MAMMALIAN SPECIES No. 686, pp. 1–3, 3 figs.

Mephitis macroura.

By Yeen Ten Hwang and Serge Larivière

Published 26 December 2001 by the American Society of Mammalogists

Mephitis macroura Lichtenstein, 1832

Hooded Skunk

Mephitis macroura Lichtenstein, 1832:pl. 46. Type locality "Gebirgs-Gegenden nordwestlich von der Stadt Mexico" (Mexico, mountains northwest of Mexico city).
Mephitis vittata Lichtenstein, 1832:pl. 47. Type locality "San Mateo del Mar, Oaxaca."
Mephitis mexicana Gray, 1837:581. Renaming of *Mephitis macroura* Lichtenstein.
Mephitis longicauda Tomes, 1861:280. Type locality "Dueñas, Guatemala."
Mephitis concolor Gray, 1865:149. Based on a variety of *M. macroura* Lichtenstein.
Mephitis edulis Coues, 1877:236. Type locality "inhabits most of Mexico. I have found it about San Fernando de Bexar."
Mephitis milleri Mearns, 1897:1. Type locality "Fort Lowell, near Tucson, Pima County, Arizona."

CONTEXT AND CONTENT. Order Carnivora, family Mephitidae (Dragoo and Honeycutt 1997). The genus *Mephitis* includes 2 species: *M. macroura* and *M. mephitis* (Wozencraft 1993). Four subspecies of *M. macroura* are recognized (Hall 1981).

M. m. eximius Hall and Dalquest, 1950:579. Type locality "15 km west of Piedras Negras, 300 feet altitude, Veracruz."
M. m. macroura Lichtenstein, 1832, see above (*concolor* Gray, *edulis* Coues, *intermedia* Gray, *longicauda* Tomes, *mexicana* Gray, *vittata* Lichtenstein are synonyms).
M. m. milleri Mearns, 1897:1, see above.
M. m. richardsoni Goodwin, 1957:3. Type locality "Matagalpa, Nicaragua, 2000 feet altitude."

DIAGNOSIS. *Mephitis macroura* can be differentiated from *M. mephitis* by its ruff of long hairs on back of neck and head (hence the common name "hooded"), by mixing of black hairs in areas of mostly white hairs, or by wider separation of dorsal white stripes compared to *M. mephitis* (Hoffmeister 1986; Wade-Smith and Verts 1982). Moreover, white bands are located on upper sides of *M. macroura* instead of dorsally on *M. mephitis* (Nowak 1999). White stripes on back or sides of *M. macroura* seldom join into a "V," instead they remain separate (Findley et al. 1975; Godin 1982). Finally, skull of *M. macroura* can be differentiated from that of *M. mephitis* by the larger tympanic bullae (Hall 1981). *M. macroura* is sympatric with hog-nosed skunks (*Conepatus*); however, the latter are larger (>2 kg), have larger snouts, shorter tails, and much coarser fur (Godin 1982).

GENERAL CHARACTERS. *Mephitis macroura* (Fig. 1) is a small, slender animal with a long tail. The 3 color phases are: black-backed with 2 narrow and widely separated lateral white stripes, white-backed with 1 wide dorsal white stripe, and rarely, entirely black with a remnant white stripe above the nose and a few white hairs in the tail (Hoffmeister 1986; Patton 1974). In all color phases, a thin white stripe is present vertically on head between eyes (Patton 1974).

Measurements are scarce, but females are generally 15% smaller than males (Rosatte 1987). Height at shoulder is ca. 20 cm (Ceballos and Miranda 1986). Measurements of 9 males (in mm) were: total length, 558–790; length of tail, 275–435; and length of hind foot, 58–73 (Bailey 1932; Ceballos and Miranda 1986; Hoffmeister 1986; Hubbard 1972; Leopold 1959). Measurements (in mm, with parenthetical range) of 6 males and 4 females, respectively, from Sinaloa, Mexico, average: total length, 637 (598–677), 646 (628–678); length of tail, 322 (285–370), 350 (328–383); length of hind foot, 66 (61–69), 64 (61–69); and length of ear, 30 (29–32), 30 (28–30—Armstrong et al. 1972). Body mass of 3 males was 716, 803, and 900 g, whereas mass of 2 females was 699 and 735 g (Armstrong et al. 1972). Body mass of 1 male caught in August was 965 g, and 1 pregnant female captured in June weighed 1,212 g (Davis and Lukens 1958). Maximum body mass is 2.7 kg (Ceballos González and Galindo Leal 1984). Animals in Costa Rica are <50% smaller than those from southern United States (Janzen and Hallwachs 1982).

Skull (Fig. 2) is highly arched and highest in frontal region. Postorbital processes are not prominent (Howell 1901). Basilar length of skull is 56.1–60.3 mm (Hall 1981). Skull measurements (in mm, with parenthetical range) for 6 males and 3 females, respectively, average: condylobasal length, 61 (59–63), 60 (59–61); zygomatic breadth, 40 (39–41), 38 (38); mastoid breadth, 33 (33–34), 32 (32–33); and length of maxillary toothrow, 20 (19–21), 19 (18–19—Armstrong et al. 1972).

DISTRIBUTION. *Mephitis macroura* occurs in a wide variety of habitats including temperate and tropical regions (Fig. 3). *M. macroura* occurs from southwestern Texas, southwestern New Mexico, and southeastern Arizona, throughout Mexico, into Guatemala, Honduras, Nicaragua, and into Costa Rica (Hall 1981; Janzen and Hallwachs 1982; Reid 1997).

FOSSIL RECORD. Hooded skunks occurred in the Late Pleistocene–Early Holecene fauna from Deadman Cave, southern Arizona. No other fossils are known (Mead et al. 1984).

FORM AND FUNCTION. Hooded skunks have 5 pairs of mammae: 2 pairs of inguinal, 1 pair of abdominal, and 2 pairs of pectoral (Bailey 1932; Cahalane 1961). A male collected on 12 April 1962 had scrotal testes 19 mm in length (Armstrong et al. 1972). Males have a baculum. Dental formula is i 3/3, c 1/1, p 3/3, m 1/2, total 34.

REPRODUCTION. *Mephitis macroura* mate from mid-February to the end of March (Patton 1974). Litter size ranges from 3 to 8 (Bailey 1932; Ceballos González and Galindo Leal 1984; Patton 1974; Reid 1997). A female collected on 23 June 1958 at Colotlipa, Guerrero, Mexico, carried 3 embryos, 35 mm in crown–rump length (Davis and Lukens 1958). In Chihuahua, Mexico, 1 female carried 2 embryos, 28 mm in length; a 2nd female carried 4 embryos, 28 mm in length (Anderson 1972).

ECOLOGY. The hooded skunk is most common in the arid lowlands (Davis and Russell 1954), but also occurs in deciduous

FIG. 1. Adult male *Mephitis macroura*. Photograph by J. W. Dragoo.

FIG. 2. Dorsal, ventral, and lateral views of cranium and lateral view of mandible of *Mephitis macroura* from Pinal County, Arizona (juvenile female, American Museum of Natural History, specimen #599/1354). Greatest length of cranium is 63.5 mm.

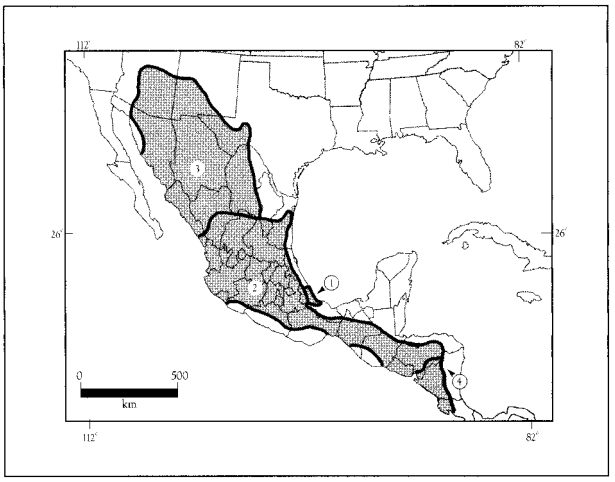

FIG. 3. Distribution of *Mephitis macroura*, modified from Hall (1981) and Reid (1997): 1, *M. m. eximus*; 2, *M. m. macroura*; 3 *M. m. milleri*; 4, *M. m. richardsoni*.

or ponderosa forest, forest edges, pastures, rocky canyons, and riparian habitats (Baker 1956; Findley et al. 1975; Janzen and Hallwachs 1982). In Mexico, hooded skunks occupy home ranges of 2.8–5.0 km² (Ceballos and Miranda 1986). Typically, *M. macroura* occurs from sea level to 2,440 m (Hubbard 1972), but 1 animal was collected in the Boreal Forest of Morelos, Mexico, at 3,110 m (Davis and Russell 1954), and in Arizona, they occur at 2,620 m along Hannagan Creek and at Beaverhead Lodge in Greenlee County (Hoffmeister 1986). In Guerrero, Mexico, hooded skunks are widespread but scattered below 1,830 m (Davis and Lukens 1958).

The hooded skunk mainly consumes insects, fruits, small vertebrates, and bird eggs (Patton 1974; Reid 1997). A hooded skunk captured near a river in New Mexico had a stomach filled with remnants of black beetles (Coleoptera—Bailey 1932), and 1 animal killed in a grassy meadow had a stomach full of grasshoppers (Orthoptera—Dalquest 1953).

Captive hooded skunks have lived for 3 years (Patton 1974). In the wild, great horned owls (*Bubo viginianus*) and coyotes (*Canis latrans*) may kill hooded skunks.

Mephitis macroura hosts the nematode *Physaloptera maxillaris* (Erickson 1946). Roundworms (*Physaloptera maxillaries*) and fleas (family: Pulicidae) occur in hooded skunks in Trans Pecos, Texas (Patton 1974). Lesions in skulls of adult hooded skunks from that area indicate the presence of *Skrjabingylus chiwoodorum* (Patton 1974). No cases of rabies are known (Aranda and López-de Buen 1999; Ceballos and Miranda 1986). A female and her litter in Balmorhea Lake dam in Trans Pecos, Texas died of feline distemper (Patton 1974).

Fur of the hooded skunk is very long, light, and of low economic value (Bailey 1932). The flesh, however, is considered a table delicacy in some areas (Davis 1944). In Guatemala, hooded skunks are hunted for their scent glands that are used in folk medicine (Reid 1997). In San Luis Potosi, Mexico, the fat of hooded skunks is used for medicinal purposes (Dalquest 1953). Hooded skunks offer little resistance when caught in a trap (Hoffmeister 1986).

BEHAVIOR. The hooded skunk is nocturnal and generally solitary, but several may gather at a feeding site without aggression (Reid 1997). When foraging, *M. macroura* moves slowly, snuffling among leaves and pouncing on grasshoppers and beetles (Dalquest 1953; Reid 1997). Typically, hooded skunks are active soon after dusk and travel along rock walls, streambeds, and in weedy fields. During the day, *M. macroura* sleeps in rock crevices, burrows, holes, and brushy bottoms (Bailey 1932; Godin 1982; Reid 1997). Hooded skunks prefer to den away from human dwellings (Patton 1974). However, at San Bernardino Ranch east of Douglas, Arizona, hooded skunks were observed under buildings (Hoffmeister 1986). Most likely, they remain active all year (Bailey 1932).

Anal glands are used exclusively in self-defense (Dalquest 1953). The defensive behavior of *M. macroura* is similar to that of *M. mephitis* (Janzen and Hallwachs 1982; Larivière and Messier 1996; Leopold 1965). When chased, a large hooded skunk in the Sonoran desert, Arizona, took refuge under a jumping cholla (*Opuntia fulgida*—Reed and Carr 1949).

In Costa Rica, hooded skunks do not break chicken eggs with their mouth; instead they break eggs by throwing them between their back legs. They may repeat the procedure until the egg is broken, but the throws are not directed at rocks or hard surfaces (Janzen and Hallwachs 1982).

GENETICS. *Mephitis macroura* probably evolved from a slow moving omnivore/insectivore (Dragoo et al. 1993). Closest living relatives of *M. macroura* are striped (*M. mephitis*) and spotted (*Spilogale*) skunks. *M. macroura* and *M. mephitis* are separated by a genetic distance of 0.28 based on mitochondrial deoxyribonucleic acid sequence of CYT1 and D-loop (Dragoo et al. 1993).

CONSERVATION STATUS. Hooded skunks are not threatened. In Mexico, they are very abundant and survive in human-altered habitats such as cultivated fields, pastures, and suburban areas.

REMARKS. Skunks have been elevated to their own family, the Mephitidae, which includes genera *Conepatus, Mephitis, My-*

daus, and *Spilogale* (Dragoo and Honeycutt 1997), rather than grouped as a subfamily (Mephitinae) within Mustelidae (Nowak 1999; Wozencraft 1993). Other common names for the hooded skunk include white-sided skunk, southern skunk, zorillo, zorillo común, zorillo rayado, zorillo listado, or mofeta rayada (Spanish), pay (Maya), and moufette à capuchon (French). The etymological origin of *Mephitis* is the Latin *mephit* meaning "foul odor" (Borror 1960). The specific name *macroura* is from the Greek prefix *macr* meaning "large" and the Greek suffix *oura* meaning "tail" (Borror 1960).

Y. T. Hwang was supported by a graduate scholarship from the University of Saskatchewan. C. Moore and J. Gandy helped with the map, and C. Hutchison helped obtain numerous references. G. Ceballos and J. Dragoo reviewed an earlier draft of this manuscript.

LITERATURE CITED

ANDERSON, S. 1972. Mammals of Chihuahua, taxonomy and distribution. Bulletin of the American Museum Natural History 148:149–410.

ARANDA, M., AND L. LÓPEZ-DE BUEN. 1999. Rabies in skunks from Mexico. Journal of Wildlife Diseases 35:574–577.

ARMSTRONG, D. M., J. K. JONES, JR., AND E. C. BIRNEY. 1972. Mammals from the Mexican state of Sinaloa. III. Carnivora and Artiodactyla. Journal of Mammalogy 53:48–61.

BAILEY, V. 1932. Mammals of New Mexico. North American Fauna 53:1–412.

BAKER, R. H. 1956. Mammals of Coahuila, Mexico. University of Kansas Publications, Museum of Natural History 9:125–335.

BORROR, D. J. 1960. Dictionary of word roots and combining forms. National Press Books, Palo Alto, California.

CAHALANE, V. H. 1961. Mammals of North America. MacMillan Company, New York.

CEBALLOS, G., AND A. MIRANDA. 1986. Los mamiféros de Chamela, Jalisco: manual de campo. Universidad Nacional Autonoma de México, México City, México.

CEBALLOS GONZÁLEZ, G., AND C. GALINDO LEAL. 1984. Mamíferos silvestres de la Cuenca de México. Instituto de Ecología y Museo de Historia Natural de la Ciudad de México, Editorial Limusa, México City, México.

COUES, E. 1877. Fur-bearing animals: a monograph of North American Mustelidae. Department of Interior, United States Geological Survey of Territories, Miscellaneous Publications 8:1–348.

DALQUEST, W. W. 1953. Mammals of the Mexican state of San Luis Potosi. Louisiana State University Press, Baton Rouge.

DAVIS, W. B. 1944. Notes on Mexican mammals. Journal of Mammalogy 25:370–402.

DAVIS, W. B., AND P. W. LUKENS. 1958. Mammals of the Mexican state of Guerrero, exclusive of Chiroptera and Rodentia. Journal of Mammalogy 39:347–367.

DAVIS, W. B., AND R. J. RUSSELL. 1954. Mammals of the Mexican state of Morelos. Journal of Mammalogy 35:63–80.

DRAGOO, J. W., R. D. BRADLEY, R. L. HONEYCUTT, AND J. W. TEMPLETON. 1993. Phylogenetic relationships among the skunks: a molecular perspective. Journal of Mammalian Evolution 1: 255–267.

DRAGOO, J. W., AND R. L. HONEYCUTT. 1997. Systematics of mustelid-like carnivores. Journal of Mammalogy 78:426–443.

ERICKSON, A. B. 1946. Incidence of worm parasites in Minnesota Mustelidae and host list and keys to North American species. The American Midland Naturalist 36:494–509.

FINDLEY, J. S., A. H. ILARRIS, D. E. WILSON, AND C. JONES. 1975. Mammals of New Mexico. University of New Mexico Press, Albuquerque.

GODIN, A. J. 1982. Striped and hooded skunks. Pp. 674–687 in Wild mammals of North America: biology, management, and economics (J. A. Chapman and G. A. Feldhamer, eds.). The John Hopkins University Press, Baltimore, Maryland.

GOODWIN, G. G. 1957. A new kinkajou from Mexico and a hooded skunk from Central America. American Museum Novitates 1830:1–25.

GRAY, J. E. 1837. Description of some new or little known Mammalia principally in the British Museum collection. Charlesworth's Magazine of Natural History 1:577–587.

GRAY, J. E. 1865. Revision of the genera and species of Mustelidae contained in the British Museum. Proceedings of the Zoological Society of London 1865:100–154.

HALL, E. R. 1981. The mammals of North America. Second edition. John Wiley & Sons, New York 2:601–1181.

HALL, E. R., AND W. W. DALQUEST. 1950. Geographic range of the hooded skunk, *Mephitis macroura,* with description of a new subspecies from Mexico. University of Kansas Publications, Museum of Natural History 1:579–580.

HOFFMEISTER, D. F. 1986. Mammals of Arizona. University of Arizona Press, Tucson.

HOWELL, A. H. 1901. Revision of the skunks of the genus *Chincha.* North American Fauna 20:8–63.

HUBBARD, J. P. 1972. Hooded skunk on the Mongolian Plateau, New Mexico. Southwest Naturalist 16:458.

JANZEN, D. H., AND W. HALLWACHS. 1982. The hooded skunk, *Mephitis macroura,* in lowland northwestern Costa Rica. Brenesia 19/20:549–552.

LARIVIÈRE, S., AND F. MESSIER. 1996. Aposematic behaviour in the striped skunk, *Mephitis mephitis.* Ethology 102:986–992.

LEOPOLD, A. S. 1959. Wildlife of Mexico: the game birds and mammals. University of California Press, Los Angeles.

LEOPOLD, A. S. 1965. Fauna silvestre de México. Instituto Mexicano de Recursos Naturales Renovables, México City, México.

LICHTENSTEIN, H. 1832. Darstellung neuer oder wenig bekannter Säugethiere in Abbildungen and Beschreibungen von fünf und sechzig Arten auf fünfzig colorirten Steindrucktafeln nach den Originalen des Zoologischen Museums der Universität zu Berlin. C. G. Lüderitz, Berlin, Germany 1:1–119.

MEAD, J. I., E. L. ROTH, T. R. VAN DEVENDER, AND D. W. STEADMAN. 1984. The late Wisconsinan vertebrate fauna from Deadman Cave, southern Arizona. Transactions of the San Diego Society of Natural History 20:247–276.

MEARNS, E. A. 1897. Preliminary diagnoses of new mammals of the genera *Lynx, Urocyon, Spilogale,* and *Mephitis,* from the Mexican boundary line. Proceedings of the United States National Museum 20:1–4.

NOWAK, R. M. 1999. Walker's mammals of the world. Sixth edition. The John Hopkins University Press, Baltimore, Maryland 1: 1–836.

PATTON, R. F. 1974. Ecological and behavioural relationships of the skunks of Trans Pecos Texas. Ph.D. dissertation, Texas A&M University, 199 pp.

REED, C. A., AND W. H. CARR. 1949. Use of cactus as protection by hooded skunk. Journal of Mammalogy 30:79–80.

REID, F. A. 1997. A field guide to the mammals of Central America and south east Mexico. Oxford University Press, New York.

ROSATTE, R. C. 1987. Striped, spotted, hooded, and hog-nosed skunk. Pp. 599–613 in Wild furbearer management and conservation in North America (M. Nowak, J. A. Baker, M. E. Obbard, and B. Malloch, eds.). Ontario Ministry of Natural Resources, Toronto, Canada.

TOMES, R. F. 1861. Report of a collection of mammals made by Osbert Salvin, Esq., F. Z. S., at Dueñas, Guatemala; with notes on some of the species, by Mr. Fraser. Proceedings of the Zoological Society of London 1861:278–288.

WADE-SMITH, J., AND B. J. VERTS. 1982. Mephitis mephitis. Mammalian Species 173:1–7.

WOZENCRAFT, W. C. 1993. Order Carnivora. Pp. 279–348 in Mammal species of the world: a taxonomic and geographic reference (D. E. Wilson and D. M. Reeder, eds.). Smithsonian Institution Press, Washington, D.C.

Associate editors of this account were ELAINE ANDERSON, LESLIE CARRAWAY, and LUI MARINELLI. Editor was VIRGINIA HAYSSEN.

Y. T. HWANG, DEPARTMENT OF BIOLOGY, UNIVERSITY OF SASKATCHEWAN, 112 SCIENCE PLACE, SASKATOON, SASKATCHEWAN S7N 5E2, CANADA. S. LARIVIÈRE, INSTITUTE FOR WETLAND AND WATERFOWL RESEARCH, DUCKS UNLIMITED INC, ONE WATERFOWL WAY, MEMPHIS, TENNESSEE 38120-2351 AND DEPARTMENT OF BIOLOGY, UNIVERSITY OF SASKATCHEWAN, 112 SCIENCE PLACE, SASKATOON, SASKATCHEWAN S7N 5E2, CANADA. Present address: DELTA WATERFOWL FOUNDATION, R.R. #1, BOX 1, PORTAGE LA PRAIRIE, MANITOBA R1N 3A1, CANADA.