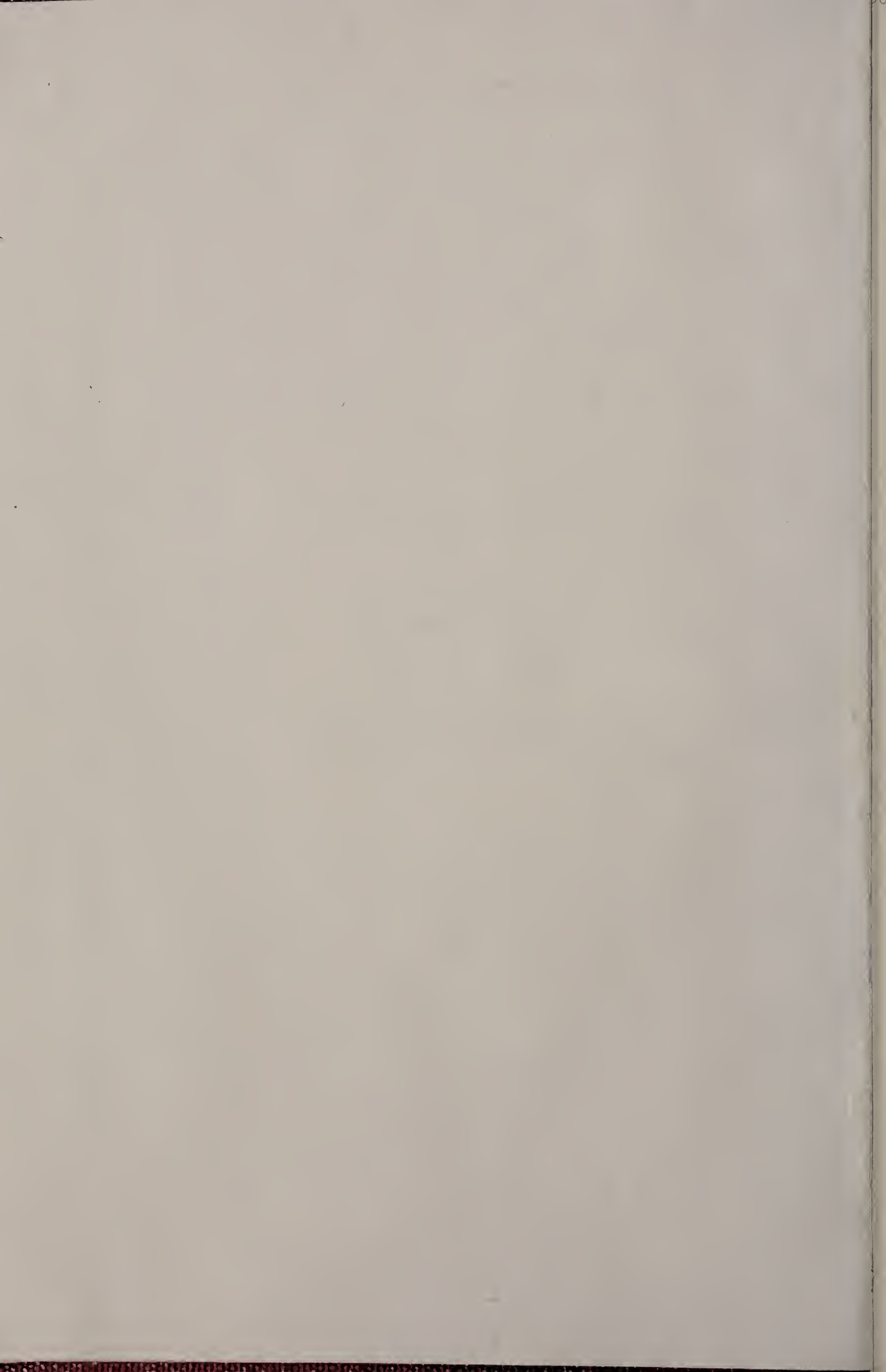




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A NEW SUBSPECIES OF THE ROCK SQUIRREL,
SPERMOPHILUS VARIEGATUS, FROM ISLA TIBURON,
SONORA, MEXICO

J. KNOX JONES, JR., AND RICHARD W. MANNING

The rock squirrel, *Spermophilus variegatus*, inhabits a broad region in the southwestern United States and adjacent México, north to Colorado, Nevada, and Utah, and southward to Jalisco, Michoacán, and Puebla (Hall, 1981:400). The species has been known for more than a half century from Isla Tiburón, in the Sea of Cortez off central Sonora (Burt, 1938:35), but that population never has been described in detail.

Spermophilus variegatus grammurus (Say, 1823), with type locality on the Purgatory River, Las Animas Co., Colorado, is the subspecies of rock squirrel of mainland Sonora adjacent to Tiburón. The insular population differs from *S. v. grammurus* in several distinctive ways, and represents an hitherto unrecognized race, which is named and described as follows:

Spermophilus variegatus tiburonensis, new subspecies

Holotype.—Adult male, skin and skull, Museum of Vertebrate Zoology no. 97612, from 3 mi. NE Ensenada del Perro, S end Isla Tiburón, Sonora; obtained on 10 January 1942 by M. Delgadillo, original no. 5125 of Seth B. Benson.

Distribution.—Known only from Isla Tiburón, Sonora.

Diagnosis.—Size small to medium among subspecies of species, somewhat smaller than specimens from adjacent mainland of Sonora and elsewhere in range of *S. v. grammurus*. Head, shoulders, and frequently upper back brownish interspersed with few buff-tipped hairs to dark chocolate brown overall, quite in

contrast to relatives on the adjacent mainland (see descriptions of color in Howell, 1938:136-147).

Comparisons.—The new subspecies needs comparison only with *S. v. grammurus*, which is broadly distributed in the American Southwest and adjacent northwestern México, including western Sonora (Hall, *loc. cit.*). From that subspecies, *tiburonensis* differs in being smaller in most cranial dimensions in specimens we have examined (see also measurements of *grammurus* in Hoffmeister, 1986:178-179) and in having a narrower mesopterygoid fossa, smaller auditory bullae, less ovoid (rounder) foramen magnum, less flattened cranium, and a shorter maxillary toothrow. The dark brownish hood and cape immediately separate the new race from *grammurus* and also from the more southerly and easterly *S. v. rupestris*, in which there is no marked darkening of the head and shoulders, as there is, for example, in the blackish-backed *S. v. buckleyi* of the Edwards Plateau region of Texas. All eight specimens examined from Tiburón have the distinctive dark brownish head and shoulders. Otherwise, aside from a darker gular region and, on the average, slightly darker feet and legs, *tiburonensis* generally resembles *grammurus* in color.

Selected external and cranial measurements (in millimeters) of the holotype, followed by those of an adult female (MVZ 74835) and those of two adult females of *S. v. grammurus* (KU 79114 and 80327 from 8 mi. SE Alamos and 9 mi. NNE Imuris, Sonora, respectively) are as follows: total length, 500, 513, 525, 515; length of tail, 222, 230, 244, 216; length of hind foot, 61, 60, 61, 64; length of ear, 25, 25, 28, 27; greatest length of skull, 60.26, 60.05, 63.84, 62.38; condylobasal length, 57.46, 56.60, 60.13, 60.15; rostral breadth, 10.16, 9.67, 10.22, 10.99; postorbital constriction, 16.20, 16.45, 16.13, 16.97; zygomatic breadth, 36.18, 36.86, 39.21,—; mastoid breadth, 21.09, 21.76, 22.55, 23.78; greatest breadth across upper molars, 15.84; 16.51, 17.94, 17.47; breadth of mesopterygoid fossa, 4.03, 4.81, 4.81, 5.41; alveolar length of maxillary toothrow, 12.53, 12.28, 13.26, 12.66; alveolar length of mandibular cheekteeth, 12.32, 11.86, 12.76, 12.48. The adult female from Tiburón weighed 675 grams.

Remarks.—Of the eight specimens available to us from Tiburón, six unfortunately are less than fully adult and thus their measurements cannot be used in direct comparisons. As noted, however, all eight possess the distinctive color pattern of the new subspecies, varying only in degree of brownish

coloration on the head and neck and extent of brownish on the upper back. Tiburón evidently is the only island in the Sea of Cortez on which *Spermophilus variegatus* occurs, one of only 13 native terrestrial, nonvolant mammals known from the island (Lawlor, 1983), none of which is an endemic species. The subspecific name obviously relates to that distribution.

Specimens examined.—Ensenada del Perro, S end Tiburón, 1 (MVZ 97611); 1 mi. W Ensenada del Perro, S end Tiburón, 1 (MVZ 97610); 3 mi. W Ensenada del Perro, S end Tiburón, 1 (MVZ 97609); 3 mi. NE Ensenada del Perro, S end Tiburón, 1 (MVZ 97612); near Las Carrizales, about 2500 ft., about 6 mi. W Bahia Santa Rosa, Tiburón, 1 (MVZ 74835); S end Isla Tiburón, 1 (KU 95282); NE Willard's Pt., Tiburón, 2 (SDSNH 19078-79).

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ANNOTATED CHECKLIST OF THE RECENT MAMMALS
OF MISSISSIPPI

CLYDE JONES AND CATHERINE H. CARTER

A complete checklist of the Recent mammals of Mississippi is not available in the literature. Gandy (1966) included 54 species of land mammals in his preliminary checklist of the vertebrates of the state. Wolfe (1971) provided some information on 58 species of terrestrial mammals, and a total of 58 species was included in the review of the mammals of Mississippi by Kennedy *et al.* (1974). Some other lists of mammals from parts of the state are available (Ward *et al.*, 1961; Richmond, 1962; Crain and Cliburn, 1965; Ward, 1965). Some information on furbearers and game mammals was provided by Cook (1945) and McSwain (1967). Schmidly (1981) presented a summary of records of marine mammals of the region. All species occurring in the state were treated in the volumes by Hall (1981).

The aforementioned works were used as points of departure in the development of this list of Recent mammals of Mississippi. A number of nomenclatural changes and some information about known distributions of mammals that occur in the state have appeared in print since publication of these works. Some additional sources of information are cited in the text. Because compilations of the sort presented here facilitate the work of many biologists, especially students, we compiled the present updated list.

Taxa are presented in conventional phylogenetic sequence through genera. Names of species are arranged alphabetically under each genus. A total of 70 species is included in this

checklist. Taxa (seven) marked with an asterisk have been introduced from outside North America, and occur in sufficient numbers in the wild to be included here. We followed Jones *et al.* (1986) for the use of vernacular names of mammals.

ORDER MARSUPIALIA—Marsupials

Family Didelphidae (opossums)

Didelphis virginiana (Virginia opossum).—Occurs throughout Mississippi. The subspecies are *D. v. virginiana* Kerr, 1792, in the northern one-half of the state and *D. v. pigra* Bangs, 1898, in the south.

ORDER INSECTIVORA—Insectivores

Family Soricidae (shrews)

Sorex longirostris (southeastern shrew).—Ranges throughout state. The subspecies is *S. l. longirostris* Bachman, 1837.

Blarina carolinensis (southern short-tailed shrew).—Known from across Mississippi. The subspecies are *B. c. minima* Lowery, 1943, in the west and south and *B. c. carolinensis* (Bachman, 1837) in the eastern part.

Cryptotis parva (least shrew).—Recorded from throughout state. The subspecies is *C. p. parva* (Say, 1823).

Family Talpidae (moles)

Scalopus aquaticus (eastern mole).—Distributed statewide. The subspecies is *S. a. howelli* Jackson, 1914.

ORDER CHIROPTERA—Bats

Family Vespertilionidae (vespertilionid bats)

Myotis austroriparius (southeastern myotis).—Probably ranges throughout state. *Myotis austroriparius* (Rhoads, 1897) is a monotypic species.

Myotis grisescens (gray myotis).—Reported only from Tishomingo County in northeastern corner of Mississippi. *Myotis grisescens* A. H. Howell, 1909, is a monotypic species.

Myotis lucifugus (little brown myotis).—Occurs in eastern and northern parts of state. The subspecies is *M. l. lucifugus* (Le Conte, 1831).

Myotis septentrionalis (northern myotis).—Recorded only from Tishomingo County. *Myotis septentrionalis* (Trouessart, 1897) is a monotypic species (van Zyll de Jong, 1985).

Myotis sodalis (Indiana myotis).—Known only from Tishomingo County. *Myotis sodalis* Miller and G. M. Allen, 1928, is a monotypic species.

Lasionycteris noctivagans (silver-haired bat).—Although known only from a single specimen (Carter *et al.*, 1987), probably ranges throughout northern two-thirds of state as a migrant. *Lasionycteris noctivagans* Le Conte, 1831, is a monotypic form.

Pipistrellus subflavus (eastern pipistrelle).—Distributed throughout state. The subspecies is *P. s. subflavus* (F. Cuvier, 1832).

Eptesicus fuscus (big brown bat).—Known from throughout state. The subspecies is *E. f. fuscus* (Palisot de Beauvois, 1796).

Lasiurus borealis (eastern red bat).—Ranges statewide. *Lasiurus borealis* (Müller, 1776) is a monotypic species (Baker *et al.*, 1988).

Lasiurus cinereus (hoary bat).—Probably occurs throughout state as a migrant. The subspecies is *L. c. cinereus* (Palisot de Beauvois, 1796).

Lasiurus intermedius (northern yellow bat).—Known from the southern one-fourth of state. The subspecies is *L. i. floridanus* (Miller, 1902).

Lasiurus seminolus (Seminole bat).—Ranges throughout state. *Lasiurus seminolus* (Rhoads, 1895) is a monotypic species.

Nycticeius humeralis (evening bat).—Occupies entire state. The subspecies is *N. h. humeralis* (Rafinesque, 1818).

Plecotus rafinesquii (Rafinesque's big-eared bat).—Statewide in occurrence. The subspecies are *P. r. rafinesquii* Lesson, 1818, across the northern edge of the state and *P. r. macrotis* Le Conte, 1831, throughout the rest of Mississippi.

Family Molossidae (free-tailed bats)

Tadarida brasiliensis (Brazilian free-tailed bat).—Known from colonies scattered about state. The subspecies is *T. b. cynocephala* (Le Conte, 1831).

ORDER XENARTHRA—Edentates

Family Dasypodidae (armadillos)

Dasypus novemcinctus (nine-banded armadillo).—Reported from everywhere except extreme northeastern corner of state. The subspecies is *D. n. mexicanus* Peters, 1864.

ORDER LAGOMORPHA—Lagomorphs

Family Leporidae (hares and rabbits)

Sylvilagus aquaticus (swamp rabbit).—Found throughout state, including Horn Island. Lowery (1974) considered *S. aquaticus* (Bachman, 1837) as a monotypic species.

Sylvilagus floridanus (eastern cottontail).—Occupies entire state, including Horn Island. The subspecies are *S. f. alacer* (Bangs, 1896) in most of the state and *S. f. mallurus* (Thomas, 1898) in the southeastern and northeastern parts.

ORDER RODENTIA—Rodents

Family Sciuridae (squirrels and allies)

Tamias striatus (eastern chipmunk).—Recorded from most of state except southeastern portion. According to Jones and Suttkus (1979), the subspecies is *T. s. striatus* (Linnaeus, 1758).

Marmota monax (woodchuck).—Occurs at scattered localities in northern one-half of state. The subspecies is *M. m. monax* (Linnaeus, 1758).

Sciurus carolinensis (gray squirrel).—Ranges throughout state. The subspecies are *S. c. fuliginosus* Bachman, 1839, along the Gulf Coast and *S. c. carolinensis* Gmelin, 1788, elsewhere.

Sciurus niger (fox squirrel).—Occupies entire state. The subspecies are *S. n. subauratus* Bachman, 1839, along the Mississippi River and *S. n. bachmani* (Lowery and Davis, 1942) in the rest of the state.

Glaucomys volans (eastern flying squirrel).—Reported from throughout state. The subspecies is *G. v. saturatus* A. H. Howell, 1915.

Family Castoridae (beavers)

Castor canadensis (beaver).—Found over most of state where suitable aquatic habitat prevails. The subspecies is *C. c. carolinensis* Rhoads, 1898.

Family Cricetidae (native mice and rats)

Oryzomys palustris (marsh rice rat).—Ranges throughout state. The subspecies are *O. p. texensis* J. A. Allen, 1894, in the southwestern part adjacent to Louisiana and *O. p. palustris* (Harlan, 1837) elsewhere.

Reithrodontomys fulvescens (fulvous harvest mouse).—Occurs in southwestern one-half of state. The subspecies is *R. f. aurantius* J. A. Allen, 1895.

Reithrodontomys humulis (eastern harvest mouse).—Known from entire state. The subspecies is *R. h. humulis* (Audubon and Bachman, 1841).

Peromyscus gossypinus (cotton mouse).—Reported from throughout state. The subspecies are *P. g. megacephalus* (Rhoads, 1894) in the northern one-half of Mississippi and *P. g. gossypinus* (Le Conte, 1853) in the southern part.

Peromyscus leucopus (white-footed mouse).—Ranges throughout state except for extreme southeastern part. The subspecies is *P. l. leucopus* (Rafinesque, 1818).

Peromyscus maniculatus (deer mouse).—Found only in northwestern corner of state. The subspecies is *P. m. bairdii* (Hoy and Kennicott, 1857).

Peromyscus polionotus (oldfield mouse).—Known from Lowndes, Tishomingo, Jasper, and Lauderdale counties. The subspecies is *P. p. colemani* Schwartz, 1954.

Ochrotomys nuttalli (golden mouse).—Statewide in distribution. The subspecies is *O. n. lisae* Packard, 1969.

Sigmodon hispidus (hispid cotton rat).—Found throughout state. The subspecies is *S. h. hispidus* Say and Ord, 1825.

Neotoma floridana (eastern woodrat).—Reported from entire state. The subspecies are *N. f. illinoensis* A. H. Howell, 1910, in the northern one-half of Mississippi and *N. f. rubida* Bangs, 1898, in the south.

Microtus pinetorum (woodland vole).—Ranges throughout state except in extreme southeastern part. The subspecies is *M. p. auricularis* Bailey, 1898.

Ondatra zibethicus (muskrat).—Occurs in suitable aquatic habitats in most of state, including Horn Island. The subspecies are *O. z. zibethicus* (Linnaeus, 1766) in the northern areas and *O. z. rivalicius* (Bangs, 1895) along the Gulf Coast.

*Family Muridae (Old World rats and mice)

**Rattus norvegicus* (Norway rat).—Common in and near human habitations in state and on Horn Island.

**Rattus rattus* (roof rat).—Widespread throughout state, including Horn Island; sometimes found in and around human habitations in rural settings.

**Mus musculus* (house mouse).—Distributed throughout state (including Horn Island), usually in close association with humans, but feral populations also are known.

Family Zapodidae (jumping mice)

Zapus hudsonius (meadow jumping mouse).—Recorded only from Alcorn County (Kennedy *et al.*, 1982). The subspecies is probably *Z. h. intermedius* Krutzsch, 1954.

*Family Myocastoridae (myocastorids)

**Myocastor coypus* (nutria).—Found in aquatic habitats throughout state; also on Horn Island.

ORDER CARNIVORA—Carnivores

Family Canidae (canids)

**Canis familiaris* (domestic dog).—Feral animals occur in many parts of state.

Canis latrans (coyote).—Recorded from every county of state since first reported (Paradiso, 1966). The subspecies is *C. l. frustror* Woodhouse, 1851.

Canis rufus (red wolf).—Once ranged throughout state. Subspecies included *C. r. floridanus* Miller, 1912, in the extreme northeastern corner of Mississippi and *C. r. gregoryi* Goldman, 1937, elsewhere.

Vulpes vulpes (red fox).—Occurs throughout state. The subspecies is *V. v. fulva* (Desmarest, 1820).

Urocyon cinereoargenteus (gray fox).—Distributed throughout Mississippi. The subspecies are *U. c. ocythous* Bangs, 1899, in the northern one-third of the state and *U. c. floridanus* Rhoads, 1895, in the southern part.

Family Ursidae (bears)

Ursus americanus (black bear).—Once ranged across state; now restricted to parts of Mississippi Delta. The subspecies included *U. a. americanus* Pallas, 1780, in the northern part of the state and *U. a. luteolus* Griffith, 1821, in the southern one-half.

Family Procyonidae (procyonids)

Procyon lotor (raccoon).—Ubiquitous throughout state, including Horn Island. The subspecies is *P. l. varius* Nelson and Goldman, 1930.

Family Mustelidae (mustelids)

Mustela frenata (long-tailed weasel).—Reported from throughout state. The subspecies are *M. f. arthuri* Hall, 1927, from the

southwestern part of the state adjacent to Louisiana and *M. f. olivacea* Howell, 1913, from the rest of Mississippi.

Mustela vision (mink).—Ranges across entire state. The subspecies are *M. v. vulgivaga* (Bangs, 1895) in the southwest adjacent to Louisiana and southern Arkansas and *M. v. mink* Peale and Palisot de Beauvois, 1796, in the remainder of the state.

Spilogale putorius (eastern spotted skunk).—Occurs in southern and eastern parts of state; absent from northwest part adjacent to Arkansas. The subspecies is *S. p. putorius* (Linneaus, 1758).

Mephitis mephitis (striped skunk).—Known from throughout state. The subspecies are *M. m. nigra* (Peale and Palisot de Beauvois, 1796) in most of Mississippi and *M. m. elongata* Bangs, 1895, along the Gulf Coast.

Lutra canadensis (river otter).—Reported from suitable aquatic habitats in most of state. The subspecies is *L. c. lataxina* F. Cuvier, 1823.

Family Felidae (cats)

**Felis catus* (domestic cat).—Feral animals occur in various places in state.

Felis concolor (mountain lion).—Once ranged throughout most of state. The subspecies was *F. c. coryi* Bangs, 1896.

• *Felis rufus* (bobcat).—Reported in all areas of state. The subspecies is *F. r. floridanus* Rafinesque, 1817.

ORDER CETACEA—Whales

Family Balaenopteridae (rorquals)

Balaenoptera borealis (sei whale).—Reported from Gulfport Harbor.

Balaenoptera physalus (fin whale).—Recorded from off the southwest coast of Mississippi near southeastern Louisiana.

Family Delphinidae (delphinids)

Tursiops truncatus (bottle-nosed dolphin).—Fairly common along Gulf Coast, especially in Mississippi Sound.

Family Kogiidae (pygmy sperm whales)

Kogia breviceps (pygmy sperm whale).—Known from Mississippi Sound off Belle Fontaine Beach (Anonymous, 1984).

Kogia simus (dwarf sperm whale).—Recorded from beach at Biloxi, Mississippi.

ORDER SIRENIA—Sea Cows

Family Trichechidae (manatees)

Trichechus manatus (manatee).—Reported in waters of Harrison and Jackson counties.

ORDER ARTIODACTYLA—Even-toed Ungulates

*Family Suidae (pigs)

**Sus scrofa* (wild pig).—Populations of pigs, derived from domestic animals that became feral and from animals introduced for hunting, occur in various places in Mississippi, including Horn Island.

Family Cervidae (cervids)

Odocoileus virginianus (white-tailed deer).—Distributed throughout state. The subspecies are *O. v. virginianus* Zimmermann, 1780, in most of the northern parts of Mississippi and *O. v. osceola* (Bangs, 1896) along the Gulf Coast.

Family Bovidae (bovids)

Bison bison (bison).—Before extirpation, ranged throughout state except in some coastal marshes. The subspecies was *B. b. bison* (Linnaeus, 1758).

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