bachman, *J. Acad. Nat. Sci. Phila.* 8(2):292. Type locality: "Michigan"; restricted to "southern Michigan" by Jackson (1915:42).

1854. *Talpa Pennantii* Le Conte, *Proc. Acad. Nat. Sci. Phila.* 6:327. Holotype: "A specimen in the Academy" [ANSP], locality unknown.

1877. *Scalops aquaticus argentatus*: Coues, *Bull. U.S. Geol. Geog. Surv. Terr.* 3(3):633.

1896. *Scalops aquaticus machrinus*: True, *Proc. U.S. Natl. Mus.* 19:20; 21 December.

1905. *Scalopus aquaticus machrinus*: Elliot, *Field Col. Mus. Publ.* 105, *Zool. Ser.* 6:470. First use of current name combination.

Holotype: "None known to exist" (Jackson, 1915:43).

Type Locality: USA: "woods, gardens and fields, near Lexington," Fayette County, Kentucky.

Distribution: Canada and USA: east of the Mississippi River and west of the Appalachian Mountains from western Wisconsin, northern Illinois, southern Michigan, southwestern Ontario (Essex County), and northern Ohio, south to central and western Tennessee (Hall, 1981).

Scalopus aquaticus montanus R. H. Baker, 1951

1951. *Scalopus montanus* R. H. Baker, *Univ. Kansas Publ. Mus. Nat. Hist.* 5(2):19; 28 February.

1977. *Scalopus aquaticus montanus*: Yates and Schmidly, *Occ. Pap. Mus. Texas Tech Univ.* 45:29; 3 June. First use of current name combination.

Holotype: KU 35668.

Type Locality: Mexico: "Club Sierra del Carmen, 2 mi. N and 6 mi. W Piedra Blanca, Coahuila."

Distribution: Mexico: isolated population known only from the type locality in the Sierra del Carmen of northern Coahuila.

Scalopus aquaticus parvus (Rhoads, 1894)

1894. *Scalops parvus* Rhoads, *Proc. Acad. Nat. Sci. Phila.* 46:157.

1901. [*Scalops aquaticus*] *parvus*: Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):390; 6 March.

1915. *Scalopus aquaticus parvus*: Jackson, *N. Am. Fauna* 38:41; 30 September. First use of current name combination.

Holotype: ANSP 8468 (Koopman, 1976).

Type Locality: USA: "Tarpon Springs, Fla."; Pinellas County.

Distribution: USA: central western coast of peninsular Florida (Hall, 1981).

Scalopus aquaticus porteri Schwartz, 1952

1952. *Scalopus aquaticus porteri* Schwartz, *J. Mamm.* 33(3):381; 19 August.

Holotype: UMMZ 97718.

Type Locality: USA: "Uleta, Dade County, Florida."

Distribution: USA: eastern Dade County, Florida (Hall, 1981).

Scalopus aquaticus texanus (J. A. Allen, 1891)

1891. *Scalops argentatus texanus* J. A. Allen, *Bull. Am. Mus. Nat. Hist.* 3(2):221; 29 April.

1893. *Scalops texanus*: J. A. Allen, *Bull. Am. Mus. Nat. Hist.* 5:200; 18 August.

1896. *Scalops aquaticus texanus*: True, *Proc. U.S. Natl. Mus.* 19:21; 21 December.

1901. [*Scalops aquaticus*] *texensis* Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):390; 6 March. Incorrect subsequent spelling of *S. aquaticus texanus* J. A. Allen, 1891.

1905. *Scalopus aquaticus texanus*: Bailey, *N. Am. Fauna* 25:206; 24 October. First use of current name combination.

1905. *Scalopus aquaticus texensis*: Elliot, *Field Col. Mus. Publ.* 105, *Zool. Ser.* 6:471. Incorrect subsequent spelling of *S. aquaticus texanus* J. A. Allen, 1891.

Holotype: AMNH 3488/2740.

Type Locality: USA: "Presidio Co., Texas." Baker (1951:21) summarized the confusion regarding the location of the type locality in Presidio County. The holotype was collected by Wm. Lloyd in September 1887. In that same year, "Presidio County was reduced to its present size by the creation of Brewster and Jeff Davis counties. Lloyd might have taken the mole in any one of these three Trans-Pecos counties."

Distribution: USA: isolated population in the Big Bend region of Texas.

Genus *Scapanus* Pomel, 1848

1848. *Scapanus* Pomel, *Arch. Sci. Phys. Nat.* 9:247; November.

1892. *Scaphanus* Herrick, *Bull. Geol. Nat. Hist. Surv. Minn.* 7:55. Incorrect subsequent spelling of *Scapanus* Pomel, 1848.

1902. *Scapasius* Beddard, *Cambr. Nat. Hist.*, p. 518. Incorrect subsequent spelling of *Scapanus* Pomel, 1848.

Type Species: *Scalops townsendii* Bachman, 1839, designated by Elliot (1901:391).

Remarks: The genus was revised by True (1896) and Jackson (1915) and reviewed by Hall and Kelson (1959) and Hall (1981). Four modern species of *Scapanus* are recognized. *Scapanus anthonyi* and *S. latimanus* were revised by Palmer (1937) and Yates and Salazar-Bravo (2005) and reviewed by Verts and Carraway (2001). *Scapanus orarius* was reviewed by Hartman and Yates (1985), and *S. townsendii* was reviewed by Carraway et al. (1993). Fossil species were reviewed by Hutchinson (1987).

Scapanus anthonyi J. A. Allen, 1893

1893. *Scapanus anthonyi* J. A. Allen, *Bull. Am. Mus. Nat. Hist.* 5:200; 18 August.

1906. *Scapanus californicus anthonyi*: Stephens, *California Mammals*, p. 257.

1937. *Scapanus latimanus anthonyi*: F. G. Palmer, *J. Mamm.* 18(3):312; 14 August.

Holotype: AMNH 6313/4947.

Type Locality: Mexico: "San Pedro Martir Mountains (alt. 7000 ft.); Baja California.

Distribution: Mexico: known only from Vallecitos south to La Grulla in the Sierra San Pedro Martir, Baja California (Yates and Salazar-Bravo, 2005); elevational distribution: 2130–2285 m (Miller and Kellogg, 1955; Hall, 1981).

Remarks: *Scapanus anthonyi* previously was treated as a subspecies of *S. latimanus* (Palmer, 1937; Verts and Carraway, 2001), but Yates and Salazar-Bravo (2005) determined it to be a separate species. It is noted for its small size and the consistent presence of only three premolars, rather than the usual four premolars typical of members of the genus (Yates and Salazar-Bravo, 2005).

Scapanus latimanus (Bachman, 1841)

Scapanus latimanus insularis F. G. Palmer, 1937

1937. *Scapanus latimanus insularis* F. G. Palmer, *J. Mamm.* 18(3):297; 14 August.

Holotype: MVZ 68993.

Type Locality: USA: "Angel Island, San Francisco Bay, Marin County, California."

Distribution: USA: known only from Angel Island; elevational distribution from near sea level to about 230 m (Miller and Kellogg, 1955; Hall, 1981).

Scapanus latimanus latimanus (Bachman, 1841)

1841. [*calops*]. *latimanus* Bachman, *Proc. Boston Soc. Nat. Hist.* 1:41.

1842. *Scalops latimanus*: Bachman, *Boston J. Nat. Hist.* 4(1):34; January (often incorrectly cited as the original description).

1856. *Scalops Californicus* Ayres, *Proc. Calif. Acad. Sci.* 1(1):54. Neotype: USNM 3111, from "San Francisco, California," selected by Lyon and Osgood (1909:233–234), who stated, "this skeleton is one of Dr. Ayres's original specimens, and probably the only one of them now in existence. It seems well to treat it as a type, although it was not so indicated

by the original describer.” Jackson (1915:66–67) objected to this designation, stating, “there seems to be no good reason for designating this specimen as the type of *californicus*; . . . if Ayres set aside any specimen as the type, it was probably in the Museum of the California Academy of Sciences since preceding his original description the donation of five moles to the Academy was acknowledged,” and it is clearly stated that Ayres’s description was “in connection” with those five specimens (Ayres, 1856). In fact, Jackson (1915) was objecting to the treatment of USNM 3111 as though it were part of the original type series, which it was not. As suggested by Lyon and Osgood (1909), however, none of the five specimens donated to the California Academy of Sciences now exists. Nearly the entire collection of that institution was destroyed by fire following the 1906 San Francisco earthquake (Maureen Flannery, California Academy of Sciences, email communication, 31 July 2017). Three USNM specimens (USNM 1288, 2673, 3111) of *Scalops californicus* were either collected by Ayres or obtained from him, the earliest of which was collected in September 1855, well after he read his description of *Scalops californicus* before the California Academy of Sciences on 21 May 1855 (Ayres, 1856; Jackson, 1915). Despite clearly not belonging to the original type series, the three USNM specimens were identified by Ayres as belonging to his species, and it is appropriate for one of them to have been designated the neotype.

1857. *Scalops (Scapanus) townsendi*: Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):65. Part; not *Scalops townsendii* Bachman, 1839.
1863. *Scapanus townsendi*: Peters, *Monatsb. K. Preuss. Akad. Wiss. Berlin* 1864:656. Part; not *Scalops townsendii* Bachman, 1839.
1887. *Scapanus Townsendii*: Townsend, *Proc. U.S. Natl. Mus.* 10:182 (not *Scalops townsendii* Bachman, 1839).
1894. *Scapanus dilatus* True, *Diagnoses of New North American Mammals*, p. 2; 26 April (preprint of *Proc. U.S. Natl. Mus.* 17:242; 15 November). Holotype: USNM 186628, from “Fort Klamath, Oreg[on].”; Klamath County, Oregon, USA.
1896. *Scapanus californicus*: True, *Proc. U.S. Natl. Mus.* 19:52; 21 December. Part.
1897. *Scapanus alpinus* Merriam, *Proc. Biol. Soc. Wash.* 11:102; 26 April. Holotype: USNM 79967, from “Crater Lake, Mt. Mazama, Oregon. Altitude about 2130 meters [7000 ft.]”; Klamath County.
1897. *Scapanus truei* Merriam, *Proc. Biol. Soc. Wash.* 11:102; 26 April. Holotype: USNM 79290, from “Lake City, Modoc Co., Calif.”
1905. *Scapanus truii*: Elliot, *Field Col. Mus. Publ.* 105, *Zool. Ser.* 6:469. Incorrect subsequent spelling of *Scapanus truei* Merriam, 1897.
1906. *Scapanus californicus truei*: Stephens, *California Mammals*, p. 259.
1907. *Scapanus latimanus*: Osgood, *Proc. Biol. Soc. Wash.* 20:52; 18 April.
1912. *Scapanus latimanus latimanus*: Grinnell and Swarth, *Univ. Calif. Publ. Zool.* 10(3):131; 13 April. First use of current name combination.
1913. *Scapanus latimanus truei*: Grinnell, *Proc. Calif. Acad. Sci.* 3:269; 28 August.
1915. *Scapanus latimanus dilatus*: Jackson, *N. Am. Fauna* 38:73; 30 September.
1915. *Scapanus latimanus alpinus*: Jackson, *N. Am. Fauna* 38:75; 30 September.
1937. *Scapanus latimanus caurinus* F. G. Palmer, *J. Mamm.* 18(3):290; 14 August. Holotype: MVZ 25388, from “Laytonville, Mendocino County, California,” USA.

Lectotype: ZMB 712, designated by Peters (1863:656) from two specimens examined by Bachman in the Zoological Museum of Humboldt University Berlin (Turni et al., 2007).

Type Locality: USA: Santa Clara, Santa Clara County, California. Peters (1863:656) publicized the fact that the holotype was collected by Ferdinand Deppe at Santa Clara in October 1834, and Osgood (1907:52) confirmed that the locality is in California (see also Turni et al., 2007).

Distribution: USA: from south central Oregon through northern California, then south in the west along the coastal region of California to Santa Barbara; it occurs east of the Sacramento Valley to the western edge of Nevada and south to Holbrook, Douglas County, Nevada (Hall, 1981; Yates and Salazar-Bravo, 2005); elevational distribution: from near sea level to 2,590 m (Grinnell, 1933; Miller and Kellogg, 1955; Hall, 1981).

Remarks: *Scapanus latimanus caurinus* and *S. l. dilatus* previously were considered distinct subspecies (Verts and Carraway, 2001) but were synonymized with *S. l. latimanus* by Yates and Salazar (2005).

Scapanus latimanus minusculus Bangs, 1899

1899. *Scapanus californicus minusculus* Bangs, *Proc. New Engl. Zool. Club* 1:70; 31 July.
1912. *Scapanus californicus (=latimanus) minusculus*: Grinnell and Swarth, *Univ. Calif. Publ. Zool.* 10(3):133; 13 April.
1912. *Scapanus latimanus minusculus*: Miller, *Bull. U.S. Natl. Mus.* 79:10; 31 December. First use of current name combination.
1913. *Scapanus latimanus latimanus*: Grinnell, *Proc. Calif. Acad. Sci.*, ser. 4, 3:269. Part; not *Scalops latimanus* Bachman, 1841 (= *Scapanus latimanus latimanus*).
1914. *Scapanus latimanus sericatus* Jackson, *Proc. Biol. Soc. Wash.* 27:55; 20 March. Holotype: USNM 109548, from “Yosemite, Mariposa County, California,” USA.
1916. *Scapanus latimanus campi* Grinnell and Storer, *Univ. Calif. Publ. Zool.* 17(1):1; 23 August. Holotype: MVZ 21520, from “Snelling, 250 feet altitude, Merced County, California,” USA.
1918. *Scapanus latimanus monoensis* Grinnell, *Univ. Calif. Publ. Zool.* 17(14):423; 25 April. Holotype: MVZ 25834, from “Taylor Ranch, two miles south of Benton Station, Mono County, California,” USA.

Holotype: MCZ BANGS 9189.

Type Locality: USA: “Fyffe, Eldorado Co., California.”

Distribution: USA: east central California, from El Dorado County to Fresno County (Yates and Salazar-Bravo, 2005); elevational distribution: 60–2,900 m (Grinnell, 1933; Miller and Kellogg, 1955; Hall, 1981).

Remarks: *Scapanus latimanus campi*, *S. l. monoensis*, and *S. l. sericatus* previously were considered distinct subspecies (Verts and Carraway, 2001) but were synonymized with *S. l. minusculus* by Yates and Salazar-Bravo (2005).

Scapanus latimanus occultus Grinnell and Swarth, 1912

1912. *Scapanus latimanus occultus* Grinnell and Swarth, *Univ. Calif. Publ. Zool.* 10(3):131; 13 April.

1914. *Scapanus latimanus grinnelli* Jackson, *Proc. Biol. Soc. Wash.* 27:56; 20 March. Holotype: MVZ 17785, from "Independence (altitude 3,900 feet), Inyo County, California," USA. This was the site of the former Fort Independence, 3 km north of the town of Independence (Miller and Kellogg, 1955).

Holotype: MVZ 2369.

Type Locality: USA: "Santa Ana Cañon at 400 feet altitude, Orange County, California."

Distribution: Mexico and USA: from the Yosemite Valley, Mariposa County, California, south to Santa Barbara and then southeast to Laguna Hanson, Baja California (Yates and Salazar-Bravo, 2005); elevational distribution from near sea level to 2,990 m (Grinnell, 1933; Miller and Kellogg, 1955; Hall, 1981).

Remarks: *Scapanus latimanus grinnelli* previously was considered a distinct subspecies (Verts and Carraway, 2001) but was synonymized with *S. l. occultus* by Yates and Salazar-Bravo (2005).

Scapanus latimanus parvus F. G. Palmer, 1937

1937. *Scapanus latimanus parvus* F. G. Palmer, *J. Mamm.* 18(3):300; 14 August.

Holotype: MVZ 30343.

Type Locality: USA: "Alameda, Alameda County, California."

Distribution: USA: known only from Alameda Island, California (Miller and Kellogg, 1955; Hall, 1981).

Scapanus orarius True, 1896

Scapanus orarius orarius True, 1896

1896. *Scapanus orarius* True, *Proc. U.S. Natl. Mus.* 19:52; 21 December.

1915. *Scapanus orarius orarius*: Jackson, *N. Am. Fauna* 38:61; 30 September. First use of current name combination.

Holotype: USNM 1381/37434. True (1896:52) incorrectly reported the holotype as USNM 381.

Type Locality: USA: "Shoalwater Bay, Washington" [=Willapa Bay], Pacific County.

Distribution: USA: humid Pacific coastal region from northern Washington south to northern California and eastward in Oregon to the central northern part of the state (Hartman and Yates, 1985).

Scapanus orarius schefferi Jackson, 1915

1915. *Scapanus orarius schefferi* Jackson, *N. Am. Fauna* 38:63; 30 September.

1944. *Scapanus orarius yakimensis* Dalquest and Scheffer, *Murrelet* 25(2):27; 19 September. Holotype: MVZ 96354, from "¾ mi. N Union Gap, Yakima County, Washington."

Holotype: USNM 204997.

Type Locality: USA: "Walla Walla, Walla Walla County, Washington."

Distribution: Canada and USA: southwestern corner of British Columbia southeastward through central and western Washington and northwestern Oregon to west central Idaho (Hartman and Yates, 1985).

Scapanus townsendii (Bachman, 1839)

Remarks: This is the type species of the genus *Scapanus* Pomel, 1848.

Scapanus townsendii olympicus M. L. Johnson and Yates, 1980

1980. *Scalops townsendii olympicus* M. L. Johnson and Yates, *Occ. Pap. Mus. Texas Tech Univ.* 63:1; 11 January.

Holotype: PSMNH 22735.

Type Locality: USA: "Hurricane Ridge, Olympic National Park, Clallam Co., Washington, elevation approximately 1615 meters."

Distribution: USA: known only from the Olympic Mountains, Clallam County, Washington (Johnson and Yates, 1980).

Scapanus townsendii townsendii (Bachman, 1839)

1829. *Scalops canadensis* Richardson, *Fauna Bor.-Am.* 1:9 (name preoccupied by *Scalops canadensis* Desmarest, 1820 and *Scalops canadensis* Harlan, 1825, both = *Sorex aquaticus* Linnaeus, 1758 = *Scalopus aquaticus*). Type locality: "the banks of the Columbia and the adjoining coasts of the Pacific."

1839. *Scalops Townsendii* Bachman, *J. Acad. Nat. Sci. Phila.* 8(1):58.

1842. *Scalops Townsendii* Bachman, *Boston J. Nat. Hist.* 4(1):31; January. Incorrect subsequent spelling of *Scalops townsendii* Bachman, 1839 (= *Scapanus townsendii*).

1848. *Scapanus Townsendii* Pomel, *Arch. Sci. Phys. Nat.* 9:247 Incorrect subsequent spelling of *Scalops townsendii* Bachman, 1839 (= *Scapanus townsendii*).

1854. *Scalops metallescens* Cassin, *Proc. Acad. Nat. Sci. Phila.* 6:242 (*nomen nudum*). This appears to be a preliminary working name for the specimen that became the holotype of *Scalops aeneus* Cassin, 1854.

1854. *Scalops aeneus* Cassin, *Proc. Acad. Nat. Sci. Phila.* 6:299. Holotype: USNM 3725, from "Oregon." This is one of two specimens originally reported as *Scalops townsendii* by Peale (1849:30), "one taken on the Columbia, the other on the Willamette River." See also True (1896:63–64) and Jackson (1915:59–60).

1854. [*Talpa*] *aenea*: Le Conte, *Proc. Acad. Nat. Sci. Phila.* 6:327.

1854. [*Talpa*] *Townsendii*: Le Conte, *Proc. Acad. Nat. Sci. Phila.* 6:327.

1854. [*Talpa*] *taeniata* Le Conte, *Proc. Acad. Nat. Sci. Phila.* 6:327. Holotype: ANSP 449, from "Banks of the Columbia river"; restricted by True (1898:63) to "Fort Vancouver," Vancouver, Clark County, Washington. The holotype is also one of the two cotypes of *Scalops townsendii* Bachman, 1839 (Jackson, 1915:58–60).

1857. *Scalops (Scapanus) townsendii*: Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):65.

1980. *Scalops townsendii townsendii*: M. L. Johnson and Yates, *Occ. Pap. Mus. Texas Tech Univ.* 63:1; 11 January. First use of current name combination.

Lectotype: ANSP 450, designated by True (1896:63) from the two specimens upon which Bachman based the species, one collected by Thomas Nuttall (ANSP 450), the other by John Kirk Townsend (ANSP 449). According to Koopman (1976:3), the type is now lost.

Type Locality: USA: “Banks of the Columbia river”; restricted by True (1896:63) to “Fort Vancouver,” Vancouver, Clark County, Washington (see also Jackson, 1915:58–60). Bachman (1839) did not initially provide a locality for Nuttall’s specimen, but he later wrote, “the specimen of Mr. Townsend is labelled, ‘Banks of the Columbia River; May 9th, 1835;’ that of Mr. Nuttall was, I believe, obtained in the same locality” (Bachman, 1842:32).

Distribution: Canada and USA: southwesternmost corner of British Columbia south through western Washington, western Oregon, and northwestern corner of California, west of the Cascade Mountains (Hall, 1981; Carraway et al., 1993).

FAMILY SORICIDAE G. FISCHER, 1814

1814. SORICINORUM G. Fischer, *Zoognosia* 3:x.

SUBFAMILY SORICINAE G. FISCHER, 1814

1814. SORICINORUM G. Fischer, *Zoognosia* 3:x. Proposed as a family-level taxon

TRIBE BLARININI KRETZOI, 1965

1965. BLARININI Kretzoi, *Vertebrata Hungarica*, 7(1–2):124.

Genus *Blarina* Gray, 1838

1838. *Blarina* Gray, *Proc. Zool. Soc. London* 1837(5):124; 14 June. Proposed as a subgenus of *Corsira* Gray, 1838 (= *Sorex* Linnaeus, 1758).

1842. *Blarina*: Lesson, *Nouv. tableau mamm.*, p. 89. First use as a genus.

1842. *Brachysorex* Duvernoy, *Mag. Zool. Anat. Comp. Pal.*, ser. 2, 4(8):37. Proposed as a subgenus of *Sorex* Linnaeus, 1758. Type species: none selected; either *Sorex* (*Brachysorex*) *brevicaudatus* Duvernoy, 1842 (= *Sorex brevicaudus* Say, 1822 = *Blarina brevicauda*) or *Sorex* (*Brachysorex*) *harlani* Duvernoy, 1842 (= *Sorex parvus* Say, 1822 = *Cryptotis parvus*).

1843. *Blaria*: Gray, *List Mamm. Brit. Mus.*, p. xxi. Incorrect subsequent spelling of *Blarina* Gray, 1838).

1848. *Talposorex* Pomel, *Arch. Sci. Phys. Nat.*, 9:248. Type species: *Talposorex platyurus* Pomel, 1848 (= *Sorex carolinensis* Bachman, 1837 = *Blarina carolinensis*), by original designation (not *Talposorex* Schinz, 1821 = *Condylura* Illiger, 1811; not *Talposorex* Lesson, 1827 = *Scalopus* È. Geoffroy Saint-Hilaire, 1803).

1848. *Galemys* Pomel, *Arch. Sci. Phys. Nat.* 9:249. Part; also includes the subgenus *Brachysorex*, which contains the species *Galemys micrurus* Pomel, 1848 (= *Sorex talpoides* Gapper, 1830 = *Blarina brevicauda talpoides*) and *Galemys harlani* Duvernoy, 1842 (= *Sorex parvus* Say, 1822 = *Cryptotis parvus*).

1855. *Anotus* Wagner, *Die Säugthiere Suppl.* 5:550. Type species: *Sorex carolinensis* Bachman, 1837 (= *Blarina carolinensis*), by monotypy.

Type Species: *Sorex talpoides* Gapper, 1830 (= *Blarina brevicauda talpoides*), by original designation.

Remarks: The genus was revised by Merriam (1895a) and Jones et al. (1984) and reviewed by Hall and Kelson (1959) and Hall (1981); phylogeography was studied by Brant and Orti (2002). *Blarina brevicauda* was revised by Webster et al. (2011); *B. carolinensis* was reviewed by Genoways and Choate (1998), and *B. hylophaga* was reviewed by George et al. (1981).

Blarina brevicauda (Say, 1822)

FIGURES 16–19

Remarks: This is the type species for the genus *Blarina* Gray, 1838. Webster et al. (2011) comprehensively revised the subspecies of *Blarina brevicauda*. The karyotype of the species is 2N = 48–50, FN = 48 (George et al., 1982; Thompson et al., 2011).

Blarina brevicauda aloga Bangs, 1902

1902. *Blarina brevicauda aloga* Bangs, *Proc. New Engl. Zool. Club* 3:76; 31 March.

1902. *Blarina brevicauda compacta* Bangs, *Proc. New Engl. Zool. Club* 3:77; 31 March. Holotype: MCZ BANGS 9705, from “Nantucket, Massachusetts;” Nantucket County.

Holotype: MCZ BANGS 9727.

Type Locality: USA: “West Tisbury, Martha’s Vineyard, Massachusetts;” Dukes County.

Range: USA: Martha’s Vineyard and Nantucket islands, Massachusetts (Webster et al., 2011).

Remarks: Bangs (1902) distinguished the island forms *Blarina brevicauda aloga* (from Martha’s Vineyard) and *B. brevicauda compacta* (from Nantucket Island) from mainland *B. brevicauda talpoides* on the basis of their smaller size, and he distinguished the two subspecies from each other on the basis of pelage color. Hall (1981) recognized the two taxa as distinct, but Webster et al. (2011:30) synonymized them, noting that their “analyses indicate that individuals from Nantucket Island are slightly larger than those from Martha’s Vineyard.”

Blarina brevicauda brevicauda (Say, 1822)

FIGURES 16, 17

1822. *Sorex brevicaudus* Say, in James, *Acct. Exped. Pittsb. Rocky Mtns.*, 1:164; 31 December.

1842. [*Sorex*] *Brachysorex brevicaudatus*: Duvernoy, *Mag. Zool. Anat. Comp. Pal.* 1842:38. Unjustified emendation.

1857. *Blarina brevicauda*: Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):42.

1891. *Blarina costaricensis* J. A. Allen, *Bull. Am. Mus. Nat. Hist.* 3:205; 17 April. Holotype: AMNH 2800/3642, from “La Carpintera,” Cartago Province, Costa Rica. Merriam (1895a:10, 12–13) identified



FIGURE 16. Watercolor and ink of the holotypes of (top left) *Sorex brevicaudus* Say, 1822 (= *Blarina brevicauda*) and (bottom right) *Sorex parvus* Say, 1822 (= *Cryptotis parvus*) by Titian R. Peale. Image courtesy of the American Philosophical Society, Philadelphia (Titian Ramsay Peale Sketches).

the holotype as *Blarina brevicauda* and thought it probably came from the Upper Mississippi Valley—possibly Iowa—where the collector, George K. Cherrie, had lived before he went to Costa Rica. Allen (1897:34) noted that the collector “still affirms that such an error was impossible, and that the specimen was actually taken at La Carpentera, Costa Rica.” Webster et al. (2011) confirmed that the specimen is *B. brevicauda* rather than *B. hylophaga*, which is also now known from Iowa.

1943. *Blarina fossilis* Hibbard, *Univ. Kansas Sci. Bull.* 29(2):238; 15 October. Holotype: KUVF 6675, from mid-Pleistocene (Irvingtonian) sediments in “the Rezabek gravel pit in sec. 20, T.13S. R.11W., Lincoln county, Locality No. 5, Kansas.” Jones et al. (1984:84) stated that this taxon “most closely resembles Holocene *B. b. brevicauda*,” and Webster et al. (2011) placed it in synonymy with that taxon.
1947. *Blarina brevicauda manitobensis* R. M. Anderson, *Natl. Mus. Canada Bull.* 102(1946):23; 24 January. Holotype: CMN 8549, from “Max Lake, Turtle Mountains, Manitoba; latitude a little north of 49th parallel, longitude about 100 degrees west; altitude about 2,100 feet.”

Neotype: SMNH 37241, designated by Webster et al. (2011). The holotype (Figure 16) in the Philadelphia Museum (Godman, 1826:79–80 and accompanying plate) was lost or destroyed (Woodman, 2009).

Type Locality: USA: “3 mi S, 4 mi E Fort Calhoun, Washington County, Nebraska, 41°24'43" N, 95°57'00" W.” The type locality of the neotype essentially matches the original type locality (“Engineer cantonment . . . taken near our cabins”), which was rediscovered by Carlson et al. (2004) and described by Genoways and Ratcliff (2008:6–7): “Engineer Cantonment is located in the extreme southeastern corner of modern Washington County, NE, at a place three miles south and four miles east of the town of Fort Calhoun (41°24'43" N latitude, 95°57'00.6" W longitude, SE ¼ NW ¼ SE ¼, Section 28, Township 17 N, Range 13 E). The site is 305 m in elevation.”

Distribution: Canada and USA: southeastern Saskatchewan and southern Manitoba south through eastern North Dakota, eastern South Dakota, eastern Nebraska, western and southern Minnesota, and the Mississippi Valley regions of



FIGURE 17. *Sorex brevicaudatus* Duvernoy, 1842 (= *Sorex brevicaudus* Say, 1842 = *Blarina brevicauda*). Image from Duvernoy (1842: pl. 52), courtesy of Biodiversity Heritage Library (<https://www.biodiversitylibrary.org/>), contributed by the Ernst Mayer Library, Museum of Comparative Zoology, Harvard University, Cambridge.

Wisconsin and Illinois to northern Missouri (Thompson et al., 2011; Webster et al., 2011).

Blarina brevicauda cumberlandensis Webster, Moncrief, Choate, and Genoways, 2011

2011. *Blarina brevicauda cumberlandensis* Webster, Moncrief, Choate, and Genoways, *Virginia Mus. Nat. Hist. Mem.* 10:31; 21 March.

Holotype: OMNH 37146.

Type Locality: USA: “Murfreesboro, Rutherford County, Tennessee.”

Distribution: USA: Cumberland Plateau region of central Tennessee and western and south central Kentucky (Webster et al., 2011).

Blarina brevicauda delmarvensis Webster, Moncrief, Choate, and Genoways, 2011

2011. *Blarina brevicauda delmarvensis* Webster, Moncrief, Choate, and Genoways, *Virginia Mus. Nat. Hist. Mem.* 10:32; 21 March.

Holotype: KU 45447.

Type Locality: USA: “Cambridge, Dorchester County, Maryland.”

Distribution: USA: southern half of Delaware and the eastern shore of Maryland and Virginia (Webster et al., 2011).

Blarina brevicauda jerrychoatei Webster, Moncrief, and Genoways, 2011

2011. *Blarina brevicauda jerrychoatei* Webster, Moncrief, and Genoways, in Webster et al., *Virginia Mus. Nat. Hist. Mem.* 10:34; 21 March.

Holotype: KU 114306.

Type Locality: USA: “turnpike right-of-way 1 ½ mi N, 1 ½ mi E Courthouse, Lawrence, Douglas County, Kansas.”

Distribution: Kansas: valleys of the Kansas River and its tributaries in Douglas, Jefferson, and Leavenworth Counties; elevational distribution: 240–300 m.

Remarks: Where the distributions of *Blarina brevicauda* and *B. hylophaga* come into contact, the two species generally appear to have parapatric distributions with a narrow contact zone and minimal hybridization (Thompson et al., 2011). *Blarina brevicauda jerrychoatei* represents an isolated population that is within the distribution of *B. hylophaga*. Webster et al. (2011:34) indicated that the taxon is “intermediate in most characters, not as massive as in specimens from elsewhere west of the Mississippi River.” Esselstyn and Timm (2006) reported that mitochondrial cytochrome *b* sequences from the population do not differ substantially from those of *B. b. brevicauda*. More complete study is needed to better elucidate the relationships of this Kansas River population.

Blarina brevicauda knoxjonesi Webster, 1996

1996. *Blarina brevicauda knoxjonesi* Webster, in Genoways and Baker, *Contributions in Mammalogy*, p. 52; 5 September.

Holotype: USNM 567349.

Type Locality: USA: “Carolina Beach, New Hanover Co., North Carolina (34°01'32"N, 77°54'36"W).”

Distribution: USA: south of the Pamlico River in eastern North Carolina (Webster et al., 2011).



FIGURE 18. Copperplate engraving of Benjamin Barton's (1806) "black shrew" from the vicinity of Philadelphia, the basis for *Sorex niger* Ord, 1815 (= *Sorex talpoides* Gapper, 1830 = *Blarina brevicauda talpoides*; Woodman, 2013). Image courtesy of the American Philosophical Society, Philadelphia, Pennsylvania (Benjamin Smith Barton Papers).

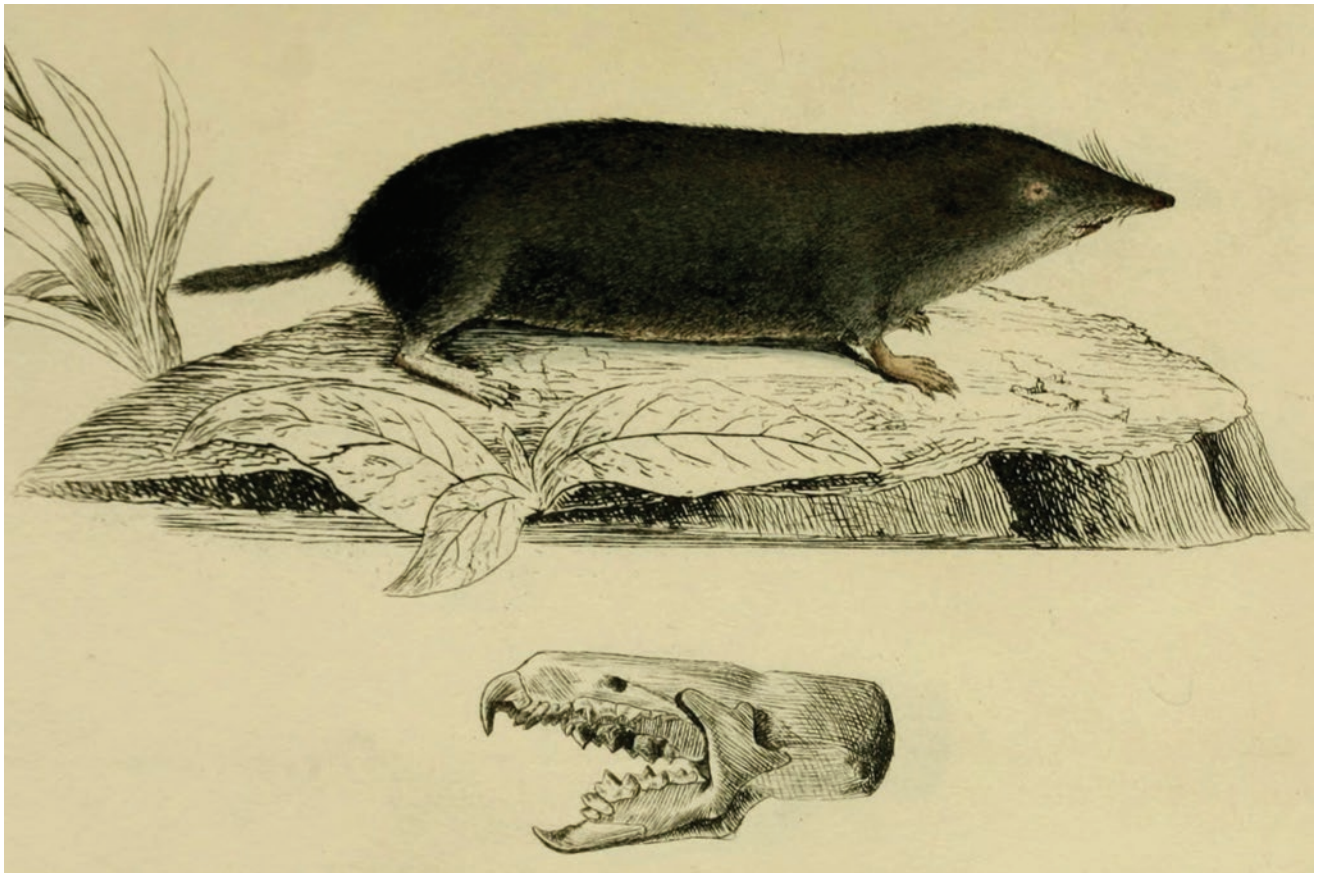


FIGURE 19. *Sorex talpoides* Gapper, 1830 (= *Blarina brevicauda talpoides*). From Gapper (1830: pl. 8), courtesy of Biodiversity Heritage Library (<https://www.biodiversitylibrary.org/>), contributed by The Natural History Museum Library, London.

Blarina brevicauda talpoides (Gapper, 1830)

FIGURES 18–20

1815. *Sorex niger* Ord, *Zoology of North America*, p. 291, in W. Guthrie [et al.], *A New Geographical, Historical, and Commercial Grammar. Nomen nudum*; based on Barton's (1806) "black shrew" from "the vicinity of Philadelphia" (Woodman, 2013).
1830. *Sorex talpoides* Gapper, *Zool. J.* 5(31):202, pl. 8; June.
1837. *Corsira (Blarina) talpoides*: J. E. Gray, *Proc. Zool. Soc. Lond.* 5:124; November.
1837. *Sorex dekayi* Bachman, *J. Acad. Nat. Sci. Phila.* 7(2):377; November. Holotype: unknown, from "Queens county," New York (De Kay, 1842:18).
1842. [*Sorex*] *concolor* De Kay, *Zool. New York*, p. 18. *Nomen nudum*; working name for *Sorex dekayi* Bachman, 1837.
1848. *G[alemys]. micrurus* Pomel, *Arch. Sci. Phys. Nat.*, 9:249; based on "Sorex de Kayi de Kay, 1842" = *Sorex dekayi* Bachman, 1837.
1857. *Blarina angusticeps* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):47. Holotype: USNM 1318/2120, from "Burlington, Vermont." The type and only specimen of this taxon was regarded by Merriam (1895a:10) as an individual with a deformed skull; see also Bole and Moulthrop (1942:111–112).
1895. *Blarina telmalestes* Merriam, *N. Am. Fauna* 10:15; 31 December. Holotype: USNM 71823, from "Lake Drummond, Dismal Swamp, Virginia."
1899. *Blarina simplicidens* Cope, *J. Acad. Nat. Sci. Phila.* ser. 2, 11(2):219–220. Holotype: ANSPVP 150, from mid-Pleistocene (late Irvingtonian) "carbonaceous layers of the Port Kennedy deposit," Upper Merion Township, Montgomery County, Pennsylvania (Spamer et al., 1995; Bell et al., 2004). Jones et al. (1984) considered this fossil taxon "a representative of the *talpoides* semispecies." Webster et al. (2011) treated it as a synonym of *B. b. talpoides*.
1902. *Blarina brevicauda talpoides*: Bangs, *Proc. New Engl. Zool. Club* 3:75; 31 March. First use of current name combination.
1908. *Blarina brevicauda ozarkensis* B. Brown, *Mem. Am. Mus. Nat. Hist.* 9(4):170; February. Holotype: AMNH 11794, from mid-Pleistocene (late Irvingtonian) sediments in Conard Fissure, "a mile north of the Buffalo River, four miles west of Willcockson and fifteen miles south of Harrison, near the northern line of Newton County, Arkansas." Jones et al. (1984:81) treated this taxon "as a separate subspecies within the *talpoides* semispecies of *B. brevicauda*." Webster et al. (2011) placed it in synonymy with *B. b. talpoides*.
1940. *Blarina brevicauda pallida* R. W. Smith, *Am. Midl. Nat.* 24(1):223; 31 July. Holotype: MVZ 86682, from "Wolfville, Kings County, Nova Scotia."
1942. *Blarina brevicauda kirtlandi* Bole and Moulthrop, *Sci. Publ. Cleveland Mus. Nat. Hist.* 5(6):99; 11 September. Holotype: CMNH 16895, from "The Holden Arboretum, Kirtland Township, Lake County, and Chardon Township, Geauga County, Ohio. (The county line bisects the type locality.)"
1942. *Blarina brevicauda churchi* Bole and Moulthrop, *Sci. Publ. Cleveland Mus. Nat. Hist.* 5(6):109; 11 September. Holotype: CMNH 3640, from "Roan Mountain, Mitchell County, North Carolina."
1942. *Blarina brevicauda hooperi* Bole and Moulthrop, *Sci. Publ. Cleveland Mus. Nat. Hist.* 5(6):110; 11 September. Holotype: UMMZ 77380, from "Lyndon, Caledonia County, Vermont."

1943. *Blarina brevicauda angusta* Anderson, *Ann. Rep. Provancher Soc. Nat. Hist.* 1942:52; 7 September. Holotype: CMN 11655, from "Kelly's Camp, Berry Mountain Brook, near head of Grand Cascapedia River, Gaspé County, Quebec, attitude [sic], about 1,600 feet".

Holotype: Natural History Museum Bristol, UK [now Bristol Museum and Art Gallery]; probably lost when the museum was destroyed by aerial bombing during World War II (Rhian Rowson, Bristol Museum and Art Gallery, email communication, 22 February 2017).

Type Locality: Canada: "the District of Upper Canada extending between York and Lake Simcoe," southern Ontario. York is now within the city limits of Toronto.

Distribution: Canada and USA: southernmost portions of Canada from western Ontario to Nova Scotia, south to the Ohio River in Illinois and western Indiana, eastern Kentucky, south along the Appalachian Mountains into northern Georgia and Alabama, and east through northern South Carolina to the eastern coast of the United States (Webster et al., 2011); elevational distribution from near sea level to 1,950 m (USNM specimens).

Blarina carolinensis (Bachman, 1837)

FIGURE 20

Remarks: In general, the distributions of *B. carolinensis* and its constituent subspecies remain poorly circumscribed (Genoways and Choate, 1998; McCay, 2001). The karyotype of *B. carolinensis* is $2N = 37-46$, $FN = 44-45$ (George et al., 1982).

Blarina carolinensis carolinensis (Bachman, 1837)

FIGURE 20

1837. *Sorex carolinensis* Bachman, *J. Acad. Nat. Sci. Phila.* 7(2):366; November.
1857. *Blarina carolinensis*: Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):45.
1895. *Blarina brevicauda carolinensis*: Merriam, *N. Am. Fauna* 10:13; 31 December.
1984. *Blarina carolinensis carolinensis*: C. A. Jones et al., *Spec. Publ. Carnegie Mus.* 8:74; 11 September. First use of current name combination.

Neotype: USNM 574157, designated by Handley and Varn (1994).

Type Locality: USA: "beside Awendaw Creek, 3.2 km E Awendaw Post Office, Charleston County, South Carolina, in a thicket at the edge of a salt marsh" (Handley and Varn, 1994). Bachman (1837:366) originally wrote, "It is found in various localities, both in the upper and maritime districts of South Carolina." Merriam (1895a:13) restricted the type locality to "Eastern South Carolina."

Distribution: USA: Atlantic coastal plain and piedmont from south central and southeastern Virginia south to Alachua County, Florida, and west along the Gulf of Mexico coastal plain to central Mississippi, then north into the upland portion of western Tennessee, southern Illinois, central Arkansas, southeastern Oklahoma, and northeastern Texas.



FIGURE 20. John Bachman's (1837) shrews: from top to bottom, *Sorex carolinensis* Bachman, 1837 (= *Blarina carolinensis*); *Sorex longirostris* Bachman, 1837; *Sorex cinereus* Bachman, 1837 (= *Blarina floridana* Merriam, 1895 = *Cryptotis parvus floridanus*); *Sorex dekayi* Bachman, 1837 (= *Sorex talpoides* Gapper, 1830 = *Blarina brevicauda talpoides*). Image from Bachman (1837: pl. 23).

Blarina carolinensis minima Lowery, 1943

1943. *Blarina brevicauda minima* Lowery, *Occ. Pap. Mus. Zool. Louisiana State Univ.* 13:218; 22 November.

1979. *Blarina carolinensis minima*: Sealander, *A Guide to Arkansas Mammals*, p. 44. First use of current name combination.

Holotype: LSU 2196.

Type Locality: USA: "Comite River, 13 mi. NE Baton Rouge, East Baton Rouge Parish, Louisiana."

Distribution: USA: appears to occur in southeastern Texas, most of Louisiana, and the Mississippi Valley regions of western Mississippi, eastern Arkansas, and western Tennessee, possibly reaching the southeastern tip of Missouri, southern tip of Illinois, and western tip of Kentucky (Genoways and Choate, 1998; McCay, 2001).

Remarks: Provisionally retained as a subspecies of *B. carolinensis* by Genoways and Choate (1998).

Blarina hylophaga Elliot, 1899

Remarks: The karyotype of *B. hylophaga* is $2N = 52$, $FN = 60-62$ (George et al., 1982).

Blarina hylophaga hylophaga Elliot, 1899

1899. *Blarina brevicauda hulophaga* Elliot, *Field Col. Mus. Publ.* 38, *Zool. Ser.* 1(15):287; 24 May.

1905. *Blarina brevicauda hylophaga*: Elliot, *Field Col. Mus. Publ.* 105, *Zool. Ser.* 6:461. Justified emendation of *Blarina brevicauda hulophaga* Elliot, 1899. In a footnote, Elliot (1905:461) wrote, "Misprinted originally *hulophaga*." The corrected spelling is a better transliteration of the Greek word ὑλοφάγος, from which Elliot (1899b:288) derived the species name.

1939. *Blarina brevicauda carolinensis*: Blair, *Am. Midl. Nat.* 22:99; July. Part; not *Sorex carolinensis* Bachman, 1837 = *Blarina carolinensis*.

1972. *Blarina carolinensis carolinensis*: Genoways and Choate, *Syst. Zool.* 21:114; March. Part; not *Sorex carolinensis* Bachman, 1837 = *Blarina carolinensis*.

1981. *Blarina hylophaga hylophaga*: George et al., *Ann. Carnegie Mus.* 50(21):504; 18 December. First use of current name combination.

Holotype: FMNH 6770.

Type Locality: USA: "Dougherty, Indian Territory"; Murray County, Oklahoma. Elliot (1905:461) subsequently provided a slightly more expanded locality: "Dougherty, Washita River, Chickasaw Nation, Indian Territory."

Distribution: USA: southern Great Plains from southern Nebraska and southwest Iowa to east central Colorado, through Kansas and Missouri through northwestern Arkansas, central and eastern Oklahoma, to northeastern Louisiana (George et al., 1981).

Blarina hylophaga plumbea W. B. Davis, 1941

1941. *Blarina brevicauda plumbea* W. B. Davis, *J. Mamm.* 22(3):317; 14 August.

1979. *B[larina]. c[arolinensis]. plumbea*: Schmidly and W. A. Brown, *Southwest. Nat.* 24(1):39; 30 March.

1981. *Blarina hylophaga plumbea*: George et al., *Ann. Carnegie Mus.* 50(21):504; 18 December. First use of current name combination.

Holotype: TCWC 1541.

Type Locality: USA: "one-half mile west of Marano Mill, Aransas National Wildlife Refuge Aransas County, Texas."

Distribution: USA: known only from two isolated populations in Aransas and Bastrop Counties, Texas (Reilly et al., 2005).

Blarina peninsulae Merriam, 1895

1895. *Blarina carolinensis peninsulae* Merriam, *N. Am. Fauna* 10:14; 31 December.

1897. [*Blarina brevicauda*] *peninsulae*: Trouessart, *Catalogus Mammalium, Tam Viventium quam Fossilium* 1:188.

2005. *Blarina peninsulae*: Hutterer, in MSW3, p. 270. First use of current name combination.

Holotype: USNM 70874.

Type Locality: USA: "Miami River, Dade County, Fla."

Distribution: USA: most of peninsular Florida (Benedict et al., 2006).

Remarks: Formerly treated as a subspecies of *Blarina carolinensis* (McCay, 2001; Benedict et al., 2006). *Blarina peninsulae* has a distinct karyotype ($2N = 50-52$, $FN = 52$) and morphology (George et al., 1982; Genoways and Choate, 1998), leading Hutterer (2005:270) to recognize it as a distinct species.

Blarina shermani Hamilton, 1955

1955. *Blarina brevicauda shermani* Hamilton, *Proc. Biol. Soc. Wash.* 68:37; 20 May.

1992. *Blarina carolinensis shermani*: Layne, in Humphrey, *Rare and Endangered Biota of Florida* 1:328.

2006. *Blarina shermani*: Benedict et al., *Occ. Pap. Mus. Texas Tech Univ.* 251:16; 23 January. First use of current name combination.

Holotype: CUMV 8026.

Type Locality: USA: "two miles north of Fort Myers, Lee County, Florida."

Distribution: USA: restricted to southwestern coast of Charlotte, Lee, and Collier Counties, Florida (Benedict et al., 2006).

Remarks: McCay (2001) considered this taxon to be a subspecies of *B. carolinensis*, but Benedict et al. (2006) treated it as a distinct species.

Genus *Cryptotis* Pomel, 1848

1848. *Cryptotis* Pomel, *Arch. Sci. Phys. Nat.* 9:249; November. Proposed as a subgenus of *Musaraneus* Pomel, 1848.

1848. *Galemys* Pomel, *Arch. Sci. Phys. Nat.* 9:249. Part; not *Galemys* Kaup, 1829, a talpid.

1848. *Brachysorex*: Pomel, *Arch. Sci. Phys. Nat.* 9:249. Part; not *Brachysorex* Duvernoy, 1842.

1848. *Musaraneus* Pomel, *Arch. Sci. Phys. Nat.* 9:249. Part; not *Musaraneus* Brisson, 1762, which is unavailable; *Musaraneus* Pomel,

1848 is a junior synonym of *Crocidura* Wagler, 1832 (Woodman, 2004).

1857. *Blarina*: Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):48. Part; not *Blarina* Gray, 1838.
1872. *Cryptotis* Milne-Edwards, *Recherches des Mamm.* 1:256. Incorrect subsequent spelling of *Cryptotis* Pomel, 1848.
1877. *Soriciscus* Coues, *Bull. U.S. Geol. Geog. Surv. Terr.* 3(3):649; 15 May. Type species: “*Sorex parvus* Say or *S. cinereus* Bachm” (= *Cryptotis parvus parvus* (Say, 1822) and *Cryptotis parvus floridanus* (Merriam, 1895), respectively), by original designation. Proposed as a subgenus of *Blarina* Gray, 1838.
1901. *Sorieiscus* Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):382; 6 March. Incorrect subsequent spelling of *Soriciscus* Coues, 1877.
1911. *Cryptotis*: Miller, *Proc. Biol. Soc. Wash.* 24:221; 31 October (first use as a genus).
1958. *Cryptotys* Saban, in Piveteau, *Traité de Paléontologie* 6(2):846. Incorrect subsequent spelling of *Cryptotis* Pomel, 1848.
1966. *Xenosorex* Schaldach, *Saug. Mitteil.* 14(4):289; October. Type species: *Notiosorex phillipsii* Schaldach, 1966 (= *Cryptotis phillipsii* (Schaldach, 1966)), by original designation. Proposed as a subgenus of *Notiosorex* Coues, 1877.
1984. *Criptotis* Durant and Péfaur, *Revista de Ecología, Conservación y Ornitología Latinoamericana* 1(2):6. Incorrect subsequent spelling of *Cryptotis* Pomel, 1848.

Type Species: *Musaraneus (Cryptotis) cinereus* (Bachman, 1837) (= *Sorex cinereus* Bachman, 1837 = *Sorex parvus* Say, 1822 = *Cryptotis parvus*), by monotypy.

Remarks: *Cryptotis* was revised by Merriam (1895a) and reviewed by Hall and Kelson (1959) and Hall (1981); Middle American species were revised by Choate (1970). Species groups are based on Choate (1970) and Woodman and Timm (1993, 1999, 2017) and on molecular genetic analyses by Guevara and Cervantes (2013), He et al. (2015: tab. 1), and Baird et al. (2017).

Although historically treated as feminine in gender (Miller, 1912a; Miller and Kellogg, 1955; Hall and Kelson, 1959; Hall, 1981), a ruling by ICZN (2006) determined *Cryptotis* should be treated as a masculine noun.

Cryptotis alticola (Merriam, 1895)

1895. *Blarina alticola* Merriam, *N. Am. Fauna* 10:27; 31 December.
1912. *Cryptotis alticola*: Miller, *Bull. U.S. Natl. Mus.* 79:27; 31 December. First use of current name combination.
1967. *Cryptotis euryrhynchis* Genoways and Choate, *Proc. Biol. Soc. Wash.* 80:203; 1 December. Holotype: KU107143, from “Volcán de Fuego (also called Volcán de Colima), 9800 ft, Jalisco.”
1970. *Cryptotis goldmani alticola*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19(3):245; 30 December.

Holotype: USNM 52047.

Type Locality: Mexico: “Mount Popocatepetl, Mexico (altitude, 11,500 feet).”

Distribution: Transverse Volcanic Axis of central Mexico, from southern Jalisco and Colima to northern Hidalgo

and northwestern Puebla; elevational distribution 1,060–4,115 m (Woodman and Timm, 1999; Carraway, 2007).

Remarks: Molecular analyses (Guevara and Cervantes, 2014; He et al., 2015; Baird et al., 2017) position *C. alticola* as part of either the *C. goldmani* group or *C. goodwini* group. On biogeographical grounds, I tentatively place it in the former species group (Appendix A).

Cryptotis aroensis Quiroga-Carmona and Molinari, 2012

2012. *Cryptotis aroensis* Quiroga-Carmona and Molinari, *Zootaxa* 3441:3; 28 August.

Holotype: CVULA I-8548.

Type Locality: Venezuela: “Las Cumaraguas Sector, Sierra de Aroa, Municipio Cocorote, Estado Yaracuy, Venezuela (10°22'02.6" N, 68°49'20.4" W), elevation 1730 m.”

Distribution: Known only from the highlands of the Sierra de Aroa, northwestern Venezuela; elevational distribution is 1,400–1,940 m (Quiroga-Carmona and Molinari, 2012; García et al., 2014).

Remarks: *Cryptotis thomasi* group.

Cryptotis berlandieri (Baird, 1857)

FIGURE 11

1857. *Blarina berlandieri* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):53, pl. 18.
1895. *Blarina parva*: Merriam, *N. Am. Fauna* 10:17; 31 December. Part; not *Sorex parvus* Say, 1822.
1903. *Blarina pergracilis* Elliot, *Field Col. Mus. Publ.* 71, *Zool. Ser.* 3(8):149; 20 March. Holotype: FMNH 8689, from “Ocotlan, state of Jalisco, Mexico.”
1903. *B[larina]. b[erlandieri]. berlandieri*: Elliot, *Field Col. Mus. Publ.* 71, *Zool. Ser.* 3(8):149; 20 March.
1911. *Cryptotis pergracilis macer* Miller, *Proc. Biol. Soc. Wash.* 24:223; 31 October. Holotype: USNM 15565/38494, from “near Guanajuato City, Mexico”; state of Guanajuato.
1911. *Cryptotis pergracilis pergracilis*: Miller, *Proc. Biol. Soc. Wash.* 24:223; 31 October.
1912. *Cryptotis berlandieri*: Miller, *Bull. U.S. Natl. Mus.* 79:25; 31 December. First use of current name combination.
1924. *Cryptotis pergracilis macra*: Miller, *Bull. U.S. Natl. Mus.* 128:31. Emendation of *Cryptotis pergracilis macer* Miller, 1911 for gender agreement.
1933. *Cryptotis pergracilis nayaritensis* Jackson, *Proc. Biol. Soc. Wash.* 46:79; 27 April. Holotype: USNM 88015, from “Tepic, altitude 3000 feet, state of Nayarit, Mexico.”
1941. *Cryptotis parva berlandieri*: W. B. Davis, *J. Mamm.* 22(4):413; 14 November.

Lectotype: USNM 2159, designated by Lyon and Osgood (1909:237).

Type Locality: Mexico: “in the vicinity of Matamoros,” Tamaulipas (Baird, 1857:54).

Distribution: USA and Mexico: southern Texas, Coahuila, Guanajuato, Jalisco, Michoacán, Nayarit, Nuevo León, San

Luis Potosí, and Tamaulipas; elevational distribution from near sea level to 2,715 m (Carraway, 2007).

Remarks: *Cryptotis parvus* group. *Cryptotis berlandieri* in Texas and northern Tamaulipas average larger than *C. parvus* from the central Great Plains. There is also preliminary evidence that populations of *C. berlandieri* in Texas and northern Tamaulipas may differ from those in more southern parts of the distribution in Mexico (Choate, 1970). A more comprehensive study of populations within *C. berlandieri* than has been undertaken so far may reveal more genetic variation than currently recognized.

Cryptotis brachyonyx Woodman, 2003

2003. *Cryptotis brachyonyx* Woodman, *Proc. Biol. Soc. Wash.* 116(4):855; 31 December.

Holotype: BM 99.10.3.2.

Type Locality: “Colombia: Department of Cundinamarca: ‘La Selva, near Bogotá.’”

Distribution: Colombia: eastern range of the Andes in Departamento de Cundinamarca; known elevational distribution: 1,300–2,715 m (Woodman and Péfaur, 2008).

Remarks: *Cryptotis nigrescens* group.

Cryptotis cavatorculus Woodman, 2015

2015. *Cryptotis cavatorculus* Woodman, *Ann. Carnegie Mus.* 83(2):114; 15 November.

Holotype: FLMNH 27718.

Type Locality: Honduras: “desiccated cloud forest on a ridge above El Cedral, ca. 1900 m (ca. 14°54′ N, 88°06′ W), Parque Nacional de Santa Barbara, Santa Barbara Dept.”

Distribution: Honduras: known only from the holotype.

Remarks: *Cryptotis goodwini* group.

Cryptotis celaque Woodman, 2015

2015. *Cryptotis celaque* Woodman, *Ann. Carnegie Mus.* 83(2):106; 15 November.

Holotype: CM 112882.

Type Locality: Honduras: “Campamento Don Tomás, 2075 m, Celaque National Park, ca. 11 km SW of Gracias, Lempira Dept.”

Distribution: Honduras: known only from Sierra de Celaque, Departamento de Lempira; elevational distribution: 1,430–2,560 m (Woodman, 2015).

Remarks: *Cryptotis goodwini* group.

Cryptotis colombianus Woodman and Timm, 1993

1993. *Cryptotis colombiana* Woodman and Timm, *Field. Zool.*, n.s. 74(1452):24; 30 September.

Holotype: FMNH 69816.

Type Locality: “Colombia; Central Cordillera; Antioquia Dept., Sonsón; 15 km E of Río Negro; 1750 m.”

Distribution: Colombia: northern central range of the Andes in Antioquia Department; elevational distribution: 1,750–2,150 m (Woodman, 2003).

Remarks: *Cryptotis nigrescens* group.

Cryptotis dinirensis Quiroga-Carmona and DoNascimento, 2016

2016. *Cryptotis dinirensis* Quiroga-Carmona and DoNascimento, *Mamm. Biol.* 81(2016):1–12; 3 May.

Holotype: EBRG 24723.

Type Locality: Venezuela: “Las Antenas sector of the Parque Nacional Dinira, along Carache–La Peña road, Trujillo State, Venezuela, 9°41′ N, 70°04′ W, elevation 2550 m.”

Distribution: Venezuela: northernmost portion of the eastern branch of the Venezuelan Andes Cordillera; elevational distribution: 2,430–3,100 m (Quiroga-Carmona and DoNascimento, 2016).

Remarks: *Cryptotis thomasi* group.

Cryptotis endersi Setzer, 1950

1950. *Cryptotis endersi* Setzer, *J. Wash. Acad. Sci.* 40(9):300; 29 September.

Holotype: ANSP 20955.

Type Locality: Panama: “Cylindro, Province of Chiriquí.” The type locality is probably on the Caribbean slope in Bocas del Toro Province (Pine et al., 2002).

Distribution: Panama: known from two specimens taken in highlands near the boundary between Bocas del Toro and Chiriquí Provinces; known elevation: 1,800–1,856 m (Pine et al., 2002).

Remarks: *Cryptotis thomasi* group.

Cryptotis equatoris (Thomas, 1912)

1912. *Blarina equatoris* Thomas, *Ann. Mag. Nat. Hist.*, ser. 8, 9:409; April.

1913. *Blarina meridensis*: Lönnberg, *Ark. Zool.* 8(16):1. Part; not *Blarina meridensis* Thomas, 1898.

1921. *Blarina aequatoris* Lönnberg, *Ark. Zool.* 14(4):4. Incorrect subsequent spelling of *Blarina equatoris* Thomas, 1912.

1921. [*Cryptotis*] *equatoris*: Thomas, *Ann. Mag. Nat. Hist.*, ser. 9, 8(45):354. First use of current name combination.

1958. *Cryptotis thomasi equatoris*: Cabrera, *Rev. Mus. Argentino* 4(1):47. Part.

1997. *Cryptotis e[quatoris]. equatoris*: Vivar et al., *Am. Mus. Novit.* 3202:6; 29 August.

Holotype: BM 99.9.9.3.

Type Locality: Ecuador: “Sinche, Guabanda, 4000 m”; Hacienda de Sinche, northeast of Guaranda, Departamento de Bolívar.

Distribution: Ecuador: western Andean cordillera from northern Carchí Province south to central Bolívar Province; elevational distribution: 1,800–4,000 m (Moreno-Cárdenas and Albuja, 2014). Populations of *C. equatoris* reported from northern Peru (Pacheco et al., 2009) have since been reidentified as *C. montivagus* (Zeballos et al., 2018).

Remarks: *Cryptotis thomasi* group.

Cryptotis evaristoi Zeballos, Pino, Medina, Pari, and Ceballos, 2018

2018. *Cryptotis evaristoi* Zeballos, Pino, Medina, Pari, and Ceballos, in Zeballos et al., *Zootaxa* 4377(1):61; 31 January.

Holotype: MUSA 7427.

Type Locality: Peru: “Miraflores, San Ignacio, Cajamarca, Peru (5°12' S and 79°12' W) at 2,800 m above sea level.”

Distribution: Peru: montane forest and páramo in Tabaconas Namballe National Sanctuary, Cajamarca Province, northern Peru; elevational distribution: 2,700–3,780 m (Zeballos et al., 2018).

Remarks: *Cryptotis thomasi* group.

Cryptotis goldmani (Merriam, 1895)

Remarks: *Cryptotis goldmani* group. *Cryptotis goldmani* was once thought to be much more widespread (Choate, 1970), including populations near San Cristóbal de las Casas, Chiapas (*C. griseoventris*), and from Todos Santos Cuchumatán, Guatemala (*C. mam*). Carraway (2007:19) formally distinguished populations in Guerrero (*C. goldmani goldmani*) from those in Oaxaca (*C. goldmani machetes*) on the basis of the former’s “venter pelage with white-tipped hairs” rather than blond-tipped hairs. The two populations can be partially separated using discriminant function analysis of a suite of cranial measurements.

Cryptotis goldmani goldmani (Merriam, 1895)

1895. *Blarina mexicana goldmani* Merriam, *N. Am. Fauna* 10:25; 31 December.

1912. *Cryptotis mexicana goldmani*: Miller, *Bull. U.S. Natl. Mus.* 79:27; 31 December.

1933. *Cryptotis guerrerensis* Jackson, *Proc. Biol. Soc. Wash.* 46:80; 27 April. Holotype: USNM 126895, from “Omiteme, altitude about 8000 feet, state of Guerrero, Mexico.”

1970. *Cryptotis goldmani goldmani*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19(3):247; 30 December. Part; first use of current name combination.

Holotype: USNM 70244.

Type Locality: Mexico: “mountains near Chilpancingo, Guerrero, Mexico (altitude, 10,000 feet).”

Distribution: Mexico: highland region around Omiteme, Guerrero; elevational distribution: 1,550–3,000 m (Woodman and Timm, 1999; Carraway, 2007).

Cryptotis goldmani machetes (Merriam, 1895)

1895. *Blarina mexicana machetes* Merriam, *N. Am. Fauna* 10:26; 31 December.

1895. *Blarina fossor* Merriam, *N. Am. Fauna* 10:28; 31 December. Holotype: USNM 68545, from “Mount Zempoaltepec, Oaxaca, Mexico (altitude, 10,500 feet).”

1911. *Cryptotis frontalis* Miller, *Proc. Biol. Soc. Wash.* 24:222; 31 October. Holotype: USNM 123429, from “near the City of Tehuantepec, Mexico”; state of Oaxaca.

1912. *Cryptotis mexicana machetes*: Miller, *Bull. U.S. Natl. Mus.* 79:27; 31 December.

1912. *Cryptotis fossor*: Miller, *Bull. U.S. Natl. Mus.* 79:28; 31 December.

1967. *Cryptotis mexicana mexicana*: J. K. Jones and Genoways, *J. Mamm.* 48(2):321; 20 May. Part; not *Blarina mexicana* Coues, 1877 (= *Cryptotis mexicanus*).

1970. *Cryptotis goldmani goldmani*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19:247; 30 December. Part; not *Blarina goldmani* Merriam, 1895 (= *Cryptotis goldmani goldmani*).

2007. *Cryptotis goldmani machetes*: Carraway, *Monogr. West. N. Am. Nat.* 3:20; 22 June. First use of current name combination.

Holotype: USNM 71456.

Type Locality: Mexico: “mountains near Ozolotepec, Oaxaca (altitude, 10,000 feet).”

Distribution: Mexico: highlands of Oaxaca; elevational distribution: 2,250–3,200 m (Woodman and Timm, 1999; Carraway, 2007).

Cryptotis goodwini Jackson, 1933

1933. *Cryptotis goodwini* Jackson, *Proc. Biol. Soc. Wash.* 46:81; 27 April.

Holotype: USNM 77074.

Type Locality: Guatemala: “Calel, altitude 10200 feet”; Quetzaltenango Department (see also Goldman, 1951).

Distribution: Guatemala: *Cryptotis goodwini* sensu stricto are known exclusively from highlands of southern Guatemala; elevational distribution: 1,200–3,350 m (Woodman, 2015).

Remarks: *Cryptotis goodwini* group. Once considered a species widespread in highlands in Guatemala, El Salvador, and Honduras (Choate, 1970; Woodman et al., 2012), *C. goodwini* sensu lato included several cryptic species now recognized as distinct (*C. cavatorculus*, *C. celaque*, *C. lacertosus*, *C. magnimanus*, *C. mam*, *C. mccarthyi*, *C. oreoryctes*), and all are variously adapted for more fossorial behavior (Woodman and Gaffney, 2014). A record of *Cryptotis “goodwini”* from Chiapas (e.g., Guevara and Cervantes, 2014) represents a distinct species that is being described.

Cryptotis gracilis Miller, 1911

1911. *Cryptotis gracilis* Miller, *Proc. Biol. Soc. Wash.* 24:221; 31 October.

1944. *Cryptotis jacksoni* Goodwin, *Am. Mus. Novit.* 1267:1; 10 December. Holotype: USNM 116649, from “Volcan Irazu”; Cartago Province, Costa Rica.

Holotype: USNM 12236/38471.

Type Locality: Costa Rica: “head of Rio Lari, near base of Pico Blanco, Talamanca, Costa Rica, by Wm. M. Gabb. Altitude about 6,000 feet”; Limón Province.

Distribution: Costa Rica and Panama: portions of the Cordillera Central and Cordillera de Talamanca; elevational distribution: 1,830–3,540 m.

Remarks: *Cryptotis goodwini* group.

Cryptotis griseoventris Jackson, 1933

1933. *Cryptotis griseoventris* Jackson, *Proc. Biol. Soc. Wash.* 46:80; 27 April.
 1970. *Cryptotis goldmani goldmani*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19:247; 30 December. Part; not *Blarina goldmani* Merriam, 1895 (= *Cryptotis goldmani*).

Holotype: USNM 75894.

Type Locality: Mexico: “San Cristobal, altitude, 9500 feet, state of Chiapas.”

Distribution: Mexico: known only from the region of Los Altos de Chiapas, northern Chiapas; elevational distribution: 2,200–2,900 m (Guevara et al., 2014).

Remarks: *Cryptotis goodwini* group.

Cryptotis hondurensis Woodman and Timm, 1992

1992. *Cryptotis hondurensis* Woodman and Timm, *Proc. Biol. Soc. Wash.* 105(1):2; 12 March.

Holotype: KU 106941.

Type Locality: Honduras: “Francisco Morazán Department; 12 km WNW of El Zamorano, W slope of Cerro Uyuca [=Cerro Oyuca; ca. 14°05' N, 87°06' W], 1680 m.”

Distribution: Honduras: known only from forested highlands east of Tegucigalpa; elevational distribution: 1,680–1,700 m.

Remarks: *Cryptotis nigrescens* group.

Cryptotis lacandonensis Guevara, Sánchez-Cordero, León-Paniagua, and Woodman, 2014

2014. *Cryptotis lacandonensis* Guevara, Sánchez-Cordero, León-Paniagua, and Woodman, *J. Mamm.* 95(4):743; August.

Holotype: MZFC 7168.

Type Locality: Mexico: “Yaxchilán Archaeological Site, 90-m elevation, municipality of Ocosingo, Chiapas, Mexico (. . . 16°54' N, 90°58' W). The type locality of the Lacandona shrew is in lowland tropical rain forest dominated by trees 40 m in height on the floodplain of the Lacantún–Usumacinta rivers.”

Distribution: Mexico: known only from the Lacandona rain forest, Chiapas; known elevation: 90 m.

Remarks: *Cryptotis nigrescens* group.

Cryptotis lacertosus Woodman, 2010

2010. *Cryptotis lacertosus* Woodman, *J. Mamm.* 91(3):576; 16 June.

2017. *Cryptotis lasertosus* Matson and Ordóñez-Garza, *Zootaxa* 4236(3):476; 24 February. Incorrect subsequent spelling.

Holotype: USNM 569443.

Type Locality: Guatemala: “north-facing slope with abundant downed trees and mosses in a relatively closed-canopy cloud forest dominated by oaks, pines, and firs; 5 km SW San Mateo Ixtatán, 3,110 m, Huehuetenango.”

Distribution: Guatemala: known only from the northern Sierra de los Cuchumatanes near San Mateo Ixtatán, western Guatemala; elevational distribution: 2,680–3,110 m.

Remarks: *Cryptotis goodwini* group.

Cryptotis magnimanus Woodman and Timm, 1999

1999. *Cryptotis goodwini magnimana* Woodman and Timm, *Field. Zool.*, n.s. 91(1497):11; 13 January.

2011. *Cryptotis magnimanus*: Woodman, *Zool. J. Linn. Soc.* 163:1268; December. First use of current name combination.

Holotype: KU 144611.

Type Locality: Honduras: “2.5 km N, 1.6 km E Cerro San Juanillo [14°30' N, 87°53' W], Reserva Biológica Cordillera de Montecillos, Comayagua Department, Honduras, 1750 m.”

Distribution: Honduras: known only from the type locality.

Remarks: *Cryptotis goodwini* group.

Cryptotis magnus (Merriam, 1895)

1895. *Blarina magna* Merriam, *N. Am. Fauna* 10:28; 31 December.

1912. *Cryptotis magna*: Miller, *Bull. U.S. Natl. Mus.* 79:28; 31 December. First use of current name combination.

2010. *Cryptotis magnus*: Woodman, *J. Mamm.* 91(3):572; 16 June.

Holotype: USNM 68575.

Type Locality: Mexico: “Totontepec, Oaxaca (altitude, 6,800 feet).”

Distribution: Mexico: known only from highlands in Oaxaca; elevational distribution: 1,500–2,850 m.

Remarks: *Cryptotis mexicanus* group.

Cryptotis mam Woodman, 2010

2010. *Cryptotis mam* Woodman, *J. Mamm.* 91(3):573; 16 June.

Holotype: USNM 77053.

Type Locality: Guatemala: “approximately 10,000 feet in cloud forest dominated by cypress, fir, and pine on the upper reaches of a spurlike ridge above Todos Santos Cuchumatán [approximately 15°36' N, 91°37' W], Huehuetenango, Guatemala.”

Distribution: Guatemala: Sierra de los Cuchumatanes, western Guatemala; elevational distribution: 2,740–3,350 m.

Remarks: *Cryptotis goodwini* group. *Cryptotis mam* previously was considered part of *C. goldmani goldmani* (Choate, 1970), *C. goodwini* (Choate, 1970; Woodman and Timm, 1999), and *C. griseoventris* (Woodman and Timm, 1999), but it can be clearly distinguished from those species by cranial and postcranial morphology (Woodman and Stephens, 2010; Woodman, 2011a).

Cryptotis mayensis (Merriam, 1901)

1901. *Blarina mayensis* Merriam, *Proc. Wash. Acad. Sci.* 3:559; 29 November.

1912. *Cryptotis mayensis*: Miller, *Bull. U.S. Natl. Mus.* 79:26; 31 December. First use of current name combination.

1917. *Blarina mexicana*: Gaumer, *Monografía de los Mamíferos de Yucatán*, p. 249. Part; not *Blarina mexicana* Coues, 1877 (= *Cryptotis mexicanus*).

1935. *Cryptotis micrura*: Murie, *Misc. Publ. Mus. Zool., Univ. Mich.* 26:17; 15 July. Part; not *Sorex micrurus* Tomes, 1862 (= *Blarina tropicalis* Merriam, 1895 = *Cryptotis tropicalis*).

1970. *Cryptotis nigrescens mayensis*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19:275; 30 December.

Holotype: USNM 108087.

Type Locality: Mexico: “a Maya ruin at Chichenitza, Yucatan.”

Distribution: Central America: the Yucatan Peninsula in Belize, Guatemala, and Mexico, as well as a cryptic, isolated record from owl pellets in a cave in Guerrero, Mexico; elevational distribution from near sea level to 600 m (Woodman and Timm, 1993; Engilis et al., 2012).

Remarks: *Cryptotis nigrescens* group.

Cryptotis mccarthyi Woodman, 2015

2015. *Cryptotis mccarthyi* Woodman, *Ann. Carnegie Mus.* 83(2):110; 15 November.

Holotype: CM 119693.

Type Locality: Honduras: “1500–1620 m; ca. 0.3 km SW of the Visitors Center, Cusuco National Park, Cortés Dept.”

Distribution: Honduras: known only from the Sierra de Omoa, which occupies parts of Cortés and northern Santa Barbara Departments; elevational distribution: ~1,500–1,620 m (Woodman, 2015).

Remarks: *Cryptotis goodwini* group.

Cryptotis medellinius Thomas, 1921

1921. *Cryptotis medellinius* Thomas, *Ann. Mag. Nat. Hist.*, ser. 9, 8(45):354; September.

1932. *Cryptotis medellinus* Tate, *J. Mamm.* 13(3):224; August. Incorrect subsequent spelling of *Cryptotis medellinius* Thomas, 1921.

1958. *Cryptotis thomasi medellinius*: Cabrera, *Rev. Mus. Argentino* 4(1):48.

2002. *Cryptotis medellinia*: Woodman, *Proc. Biol. Soc. Wash.* 115(2):252; 2 July. Emendation for gender agreement.

Holotype: BM 21.7.1.9.

Type Locality: Colombia: “San Pedro, 30 km. north of Medellín”; Antioquia Province.

Distribution: Colombia: northern half of the central Andean Cordillera and the northern tip of the western Andean Cordillera; elevational distribution: 2,000–3,800 m (Woodman and Péfaur, 2008).

Remarks: *Cryptotis thomasi* group.

Cryptotis meridensis (Thomas, 1898)

1898. *Blarina meridensis* Thomas, *Ann. Mag. Nat. Hist.*, ser. 7, 1(6):457; June.

1921. *Cryptotis meridensis*: Thomas, *Ann. Mag. Nat. Hist.*, ser. 9, 8:354. First use of current name combination.

1958. *Cryptotis thomasi meridensis*: Cabrera, *Rev. Mus. Argentino* 4(1):48. Part.

1997. *Cryptotis thomasi thomasi*: Díaz et al., in Wielgolaski (ed.), *Polar and Alpine Tundra*, p. 293, Ecosystems of the World 3. Part; not *Blarina thomasi* Merriam, 1897 (= *Cryptotis thomasi*).

1998. *Cryptotis meridensis meridensis*: Linares, *Mamíferos de Venezuela*, p. 106.

Holotype: BM 98.5.15.5.

Type Locality: Venezuela: “Merida, alt. 2165 m,” modified to “Montes del Valle Merida 2165 m” by Woodman (2002) on the basis of information recorded on the skin label of the holotype.

Distribution: Venezuela: found in the Cordillera de Mérida in eastern Táchira, Mérida, and possibly southern Trujillo states; elevational distribution: 1,640–3,950 m (Woodman and Díaz de Pascual, 2004; Woodman and Péfaur, 2008).

Remarks: *Cryptotis thomasi* group.

Cryptotis merriami Choate, 1970

1970. *Cryptotis nigrescens merriami* Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19:277; 30 December.

1970. *Cryptotis nigrescens nigrescens*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19:281; 30 December. Part; not *Blarina nigrescens* J. A. Allen, 1895 (= *Cryptotis nigrescens*).

1993. *Cryptotis merriami*: Woodman and Timm, *Field. Zool.*, n.s. 74(1452):14; 30 September. First use of current name combination.

Holotype: USNM 77050.

Type Locality: Guatemala: “Jacaltenango, 5400 ft., Huehuetenango.”

Distribution: Central America: occurs at middle elevations from western Guatemala to the Tilarán Highlands of Costa Rica; elevational distribution: 600–1,665 m (Woodman and Timm, 1993; Woodman et al., 2012).

Remarks: *Cryptotis nigrescens* group. Genetic analyses (He et al., 2015; Baird et al., 2017) suggest that *C. merriami* may be a complex of at least two cryptic species.

Cryptotis merus Goldman, 1912

1912. *Cryptotis merus* Goldman, *Smithson. Misc. Coll.* 60(2):17; 20 September.

1959. *Cryptotis mera*: Hall and Kelson, *Mammals of North America*, p. 61; 31 March. Emendation for gender agreement.

1966. *Cryptotis n[igrescens]. mera*: Handley, in Wenzel and Tipton (eds.), *Ectoparasites of Panama*, p. 756; 22 November.

1970. *Cryptotis nigrescens nigrescens*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19:279; 30 December. Part; not *Blarina nigrescens* J. A. Allen, 1895 (= *Cryptotis nigrescens*).

Holotype: USNM 178976.

Type Locality: Panama: “near head of Rio Limon (altitude 4,500 feet), Mount Pirri, eastern Panama.”

Distribution: Panama and Colombia: Known only from Serranía de Pirre, Cerro Tacarcuna, and Serranía de Darién, Darién Province, along the Panama/Colombia border (Woodman and Timm, 1993; Woodman and Péfaur, 2008).

Remarks: *Cryptotis nigrescens* group.

Cryptotis mexicanus (Coues, 1877)

1877. *Blarina (Soriciscus) mexicana* Coues, *Bull. U.S. Geol. Geog. Surv. Terr.* 3:652; 15 May. Not *Sorex mexicanus* Kerr, 1792, a geomyid; not

Blarina Mexicana Gray, 1847 from “Coban, South America,” a *nomen nudum*.

1911. *Cryptotis mexicana*: Miller, *Proc. Biol. Soc. Wash.* 24:221; 31 October. First use of current name combination.
 1912. *Cryptotis mexicana mexicana*: Miller, *Bull. U.S. Natl. Mus.* 79:26; 31 December.
 1969. *Cryptotis mexicana peregrina*: Goodwin, *Bull. Am. Mus. Nat. Hist.* 141(1):39; 30 April. Part; not *Blarina peregrina* Merriam, 1895 (= *Cryptotis peregrinus*).

Holotype: USNM 3525/4438.

Type Locality: Mexico: “Xalapa, Mexico”; Jalapa, state of Veracruz.

Distribution: Mexico: highland regions from east central Hidalgo and northern Puebla south through west central Oaxaca and Chiapas; elevational distribution: 520–3,200 m (Choate, 1970; Carraway, 2007).

Remarks: *Cryptotis mexicanus* group.

Cryptotis montevertensis Woodman and Timm, 2016

2016. *Cryptotis montevertensis* Woodman and Timm, *Mamm. Res.* 62(2017):93, published online 27 August 2016.

Holotype: KU 134852.

Type Locality: Costa Rica: “Puntarenas Province, Monteverde, Monteverde Cloud Forest Reserve, in ‘cloud forest at [the continental] divide’ (ca. 10°18' N, 84°47' W).”

Distribution: Costa Rica: Known only from the type locality; this species is probably restricted to the highest elevations of Cordillera de Tilarán (Woodman and Timm, 2017).

Remarks: *Cryptotis thomasi* group.

Cryptotis montivagus (Anthony, 1921)

1921. *Blarina montivaga* Anthony, *Am. Mus. Novit.* 20:5; 3 November.
 1925. [*Cryptotis*] *montivaga*: Cabrera, *Gen. Mamm. Insect. Galeop.*, p. 134. First use of current name combination.
 1958. *Cryptotis montivagus*: Cabrera, *Rev. Mus. Argentino* 4(1):47.
 1997. *Cryptotis peruviansis*: Vivar, Pacheco, and Valqui, *Am. Mus. Novit.* 3202:7; 29 August. Part, not *Cryptotis peruviansis* Vivar et al., 1997.
 2009. *Cryptotis equatoris*: Pacheco et al., *Rev. Peruana Biol.* 16:11; August. Part, not *Cryptotis equatoris* (Thomas, 1912).

Holotype: AMNH 47200.

Type Locality: Ecuador: “Bestion, Prov. del Azuay, Ecuador; altitude 10,000 ft.”

Distribution: Ecuador and Peru: Andean highlands of southern Chimborazo, Azuay, eastern Loja, and western Zamora-Chinchipec Provinces of Ecuador and Piura Province, northern Peru; elevational distribution: 2,500–3,910 m (Woodman and Péfau, 2008; Moreno-Cárdenas and Albuja, 2014; Zeballos et al., 2018). Zeballos et al. (2018) listed (but did not map) two localities for *C. montivagus* in Imbabura Province, northern Ecuador, which would represent a large northward extension of the geographical

distribution of this species. One locality (Laguna Atillo) appears to be more appropriately located in Chimborazo, and the second locality (Páramo Angochagua) needs to be substantiated.

Remarks: *Cryptotis thomasi* group. Small-eared shrews from Piura Department, Peru, earlier identified as *C. peruviansis* (Vivar et al., 1997) and later as *C. equatoris* (Pacheco et al., 2009), were more recently identified as *C. montivagus* (Zeballos et al., 2018).

Cryptotis nelsoni (Merriam, 1895)

1895. *Blarina nelsoni* Merriam, *N. Am. Fauna* 10:26; 31 December.
 1912. *Cryptotis nelsoni*: Miller: *Bull. U.S. Natl. Mus.* 79:27; 31 December. First use of current name combination.
 1970. *Cryptotis mexicana nelsoni*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19:234; 30 December.

Holotype: USNM 65437.

Type Locality: Mexico: “Volcano of Tuxtla, Vera Cruz, Mexico (altitude, 4,800 feet).”

Distribution: Mexico: known only from the geographically isolated Volcán San Martín Tuxtla, Veracruz; elevational distribution: 1,300–1,500 m (Choate, 1970; Cervantes and Guevara, 2010).

Remarks: *Cryptotis mexicanus* group.

Cryptotis niausa Moreno-Cárdenas and Albuja, 2014

2014. *Cryptotis niausa* Moreno-Cárdenas and Albuja, *Papéis Avulsos de Zoología* 54(28):408.

Holotype: MEPN 9627.

Type Locality: Ecuador: “provincia de Napo: cantón de Quijos: Papallacta (Páramos de la Virgen), 00°20'49.2" S, 78°12'0" W, 3700 m, a 64 km al oriente de la ciudad de Quito.”

Distribution: Ecuador: Páramos and montane forests, from the Andes of northern Carchí Province south along the eastern cordillera to western Napo and eastern Pichincha Provinces; elevational distribution: 2,800–3,900 m.

Remarks: *Cryptotis thomasi* group. Specimens identified by Voss (2003:18) as *Cryptotis* cf. *montivagus* are referable to this species. The name *niausa* is used as a noun in apposition. It is adapted from *ñausa*, which means “blind” in the Kichwa language of Colombia, Ecuador, and Peru, with *ñausa ucucha* (blind mouse) being a local name for a shrew (Moreno-Cárdenas and Albuja, 2014).

Cryptotis nigrescens (J. A. Allen, 1895)

1895. *Blarina (Soriciscus) nigrescens* J. A. Allen, *Bull. Am. Mus. Nat. Hist.* 7(10):339; 8 November.
 1911. [*Cryptotis*] *nigrescens*: Miller, *Proc. Biol. Soc. Wash.* 24:222; 31 October. First use of current name combination.
 1950. *Cryptotis zeteki* Setzer, *J. Wash. Acad. Sci.* 40(9):299; 29 September. Holotype: USNM 290466, from “Cerro Punta (lat. 8°42' N., long. 82°48' W.), 6,500 feet, Chiriquí Province, Republic of Panama.”

1954. *Cryptotis tersus* Goodwin, *Am. Mus. Novit.* 1677:1; 28 June. Holotype: AMNH 164695, from “Santa Clara, 4200 feet elevation, on the Pan American Highway, 15 miles from the border of Costa Rica, Chiriqui Province, Republic of Panama.”
1966. *C[ryptotis]. nigrescens. zeteki*: Handley, in Wenzel and Tipton (eds.), *Ectoparasites of Panama*, p. 756; 22 November.
1970. *Cryptotis parva orophila*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19(3):264; 30 December. Part; not *Blarina orophila* J. A. Allen, 1895 (= *Cryptotis orophilus*).

Holotype: AMNH 9591/7952.

Type Locality: Costa Rica: “San Isidro (San José).”

Distribution: Central America: highlands in Costa Rica and western Panama; elevational distribution: 870–2,865 m (Woodman and Timm, 1993).

Remarks: *Cryptotis nigrescens* group.

Cryptotis obscurus (Merriam, 1895)

1895. *Blarina obscura* Merriam, *N. Am. Fauna* 10:23; 31 December.
1912. *Cryptotis obscura*: Miller, *Bull. U.S. Natl. Mus.* 79:26; 31 December. First use of current name combination.
1954. *Cryptotis mexicana madrea* Goodwin, *Am. Mus. Novit.* 1670:1; 28 June. Holotype: AMNH 147901, from “Rancho del Cielo, 3500 feet elevation, 5 miles northwest of Gómez Farías, Sierra Madre Oriental, Tamaulipas, Mexico.”
1970. *Cryptotis mexicana obscura*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19(3):235; 30 December.
2010. *Cryptotis obscurus*: Woodman, *J. Mamm.* 91(3):572; 16 June.

Holotype: USNM 55634.

Type Locality: Mexico: “Tulancingo, Hidalgo, Mexico (altitude, 8,500 feet).”

Distribution: Mexico: highlands in the states of Hidalgo, México, San Luis Potosí, Tamaulipas, and Veracruz, 1,040–2,900 m (Choate, 1970; Carraway, 2007).

Remarks: *Cryptotis mexicanus* group.

Cryptotis oreoryctes Woodman, 2011

2011. *Cryptotis oreoryctes* Woodman, *Zool. J. Linn. Soc.* 163(4):1280; December.

Holotype: USNM 569877.

Type Locality: Guatemala: “Chelemhá Cloud Forest Reserve (c. 15°23' N, 90°04' W), c. 2090 m.a.m.s.l., Alta Verapaz.”

Distribution: Guatemala: Sierra de Yalijux, departments of Alta Verapaz, El Progreso, and Zacapa; elevational distribution: 2,040–2,700 m (Woodman, 2011a, 2011b, 2015:119).

Remarks: *Cryptotis goodwini* group.

Cryptotis orophilus (J. A. Allen, 1895)

1895. *Blarina (Soriciscus) orophila* J. A. Allen, *Bull. Am. Mus. Nat. Hist.* 7:340; 8 November.

1908. *Blarina olivaceus* J. A. Allen, *Bull. Am. Mus. Nat. Hist.* 24:669; 13 October. Holotype: AMNH 28356, from “San Rafael del Norte (altitude about 5000 feet), Nicaragua”; Jinotega Department.
1911. *C[ryptotis]. orophila*: Miller, *Proc. Biol. Soc. Wash.* 24:221; 31 October. First use of current name combination.
1970. *Cryptotis parva orophila*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19(3):262; 30 December.
2010. *Cryptotis orophilus*: Woodman, *J. Mamm.* 91(3):566; 16 June.

Holotype: AMNH 9640/9558.

Type Locality: Costa Rica: “Volcan de Irazú” (Cartago Province).

Distribution: Central America: middle elevations from northern El Salvador and western Honduras to the Valle Central of Costa Rica; elevational distribution: 1,150–1,985 m (Woodman and Timm, 1992; Woodman et al., 2012). Panamanian specimens identified by Choate (1970:264) as *C. parvus orophilus* were subsequently determined to be *C. nigrescens* (Woodman and Timm, 1993:21, 30).

Remarks: *Cryptotis parvus* group.

Cryptotis osgoodi (Stone, 1914)

1914. *Blarina osgoodi* Stone, *Proc. Acad. Nat. Sci. Phila.* 66:16; 31 March.
1932. *C[ryptotis]. osgoodi*: Tate, *J. Mamm.* 13(3):225; August. First use of current name combination.
1958. *Cryptotis thomasi equatoris*: Cabrera, *Rev. Mus. Argentino* 4(1):47. Part; not *Blarina equatoris* Thomas, 1912 (= *Cryptotis equatoris*).
1997. *Cryptotis equatoris osgoodi*: Vivar et al., *Am. Mus. Novit.* 3202:7; 29 August.

Holotype: ANSP 12732.

Type Locality: Ecuador: “Hacienda Garzon, Mt. Pichincha, 10,500 ft. altitude;” Pichincha Province.

Distribution: Ecuador: eastern Pichincha, eastern Cotopaxi, eastern Tungurahua, and western Napo provinces, from the lower eastern flanks of Volcán Pichincha through the eastern Andean Cordillera to Volcán Sumaco; elevational distribution: 1,700–3,710 m (Moreno-Cárdenas and Albuja, 2014).

Remarks: *Cryptotis thomasi* group.

Cryptotis parvus (Say, 1822)

FIGURES 11, 16, 20, 21

Cryptotis parvus floridanus (Merriam, 1895)

FIGURE 20

1837. *Sorex cinereus* Bachman, *J. Acad. Nat. Sci. Phila.* 7(2):373. Syntypes: ANSP 477, 478; USNM 94/1771 from “Goose Creek about twenty-two miles from Charleston”; Berkeley County, South Carolina (not *Sorex cinereus* Kerr, 1792; see Handley and Varn, 1994).
1837. *Sorex cinereus* Bachman, *J. Acad. Nat. Sci. Phila.* 7(2): pl. 23, fig. 3. Incorrect subsequent spelling of *Sorex cinereus* Bachman, 1837.
1895. *Blarina floridana* Merriam, *N. Am. Fauna* 10:19; 31 December.
1912. *Cryptotis floridana*: Miller, *Bull. U.S. Natl. Mus.* 79:25; 31 December.
1927. *Cryptotis parva floridana*: Harper, *Proc. Boston Soc. Nat. Hist.* 38(7): 270; March. First use of current name combination.

Holotype: USNM 16510/23937.

Type Locality: USA: “Chester Shoal, 11 miles north of Cape Canaveral, Brevard County, Fla.”

Distribution: USA: coastal Carolinas through peninsular Florida (Hall, 1981; Handley and Varn, 1994).

Remarks: *Cryptotis parvus* group. *Sorex cinereus* Bachman, 1837 has typically been placed in synonymy with *Cryptotis parvus parvus* (Say, 1822), but Handley and Varn (1994) indicated that on the basis of body size, coastal populations in the Carolinas are more appropriately treated as *C. parvus floridanus*. Some preliminary data suggest, however, that throughout the distribution of *C. parvus*, coastal populations have larger size than nearby inland populations. Rather than a genetically distinctive subspecies, this variation, together with latitudinal clinal variation in body size, may result in seemingly complex geographic patterns of body size variation.

Cryptotis parvus parvus (Say, 1822)

FIGURES 11, 16, 21

1822. *Sorex parvus* Say, in James, *Acct. Exped. Pittsb. Rocky Mtns.* 1:163; 31 December.

1842. [*Sorex*] *Brachysorex harlani* Duvernoy, *Mag. Zool. Anat. Comp. Pal.*, ser. 2, 2:40, pl. 53. Holotype: unknown, from “New-Harmony, dans l’Etat d’Indiana (Amérique du Nord)” [Posey County, southwestern Indiana]. No specimen matching the holotype was found in a recent search of the collection of the MNHN (Cécile Callou, MNHN, email personal communication, 1 September 2017).

1857. *Blarina exilipes* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):51. Lectotype: USNM 2157, from “Washington, Miss[issipi],” designated by Lyon and Osgood, 1909:237.

1857. *Blarina eximius* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):52. Syntypes: USNM 639/1790 from “St. Louis, M[iss]o[uri].” and 2166/3109 from “De Kalb county, Ill[inois].”

1884. *Blarina cinerea*: True, *U.S. Natl. Mus. Circ.* 29:22; 29 November. Part; not *Sorex cinereus* Bachman, 1837 = *Blarina floridana* Merriam, 1895 (= *Cryptotis parvus floridanus*).

1912. *Cryptotis parva*: Miller, *Bull. U.S. Natl. Mus.* 79:24; 31 December.

1927. [*Cryptotis parva*] *parva*: Harper, *Proc. Boston Soc. Nat. Hist.* 38(7):270; March. First use of current name combination.

1942. *Cryptotis parva elasson* Bole and Moulthrop, *Sci. Publ. Cleveland Mus. Nat. Hist.* 5(6):97; 11 September. Holotype: CMNH 14025, from “Bettsville, Seneca County, Ohio.”

1942. *Cryptotis parva harlani* Bole and Moulthrop, *Sci. Publ. Cleveland Mus. Nat. Hist.* 5(6):99.

Holotype: The holotype (Figure 16) in the Peale Museum, Philadelphia (see Godman, 1826:79–80 and accompanying plate) was lost or destroyed (Woodman, 2009).

Type Locality: USA: “Engineer cantonment . . . taken near our cabins” (west bank of the Missouri River, Washington County, Nebraska). The location of Engineer Cantonment was rediscovered by Carlson et al. (2004) and described by Genoways and Ratcliff (2008:6–7): “Engineer Cantonment is located in the extreme southeastern corner of modern Washington County, NE, at a place three miles south and four



FIGURE 21. *Sorex harlani* Duvernoy, 1842 (= *Cryptotis parvus* (Say, 1822)). Image from Duvernoy (1842: pl. 53), courtesy of Biodiversity Heritage Library (<https://www.biodiversitylibrary.org/>), contributed by the Ernst Mayer Library, Museum of Comparative Zoology, Harvard University, Cambridge.

miles east of the town of Fort Calhoun (41°24'43" N latitude, 95°57'00.6" W longitude, SE ¼ NW ¼ SE ¼, Section 28, Township 17 N, Range 13 E). The site is 305 m in elevation."

Distribution: Canada and USA: the eastern United States, from western South Dakota, east central Wyoming, eastern Colorado, and east central New Mexico east through the southern tip of Ontario to Connecticut and Florida. There is evidence that the species is expanding its distribution to the west and to the north (e.g., Backlund, 2002; Geluso et al., 2004; Seimers et al., 2006).

Remarks: *Cryptotis parvus* group. Hall (1981) recognized the subspecies *C. p. elasson* (in Ohio) and *C. p. harlani* (in portions of eastern Illinois and Indiana). In contrast, Hoffmeister (1989:77) found "no basis for regarding *Cryptotis parva harlani* as a distinct species," and Whitaker and Mumford (2009:158) wrote that "all Indiana specimens should be referred to *C. p. parva*."

Preliminary genetic evidence indicates that *C. parvus* may include two cryptic species, possibly distributed to the west (*C. parvus*) and to the east (*C. harlani*) of the Mississippi River (He et al., 2015).

Cryptotis peregrinus (Merriam, 1895)

1895. *Blarina mexicana peregrina* Merriam, *N. Am. Fauna* 10:24; 31 December.

1911. *Cryptotis mexicana peregrina*: Miller, *Proc. Biol. Soc. Wash.* 24:222; 31 October.

1999. *Cryptotis peregrina*: Woodman and Timm, *Field. Zool.*, n.s. 91(1497):3; 13 January. First use of current name combination.

2010. *Cryptotis peregrinus*: Woodman, *J. Mamm.* 91(3):572; 16 June.

Holotype: USNM 68317.

Type Locality: Mexico: "mountains 15 miles west of city of Oaxaca, Mexico (altitude, 9,500 feet)."

Distribution: Mexico: Sierra de Miahuatlán, southern Oaxaca; elevational distribution: 1,060–2,745 m (Woodman and Timm, 2000).

Remarks: *Cryptotis goldmani* group.

Cryptotis perijensis Quiroga-Carmona and Woodman, 2015

2015. *Cryptotis perijensis* Quiroga-Carmona and Woodman, *J. Mamm.* 96(4):804, published online 3 August.

Holotype: MBLUZ 105.

Type Locality: Colombia: "near Finca el Suspiro, Departamento del Cesar, Colombia, 2,000 m (10°21' N, 72°57' W . . .)."

Distribution: Colombia and Venezuela: "known solely from the northern half of the Sierra de Perijá in eastern Colombia and western Venezuela" (Quiroga-Carmona and Woodman, 2015).

Remarks: *Cryptotis thomasi* group.

Cryptotis peruiensis Vivar, Pacheco, and Valqui, 1997

1993. *Cryptotis thomasi*: Hutterer, *MSW2*, p. 109. Part; not *Blarina thomasi* Merriam, 1897 (= *Cryptotis thomasi*).

1997. *Cryptotis peruiensis* Vivar, Pacheco, and Valqui, *Am. Mus. Novit.* 3202:7; 29 August.

Holotype: MUSM 8373.

Type Locality: "Peru, Department Cajamarca, Las Ashitas, 3150 m, about 42 km W of Jaén (05°42' S, 79°08' W)."

Distribution: Peru: known only from Cajamarca Department in the northern Peruvian Andes (Pacheco et al., 2009; Zeballos et al., 2018).

Remarks: *Cryptotis thomasi* group. *Cryptotis peruiensis* was described on the basis of two specimens: the holotype from Cajamarca Department (3,150 m) in the northern Peruvian Andes and a paratype (LSU 26887) from adjoining Piura Department (2,050 m). The population of *Cryptotis* in Piura was subsequently reidentified, first as *C. equatoris* by Pacheco et al. (2009) and then as *C. montivagus* by Zeballos et al. (2018).

Cryptotis phillipsii (Schaldach, 1966)

1966. *Notiosorex [Xenosorex] phillipsii* Schaldach, *Säug. Mitteil.* 14(4):289; October.

1969. *Cryptotis mexicana machetes*: Goodwin, *Bull. Am. Mus. Nat. Hist.* 141:40; 30 April. Part; not *Blarina machetes* Merriam, 1895 (= *Cryptotis goldmani machetes*).

1970. *Cryptotis mexicana peregrina*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19:237; 30 December. Part; not *Blarina peregrina* Merriam, 1895 (= *Cryptotis peregrinus*).

2000. *Cryptotis phillipsii*: Woodman and Timm, *Proc. Biol. Soc. Wash.* 113(2):351; 31 July. First use of current name combination.

Holotype: CNMA 8445.

Type Locality: Mexico: "Río Molino, 3 kilometers S. W. San Miguel Suchixtepec, altitude 2250 meters, southern Oaxaca."

Distribution: Mexico: southern Oaxaca; elevational distribution: 1,060–2,600 m.

Remarks: *Cryptotis mexicanus* group. This is the type species of subgenus *Xenosorex* Schaldach, 1966.

Cryptotis pueblensis Jackson, 1933

1933. *Cryptotis pergracilis pueblensis* Jackson, *Proc. Biol. Soc. Wash.* 46:79; 27 April.

1956. *Cryptotis celatus* Goodwin, *Am. Mus. Novit.* 1791:1; 28 September. Holotype: AMNH 145838, from "Las Cuevas, Santiago Lachiguiri, District of Tehuantepec, Oaxaca, México."

1970. *Cryptotis parva pueblensis*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19:264; 30 December.

Holotype: USNM 92720.

Type Locality: Mexico: "Huauchinango, altitude 5,000 feet, state of Puebla."

Distribution: Mexico: from the southeastern corner of San Luis Potosí southeast to Oaxaca and central Chiapas; elevational distribution: 10–2,300 m (Choate, 1970; Carraway, 2007).

Remarks: *Cryptotis parvus* group.

Cryptotis soricinus (Merriam, 1895)

1895. *Blarina soricina* Merriam, *N. Am. Fauna* 10:22; 31 December.
 1911. *C[ryptotis]. soricina*: Miller, *Proc. Biol. Soc. Wash.* 24:221; 31 October. First use of current name combination.
 1970. *Cryptotis parva soricina*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19:267; 30 December.

Holotype: USNM 50762.

Type Locality: Mexico: "Tlalpam, Valley of Mexico (altitude, 7,600 feet)"; Tlalpan, Distrito Federal.

Distribution: Mexico: the Valley of Mexico in the Distrito Federal and state of México; elevational distribution: 1,250–2,370 m (Choate, 1970; Carraway, 2007).

Remarks: *Cryptotis parvus* group.

Cryptotis squamipes (J. A. Allen, 1912)

1912. *Blarina (Cryptotis) squamipes* J. A. Allen, *Bull. Am. Mus. Nat. Hist.* 31(7):93; 19 April.
 1932. *C[ryptotis]. squamipes*: Tate, *J. Mamm.* 13(3):225; August. First use of current name combination.

Holotype: AMNH 32378.

Type Locality: Colombia: "crest of Western Andes (alt. 10,340 ft.), 40 miles west of Popayan, Cauca."

Distribution: Colombia: the southern cordillera and the southern parts of the western and central cordilleras of the Andes; elevational distribution: 1,500–3,375 m (Woodman and Péfaur, 2008).

Remarks: *Cryptotis thomasi* group.

Cryptotis tamensis Woodman, 2002

2002. *Cryptotis tamensis* Woodman, *Proc. Biol. Soc. Wash.* 115(2):254; 2 July.

Holotype: USNM 418567.

Type Locality: Venezuela: "state of Táchira: Buena Vista, 7°27' N, 72°26' W, 2415 m; near Páramo de Tamá; 35 km S, 22 km W of San Cristóbal."

Distribution: Colombia and Venezuela: Tamá highlands in the north central portion of the eastern range (in Colombia) of the Andes Cordillera, from northeastern Santander and southeastern Norte de Santander Departments in Colombia to western Táchira, Venezuela; elevational distribution: 2,385–3,330 m.

Remarks: *Cryptotis thomasi* group.

Cryptotis thomasi (Merriam, 1897)

1897. *Blarina thomasi* Merriam, *Proc. Biol. Soc. Wash.* 11:227; 15 July.
 1904. [*Blarina (Cryptotis)*] *thomasi*: Trouessart, *Cat. Mamm. Suppl.* 1904:138.
 1921. *C[ryptotis]. thomasi*: Thomas, *Ann. Mag. Nat. Hist.*, 9th ser., 8(45):354; September. First use of current name combination.
 1923. *Cryptotis avia* G. M. Allen, *Proc. New Engl. Zool. Club* 8:37; 12 February. Holotype: MCZ 20091, from "El Verjón, in the Andes east of Bogotá, Colombia" [Distrito Capital].

1958. *Cryptotis avius*: Cabrera, *Rev. Mus. Argentino* 4(1):47.

1958. *Cryptotis thomasi thomasi*: Cabrera, *Rev. Mus. Argentino* 4(1):48.

Holotype: BM 97.5.21.2.

Type Locality: Colombia: "Plains of Bogota, Colombia (on G. O. Child's estate near City of Bogota, alt. about 9000 feet)" [Distrito Capital].

Distribution: Colombia: south central portion of the eastern range of the Andes Cordillera; elevational distribution: 2,800–3,500 m.

Remarks: *Cryptotis thomasi* group.

Cryptotis tropicalis (Merriam, 1895)

FIGURE 22

1843. *Corsira tropicalis* Gray, *Proc. Zool. Soc. Lond.* 11:79; December. Type locality: "Coban, in Central America"; Alta Verapaz Department, Guatemala (*nomen nudum*).

1862. *Sorex micrurus* Tomes, *Proc. Zool. Soc. Lond.* 1861:279; April. Lectotype: BM 7.1.1.33, designated by Choate (1970:268), but see also Handley and Choate (1970); from "Dueñas, Guatemala"; Coban, Alta Verapaz Department, Guatemala. Preoccupied by *Galemys micrurus* Pomel, 1848 = *Sorex talpoides* Gapper, 1830 (= *Blarina brevicauda talpoides*).

1877. *Blarina micrura*: Alston, *Proc. Zool. Soc. Lond.* 1877:446; 1 October.

1895. *Blarina tropicalis* Merriam, *N. Am. Fauna* 10:21; 31 December. Replacement name for *Sorex micrurus* Tomes, 1862, preoccupied by *Galemys micrurus* Pomel, 1848 (= *Sorex talpoides* Gapper, 1830 = *Blarina brevicauda talpoides*).

1911. *C[ryptotis]. tropicalis*: Miller, *Proc. Biol. Soc. Wash.* 24:221; 31 October. First use of current name combination.

1924. *Cryptotis micrura*: Miller, *Bull. U.S. Natl. Mus.* 128:32. Part.

1970. *Cryptotis parva soricina*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19:268; 30 December. Part; not *Blarina soricina* Merriam, 1895 (= *Cryptotis soricinus*).

1970. *Cryptotis parva tropicalis*: Choate, *Univ. Kansas Publ. Mus. Nat. Hist.* 19:268; 30 December.

Holotype: BM 7.1.1.33.

Type Locality: Guatemala: "Coban, Guatemala (altitude about 4,400 feet)"; Alta Verapaz Department.

Distribution: Central America: eastern Chiapas through Guatemala; elevational distribution: 975–1,580 m (Choate, 1970; Woodman and Timm, 1993; Woodman et al., 2012).

Remarks: *Cryptotis parvus* group. See Handley and Choate (1970) for an account of the complex nomenclatural history of this species.

Cryptotis venezuelensis Quiroga-Carmona, 2013

2013. *Cryptotis venezuelensis* Quiroga-Carmona, *Mast. Neotr.* 20(1):125; 23 March.

Holotype: EBRG 27336.

Type Locality: Venezuela: "Sector Cerro Geremba del Monumento Natural Pico Codazzi, Municipio Tovar, Estado



FIGURE 22. *Sorex veraepacis* Alston, 1877 (left) and *Blarina micrura* Alston, 1877 (= *Blarina tropicalis* Merriam, 1895 = *Cryptotis tropicalis*) (right). Image from Alston (1879–1882: tab. 5), courtesy of Biodiversity Heritage Library (<https://www.biodiversitylibrary.org/>), contributed by Smithsonian Institution Libraries, Washington.

Aragua, Venezuela (coordenadas geográficas: 10°24'36" N, 67°13'16" W), 2238 m de elevación."

Distribution: Venezuela: cloud forests of the Serranía del Litoral; elevational distribution: 2,100–2,238 m.

Remarks: *Cryptotis thomasi* group.

TRIBE NOTIOSORICINI REUMER, 1984

1984. NOTIOSORICINI Reumer, *Scripta Geologica*, 73:18.

Genus *Megasorex* Hibbard, 1950

1950. *Megasorex* Hibbard; *Contr. Mus. Paleo. Univ. Mich.* 8(6):127; 29 June.

Type Species: *Notiosorex gigas* Merriam, 1897, by original designation. The genus was reviewed by Hall and Kelson (1959) and Hall (1981).

Megasorex gigas (Merriam, 1897)

1897. *Notiosorex gigas* Merriam, *Proc. Biol. Soc. Wash.* 11:227; 15 July.

1950. *Megasorex gigas*: Hibbard, *Contr. Mus. Paleo. Univ. Mich.* 8(6):128; 29 June. First use of current name combination.

Holotype: USNM 88012.

Type Locality: Mexico: "Mts. at Milpillas, near San Sebastian, Jalisco."

Distribution: Mexico: west central states of Nayarit, Jalisco, Colima, Michoacán, and Guerrero; elevational distribution: 80–1,800 m (Carraway, 2007).

Remarks: *Megasorex gigas* is the type species of the genus *Megasorex* Hibbard, 1950.

Genus *Notiosorex* Coues, 1877

1877. *Notiosorex* Coues, *Bull. U.S. Geol. Geog. Surv. Terr.* 3:646; 15 May. Proposed as a subgenus of *Sorex*.

Type Species: *Sorex (Notiosorex) crawfordi* Coues, 1877, by original designation.

Remarks: *Notiosorex* was revised by Merriam (1895a), Carraway and Timm (2000), and Carraway (2007), and it was reviewed by Hall and Kelson (1959) and Hall (1981).

Notiosorex cockrumi R. J. Baker, O'Neill, and McAliley, 2003
2003. *Notiosorex cockrumi* R. J. Baker, O'Neill, and McAliley, *Occas. Pap. Mus. Texas Tech Univ.* 222:2; 20 June.

2003. *N[otiosorex]. crockrumi* R. J. Baker, O'Neill, and McAliley, *Occas. Pap. Mus. Texas Tech Univ.* 222:4; 20 June. Incorrect subsequent spelling of *Notiosorex cockrumi* R. J. Baker et al., 2003.

Holotype: TTU 100000.

Type Locality: USA, "Arizona, Cochise County, Leslie Canyon National Wildlife Refuge, T21S, R28E, Section NW ¼ 20, Elevation 4460."

Distribution: USA and Mexico: south central and southeastern Arizona to central Sonora.

Remarks: This species represents a hypothesis in need of comprehensive testing. It was originally identified and described on the basis of differences in the sequences of the mitochondrial cytochrome *b* gene and a portion of intron 7 of the nuclear beta fibrinogen gene between individuals of *Notiosorex crawfordi* in southern Arizona and Sonora and individuals from throughout the rest of the geographic range of the species. Neither *Notiosorex evotis* nor *Notiosorex villai* was included in the analysis as an outgroup, as a gauge of interspecific variation, or to test the distinctiveness of the new species. No morphological or morphometric study was done, making it difficult to identify existing specimens in systematic collections, although the authors noted that Carraway and Timm (2000) "detected no geographically discernable patterns in skin and skull characteristics and measurements across the range of *N. crawfordi*" (Baker et al., 2003:4). This cryptic species is sympatric with *N. crawfordi* in Cochise County, Arizona, where one might expect to detect morphological character displacement between two closely related species. Similar molecular data suggest the presence of another morphologically cryptic mitochondrial species in Baja California, Mexico (Baker et al., 2003; Ohdachi et al., 2006; McAliley et al., 2007).

Notiosorex crawfordi (Coues, 1877)

1877. *Sorex (Notiosorex) crawfordi* Coues, *Bull. U.S. Geol. Geog. Surv. Terr.* 3:651; 15 May.

1895. *Notiosorex crawfordi*: Merriam, *N. Am. Fauna* 10:32; 31 December. First use of current name combination.

Holotype: USNM 2653/4437.

Type Locality: USA: "Fort Bliss, New Mexico, or vicinity." This locality is now in the vicinity of the city of El Paso, El Paso County, Texas.

Distribution: USA and Mexico: the southern United States from southern California, southern Colorado, southern Kansas, and northwestern Arkansas south to northern Jalisco and Hidalgo in central Mexico and to the southern tip of Baja California; elevational distribution 640–2,040 m (Carraway and Timm, 2000). *Notiosorex crawfordi* appears to be expanding its geographic range northward, southward, and eastward (Manning et al., 2014; Rojas-Martínez et al., 2014; Dreier et al., 2015).

Remarks: *Notiosorex crawfordi* is the type species of the genus *Notiosorex* Coues, 1877.

Notiosorex evotis (Coues, 1877)

1877. *Sorex (Notiosorex) evotis* Coues, *Bull. U.S. Geol. Geog. Surv. Terr.* 3:652; 15 May.

1895. *Notiosorex crawfordi evotis*: Merriam, *N. Am. Fauna* 10:34; 31 December.

1962. *Notiosorex evotis*: J. K. Jones et al., *Univ. Kansas Publ. Mus. Nat. Hist.* 14(12):148; 18 May. First use of current name combination.

Holotype: USNM 9066.

Type Locality: Mexico: "Mazatlan"; state of Sinaloa.

Distribution: Mexico: Sinaloa south to Michoacán; elevational distribution from near sea level to 550 m (Carraway and Timm, 2000).

Notiosorex villai Carraway and Timm, 2000

2000. *Notiosorex villai* Carraway and Timm, *Proc. Biol. Soc. Wash.* 113:307; 6 April.

Holotype: KU 54932.

Type Locality: Mexico: "Jaumave, Tamaulipas, Mexico, 2400 ft."; 23°34'N, 99°23'W (Carraway and Timm, 2000).

Distribution: Mexico: known only from the central mountains of Tamaulipas; elevational distribution 575–1,340 m (Carraway and Timm, 2000).

TRIBE SORICINI G. FISCHER, 1814

1814. SORICINORUM G. Fischer, *Zoognosia* 3:x. Proposed as a family-level taxon.

Genus *Sorex* Linnaeus, 1758

1758. *Sorex* Linnaeus, *Systema Naturae*, 10th ed., 1:53.

1762. *Musaraneus* Brisson, *Regnum Animale*, p. 126. Type species: "*Musaraneus*" (= *Sorex araneus* Linnaeus, 1758), by original designation.

1829. *Oxyrhin* Kaup, *Skizzirte Entwickelungs-Geschichte und natürlichen System der europäischen Thierwelt*, p. 120. Type species: *Sorex tetragonurus* Hermann, 1780 (= *Sorex araneus* Linnaeus, 1758), designated by Miller (1912b:29).

1835. *Amphi-Sorex* Duvernoy, *Mém. Soc. Mus. d'Hist. Nat. Strasbourg* 2:23. Type species: skull of *Sorex hermanni* Duvernoy, 1835 (= *Neomys fodiens* (Pennant, 1771)) and skin of *Sorex araneus tetragonurus* Hermann, 1780 (see Hall, 1981:25).

1838. *Corsira* Gray, *Proc. Zool. Soc. Lond.* 1837:123; May. Type species: *Sorex vulgaris* Linnaeus, 1754 (= *Sorex araneus* Linnaeus, 1758; not *Sorex vulgaris* Nathusius, 1838 = *Sorex araneus* Linnaeus, 1758), by monotypy.

1842. *Otiosorex* De Kay, *Zool. New York*, p. 22 + pl. 5, fig. 1. Type species: *Otiosorex platyrhinus* De Kay, 1842 (= *Sorex cinereus* Kerr, 1792), designated by Baird (1857:9).

1848. *Hydrogale* Pomel, *Arch. Sci. Phys. Nat.* 9:248; November. Type species: *Sorex fimbripes* Bachman, 1837, by original designation. The type of *S. fimbripes* is lost, and the species is unidentifiable (Coues, 1877:641; Hollister, 1911:380). Preoccupied by *Hydrogale* Kaup, 1829 (= *Neomys* Kaup, 1829).
1868. *Crocidura*: Fitzinger, *Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.* 57(1):513 (in synonymy). Part; not *Crocidura* Wagler, 1832.
1868. *Crossopus*: Fitzinger, *Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.* 57(1):513. Part; not *Crossopus* Wagler, 1832.
1857. *Neosorex* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):11; 14 July. Type species: *Neosorex navigator* Baird, 1857, by original designation.
1884. *Atophyrax* Merriam, *Trans. Linn. Soc. New York* 2:221; August. Type species: *Atophyrax bendirii* Merriam, 1884, by original designation.
1877. *Microsorex* Coues, *Bull. U.S. Geol. Geog. Surv. Terr.* 3(3):646; 15 May. Type species: *Sorex hoyi* Baird, 1857, by original designation. Proposed as a subgenus of *Sorex* Linnaeus, 1758.
1890. *Homalurus* Schulze, *Schriften des Naturwissenschaftlichen Vereins des Harzes in Wernigerode* 5:28. Type species: *Sorex alpinus* Schinz, 1837, by original designation. Proposed as a subspecies of *Sorex* Linnaeus, 1758; treated as a genus by Brandes (1896). Preoccupied by *Homalura* Meigen, 1826, a genus of Diptera (Palmer, 1904:330).
1911. *Sorax* Hollister, *Proc. U.S. Natl. Mus.* 40(1825):378; 17 April. Incorrect subsequent spelling of *Sorex* Linnaeus, 1758.
1927. *Soricidus* Altobello, *Rev. Franc. Mamm.* 1:6. Type species: *Soricidus monsvairani* Altobello, 1927 (= *Sorex araneus* Linnaeus, 1758), by original designation.
1952. *Eurosorex* Stroganov, *Byull. Moscov. Ovshch. Ispyt. Pryr. Otd. Biol.* 57(5):22. Type species: *Sorex buchariensis* Ognev, 1921, by original designation. Proposed as a subgenus of *Sorex* Linnaeus, 1758.
1959. *Amphiosorex* Hall and Kelson, *Mammals of North America*, p. 23; 31 March. Incorrect subsequent spelling of *Amphisorex* Duvernoy, 1835.
1967. *Ognevia* Dolgov and Geptner, in Geptner and Dolgov, *Zool. Zh.* 46(9):1422. Type species: *Sorex mirabilis* Ognev, 1937, by original designation. Proposed as a subgenus of *Sorex* Linnaeus, 1758.
1989. *Strogonovia* Yudin, *Nasek. Mlekop. Sibiri*, p. 121. Type species: *Sorex daphaenodon* Thomas, 1907, by monotypy. Proposed as a subgenus of *Sorex* Linnaeus, 1758.
2012. *Sore* Hope, Speer, Demboski, Talbot, and Cook, *Molecular Phylogenetics and Evolution* 64:675. Incorrect subsequent spelling of *Sorex* Linnaeus, 1758.

Type Species: *Sorex araneus* Linnaeus, 1758.

Remarks: North American taxa of *Sorex* were revised by Bachman (1837), Baird (1857), Merriam (1895b), Miller (1895), and Jackson (1928), and they were reviewed by Hall and Kelson (1959) and Hall (1981). Subfamilies and species groups are based on molecular genetic analyses by George (1988), Demboski and Cook (2001, 2003), Maldonado et al. (2001, 2004), Shafer and Stewart (2007), Esteva et al. (2010), and Hope et al. (2010, 2012, 2014). My interpretation of this body of work is that it indicates the existence of three subgenera in North America: *Otisorex*,

which is equivalent to Esteva et al.'s (2010) clade B (*Sorex dispar*, *S. oreopolus*, *S. veraecrucis*, *S. cinereus*, *S. hoyi*, *S. vagrans*, *S. palustris*, *S. sonomae*, and *S. monticola* species groups); *Sorex* (*S. arcticus* and *S. minutissimus* species groups); and an unnamed subgenus (George, 1988), equivalent to Esteva et al.'s (2010) clade A (*S. merriami*, *S. salvini*, *S. saussurei*, *S. trowbridgii*, and *S. veraepacis* species groups). See Appendix A.

Sorex albibarbis (Cope, 1862)

1862. *Neosorex albibarbis* Cope, *Proc. Acad. Nat. Sci. Phila.* 14:188.
1892. *Sorex albibarbis*: Merriam, *Proc. Biol. Soc. Wash.* 7:25; April. First use of current name combination.
1903. *Sorex palustris albibarbis*: Rhoads, *The Mammals of Pennsylvania and New Jersey*, p. 191.
1915. *Neosorex palustris acadicus* G. M. Allen, *Proc. Biol. Soc. Wash.* 28:15; 12 February. Holotype: MCZ BANGS 2046, from "Digby, Nova Scotia"; Digby County. Preoccupied by *Sorex acadicus* Gilpin, 1865 (= *Sorex cinereus* Kerr, 1792).
1915. *Neosorex palustris albibarbis* G. M. Allen, *Proc. Biol. Soc. Wash.* 28:17; 12 February.
1926. *Sorex palustris gloveralleni* Jackson, *J. Mamm.* 7(1):57; 15 February. Replacement name for *Neosorex palustris acadicus* G. M. Allen, 1915, preoccupied by *Sorex acadicus* Gilpin, 1865.
1930. *Sorex palustris fimbripes*: Green, *Contr. Mamm. N. Mtn. Reg.*, p. 11; 31 March. Part; not *Sorex fimbripes* Bachman, 1837, an unidentifiable species.
1938. *Sorex palustris labradorensis* Burt, *Occ. Pap. Mus. Zool. Univ. Mich.* 383:1; 27 August. Holotype: UMMZ 68109, from "Red Bay, Straits of Belle Isle, Labrador"; Newfoundland and Labrador.
1942. *Sorex palustris punctulatus* Hooper, *Occ. Pap. Mus. Zool. Univ. Mich.* 463:1; 15 September. Holotype: UMMZ 85498, from "West Virginia, Randolph County, six miles northwest of Durbin, Shavers Fork of the Cheat River, 3600 feet elevation."
1951. *Sorex palustris turneri* D. H. Johnson, *Proc. Biol. Soc. Wash.* 64:110; 24 August. Holotype: USNM 282879, from "Fort Chimo (on the eastern bank of Koksoak River, lat. 58°8' N., long. 68°15' W.), Ungava district, Quebec, Canada."

Syntype: USNM 11239/38743. Cope (1862) described *S. albibarbis* from two specimens but did not designate a holotype. The location of the second specimen, if it still exists, is unknown.

Type Locality: USA: "Profile Lake, in the Franconia Mountains, New Hampshire"; Grafton County.

Distribution: Canada and USA: eastern Ontario through southern Quebec to the Atlantic Coast; north to Ungava Bay and south to central Pennsylvania.

Remarks: Subgenus *Otisorex*; *Sorex palustris* group. Hope et al. (2014) recognized three species-level molecular clades among the subspecies formerly united as *Sorex palustris*: eastern *S. albibarbis*, cordilleran *S. navigator*, and boreal *S. palustris*. Their study recognized *S. albibarbis* as comprising the former subspecies *S. palustris albibarbis*, *S. p.*

gloveralleni, *S. p. labradorensis*, *S. p. punctulatus*, and *S. p. turneri*. The latter two subspecies were included, however, on the basis of geography alone because no sequences from them were analyzed (Hope et al., 2014).

Green (1930:11) noted that *Neosorex albibarbis* Cope, 1862 could be antedated by *Sorex fimbripes* Bachman, 1837. Unfortunately, the type of *S. fimbripes* is lost, and the species is unidentifiable (Hollister, 1911:380).

***Sorex altoensis* Carraway, 2007**

2007. *Sorex veraecrucis altoensis* Carraway, *Monogr. West. N. Am. Nat.* 3:58; 22 June.

2010. *S[orex]. veraecrucis* (5): Esteva et al., *Zootaxa* 2615:55, fig. 1; 17 September. Part; not *Sorex veraecrucis* Jackson, 1925.

2010. *S[orex]. veraecrucis* (7): Esteva et al., *Zootaxa* 2615:55, fig. 1; 17 September. Part; not *Sorex veraecrucis* Jackson, 1925.

2014. *Sorex salvini altoensis*: Ramírez-Pulido et al., *Spec. Publ. Mus. Texas Tech Univ.* 63:6; 18 September.

Holotype: KU 107135.

Type Locality: Mexico: “Volcán de Fuego, 9800 ft., Jalisco, latitude 19.55° N, longitude 103.63° W.”

Distribution: Mexico: highlands in western Durango, southern Coahuila, Nuevo León, and southwestern Tamaulipas, Jalisco, Guanajuato, Querétaro, Hidalgo, Colima, Michoacán, México, Morelos, Distrito Federal, Puebla, Guerrero, and Oaxaca; elevational distribution: 1,820–3,500 m (Carraway, 2007).

Remarks: Unnamed subgenus; *Sorex saussurei* group; part of Esteva et al.’s (2010) clade B1 (as *S. veraecrucis* localities 5, 7), in which it is sister to *S. saussurei* (as *S. saussurei* locality 6).

***Sorex arcticus* Kerr, 1772**

FIGURES 4, 23

Remarks: Subgenus *Sorex*; *Sorex araneus* group (Fumagalli et al., 1999).

***Sorex arcticus arcticus* Kerr, 1772**

FIGURE 4

1792. *Sorex arcticus* Kerr, *Animal Kingdom*, p. 206.

1829. *Sorex parvus*: Richardson, *Fauna Bor.-Am.*, p. 8. Based on MZSL 89, listed in Waterhouse (1838:18) as specimen 160. Part; not *Sorex parvus* Say, 1822 (= *Cryptotis parvus*).

1837. *Sorex Richardsonii* Bachman, *J. Acad. Nat. Sci. Phila.* 7(2):383; November. Lectotype: BM 1855.12.24.92 (previously MZSL 89), from “North America”; designated by Jackson (1928:68) on the basis of information from Oldfield Thomas. Bachman (1837) based his description of *Sorex richardsonii* on Richardson’s (1829) description of *Sorex parvus*, which was based on MZSL 89, listed in Waterhouse (1838:18) as specimen 160. Neither Bachman (1837) nor Richardson (1829) provided a locality, and information associated with the specimen indicates only that it is from North America. Waterhouse (1838:18) similarly states only that it is from “North America.” Merriam (1895b:63) listed the type locality as “unknown; probably plains of Saskatchewan.”

1843. *S[orex]. Richardsonii*: Sundevall, *Kung. Svenska Vet. Hand.*, ser. 3, 30(1842):182. Incorrect subsequent spelling of *Sorex richardsonii* Bachman, 1837.

1877. *Sorex sphagnicola* Coues, *Bull. U.S. Geol. Geog. Surv. Terr.* 3:650; 15 May. Holotype: USNM 6361, from “Fort Liard, H[udson’s]. B[ay]. T[erritory]., or vicinity,” Dehcho Region, southwestern Northwest Territories, Canada.

1890. *Sorex vulgaris*: Dobson, *Monogr. Insectiv.*, pt. 3, fasc. 1, pl. 23, fig. 4. Part; not *Sorex vulgaris* Linnaeus, 1754 or *Sorex vulgaris* Nathusius, 1838.

1892. *Sorex belli* Merriam, *Proc. Biol. Soc. Wash.* 7:25; 13 April. Holotype: CMN 46, from “Shamattawa River, Kenora District, Ontario.” *Nomen nudum* based on an 1885 manuscript name by Dobson (see Jackson, 1928:69; Youngman, 1973:1).

1892. [*Sorex*] *sphagnicolus*: Merriam, *Proc. Biol. Soc. Wash.* 7:25; April. Unjustified emendation of *Sorex sphagnicola* Coues, 1877.

1925. *Sorex arcticus arcticus* Jackson, *Proc. Biol. Soc. Wash.* 38:127; 13 November. First use of current name combination.

1983. *S[orex]. arcticus*: Okhotina, *Zool. Zh.* 62(3):417; March. Incorrect subsequent spelling of *Sorex arcticus* Kerr, 1792.

Holotype: “None known to exist” (Jackson, 1928:69). The holotype was originally part of the collection of the Royal Society of London (Forster, 1772), which was transferred to the British Museum (Natural History), now The Natural History Museum, London, in 1781 (Chambers, 2016:23). Kerr (1792) based his “Labradore shrew,” *Sorex arcticus*, mainly on Pennant’s (1784:139) description of a specimen of the “foetid shrew.” This was the same specimen Forster (1772:380) reported as the foetid shrew, *Sorex araneus* (see Jackson, 1928:69–70).

Type Locality: Canada: “Inhabits Hudson’s Bay and Labradore.” An editor’s footnote to Forster’s (1772:370) account of the quadrupeds from Hudson’s Bay indicates that the specimens on which he based his report were sent from the Hudson’s Bay Company factory at Hudson Bay by Mr. Graham, “a gentlemen belonging to the settlement on Severn River.” On the basis of this information, Jackson (1925:55) restricted the type locality of *S. a. arcticus* to “Severn Settlement (now Fort Severn, mouth of Severn River, Ontario)” (see also Jackson, 1928:69). The specimens documented by Forster (1772) came from a variety of localities, however, including “Severn River,” “Albany Fort” (on the Albany River), and “Churchill River”—all near Hudson Bay—but also from “Musquash [River]” and “York Fork” in southern Ontario. Unfortunately, Forster (1772) did not provide a specific locality for his foetid shrew, so it may have been obtained from anywhere in the region of east central to southeastern Ontario.

Distribution: Canada and USA: southeastern Yukon Territory and southwestern Northwest Territories south through northwestern corner of British Columbia, Alberta, and Saskatchewan to northwestern North Dakota and east through Manitoba, Ontario, and central Quebec to the west bank of the St. Lawrence River (Hall, 1981; Naughton, 2012).

Sorex arcticus laricorum Jackson, 1925

FIGURE 23

1857. *Sorex pachyurus* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):20, pl. 27; 14 July. Lectotype USNM 1674/38820 from “Pembina, Minnesota [Territory]”; this is now in Pembina County, North Dakota, USA. Designated by Lyon and Osgood (1909:247). Preoccupied by *Sorex pachyurus* Küster, 1835 (= *Sorex etruscus* Savi, 1822 = *Suncus etruscus*) (Contoli et al., 2004; Hutterer, 2005).
1925. *Sorex arcticus laricorum* Jackson, *Proc. Biol. Soc. Wash.* 38:127; 13 November.

Holotype: USNM 186837.

Type Locality: USA: “Elk River, Sherburne County, Minnesota.”

Distribution: Canada and USA: southern Manitoba, eastern North Dakota and northeastern South Dakota east through Wisconsin and the northern peninsula of Michigan (Hall, 1981; Naughton, 2012).

Sorex arizonae Diersing and Hoffmeister, 1977

1977. *Sorex arizonae* Diersing and Hoffmeister, *J. Mamm.* 58(3):329; 20 August.

Holotype: MSB 275328 (originally UIMNH 3809).

Type Locality: USA: “upper end of Miller Canyon, 15 mi S [=10 mi S, 4¾ mi E] Fort Huachuca [near spring at lower edge of Douglas fir zone, Huachuca Mts.], Cochise County, Arizona” (brackets in the original).

Distribution: USA and Mexico: disjunct mountains in SE Arizona, SW New Mexico, and the Sierra Madre Occidental of Chihuahua (Carraway, 2007).

Remarks: Unnamed subgenus (George, 1988); *Sorex merriami* group. Originally referred to subgenus *Sorex* by Diersing and Hoffmeister (1977).***Sorex bendirii*** (Merriam, 1884)Remarks: Subgenus *Otisorex*; *Sorex palustris* group.***Sorex bendirii albiventer*** Merriam, 1895

1895. *Sorex (Atophyrax) bendirii albiventer* Merriam, *N. Am. Fauna* 10:97; 31 December.
1901. [*Atophyrax bendirii*] *albiventer*: Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):381; 6 March.
1912. *Neosorex bendirii albiventer*: Miller, *Bull. U.S. Natl. Mus.* 79:22; 31 December.
1926. *Sorex bendirii albiventer*: Jackson, *J. Mamm.* 7:58; 15 February. First use of current name combination.

Holotype: USNM 66198.

Type Locality: USA: “Lake Cushman, Olympic Mountains, Washington”; Mason County.

Distribution: USA: Olympic Peninsula of Washington (Hall, 1981).

Sorex bendirii bendirii (Merriam, 1884)

1884. *Atophyrax bendirii* Merriam, *Trans. Linn. Soc. New York* 2:217; 28 August.

1884. *Atophyrax Bendirei*: True, *U.S. Natl. Mus. Circ.* 29:22; 29 November. Incorrect subsequent spelling of *Atophyrax bendirii* Merriam, 1884 (= *Sorex bendirii*).
1890. *Sorex bendirii*: Dobson, *Monogr. Insectiv.*, pt. 3, pl. 23, fig. 17 and legend.
1904. [*Sorex (Atophyrax)*] *bendirii*: Trouessart, *Cat. Mamm. Suppl.* 1:135. Incorrect subsequent spelling of *Atophyrax bendirii* Merriam, 1884 (= *Sorex bendirii*).
1906. *Sorex bendirei*: Stephens, *California Mammals*, p. 255; June. Incorrect subsequent spelling of *Atophyrax bendirii* Merriam, 1884 (= *Sorex bendirii*).
1912. *Neosorex bendirii bendirii*: Miller, *Bull. U.S. Natl. Mus.* 79:22; 31 December.
1926. *Sorex bendirii bendirii*: Jackson, *J. Mamm.* 7:58; 15 February. First use of current name combination.

Holotype: USNM 186442 (by monotypy; Fisher and Ludwig, 2015).

Type Locality: USA: “about a mile from Williamson’s River, and some eighteen miles southeast of Fort Klamath Basin”; Klamath County, Oregon.

Distribution: Canada and USA: extreme southwestern British Columbia south through the Cascades and lowlands of western Washington (excluding the Olympic Peninsula), west central Oregon to coastal California as far south as southern Mendocino County (Hall, 1981; Verts and Carraway, 1998).

Sorex bendirii palmeri Merriam, 1895

1895. *Sorex (Atophyrax) bendirii palmeri* Merriam, *N. Am. Fauna* 10:97; 31 December.
1901. [*Atophyrax bendirii*] *palmeri*: Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):381; 6 March.
1912. *Neosorex bendirii palmeri*: Miller, *Bull. U.S. Natl. Mus.* 79:22; 31 December.
1926. *Sorex bendirii palmeri*: Jackson, *J. Mamm.* 7:58; 15 February. First use of current name combination.

Holotype: USNM 17338/24263.

Type Locality: USA: “Astoria, Oregon”; Clatsop County.

Distribution: USA: Oregon west of the Cascade Mountains to extreme northwestern California, north of the Klamath River (Hall, 1981).

Sorex chiapensis Jackson, 1925

1925. *Sorex veraepacis chiapensis* Jackson, *Proc. Biol. Soc. Wash.* 38:129; 13 November.
2012. *Sorex veraepacis veraepacis*: Woodman et al., *Ann. Carnegie Mus.* 80(3):217; 15 July. Part; not *Sorex veraepacis* Alston, 1877.
2017. *Sorex chiapensis*: Matson and Ordóñez-Garza, *Zootaxa* 4236(3):477; 24 February. First use of current name combination.

Holotype: USNM 75877.

Type Locality: Mexico: “San Cristobal, altitude 9,500 feet, state of Chiapas.”

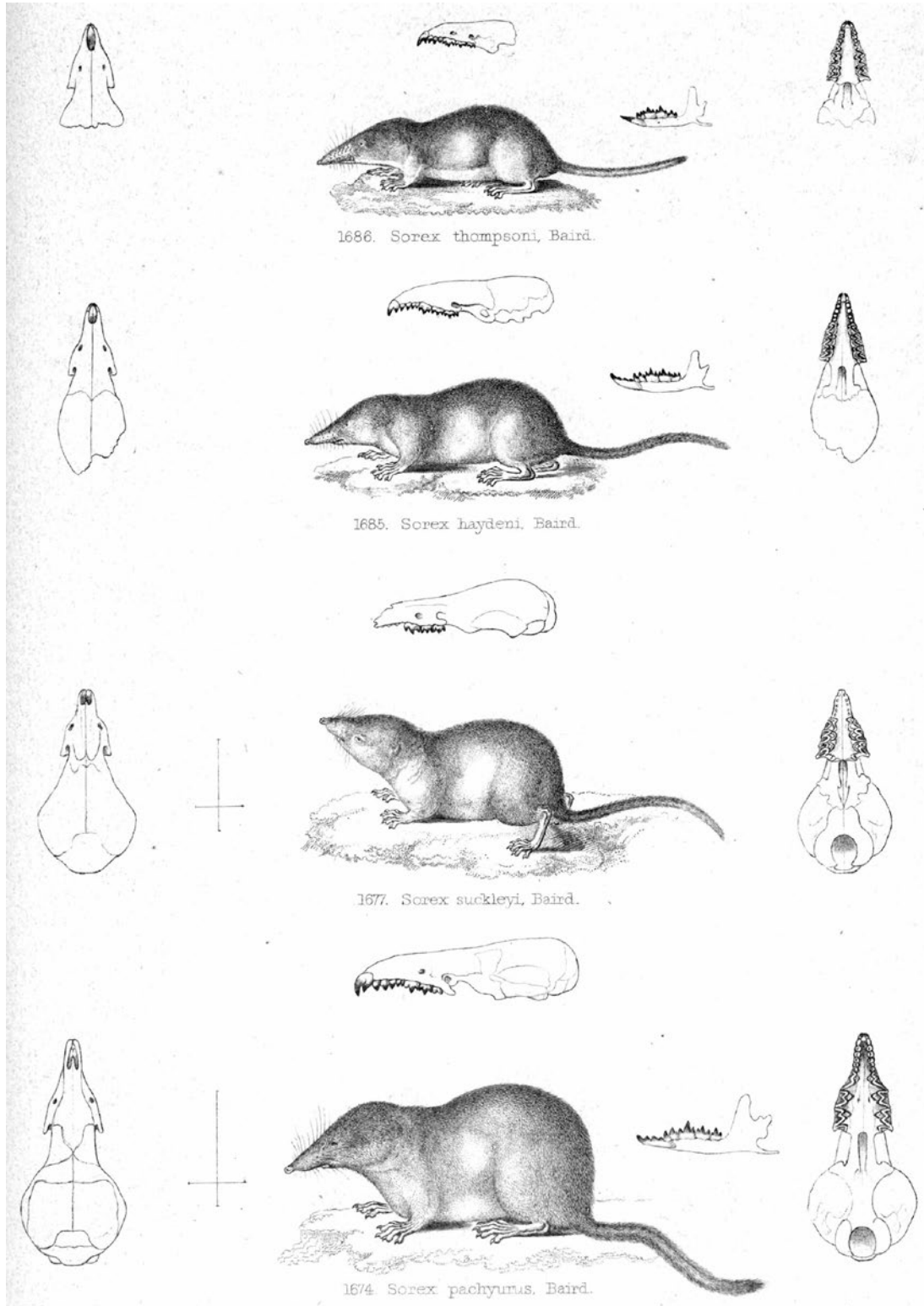


FIGURE 23. Spencer Baird's shrews: from top to bottom, USNM 1686, *Sorex thompsoni* Baird, 1857 (= *Sorex hoyi thompsoni*); USNM 1685, *Sorex haydeni* Baird, 1857; *Sorex suckleyi* Baird, 1857 (= *Sorex vagrans* Baird, 1857); USNM 1674, *Sorex pachyurus* Baird, 1857 (= *Sorex arcticus laricorum* Jackson, 1925). Image from Baird (1857: pl. 17).

Distribution: Mexico and Guatemala: highlands in Chiapas, Mexico, and in adjacent northwestern Guatemala, 2,895–3,160 m (Carraway, 2007; Matson and Ordóñez-Garza, 2017).

Remarks: Subgenus *Otisorex*; *Sorex veraepacis* group.

***Sorex cinereus* Kerr, 1792**

FIGURES 4, 11, 24–27

Remarks: Type species of subgenus *Otisorex*; southern clade of the *Sorex cinereus* group (Hope et al., 2012); clade A2 of Esteva et al. (2010).

Molecular analyses of the *Sorex cinereus* group (Demboski and Cook, 2003; Hope et al., 2012) have provided intriguing insight into relationships among species and populations, including low genetic divergence among a number of recognized arctic species and the presence of unrecognized cryptic species. As currently understood, *S. cinereus* is almost certainly paraphyletic (Stewart et al., 1993; Hope et al., 2012). Unfortunately, sampling for genetic studies remains insufficient to completely elucidate the relationships of genetic clades to named subspecies, the geographic distributions of clades, or the taxonomy of the *S. cinereus* group.

***Sorex cinereus cinereus* Kerr, 1792**

FIGURES 4, 11, 24–26

1792. *Sorex arcticus cinereus* Kerr, *Animal Kingdom*, p. 206.

1827. *Sorex personatus* I. Geoffroy Saint-Hilaire, *Dict. Class. d'Hist. Nat.* 11:319; January. Holotype: unknown, from the “États-Unis.” According to I. Geoffroy Saint-Hilaire (1827a, 1827b), the single specimen of the species then in the Muséum National d'Histoire Naturelle, Paris (MNHN), was obtained by Jacques-Gérard Milbert (1766–1840), a French artist who lived in the United States from 1815 to 1823. Beginning about 1817, Milbert collected animals, plants, minerals, and rocks for the MNHN and Jardin des Plantes. Although he resided mostly in New York City, Milbert traveled extensively in the middle Atlantic and northeastern states, going as far south as Virginia and visiting Maryland, Pennsylvania, New Jersey, and much of New England as well as upstate New York. Milbert eventually sent 58 shipments containing 7,868 specimens back to France (Weimerskirch, 1998). The holotype of *Sorex personatus* most likely would have been obtained somewhere in the northeastern to Mid-Atlantic regions of the United States. No specimen matching the holotype was found in a recent search of the collection of the MNHN (Cécile Callou, MNHN, email communication, 1 September 2017).

1827. *Sorex personatus*: I. Geoffroy Saint-Hilaire, *Mém. Mus. Hist. Nat.* 15:122; December. This work is often incorrectly cited as the original description of the species.

1828. *Sorex forsteri* Richardson, *Zool. J.* 3:516; April. Holotype: BM 1842.10.7.2, from “Capt. Franklin’s late Expedition,” “common throughout the Hudson’s Bay countries.” John Richardson participated in John Franklin’s 1825 Canadian expedition, which traveled north down the Mackenzie River, then east (Richardson) and west (Franklin) along the coast of the Beaufort Sea. The expedition thereby passed through portions of the Northwest Territories, Yukon Territory, Nunavut and Alaska (Figures 4, 24).

1837. *Sorex cooperi* Bachman, *J. Acad. Nat. Sci. Phila.* 7(2):388. Holotype: not known to exist; from “the North Western Territory.” The “Northwest Territory” or “Territory Northwest of the Ohio River” was incorporated as a U.S. territory in 1787 and encompassed what are now the states of Ohio (statehood in 1803), Indiana (1816), Illinois (1818), Michigan (1837), Wisconsin (1848), and parts of Minnesota (1858). Once Ohio achieved statehood, the territory no longer existed officially, which may be why Merriam (1895b:60) speculated that the holotype was “probably from northern part of Mississippi Valley” (Figures 4, 25).

1837. *Corsira Forsteri*: Gray, *Proc. Zool. Soc. London* 5(1837):124.

1842. *Otisorex platyrhinus* De Kay, *Zool. New York*, 1:22, pl. 5, fig. 1. Holotype: unknown, from “Tappan, Rockland county,” New York.

1842. *Otisorex platyrhincus* De Kay, *Zool. New York*, 1:143. Incorrect subsequent spelling of *Otisorex platyrhinus* De Kay, 1842.

1842. [*orex*]. *platyrhinchus* Linsley, *Am. J. Sci.* 43(2):346; October. Incorrect subsequent spelling of *Otisorex platyrhinus* De Kay, 1842.

1855. [*orex*]. *platyrhinus* Wagner, *Die Säugthiere Suppl.* 5:547. Incorrect subsequent spelling of *Otisorex platyrhinus* De Kay, 1842.

1857. *Sorex platyrhinus*: Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):25.

1865. *Sorex acadicus* Gilpin, *Proc. Trans. Nova Scot. Inst. Nat. Sci.* 1(2):2. Neotype: USNM 59647, designated by Woodman (2018) from “Canada: Nova Scotia, Halifax County, Halifax.” The date for the publication of the description of this species is typically given as 1867, but see Woodman (2018).

1866. *Sorex forsteri* Packard, *Proc. Boston Soc. Nat. Hist.* 10:244. Incorrect subsequent spelling of *Sorex forsteri* Richardson, 1828.

1868. *Amphisorex forsteri*: Fitzinger, *Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.* 57(1):509 (in synonymy).

1868. *Crocidura cooperi*: Fitzinger, *Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.* 57(1):513 (in synonymy).

1868. *Otisorex platyrhinus* Fitzinger, *Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.* 57(1):584 (in synonymy). Incorrect subsequent spelling of *Otisorex platyrhinus* De Kay, 1842.

1868. *Sorex platyrhinchus* Fitzinger, *Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.* 57(1):584 (in synonymy). Incorrect subsequent spelling of *Otisorex platyrhinus* De Kay, 1842.

1868. *Crocidura platyrhymncha* Fitzinger, *Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.* 57(1):585 (in synonymy). Incorrect subsequent spelling of *Otisorex platyrhinus* De Kay, 1842.

1869. *Sorex platyrhinus* Gilpin, *Proc. Trans. Nova Scot. Inst. Nat. Sci.* 2(2):59. Incorrect subsequent spelling of *Otisorex platyrhinus* De Kay, 1842.

1869. *Sorex Acadica*: Gilpin, *Proc. Trans. Nova Scot. Inst. Nat. Sci.* 2(2):59. Unjustified emendation of *Sorex acadicus* Gilpin, 1865.

1890. *Sorex richardsoni* Dobson, *Monogr. Insectiv.*, pt. 3, fasc. 1, pl. 23, fig. 9. Part; not *Sorex richardsonii* Bachman, 1837 (= *Sorex arcticus* Kerr, 1772).

1891. *Sorex idaboensis* Merriam, *N. Am. Fauna* 5:32; 30 July. Holotype: USNM 23527/30945, from “Timber Creek, Salmon River Mountains, Idaho, . . . Altitude about 2,500 meters (8,200 feet);” Lemhi Mountains, Lemhi County.

1901. [*Sorex*] *platyrhynchus* Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):366; 6 March. Incorrect subsequent spelling of *Otisorex platyrhinus* De Kay, 1842.

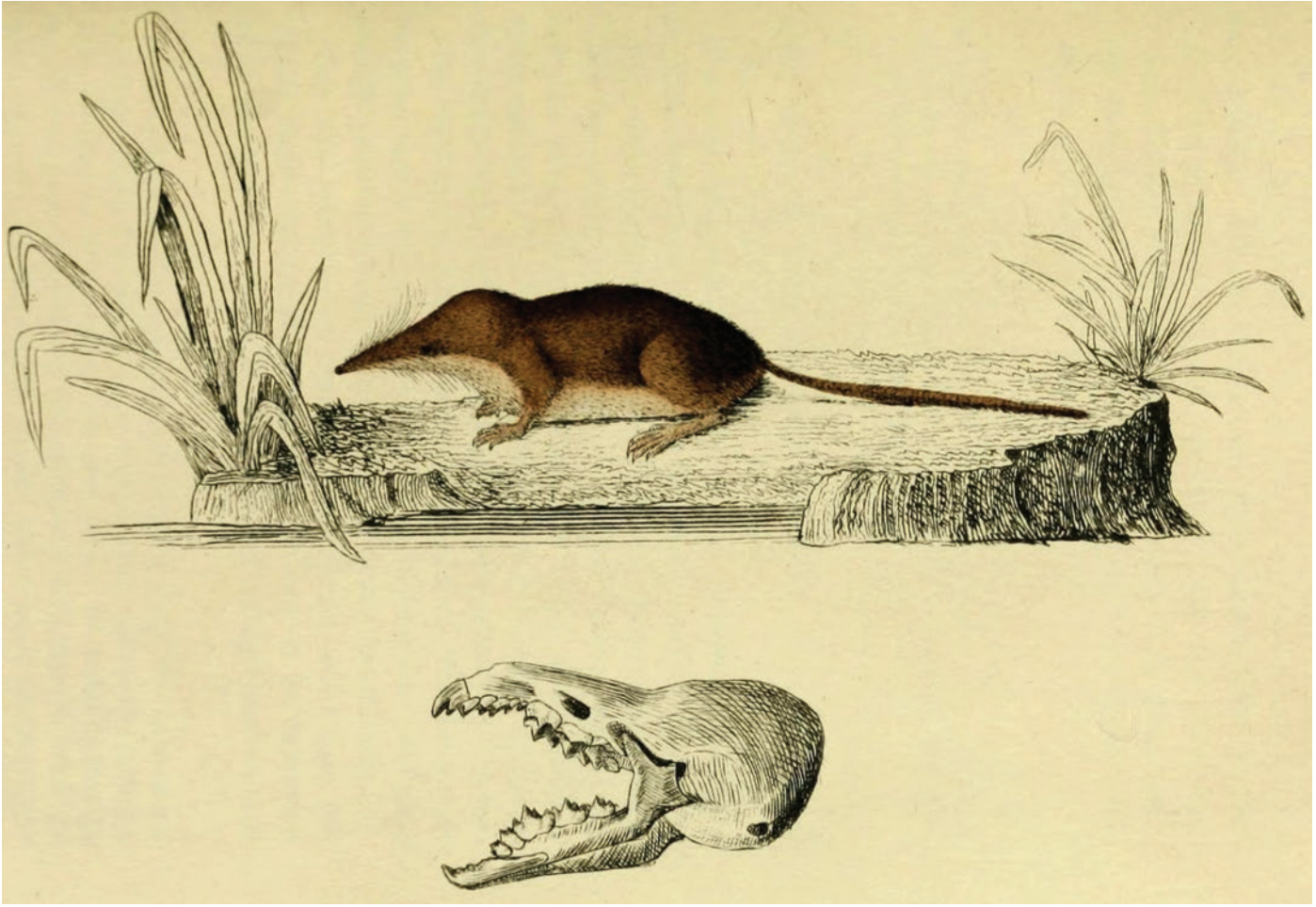


FIGURE 24. *Sorex forsteri* Richardson, 1828 (= *Sorex cinereus* Kerr, 1792). Image from Gapper (1830: pl. 7), courtesy of Biodiversity Heritage Library (<https://www.biodiversitylibrary.org/>), contributed by The Natural History Museum Library, London.

1913. *Sorex forsteri* Fleming, in J. H. Faull, *Natural History of the Toronto Region* (Toronto: The Canadian Institute), p. 209; November. Incorrect subsequent spelling of *Sorex forsteri* Richardson, 1828.

1925. *Sorex cinereus cinereus* Jackson, *J. Mamm.* 6(1):56; 9 February. First use of current name combination.

1926. *Sorex frankstounensis* Peterson, *Ann. Carnegie Mus.* 16(2):292; March. Holotype: CMVP 11159a, a Pleistocene (Rancholabrean) fossil from "Frankstown Cave, near Hollidaysburg, Blair County, Pennsylvania."

1940. *Sorex cinereus acadicus*: R. W. Smith, *Am. Midl. Nat.* 24(1):219; 31 July.

1942. *Sorex cinereus obionensis* Bole and Moulthrop, *Sci. Publ. Cleveland Mus. Nat. Hist.* 5(6):89; 11 September. Holotype: CMNH 16901, from "Hunting Valley, Cuyahoga County, Ohio," USA.

Holotype: "None now known to exist" (Jackson, 1928:41). The holotype was originally part of the collection of the Royal Society of London (Forster, 1772), which was transferred

to the British Museum (Natural History), now The Natural History Museum, London, in 1781 (Chambers, 2016:23). Kerr (1792) based his description of the "grey Labradore shrew," *Sorex arcticus cinereus*, on Pennant's (1784:139) description of a smaller variety of what he called the "foetid shrew," which, in turn, was based on Forster's (1772:381) description of two specimens sent to the Royal Society by Andrew Graham, "long a resident in Hudson's Bay" (Pennant, 1784: fifth page of unpaginated "Advertisement").

Type Locality: Canada: "Hudson's Bay." An editor's footnote to Forster's (1772:370) account of the quadrupeds from Hudson's Bay indicates that the specimens on which he based his report were sent from the Hudson's Bay Company factory at Hudson Bay by Mr. Graham, "a gentlemen belonging to the settlement on Severn River." On the basis of this information, Jackson (1925:55) restricted the type locality of *S. c. cinereus* to: "Severn Settlement," which he previously noted was "now Fort Severn, mouth of Severn River,

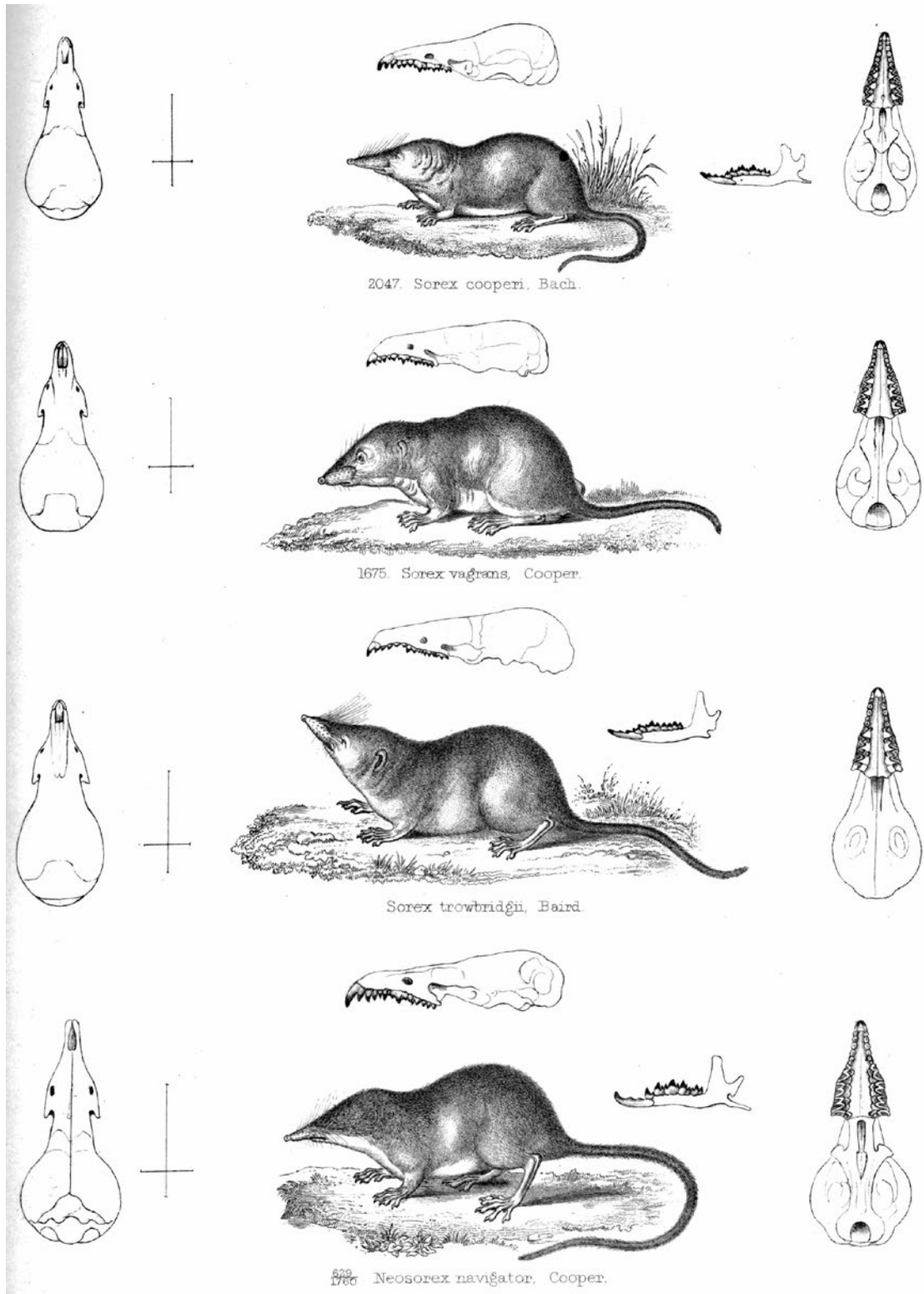


FIGURE 25. Spencer Baird's shrews: from top to bottom, USNM 2047, *Sorex cooperi* Bachman, 1837 (= *Sorex cinereus* Kerr, 1792); USNM 1675, *Sorex vagrans* Baird, 1857; *Sorex trowbridgii* Baird, 1857; USNM 629/1780 (not 629/1760), *Neosorex navigator* Baird, 1857 (= *Sorex navigator*). Image from Baird (1857: pl. 16).



FIGURE 26. *Otisorex platyrhinus* De Kay, 1842 (= *Sorex cinereus* Kerr, 1792). Image from De Kay (1842: pl. 5, fig. 1), courtesy of Biodiversity Heritage Library (<https://www.biodiversitylibrary.org/>), contributed by the Marine Biology Laboratory, Woods Hole Oceanographic Institution, Woods Hole.

Ontario,” Canada (see also Jackson, 1928:41). The various species noted by Forster came, however, from a variety of localities, including “Severn River,” “Albany Fort” (on the Albany River), and “Churchill River”—all near Hudson Bay—and also from “Musquash [River]” and “York Fork” in southern Ontario. Unfortunately, Forster (1772) did not provide a specific locality for these two shrews, so they may have been obtained from anywhere in the region, from east central to southeastern Ontario.

Distribution: Canada and USA: In western North America, *S. c. cinereus* occurs from north central Alaska, northern Yukon Territory, northern Northwest Territories, central and southeastern Nunavut, and the southern edge of Hudson’s Bay south to central Washington (but excluding most of the coastal region), west central and southeastern Idaho, south central Utah (but not eastern Utah or western Colorado), central Colorado, north central New Mexico, southern and north central Wyoming, central Montana, across central Saskatchewan, parts of southern Manitoba, to central and southern Minnesota. In eastern North America, it occupies most of western and central Quebec (except the Ungava Peninsula) and parts of westernmost Labrador south through New England (excluding Nova Scotia) to

central New Jersey and Pennsylvania in and west of the Appalachians, south along the Appalachians to northern Georgia, southern Ohio, southern Indiana, to central Illinois (Hall, 1981); elevational distribution from near sea level to 3,625 m (USNM specimens).

Remarks: On the basis of multigene molecular analysis, *S. c. cinereus* as currently conceived comprises populations from the West, Midwest, Southwest, and East molecular clades of Hope et al. (2012) and includes at least two undescribed species. It also appears to be paraphyletic with respect to *S. milleri*.

Sorex cinereus acadicus in Nova Scotia and *S. c. ohioensis* in Ohio have generally been recognized as valid taxa (e.g., Hall, 1981; Whitaker, 2004; Hutterer, 2005). *Sorex c. acadicus* differs insubstantially from adjacent populations of *S. c. cinereus*, and I recently placed the former in synonymy with the latter (Woodman, 2018). Van Zyll de Jong and Kirkland (1989) considered *S. c. ohioensis* morphologically and morphometrically transitional between *S. c. cinereus* and *S. c. lesueurii*. In fact, a review of their evidence suggests it is little differentiated at all from *S. c. cinereus*, and for this reason, I synonymize *S. c. ohioensis* with *S. c. cinereus* herein.

Sorex cinereus hollisteri Jackson, 1925

1900. *Sorex personatus arcticus* Merriam, *Proc. Wash. Acad. Sci.* 2:17; 14 March. Preoccupied by *Sorex arcticus* Kerr, 1792.

1925. *Sorex cinereus hollisteri* Jackson, *J. Mamm.* 6(1):55; 9 February. Replacement name for *Sorex personatus arcticus* Merriam, 1900, preoccupied by *Sorex arcticus* Kerr, 1792.

Holotype: USNM 99305.

Type Locality: USA: “St. Michaels, Alaska.”

Distribution: USA: western Alaska from Franklin Point south to Anchorage (Miller and Kellogg, 1955; Hall, 1981).

Remarks: On the basis of multigene molecular analysis, *S. c. hollisteri* comprises a part of the West clade of *S. cinereus* (Hope et al., 2012).

Sorex cinereus lesueurii Duvernoy, 1842

FIGURE 27

1842. [*Sorex*] *Amphisorex lesueurii* Duvernoy, *Mag. Zool. Anat. Comp. Pal.* 25:33, pl. 50; November.

1843. [*Sorex*]. *lesueurii*: Sundevall, *Kung. Svenska Vet. Hand.*, ser. 3, 30(1842):182.

1847. [*Sorex*] *lesueurii* A. B. Reichenbach, *Praktische Naturgeschichte Menschen und der Säugethiere für Gebildete aller Stände* (Leipzig: Gebhardt and Reiland), p. 165 [reference not seen]. Incorrect subsequent spelling of *Sorex lesueurii* Duvernoy, 1842.

1857. *Amphisorex lesuerii* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):27 (in synonymy). Incorrect subsequent spelling of *Sorex lesueurii* Duvernoy, 1842.

1857. *Sorex lesueri* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):27 (in synonymy). Incorrect subsequent spelling of *Sorex lesueurii* Duvernoy, 1842.

1892. *Amphisorex lesueri* Herrick, *Bull. Geol. Nat. Hist. Surv.* 7:48. Incorrect subsequent spelling of *Sorex lesueurii* Duvernoy, 1842.

1892. *Amphisorex lesuerii* Butler, *Proc. Indiana Acad. Sci.* 1891:163. Incorrect subsequent spelling of *Sorex lesueurii* Duvernoy, 1842.

1895. *Amphisorex lesueri* Miller, *N. Am. Fauna* 10:53; 31 December. Incorrect subsequent spelling of *Sorex lesueurii* Duvernoy, 1842.

1895. *Amphisorex lesueuri* Merriam, *N. Am. Fauna* 10:60; 31 December (in synonymy). Incorrect subsequent spelling of *Sorex lesueurii* Duvernoy, 1842.

1895. [*Sorex personatus*] *lesueuri* Merriam, *N. Am. Fauna* 10:61; 31 December. Incorrect subsequent spelling of *Sorex lesueurii* Duvernoy, 1842.

1901. *Sorex personatus lesueurii*: Miller and Rehn, *Proc. Boston Soc. Nat. Hist.* 30:25; 27 December.

1911. *Sorex longirostris lesueurii*: Hollister, *Proc. U.S. Natl. Mus.* 40:380; 17 April.

1942. *Sorex cinereus lesueurii* Bole and Moulthrop, *Sci. Publ. Cleveland Mus. Nat. Hist.* 5(6):95; 11 September. First use of current name combination.

Holotype: None known to exist (Diersing and Hoffmeister, 1981). No specimen matching the type of *Amphisorex lesueurii* Duvernoy, 1842 was found in a recent search of the collection of the MNHN (Cécile Callou, MNHN, email communication, 1 September 2017).

Type Locality: USA: “la vallée de la rivière de Wabasch, qui arrose l’Indiana, l’un des États unis de l’Amérique septentrionale” [the valley of the Wabash River, which waters Indiana, one of the United States of North America]; restricted to “New Harmony, Posey County, Indiana,” by Diersing and Hoffmeister (1981).

Distribution: USA: Diersing and Hoffmeister (1981:6) considered the distribution of *S. c. lesueurii* to be mostly restricted to the lower Wabash, Ohio, and Mississippi river valleys in southern and southeastern Illinois and southwestern Indiana, possibly extending into adjacent parts of the Mississippi River Valley in Kentucky, Missouri, Tennessee, and Arkansas. In contrast, Whitaker (2004) indicated a more widespread distribution that also included portions of southern Wisconsin, northern Illinois, northern and west central Indiana, and possibly the southern half of the lower peninsula of Michigan.

Remarks: The taxonomic status of this subspecies has not been evaluated using molecular phylogenetic techniques (e.g., Hope et al., 2012).

Sorex cinereus miscix Bangs, 1899

1899. *Sorex personatus miscix* Bangs, *Proc. New Engl. Zool. Club* 1:15; 28 February.

1901. [*Sorex merriami*] *miscix*: Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):376; 6 March.

1925. *Sorex cinereus miscix*: Jackson, *J. Mamm.* 6:56; February. First use of current name combination.

Holotype: MCZ BANGS 8651.

Type Locality: Canada: “Black Bay, Labrador”; Newfoundland and Labrador Province.

Distribution: Canada: eastern Labrador and eastern Quebec to the north shore of Gulf of St. Lawrence at Moisie River and Bay of Seven Islands (Miller and Kellogg, 1955; Hall, 1981).

Remarks: On the basis of multigene molecular analysis, *S. c. miscix* is a member of the Midwest clade of *S. cinereus*, which is otherwise composed of populations from the upper Midwest, upper Great Plains, and Rocky Mountains (Hope et al., 2012).

Sorex cinereus nigriculus Green, 1932

1932. *Sorex cinereus nigriculus* Green, *Univ. Calif. Publ. Zool.* 38(7):387; 9 June.

Holotype: MVZ 51413.

Type Locality: USA: “alluvial tidewater marsh on Tuckahoe River, east of Tuckahoe, Cape May County, southern New Jersey.”

Distribution: USA: this is an isolated subspecies known only from the vicinity of the type locality (Hall, 1981; Whitaker, 2004).

Remarks: The taxonomic status of this subspecies has not been evaluated using molecular phylogenetic techniques (e.g., Hope et al., 2012).



FIGURE 27. *Amphisorex lesueurii* Duvernoy, 1842 (= *Sorex cinereus* Kerr, 1792). Image from Duvernoy (1842: pl. 50), courtesy of Biodiversity Heritage Library (<https://www.biodiversitylibrary.org/>), contributed by the Ernst Mayer Library, Museum of Comparative Zoology, Harvard University, Cambridge.

***Sorex cinereus streatorii* Merriam, 1895**

1895. *Sorex personatus streatorii* Merriam, *N. Am. Fauna* 10:62; 31 December.

1925. *Sorex cinereus streatorii*: Jackson, *J. Mamm.* 6(1):56; 9 February. First use of current name combination.

Holotype: USNM 73537.

Type Locality: USA: "Yakutat, Alaska (about latitude 59°35')." "

Distribution: Canada and USA: Pacific coastal region from the Kenai Peninsula, Alaska, along the coast of British Columbia west of Cascades to the north bank of the lower Fraser River (Hall, 1981; Woodman and Fisher, 2016).

Remarks: Subgenus *Otisorex*. On the basis of multigene molecular analysis, *S. c. streatorii* is a part of the West clade of *S. cinereus* (Hope et al., 2012).

***Sorex dispar* Batchelder, 1911**

1896. *Sorex macrurus* Batchelder, *Proc. Biol. Soc. Wash.* 10:133; 8 December. Preoccupied by *Sorex macrourus* Lehmann, 1822 (= *Sorex fodiens* Pennant, 1771 = *Neomys fodiens*); not *Sorex macrurus* Hodgson, 1863:9, a *nomen nudum*; not *Soriculus macrurus* Blanford, 1888:231 (= *Episoriculus macrurus*).

1911. *Sorex dispar* Batchelder, *Proc. Biol. Soc. Wash.* 24:97; 15 May. Replacement name for *Sorex macrurus* Batchelder, 1896, preoccupied by *Sorex macrourus* Lehmann, 1822.

1924. *Sorex gaspensis* Anthony and Goodwin, *Am. Mus. Novit.* 109:1; 10 March. Holotype: AMNH 64190, from "Mount Albert, Gaspé Peninsula, Quebec, 2000 feet elevation."

1956. *Sorex dispar blitchi* Schwartz, *J. Elisha Mitchell Sci. Soc.* 72(1):26; May. Holotype: USNM 301993, from "2 mi. NE Wagon Road Gap, elevation 4525 feet, Haywood County, North Carolina."

1956. *Sorex d[ispar]. dispar*: Schwartz, *J. Elisha Mitchell Sci. Soc.* 72(1):26; May.

2004. *S[orex]. d[ispar]. gaspensis*: Rhymer et al., *J. Mamm.* 85(2):336; 12 April.

Holotype: MCZ 41744.

Type Locality: USA: "Beede's [sometimes called Keene Heights], in the township of Keene, Essex county, New York"; restricted by Martin (1966) to "0.6 mile south and 0.5 mile east of Saint Huberts, Essex County, New York, lat. 44°09', long. 73°46'."

Distribution: Canada and USA: occurs in a narrow band from central Maine to the southern border between Tennessee and North Carolina, with disjunct populations in the Gaspé Peninsula of Quebec, New Brunswick, Nova Scotia, and Cape Breton Island; elevational distribution: ~150–2,025 m (Conaway and Pfitzer, 1952; Kirkland, 1981; Scott and van Zyll de Jong, 1989; Shafer and Stewart, 2006; Shafer et al., 2008).

Remarks: Subgenus *Otisorex*; *Sorex dispar* group. Molecular analyses indicate that *S. dispar* may be the most basal branch within *Otisorex* (Shafer and Stewart, 2007).

Analyses of mitochondrial and nuclear genetic markers among populations of *S. dispar* and *S. gaspensis* have indicated that they represent a single monophyletic group lacking any genetic structuring sufficient for either species or subspecies recognition (Rhymer et al., 2004; Shafer et al., 2008). Instead, the smaller body size of *S. gaspensis* appears to reflect a continuation of a cline of gradually decreasing body size from south to north (Rhymer et al., 2004), a conclusion consistent with those of Kirkland and Van Deusen (1979) and Scott and van Zyll de Jong (1989). Because the morphological relationships among *S. gaspensis*, *S. dispar blitchi*, and *S. d. dispar* appear to represent a continuous cline and because the boundary between *S. d. blitchi* and *S. d. dispar* is clearly arbitrary (Schwartz, 1956; Kirkland and Van Deusen, 1979; Scott and van Zyll de Jong, 1989) and unsupported by genetic analyses (Shafer et al., 2008), I recognize no subspecies of *S. dispar*.

***Sorex emarginatus* Jackson, 1925**

1925. *Sorex emarginatus* Jackson, *Proc. Biol. Soc. Wash.* 38:129; 13 November.

1955. *Sorex oreopolus emarginatus*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 7(14):616; 10 June.

Holotype: USNM 90847.

Type Locality: Mexico: "Sierra Madre near Bolanos, altitude, 7,600 feet, state of Jalisco."

Distribution: Mexico: highlands in southern Durango, southern Zacatecas, and northern Jalisco, 2,300–2,900 m (Carraway, 2007).

Remarks: Subgenus *Otisorex*; southern clade of the *Sorex cinereus* group (Hope et al., 2012); clade A2 of Esteva et al. (2010). Esteva et al. (2010) showed *S. emarginatus* embedded within *S. milleri*, and Hope et al. (2012) showed *S. milleri* embedded within *S. cinereus*. The relationships of these taxa require further careful investigation.

***Sorex fontinalis* Hollister, 1911**

1911. *Sorex fontinalis* Hollister, *Proc. U.S. Natl. Mus.* 40(1825):378; 17 April.

1937. *Sorex cinereus fontinalis*: E. L. Poole, *J. Mamm.* 18(1):96; 11 February.

1977. *S[orex]. c[inereus]. fontinalis* Kirkland, *Proc. Penna. Acad. Sci.* 51:46. Incorrect subsequent spelling of *Sorex fontinalis* Hollister, 1911.

Holotype: USNM 85439.

Type Locality: USA: "Cold Spring Swamp, near Beltsville, Maryland"; Prince George's County.

Distribution: USA: southeastern and south central Pennsylvania, Delaware, and Maryland, extending into Accomack County, Virginia, and into Hampshire County, West Virginia (Kirkland and Levenson, 1987).

Remarks: Subgenus *Otisorex*; Southern clade of the *Sorex cinereus* group (Hope et al., 2012). Apparently, the taxonomic

status of *S. fontinalis* is still questionable (e.g., Hutterer, 2005) despite the fact that Kirkland (1977) and Kirkland and Levenson (1987) showed clear size differences between *S. cinereus* and *S. fontinalis* in Pennsylvania and Kirkland (1977) reported the two taxa in sympatry in Lancaster and York Counties, Pennsylvania.

***Sorex fumeus* Miller, 1895**

Remarks: Subgenus *Otisorex*; *Sorex oreopolus* group, part of Esteva et al.'s (2010) clade A3.

The validity of the two recognized subspecies warrants investigation as they may simply represent samples from either end of a latitudinal size cline, as seen in *Sorex dispar*, or some form of local variation. *Sorex fumeus umbrosus* was originally differentiated by its having grayer winter pelage and averaging slightly larger than *S. f. fumeus*. Huggins and Kennedy (1989) reported a more complex pattern of size variation, however, with larger individuals generally in the central portion of the species' distribution (southern Pennsylvania, Maryland, West Virginia, and northern Virginia) and smaller individuals to the north and to the south.

***Sorex fumeus fumeus* Miller, 1895**

1857. *Sorex forsteri*: Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):22. Part; not *Sorex forsteri* Richardson, 1819 (= *Sorex cinereus* Kerr, 1792).

1857. *Sorex richardsonii*: Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):24. Part; not *Sorex richardsonii* Bachman, 1837 (= *Sorex arcticus* Kerr, 1772).

1890. *Sorex platyrhinus*: Dobson, *Monogr. Insectiv.*, pt. 3, fasc. 1, pl. 23, fig. 5. Part; not *Otisorex platyrhinus* De Kay, 1842 (= *Sorex cinereus* Kerr, 1792).

1895. *Sorex fumeus* Miller, *N. Am. Fauna* 10:50; 31 December.

1917. *Sorex fumeus fumeus*: Jackson, *Proc. Biol. Soc. Wash.* 30:149; 27 July. First use of current name combination.

Holotype: BM 1907.7.7.2582.

Type Locality: USA: "Peterboro, N. Y."; Madison County.

Distribution: Canada and USA: from the northeastern tip of Minnesota northeast into southern Ontario (south of Lake Nipigon) and southern Quebec (Val-Jalbert; Saint-Nicolas) to the St. Lawrence River. In the west, the distribution is southwestward through the southeastern half of Ohio to central Kentucky and central Tennessee to the northeastern corner of Alabama and northern Georgia. In the east, the distribution passes through southern and central Vermont, New Hampshire, and the southernmost tip of Maine, then south through northern and western New Jersey, Pennsylvania, western Maryland, western Virginia, and western North Carolina to the northwestern corner of South Carolina (Hall, 1981; Owen, 1984; Jannett and Oehlenschläger, 1994; Desroches and Picard, 2004; Felix et al., 2009). A single individual collected in 1883 is evidence of an isolated population at Racine, Racine County, Wisconsin (Jackson, 1928); elevational distribution: 209–1,981 m (USNM specimens).

Sorex fumeus umbrosus Jackson, 1917

1896. [*Sorex*]. *fumens* Cox, *Canadian Record of Science* 7(1–2):118; 24 June. Incorrect subsequent spelling of *Sorex fumeus* Miller, 1895.
 1917. *Sorex fumeus umbrosus* Jackson, *Proc. Biol. Soc. Wash.* 30:149; 27 July.

Holotype: USNM 150065.

Type Locality: Canada: “James River, Antigonish County, Nova Scotia.”

Distribution: Canada and USA: Quebec south of the St. Lawrence River, New Brunswick, Prince Edward Island, and Nova Scotia (and probably Cape Breton Island), south to the northeastern corner of New York, northern Vermont, northern New Hampshire, and southern Maine (Hall, 1981; Owen, 1984); elevational distribution: 6–457 m (USNM specimens).

Sorex haydeni Baird, 1857

FIGURE 23

1857. *Sorex haydeni* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):29.
 1896. *Sorex personatus haydeni*: J. A. Allen, *Bull. Am. Mus. Nat. Hist.* 8(15):257; 25 November.
 1925. *Sorex cinereus haydeni*: Jackson, *J. Mamm.* 6(1):56; 9 February.

Lectotype: USNM 1685, designated by Lyon and Osgood (1909:244).

Type Locality: USA: “Fort Union, Nebraska.” This locality is now near Fort Buford, Williams County, North Dakota.

Distribution: Canada and USA: the approximate boundary of its distribution is from east central Alberta through southern Saskatchewan to southwestern Manitoba, then south through western Minnesota and Iowa to northern Missouri and northern Kansas, then north through Nebraska, northeastern Colorado, and eastern Montana, northwestern Iowa, northern Nebraska, southwestern South Dakota, southeastern Wyoming, and eastern Montana (Hall, 1981); elevational distribution: 785–2,682 m (USNM specimens).

Remarks: Subgenus *Otisorrex*; Beringian clade of the *Sorex cinereus* group. The distribution of *Sorex haydeni* may overlap with the distributions of the Southwest and Midwest clades of *Sorex cinereus* (Hope et al., 2012).

Sorex hoyi Baird, 1857

FIGURES 11, 23

Remarks: Subgenus *Otisorrex*; the *Sorex hoyi* group part of Esteva et al.’s (2010) clade A1. *Sorex hoyi* is the type species of *Microsorex* Coues, 1877. *Sorex hoyi* was revised by Long (1971) and Diersing (1980).

Long (1971) noted a clinal increase in size in *S. hoyi* from south to north. This variation is particularly noticeable in Long’s (1971: fig. 5) data, both among populations within eastern North America (South Carolina to through Quebec) and among populations within western North America (Idaho through Alaska). On the basis of morphology and morphometrics, Long (1971, 1974) recognized two

species: *Microsorex hoyi* (Alaska, all of Canada north of the St. Lawrence River plus the Gaspé Peninsula, the western and midwestern United States) and *M. thompsoni* (the northeastern United States east of Lake Michigan and eastern Canada south of the St. Lawrence River). In contrast, van Zyll de Jong (1976) determined that the morphological differences used to differentiate the two taxa were size related and resulted from latitudinal clinal variation. Analysis of partial sequences of the mitochondrial cytochrome *b* gene by Stewart et al. (2002b) supported separation of *S. hoyi* (western clade) and *S. thompsoni* (eastern clade), but with different distributions than those suggested by Long (1974), and they provided no clear definition of where the geographic boundary between the two taxa may occur. Drawn boundaries of putative subspecies vary greatly (Long, 1971, 1974; Diersing, 1980; Hall, 1981; Kirkland et al., 1987; Whitaker and Hamilton, 1998; Stewart et al., 2002b), making it difficult to clearly define operational taxonomic units. Regardless, it appears extremely likely that *S. hoyi* includes at least two species.

Sorex hoyi eximius (Osgood, 1901)

1901. *Sorex (Microsorex) eximius* Osgood, *N. Am. Fauna* 21:71; 26 September.
 1905. *Microsorex eximius*: Elliot, *Field Col. Mus. Publ.* 105, *Zool. Ser.* 6:457.
 1925. *Microsorex hoyi eximius*: Jackson, *Proc. Biol. Soc. Wash.* 38:125; 13 November.
 1980. *Sorex hoyi eximius*: Diersing, *J. Mamm.* 61(1):89; 20 February. First use of current name combination.

Holotype: USNM 107126.

Type Locality: USA: “Tyonek, Cook Inlet, Alaska.”

Distribution: USA: Alaska south of the Brooks Range (Diersing, 1980).

Sorex hoyi hoyi Baird, 1857

FIGURE 11

1857. *Sorex hoyi* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):32, pl. 28.
 1901. [*Microsorex*] *hoyi*: Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):377; 6 March.
 1902. *Sorex (Microsorex) alnorum* Preble, *N. Am. Fauna* 22:72; 31 October. Holotype: USNM 107014, from “Robinson Portage, Keewatin, Canada”; redefined by Miller and Kellogg (1955:34) as “upper Hayes River, about 35 miles southwest of Oxford Lake, at about lat. 54°30’ N., long. 96° W.), Manitoba.”
 1905. *Microsorex alnorum*: Elliot, *Field Col. Mus. Publ.* 105, *Zool. Ser.* 6:457.
 1925. *Microsorex hoyi intervectus* Jackson, *Proc. Biol. Soc. Wash.* 38:125; 13 November. Holotype: USNM 226979, from “Lakewood, Oconto County, Wisconsin.”
 1925. *Microsorex hoyi washingtoni* Jackson, *Proc. Biol. Soc. Wash.* 38:125; 13 November. Holotype: USNM 91007, from “Loon Lake, Stevens County, Washington.”

1925. *Microsorex hoyi hoyi*: Jackson, *Proc. Biol. Soc. Wash.* 38:126; 13 November.

1925. *Microsorex hoyi alnorum*: Jackson, *Proc. Biol. Soc. Wash.* 38:126; 13 November.

1980. *Sorex hoyi hoyi*: Diersing, *J. Mamm.* 61(1):90; 20 February. First use of current name combination.

Lectotype: USNM 632/1783, designated by Jackson (1928:203).

Type Locality: USA: "Racine"; Racine County, Wisconsin.

Distribution: Canada and USA: southern Yukon, southern Northwest Territories, and northern Manitoba, south to northeastern Washington; Idaho County, Idaho; across western and northern Montana; east through northern North Dakota; south through central South Dakota east of the Missouri River to Clay and Union Counties; east across northern Iowa, Wisconsin, northern Illinois, and Michigan; north of Lake Erie, Lake Ontario, and the St. Lawrence River, but then extending through the Gaspé Peninsula (Diersing, 1980; Foresman, 1999; King et al., 1999; Murrey et al., 2007; Hendricks and Lenard, 2014).

Remarks: Long (1971, 1974) and Hall (1981) recognized *S. h. alnorum* as a distinct subspecies; Diersing (1980) did not. On the basis of preliminary molecular analysis, Stewart et al. (2002b) indicated that eastern populations of *S. h. hoyi* and *S. h. thompsoni* may be distinct from populations west of James Bay and Lake Michigan.

Sorex hoyi montanus L. N. Brown, 1966

1966. *Microsorex hoyi montanus* L. N. Brown, *Proc. Biol. Soc. Wash.* 79:50; 23 May. Not *Sorex montanus* Kelaart, 1850:211 (= *Suncus montanus*); not *Sorex isodon princeps montanus* Skalon and Rajevsky, 1940:199; not *Sorex isodon montanus* Pavlinov, Borisenko, Kruskop, and Yahontov, 1995:36 (see Hutterer and Zaitsev, 2004).

1980. *Sorex hoyi montanus*: Diersing, *J. Mamm.* 61(1):99; 20 February. First use of current name combination.

Holotype: UWYMV 1449.

Type Locality: USA: "from edge of Trail's Divide, ¼ mi. S of Univ. Wyoming summer Science Camp on state Highway 130, Centennial, Albany Co., Wyoming."

Distribution: USA: isolated distribution in the Medicine Bow Range of southcentral Wyoming and the central Rocky Mountains of Colorado (Diersing, 1980).

Sorex hoyi thompsoni Baird, 1857

FIGURE 23

1857. *Sorex thompsoni* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):34, pl. 27.

1865. *Sorex, Thomsoni* Gilpin, *Proc. Trans. Nova Scot. Inst. Nat. Sci.* 1(2):1. Incorrect subsequent spelling of *Sorex thompsoni* Baird, 1857.

1925. *Microsorex hoyi thompsoni*: Jackson, *Proc. Biol. Soc. Wash.* 38:126; 13 November.

1971. *Microsorex thompsoni thompsoni*: Long, *Trans. Kansas Acad. Sci.* 74(2):192; 7 April.

1980. *Sorex hoyi thompsoni*: Diersing, *J. Mamm.* 61(1):94; 20 February. First use of current name combination.

Lectotype: USNM 1686/38838, designated by Lyon and Osgood (1909:250).

Type Locality: USA: "Burlington, V[ermon]t"; Chittenden County.

Distribution: Canada and USA: south of the Gaspé Peninsula and the St. Lawrence River in southernmost Quebec, New Brunswick, Prince Edward Island, and Nova Scotia; south through Maine, Vermont, New Hampshire, and New York through all but southeastern Pennsylvania to eastern Ohio and extending into Maryland as far as Baltimore (Diersing, 1980; Kirkland et al., 1987; Laerm et al., 1994; Whitaker and Hamilton, 1998; Kirkland and Hart, 1999).

Remarks: Long (1971, 1974) recognized *Microsorex thompsoni* as a distinct species with two subspecies: *M. t. thompsoni* and *M. t. winnemana*; Diersing (1980) considered both taxa to be subspecies of *S. hoyi*. On the basis of preliminary molecular analysis Stewart et al. (2002b) indicated that eastern populations of *S. hoyi*, including *S. h. thompsoni*, may be distinct from populations west of James Bay and Lake Michigan.

Sorex hoyi winnemana Preble, 1910

1910. *Microsorex winnemana* Preble, *Proc. Biol. Soc. Wash.* 23:101; 24 June.

1925. *Microsorex hoyi winnemana*: Jackson, *Proc. Biol. Soc. Wash.* 38:126; 13 November.

1971. *Microsorex thompsoni winnemana*: Long, *Trans. Kansas Acad. Sci.* 74(2):187; 7 April.

1980. *Sorex hoyi winnemana*: Diersing, *J. Mamm.* 61(1):98; 20 February. First use of current name combination.

Holotype: USNM 126320.

Type Locality: USA: "Fairfax County (bank of Potomac River near Stubblefield Falls), Virginia"; Jackson (1928:206) added that this locality is "4 miles below Great Falls of the Potomac" River.

Distribution: USA: in the east, from Prince George's and Garrett Counties, Maryland, south through central Virginia, to the northwestern corner of South Carolina and northern Georgia; in the west, from Greenup County, Kentucky, and Owen, Monroe, Brown, and Bartholomew Counties, Indiana, south through central and eastern Kentucky and eastern Tennessee to northeastern Alabama and northwestern Georgia. A possibly isolated population was reported from Camden and Gates Counties, North Carolina (Diersing, 1980; Caldwell and Bryan, 1982; Cudmore and Whitaker, 1984; Kirkland et al., 1987; Laerm et al., 1994; Padget and Rose, 1994; Whitaker and Hamilton, 1998; Czech et al., 2017).

Remarks: Long (1971, 1974) considered this taxon to be a subspecies of *Microsorex thompsoni*; Diersing (1980) considered it to be a subspecies of *S. hoyi*.

Sorex ibarra Matson and McCarthy, 2005

2005. *Sorex veraepacis ibarra* Matson and McCarthy, *Special Publication of the International Society of Shrew Biologists* 1:68; December.

2017. *Sorex ibarra*: Matson and Ordóñez-Garza, *Zootaxa* 4236(3):478; 24 February. First use of current name combination.

Holotype: CM 113283.

Type Locality: “Guatemala, Departamento El Progreso, Municipio San Agustín Acasaguastlan, Reserva Biosfera Sierra de las Minas, Cerro Pinalón, Camino de las Torres, 2700 m; 15°04'54" N, 89°55'59" W.”

Distribution: Guatemala: Sierra de las Minas in El Progreso and Zacapa Departments; elevational distribution: 1,475–2,800 m (Matson and McCarthy, 2005).

Remarks: Unnamed subgenus; *S. veraepacis* group (Matson and Ordóñez-Garza, 2017). Originally described as a subspecies of *S. veraepacis* by Matson and McCarthy (2005).

Sorex ixtlanensis Carraway, 2007

2007. *Sorex ixtlanensis* Carraway, *Monogr. West. N. Am. Nat.* 3:52; 22 June.

Holotype: KU 124320.

Type Locality: Mexico: “N slope Cerro Pélon, 31.6 kms. S (by road) Vista Hermosa, 2650 m., Oaxaca, latitude 17.36° N, longitude 95.25° W.”

Distribution: Mexico: Guerrero and Oaxaca, 1,920–3,000 m (Carraway, 2007).

Remarks: Subgenus *Otisoorex*; *S. veraecrucis* group. Populations now recognized as *S. ixtlanensis* were previously part of *S. veraepacis mutabilis* (Jackson, 1928).

Sorex jacksoni Hall and Gilmore, 1932

1932. *Sorex jacksoni* Hall and Gilmore, *Univ. Calif. Publ. Zool.* 38(9):392; 17 September.

Holotype: MVZ 51142

Type Locality: USA: “Sevoonga, 2 miles east of North Cape, St. Lawrence Island, Bering Sea, Alaska.”

Distribution: Known only from St. Lawrence Island.

Remarks: Subgenus *Otisoorex*; Beringian clade of the *Sorex cinereus* group (Hope et al., 2012). Hope et al. (2012) found low levels of genetic divergence among high-latitude tundra/taiga species in the Beringian clade of the *Sorex cinereus* group (*S. camtschatica* Yudin, 1972; *S. jacksoni*; *S. leucogaster* Kuroda, 1933; *S. portenkoi* Stroganov, 1956; *S. pribilofensis* Merriam, 1895; *S. ugyunak* Anderson and Rand, 1945) that they interpreted as evidence of recent speciation. In that analysis, *S. jacksoni* was sister to the eastern Siberian species *S. camtschatica*. Despite the relative lack of differentiation and lack of evidence of parphyly and polyphyly in their cytochrome *b* tree, they urged caution in revising the taxonomic status of these species.

Sorex longirostris Bachman, 1837

FIGURE 20

Remarks: Subgenus *Otisoorex*. *Sorex longirostris* may be either part of the southern clade of the *Sorex cinereus* group (Esteva et al., 2010) or one of the two basal branches in the *Sorex cinereus* group (Hope et al., 2012). *Sorex longirostris* was reviewed by Jones et al. (1991) and Webster et al. (2009).

Sorex longirostris eionis J. A. Davis, 1957

1957. *Sorex longirostris eionis* J. A. Davis, *Am. Mus. Novit.* 1844:3; 10 October.

Holotype: AMNH 163855.

Type Locality: USA: “Homosassa Springs, Citrus County, Florida.”

Distribution: USA: northern two-thirds of the Florida peninsula (Jones et al., 1991).

Sorex longirostris fisheri Merriam, 1895

1895. *Sorex fisheri* Merriam, *N. Am. Fauna* 10:86; 31 December.

1928. *Sorex longirostris fisheri*: Jackson, *N. Am. Fauna* 51:87; 24 July. First use of current name combination.

Holotype: USNM 75166.

Type Locality: USA: “Lake Drummond, Dismal Swamp, Virginia”; Norfolk County.

Distribution: USA: originally restricted to the vicinity of the historical Great Dismal Swamp in Virginia and North Carolina (Jones et al., 1991), the distribution is now considered to encompass much of the Atlantic Coastal Plain from the mouth of the James River on the eastern coastline of Virginia to the northeastern corner of South Carolina (Webster et al., 2009).

Sorex longirostris longirostris Bachman, 1837

FIGURE 20

1837. *Sorex longirostris* Bachman, *J. Acad. Nat. Sci. Phila.* 7(2):370, pl. 23: fig. 2.

1842. *O[tisoorex]. longirostris*: De Kay, *Zool. New York*, p. 23.

1848. [*Musaraneus (Crociodura)*] *Bachmani* Pomel, *Arch. Sci. Phys. Nat.*, 9:249. Renaming of *Sorex longirostris* Bachman, 1837.

1857. *Sorex personatus*: Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):30. Part; not *Sorex personatus* I. Geoffroy Saint-Hilaire, 1827.

1868. *Sorex wagneri* Fitzinger, *Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.* 57(1):512. Holotype: not known to exist, from “Nord-Amerika.” The holotype was a specimen in the “Münchener Museum” that Wagner (1855:547) previously referred to *S. longirostris*. The specimen presumably was destroyed during World War II (Anneke van Heteren, Zoologische Staatssammlung München, Munich, Germany, email communication, 6 July 2017).

1928. *Sorex longirostris longirostris*: Jackson, *N. Am. Fauna* 51:28; 24 July. First use of current name combination.

2009. *Sorex logirostris*: Whitaker and Mumford, *Mammals of Indiana*, 2nd ed., p. 124. Incorrect subsequent spelling of *Sorex longirostris* Bachman, 1837.

Holotype: ANSP 479.

Type Locality: USA: “swamps of Santee.” Restricted by Jackson (1928:85) to “Hume Plantation, swamps of the Santee River [Cat Island, mouth of Santee River], S. C.” Handley and Varn (1994:395) noted that “Cat Island is on the north side of the mouth of the Santee River.” The type locality is now part of the Tom Yawkey Wildlife Center, Georgetown County, South Carolina.

Distribution: USA: western limit from north central Missouri, central Illinois, Indiana, and northern Kentucky, south through southwestern Missouri, eastern Oklahoma, northern and southeastern Louisiana to the coast; eastern limit from central West Virginia and southern Maryland east of the Chesapeake Bay, south through Virginia, except the southeastern corner, the piedmont of North Carolina, all but the northeastern corner of South Carolina to southeastern Georgia, and the panhandle of Florida; elevational distribution: near sea level to 366 m (Pagels et al., 1982; Jones et al., 1991; Webster et al., 2009).

Sorex lyelli Merriam, 1902

1902. *Sorex tenellus lyelli* Merriam, *Proc. Biol. Soc. Wash.* 15:75; 22 March.

1928. *Sorex lyelli*: Jackson, *N. Am. Fauna* 51:57; 24 July. First use of current name combination.

Holotype: USNM 109530.

Type Locality: USA: “Mount Lyell, Tuolumne Co., California.”

Distribution: USA: central Sierra Nevada in Mariposa, Mono, Tuolumne, and Fresno Counties, California; elevational distribution: 2,100–3,630 m (Epachin and Engilis, 2009).

Remarks: Subgenus *Otisorex*; *Sorex cinereus* group. Within the Beringian clade of the *Sorex cinereus* group, *S. lyelli* is a member of a subclade that also includes *S. preblei* and two undescribed western North American species (Hope et al., 2012).

Sorex macrodon Merriam, 1895

1895. *Sorex macrodon* Merriam, *N. Am. Fauna* 10:82, pl. 7, figs. 2, 2a; pl. 12, figs. 12, 13; 31 December.

Holotype: USNM 58272.

Type Locality: Mexico: “Orizaba, Veracruz, Mexico (altitude, 4,200 feet).”

Distribution: Mexico: highlands in Puebla, Veracruz, and Oaxaca; elevational distribution: 1,280–2,590 m (Carraway, 2007).

Remarks: Unnamed subgenus; *Sorex veraepacis* group (clade B2 of Esteva et al., 2010).

Sorex madrensis Matson and Ordóñez-Garza, 2017

1928. *Sorex veraepacis chiapensis* Jackson, *N. Am. Fauna* 51:150; 24 July. Part.

2017. *Sorex madrensis* Matson and Ordóñez-Garza, *Zootaxa* 4236(3):479; 24 February.

Holotype: USNM 569709.

Type Locality: Guatemala: “coniferous-hardwood cloud forest approximately 5 km ENE Cabricán, Bosque Ojo de Agua, 3100 m, Quetzaltenango, Guatemala, latitude 15°05' N, longitude 91°36' W.”

Distribution: Guatemala: Sierra Madre of southern Guatemala; elevational distribution: 2,300–3,100 m (Matson and Ordóñez-Garza, 2017).

Remarks: Unnamed subgenus; *S. veraepacis* group. The populations now recognized as *S. madrensis* previously formed part of *Sorex veraepacis chiapensis* (Jackson, 1928; Woodman et al., 2012).

Sorex maritimensis R. W. Smith, 1939

1939. *Sorex arcticus maritimensis* R. W. Smith, *J. Mamm.* 20(2):244; 14 May.

2002. *Sorex maritimensis*: Stewart et al., *Can. J. Zool.* 80:94; published online 7 February. First use of current name combination.

Holotype: MVZ 84479.

Type Locality: Canada: “Wolfville, Kings County, Nova Scotia.”

Distribution: Canada: Nova Scotia and New Brunswick (McAlpine et al., 2012).

Remarks: Subgenus *Sorex*; *Sorex araneus* group. *Sorex maritimensis* was formerly treated as a subspecies of *S. arcticus* but was recognized as a distinct species by Stewart et al. (2002a) and Hutterer (2005) on the basis of morphometric work by van Zyll de Jong (1983), karyotypes analyzed by Volobouev and van Zyll de Jong (1988), and genetic evidence provided Stewart et al. (2002a).

Sorex mccarthyi Matson and Ordóñez-Garza, 2017

2017. *Sorex mccarthyi* Matson and Ordóñez-Garza, *Zootaxa* 4236(3):475; 24 February.

Holotype: CM 119732.

Type Locality: Honduras: “in cloud forest, approximately 11 km SW Gracias, 2560 m, Campamento El Naranjo, Parque Nacional Celaque, Lempira, Honduras, latitude 14°33' N, longitude 88°40' W.”

Distribution: Honduras: known only from the type locality (Matson and Ordóñez-Garza, 2017).

Remarks: Unnamed subgenus; *Sorex saussurei* group. The holotype was originally identified as *S. salvini* (Woodman et al., 2012). Matson and Ordóñez-Garza (2017) considered *S. mccarthyi* to be closely related to *S. salvini*.

Sorex mediopua Carraway, 2007

2007. *Sorex mediopua* Carraway, *Monogr. West. N. Am. Nat.* 3:54; 22 June.

Holotype: KU 112032.

Type Locality: Mexico: “12 mi SW Cd. Guzmán, 10000 ft., Jalisco, latitude 19.56° N, longitude 103.61° W.”

Distribution: Mexico: highlands in Jalisco, Michoacán, México, and Guerrero; elevational distribution: 1,875–3,050 m (Carraway, 2007).

Remarks: Unnamed subgenus: *Sorex saussurei* group. This species previously formed part of *Sorex saussurei saussurei* Merriam, 1892.

Sorex merriami Dobson, 1890

1890. *Sorex merriami* Dobson, *Monogr. Insectiv.*, pt. 3, fasc. 1, pl. 23, fig. 6; May.

1909. *Sorex leucogenys* Osgood, *Proc. Biol. Soc. Wash.* 22:52; 17 April. Holotype: USNM 157952, from “mouth of the canyon of Beaver River, about 3 miles east of Beaver, Beaver Co., Utah,” USA.

1939. *Sorex merriami merriami*: Benson and Bond, *J. Mamm.* 20(3):348; 14 August.

1939. *Sorex merriami leucogenys*: Benson and Bond, *J. Mamm.* 20(3):348; 14 August.

Holotype: USNM 186441.

Type Locality: USA: “Fort Custer, Montana.” Restricted by Miller and Kellogg (1955:17) to “Little Bighorn River, about a mile and a half above Fort Custer, Bighorn County, Mont.”

Distribution: Canada and USA: from southernmost British Columbia, north central Montana, and west central North Dakota south to southern California and southern New Mexico; elevational distribution 195–2,900 m (Diersing and Hoffmeister, 1977; Shaughnessy and Woodman, 2015).

Remarks: Unnamed subgenus (George, 1988:456); *Sorex merriami* group. *Sorex merriami* is considered to be monotypic (Diersing and Hoffmeister, 1977:328).

Sorex milleri Jackson, 1947

1947. *Sorex milleri* Jackson, *Proc. Biol. Soc. Wash.* 60:131; 9 October.

Holotype: USNM 274950.

Type Locality: Mexico: “Madera Camp, altitude 8,000 feet, Carmen Mountains, Coahuila.”

Distribution: Mexico: highlands of Coahuila and Nuevo León; elevational distribution: 2,440–3,660 m.

Remarks: Subgenus *Otisorex*; southern clade of the *Sorex cinereus* group (Hope et al., 2012); clade A2 of Esteva et al. (2010). Esteva et al. (2010) showed *S. emarginatus* embedded within *S. milleri*, and Hope et al. (2012) showed *S. milleri* embedded within *S. cinereus*. The relationships of these taxa require further careful investigation.

Sorex minutissimus Zimmermann, 1780

1780. *Sorex minutissimus* Zimmermann, *Geog. Gesch. Mensch. Vierf. Thiere* 2:385.

Holotype: Not known to exist. This species was described by Zimmermann (1780) based on earlier descriptions by Pallas (1773:664) and Schreber (1778).

Type Locality: Russia: “Herr Pallas fand sie am Ienisen” (Mr. Pallas found them at the Yenisei [River]). This locality description is a shorter version of Schreber’s (1778:577): “Der Herr Professor Pallas hat sie in Sibirien am Ienisei entdeckt” (Professor Pallas discovered it in Siberia at the Yenisei [River]). The type locality was restricted by Pavlinov and Rossolimo (1987:23) to “Красноярский кр., Красноярск” (Krasnoyarskii krai, Krasnoyarsk), Russia.

Remarks: Subgenus *Sorex*; *Sorex minutissimus* group. Only one subspecies of *Sorex minutissimus* is known to occur in North America.

Sorex minutissimus yukonicus Dokuchaev, 1997

1997. *Sorex yukonicus* Dokuchaev, *J. Mamm.* 78(3):814; August.

2012. *Sorex minutissimus*: Hope et al., *Northwest. Nat.* 93(2):104; Autumn.

Holotype: UAM 19268.

Type Locality: USA: “Crow Creek, 1 ¾ miles N, 2 ¼ miles W Beaver Creek (64°44' N, 156°50' W) near Galena, Alaska.”

Distribution: Canada and USA: through much of Alaska and into the northern Yukon Territory (Hope et al., 2010; Cook et al., 2016).

Remarks: The taxon *Sorex yukonicus* Dokuchaev, 1997 was described for the North American representatives of *S. minutissimus*, but Hope et al. (2010) determined that *S. yukonicus* and Siberian *S. minutissimus* are conspecific. Despite this, North American *S. minutissimus* appears to represent a weakly differentiated clade (Hope et al., 2010), which is why I recognize it herein as a subspecies.

Sorex monticola Merriam, 1890

Remarks: Subgenus *Otisorex*; *S. monticola* group. Phylogenetic analysis of the mitochondrial cytochrome *b* gene indicated that *S. monticola*, as considered by Alexander (1996), is not monophyletic but includes three genetically divergent clades (Demboski and Cook, 2001; Shafer and Stewart, 2007) that I treat herein as three species using the oldest available name for each clade. *Sorex monticola* (sensu stricto) thus refers to Demboski and Cook’s (2001) “southern continental clade”; *S. obscurus* refers to their “northern continental clade,” and *S. pacificus* refers to their “coastal clade.” Subspecies comprising these clades are mostly those recognized in taxonomic revisions by Carraway (1990) and Alexander (1996).

Most species-group names are adjectives that must agree with the genus-level name in gender and number (ICZN, 1999: Article 31.2.1; see also Gardner and Hayssen,

2004). The name *monticola*, however, like any species-group name ending in *-cola*, is an invariable noun in apposition, which does not change gender (Woodman, 2012a). The suffix *-cola* means “dweller” or “inhabitant”; hence, *monticola* = “mountain dweller.” Merriam (1890:43) made this error when he first described the species as *S. monticolus*, but he subsequently corrected the spelling to *S. monticola* (Merriam, 1895b:69).

***Sorex monticola monticola* Merriam, 1890**

1890. *Sorex monticolus* Merriam, *N. Am. Fauna* 3:43; 11 September.
 1895. *Sorex vagrans monticola*: Merriam, *N. Am. Fauna* 10:69; 31 December. Justified emendation for noun in apposition.
 1912. *Sorex obscurus obscurus*: Miller, *Bull. U.S. Natl. Mus.* 79:15; 31 December. Part; not *Sorex obscurus* Merriam, 1895.
 1925. *Sorex durangae* Jackson, *Proc. Biol. Soc. Wash.* 38:127; 13 November. Holotype: USNM 94540, from “El Salto, Durango, Mexico.”
 1932. *Sorex melanogenys* Hall, *J. Mamm.* 13(3):260; 9 August. Holotype: MVZ 50247, from “Marijilda Canyon, 8600 feet altitude, Graham Mountains [=Pinaleno Mountains], Graham County, Arizona.”
 1955. *Sorex vagrans obscurus*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):43; 10 December. Part; not *Sorex obscurus* Merriam, 1895.
 1977. *S[orex]. m[onticolus]. monticolus*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July. First use of current name combination.
 1977. *S[orex]. monticolus obscurus*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:5; 15 July. Part; not *Sorex obscurus* Merriam, 1895.

Holotype: USNM 17599/24535.

Type Locality: USA: “San Francisco Mountain, Arizona . . . Altitude 3,500 meters (11,500 feet)” [Coconino County].

Distribution: USA and Mexico: discontinuously distributed in montane regions from east central California, Utah, and Wyoming south to southern Durango; elevational distribution: 1,830–3,810 m (Hennings and Hoffmann, 1977; Alexander, 1996; Carraway, 2007).

Remarks: Includes Alexander’s (1996) *S. m. monticola* and southern populations that she referred to *S. m. obscurus* (Demboski and Cook, 2001).

***Sorex monticola neomexicanus* Bailey, 1913**

1913. *Sorex obscurus neomexicanus* Bailey, *Proc. Biol. Soc. Wash.* 26:133; 21 May.
 1955. *Sorex vagrans neomexicanus*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):50; 10 December.
 1977. *S[orex]. m[onticolus]. neomexicanus*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July. First use of current name combination.
 1996. *Sorex neomexicanus*: Alexander, *Univ. Kansas Mus. Nat. Hist., Misc. Publ.* 88:21; 21 February.

Holotype: USNM 100440.

Type Locality: USA: “Cloudcroft, New Mexico (alt. 9000 feet), in the Sacramento Mountains” [Otero County].

Distribution: USA: the Capitan and Sacramento Mountains of south central New Mexico; elevational distribution: 2,055–2,750 m [Hennings and Hoffmann, 1977; Alexander, 1996; VertNet records (<http://www.vertnet.org>; accessed 18 June 2017)].

Remarks: Subgenus *Otisorex*. *Sorex monticola* group. Molecular analysis indicates this taxon is embedded within the southern clade of Demboski and Cook (2001; Esteva et al., 2010).

***Sorex mutabilis* Merriam, 1898**

1895. *Sorex saussurei caudatus* Merriam, *N. Am. Fauna* 10:84; 31 December. Preoccupied by *Sorex caudatus* Horsfield, 1851 (= *Episoriculus caudatus*); not *Sorex caudatus* Hodgson, 1849, a *nomen nudum*.
 1898. *Sorex saussurei mutabilis* Merriam, *Science* 8:782; 2 December. Renaming of *Sorex saussurei caudatus* Merriam, 1895, preoccupied by *Sorex caudatus* Horsfield, 1851.
 1925. *Sorex veraepacis mutabilis*: Jackson, *Proc. Biol. Soc. Wash.* 38:130; 13 November.
 2010. *S[orex]. veraepacis* (10): Esteva et al., *Zootaxa* 2615:55, fig. 1; 17 September. Part; not *Sorex veraepacis* Alston, 1877.

Holotype: USNM 69600.

Type Locality: Mexico: “Reyes, Oaxaca, Mexico (altitude 10,200 feet).”

Distribution: Mexico: highlands in Guerrero and Oaxaca; elevational distribution: 1,120–3,110 m (Carraway, 2007).

Remarks: Unnamed subgenus; *Sorex veraepacis* group (Matson and Ordóñez-Garza, 2017); clade B2 of Esteva et al. (2010); as *S. veraepacis* locality 10). *Sorex chiapensis*, *S. ibarraí*, and *S. mutabilis* previously were treated as subspecies of *S. veraepacis* (Carraway, 2007; Woodman et al., 2012). Matson and Ordóñez-Garza (2017) showed *S. chiapensis*, *S. ibarraí*, and *S. veraepacis* to be distinct species. Given the disjunct distributions of *S. mutabilis* to the west of the Isthmus of Tehuantepec and *S. veraepacis* to the east and given the strong genetic divergence between them (Esteva et al., 2010), it seems most appropriate to treat *S. mutabilis* and *S. veraepacis* as distinct species.

***Sorex nanus* Merriam, 1928**

1895. *Sorex tenellus nanus* Merriam, *N. Am. Fauna* 10:81; 31 December.
 1928. *Sorex nanus*: Jackson, *N. Am. Fauna* 51:174; 24 July.

Holotype: USNM 73773.

Type Locality: USA: “Estes Park, Colorado”; Larimer County.

Distribution: USA: from north central Montana south to western Wyoming and central South Dakota to east central Arizona and south central New Mexico; elevational distribution: 2,130–3,505 m [Hall, 1981; Backlund, 1995; VertNet, <http://www.vertnet.org>; accessed 21 June 2017].

Remarks: Subgenus *Otisorex*; *Sorex oreopolus* group.

Sorex navigator (Baird, 1857)

FIGURE 25

Remarks: Subgenus *Otisoorex*; *Sorex palustris* group. *Sorex navigator* is the type species of *Neosorex* Baird, 1857. Within the *S. palustris* group, *S. navigator* is sister to *S. bendirii* (Hope et al., 2014).

Hope et al.'s (2014) investigation of the molecular phylogenetics of North American water shrews revealed three species-level clades among the subspecies formerly united as *Sorex palustris*: eastern *S. albibarbis*, western cordilleran *S. navigator*, and boreal *S. palustris* (sensu stricto). Nagorsen et al. (2017) demonstrated that parapatric *S. navigator* and *S. palustris* can be distinguished morphometrically.

Sorex navigator includes two subspecies: *S. navigator navigator* on the continent and *S. n. brooksi* from Vancouver Island. The northeastern distributional extent of *S. navigator navigator* is incompletely understood (Hope et al., 2014).

Sorex navigator brooksi Anderson, 1934

1934. *Sorex palustris brooksi* Anderson, *Can. Field-Nat.* 48(8):134; 1 November.

2014. *S[orex]. navigator brooksi*: Hope et al., *J. Mamm.* 95(4):730; 22 August.

Holotype: CMN 12370.

Type Locality: Canada: "Black Creek, 150 feet altitude, Comox district, east coast of Vancouver Island, British Columbia, latitude 49°50' north, longitude 125°08' west."

Distribution: Canada: Vancouver Island (Hope et al., 2014).

Sorex navigator navigator (Baird, 1857)

FIGURE 25

1857. *Neosorex navigator* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):11, pl. 26; 14 July.

1863. *Sorex navigator*: Verrill, *Proc. Boston Soc. Nat. Hist.* 9:167; February.

1891. *Sorex palustris*: Merriam, *N. Am. Fauna* 5:35; August.

1895. *Sorex (Neosorex) palustris navigator*: Merriam, *N. Am. Fauna* 10:92; 31 December.

1900. *Sorex navigator alaskanus* Merriam, *Proc. Wash. Acad. Sci.* 2:18; 14 March. Holotype: USNM 97713, from "Point Gustavus, Glacier Bay, Alaska," USA.

1901. [*Neosorex palustris*] *navigator*: Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):379; 6 March.

1906. *Sorex palustris navigator*: Stephens, *California Mammals*, p. 254.

1912. *Neosorex navigator navigator*: Miller, *Bull. U.S. Natl. Mus.*, 79:21; 31 December.

2014. *Sorex navigator*: Hope et al., *J. Mamm.* 95(4):730; 22 August.

Holotype: USNM 629/1780 (not 629/1760, as indicated in Baird, 1857: pl. 26).

Type Locality: USA: "Fort Vancouver, W[estern]. T[erritories]," along the Columbia River, Vancouver, Clark County, Washington. In describing *Neosorex navigator*, Baird (1857) apparently based the type locality on faulty information. The

original collector, J. G. Cooper (1860b:73), later wrote, "But one specimen of this species was obtained during the expedition; this, according to the label now attached, was found at Fort Vancouver, but I am inclined to consider this a mistake, and that it was really taken while swimming under water in a lake near the summit of the Cascade mountains; August 31, 1853." Further supporting his memory of the capture of this animal, Cooper (1860a:36) noted, "Aquatic mammalia . . . abound in the fresh waters; and one seems to be peculiar to the Territory, the water shrew, (*Neosorex navigator*,) caught while swimming a foot below the surface of one of the lakes at the head of the Yakima river, and at least 2,500 feet above the ocean."

Cooper's accounts caused Jackson (1928:184) to fix the type locality as "near head of Yakima River, Cascade Mountains, Wash. "; Kittitas County.

Distribution: Canada and USA: from central Alaska and central Yukon Territory south through British Columbia; in and east of the Cascades in Washington and Oregon; western and central Wyoming; to east central Arizona and west central New Mexico (Hope et al., 2014); elevational distribution: 90–3,415 m (USNM specimens).

Sorex obscurus Merriam, 1895

Remarks: Subgenus *Otisoorex*; *Sorex monticola* group. Phylogenetic analysis of the mitochondrial cytochrome *b* gene indicated that *S. monticola*, as conceived by Alexander (1996), is not monophyletic but comprises three genetically divergent species-level clades for which the oldest available names are (Demboski and Cook, 2001; Shafer and Stewart, 2007) *S. monticola* for their "southern continental clade," *S. obscurus* for the "northern continental clade," and *S. pacificus* for the "coastal clade." The subspecies of *S. obscurus* recognized here are based primarily on Alexander's (1996) review of *S. monticola*.

Sorex obscurus alascensis Merriam, 1895

1895. *Sorex obscurus alascensis* Merriam, *N. Am. Fauna* 10:76; 31 December.

1900. *Sorex glacialis* Merriam, *Proc. Wash. Acad. Sci.* 2:16; 14 March. Holotype: USNM 97709, from "Point Gustavus, on east side of entrance to Glacier Bay, Alaska," USA.

1900. *S[orex]. alascensis*: Merriam, *Proc. Wash. Acad. Sci.* 2:18; 14 March.

1901. [*Sorex glacialis*] *alascensis*: Elliott, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):372; 6 March.

1912. *Sorex alascensis alascensis*: Miller, *Bull. U.S. Natl. Mus.* 79:16; 31 December.

1955. *Sorex vagrans alascensis*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):41; 10 December.

1977. *S[orex]. m[onticolus]. alascensis*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.

Holotype: USNM 73539.

Type Locality: USA: "Yakutat Bay, Alaska."

Distribution: Canada and USA: coastal southeastern Alaska from western Prince William Sound to Juneau and Admiralty Island and adjacent parts of northwestern British Columbia (Alexander, 1996).

***Sorex obscurus obscurus* Merriam, 1895**

1891. *Sorex vagrans similis* Merriam, *N. Am. Fauna* 5:34; 30 July. Preoccupied by *Sorex similis* Hensel, 1855 (= *Asoriculus similis*), an extinct subfossil shrew from Cagliari, Sardinia.

1895. *Sorex obscurus* Merriam, *N. Am. Fauna* 10:72; 31 December. Replacement name for *Sorex vagrans similis* Merriam, 1891, preoccupied by *Sorex similis* Hensel, 1855.

1912. *Sorex obscurus obscurus*: Miller, *Bull. U.S. Natl. Mus.* 79:15; 31 December. First use of current name combination.

1955. *Sorex vagrans obscurus*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):43; 10 December.

1955. *Sorex vagrans longiquus* Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):49; 10 December. Holotype: UMMZ 87332, from "25 mi. ESE Big Sandy, Eagle Creek, Choteau Co., Montana," USA.

1955. *Sorex vagrans obscuroides* Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):58; 10 December. Holotype: USNM 30064/42074, from "Bishop Creek, 6600 ft., Inyo Co., California," USA.

1977. *S[orex]. m[onticolus]. obscurus*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.

1996. *S[orex]. m[onticola]. obscuroides*: Alexander, *Univ. Kansas Mus. Nat. Hist., Misc. Publ.* 88:6; 21 February.

Holotype: USNM 23525/30943.

Type Locality: USA: "Timber Creek, Salmon River Mountains, Idaho (altitude, 8,200 feet)"; Lemhi Mountains, 16 km west of Junction, Lemhi County (Jackson, 1928:117).

Distribution: Canada and USA: from central northern Alaska and northwestern corner of the Northwest Territory south through western Canada (excluding the coastal region) to western Oregon, Idaho, and northwestern Wyoming; elevational distribution: 120–2,500 m (Hennings and Hoffmann, 1977; Alexander, 1996; Demboski and Cook, 2001).

Remarks: Hennings and Hoffmann (1977:15) and Alexander (1996:30) agreed on morphological grounds that *S. vagrans obscuroides* Findley, 1955 does not warrant recognition as a subspecies distinct from *S. o. obscurus*. The relationships of this seemingly isolated population warrant molecular investigation, particularly with respect to *S. monticola*, *S. obscurus*, and *S. ornatus*.

***Sorex obscurus shumaginensis* Merriam, 1900**

1900. *Sorex alascensis shumaginensis* Merriam, *Proc. Wash. Acad. Sci.* 2:18; 14 March.

1901. *S[orex]. shumaginensis*: Osgood, *N. Am. Fauna* 21:71; 26 September.

1901. [*Sorex glacialis*] *shumaginensis*: Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):373; 6 March.

1902. *Sorex obscurus shumaginensis*: J. A. Allen, *Bull. Am. Mus. Nat. Hist.* 16:228; 12 July. First use of current name combination.

1955. *Sorex vagrans shumaginensis*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):42; 10 December.

1977. *S[orex]. m[onticolus]. shumaginensis*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.

Holotype: USNM 97993.

Type Locality: USA: "Popof I[slan]d., Shumagin Islands, Alaska."

Distribution: USA: western Alaska, from the Bering Sea east to western Prince William Sound, including the Seward, Alaska, and Kenai peninsulas (Alexander, 1996).

***Sorex obscurus soperi* Anderson and Rand, 1945**

1945. *Sorex obscurus soperi* Anderson and Rand, *Can. Field-Nat.* 59(2):47; 16 October.

1955. *Sorex vagrans soperi*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):48; 10 December.

1977. *S[orex]. m[onticolus]. soperi*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.

Holotype: CMN 18249.

Type Locality: Canada: "2 ½ miles northwest of Lake Audy, Riding Mountain National Park, southwestern Manitoba, Canada; altitude about 1740 feet."

Distribution: Canada: eastern Saskatchewan and Manitoba (Wrigley et al., 1979; Alexander, 1996).

***Sorex oreopolus* Merriam, 1892**

1892. *Sorex oreopolus* Merriam, *Proc. Biol. Soc. Wash.* 7:173; 29 September.

1959. *Sorex oreopolus oreopolus*: Hall and Kelson, *Mammals of North America*, p. 49.

Holotype: USNM 33663/45698.

Type Locality: Mexico: "the Sierra de Colima, Jalisco, Mexico (altitude, 10,000 feet)."

Distribution: Mexico: discontinuous distribution in highlands of Jalisco, México, Distrito Federal, Morelos, Tlaxcala, and Puebla; elevational distribution: 2,440–3,965 m (Carraway, 2007).

Remarks: Subgenus *Otisorex*; *Sorex oreopolus* group (Esteva et al., 2010, clade A3). Within the *S. oreopolus* group, *S. oreopolus* is sister to *S. ventralis* (Esteva et al., 2010).

***Sorex orizabae* Merriam, 1895**

1895. *Sorex orizabae* Merriam, *N. Am. Fauna* 10:71; 31 December.

1928. *Sorex vagrans orizabae*: Jackson, *N. Am. Fauna* 51:113; 24 July.

Holotype: USNM 53633.

Type Locality: Mexico: "Mount Orizaba, state of Puebla, Mexico (altitude, 9,500 ft)."

Distribution: Mexico: highlands in Michoacán, México, Distrito Federal, Morelos, Tlaxcala, Puebla, and Veracruz; elevational distribution: 2,060–4,175 m (Carraway, 2007).

Remarks: Subgenus *Otisorex*; *S. oreopolus* group.

Sorex ornatus Merriam, 1895

Remarks: Subgenus *Otisorrex*; *Sorex vagrans* group. Molecular analyses by Maldonado et al. (2001, 2004) demonstrated the existence of three genetic clades (northern, central, and southern) whose geographical distributions do not correspond entirely to those of morphologically defined subspecies of *S. ornatus*. They showed that *S. ornatus sinuosus* and some northern populations of *S. o. californicus* are more closely related to *S. vagrans* and that *S. monticola parvidens* is more closely related to *S. ornatus*. The latter point was also demonstrated morphologically by Woodman (2012a).

Sorex ornatus californicus Merriam, 1895

1895. *Sorex californicus* Merriam, *N. Am. Fauna* 10:80; 31 December.
 1912. *Sorex californicus californicus*: Miller, *Bull. U.S. Natl. Mus.* 79:18; 31 December.
 1922. *Sorex ornatus californicus*: Jackson, *J. Wash. Acad. Sci.* 12:264; 4 June. First use of current name combination.
 1928. *Sorex ornatus ornatus*: Jackson, *N. Am. Fauna* 51:164; 24 July. Part; not *S. ornatus ornatus* Merriam, 1895.

Holotype: USNM 32578/44426.

Type Locality: USA: "Walnut Creek, Contra Costa County, Calif."

Distribution: USA: west central California south of San Pablo Bay, Suisun Bay, and the San Joaquin River to central Santa Barbara and southern Kern Counties (Maldonado et al., 2001, 2004); elevational range: from near sea level to 950 m (Grinnell, 1933).

Remarks: *Sorex ornatus californicus* comprises the bulk of Maldonado et al.'s (2001, 2004) central clade, which also includes *S. o. relictus* and *S. o. salarius*. Its distribution now excludes a large northern population of the former *S. o. californicus*, which was demonstrated to be more closely related to *S. v. vagrans*. The geographic distribution of *S. o. californicus* now extends farther south to include populations previously considered to be *S. o. ornatus*.

Sorex ornatus juncensis Nelson and Goldman, 1909

1909. *Sorex californicus juncensis* Nelson and Goldman, *Proc. Biol. Soc. Wash.* 22:27; 10 March.
 1917. *Sorex californicus juncensis*: Elliot, *Checkl. Mamm. Suppl.*, p. 146. Incorrect subsequent spelling of *Sorex californicus juncensis* Nelson and Goldman, 1909.
 1928. *Sorex juncensis*: Jackson, *N. Am. Fauna* 51:172; 24 July.
 1981. *Sorex* [ornatus]. *juncensis*: Junge and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 94:34; 5 November. First use of current name combination.

Holotype: USNM 139594.

Type Locality: Mexico: "Socorro, 15 miles south of San Quintin, Lower California, Mexico."

Distribution: Mexico: known only from marshes along a short section of the Pacific Coast of northern Baja California (Hall, 1981; Maldonado et al., 2001, 2004).

Remarks: This taxon forms part of the southern clade of *Sorex ornatus*; hence, it is closely allied with *S. ornatus ornatus* (Maldonado et al., 2001, 2004).

Sorex ornatus lagunae Nelson and Goldman, 1909

1909. *Sorex lagunae* Nelson and Goldman, *Proc. Biol. Soc. Wash.* 22:27; 10 March.
 1928. *Sorex ornatus lagunae*: Jackson, *N. Am. Fauna* 51:169; 24 July. First use of current name combination.

Holotype: USNM 147119.

Type Locality: Mexico: "La Laguna, Sierra Laguna, Lower California, Mexico (5,500 ft.)."

Distribution: Mexico: known only from extreme southern Baja California.

Remarks: This taxon is part of Maldonado et al.'s (2001, 2004) southern clade of *Sorex ornatus*, which includes *S. ornatus ornatus*.

Sorex ornatus ornatus Merriam, 1895

1895. *Sorex ornatus* Merriam, *N. Am. Fauna* 10:79; 31 December.
 1903. *Sorex oreinus* Elliot, *Field Col. Mus. Publ.* 74, *Zool. Ser.* 3(10):172; 7 May. Holotype: FMNH 10842, from "Aguaje de las Fresas, San Pedro Martir mountains, Lower California, Mexico, 6,000 feet elevation."
 1903. *Sorex orinus* Elliot, *Field Col. Mus. Publ.* 74, *Zool. Ser.* 3(12):228; June. Justified emendation of *Sorex oreinus* Elliot, 1903.
 1928. *Sorex ornatus ornatus*: Jackson, *N. Am. Fauna* 51:166; 24 July. First use of current name combination.

Holotype: USNM 31333/43198.

Type Locality: USA: "head of San Emigdio Canyon, Mount Piños, California"; Kern County.

Distribution: USA and Mexico: from about central Santa Barbara County and southern Kern County in west central California to northwestern Baja California (Maldonado et al., 2001, 2004); elevational distribution: from near sea level to 2,750 m (Grinnell, 1933).

Remarks: *Sorex ornatus ornatus* comprises the bulk of Maldonado et al.'s (2001, 2004) southern clade, which also includes *S. o. lagunae*, *S. o. parvidens*, *S. o. salicornicus*, and *S. o. willetti*. The distribution of *S. o. ornatus* excludes a large northern population that is now referred to *S. o. californicus*.

Sorex ornatus parvidens Jackson, 1921

1921. *Sorex obscurus parvidens* Jackson, *J. Mamm.* 2(3):161; 19 August.
 1895. *Sorex ornatus*: Merriam, *N. Am. Fauna* 10:79; 31 December. Part; not *Sorex ornatus ornatus* Merriam, 1895.
 1955. *Sorex vagrans parvidens*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):58; 10 December.
 1977. *S*[orex]. *m*[onticolus]. *parvidens*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.
 2001. *S*[orex]. *o*[rnatus]. *ornatus* (southern clade): Maldonado et al., *Molecular Ecology* 10:129.

2012. *Sorex ornatus parvidens*: Woodman, *J. Mamm.* 93(3):837; 28 June.
First use of current name combination.

Holotype: USNM 56561.

Type Locality: USA: “Spring known as Thurman’s Camp, Bluff Lake, altitude 7,500 feet, western side of San Bernardino Peak, San Bernardino Mountains, California”; corrected by Jackson (1928:124) to “Spring known as Thurmans Camp, Bluff Lake, altitude about 7,500 feet, San Bernardino Mountains, Calif.”

Distribution: USA: San Bernardino and San Gabriel Mountains in San Bernardino and Los Angeles Counties, California; elevational distribution: up to 2,286 m (Woodman, 2012a).

Remarks: Maldonado et al. (2001, 2004) showed genetically that shrews of the *S. vagrans* group from the San Bernardino Mountains are part of their southern clade of *S. ornatus*. Woodman (2012a) demonstrated *S. obscurus parvidens* is also morphologically closest to *S. ornatus*.

Sorex ornatus relictus Grinnell, 1932

1932. *Sorex ornatus relictus* Grinnell, *Univ. Calif. Publ. Zool.* 38(8):389; 9 June.

Holotype: MVZ 51414.

Type Locality: USA: “excavated slough immediately outside of east side levee, Buena Vista Lake, 290 feet altitude, Kern County, California.”

Distribution: USA: formerly found in marshlands associated with lakes in the southern San Joaquin Valley in Kings and Kern Counties, California; elevational distribution: below 100 m (Grinnell, 1933).

Remarks: This taxon forms part of the central clade of *S. ornatus*; hence, it is closely allied with *S. ornatus californicus* (Maldonado et al., 2001, 2004).

Sorex ornatus salarius von Bloeker, 1939

1939. *Sorex ornatus salarius* von Bloeker, *Proc. Biol. Soc. Wash.* 52:94; 5 June.

Holotype: MVZ 81548.

Type Locality: USA: “the salt marsh at the mouth of the Salinas River, Monterey County, California.”

Distribution: USA: known only from the coastal region around Monterey Bay, Monterey County, California; elevational distribution: from near sea level up to 400 m (Hall, 1981; Maldonado et al., 2001, 2004).

Remarks: This taxon belongs to Maldonado et al.’s (2001, 2004) central clade of *S. ornatus* and is closely allied with *S. ornatus californicus*.

Sorex ornatus salicornicus von Bloeker, 1932

1932. *Sorex ornatus salicornicus* von Bloeker, *Proc. Biol. Soc. Wash.* 45:131; 9 September.

Holotype: MVZ 74679.

Type Locality: USA: “Playa del Rey, Los Angeles County, California”; the original skin tag of the holotype gives the collection locality more accurately as “1 mi. N. of La Playa del Rey, Los Angeles Co., California” and provides an elevation of “25 ft.” (Chris J. Conroy, MVZ, email communication, 23 June 2017).

Distribution: USA: known from coastal marshes in Ventura and Los Angeles Counties, southwestern California (Grinnell, 1933).

Remarks: This taxon is part of the southern clade of *S. ornatus*, which includes *S. ornatus ornatus* (Maldonado et al., 2001, 2004).

Sorex ornatus willetti von Bloeker, 1942

1942. *Sorex willetti* von Bloeker, *Bull. S. Cal. Acad. Sci.* 40(3):163; 31 January.

1967. *Sorex o[rnatus]. willetti*: von Bloeker, *Proceedings of the Symposium on the Biology of the California Islands* (Santa Barbara: Santa Barbara Botanic Garden), p. 247; 18 August.

Holotype: LACM 7400.

Type Locality: USA: “Avalon Canyon, Santa Catalina Island, Los Angeles County, California.”

Distribution: USA: known only from Santa Catalina Island, California.

Remarks: This taxon is part of the southern clade of *S. ornatus*, and it is closely allied with *S. ornatus ornatus* (Maldonado et al., 2001, 2004).

Sorex pacificus Coues, 1877

Remarks: Subgenus *Otisorex*. Within the *Sorex sonomae* group, *S. pacificus* is sister to *S. sonomae* (Demboski and Cook, 2001; Hope et al., 2014). Phylogenetic analysis of the mitochondrial cytochrome *b* gene indicated that *S. monticola* as conceived by Alexander (1996) is not monophyletic but is composed of three genetic clades (Demboski and Cook, 2001; Shafer and Stewart, 2007): “southern continental clade” (recognized herein as *Sorex monticola* [sensu stricto]), “northern continental clade” (*S. obscurus*), and “coastal clade” (*S. pacificus*). Subspecies included in *S. pacificus* herein are based on my interpretations of Carraway (1990) and Alexander (1996) applied to the framework of Demboski and Cook (2001), which showed *S. bairdi* and *S. pacificus* deeply embedded among what had been considered the Pacific coastal subspecies of *S. monticola* (sensu lato) (Alexander, 1996).

Sorex pacificus bairdi Merriam, 1895

1895. *Sorex bairdi* Merriam, *N. Am. Fauna* 10:77; 31 December.

1918. *Sorex obscurus bairdi*: Jackson, *Proc. Biol. Soc. Wash.* 31:127; 29 November.

1955. *Sorex vagrans bairdi*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):35; 10 December.

1977. *S[orex]. m[onticolus]. bairdii*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July. Incorrect subsequent spelling of *Sorex bairdi* Merriam, 1895.
1990. *Sorex bairdii bairdii*: Carraway, *Spec. Publ. Mus. Texas Tech Univ.* 32:39; 7 July. Incorrect subsequent spelling of *Sorex bairdi* Merriam, 1895.
1996. *Sorex bairdi bairdi*: Alexander, *Univ. Kansas Mus. Nat. Hist., Misc. Publ.* 88:22; 21 February.

Holotype: USNM 17414/24318.

Type Locality: USA: "Astoria, Oregon"; Clatsop County.

Distribution: USA: northwestern Oregon from the Columbia River south to Lane County; elevational distribution: 70–490 m (Carraway, 1990).

Sorex pacificus calvertensis Cowan, 1941

1941. *Sorex obscurus calvertensis* Cowan, *Proc. Biol. Soc. Wash.* 54:103; 31 July.
1955. *Sorex vagrans calvertensis*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):39; 10 December.
1977. *S[orex]. m[onticolus]. calvertensis*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.

Holotype: RBCM 1947.

Type Locality: Canada: "Safety Cove, Calvert Island, B.C."

Distribution: Canada: widely separated Banks Island and Calvert Island, British Columbia (Alexander, 1996).

Sorex pacificus cascadenis Carraway, 1990

1990. *Sorex pacificus cascadenis* Carraway, *Spec. Publ. Mus. Texas Tech Univ.* 32:55; 7 July.

Holotype: USNM 204479.

Type Locality: USA: "McKenzie Bridge, [Lane County], Oregon" (brackets in original).

Distribution: USA: northeastern Linn County south to Jackson County, Oregon; elevational distribution: 425–1,400 m (Carraway, 1990).

Sorex pacificus ellassodon Osgood, 1901

1901. *Sorex longicauda ellassodon* Osgood, *N. Am. Fauna* 21:35; 26 September.
1905. *Sorex obscurus ellassodon*: Elliot, *Field Col. Mus. Publ.* 105, *Zool. Ser.* 6:450; 6 December.
1955. *Sorex vagrans ellassodon*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):40; 10 December.
1977. *S[orex]. m[onticolus]. ellassodon*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.

Holotype: USNM 100597.

Type Locality: Canada: "Cumshewa Inlet, Moresby Island, Queen Charlotte Islands, British Columbia."

Distribution: Canada and USA: individual coastal islands from Baranof, Kupreanof, and Mitkof Islands, Alaska, to Porcher and Dewdney Islands and part of the Haida Gwaii

Archipelago (formerly Queen Charlotte Islands), British Columbia (Alexander, 1996).

Sorex pacificus insularis Cowan, 1941

1941. *Sorex obscurus insularis* Cowan, *Proc. Biol. Soc. Wash.* 54:103; 31 July. Not *Sorex insularis* Okhotina, 1993:64.
1955. *Sorex vagrans insularis*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):39; 10 December.
1977. *S[orex]. m[onticolus]. insularis*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.

Holotype: RBCM 3110.

Type Locality: Canada: "Smythe Island, Bardswell group, B. C."

Distribution: Canada: the western portion of the Bardswell Island Group (including Athlone [formerly Smythe or Smyth], Townsend, and Reginald Islands), along the west coast of British Columbia (Alexander, 1996).

Sorex pacificus isolatus Jackson, 1922

1922. *Sorex obscurus isolatus* Jackson, *J. Wash. Acad. Sci.* 12:263; 4 June.
1955. *Sorex vagrans isolatus*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):38; 10 December.
1977. *S[orex]. m[onticolus]. isolatus*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.

Holotype: USNM 177719.

Type Locality: Canada: "Mouth of Millstone Creek, Nanaimo, Vancouver island, British Columbia."

Distribution: Canada: Vancouver Island and numerous smaller islands (including Denman Island) along the coast of Vancouver Island, British Columbia.

Sorex pacificus longicauda Merriam, 1895

1895. *Sorex obscurus longicauda* Merriam, *N. Am. Fauna* 10:74; 31 December.
1900. *S[orex]. longicauda*: Merriam, *Proc. Wash. Acad. Sci.* 2:16; 14 March.
1902. [*Sorex obscurus*] *longicaudus*: Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2:372. Unjustified emendation of *Sorex obscurus longicauda* Merriam, 1895, a noun in apposition.
1955. *Sorex vagrans longicauda*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):37; 10 December.
1977. *S[orex]. m[onticolus]. longicauda*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.
1996. *Sorex monticolus longicaudus*: Alexander, *Univ. Kansas Mus. Nat. Hist., Misc. Publ.* 88:28; 21 February. Unjustified emendation of *Sorex obscurus longicauda* Merriam, 1895, a noun in apposition.

Holotype: USNM 74711.

Type Locality: USA: "Wrangel, southeast Alaska."

Distribution: Canada and USA: Pacific coastal region and adjacent islands from Taku Inlet, southeast Alaska, to Rivers Inlet, British Columbia; includes Pitt, Campania, Princess Royal, Swindle, Dufferin, Horsfall, Campbell, Spider, and

the Hunter group of islands; excludes Porcher, the Estevan group, the western Bardswell group, and Goose and Hecate Islands (Alexander, 1996).

Sorex pacificus malitiosus Jackson, 1919

1919. *Sorex obscurus malitiosus* Jackson, *Proc. Biol. Soc. Wash.* 32:23; 11 April.
 1955. *Sorex vagrans malitiosus*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):40; 10 December.
 1977. *S[orex]. m[onticolus]. malitiosus*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.

Holotype: MVZ 8401.

Type Locality: USA: “east side of Warren Island, Alaska.”

Distribution: USA: Known only from Warren and Coronation Islands, along the Pacific Coast of southeastern Alaska (Alexander, 1996).

Sorex pacificus pacificus Coues, 1877

1877. *Sorex pacificus* Coues, *Bull. U.S. Geol. Geog. Surv. Terr.* 3(3):650; 15 May.
 1918. *Sorex yaquinae* Jackson, *Proc. Biol. Soc. Wash.* 31:127; 29 November. Holotype: USNM 73051, from “Yaquina Bay, Oregon”; Lincoln County, USA.
 1921. *Sorex pacificus pacificus*: Jackson, *J. Mamm.* 2(3):162; 19 August. First use of current name combination.
 1936. *Sorex pacificus yaquinae*: Bailey, *N. Am. Fauna* 55:364; June.
 1955. *Sorex vagrans pacificus*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):34; 10 December.
 1955. *Sorex vagrans yaquinae*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):34; 10 December.

Holotype: USNM 3266.

Type Locality: USA: “Fort Umpqua, Oregon”; mouth of the Umpqua River, Douglas County.

Distribution: USA: Pacific coastal region west of the Cascades, from Cascade Head in Tillamook County to Coos Bay in Coos County, Oregon (Carraway, 1990).

Sorex pacificus permiliensis Jackson, 1918

1918. *Sorex obscurus permiliensis* Jackson, *Proc. Biol. Soc. Wash.* 31:128; 29 November.
 1955. *Sorex vagrans permiliensis*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):36; 10 December.
 1977. *S[orex]. m[onticolus]. permiliensis*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.
 1990. *Sorex bairdii permiliensis*: Carraway, *Spec. Publ. Mus. Texas Tech Univ.* 32:40; 7 July.

Holotype: USNM 91048.

Type Locality: USA: “Permil Lake, west base of Mount Jefferson, Cascade Range, Oregon”; Marion County.

Distribution: USA: Cascade Range of northern Oregon, from the Columbia River south through Lane County; elevational distribution: 325–1,400 m (Carraway, 1990).

Sorex pacificus prevostensis Osgood, 1901

1901. *Sorex longicauda prevostensis* Osgood, *N. Am. Fauna* 21:35; 26 September.
 1905. *Sorex obscurus prevostensis*: Elliot, *Field Col. Mus. Publ.* 105, *Zool. Ser.* 6:450; 6 December
 1955. *Sorex vagrans prevostensis*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):41; 10 December.
 1977. *S[orex]. m[onticolus]. prevostensis*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.

Holotype: USNM 100618.

Type Locality: Canada: “Prevost Island, Queen Charlotte Islands, British Columbia.”

Distribution: Canada: known only from Kunghit Island (formerly Prevost Island) at the southern tip of the Haida Gwaii Archipelago (formerly Queen Charlotte Islands; Alexander, 1996).

Remarks: Apparently, there were two Prevost Islands in British Columbia. One at the southern tip of the Haida Gwaii Archipelago is now called Kunghit Island. A second is located in the channel between the southeastern tip of Vancouver Island and the northwestern corner of Washington. *Sorex pacificus prevostensis* occurs on Kunghit Island.

Sorex pacificus setosus Elliot, 1899

1899. *Sorex setosus* Elliot, *Field Col. Mus. Publ.* 32, *Zool. Ser.* 1(13):274; 17 May.
 1918. *Sorex obscurus setosus*: Jackson, *Proc. Biol. Soc. Wash.* 31:127; 29 November.
 1938. *Sorex obscurus mixtus* Hall, *Am. Nat.* 72(742):462; 10 September. Holotype: MVZ 70376, from “Vanada, Texada Island, Georgia Strait, British Columbia,” Canada.
 1955. *Sorex vagrans setosus*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):36; 10 December.
 1955. *Sorex vagrans mixtus*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):38; 10 December.
 1977. *S[orex]. m[onticolus]. setosus*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.
 1977. *S[orex]. m[onticolus]. mixtus*: Hennings and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 68:4; 15 July.

Holotype: FMNH 6213.

Type Locality: USA: “vicinity of Happy Lake,” Olympic Mountains, Clallam County, Washington.

Distribution: Canada and USA: coastal region and western slope of the Cascade Mountains from Rivers Inlet in southwestern British Columbia through western Washington and northwestern Oregon; elevational distribution from near sea level to 1,525 m (Hennings and Hoffmann, 1977; Alexander, 1996).

Sorex palustris Richardson, 1828

Remarks: Subgenus *Otisorex*; *Sorex palustris* group. Hope et al. (2014) recognized three species-level molecular clades among the subspecies formerly united as *Sorex palustris*:

eastern *S. albibarbis*, cordilleran *S. navigator*, and boreal *S. palustris* (sensu stricto). That study limited *S. palustris* (sensu stricto) to include the subspecies *S. palustris hydrobadistes* and *S. p. palustris*. Nagorsen et al. (2017) demonstrated that parapatric *S. navigator* and *S. palustris* can also be distinguished morphometrically. However, the taxonomic status of many southern and Midwestern populations remains incompletely understood (Hope et al., 2014).

***Sorex palustris hydrobadistes* Jackson, 1926**

1926. *Sorex palustris hydrobadistes* Jackson, *J. Mamm.* 7(1):57; 15 February.

Holotype: USNM 229061.

Type Locality: USA: “Withee, Clark County, Wisconsin.”

Distribution: Extreme northeastern South Dakota, central Minnesota, northern Wisconsin, the Upper Peninsula of Michigan, and the northern Lower Peninsula of Michigan (Hall, 1981; Beneski and Stinson, 1987; Hope et al., 2014); elevational distribution: 140–1,100 m.

***Sorex palustris palustris* Richardson, 1828**

1828. *Sorex palustris* Richardson, *Zool. J.* 3:517; April.

1838. *Amphisorex palustris*: Gray, *Proc. Zool. Soc. Lond.* 5(1837):125; 14 June.

1847. *Crossopus palustris*: Reichenbach, *Praktische Naturgeschichte Menschen und der Säugethiere für Gebildete aller Stände* (Leipzig: Gebhardt & Reiland), p. 161 [reference not seen].

1848. [*Galemys* (*Crossopus*)] *palustris*: Pomel, *Arch. Sci. Phys. Nat.* 9:249.

1863. *Neosorex palustris*: Verrill, *Proc. Boston Soc. Nat. Hist.* 9:167; February.

1868. *Crossopus fimbripes*: Fitzinger, *Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.* 57(1):630. Not *Sorex fimbripes* Bachman, 1837.

1895. *Sorex* (*Neosorex*) *palustris*: Merriam, *N. Am. Fauna* 10:91; 31 December.

1901. *Neosorex palustris* Elliot, *Field Col. Mus. Publ.* 45, *Zool. Ser.* 2(1):378, fig. 72; 6 March. Incorrect subsequent spelling of *Sorex palustris* Richardson, 1828.

1915. *Neosorex palustris palustris*: G. M. Allen, *Proc. Biol. Soc. Wash.* 28:17; 12 February.

1926. *Sorex palustris palustris*: Jackson, *J. Mamm.* 7(1):57; 15 February. First use of current name combination.

Holotype: BM 1842.10.7.1.

Type Locality: Canada: “Marshy places, from Hudson’s Bay to the Rocky Mountains.” The holotype was “procured on Capt. Franklin’s late Expedition.” John Richardson participated in John Franklin’s 1825 Canadian expedition, which traveled north down the Mackenzie River, then east (Richardson) or west (Franklin) along the coast of the Beaufort Sea. The expedition thereby passed through portions of the Northwest Territories, Yukon Territory, Nunavut, and Alaska.

Distribution: Canada and USA: southern Northwest Territory and Alberta east of the crest of the Rocky Mountains to

northern Minnesota and central Ontario; elevational distribution: 15–2,819 m (Hall, 1981; Beneski and Stinson, 1987; Hope et al., 2014).

***Sorex preblei* Jackson, 1922**

1922. *Sorex preblei* Jackson, *J. Wash. Acad. Sci.* 12:263; 4 June.

Holotype: USNM 208032.

Type Locality: USA: “Jordan Valley, altitude, 4,200 feet, Malheur County, Oregon.”

Distribution: Canada and USA: south central British Columbia, southeastern Washington, central Oregon, and the northeastern corner of California east through Montana, western Wyoming, and northern Utah; elevational distribution: 343–3,135 m (Cornely et al., 1992; Nagorsen et al., 2001).

Remarks: Subgenus *Otisorex*; clade A2 of Esteva et al. (2010). Within the Beringian clade of the *Sorex cinereus* group, *S. preblei* is a member of a subclade that also contains *S. lyelli* and two undescribed western North American species (Hope et al., 2012).

***Sorex pribilofensis* Merriam, 1895**

1895. *Sorex pribilofensis* Merriam, *N. Am. Fauna* 10:87; 31 December.

1981. *Sorex hydrodromus*: Junge and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 94:18; 5 November. Not *Sorex hydrodromus* Dobson, 1889.

Holotype: USNM 30911.

Type Locality: USA: “St. Paul Island, Pribilof Islands, Bering Sea”; Alaska.

Distribution: Known only from St. Paul Island, Alaska.

Remarks: Subgenus *Otisorex*; *S. cinereus* group (Demboski and Cook, 2003). Within the Beringian clade of the *S. cinereus* group, *S. pribilofensis* is a member of a subclade that that is sister to *S. haydeni* and that also includes North American *S. jacksoni* and *S. ugyunak* and Siberian *S. camtschatica* Yudin, 1972 and *S. portenkoi* Stroganov, 1956 (Hope et al., 2012).

Sorex pribilofensis has sometimes been placed in synonymy with *S. hydrodromus* Dobson, 1889, which was described from a specimen (RAS 2389) obtained from “Unalaska” by I. G. Vosnesensky in 1840–1848 (Hall in Murie, 1959) and preserved in the Zoological Institute of the Russian Academy of Sciences, St. Petersburg (Baranova et al., 1981). *Sorex hydrodromus* was described as a form of water shrew with the characteristic “thick comb-like fringe of stiff hairs . . . along the outer and inner margin of both manus and pes” (Dobson, 1889:373). Later investigators, however, variably identified the holotype as (1) “a recognizable kind (species or subspecies) of *Sorex* best placed in the *arcticus* group” (Hall in Murie, 1959; see also Jackson, 1928:75), (2) synonymous with *S. caecutiens* (Gromov et al., 1963), or (3) “virtually indistinguishable from *S. pribilofensis*”

(Hoffmann and Peterson, 1967:131–132). The type locality of “Unalaska” has been narrowly interpreted to mean Unalaska Island (Hall in Murie, 1959), but no shrews inhabit that island (Peterson, 1967). More logically, it refers to the old Russian Unalaska District, a region that included the Shumagin Islands, the western Alaska Peninsula, Unimak Island, the Fox Islands, and the Pribilof Islands (Peterson, 1967; Rausch and Rausch, 1997). Hall (in Murie, 1959) reported cranial measurements (in mm) from the holotype and a second specimen (RAS 2370) of *S. hydrodromus* collected by Vosnesensky from the type locality (condylobasal length: 16.1, 16.0; cranial breadth: 8.2, 8.8; maxillary breadth: 4.45, 4.7, respectively). Comparison of these measurements with those of *S. pribilofensis* reported by Hoffmann and Peterson (1967; mean and range of measurements for 12 to 14 individuals (mm): condylobasal length, 15.5, 15.2–15.8; cranial breadth, 7.9, 7.8–8.0; maxillary breadth, 4.7, 4.5–4.9) suggests that *S. hydrodromus* has slightly larger cranial size than *S. pribilofensis* but a relatively narrower maxillary breadth. The holotype of *S. hydrodromus* is also reported to have a substantially longer tail (either 42 or 46 mm) than *S. pribilofensis* (mean \pm SD for 15 individuals (mm): 34 ± 1 ; van Zyll de Jong, 1982). A better match for *S. hydrodromus* may be *S. camtschatica* Yudin, 1972, which is closer in cranial size (mean \pm SD for 34 individuals (mm): condylobasal length, 16.2 ± 2 ; cranial breadth, 8.0 ± 2 ; breadth across $M^2 - M^2$, 3.9 ± 1 ; van Zyll de Jong, 1982) and is reported to possess a “well-developed fringe of stiff hair on the feet” (van Zyll de Jong, 1982:1585).

Sorex rohweri Rausch, Feagin, and Rausch, 2007

2007. *Sorex rohweri* Rausch, Feagin, and Rausch, *Mamm. Biol.* 72(2):93; 26 March.

Holotype: UWBM 39812.

Type Locality: USA: “Olympic Peninsula, Washington State, near Quilcene, Penny Creek, at lat. 47°51' N, long. 122°57' W.” in Jefferson County.

Distribution: Canada and USA: occurs from the western Cascades to the coast in southwestern British Columbia (south of the lower Fraser River) and western Washington and west of the Willamette Valley in Oregon; elevational distribution from near sea level to 1,250 m (Rausch et al., 2007; Nagorsen and Panter, 2009; Woodman and Fisher, 2016).

Remarks: Subgenus *Otisorex*; *S. rohweri* can be considered either the most basal branch within the *Sorex cinereus* group or the sister taxon to *S. longirostris* plus the *Sorex cinereus* group (Hope et al., 2012).

Sorex salvini Merriam, 1897

Remarks: Unnamed subgenus; *S. salvini* group. Esteva et al. (2010) showed that *S. salvini* (as *S. veraecrucis* locality 14 and *S. saussurei* locality 15) is sister to a clade formed by *S. altoensis* (as *S. veraecrucis* localities 5, 7) and *S. saussurei*

(as *S. saussurei* locality 6). Together, these taxa form part of Esteva et al.’s (2010) subclade S2 of clade B1.

Matson and Ordóñez-Garza (2017) recognized *S. cristobalensis* and *S. salvini* as species, but they exhibit only 4.0% genetic sequence divergence between them for cytochrome *b* (Esteva et al., 2010). For this reason, I tentatively treat them as subspecies herein, but these taxa should be restudied using additional genetic markers. Unfortunately, *S. salvini oaxacae* was not included in Esteva et al.’s (2010) study. All three taxa were treated previously as subspecies of *S. saussurei* and *S. veraecrucis*. Esteva et al. (2010) showed high sequence divergence between *S. s. cristobalensis* (as *S. veraecrucis* locality 14) and both (1) *S. saussurei* (as *S. saussurei* locality 6: 10.7% divergence) and (2) *S. veraecrucis* (as *S. veraecrucis* locality 11: 16.0%). They also demonstrated high sequence divergence between *S. s. salvini* (as *S. saussurei* locality 15) and both (1) *S. saussurei* (10.1%) and (2) *S. veraecrucis* (14.6%).

Sorex salvini cristobalensis Jackson, 1925

1925. *Sorex saussurei cristobalensis* Jackson, *Proc. Biol. Soc. Wash.* 38:129; 13 November.

2007. *Sorex veraecrucis cristobalensis*: Carraway, *Monogr. West. N. Am. Nat.* 3:62; 22 June.

2010. [S[orex]. *veraecrucis* (14): Esteva et al., *Zootaxa* 2615:55, fig. 1; 17 September. Part; not *Sorex saussurei veraecrucis* Jackson, 1925.

2012. [S[orex]. *salvini cristobalensis*: Woodman et al., *Ann. Carnegie Mus.* 80(3):214; 15 July. First use of current name combination.

2017. *Sorex cristobalensis*: Matson and Ordóñez-Garza, *Zootaxa* 4236(3): 475; 24 February.

Holotype: USNM 75883.

Type Locality: Mexico: “San Cristobal, altitude 8,400 feet, state of Chiapas.”

Distribution: Mexico: known from three localities in the highlands of Chiapas; elevational distribution: 1,900–2,560 m (Carraway, 2007; Matson and Ordóñez-Garza, 2017).

Sorex salvini oaxacae Jackson, 1925

1925. *Sorex saussurei oaxacae* Jackson, *Proc. Biol. Soc. Wash.* 38:128; 13 November.

2007. *Sorex veraecrucis oaxacae*: Carraway, *Monogr. West. N. Am. Nat.* 3:62; 22 June.

2012. [S[orex]. *salvini oaxacae*: Woodman et al., *Ann. Carnegie Mus.* 80(3):214; 15 July. First use of current name combination.

Holotype: USNM 71467.

Type Locality: Mexico: “Mountains near Ozolotepec, altitude 10,000 feet, state of Oaxaca.”

Distribution: Mexico: highlands of Oaxaca; elevational distribution: 1,600–3,050 m (Carraway, 2007).

Sorex salvini salvini Merriam, 1897

1897. *Sorex salvini* Merriam, *Proc. Biol. Soc. Wash.* 11:229; 15 July.

1897. *Sorex godmani* Merriam, *Proc. Biol. Soc. Wash.* 11:229; 15 July. Holotype: USNM 77044, from “Volcano Santa Maria, Quezaltenango, Guatemala (alt. 9,000 ft. = 2740 meters).”
1904. [*Sorex*] *godmani* Trouessart, *Cat. Mamm. Suppl.* 1904:135. Incorrect subsequent spelling of *Sorex godmani* Merriam, 1897.
1928. *Sorex saussurei godmani*: Jackson, *N. Am. Fauna* 51:158; 24 July.
1928. *Sorex saussurei salvini*: Jackson, *N. Am. Fauna* 51:159; 24 July.
2010. [*Sorex*]. *saussurei* (15): Esteva et al., *Zootaxa* 2615:55, fig. 1; 17 September. Part; not *Sorex saussurei* Merriam, 1892.
2012. [*Sorex*]. *salvini salvini*: Woodman et al., *Ann. Carnegie Mus.* 80(3):214; 15 July. First use of current name combination.

Holotype: USNM 77035.

Type Locality: Guatemala: “Calel, Totonicapán, Guatemala (alt. 10200 ft. = 3100 meters).”

Distribution: Guatemala: highlands of southwestern and central Guatemala; elevational distribution: 2,040–3,110 m (Matson and Ordóñez-Garza, 2017).

***Sorex saussurei* Merriam, 1892**

1892. *Sorex saussurei* Merriam, *Proc. Biol. Soc. Wash.* 7:173; 29 September.
1905. *Sorex saussurii* Elliot, *Field Col. Mus. Publ.* 105, *Zool. Ser.* 6:456; 6 December. Incorrect subsequent spelling of *Sorex saussurei* Merriam, 1892.
1912. *Sorex saussurei saussurei* Miller, *Bull. U.S. Natl. Mus.* 79:19; 31 December. Part.

Holotype: USNM 33667/45702.

Type Locality: Mexico: “the Sierra de Colima, Jalisco, Mexico (altitude 8,000 feet).”

Distribution: Mexico: highlands in Jalisco, Colima, Michoacán, México, Distrito Federal, Morelos, and Puebla; elevational distribution: 2,370–3,180 m (Carraway, 2007).

Remarks: Unnamed subgenus; *S. saussurei* group. *Sorex saussurei* (as *S. saussurei* locality 6) is sister to *S. altoensis* (as *S. veraecrucis* localities 5, 7), and together, they form part of Esteva et al.’s (2010) subclade S2 of clade B1.

***Sorex sclateri* Merriam, 1897**

1897. *Sorex sclateri* Merriam, *Proc. Biol. Soc. Wash.* 11:228; 15 July.

Holotype: USNM 75872.

Type Locality: Mexico: “Tumbala, Chiapas, Mexico (alt., 5,000 ft.).”

Distribution: Mexico: known only from two localities in the highlands of Chiapas, 1,525 m elevation (Carraway, 2007; Matson and Ordóñez-Garza, 2017).

Remarks: Unnamed subgenus; *S. salvini* group (Matson and Ordóñez-Garza, 2017).

***Sorex sonomae* Jackson, 1921**

Remarks: Subgenus *Otisorrex*; *S. sonomae* group. Molecular phylogenetic analyses indicate that *S. sonomae* is sister to *S. pacificus* (Dembofski and Cook, 2001; Esteva et al., 2010; Hope et al., 2014).

***Sorex sonomae sonomae* Jackson, 1921**

1921. *Sorex pacificus sonomae* Jackson, *J. Mamm.* 2(3):162; 19 August.
1955. *Sorex vagrans sonomae*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 9(1):32; 10 December.
1990. *Sorex sonomae sonomae*: Carraway, 1990, *Spec. Publ. Mus. Texas Tech Univ.* 32:29; 7 July. First use of current name combination.

Holotype: MVZ 19658.

Type Locality: USA: “Sonoma County side of Gualala River, Gualala, California.”

Distribution: USA: Pacific Coast from Lincoln and Benton Counties, Oregon, south to Marin County, California; elevational distribution: from near sea level to 1,700 m (Carraway, 1990).

***Sorex sonomae tenelliodus* Carraway, 1990**

1990. *Sorex sonomae tenelliodus* Carraway, 1990, *Spec. Publ. Mus. Texas Tech Univ.* 32:33; 7 July.

Holotype: USNM 565663.

Type Locality: USA: “4 mi. S, 10½ mi. E Blue River, East Fork Creek, T17S, R6E, sec. 7, Lane County, Oregon.”

Distribution: USA: Lincoln County, Oregon, south to northern Siskiyou County, California; elevational distribution: 160–1,315 m (Carraway, 1990).

***Sorex stizodon* Merriam, 1895**

1895. *Sorex stizodon* Merriam, *N. Am. Fauna* 10:98; 31 December.

Holotype: USNM 75885.

Type Locality: Mexico: “San Cristobal, Chiapas.”

Distribution: Mexico: known from only two localities near San Cristóbal de las Casas in the highlands of northern Chiapas, 2,740 m elevation (Carraway, 2007; Matson and Ordóñez-Garza, 2017).

Remarks: Unnamed subgenus; *S. salvini* group (Matson and Ordóñez-Garza, 2017).

***Sorex tenellus* Merriam, 1895**

1895. *Sorex tenellus* Merriam, *N. Am. Fauna* 10:81; 31 December.
1902. *Sorex tenellus myops* Merriam, *Proc. Biol. Soc. Wash.* 15:76; 22 March. Holotype: USNM 29559/41634, from “White Mountains, California.” On the basis of E. W. Nelson’s field catalog, Howell (1923:266) corrected the type locality to “Cottonwood Creek (about 9550 feet) on east slope of the White Mountains, Inyo County, California.”
1912. *Sorex tenellus tenellus*: Miller, *Bull. U.S. Natl. Mus.* 79:18; 31 December.

Holotype: USNM 25083/32495.

Type Locality: USA: “summit of Alabama Hills near Lone Pine, Owens Valley, Calif[ornia].” On the basis of information in the field catalog of the collector (E. W. Nelson), Howell (1923:266) corrected the type locality to “Lone Pine Creek (about 4500 feet), Owens Valley, Inyo County, California.”

Distribution: USA: highlands in western California (from Mount Lassen to the Inyo Mountains) to eastern Nevada (from the Ruby Mountains south to the Spring Mountains) and western Utah; elevational distribution: 1,370–4,270 m (Hoffmann and Owen, 1980; Rickart et al., 2004, 2011, 2017; Shohfi et al., 2006).

Remarks: Subgenus *Otisorex*; *S. oreopolus* group, which is part of Esteva et al.'s (2010) clade A3.

***Sorex trowbridgii* Baird, 1857**

FIGURE 25

Remarks: Unnamed subgenus (George, 1988:456); *S. trowbridgii* group. This species forms part of Esteva et al.'s (2010) clade B1, in which it appears to be sister to their subclade S2 (*S. salvini* and *S. saussurei* groups). In contrast, Maldonado et al. (2015) showed *S. trowbridgii* to be sister to the *S. merriami* group.

***Sorex trowbridgii destructioni* Scheffer and Dalquest, 1942**

1942. *Sorex trowbridgii destructioni* Scheffer and Dalquest, *J. Mamm.* 23(3):334; 14 August.

Holotype: USNM 271634.

Type Locality: USA: "Destruction Island, Jefferson County, Washington."

Distribution: USA: known only from Destruction Island, Washington (Hall, 1981; George, 1989).

***Sorex trowbridgii humboldtensis* Jackson, 1922**

1922. *Sorex trowbridgii humboldtensis* Jackson, *J. Wash. Acad. Sci.* 12(11): 264; 4 June.

Holotype: USNM 97271.

Type Locality: USA: "Carson's Camp, Mad River, Humboldt Bay, Humboldt County, California."

Distribution: USA: coastal region of southern Humboldt and Mendocino Counties, California; elevational distribution: from near sea level to 700 m (Grinnell, 1933; Hall, 1981; George, 1989).

***Sorex trowbridgii mariposae* Grinnell, 1913**

1913. *Sorex montereyensis mariposae* Grinnell, *Univ. Calif. Publ. Zool.* 10(9):189; 20 March.

1923. *Sorex trowbridgii mariposae*: Grinnell, *Univ. Calif. Publ. Zool.* 21(10):314; 27 January. First use of current name combination.

Holotype: MVZ 12979.

Type Locality: USA: "Yosemite Valley at 4,000 feet altitude, Mariposa County, California." Miller and Kellogg (1955:19) restricted the type locality to "near the old Sentinel Hotel"; which is approximately 37°44'30"N, 119°35'30"W.

Distribution: USA: from south central Oregon south along the higher inner Coast Ranges to southern Mendocino County, California, and from western Siskiyou and Modoc

Counties, California, south through the Warner Mountains and northern Sierra Nevada of eastern California and the south central corner of Nevada to Tulare County; elevational distribution: 385–2,290 m (Grinnell, 1933; Hall, 1981; George, 1989).

***Sorex trowbridgii montereyensis* Merriam, 1895**

1895. *Sorex montereyensis* Merriam, *N. Am. Fauna* 10:79; 31 December.

1922. *Sorex t[ro]wbridgii. montereyensis*: Jackson, *J. Wash. Acad. Sci.* 12:264; 4 June. First use of current name combination.

Holotype: USNM 32000/44810.

Type Locality: USA: "Monterey, Calif[ornia]."; Monterey County.

Distribution: USA: coastal region of west central California, from southern Mendocino County south to southern Santa Barbara County; elevational distribution: from near sea level to 610 m (Grinnell, 1933; Hall, 1981; George, 1989).

***Sorex trowbridgii trowbridgii* Baird, 1857**

FIGURE 25

1857. *Sorex trowbridgii* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):13, pl. 26.

1884. *Sorex trowbridgei*: True, *U.S. Natl. Mus. Circ.* 29:22; 29 November. Incorrect subsequent spelling of *Sorex trowbridgii* Baird, 1857.

1922. *Sorex trowbridgii trowbridgii*: Jackson, *J. Wash. Acad. Sci.* 12:264; 4 June. First use of current name combination.

Lectotype: USNM 813/3088, designated by A. J. Poole and Schantz (1942:196).

Type Locality: USA: "Astoria, Oregon." Miller and Rehn (1901:239) added that the type locality is at the "mouth of Columbia River, Clatsop County."

Distribution: Canada and USA: southwestern British Columbia through western Washington and western Oregon to eastern Humboldt and western Trinity Counties, California; elevational distribution: from near sea level to 1,985 m (Grinnell, 1933; Hall, 1981; George, 1989).

***Sorex tundrensis* Merriam, 1900**

Distribution: Holarctic: in Eurasia, the species ranges from the Pechora River in European Russia east through Siberia to Chukotka and south to the Altai Mountains, Mongolia and northeastern China; in North America, it occurs through much of Alaska, the northwestern corner of British Columbia, northern Yukon Territory, and northern Northwest Territories (Hutterer, 2005; Naughton, 2012).

Remarks: Subgenus *Sorex*; *Sorex araneus* group (Fumagalli et al., 1999). A single subspecies occurs in North America.

***Sorex tundrensis tundrensis* Merriam, 1900**

1900. *Sorex tundrensis* Merriam, *Proc. Wash. Acad. Sci.* 2:16; 14 March.

1956. *Sorex arcticus tundrensis*: Bee and Hall, *Univ. Kansas Mus. Nat. Hist., Misc. Publ.* 8:13; 10 March.

1983. *S[orex]. t[undrensis]. tundrensis*: Okhotina, *Zool. Zh.* 62(3):410; March. First use of current name combination.

Holotype: USNM 99286.

Type Locality: USA: “St. Michaels, Alaska.”

Distribution: Canada and USA: northern, western, and central Alaska, the northwesternmost corner of British Columbia, northern Yukon Territory, and northern Northwest Territories (Naughton, 2012).

Sorex ugyunak Anderson and Rand, 1945

1945. *Sorex cinereus ugyunak* Anderson and Rand, *Can. Field-Nat.* 59(2):62; 16 October.

1983. *Sorex ugyunak*: van Zyll de Jong, *Handbook of Canadian Mammals*, pp. 5, 76. First use of current name combination.

Holotype: AMNH 31365.

Type Locality: Canada: “Tuktuk (Tuktuyaktok), northeast side of Mackenzie River delta, south of Toket Point, Mackenzie District, Northwest Territories, Canada.”

Distribution: Canada and USA: tundra areas of northern Alaska, northern Yukon Territory, northern Northwest Territories, and Nunavut (Naughton, 2012).

Remarks: Subgenus *Otisorrex*; Beringian clade of the *Sorex cinereus* group (Hope et al., 2012). Hope et al. (2012) found low resolution among high-latitude tundra/taiga species in the Beringian clade of the *Sorex cinereus* group (North American *S. jacksoni* Hall and Gilmore, 1932; *S. pribilofensis* Merriam, 1895; and *S. ugyunak* and Siberian *S. camtschatica* Yudin, 1972; *S. leucogaster* Kuroda, 1933; and *S. portenkoi* Stroganov, 1956) that they interpreted as evidence of recent speciation. Their analysis indicated *S. ugyunak* is sister to a clade comprising *S. camtschatica*, *S. jacksoni*, and *S. portenkoi*. Despite the relative lack of evidence of paraphyly or polyphyly in their cytochrome *b* tree, they urged caution in revising the taxonomic status of these taxa.

Sorex vagrans Baird, 1857

FIGURES 23, 25

Remarks: Subgenus *Otisorrex*; *Sorex vagrans* group. Molecular analyses of *S. ornatus* and *S. vagrans* by Maldonado et al. (2001, 2004) demonstrated the existence of three genetic clades (northern, central, and southern) along the western coast of North America. Their northern clade, which corresponds to *S. vagrans*, includes what were previously called *S. ornatus sinuosus* as well as some northern populations of *S. ornatus californicus*.

Sorex vagrans halicoetes Grinnell, 1913

1913. *Sorex halicoetes* Grinnell, *Univ. Calif. Publ. Zool.* 10(9):183; 20 March.

1928. *Sorex vagrans halicoetes* Jackson, *N. Am. Fauna* 51:108; 24 July. First use of current name combination.

Holotype: MVZ 3638.

Type Locality: USA: “salt marsh near Palo Alto, Santa Clara County, California.”

Distribution: USA: salt marshes bordering the southern arm of San Francisco Bay (San Mateo, Santa Clara, and Alameda Counties); known only from near sea level (Grinnell, 1933; Gillihan and Foresman, 2004).

Remarks: Specimens originally identified as *S. vagrans halicoetes* from San Gregorio, along the Pacific shore of San Mateo County (Jackson, 1928; Grinnell, 1933), were subsequently referred to the newer subspecies *S. v. paludivagus* (von Bloeker, 1939).

Sorex vagrans paludivagus von Bloeker, 1939

1939. *Sorex vagrans paludivagus* von Bloeker, *Proc. Biol. Soc. Wash.* 52:93; 5 June.

Holotype: LACM 5053.

Type Locality: USA: “the salt marsh at mouth of Elkhorn Slough, Moss Landing, Monterey County, California.”

Distribution: USA: Pacific coastal salt marshes of west central California, potentially from Rockaway Beach, San Mateo County, south at least to Seaside Lagoon, Monterey County; known only from near sea level (von Bloeker, 1939; Gillihan and Foresman, 2004).

Sorex vagrans sinuosus Grinnell, 1913

1913. *Sorex sinuosus* Grinnell, *Univ. Calif. Publ. Zool.* 10(9):187; 20 March.

1981. *Sorex o[rnatus]. sinuosus*, Junge and Hoffmann, *Occ. Pap. Mus. Nat. Hist. Univ. Kansas* 94:34; 5 November.

Holotype: MVZ 16470.

Type Locality: USA: “Grizzly Island, near Suisun, Solano County, California.”

Distribution: USA: salt marshes of Grizzly Island; known only from near sea level.

Remarks: Previously considered a subspecies of *Sorex ornatus*, Maldonado et al. (2001, 2004) demonstrated that this taxon is more closely related genetically to *Sorex vagrans vagrans*, with which it forms a clade that is the sister group to *S. ornatus*.

Sorex vagrans vagrans Baird, 1857

FIGURES 23, 25

1857. *Sorex vagrans* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):15, pl. 26.

1857. *Sorex suckleyi* Baird, *Rep. Expl. Surv. Railr. Pacif.* 8(1):18, pl. 27. Lectotype: USNM 1677, designated by Lyon and Osgood (1909:249) from “Steilacoom, W[estern]. T[erritories].,” Pierce County, Washington, USA.

1891. *Sorex dobsoni* Merriam, *N. Am. Fauna* 5:33; 30 July. Holotype: USNM 24274/31678, from “Saw Tooth or Alturas Lake, Saw Tooth Mountains, Idaho . . . Altitude about 2,200 meters (7,200 feet);” Blaine County, USA.

1895. *Sorex vagrans dobsoni*: Merriam, *N. Am. Fauna* 10:68; 31 December.

1895. *Sorex amoenus* Merriam, *N. Am. Fauna* 10:69; 31 December. Holotype: USNM 29784/41863, from “Mammoth Pass, head of Owens River, east slope Sierra Nevada, California (altitude, about

10,000 feet),” USA. On the basis of the field catalog of the collector (E. W. Nelson), Howell (1923:266) corrected the type locality to “somewhere in the immediate vicinity of Mammoth (8000 feet), Mono County, California.”

1895. *Sorex nevadensis* Merriam, *N. Am. Fauna* 10:71; 31 December. Holotype: USNM 24891/32302, from “Reese River, Nevada,” USA. Miller and Kellogg (1955:20) further restricted the type locality to “about 6,000 feet, at line between Lander and Nye Counties.”

1899. *Sorex shastensis* Merriam, *N. Am. Fauna* 16:87; 28 October. Holotype: USNM 95450, from “Wagon Camp, Mount Shasta (alt. 5,700 ft. in the lower part of the Canadian zone);” Siskiyou County, California, USA.

1912. *Sorex vagrans vagrans*: Miller, *Bull. U.S. Natl. Mus.* 79:14; 31 December. First use of current name combination.

1912. *Sorex californicus californicus*: Miller, *Bull. U.S. Natl. Mus.* 79:18; 31 December. Part; not *S. ornatus californicus* Merriam, 1895.

1922. *Sorex trigonirostris* Jackson, *J. Wash. Acad. Sci.* 12:264; 4 June. Holotype: USNM 203608, from “Ashland, altitude 1,975 feet, Jackson County, Oregon,” USA.

1922. *Sorex ornatus californicus*: Jackson, *J. Wash. Acad. Sci.* 12:264; 4 June. Part; not *Sorex ornatus californicus* Merriam, 1895.

1928. *Sorex vagrans nevadensis*: Jackson, *N. Am. Fauna* 28:107; 31 December.

1928. *Sorex vagrans amoenus*: Jackson, *N. Am. Fauna* 28:109; 31 December.

1936. *Sorex ornatus trigonirostris*: Bailey, *N. Am. Fauna* 55:366; 29 August.

Lectotype: USNM 1675 (Figure 25), designated by Lyon and Osgood (1909:251).

Type Locality: USA: “Shoalwater Bay, W[estern]. T[erritories].” [Pacific County, Washington].

Distribution: Canada and USA: southern British Columbia south through Washington and Oregon to San Francisco Bay in western California and through the Sierra Nevada in eastern California; western Montana to western Wyoming, northern Utah, and central Nevada; elevational distribution: 55–3,050 m (Findley, 1955; Hennings and Hoffmann, 1977; Gillihan and Foresman, 2004).

Sorex vagrans vancouverensis Merriam, 1895

1895. *Sorex vancouverensis* Merriam, *N. Am. Fauna* 10:70; 31 December.

1928. *Sorex vagrans vancouverensis*: Jackson, *N. Am. Fauna* 28:106; 31 December. First use of current name combination.

Holotype: USNM 71913.

Type Locality: Canada: “Goldstream, Vancouver Island, British Columbia.”

Distribution: Canada: Vancouver, Bowen, Saltspring, Saturna, and South Pender Islands, southwestern British Columbia (Findley, 1955; Hall, 1981).

Sorex ventralis Merriam, 1895

1895. *Sorex obscurus ventralis* Merriam, *N. Am. Fauna* 10:75; 31 December.

1903. *Sorex ventralis*: Elliot, *Field Col. Mus. Publ.* 71, *Zool. Ser.* 3 (8):148; 20 March. First use of current name combination.

1955. *Sorex oreopolus ventralis*: Findley, *Univ. Kansas Publ. Mus. Nat. Hist.* 7(14):617; 10 June.

Holotype: USNM 68342.

Type Locality: Mexico: “Cerro San Felipe, Oaxaca, Mexico (altitude, 10,000 feet).”

Distribution: Mexico: highlands of México, Distrito Federal, Tlaxcala, Puebla, and Oaxaca; elevational distribution: 1,990–3,900 m (Carraway, 2007).

Remarks: Subspecies *Otisorex*; *S. oreopolus* group. *Sorex ventralis* forms part of Esteva et al.’s (2010) clade A3, within which it is sister to *S. oreopolus*.

Sorex veraecrucis Jackson, 1925

1925. *Sorex saussurei veraecrucis* Jackson, *Proc. Biol. Soc. Wash.* 38:128; 13 November.

2007. *Sorex veraecrucis veraecrucis*: Carraway, *Monogr. West. N. Am. Nat.* 3:57; 22 June.

2012. [*Sorex*]. *salvini veraecrucis*: Woodman et al., *Ann. Carnegie Mus.* 80(3):214; 15 July.

Holotype: USNM 55106.

Type Locality: Mexico: “Xico, altitude 6,000 feet, state of Vera Cruz.”

Distribution: Mexico: Veracruz, Puebla, and Oaxaca; elevational distribution: 1,300–2,860 m (Carraway, 2007).

Remarks: Subspecies *Otisorex*; *S. veraecrucis* group. *Sorex veraecrucis* (as *Sorex veraecrucis* locality 11) is sister to *S. ixtlanensis* (Esteva et al., 2010). Together, they form Esteva et al.’s (2010) subclade S1 within clade A3.

Sorex veraepacis Alston, 1877

FIGURE 22

1843. *Corsira temlyas* J. E. Gray, *Proc. Zool. Soc. London*, 1843(11):79; 10 January. *Nomen nudum*, “from Coban, in Central America.”

1877. *Sorex verae-pacis* Alston, *Proc. Zool. Soc. London*, 1877(3):445; 1 October.

1877. [*Corsira*]. *teculyas* Alston, *Proc. Zool. Soc. London*, 1877(3):445; 1 October. *Nomen nudum*.

1925. *Sorex veraepacis veraepacis*: Jackson, *Proc. Biol. Soc. Wash.* 38:130; 13 November.

Lectotype: BM 43.6.13.8

Type Locality: Guatemala: “Coban (Vera Paz), Guatemala”; Alta Verapaz Department. Matson and Ordóñez-Garza (2017) noted that all specimens of *Sorex veraepacis* (sensu stricto) collected after the species was first described are from the Sierra de los Cuchumatanes, Guatemala. On the basis of this fact, they suggested that the holotype was most likely also collected there and transported to Cobán, which was an early center for trade in natural history specimens.

Distribution: Guatemala: Sierra de los Cuchumatanes of Alta Verapaz and Huehuetenango Departments (Matson and McCarthy, 2005).

Remarks: Unnamed subgenus; *S. veraepacis* group. Esteva et al.'s (2010) clade B2 consists of *Sorex veraepacis* (as *S. veraepacis* locality 16), *S. macrodon*, and *S. mutabilis* (as *S. veraepacis* locality 10). *Sorex chiapensis*, *S. ibarraii*, and *S. mutabilis* were formerly included in *S. veraepacis* as a subspecies.

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Appendix A: Phylogenetic Listing of Species of New World Eulipotyphla

Relationships among species within the Nesophontidae, Solenodontidae, and Notiosoricini remain unresolved, as do relationships among the tribes of the Talpidae. Relationships of the three species of *Scapanus* follow He et al. (2016). Within the Soricidae, relationships within the Blarinini are based on Brant and Ortí (2002), Reilly et al. (2005), Guevara and Cervantes (2014), He et al. (2015), and Baird et al. (2017); those within the Soricini follow George (1988), Demboski and Cook (2001, 2003), Maldonado et al. (2001, 2004), Shafer and Stewart (2007), Esteva et al. (2010), and Hope et al. (2012, 2014).

Order Eulipotyphla

Family Nesophontidae

Genus *Nesophontes*

N. edithae
N. hypomicrus
N. major
N. micrus
N. paramicrus
N. zamircus

Family Solenodontidae

Genus *Solenodon*

S. arrendondo
S. cubanus
S. marcano
S. paradoxus

Family Talpidae

Tribe Condylurini

Genus *Condylura*

C. cristata

Tribe Neurotrichini

Genus *Neurotrichus*

N. gibbsii

Tribe Scalopini

Genus *Parascalops*

P. breweri

Genus *Scalopus*

S. aquaticus

- Genus *Scapanus*
S. anthonyi
S. latimanus
S. orarius
S. townsendii
- Family Soricidae
 Subfamily Soricinae
 Tribe Blarinini
 Genus *Blarina*
B. brevicauda
B. hylophaga
B. carolinensis
B. peninsulae
B. shermani
- Genus *Cryptotis*
C. mexicanus group
C. nelsoni
C. magnus
C. mexicanus
C. obscurus
C. phillipsii
C. nigrescens group
C. brachyonyx
C. colombianus
C. hondurensis
C. merus
C. nigrescens
C. lacandonensis
C. mayensis
C. merriami
C. parvus group
C. berlandieri
C. orophilus
C. parvus
C. pueblensis
C. soricinus
C. tropicalis
C. goldmani group
C. alticola
C. goldmani
C. peregrinus
C. goodwini group
C. gracilis
C. cavatorculus
C. celaque
C. griseoventris
C. mccarthyi
C. lacertosus
C. magnimanus
C. mam
C. goodwini
C. oreoryctes
C. thomasi group
C. aroensis
- C. dinirensis*
C. endersi
C. equatoris
C. evaristoi
C. medellinius
C. meridensis
C. monteverdensis
C. montivagus
C. niausa
C. osgoodi
C. perijensis
C. peruviensis
C. squamipes
C. tamensis
C. thomasi
C. venezuelensis
- Tribe Notiosoricini
 Genus *Megasorex*
M. gigas
 Genus *Notiosorex*
N. cockrumi
N. crawfordi
N. evotis
N. villai
- Tribe Soricini
 Genus *Sorex*
 Subgenus *Sorex*
S. araneus group
S. arcticus
S. maritimensis
S. tundrensis
S. minutissimus group
S. minutissimus
- Unnamed subgenus
 Clade B1
S. trowbridgii group
S. trowbridgii
S. merriami group
S. arizonae
S. merriami
S. saussurei group
S. altoensis
S. mediopua
S. saussurei
S. salvini group
S. mccarthyi
S. salvini
S. sclateri
S. stizodon
 Clade B2
S. veraepacis group
S. chiapensis
S. ibarraii
S. macrodon

- S. madrensis*
- S. mutabilis*
- S. veraepacis*
- Subgenus *Otisorex*
 - S. dispar* group
 - S. dispar*
- Clade A3
 - S. oreopolus* group
 - S. fumeus*
 - S. tenellus*
 - S. nanus*
 - S. oreopolus*
 - S. orizabae*
 - S. ventralis*
 - S. veraecrucis* group (subclade S1)
 - S. ixtlanensis*
 - S. veraecrucis*
- Clade A2
 - S. cinereus* group, basal lineages
 - S. rohweri*
 - S. longirostris*
 - S. cinereus* group, southern clade
 - S. cinereus*
 - S. fontinalis*
 - S. lyelli*
 - S. emarginatus*
 - S. milleri*
- S. cinereus* group, Beringian clade
 - S. preblei*
 - S. haydeni*
 - S. pribilofensis*
 - S. ugyunak*
 - S. portenkoi* [Siberian]
 - S. jacksoni*
 - S. camtschatica* [Siberian]
 - S. leucogaster* [Siberian]
- Clade A1
 - S. hoyi* group
 - S. hoyi*
 - S. vagrans* group
 - S. ornatus*
 - S. vagrans*
 - S. palustris* group
 - S. albibarbis*
 - S. palustris*
 - S. bendirii*
 - S. navigator*
 - S. sonomae* group
 - S. pacificus*
 - S. sonomae*
 - S. monticola* group
 - S. monticola*
 - S. obscurus*

Appendix B: Literature Abbreviations

List of abbreviations used in synonymies for titles of journals, books, and other printed media.

<i>Abhand. Physik. Klasse</i>	<i>Abhandlungen der Physikalischen Klasse der Königlich-Preussischen Akademie der Wissenschaften aus den Jahren 1804–1811</i> (Illiger, 1815)
<i>Acct. Exped. Pittsb. Rocky Mtns.</i>	<i>Account of an Expedition from Pittsburgh to the Rocky Mountains</i> (James, 1822)
<i>Am. J. Sci.</i>	<i>American Journal of Science and Arts</i>
<i>Am. Midl. Nat.</i>	<i>American Midland Naturalist</i>
<i>Am. Month. Mag.</i>	<i>American Monthly Magazine and Critical Review</i>
<i>Am. Mus. Novit.</i>	<i>American Museum Novitates</i>
<i>Am. Nat.</i>	<i>American Naturalist</i>
<i>Animal Kingdom</i>	<i>The Animal Kingdom</i> (Kerr, 1792).
<i>Ann. Carnegie Mus.</i>	<i>Annals of the Carnegie Museum</i>
<i>Ann. Franç. Anat. Phys.</i>	<i>Annales Françaises et Étrangères d'Anatomie et de Physiologie, Appliquées a la Médecine et a l'Histoire Naturelle</i>
<i>Ann. Mag. Nat. Hist.</i>	<i>Annals and Magazine of Natural History</i>
<i>Ann. Rep. Provancher Soc. Nat. Hist.</i>	<i>Annual Report of the Provancher Society of Natural History of Canada</i> (<i>Rapport Annuel de la Société Provancher d'Histoire Naturelle du Canada</i>)
<i>Arch. Sci. Phys. Nat.</i>	<i>Archives des Sciences Physiques et Naturelles</i> (Geneve)
<i>Ark. Zool.</i>	<i>Arkiv för Zoologi</i>
<i>Atlantic J.</i>	<i>Atlantic Journal and Friend of Knowledge</i>
<i>Boston J. Nat. Hist.</i>	<i>Boston Journal of Natural History</i>
<i>Boston J. Philos. Arts</i>	<i>Boston Journal of Philosophy and the Arts</i>
<i>Bull. Am. Mus. Nat. Hist.</i>	<i>Bulletin of the American Museum of Natural History</i>
<i>Bull. Geol. Nat. Hist. Surv. Minn.</i>	<i>Bulletin of the Geological and Natural History Survey of Minnesota</i>
<i>Bull. Mus. Comp. Zool.</i>	<i>Bulletin of the Museum of Comparative Anatomy</i>
<i>Bull. S. Cal. Acad. Sci.</i>	<i>Bulletin of the Southern California Academy of Sciences</i>
<i>Bull. U.S. Geol. Geog. Surv. Terr.</i>	<i>Bulletin of the United States Geological and Geographical Survey of the Territories</i>
<i>Bull. U.S. Natl. Mus.</i>	<i>Bulletin of the United States National Museum</i>

- Byull. Moscov. Ovshch. Ispyt. Pryr. Otd. Biol.*
Byulleten Moscovskogo Ovshchestva Ispytateley Pryrodi Otdel Biologicheskyy [Бюллетень Московского Общества Испытателей Природы, Отдел Биологический; *Bulletin of the Moscow Society of Naturalists, Biological Series*]
- Cambr. Nat. Hist.*
The Cambridge Natural History, Vol. 10: Mammalia
- Can. Field-Nat.*
Canadian Field-Naturalist
- Cat. Mamm. Asia. Soc. Mus.*
Catalogue of the Mammals in the Asiatic Society Museum
- Cat. Mamm. Mus. Natl. Hist. Nat.*
Catalogue des mammifères du Museum National d'Histoire Naturelle (Geoffroy Saint-Hilaire, 1803)
- Cat. Mamm. Suppl.*
Catalogus Mammalium tam Viventium quam Fossilium. Quinquennale Supplementum (Trouessart, 1904)
- Cat. Marsup. Monotrem.*
Catalogue of the Marsupialia and Monotremata in the Collection of the British Museum (Natural History)
- Checkl. Mamm. Suppl.*
A Check-List of Mammals of the North American Continent: Supplement (Elliot, 1917)
- Contr. Mamm. N. Mtn. Reg.*
A Contribution to the Mammalogy of the North Mountain Region (Green, 1930)
- Contr. Mus. Paleo. Univ. Mich.*
Contributions from the Museum of Paleontology, University of Michigan
- Cyclop. Anat. Phys.*
Cyclopaedia of Anatomy and Physiology
- Das Thierreich*
Das Thierreich eingetheilt nach dem Bau der Thiere als Grundlage ihrer Naturgeschichte und der vergleichenden Anatomie von den Herrn Ritter von Cuvier. Erster Band, Säugethiere und Vögel (Schinz, 1821)
- Dict. Class. d'Hist. Nat.*
Dictionnaire classique d'histoire naturelle (Geoffroy Saint-Hilaire, 1827a)
- Die Säugthiere Suppl.*
Die Säugthiere in Abbildungen nach der Natur mit Beschreibungen von Dr. Johann Christian Daniel von Schreber, Supplementband (Wagner, 1855)
- Diver. Distr.*
Diversity and Distributions
- East. Star*
Eastern Star and Washington Advertiser (a weekly newspaper from Machias, Maine)
- Essai Hist. Nat. Taupe*
Essai sur l'histoire naturelle de la taupe (De la Faille, 1769)
- Fauna Am.*
Fauna Americana (Harlan, 1825)
- Fauna Bor.-Am.*
Fauna Boreali-Americana (Richardson, 1829)
- Field Col. Mus. Publ., Zool. Ser.*
Field Columbian Museum Publication, Zoological Series
- Field. Zool., n.s.*
Fieldiana: Zoology, new series
- Gen. Mamm. Insect. Galeop.*
Genera Mammalium. Insectivora. Galeopithecina (Cabrera, 1925)
- Gen. Mamm. Monot. Marsup.*
Genera Mammalium. Monotremata, Marsupialia (Cabrera, 1919)
- Gen. Zool.*
General Zoology, or, Systematic Natural History (Shaw, 1800)
- Geog. Gesch. Mensch. Vierf. Thiere*
Geographische Geschichte des Menschen, und der allgemein verbreiteten vierfüßigen Thiere (Zimmermann, 1780)
- Guthrie's Geography*
A New Geographical, Historical, And Commercial Grammar; and Present State of the Several Kingdoms of the World (Guthrie, 1815)
- Hist. Am. Fauna*
History of the American Fauna (Holder et al., 1877)

- J. Acad. Nat. Sci. Phila.*
J. Elisha Mitchell Sci. Soc.
J. Mamm.
J. Phys. Chim. Hist. Nat. Arts

J. Wash. Acad. Sci.

Kung. Svenska Vet. Hand.

List Mamm. Brit. Mus.

Mag. Zool. Anat. Comp. Pal.

Mamm. Biol.
Mamm. Res.
Mammalogie

Mast. Neotr.
Mém. Acad. Imp. Sci. St. Petersbourg, ser. 6, Sci. Math. Phys. et Nat.

Mem. Am. Mus. Nat. Hist.
Mém. Mus. Hist. Nat.
Mem. Soc. Cienc. Nat. La Salle
Mém. Soc. Mus. d'Hist. Nat. Strasbourg

Misc. Publ. Mus. Zool., Univ. Mich.

Monatsb. K. Preuss. Akad. Wiss. Berlin

Monogr. Insectiv.
Monogr. West. N. Am. Nat.
MSW2

MSW3

Mus. Nat. Hist.

N. Am. Fauna
Nasek. Mlekoop. Sibiri

Natl. Mus. Canada Bull.
Natürl. Syst.

Northwest. Nat.
Nouv. tableau mamm.

Occ. Pap. Mus. Nat. Hist. Univ. Kansas
- Journal of the Academy of Natural Sciences of Philadelphia*
Journal of the Elisha Mitchell Scientific Society
Journal of Mammalogy
Journal de Physique, de Chimie, d'Histoire Naturelle et des Arts
Journal of the Washington Academy of Science

Kungliga Svenska Vetenskapsakademiens Handlingar

A List of the Specimens of Mammalia in the Collection of the British Museum (Gray, 1843)

Magasin de Zoologie, d'Anatomie Comparée et de Palaeontologie
Mammalian Biology
Mammal Research
Mammalogie, ou description des espèces de mamifères, Part 1 (Desmarest, 1820)
Mastozoología Neotropical
Mémoires de l'Académie Impériale des Sciences de St.-Petersbourg. 6e série, Sciences, Mathématiques, Physiques et Naturelles
Memoirs of the American Museum of Natural History
Mémoires du Muséum d'Histoire Naturelle (Paris)
Memoria, La Sociedad de Ciencias Naturales La Salle
Mémoires de la Société du Muséum d'Histoire Naturelle de Strasbourg
Miscellaneous Publications. Museum of Zoology, University of Michigan
Monatsberichte der Königlichen Preussische Akademie des Wissenschaften zu Berlin
A Monograph of the Insectivora (Dobson, 1890)
Monographs of the Western North American Naturalist
Mammal Species of the World, 2nd ed., ed. D. E. Wilson and D. M. Reeder, Washington, D.C.: Smithsonian Institution Press, 1993
Mammal Species of the World, 3rd ed. (Wilson and Reeder, 2005)
The Museum of Natural History (Richardson et al., 1877)

North American Fauna
Nasekomoyadnye Mlekoopitayushchie Sibiri [Насекомоядные млекопитающие Сибири; Insectivorous Mammals of Siberia] (Yudin, 1989)
National Museum of Canada Bulletin
Natürliches System der Amphibien, mit vorangehender Classification der Säugthiere und Vögel. Ein Beitrag zur vergleichenden Zoologie (Wagler, 1830)
Northwestern Naturalist
Nouveau tableau du règne animal. Première classe. Mammifères (Lesson, 1842)

Occasional Papers of the Museum of Natural History, University of Kansas

- Occ. Pap. Mus. Texas Tech Univ.*
Occ. Pap. Mus. Zool. Louisiana State Univ.
- Occ. Pap. Mus. Zool. Univ. Mich.*
- Précis découv.*
- Proc. Acad. Nat. Sci. Phila.*
- Proc. Biol. Soc. Wash.*
Proc. Boston Soc. Nat. Hist.
Proc. Calif. Acad. Sci.
Proc. Indiana Acad. Sci.
Proc. New Engl. Zool. Club
Proc. Penna. Acad. Sci.
Proc. Trans. Nova Scot. Inst. Nat. Sci.
- Proc. U.S. Natl. Mus.*
Proc. Wash. Acad. Sci.
Proc. Zool. Soc. Lond.
Prodr. Syst. Mamm. Avium
- Recherches des Mamm.*
Regnum animale
Rep. Expl. Surv. Railr. Pacif.
- Rep. W. Va. Board Agric.*
- Rev. Franc. Mamm.*
Rev. Mus. Argentino
- Rev. Peruana Biol.*
- Säug. Mitteil.*
Sci. Publ. Cleveland Mus. Nat. Hist.
- Sitzungsber. Math.-naturwissensch. Classe Kaiserl. Akad. Wissensch.*
- Smithson. Misc. Coll.*
Southwest. Nat.
Spec. Mamm. Brit. Mus.
- Spec. Publ. Carnegie Mus.*
- Spec. Publ. Mus. Texas Tech Univ.*
Spec. Zool. Geog.
- Synop. Insectiv. Mamm.*
- Occasional Papers of the Museum of Texas Tech University*
Occasional Papers of the Museum of Zoology, Louisiana State University
Occasional Papers of the Museum of Zoology, University of Michigan
- Précis des découvertes et travaux somiologiques ou zoologiques et botaniques* (Rafinesque, 1814)
Proceedings of the Academy of Natural Sciences of Philadelphia
Proceedings of the Biological Society of Washington
Proceedings of the Boston Society of Natural History
Proceedings of the California Academy of Sciences
Proceedings of the Indiana Academy of Science
Proceedings of the New England Zoological Club
Proceedings of the Pennsylvania Academy of Science
Proceedings and Transactions of the Nova Scotian Institute of Natural Science
Proceedings of the United States National Museum
Proceedings of the Washington Academy of Sciences
Proceedings of the Zoological Society of London
Prodromus Systematis Mammalium et Avium (Illiger, 1811)
- Recherches pour servir à l'histoire naturelle des mammifères*
Regnum animale in classes IX (Brisson, 1756, 1762)
Reports of Explorations and Surveys, to Ascertain the Most Practicable and Economical Route for a Railroad from the Mississippi River to the Pacific Ocean. Volume 8: General Report upon the Zoology of the Several Pacific Railroad Routes. Part 1: Mammals. Washington, D.C.: A. O. P. Nicholson
Report of the West Virginia State Board of Agriculture for the Quarter Ending December 30, 1910. Forestry
Revue Française de Mammalogie
Revista del Museo Argentino de Ciencias Nautales "Bernardino Rivadavia" e Instituto Nacional de Investigación de las Ciencias Naturales
Revista Peruana de Biología
- Säugetierkundliche Mitteilungen*
Scientific Publications of the Cleveland Museum of Natural History
Sitzungsberichte der Mathematisch-naturwissenschaftlichen Classe der Kaiserlichen Akademie der Wissenschaften
Smithsonian Miscellaneous Collections
Southwestern Naturalist
A List of the Specimens of Mammalia in the Collection of the British Museum
Special Publication of the Carnegie Museum of Natural History
Special Publication of the Museum, Texas Tech University
Specimen Zoologiae Geographicae, Quadrupedum Dimicilia et Migrationes Sistens (Zimmermann, 1777)
Synopsis of Insectivorous Mammals (Gill, 1875)

- Syst. Biol.*
Systema Naturae, 10th ed.
Systema Naturae, 13th ed.
Syst. Reg. Anim.
- Syst. Zool.*
- Thesaurus*
- Thierreich*
- Trans. Kansas Acad. Sci.*
Trans. Linn. Soc. New York
- Univ. Calif. Publ. Zool.*
Univ. Kansas Mus. Nat. Hist., Misc. Publ.
- Univ. Kansas Publ. Mus. Nat. Hist.*
- Univ. Kansas Sci. Bull.*
U.S. Natl. Mus. Circ.
- Virginia Mus. Nat. Hist. Mem.*
Voll. Natursyst. Suppl.
- Zeit. Geol. Wiss.*
Zoognosia
Zool. J.
Zool. J. Linn. Soc.
Zool. New York
- Zool. Record*
Zool. Zh.
- Systematic Biology*
Systema Naturae, 10th edition of Linnaeus (1758)
Systema Naturae, 13th edition of Gmelin (1788)
Systema Regni Animalis per Classes, Ordines, Genera, Species, Varietates: cum Synonymia et Historia Animalivm: Classis I. Mammalia (Erxleben, 1777)
Systematic Zoology
- Locupletissimi Rerum Naturalium Thesauri Accurata Descriptio* (Seba, 1734)
Das Thierreich eingetheilt nach dem Bau der Thiere als Grundlage ihrer Naturgeschichte und der vergleichenden Anatomie
Transactions of the Kansas Academy of Science
Transactions of the Linnean Society of New York
- University of California Publications in Zoology*
University of Kansas, Museum of Natural History, Miscellaneous Publications
University of Kansas Publications, Museum of Natural History
University of Kansas Science Bulletin
United States National Museum, Circular (True, 1884)
- Virginia Museum of Natural History Memoir*
Vollständigen Natursystems Supplements und Register Band (Müller, 1776, 1789)
- Zeitschrift für Geologische Wissenschaften*
Zoognosia Tabulis Synopticis Illustrata (Fischer, 1814)
Zoological Journal
Zoological Journal of the Linnean Society
Zoology of New-York, or the New-York Fauna. Part 1: Mammalia (De Kay, 1842)
Zoological Record
Zoologicheskii Zhurnal [Зоологический Журнал; *Zoological Journal*]

Appendix C: Institutional Abbreviations for Systematic Collections

Abbreviations used in the text for institutions with systematic collections in which primary types (holotypes, lectotypes, neotypes) of Eulipotyphlans were deposited. Numbers in brackets are the numbers of primary types of Eulipotyphla currently known to be held by the institution.

AMNH	Department of Mammalogy, Division of Vertebrate Zoology, American Museum of Natural History, New York, New York, USA (17)
AMNH VP	Department of Vertebrate Paleontology, Division of Paleontology, American Museum of Natural History, New York, New York, USA (2)
ANSP	Mammalogy Collection, Academy of Natural Sciences of Philadelphia (now Academy of Natural Sciences of Drexel University), Philadelphia, Pennsylvania, USA (7)
ANSPVP	Paleontology Collection, Academy of Natural Sciences of Philadelphia (now Academy of Natural Sciences of Drexel University), Philadelphia, Pennsylvania, USA (1)
BM	The Natural History Museum [formerly the British Museum (Natural History)], London, UK (11)
CM	Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA (5)
CMN	Canadian Museum of Nature, Ottawa, Canada (5)
CMNH	Cleveland Museum of Natural History, Cleveland, Ohio, USA (4)
CMVP	Division of Vertebrate Paleontology, Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA (1)
CNMA	Colección de Mamíferos, Instituto de Biología, Universidad Nacional Autónoma de México, Mexico City, Mexico (1)
CUMV	Cornell University Museum of Vertebrates, Ithaca, New York, USA (1)
CVULA	Colección de Vertebrados de la Universidad de Los Andes, Mérida, Venezuela (1)
EBRG	Museo Estación Biológica de Rancho Grande, El Limón, Carabobo, Venezuela (2)
FLMNH	Florida Museum of Natural History, University of Florida, Gainesville, Florida, USA (1)
FMNH	Field Museum of Natural History, Chicago, Illinois, USA (7)
GEC	Grupo de Exploraciones Científicas, Havana, Cuba (2)
KU	Collection of Mammals, Natural History Museum and Biodiversity Institute, University of Kansas, Lawrence, Kansas, USA (11)

KUVP	Collection of Vertebrate Paleontology, Natural History Museum and Biodiversity Institute, University of Kansas, Lawrence, Kansas, USA (1)	PM	Philadelphia Museum, Philadelphia, Pennsylvania, USA, an 18th and early 19th century museum; nearly all of the collection has been lost or destroyed (Woodman, 2009)
LACM	Natural History Museum of Los Angeles County, Los Angeles, California, USA (2)	PSMNH	Puget Sound Puget Sound Museum of Natural History, University of Puget Sound, Tacoma, Washington, USA (1)
LSU	Louisiana State University Museum of Zoology, Baton Rouge, Louisiana, USA (1)	RAS	Zoological Museum, Zoological Institute, Russian Academy of Sciences, Saint Petersburg, Russia (1)
MB	Museum für Naturkunde an der Humboldt-Universität zu Berlin, Paläontologisches Museum, Berlin, Germany [Ma. 1967 = Mammalia, 1967 gesammelt] (1)	RBCM	Royal British Columbia Museum, Victoria, British Columbia, Canada (2)
MBLUZ	Museo de Biología, Universidad del Zulia, Maracaibo, Venezuela (1)	SMNH	Sternberg Museum of Natural History, Fort Hays State University, Hays, Kansas, USA (1)
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA (6)	TCWC	Texas Wildlife Cooperative Collection, Texas A&M University, College Station, Texas, USA (3)
MCZ BANGS	Collection of E. A. and Outram Bangs, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA (8)	TTU	Museum of Texas Tech University, Lubbock, Texas, USA (1)
MEPN	Museo de Historia Natural "Gustavo Orces V.," Escuela Politécnica Nacional, Quito, Ecuador (1)	UAM	University of Alaska Museum of the North, Fairbanks, Alaska, USA (1)
MNHN	Museum National d'Histoire Naturelle, Paris, France (0)	UF	Florida Museum of Natural History, University of Florida, Gainesville, Florida, USA (1)
MNHNC	Museo Nacional de Historia Natural de Cuba, Havana, Cuba (1)	UIMNH	Museum of Natural History, University of Illinois, Urbana, Illinois, USA [defunct; collections transferred to MSB]
MSB	Museum of Southwestern Biology, University of New Mexico, Albuquerque, New Mexico, USA (1)	UMMZ	University of Michigan Museum of Zoology, Ann Arbor, Michigan, USA (5)
MUSA	Museo de Historia Natural de la Universidad Nacional de San Agustín, Arequipa, Peru (1)	USNM	Division of Mammals, Department of Vertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA (formerly the United States National Museum) (147)
MUSM	Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos, Lima, Peru (1)	USNM PAL	Department of Paleobiology, National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA (formerly the United States National Museum) (3)
MVZ	Museum of Vertebrate Zoology, University of California, Berkeley, California, USA (24)	UWBM	University of Washington Burke Museum, Seattle, Washington, USA (1)
MZFC	Museo de Zoología "Alfonso L. Herrera," Universidad Nacional Autónoma de México, Mexico City, Mexico (1)	UWYMV	University of Wyoming Museum of Vertebrates, Laramie, Wyoming, USA (1)
MZSL	Museum of the Zoological Society of London, whose collections were transferred to the British Museum (Natural History), now the Natural History Museum, London, UK	ZMB	Humboldt-Universität zu Berlin, Museum für Naturkunde (formerly Zoologisches Museum Berlin), Berlin, Germany (2)
OMNH	Sam Noble Oklahoma Museum of Natural History, University of Oklahoma, Norman, Oklahoma, USA (1)		

Appendix D: Distribution of Type Localities

There are approximately 327 known type localities for New World eulipotyphlans distributed among 17 countries.

Canada (30)

- No locality (2)
- British Columbia (8)
- Manitoba (3)
- Newfoundland and Labrador (2)
- Northwest Territories (2)
- Nova Scotia (7)
- Ontario (3)
- Quebec (3)

Canada/Alaska (2)

Colombia (7)

- Antioquia (2)
- Cauca (1)
- Cesar (1)
- Cundinamarca (1)
- Distrito Capital (2)

Costa Rica (6)

- Cartago (3)
- Limón (1)
- Puntarenas (1)
- San José (1)

Cuba (7)

Dominican Republic (2)

Ecuador (4)

- Azuay (1)
- Bolívar (1)
- Napo (1)
- Pichincha (1)

- Guatemala (12)
 Alta Verapaz (4)
 El Progreso (1)
 Huehuetenango (3)
 Quetzaltenango (3)
 Totonicapán (1)
- Haiti (3)
- Hispaniola (Haiti/Dominican Republic) (1)
- Honduras (6)
 Comayagua (1)
 Cortés (1)
 Francisco Morazán (1)
 Lempira (2)
 Santa Barbara (1)
- Mexico (51)
 Baja California (4)
 Chiapas (6)
 Coahuila (2)
 Distrito Federal (1)
 Durango (1)
 Guanajuato (1)
 Guerrero (2)
 Hidalgo (1)
 Jalisco (7)
 México (1)
 Nayarit (1)
 Oaxaca (12)
 Puebla (2)
 Sinaloa (1)
 Tamaulipas (4)
 Veracruz (4)
 Yucatan (1)
- Nicaragua (1)
 Jinotega (1)
- Panama (4)
 Bocas del Toro (1)
 Chiriquí (2)
 Darién (1)
- Peru (2)
 Cajamarca (2)
- Puerto Rico (1)
- Russia (1)
 Krasnoyarskii Krai (1)
- USA (182)
 Unknown locality (5)
 Alabama (1)
 Alaska (14)
 Arizona (4)
 Arkansas (2)
 California (35)
 Colorado (1)
 Connecticut (1)
 Florida (9)
 Idaho (4)
 Indiana (2)
 Kansas (3)
 Kentucky (2)
 Louisiana (1)
 Maine (1)
 Maryland (2)
 Massachusetts (3)
 Michigan (1)
 Minnesota (1)
 Mississippi (1)
 Missouri/Illinois (1)
 Montana (2)
 Nebraska (5)
 Nevada (1)
 New Hampshire (1)
 New Jersey (1)
 New Mexico (2)
 New York (10)
 North Carolina (3)
 North Dakota (1)
 Ohio (2)
 Oklahoma (2)
 Oregon (14)
 Oregon/Washington (1)
 Pennsylvania (5)
 South Carolina (3)
 Tennessee (1)
 Texas (5)
 Utah (1)
 Vermont (3)
 Virginia (4)
 Washington (16)
 West Virginia (1)
 Wisconsin (3)
 Wyoming (1)
- Venezuela (5)
 Aragua (1)
 Merida (1)
 Táchira (1)
 Trujillo (1)
 Yaracuy (1)

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