

Spilogale pygmaea.

By Rodrigo A. Medellín, Gerardo Ceballos, and Heliot Zarza

Published 4 December 1998 by the American Society of Mammalogists

Spilogale pygmaea Thomas, 1898

Pygmy Spotted Skunk, Zorrillo Manchado Pigmeo

Spilogale pygmaea Thomas, 1898:898. Type locality: "Rosario, Sinaloa, W. Mexico."

CONTEXT AND CONTENT. Order Carnivora, Family Mephitidae, Genus *Spilogale*, species *pygmaea* (Dragoo and Honeycutt, 1997). Ewer (1973) questioned the validity of *S. pygmaea* arguing that the small size and color pattern approached those of *S. putorius tropicalis* and implied that these species might be conspecific; he reported that only five specimens were known. However, by 1979 there were at least 37 specimens collected and deposited in museums in Mexico, the United States, and the United Kingdom (López-Forment and Urbano, 1979). Validity of the subspecies has been questioned by some authors (Schreiber et al., 1989), because of the continuity in the range and habitats where this species occurs. Four subspecies have been named, of which only three currently are recognized (López-Forment and Urbano, 1979; Schreiber et al., 1989):

- S. p. australis* Hall, 1938:514. Type from Acapulco, Guerrero, Mexico.
- S. p. intermedia* López-Forment and Urbano, 1979:726. Type from "Jalisco: 8 km E, Chamela, 60 m," Mexico.
- S. p. pygmaea*, see above. (*albipes* Goodwin a synonym).

DIAGNOSIS. *Spilogale pygmaea* (Fig. 1) is the smallest carnivore in Mexico and one of the smallest in the world. It is a small skunk weighing about 200 g but reaching as much as 320 g (Ceballos and Miranda, 1986) with six continuous creamy-buff stripes running along the dorsum. The tail is short and is sparsely covered with short, black and creamy hairs. The only other species of *Spilogale* that can be sympatric with *S. pygmaea* along the west coast of Mexico is *S. putorius* (Kinlaw, 1995; Wozencraft, 1993). *S. putorius* is larger, with a body mass of 250–500 g; the pelage color pattern is markedly black and white, not creamy; the dorsal stripes are discontinuous; and it has a longer, fluffier, more densely furred tail (Kinlaw, 1995). Another species that co-occurs with *S. pygmaea*, at least in parts of its range, is the hooded skunk (*Mephitis macroura*), but it is a larger skunk (head and body length, 280–380, body mass, 700–2,500 g—Nowak, 1991), with a mostly black pattern and two faint to bold white stripes running divergently from the forehead posteriorly. Its tail is much longer and covered with

very long, dense hairs giving a fluffy appearance. The tail of *M. macroura* can be from all black to whitish, depending on the varying proportion of white hairs (Medellín, pers. obs.). The hog-nosed skunk (*Conepatus mesoleucus*) also co-occurs with *S. pygmaea* over a large portion of the latter's range, but the two are easily distinguished by the larger size of the former (head and body length, 300–490 mm; body mass, 2,300–4,500 g—Nowak, 1991); a single broad, white band along its back from the forehead; a long, fluffy, mostly white tail; and a broad nosepad (Ceballos and Miranda, 1986).

GENERAL CHARACTERS. The pygmy spotted skunk is the smallest mephitine and has an elongated body shape and short limbs (Fig. 1). The neck is short and the pelage is relatively short and fine. The species has a characteristic color pattern of a blackish-brown background with six continuous bands, ca. 8 mm wide, of creamy-buff hair running down the back from the forehead to the rump. The outermost band crosses the forehead just above the eyes. The feet also are creamy-buff dorsally. The dorsum and tail are dominated by the creamy-colored, relatively broad stripes. The tail is relatively short with interspersed black and creamy-buff hairs like other *Spilogale*, but shorter than in sympatric skunks (Ceballos and Miranda, 1986; Hall, 1981; López-Forment and Urbano, 1979). Dental formula is $i\ 3/3, c\ 1/1, p\ 3/3, m\ 1/2$, total 34 (Ceballos and Miranda, 1986).

The rostrum is short, with a small black nose pad. The ears are short and rounded, surrounded by the pale band that crosses the forehead. Fore- and hind legs are short, with slender feet that have relatively small, slightly curved claws.

The skull (Fig. 2) is small, short, and delicate, with no sagittal crest. The nasals are high and the rostrum short and pointed, with a narrow turbinal opening. Zygomatics are stout and conspicuously arched. The mesopterygoid pit is wide and deep with a palatine spine protruding into the pit. Lambdoidal crests are evident but not large. The teeth are similar to those in other species of the genus. The canines are relatively small, but molars are large. Among skunks, the genus *Spilogale* has the longest carnassials, suggesting greater predatory habits (Ewer, 1973).

Somatic measurements (in mm; $n = 22$ –26) are as follows: total length, 240–282; hind foot length, 20–34; ear length, 18–33; and body mass, 150–320 g (Ceballos and Miranda, 1986; Hall, 1981). Tail length is a sexually dimorphic character (López-Forment and Urbano, 1979); mean ($\pm 90\%$ interval) tail length of 18 males and 8 females was 70.3 ± 2.8 and 63.5 ± 3.8 , respectively. Measurements ($\pm 90\%$ interval) of three sexually dimorphic skull characters are, occipitonasal length ($n = 16$ males, 8 females), 41.6 ± 0.8 , 40.5 ± 0.2 , respectively; interorbital width ($n = 18$ males, 9 females), 13.0 ± 0.6 , 12.7 ± 0.6 , respectively; and palatal length ($n = 18$ males, 9 females), 14.8 ± 0.2 , 14.3 ± 0.9 , respectively (López-Forment and Urbano, 1979). Other cranial measurements (sexes combined) are as follows: condylobasal length, 40–44; zygomatic breadth, 23–27; mastoid breadth, 20–24; interorbital width, 11–12.5; postorbital width, 12–13; cranium height, 14–16; and length of maxillary toothrow, 13.5–14.2 (Greer and Greer, 1970; Van Gelder, 1959). Although some are sexually dimorphic, live skunks cannot be separated at a distance.

DISTRIBUTION. *Spilogale pygmaea* is endemic to the tropical Pacific Coast of Mexico, from Sinaloa south to Oaxaca (Fig. 3). It has been recorded from the states of Sinaloa, Nayarit, Jalisco, Colima, Guerrero, and Oaxaca (Ceballos and Miranda, 1986; Hall, 1981; López-Forment and Urbano, 1979). Altitudinal distribution is usually 0–100 m above sea level (Van Gelder, 1959), although remains of one *S. pygmaea* were found in an owl pellet at an elevation of ca. 500 m, at Cañón del Zopilote (López-Forment and Urbano, 1979). The distribution of this species is consistent with



FIG. 1. *Spilogale pygmaea* from Chamela, Jalisco. Photograph by G. Ceballos.

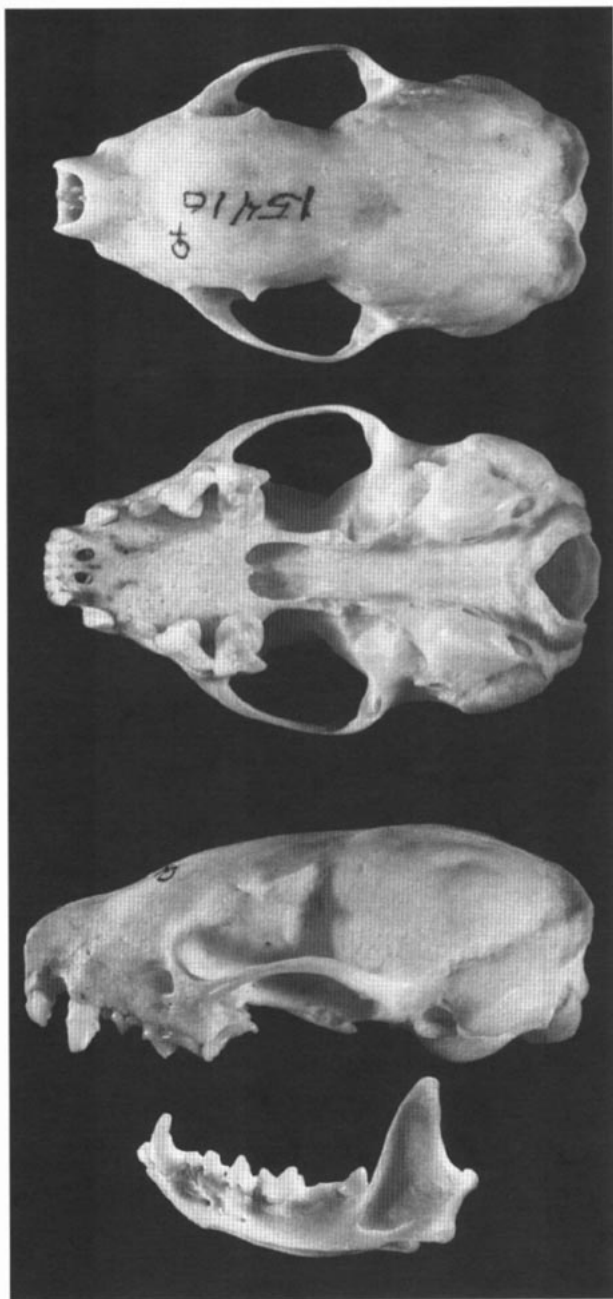


FIG. 2. Dorsal, ventral, and lateral view of skull and lateral view of mandible of adult female *Spilogale pygmaea* from Puerto Marqués, Guerrero. Condylolincisive length is 40.9 mm.

that of 37 other Mexican mammalian endemics (Ceballos and Rodríguez, 1993).

FOSSIL RECORD. No fossils of *S. pygmaea* are known. *Spilogale rexroadi*, a fossil skunk known from the upper Pliocene (early Blancan), was similar in size only to female *S. pygmaea* and to the smallest subspecies of *S. putorius* (Dalquest, 1972). *Spilogale pygmaea* has been proposed as the most primitive of the living spotted skunks (Van Gelder, 1959), and *S. rexroadi* has been speculated to be a direct ancestor of the living *Spilogale*, since its dentition is less specialized than that of living species (Dalquest, 1972).

ONTOGENY AND REPRODUCTION. Gestation is 43–51 days, slightly shorter than that of *S. putorius*, and it may include a very short and perhaps variable period of delayed implantation. The species may produce more than one litter per year. One to six pups can be born in one litter (Teska et al., 1981). Mean body mass of six newborns was 6.9 g. These were born partially covered with

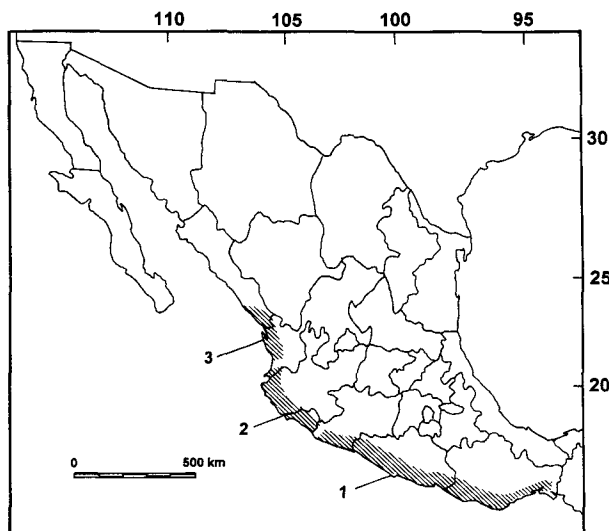


FIG. 3. Distribution of *Spilogale pygmaea*. 1, *S. p. australis*; 2, *S. p. intermedia*; 3, *S. p. pygmaea*.

fine white hair, although some skin pigmentation similar to the adult pattern was discernible. The eyes and ears remained closed until 29–32 days of age, and most teeth except M3 had erupted by 47 days of age (Teska et al., 1981).

Breeding occurs from April to August, with most births around July and August (Baker and Sánchez, 1973; Ceballos and Miranda, 1986). One male captured in April had scrotal testes (López-Forment and Urbano, 1979).

ECOLOGY. *Spilogale pygmaea* inhabits deciduous tropical forest, semi-evergreen forest, and desert scrub (Ceballos and Miranda, 1986). One specimen was obtained in coastal sand dunes with only herbaceous vegetational cover (López-Forment and Urbano, 1979). Nearly all individuals have been captured in coastal habitats, and its distribution is patchy along the coastline, with some areas completely devoid of the species. However, remains of one were found in an owl pellet at Cañón del Zopilote, Guerrero, 115 km from the coast (and at a higher altitude than the species is usually found—López-Forment and Urbano, 1979). Although most individuals have been found in undisturbed habitats, they are capable of penetrating into agricultural zones and pastures (Ceballos and Miranda, 1986). Vegetation in Colima where a specimen was caught in a Sherman trap was dominated by *Crescentia*, *Acacia*, *Caesalpinia*, *Ipomoea*, *Cochlospermum*, *Guazuma*, *Combretum*, organ-pipe cactus (*Stenocereus*), and agaves (*Agave*—Greer and Greer, 1970).

Spilogale pygmaea is a nocturnal species that makes dens underground or in fallen logs, among rocks, or simply under dense vegetation cover. Food habits consist of insects, spiders, birds, eggs, small mammals, and some fruit and seeds (Ceballos and Miranda, 1986). Of eleven digestive tracts of individuals caught around Puerto Marqués, Guerrero, ten contained animal matter and eight had plant matter. Five of the latter had fig seeds and another had seeds of Umbeliferae. One digestive tract was empty. Five contained Coleopteran remains, and two others contained spider remains, one of which was an adult Theraphosid (*Brachypelma smithii*). One stomach contained remains of a crayfish (*Macrobrachium*), one, the remains of a 12 cm-long scorpion (*Centruroides elegans*), one, parts of a bat (*Balantiopteryx plicata*), and another, remains of an Orthopteran (López-Forment and Urbano, 1979).

These skunks have been captured by hand, gun, and small traps. Where they are abundant, they readily enter Sherman or trigger Big Victor snap traps, including those baited with peanut butter, oats and vanilla (intended for rodents), and fresh fish (López-Forment and Urbano, 1979).

Spilogale pygmaea is a scarce species, but seems to be able to survive under human-disturbed conditions if enough habitat is preserved (Schreiber et al., 1989).

BEHAVIOR. *Spilogale pygmaea* is primarily a nocturnal species. The animals use pathways and stream beds to move to and

from water bodies. W. López-Forment reports that individuals of this species have approached him twice (López-Forment and Urbano, 1979). Once when observing bats in a cave, a pygmy skunk grabbed and pulled at the fabric of his trousers, and another attempted to snatch a screaming bat from his hand. Two individuals, caught in live traps, stomped their feet at the approach of the researcher. The secretion of the anal glands is released only under extreme circumstances, such as when the skunk is handled (Medellín, pers. obs.) or closely approached.

Individuals live alone most of the year except in the breeding season, when males and females can be seen together. Males are territorial and actively defend their territory against other males, only allowing the entrance of females (Ceballos and Miranda, 1986).

One *S. Pygmaea* skull was recovered from a barn owl (*Tyto alba*) pellet (López-Forment and Urbano, 1979). However, snakes and other carnivores probably prey on the species. Recorded parasites include ticks (Ixodidae), cestodes, nematodes, and two species of Acanthocephala: *Prostenorchis rugosus* and *Pachysentis gethi* (López-Forment and Urbano, 1979; Salgado-Maldonado, 1979).

CONSERVATION STATUS. The rapidly expanding touristic developments occurring in the small range of *S. pygmaea* along the Pacific Coast of Mexico, together with its discontinuous distribution along the coastline, are probably having a negative effect on this species (Ceballos and Navarro, 1991). The species is considered vulnerable (Ceballos and Navarro, 1991) and listed as threatened by the federal government (Mexico, 1994). Its presence in protected areas has been confirmed in the recently decreed, 12,000 ha Cuixmala Biosphere Reserve, which is continuous with the Chamaela Reserve of the National University of Mexico, located on the coast of Jalisco. Thus at least one population enjoys federal protection from habitat destruction. Some individuals are stuffed and sold as souvenirs in stores at Acapulco, Guerrero, Mexico (Medellín, pers. obs.). The great pressure to develop the west coast of Mexico for resorts, roads, and touristic cities is currently destroying much of the habitat of this as well as other endemic species of Mexico (Dinerstein et al., 1995; Ramamoorthy et al., 1993).

REMARKS. The name *Spilogale* is derived from the Greek *spilos*, meaning spot, and *gale*, meaning weasel (Kinlaw, 1995). The specific name *pygmaea* refers to the small size of this skunk, small both for a carnivore and for the genus. We thank A. Kinlaw, R. H. Baker, and L. Carraway for helpful suggestions on improving the manuscript.

LITERATURE CITED

- BAKER, R. H., AND C. SÁNCHEZ H. 1973. Observaciones sobre el zorrillo pigmeo manchado, *Spilogale pygmaea*. Anales del Instituto de Biología, Universidad Nacional Autónoma de México, México, Serie Zoológica (1), 44:61–64.
- CEBALLOS, G., AND A. MIRANDA. 1986. Los mamíferos de Chamaela, Jalisco. Instituto de Biología, Universidad Nacional Autónoma de México, México, D.F., 436 pp.
- CEBALLOS, G., AND D. NAVARRO. 1991. Diversity and conservation of Mexican mammals. Pp. 167–198, in Latin American mammalogy history, biodiversity, and conservation (M. A. Mares and D. J. Schmidly, eds.). University of Oklahoma Press, Norman, 468 pp.
- CEBALLOS, G., AND P. RODRÍGUEZ. 1993. Diversidad y conservación de los mamíferos de México: II. Patrones de endemidad. Pp. 87–108, in Avances en el estudio de los mamíferos de México (R. A. Medellín and G. Ceballos, eds.). Publicaciones Especiales, Asociación Mexicana de Mastozoología, 1:1–464.
- DALQUEST, W. W. 1972. On the upper Pliocene skunk, *Spilogale rexroadii* Hibbard. Transactions of the Kansas Academy of Sciences, 74:234–236.
- DINERSTEIN, E. W., D. M. OLSON, D. J. GRAHAM, A. L. WEBSTER, S. A. PRIMM, M. P. BOOKBINDER, AND G. LEDEC. 1995. A conservation assessment of the terrestrial ecoregions of Latin America and the Caribbean. The World Bank/ World Wildlife Fund, Washington, District of Columbia, 129 pp.
- DRAGOO, J. W., AND R. L. HONEYCUTT. 1997. Systematics of mustelid-like carnivores. Journal of Mammalogy, 78:426–443.
- EWER, R. F. 1973. The carnivores. Cornell University Press, Ithaca, New York, 494 pp.
- GREER, J. K., AND M. GREER. 1970. Record of the pygmy spotted skunk (*Spilogale pygmaea*) from Colima, Mexico. Journal of Mammalogy, 51:629–630.
- HALL, E. R. 1938. Notes on the spotted skunks (Genus *Spilogale*), with accounts of new subspecies from Mexico and Costa Rica. Annals and Magazine of Natural History, series 11, 1: 510–515.
- . 1981. The mammals of North America, Second ed. John Wiley & Sons, New York, 1:1–600 + 90.
- KINLAW, A. 1995. *Spilogale putorius*. Mammalian species, 511: 1–7.
- LÓPEZ-FORMENT C., W., AND G. URBANO V. 1979. Historia natural del zorrillo machado pigmeo, *Spilogale pygmaea*, con la descripción de una nueva subespecie. Anales del Instituto de Biología, Universidad Nacional Autónoma de México, México, Serie Zoológica (1), 50:721–728.
- MEXICO. 1994. Norma Oficial Mexicana NOM-059-ECOL-1994, que determina las especies y subespecies de flora y fauna silvestres terrestres y acuáticas en peligro de extinción, amenazadas, raras y las sujetas a protección especial, y que establece especificaciones para su protección. Diario Oficial de la Federación, lunes 16 de Mayo de 1994:2–60.
- NOWAK, R. M. 1991. Walker's mammals of the world. Fifth edition. Johns Hopkins University Press, Baltimore, Maryland, 2: 643–1629.
- RAMAMOORTHY, T. P., R. BYE, A. LOT, AND J. FA (EDS.). 1993. Biological diversity of Mexico: origins and distribution. Oxford University Press, New York, 812 pp.
- SALGADO-MALDONADO, M. 1979. Acantocéfalos en mamíferos. I. Hallazgo de *Pachysentis gethi* (Machado, 1950) Schmidt, 1972, parásito de *Spilogale pygmaea* en México. Anales del Instituto de Biología, Universidad Nacional Autónoma de México, México, Serie Zoológica (1), 50:51–61.
- SCHREIBER, A., R. WIRTH, M. RISSEL, AND H. VAN ROMPAEY. 1989. Weasels, civets, mongooses, and their relatives: an action plan for the conservation of mustelids and viverrids. IUCN/SSC Mustelidae-Viverridae specialist group, Gland, Switzerland, 100 pp.
- TESKA, W. R., E. N. RYBAK, AND R. H. BAKER. 1981. Reproduction and development of the pygmy spotted skunk (*Spilogale pygmaea*). American Midland Naturalist, 105:390–392.
- THOMAS, O. 1898. On a remarkably small skunk of the genus *Spilogale* which had been received in a collection made by Mr. P. O. Simons in western Mexico. Proceedings of the Zoological Society of London, 1898:898–899.
- VAN GELDER, R. G. 1959. A taxonomic revision of the spotted skunks (genus *Spilogale*). Bulletin of the American Museum of Natural History, 117:229–392.
- WOZENCRAFT, W. C. 1993. Order Carnivora. Pp. 279–348, in Mammal Species of the World: a taxonomic and geographic reference. Second ed. (D. E. Wilson and D. M. Reeder, eds.). Smithsonian Institution Press, Washington, District of Columbia, 1206 pp.

Editors of this account were LESLIE N. CARRAWAY AND DUKE S. ROGERS. Managing editor was BARBARA H. BLAKE.

RODRIGO A. MEDELLÍN, GERARDO CEBALLOS, AND HELIOT ZARZA, INSTITUTO DE ECOLOGÍA, UNAM, AP. POSTAL 70-275, MÉXICO, D. F., 04510, MÉXICO.